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**Documents of the World Administrative Radio Conference on the use of the geostationary-satellite orbit and the planning of the space services utilizing it (2<sup>nd</sup> session) (WARC ORB-88 (2))  
(Geneva, 1988)**

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

# INTERNATIONAL TELECOMMUNICATION UNION

## ORB-88

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

Document DL/1-E  
29 August 1988

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

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### AGENDA

#### OF THE

#### MEETING OF HEADS OF DELEGATIONS

Monday, 29 August 1988 at 1030 hrs

(Room II)

#### Document No.

- |  |      |
|--|------|
| 1. Opening by the Secretary-General and designation of the Chairman of the meeting | -    |
| 2. Approval of the agenda of the meeting   | -    |
| 3. Proposals for the election of the Chairman of the Conference                    | -    |
| 4. Proposals for the election of the Vice-Chairmen of the Conference               | -    |
| 5. Conference structure  | DT/3 |
| 6. Proposals for the election of the Chairmen and Vice-Chairmen of the Committees  | -    |
| 7. Draft agenda of the first Plenary Meeting                                       | DT/2 |
| 8. Allocation of documents to Committees   | DT/4 |
| 9. Other business  |      |

R.E. BUTLER  
Secretary-General

# INTERNATIONAL TELECOMMUNICATION UNION

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WARC ON THE USE OF THE  
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SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

Document DL/2-E  
29 August 1988

### STEERING COMMITTEE

#### Draft

#### GENERAL SCHEDULE OF THE WORK OF THE CONFERENCE

##### Week 1 (29 August - 2 September)

Organisation and commencement of work in Committees and Working Parties with decisions progressively, with particular emphasis in 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  
Friday 30 - End of work of Committee 6

##### Week 6 (3 - 5 October)

Monday 3 - Report of Committee 2  
- 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 meetings will be scheduled as necessary during each week of the Conference.

Note 2 This schedule may be changed in the course of the work of the Conference.



WORKING GROUP  
OF THE PLENARY

DRAFT

AMENDMENT TO SECTION 4 OF APPENDIX 29  
TO THE RADIO REGULATIONS

1. Change the title of section 4 to read:  
"Consideration of narrow-band and FM-TV carriers".
2. Add a new paragraph as the third paragraph of this section 4 (between the existing paragraphs 2 and 3):  
"For this special case administrations are referred to relevant CCIR texts guidance in facilitating subsequent coordination."

R. RYVOLA  
Chairman of the Working Group  
of the Plenary

# 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 DL/4-E  
5 September 1988  
Original: English

WORKING GROUP  
OF THE PLENARY

### Draft

#### AMENDMENTS TO SECTIONS 2.2.1.2 AND 3.2 OF APPENDIX 29 TO THE RADIO REGULATIONS

1. At the end of Section 2.2.1.2 "Cases requiring independent treatment of the up-link and the down-link" change the reference to paragraph 2.3 to read:

paragraph 3.2.

Reasons: The original reference is to an unrelated text concerning the most unfavourably sited earth stations, whereas it should be to paragraph 3.2.

2. Section 3.2 a) reads as follows:

"a) In the case of interference into only one link, the up-link or the down-link, between which there is a change of modulation on board the satellite, the value  $\Delta T_e/T_e$  or  $\Delta T_s/T_s$ , expressed as a percentage, shall be compared with the threshold value of 4%."

Reasons: The objective of Sections 3.2 a) and 3.2 b) is to define the number and types of results required for different interference situations in cases if there is a change of modulation in the satellite or if the transmission originates on board the satellite (see Section 2.2.1.2).

Therefore, Section 3.2 a) should clearly stipulate this situation in the same way as Section 3.2 b) in order to avoid any present ambiguity in its application also for satellite links using simple frequency changing transponders.

The treatment of cases of a single interference entry into satellite links using the simple frequency changing transponder (frequency overlap only on the up-link or the down-link) is fully explained in Section 2.2.

R. RYVOLA  
Chairman of the Working Group of the Plenary

CONF\ORB-2\DL\004E.TXS

Draft

APPENDICE 30A

Le document de travail ci-joint énumère les règlements en vigueur, les règles de procédure pertinentes, propres à l'IFRB ainsi que les propositions formulées par les administrations qui se rapportent à des dispositions particulières de l'appendice. Toutes les propositions d'ordre général ne sont pas reproduites dans le présent document, pas plus que ne le sont les commentaires sur la Lettre circulaire N° 719 de l'IFRB.

APPENDIX 30A (English only)

The attached working document lists the existing Regulations in force, the relevant internal IFRB Rules of Procedure and those proposals from administrations that refer to specific provisions of the Appendix. All proposals of a general nature are not reproduced in this document, neither are the comments on IFRB Circular-letter No. 719.

APENDICE 30A

El documento de trabajo adjunto contiene una lista de las disposiciones reglamentarias en vigor, las Reglas de Procedimiento internas de la IFRB pertinentes y las propuestas de las administraciones que se refieren a disposiciones concretas del apéndice. En este documento no se reproducen las propuestas de carácter general ni los comentarios sobre la Carta circular de la IFRB N° 719.

Note - The document has been prepared in English only.

Note - Le présent document a été préparé en anglais seulement.

Nota - El documento se ha preparado en inglés exclusivamente.

Le Président du Groupe de travail 5-B

C. DOSCH  
Chairman of Working Group 5-B

Presidente del Grupo de Trabajo 5-B

Text in force  
(RR Appendix 30A)

APPENDIX 30A

Orb-85

Provisions and Associated Plan for the Feeder Links  
for the Broadcasting-Satellite Service (12.2-12.7 GHz)  
in the Frequency Band 17.3-17.8 GHz in Region 2

(See Article 15A)

ARTICLE 1

General Definitions

1.1 Region 2 Feeder-Link Plan: The Plan for the feeder links for the broadcasting-satellite service in the frequency band 17.3-17.8 GHz in Region 2 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Plan.

1.2 Frequency assignment in conformity with the Region 2 Feeder-Link Plan: Any frequency assignment for a receiving space station which appears in the Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

1.3 1983 Conference: Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder Links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC Sat-R2), Geneva, 1983.

1.4 1985 Conference: First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985, called in short WARC Orb-85.

IFRB Rules of Procedure (Doc. 18)

1.2 This definition is limited to "any frequency assignment for a receiving space station which appears in the Plan". Provision 4.2.2 stipulates that "the agreement referred to in 4.2.1 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed earth station ...", which leads to the understanding that earth stations will appear in the Plan. Hence the definition given in 1.2 is not accurate. It is then necessary to know if earth stations are

- entries in the Plan, in which case the definition 1.2 should indicate "... for a receiving space station or a transmitting earth station which appears ..."; or

- additional characteristics to the assignment for a receiving space station, in which case the definition should indicate "... for a receiving space station together with the characteristics of its associated transmitting earth stations which appears ...".

2) In accordance with provision 9.1 of Article 9, the characteristics of earth stations should appear in Column 9 of the Plan. The Board noted that this column contains symbols of remarks and only two of them refer to earth stations without giving all the characteristics specified in provision 9.1.

SAT-83 adopted, in this respect, Resolution No. 7, requesting the Board to invite administrations to communicate the characteristics of their earth stations. To this effect, the Board issued Circular-letter No. 620 dated 6 June 1985 to which two administrations replied.

3) In regard to the rules that the Board shall apply in processing frequency assignments to earth stations, the uncertainties originate from the reference in several provisions to "the characteristics appearing in the Plan", although the Plan contains only one characteristic, the earth station e.i.r.p. (Column 8 identical for all the entries). In order to alleviate these uncertainties, the Board decided to consider as "characteristics appearing in the Plan" those characteristics used for the establishment of the Plan as indicated in Annex 3 to this Appendix. As a result of the above, whenever a provision of Appendix 30A refers to the characteristics of earth stations appearing in the Plan, the following characteristics will be used:

- a) e.i.r.p.: Column 8 of the Plan (87.4 dBW)
- b) antenna diameter: 5 metres (paragraph 3.4.1 of Annex 3)
- c) reference patterns: Figure 3 of Annex 3
- d) transmit power: 1 000 W (paragraph 3.5 of Annex 3) (see also comments under 5.2.1.b)
- e) a fixed earth station is defined by
  - its geographical coordinates
  - antenna characteristics
  - elevation angle of the horizon around the earth stationIn relation to the transmit power, the Board has noted that according to Section 3.10 of Annex 3, the use of power control is permitted only "when rain attenuation exceeds 5 dB" and shall remain within the limits indicated in that Section. The Board, considering that the use of power control in such a way is an operational constraint, limits its examination to the nominal power.
- f) a transportable earth station is an earth station which does not include the characteristics listed in e) above

4) Having defined the characteristics of the earth stations, the Board had to identify the procedures to be applied to them, and reached the following conclusions.

4.1 From the viewpoint of the application of Article 4:

- a) an administration may bring into use any fixed or transportable earth station in the band 17.3 - 17.7 GHz with the characteristics listed in paragraph 3 above without applying the procedure of Article 4;
- b) an administration may bring into use any fixed earth station in the band 17.7 - 17.8 GHz with the characteristics listed in paragraph 3 above without applying the procedure of Article 4;

Proposals from Administrations

USA/12/68SUP

Title Appendix 30A

USA/12/69ADD

Appendix 30A

Provisions and Associated Plans for the Feeder Links  
For the Broadcasting-Satellite Service  
(11.7-12.2 GHz in Region 3, 11.7-12.5 GHz in Region 1  
and 12.2-12.7 GHz in Region 2)  
in the Frequency Band 17.3-18.1 GHz

CEPT-1/39/1

MOD PROVISIONS AND ASSOCIATED PLANS FOR THE FEEDER LINKS FOR THE BROADCASTING-SATELLITE SERVICE (11.7-12.5 GHz IN REGION 1, 12.2-12.7 GHz IN REGION 2 AND 11.7-12.2 GHz IN REGION 3) IN THE FREQUENCY BANDS 14.5-14.8 GHz<sup>1</sup> AND 17.3-18.1 GHz IN REGION 1, 17.3-17.8 GHz IN REGION 2 AND 14.5-14.8 GHz AND 17.3-17.8 GHz IN REGION 3

ARTICLE 1  
General Definitions

CEPT-1/39/2

MOD 1.1 Regions 1 and 3 feeder link Plan: The Plan for the feeder links in the frequency bands 14.5-14.8 GHz<sup>1</sup> and 17.3-18.1 GHz for the broadcasting-satellite service in Region 1 and 14.5-14.8 GHz and 17.3-17.8 GHz in Region 3 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Regions 1 and 3 Plan.

CEPT-1/39/4

MOD 1.2 Region 2 feeder link Plan: The Plan for the feeder links for the broadcasting-satellite service in the frequency band 17.3-17.8 GHz for the broadcasting satellite service in Region 2 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Region 2 Plan.

CEPT-1/39/5

MOD 1.3 Frequency assignment in conformity with the Region 2 feeder link Plan: Any frequency assignment for a receiving space station which appears in the Regions 1 and 3 Plan or the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

CEPT-1/39/6

(MOD) 1.4 1983 Conference: Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder Links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC-SAT-R2), Geneva, 1983.

CEPT-1/39/7

(MOD) 1.5 1985 Conference: First session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilising It, Geneva, 1985, called in short WARC-ORB-85.

CEPT-1/39/8

ADD 1.6 1988 Conference: Second session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilising It, Geneva 1988, called in short WARC-ORB-88.

CEPT-1/39/3

ADD 1 The use of the band 14.5-14.8 GHz is reserved for countries outside Europe and for Malta.

| Text in force<br>(RR Appendix 30A) | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations |
|------------------------------------|--|--------------------------------|
| <p>ARTICLE 1 (contd.)</p>          | <p>1.2 (contd.)</p> <p>c) The band 17.7 - 17.8 GHz is shared with, among others, the fixed-satellite service (space-to-earth), in which typical earth stations are not authorized. Consequently, transportable earth stations are not permitted in this band (for typical earth stations see comments under the paragraph 4.2b below);</p> <p>d) an administration may bring into use a fixed earth station in the band 17.3 - 17.8 GHz (or a transportable station in the band 17.3 - 17.7 GHz) with characteristics different from those listed in paragraph 3 above following the successful application of the procedure of Article 4 with respect to the administrations referred to in provisions 4.2.1.1 to 4.2.1.4 of Article 4.</p> <p>4.2 From the viewpoint of the application of Article 5:</p> <p>a) the conformity of an earth station with the Plan will consist in comparing the characteristics notified with those listed in paragraph 3 above or with alternative characteristics recorded in the Plan following the successful application of the procedure of Article 4;</p> <p>b) no indication is given in regard to the examination and recording of transportable earth stations. A transportable earth station is not defined in any part of the Radio Regulations. In its comments under RR66 the Board indicates that, so far as Article 13 is concerned, it treats a transportable earth station "as any other fixed earth station and its notification form is considered incomplete when it does not contain the geographical coordinates". Having considered in detail Appendix 30A, the Board understands that this interpretation does not match the intent of the Appendix. The Board understands that the purpose of a transportable earth station is to permit an administration to install it at any point of the service area without a need to notify geographical coordinates. With this understanding the Board is of the view that what is referred to in Appendix 30A as a "transportable earth station" is a "typical earth station", and has decided to record the "transportable earth station" as "typical earth station";</p> <p>c) provision 5.1.5 stipulates that a notice which does not contain the characteristics specified in Annex 2 shall be returned to the notifying administration. This annex specifies that fixed earth stations can be notified only in the band 17.7 - 17.8 GHz (item 1.6) and transportable earth stations in the band 17.3 - 17.7 GHz (item 1.7). This is in contradiction with provision 4.2.2, which permits fixed earth stations in the band 17.3 - 17.8 GHz. The Board considers that what appears in Annex 2 resulted from an error and decided to accept</p> <ul style="list-style-type: none"> <li>- fixed-earth stations in the band 17.3 - 17.8 GHz</li> <li>- transportable earth stations in the band 17.3 - 17.7 GHz</li> </ul> |                                |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations  |
|--|--|---|
| <p>ARTICLE 2</p> <p>Frequency Band</p> <p>2.1 The provisions of this Appendix apply to the feeder links in the fixed-satellite service (Earth-to-space) in the frequency band 17.3-17.8 GHz, for the broadcasting-satellite service in Region 2, and to other services to which this band is allocated in Region 2 so far as their relationship to the fixed-satellite service (Earth-to-space) in this band is concerned.</p>   | <p>The Board understands this provision as being limited to feeder links for stations of the broadcasting-satellite service in the band 12.2 - 12.7 GHz. Several bands are allocated to the fixed-satellite service to be used exclusively for feeder links to the broadcasting-satellite service, and from these the band 17.3 - 17.8 GHz was selected by the 1983 Conference for planning. The Board interpreted this decision as limiting the use of the band 17.3 - 17.8 GHz only to those feeder links for the broadcasting-satellite service in the band 12.2 - 12.7 GHz. This interpretation is also derived from paragraph 3 of Annex 1, which stipulates that the overall equivalent protection margin (on which the procedures are based) is the margin resulting from "the Plan as established by the 1983 Conference". Consequently the Board will consider as not being in conformity with Appendix 30A any feeder-link assignment</p> <p>to a broadcasting-satellite in a band other than 12.2 - 12.7 GHz in Region 2.</p> | <p>ARTICLE 2</p> <p>Frequency Bands</p> <p>2.1 The provisions of this Appendix apply to the feeder links in the fixed-satellite service (Earth-to-space) in the frequency bands <u>14.5-14.8 GHz and 17.3-18.1 GHz for the broadcasting-satellite service in Region 1, and 17.3-17.8 GHz for the broadcasting-satellite service in Region 2, and 14.5-14.8 GHz and 17.3-17.8 GHz for the broadcasting-satellite service in Region 3</u> and to other services to which this band is allocated in Regions <u>1, 2 and 3</u> so far as their relationship to the fixed-satellite service (Earth-to-space) in <del>this</del> <u>these bands</u> is concerned.</p>   |
| <p>ARTICLE 3</p> <p>Execution of the Provisions and Associated Plan</p> <p>3.1 The Members of the Union in Region 2 shall adopt for their feeder-link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency band referred to in this Appendix, the characteristics specified in the Plan and its associated provisions.</p> <p>3.2 Members of the Union in Region 2 shall not change the characteristics specified in the Plan, or bring into use assignments to feeder-link stations in the fixed-satellite service or to stations of the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.</p> |  | <p>ARTICLE 3</p> <p>Execution of the Provisions and Associated Plans</p> <p>3.1 The Members of the Union in Regions <u>1, 2 and 3</u> shall adopt for their feeder link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency bands referred to in this Appendix the characteristics specified in the <u>appropriate Regional Plan and its associated provisions</u>.</p> <p>3.2 Members of the Union <del>in Region 2</del> shall not change the characteristics specified in the <u>Regions 1 and 3 Plan or in the Region 2 Plan</u>, or bring into use assignments to feeder link stations in the fixed-satellite service or to stations of the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.</p> <p>3.3 In Region 2 for the use of interim systems in the <u>Broadcasting-Satellite service the procedures for feeder links in the fixed satellite service for the bands covered by Appendix 30A are given in Resolution 2</u><br/><del>SAT-RR-CEPT [N]</del></p> |

| Text in force<br>(RR Appendix 30A)  | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations   |
|---|--|--|
| <p align="center"><b>ARTICLE 4</b></p> <p align="center"><b>Procedure for Modifications to the Region 2 Plan (17.3 - 17.8 GHz)</b></p> <p>4.1 When an administration intends to make a modification to the Plan, i.e. either:</p> <ul style="list-style-type: none"> <li>a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or</li> <li>b) to include in the Plan a new frequency assignment in the fixed-satellite service; or</li> <li>c) to cancel a frequency assignment in the fixed-satellite service,</li> </ul> <p>the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix and Resolution 42 (Orb-85)).</p> <p>4.1.1 Before an administration proposes to include in the Plan under the provisions of 4.1 b) a new frequency assignment for reception at a space station<sup>1</sup> or to include in the Plan a new frequency assignment for reception at a space station whose orbital position is not designated in the Plan to this administration, all of the assignments to the service areas involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Board of the reasons thereof.</p> <p><sup>1</sup> The expression "frequency assignment for reception at a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.</p> <p>4.2 Proposed modifications to a frequency assignment in conformity with the Plan or the inclusion in the Plan of a new frequency assignment</p> <p>4.2.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Plan or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those administrations:</p> <p>4.2.1.1 of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of sections 4.2.3.1 and 4.2.4 of this Article; or</p> <p>4.2.1.2 having a frequency assignment in the band 17.7-17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>4.2.1.3 having a frequency assignment in the band 17.7-17.8 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder link modification into use, and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>4.2.1.4 having an assignment in the fixed-satellite service (Earth-to-space) in Regions 1 or 3 which</p> <ul style="list-style-type: none"> <li>a) is recorded in the Master Register; or</li> <li>b) has been coordinated or is being coordinated or has been notified under Articles 11 and 13 of the Radio Regulations; or</li> </ul> | <p>4.1.1 The last sentence of this provision requires an administration in Region 2 to inform the Board of the reasons that lead it to modify the Plan by adding a frequency or an orbital position before notifying to the Board the assignments already appearing in the Plan; however, no other provision indicates the extent to which the Board should examine these reasons, or formulate any opinion with respect to their validity. Therefore, the Board limits its action to</p> <ul style="list-style-type: none"> <li>- ensuring that the reasons are given, as otherwise the communication is not considered complete; and</li> <li>- publishing them in the Special Section referred to in item 4.2.4.</li> </ul> <p>4.2.1 With respect to earth stations, the characteristics are those listed in paragraph 3 of the comments under provision 1.2 of this Appendix or those for which the Article 4 procedure was successfully applied.</p> <p>4.2.1.1 In determining those administrations affected in accordance with this provision, the proposed modification using the values of Section 3 of Annex 1 will be examined against the Region 2 Plan as it exists at the date of receipt of the proposed modification, taking account of all proposed modifications (whether the procedure of Article 4 is complete or not) received before that date. In the application of this provision no account will be taken of the interim systems. However, account will be taken of any time-limited modifications to the Plan in accordance with provision 4.2.13.</p> <p>4.2.1.2 In determining those administrations affected in accordance with this provision, the limits of Annex 1 (Section 1) and Annex 4 (Section 3) will be used for those earth stations in the fixed-satellite service (space-to-Earth) which are either recorded in the MIFR or communicated to the Board at the date of receipt of the proposed modification for publication in accordance with RR1074 or notified at that date.</p> <p>4.2.1.3 This provision refers to "the coordination area of the feeder link fixed-satellite earth station", implying that any modification to the Plan should be limited to feeder links with fixed earth stations. As indicated in the comments under provision 1.2 of this Appendix, few entries in the Plan contain fixed earth stations. It may be concluded from this situation that nothing prevents an administration from applying the Article 4 procedure to a feeder link without specifying fixed earth stations. When an entry in the Plan does not contain fixed earth stations, the coordination area should be calculated as indicated in paragraph 7 of Appendix 28, which requires a definition of the service area of the receiving space station more precise than the one given in paragraph 1.3 of Annex 3 to this Appendix or in item 1.7 of Annex 2.</p> | <p align="center"><b>ARTICLE 4</b></p> <p>CEPT-1/39/15<br/>MOD<br/>CEPT-1/39/16<br/>MOD</p> <p>Procedure for Modifications to the <del>Region 2 Plan (17.3-17.8 GHz)</del></p> <p>4.1 When an administration intends to make a modification to <u>one of the Regional Plans</u>, i.e. either:</p> <ul style="list-style-type: none"> <li>a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the <u>appropriate Regional Plan</u>, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or</li> <li>b) to include in the Plan a new frequency assignment in the fixed-satellite service; or</li> <li>c) to cancel a frequency assignment in the fixed-satellite service,</li> </ul> <p>the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix and Resolution <del>42 (Orb-85)</del> <u>CEPT [N]</u>*)</p> <p>CEPT-1/39/17<br/>(MOD)</p> <p>4.1.1 Before an administration proposes to include in the Plan under the provisions of 4.1 b) a new frequency assignment for reception at a space station<sup>1</sup> or to include in the Plan a new frequency assignment for reception at a space station whose orbital position is not designated in the Plan to <del>this</del> <u>that</u> administration, all of the assignments to the service areas involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Board of the reasons thereof.</p> <p>CEPT-1/39/18<br/>(MOD)</p> <p><sup>1</sup> The expression "frequency assignment for reception <del>at a space station</del>", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.</p> <p>* Note by the General Secretariat: See Document 41.</p> <p>CEPT-1/39/19<br/>MOD</p> <p>4.2 Proposed modifications to a frequency assignment in conformity with <u>one of the Regional Plans</u> or the inclusion in <del>the</del> <u>that</u> Plan of a new frequency assignment.</p> <p>CEPT-1/39/20<br/>ADD</p> <p><u>For Regions 1 and 3</u></p> <p>CEPT-1/39/21<br/>MOD</p> <p>4.2.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the <u>Regions 1 and 3 Plan</u> or the inclusion of a new frequency assignment in <del>the</del> <u>that</u> Plan shall seek the agreement of those administrations:</p> <p>CEPT-1/39/22<br/>MOD</p> <p>4.2.1.1 of <u>Regions 1 and 3</u> having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the plan have already been published by the Board in accordance with the provisions of <del>Sections</del> <u>paragraphs</u> 4.2.3.1 and 4.2.4 of this Article; or</p> <p>CEPT-1/39/23<br/>MOD</p> <p>4.2.1.2 having a frequency assignment in the band 17.7-<del>17.8</del> <u>18.1</u> GHz (<u>Region 1</u>) or 17.7-17.8 GHz (<u>Region 3</u>) to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No 1060 of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>CEPT-1/39/24<br/>MOD</p> <p>4.2.1.3 having a frequency assignment in the bands 14.5-14.8 GHz or 17.7-<del>17.8</del> <u>18.1</u> GHz (<u>Region 1</u>), or 14.5-14.8 GHz or 17.7-17.8 GHz (<u>Region 3</u>) to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder link modification into use, and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>CEPT-1/39/25<br/>MOD</p> <p>4.2.1.4 having an assignment for feeder links in the fixed-satellite service (Earth-to-space) <del>in Regions 1 and 3 in Region 1 in the bands 14.5-14.8 GHz and 17.3-18.1 GHz, in Region 2 in the band 17.3-17.8 GHz, and in Region 3 in the bands 14.5-14.8 GHz and 17.3-17.8 GHz which</del></p> <ul style="list-style-type: none"> <li>a) is recorded in the Master Register; or</li> <li>b) has been coordinated or is being coordinated or has been notified under Articles 11 and 13 of the Radio Regulations; or</li> <li>c) appears in <del>the Region 1 and 3 2 feeder-link Plan to be adopted by a future Administrative Radio Conference taking account of modifications which may be introduced subsequently in accordance with the Final Act of that Conference; or</del></li> </ul> <p><del>d) is identified in accordance with Resolution 43 (Orb-85)</del></p> <p>NOC 4.2.1.5 which are considered affected.</p> |

| Text in force<br>(RR Appendix 30A)  | IFRB Rules of Procedure (Doc. 18)   | Proposals from Administrations  |
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| <p>c) appears in a Region 1 and 3 feeder-link Plan to be adopted by a future Administrative Radio Conference, taking account of modifications which may be introduced subsequently, in accordance with the Final Acts of that conference; or</p> <p>d) is identified in accordance with Resolution 43 (Orb-85).</p> <p>4.2.1.5 which are considered affected.</p> <p>4.2.1.6 The services of an administration are considered to be affected when the limits shown in Annex 1 to this Appendix are exceeded.</p> <p>4.2.2 The agreement referred to in 4.2.1 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed earth station in the band 17.3 - 17.8 GHz or a transportable earth station in the band 17.3 - 17.7 GHz. Administrations may communicate to the Board the characteristics of such earth stations in order to include them in the Plan.</p> <p>4.2.3 An administration intending to modify characteristics in the Plan shall send to the Board, not earlier than five years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2 to this Appendix.</p> <p>4.2.3.1 Where as a result of the intended modification the limits defined in Annex 1 to this Appendix are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.2.3. The Board shall then publish this information in a special section of its weekly circular.</p> <p>4.2.3.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in 4.2.1 as well as of those with which agreement has already been reached.</p> <p>4.2.4 The Board shall determine on the basis of Annex 1 to this Appendix the administrations whose frequency assignments are considered to be affected within the meaning of 4.2.1. The Board shall include the names of those administrations with the information received under 4.2.3.2 and shall publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the Plan.</p> | <p>4.2.1.4a) An administration of Region 1 or 3 is identified in application of Appendix 29 when delta T/T exceeds 4%.</p> <p>4.2.1.4b) See comments under 4.2.1.4a).</p> <p>4.2.1.4c) It is assumed that the conference referred to in this provision will adopt criteria permitting the identification of the affected administration.</p> <p>4.2.1.4d) If the orbital position is being changed and the new position is east of 47 degrees W, those administrations having an assignment in the Region 1/3 Plan within plus or minus 10 degrees of the proposed new position are to be indicated as being affected.</p> <p>4.2.2 See the comments in paragraph 4 under provision 1.2 of Appendix 30A.</p> <p>4.2.3 This provision refers to "the relevant information" without specifying the cases where such information is to be given. See also the comments under provision 4.2.1.3 of this Appendix.</p> <p>4.2.3.1 The calculations to be made in order to ensure that the limits are not exceeded may be very complex; for this reason, when the administration has not indicated if the limits are exceeded or not, the Board makes these calculations and informs the administration of the results obtained. The Board has to do this also in the case where the administration indicates that the limits are not exceeded, in order to ensure that the interests of other administrations are safeguarded. This action by the Board is derived from 4.2.4.</p> <p>4.2.3.2 As indicated in the comments under 4.2.3.1, the Board has to do the same calculations in order to identify the administrations which are likely to be affected as prescribed by 4.2.4.</p> | <p>NOC 4.2.1.6 The services of an administration are considered to be affected when the limits shown in Annex 1 to this Appendix are exceeded.</p> <p>CEPT-1/39/26 MOD <del>4.2.1.7</del> 4.2.1.7 The agreement referred to in 4.2.1 is not required when an administration proposes to bring into use, with characteristics appearing in the plan, a fixed earth station or a transportable earth station at specified fixed points in the bands 14.5-14.8 GHz or 17.3-17.8 GHz or a transportable earth station in the band 17.3-17.7 GHz. Administrations may communicate to the Board the characteristics of such earth stations in order to include them in the Plan.</p> <p>CEPT-1/39/27 ADD For Region 2</p> <p>CEPT-1/39/28 MOD 4.2.2 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan or the inclusion of a new frequency assignment in the <u>that</u> Plan shall seek the agreement of those administrations:</p> <p>CEPT-1/39/29 (MOD) 4.2.1.1 4.2.2.1 of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of <del>Sections</del> paragraphs 4.2.3.1 and 4.2.4 of this Article; or</p> <p>CEPT-1/39/30 (MOD) 4.2.1.2 4.2.2.2 having a frequency assignment in the band 17.7-17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated in or is being coordinated under the provisions of No 1060 of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>CEPT-1/39/31 (MOD) 4.2.1.3 4.2.2.3 having a frequency assignment in the band 17.7-17.8 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder link modification into use, and which is located within the coordination area of the feeder link fixed-satellite earth station;</p> <p>CEPT-1/39/32 MOD 4.2.1.4 4.2.2.4 having an assignment for feeder links in the fixed-satellite service (Earth-to-space) in Regions 1 or 3 in the band 17.3-17.8 GHz which</p> <p>a) is recorded in the Master Register; or</p> <p>b) has been coordinated or is being coordinated or has been notified under Articles 11 and 13 of the Radio Regulations; or</p> <p>c) appears in <del>a the</del> Region 1 and 3 feeder link Plan <del>to be adopted by a future Administrative Radio Conference</del> taking account of modifications which may be introduced subsequently in accordance with the Final Acts of <del>that the</del> 1988 Conference.</p> <p><del>d) is identified in accordance with Resolution 43 (Orb-85).</del></p> <p>CEPT-1/39/33 (MOD) 4.2.1.5 4.2.2.5 which are considered affected.</p> <p>CEPT-1/39/34 (MOD) 4.2.1.6 4.2.2.6 The services of an administration are considered to be affected when the limits shown in Annex 1 to this Appendix are exceeded.</p> <p>CEPT-1/39/35 (MOD) 4.2.2 4.2.2.7 The agreement referred to in 4.2.2 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed earth station or a transportable earth station at specified fixed points in the band 17.3-17.8 GHz <del>or a transportable earth station in the band 17.3-17.7 GHz. Administrations may communicate to the Board the characteristics of such earth stations in order to include them in the Plan.</del></p> |



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| <p>4.2.5 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.</p> <p>4.2.6 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Board to include its name. The Board shall study this request on the basis of Annex 1 to this Appendix and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Plan.</p> <p>4.2.7 Any modification to a frequency assignment which is in conformity with the Plan or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 to this Appendix shall be subject to the agreement of all affected administrations.</p> <p>4.2.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Board of such requests.</p> <p>4.2.9 Comments from administrations on the information published pursuant to 4.2.4 should be sent either directly to the administration proposing the modification or through the Board. In any event the Board shall be informed that comments have been made.</p> <p>4.2.10 An administration which has not notified its comments either to the administration seeking agreement or to the Board, within a period of four months following the date of the weekly circular referred to in 4.2.3.1 or 4.2.4 shall be understood to have agreed to the proposed modification. This time-limit may be extended by up to three months for an administration which has requested additional information under 4.2.8 or for an administration which has requested the assistance of the Board under 4.2.18. In the latter case the Board shall inform the administrations concerned of this request.</p> <p>4.2.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.2.3 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.</p> <p>4.2.12 If no comments have been received on the expiry of the periods specified in 4.2.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 of this Appendix and shall inform the Board, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.</p> <p>4.2.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.</p> <p>4.2.14 When the proposed modification to the Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.</p> <p>4.2.15 The Board shall publish in a special section of its weekly circular the information received under 4.2.12 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Plan and will be considered as a frequency assignment in conformity with the Plan.</p> <p>4.2.16 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be</p> | <p>4.2.6 The Board understands from this provision that any request by an administration to be included in the list of administrations to be published shall be based only on technical reasons to be verified using Annex 1. If the application of Annex 1 indicates that the requesting administration should have been included in the list, the Board will include it; otherwise the requesting administration will be informed that its name will not be published, leaving the notifying administration to consider if it is appropriate to take the request into account.</p> <p>4.2.7 The Board understands that the agreement referred to in this provision is the agreement of the administrations identified under paragraph 4.2.1 and of those under paragraph 4.2.6 which have been confirmed by the Board using the appropriate criteria.</p> | <p>CEPT-1/39/36<br/>ADD For All Regions</p> <p>CEPT-1/39/37<br/>MOD 4.2.3 An administration intending to modify characteristics in one of the <u>Regional Plans</u> shall send to the Board, not earlier than <del>five</del> <u>eight</u> years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2 to this Appendix.</p> <p>NOC 4.2.3.1 Where as a result of the intended modification the limits defined in Annex 1 to this Appendix are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.2.3. The Board shall then publish this information in a special section of its weekly circular.</p> <p>CEPT-1/39/38<br/>MOD 4.2.3.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in 4.2.1 <u>and 4.2.2</u> as well as of those with which agreement has already been reached.</p> <p>CEPT-1/39/39<br/>MOD 4.2.4 The Board shall determine on the basis of Annex 1 to this Appendix the administrations whose frequency assignments are considered to be affected within the meaning of 4.2.1 <u>and 4.2.2</u>. The Board shall include the names of those administrations with the information received under 4.2.3.2 and shall publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the Plan.</p> <p>NOC 4.2.5 to 4.2.19</p> |

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| <p>solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.</p> <p>4.2.17 If no agreement is reached between the administrations concerned, the Board shall carry out any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.</p> <p>4.2.18 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Board, particularly in seeking the agreement of another administration.</p> <p>4.2.19 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Board.</p> <p>4.3 <i>Cancellation of frequency assignments</i></p> <p>When a frequency assignment in conformity with the Plan is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the Plan.</p> <p>4.4 <i>Master copy of the Plan</i></p> <p>4.4.1 The Board shall maintain an up-to-date master copy of the Plan, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference and those derived from all modifications to the Plan as a result of the successful completion of the modification procedure of this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.</p> <p>4.4.2 The Secretary-General shall be informed by the Board of modifications made to the Plan and shall publish an up-to-date version of the Plan in an appropriate form when justified by the circumstances.</p> <p>ARTICLE 5</p> <p>Notification, Examination and Recording in the Master Register of Frequency Assignments to Feeder-Link Transmitting Earth Stations and Receiving Space Stations in the Fixed-Satellite Service in the Band Between 17.3 and 17.8 GHz in Region 2</p> <p>5.1 <i>Notification</i></p> <p>5.1.1 Whenever an administration intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the band between 17.3 and 17.8 GHz, it shall notify this frequency assignment to the Board. For this purpose, the notifying administration shall apply the following provisions.</p> <p>5.1.2 For any notification under 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2 to this Appendix, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.</p> <p>5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date<sup>1</sup>.</p> <p><sup>1</sup> Where appropriate, the notifying administration shall initiate the procedure of Article 4 of this Appendix for modifying the Plan in sufficient time to ensure that this limit is observed.</p> | <p>5.1.1 As indicated in paragraph 4.2b) in the comments under provision 1.2 of this Appendix, the Board will treat transportable earth stations, when notified, as typical earth stations.</p> | <p>CEPT-1/39/40<br/>MOD 4.3 Cancellation of frequency assignments</p> <p>When a frequency assignment in conformity with one of the <u>Regional Plans</u> is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the Plan.</p> <p>NOC 4.4 Master copies of the Plans</p> <p>CEPT-1/39/41<br/>MOD 4.4.1 The Board shall maintain an up-to-date master copies of the Plans, including the overall equivalent protection margins in respect of <u>Region 2 and the equivalent protection margins in respect of Regions 1 and 3</u> of each assignment, taking account of the application of the procedure specified in this Article. <del>Each</del> master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference in the case of <u>Region 2 and the equivalent protection margins for the 1988 Conference in the case of Regions 1 and 3</u> and those derived from all modifications to the Plans as a result of the successful completion of the modification procedure of this Article. The Board shall prepare a document listing the amendments to be made to the Plans as a result of modifications made in accordance with the procedure in this Article.</p> <p>CEPT-1/39/42<br/>MOD 4.4.2 The Secretary-General shall be informed by the Board of any modifications made to the <u>Regional Plans</u> and shall publish an up-to-date versions of the Plans in an appropriate form when justified by the circumstances.</p> <p>CEPT-1/39/43<br/>ARTICLE 5</p> <p>MOD Notification, Examination and Recording in the Master Register of Frequency Assignments to Feeder Link Transmitting Earth Stations and Receiving Space Stations in the Fixed-Satellite Service <del>in the Band Between 17.3 and 17.8 GHz in Region 2</del></p> <p>CEPT-1/39/44<br/>5.1 Notification</p> <p>MOD 5.1.1 Whenever an administration intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the bands between 14.5 and 14.8 GHz and between 17.3 and 18.1 GHz in Region 1, between 17.3 and 17.8 GHz in Region 2 and between 14.5 and 14.8 GHz and between 17.3 and 17.8 GHz in Region 3, it shall notify this frequency assignment to the Board. For this purpose, the notifying administration shall apply the following provisions.</p> <p>NOC 5.1.2 to 5.1.8</p> |

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| <p>5.14 Any frequency assignment the notice of which reaches the Board after the applicable period specified in 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with 5.1.3.</p> <p>5.15 Any notice made under 5.1.1 which does not contain the characteristics specified in Annex 2 to this Appendix shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.</p> <p>5.16 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.</p> <p>5.17 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.</p> <p>5.18 Complete notices shall be considered by the Board in order of receipt. The Board shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.</p> <p>5.2 Examination and recording</p> <p>5.2.1 The Board shall examine each notice:</p> <p>a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to b), c), and d) below); and</p> <p>b) with respect to its conformity with the Plan; or</p> <p>c) with respect to its conformity with the Plan, however having characteristics differing from those in the Plan in one or more of the following aspects:</p> <ul style="list-style-type: none"> <li>- use of a reduced e.i.r.p.,</li> <li>- use of a reduced coverage area entirely situated within the coverage area appearing in the Plan,</li> <li>- use of other modulating signals in accordance with the provisions of 3.1.3 of Annex 5 of Appendix 30 (Orb-85),</li> <li>- use of an orbital position under the conditions specified in paragraph 8 of Annex 7 of Appendix 30 (Orb-85),</li> <li>- use of an antenna diameter greater than 5 metres without increasing the on-axis e.i.r.p.,</li> <li>- use of an antenna diameter greater than 5 metres resulting in a greater on-axis e.i.r.p. if the orbital separation with any other space station is greater than 0.5°; or</li> </ul> <p>d) with respect to its conformity with the provisions of Resolution 42 (Orb-85).</p> <p>5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 b), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.</p> <p>5.2.2.1 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 c) the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.</p> | <p>5.1.5 See comments in paragraph 4.2c) in the comments under provision 1.2 of this Appendix.</p> <p>5.2.1a) 1) For the application of this provision, notices for receiving space stations in the fixed-satellite service are examined</p> <p>a) to ensure that the frequencies (including the necessary bandwidth) are within the following limits:<br/>17.3 - 17.8 GHz;</p> <p>b) to ensure that the class of station is EC or TC.</p> <p>2) There is no examination with respect to Resolution 506. The Board considers that the Plans were established on the basis of using the geostationary-satellite orbit; any network that does not use the geostationary-satellite orbit will receive an unfavourable Finding with respect to the Plan.</p> <p>5.2.1b) 1) The Board has considered the question whether the examination with respect to conformity with the Plan only means the columns of Article 9 of Appendix 30A or whether it also includes an examination with respect to the technical criteria given in Annex 3 to Appendix 30A which were used for the establishment of the Plans. The Board has concluded that some of the technical criteria contained in Annex 3 need to be taken into account in this examination. Therefore, the examination from the viewpoint of conformity with the Plan is carried out in two steps:</p> <p>a) to ensure that the characteristics notified are those specified in the columns of the Plan concerned (see item 3.1 of Article 3 of Appendix 30A; if the characteristics are different then the examination under item 5.2.1c) is carried out);</p> <p>b) to ensure that the overall protection criteria resulting from the Plan are not exceeded, and to this effect the following characteristics are examined:</p> <p>1) <u>For a receiving frequency by a space station</u></p> <p>a) For the space station beam identification</p> <ul style="list-style-type: none"> <li>- beam identification (same as Column 1 of Plan)</li> <li>- nominal orbital position (same as Column 2 of Plan)</li> <li>- channel number/frequency (same as Column 3 of Plan)</li> <li>- boresight coordinates (same as Column 4 of Plan)</li> <li>- antenna beamwidth (same as Column 5 of Plan)</li> <li>- ellipse orientation (same as Column 6 of Plan)</li> </ul> <p>1a) cont.</p> <ul style="list-style-type: none"> <li>- polarization (same as Column 7 of Plan)</li> <li>- power plus antenna gain (same as Column 8 of Plan)</li> <li>- service area (the identified service area is within the beam area of the Plan. If new test points are notified they shall be within the territory of the notifying administration)</li> <li>- class of emission and bandwidth [27M0F8W] for assignments in the Region 2 Plan with remark "2" or "24M0F8W" for all assignments in the Plan for Region 2 (see provision 3.1.2 of Annex 5 to Appendix 30)</li> <li>- antenna characteristics (same as or better than section 3.6 of Annex 3 to Appendix 30A)</li> <li>- antenna pointing accuracy (same as or better than provision 3.6.4 of Annex 3 to Appendix 30A)</li> <li>- system noise temperature - less than 1 500 K (see provision 3.7 of Annex 3 to Appendix 30A)</li> <li>- station keeping tolerance (same as or better than that of provision 3.11 of Annex 5 to Appendix 30)</li> <li>- modulation characteristics (same as provision 3.1 of Annex 5 to Appendix 30)</li> <li>- energy dispersal (same as provision 3.18 of Annex 5 to Appendix 30)</li> </ul> <p>1b) cont.</p> <p>1i) <u>For a transmitting earth station</u></p> <p>The examination of a notice of a frequency assignment to an earth station under this provision uses the characteristics listed in paragraph 3 of the comments under provision 1.2 of this Appendix or those for which the Article 4 procedure was</p> | <p>NOC 5.2 Examination and recording</p> <p>CEPT-1/39/45 MOD 5.2.1 The Board shall examine each notice:</p> <p>a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to b), c) and d) below); and</p> <p>c) with respect to its conformity with the appropriate Regional Plan, however having characteristics differing from those in the Plan in one or more of the following aspects:</p> <ul style="list-style-type: none"> <li>- use of a reduced e.i.r.p.,</li> <li>- use of a reduced coverage area entirely situated within the coverage area appearing in the Plan,</li> <li>- use of other modulating signals in accordance with the provisions of 3.1.3 of Annex 5 of Appendix 30,</li> <li>- use of an orbital position under the conditions specified in paragraph 8 of Annex 7 of Appendix 30,</li> <li>- use of an antenna diameter greater than 5 metres without increasing the on-axis e.i.r.p.,</li> <li>- a use of an antenna diameter greater than 5 metres resulting in a greater on-axis e.i.r.p. if the orbital separation with any other space station is greater than 0.5°, or</li> </ul> <p>d) for Region 2 with respect to its conformity with the provisions of Resolution 42 (Orb-85) CEPT [N].*</p> <p>NOC 5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 b), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.</p> <p>NOC 5.2.2.1 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 c) the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.</p> <p>* Note by the General Secretariat: See Document 41.</p> |

| Text in force<br>(RR Appendix 30A) | IFRB Rules of Procedure (Doc. 18)  |  |
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|                                    | <p>5.2.1b) cont.</p> <p>ii) cont.<br/>successfully applied. It consists also in examining the location of the earth station as defined by its coordinates with respect to the service area. The service area is to be identified by a set of geographical coordinates of the polygon points of the feeder-link service area (item 1.7 of Annex 2).</p> <p>Part of the territory of the notifying administration may be within the feeder-link beam area and outside this polygon, which would lead to an unfavourable Finding. To avoid such a situation the Board decided the following:</p> <ul style="list-style-type: none"><li>- when the territory of an administration is covered by one beam, the earth station may be in any location of the territory which is inside the beam area (item 1.2 of Annex 3);</li><li>- when a territory is covered by more than one beam, the earth station may be located in any part of the territory which is covered by a given beam area.</li></ul> <p>5.2.1c)</p> <p>1) This provision permits an administration to implement a system which has some characteristics with values different from those included in the Plan. If the examination of these six characteristics is favourable, then the Board will consider the assignment to be in conformity with the Plan and will enter a remark in the MIFR indicating which parameters are different.</p> <p>5.2.1c) cont.</p> <p>2) The third indent of this provision refers to "other modulating signals in accordance with the provisions of 3.1.3 of Annex 5 of Appendix 30 (Orb-85)". The other modulating signals described in provision 3.1.3 are the following:</p> <ul style="list-style-type: none"><li>- modulation with sound channels frequency-multiplexed within the bandwidth of a television channel;</li><li>- digital modulation of sound and television signals;</li><li>- other preemphasis characteristics.</li></ul> <p>In cases where the down-link part is used for transmissions in the fixed-satellite service in accordance with RR846, other types of modulation may be used. However, they shall not result in higher interference to any assignment in the Plan.</p> <p>3) The fourth indent refers to a different orbital position; consequently the orbital position shall be examined to ensure compliance with paragraph B of Annex 7 of Appendix 30:</p> <ul style="list-style-type: none"><li>- if the orbital position is identical with that shown in the Plan, no further agreements are necessary;</li><li>- however, if the orbital position is different from that contained in the Plan but is in the same cluster, then the agreement of administrations having assignments in the same cluster is necessary; the concept of these clusters is described in section 3.13.1 of Annex 3 to Appendix 30A. The clusters are listed in <u>Annex 1</u> to the Table AP30.</li></ul> <p>5.2.1c) cont.</p> <p>3) cont.</p> <ul style="list-style-type: none"><li>- Appendix 30 does not contain any provision indicating the procedure to be followed for this agreement. The role of the Board in this respect is to ensure that the agreement of the administrations concerned is indicated in the notice; otherwise it considers the assignment not to be in conformity with the Plan.</li></ul> <p>4) The last indent of this provision permits the use of a greater on-axis e.i.r.p. without the need to apply the procedure of Article 4. This may result in a greater coordination distance and may affect an administration using the band 17.7 - 17.8 GHz for terrestrial services. The Board concluded that the need for the agreement of an administration that may be affected by such an increased e.i.r.p. was not considered by the Conference and decided to formulate a favourable Finding with respect to this indent only when the coordination distance on the territory of another administration is not increased in any direction.</p> <p>5) As indicated in paragraph 3 of the comments under provision 1.2 of this Appendix, the transmitter power as defined in 3.5 of Annex 3 is considered by the Board among the characteristics of the Plan. This power is fixed at 1 000 watts and can be exceeded under the conditions specified in Section 3.10 of Annex 3; however, only the nominal power will be considered by the Board.</p> | <p>5.2.1d)</p> <p>1) Resolution No. 42 of WARC-ORB-85 permits administrations of Region 2 to implement interim systems having characteristics different from those appearing in the Plan under the conditions specified in Resolution No. 2 (SAT-R2) of RARC-SAT-83. As Resolution No. 42 in its turn contains a reference to Resolution No. 2 (SAT-R2), this latter is applied by the Board as if it were part of the Radio Regulations. As a consequence of this, the Board examines notices for interim systems with respect to the provisions of Resolution No. 2 (SAT-R2) with a view to</p> <ul style="list-style-type: none"><li>- ensuring that for each interim assignment there is at least one assignment in the Plan that is suspended;</li><li>- ensuring that the period of operation does not exceed 12 years;</li><li>- identifying administrations whose assignments may be affected by the interim system.</li></ul> <p>2) To identify administrations whose services may be affected, the following criteria are used in the application of item 4.1 of the Annex to Resolution No. 2 (SAT-R2):</p> <p>a) For each period during the life of this interim system in which there may be other interim systems in operation (whether they have completed the process of this Resolution or not), an analysis is done to determine whether the overall margins become negative or, if previously negative, more negative.</p> <p>5.2.1d) cont.</p> <p>b) In the application of provision 4.1b) of the Annex to Resolution No. 2 (SAT-R2), all fixed-satellite systems that are recorded in the MIFR or have been published under RR1044 or RR1078 are to be considered.</p> <p>c) In the application of provision 4.1c) of the Annex to Resolution No. 2 (SAT-R2), if any administration has any assignments on that channel to any part of its territory, it is to be considered as not affected.</p> <p>d) In the application of provision 4.1d) and e), any proposed modification to the Regions 1/3 Plan published under provision 4.3.5.1 of Appendix 30 shall also be included.</p> <p>Following the completion of the procedure described in the above item 4.1 of the Annex to Resolution No. 2 (SAT-R2), if the agreement of all administrations so identified has been obtained, the Board formulates a favourable Finding with respect to item 5.2.1d) and records the assignment, indicating that it pertains to an interim system, and the termination date of this interim system.</p> |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations  |
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| <p>5.2.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a), but an unfavourable finding with respect to 5.2.1 b) and 5.2.1 c), it shall examine the notice with respect to the successful application of the provisions of Resolution 42 (Orb-85). A frequency assignment for which the provisions of Resolution 42 (Orb-85) have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution 42 (Orb-85) and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.</p> <p>5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.</p> <p>5.2.4 Where the Board reaches an unfavourable finding with respect to 5.2.1 a), 5.2.1 b) and 5.2.1 c), the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.</p> <p>5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of 5.2.1, the notice shall be treated as in 5.2.2, 5.2.2.1 or 5.2.2.2 as appropriate.</p> <p>5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled.</p> <p>5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with 5.1.3 has received a favourable finding by the Board with respect to the provisions of 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.</p> <p>5.2.8 When the Board has received confirmation that the frequency assignment has been brought into use, the Board shall remove the symbol in the Master Register.</p> <p>5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. It is given for information only.</p> <p>5.3 Cancellation of entries in the Master Register</p> <p>5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under 5.2.8, the Board will make inquiries of the administration not earlier than six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.</p> <p>5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.</p> | <p>5.2.2.2 In this provision the Board is required to undertake an examination under Resolution No. 42 in the case of an unfavourable Finding with respect to paragraphs 5.2.1b) and 5.2.1c). To undertake this examination the Board needs certain additional information (such as the assignments to be suspended and the length of time of the suspension). Furthermore, the Board decided to carry out such an examination under Resolution No. 42 only if so requested to by the administration; otherwise the notice is returned. In addition, this provision is applicable to Region 2 administrations only. As this provision does not indicate what the Board will do with respect to notices from administrations of Regions 1 and 3 that receive a favourable Finding under paragraph 5.2.1a) but an unfavourable Finding under paragraphs 5.2.1b) and 5.2.1c), the next competent Conference (ORB-88) may wish to consider this question and include an appropriate provision to that effect.</p> <p>5.2.2.2 cont.</p> <p>5.2.4 See comments under 5.2.2.2.</p> <p>5.2.5 The favourable Finding with respect to the appropriate part of 5.2.1 includes the examination with respect to 5.2.2.2 that the Board will effect only if so requested by the administration.</p> <p>5.3.1 In the case of no reply despite reminders, the Board will cancel the entry.</p> | <p>CEPT-1/39/46</p> <p>MOD 5.2.2.2 Concerning Region 2, where the Board reaches a favourable finding with respect to 5.2.1 a), but an unfavourable finding with respect to 5.2.1 b) and 5.2.1 c) it shall examine the notice with respect to the successful application of the provisions of Resolution <del>42 (Orb-85)</del> <u>CEPT [N]*</u>. A frequency assignment for which the provisions of Resolution <del>42 (Orb-85)</del> <u>CEPT [N]*</u> have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of Resolution <del>42 (Orb-85)</del> <u>CEPT [N]*</u> and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.</p> <p>NOC 5.2.3 to 5.3.2</p> |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)   | Proposals from Administrations   |
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| <p>ARTICLE 6</p> <p>Procedure Concerning Notification and Recording in the Master Register of Frequency Assignments to Terrestrial Stations in Region 2 in the Band 17.7 - 17.8 GHz, when Frequency Assignments to Feeder-Link Earth Stations for the Broadcasting-Satellite Service in Conformity with the Region 2 Plan Are Involved</p> <p>6.1 Administrations planning to implement assignments for terrestrial stations in the 17.7 - 17.8 GHz band should evaluate the level of interference which 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 contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Appendix 28 to the Radio Regulations. Should the administration concerned find that interference may be caused by the feeder-link earth stations to its planned terrestrial station, it may request the administration responsible for the feeder-link earth station to indicate the planned actual locations of the feeder-link earth stations.</p> | <p>6.1<br/>6.1<br/>cont.<br/>cont.<br/>6.1<br/>cont.<br/>6.1<br/>cont.</p> <p>1) The provisions of Article 6 do not mention interim systems implemented in accordance with Resolution No. 42 (ORB-85). Such systems may be implemented in the band 17.7 - 17.8 GHz and may affect terrestrial stations.</p> <p>2) This provision refers to "the closest feeder-link earth station located on the border of the territory of another administration". This earth station is to be considered a typical earth station located at the worst location. By referring to "the border of the territory" this provision confirms the Board's interpretation of the service area as being the territory within the coverage beam and not the polygon defined in item 1.7 of Annex 2.</p> <p>3) In order to evaluate the interference, an administration A, intending to use terrestrial stations, needs</p> <p>a) to know the fixed-earth station existing or planned; as indicated in the comments under provision 1.2 of this Appendix, no information exists for the time being, but such stations may be introduced in the Plan in the future, as indicated in Article 9. This could lead to having for some entries in the Plan of a space station a long list of earth stations. Therefore, the Board decided to publish them in a separate list to be considered as part of the Plan;</p> <p>b) to know the earth station that may be installed in a given service area; as such stations may be brought into use without applying the procedure of Article 4, administration A is not informed of them;</p> <p>c) to assume, if no fixed earth station exists, that the use of the feeder-link assignment will be based on earth stations which may be located at any point of the service area.</p> <p>3) cont.<br/>In order to take account of the above cases the Board will recommend to administrations to calculate the coordination area as indicated in paragraph 7 of Appendix 28 around a service area as defined in the comments under provision 5.2.1b).</p> <p>4) This provision stipulates that "the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Appendix 28". This statement is repeated in Section 2 of Annex 1. See comments under Section 2 of Annex 1.</p> | <p>ARTICLE 6</p> <p>CEPT-1/39/47</p> <p>MOD Procedure Concerning Notification and Recording in the Master Register of Frequency Assignments to <u>Receiving</u> Terrestrial Stations in Region 1 in the Bands 14.5-14.8 GHz and 17.7-18.1 GHz, in Region 2 in the Band 17.7-17.8 GHz, and in Region 3 in the Bands 14.5-14.8 GHz and 17.7-17.8 GHz when Frequency Assignments to Feeder-Link <u>Transmitting</u> Earth Stations for the Broadcasting Satellite Service in Conformity with the <u>Regions 1 and 3 Plan or the Region 2 Plan</u> are Involved</p> <p>CEPT-1/39/48</p> <p>MOD 6.1 Administrations planning to implement assignments for terrestrial stations in Region 1 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, in Region 2 in the 17.7-17.8 GHz band and in Region 3 in the bands 14.5-14.8 GHz and 17.7-17.8 GHz, should evaluate the level of interference <u>assessed on the basis of coordination contours calculated in accordance with Appendix 28 to the Radio Regulations</u>, which might be caused by the closest feeder link earth station located on the border of the territory of another administration. <u>In cases where the entry in the Plan contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Appendix 28 to the Radio Regulations.</u> Should the administration <u>concerned planning terrestrial stations find that interference may be caused by the feeder-link earth stations to its planned terrestrial station</u>, it may request the administration responsible for the feeder-link earth station to indicate the <u>planned-actual locations of the geographical coordinates, antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.</u></p> |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations  |
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| <p>6.2 An administration which receives a request under 6.1 shall, within a period of three months, indicate the actual locations of its feeder-link earth stations and communicate them to the Board in order to update the Plan.</p> <p>6.3 If, at the end of a period of three months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Board.</p> <p>6.4 If the administration responsible for the feeder-link 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 terrestrial station under consideration.</p> | <p>6.2 1) This provision refers to the need for an administration B to communicate the actual location of its feeder-link earth stations without specifying which of these earth stations should be taken into account.</p> <p>As no indication is given, the Board understands that the administration may communicate the locations of earth stations without any limitations.</p> <p>2) The actual locations of earth stations so communicated to administration A and to the Board will be examined by the Board for their conformity with the characteristics listed in paragraph 3 of the comments under provision 1.2 of this Appendix or those for which the procedure of Article 4 was successfully applied. This examination will lead to the following:</p> <ul style="list-style-type: none"><li>- earth stations which conform to the above characteristics will be entered in the Plan without applying the Article 4 procedure, and administration A will be informed accordingly;</li><li>- earth stations which do not conform to the characteristics listed in paragraph 3 of the comments under provision 1.2 and for which the Article 4 procedure was not applied will be recorded in the Plan with the indication that the modified characteristics are subject to the application of the procedure of Article 4, and in this application of Article 4 the proposed use of the terrestrial service by administration A shall be taken into account.</li></ul> <p>3) Following the application of this provision, any additional feeder-link earth station shall be the subject of the application of the procedure of Article 4.</p> <p>4) It is concluded from this provision that no transportable earth station can be used in the band 17.7 - 17.8 GHz.</p> <p>6.2 cont.</p> <p>6.4 This provision implies that these feeder-link earth stations will not be entered in the Plan. For this reason the Board will in such cases recommend to the administration that it apply the procedure of Article 4 in order to permit its earth stations to be entered in the Plan.</p> | <p>CEPT-1/39/49<br/>MOD 6.2 <u>In Region 2 where the entry in the Plan contains information on specific earth stations, this shall be used in the interference calculations mentioned in 6.1 above. In Region 2 where such information is not contained in the Plan an administration which receives a request under 6.1 shall, within a period of three months, <del>indicate the actual locations of its</del> provide the details of the feeder-link earth stations and communicate them to the administration planning the terrestrial station and to the Board in order to update the Plan.</u></p> <p>CEPT-1/39/50<br/>ADD 6.3 <u>In Regions 1 and 3 an administration which receives a request under 6.1 shall within a period of three months provide the details of the feeder link stations and communicate them to the administration planning the terrestrial station and to the Board for information.</u></p> <p>CEPT-1/39/51<br/>(MOD) 6.3 6.4 <u>If, at the end of a period of three months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Board.</u></p> <p>CEPT-1/39/52<br/>MOD 6.4 6.5 <u>If the administration responsible for the feeder-link 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 <del>may</del> shall only implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.</u></p> |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)   | Proposals from Administrations   |
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| <p>ARTICLE 7</p> <p>Procedure Concerning 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, when Frequency Assignments to Feeder-Link Stations for the Broadcasting-Satellite Service Appearing in the Region 2 Plan Are Involved</p> <p>7.1 The provisions of Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to transmitting space stations in the fixed-satellite service of Region 2 in the band 17.7 - 17.8 GHz together with the provisions of Annex 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.</p> <p>7.2 Administrations planning to implement assignments for receiving earth stations in the 17.7-17.8 GHz band in the fixed-satellite service (space-to-Earth) should evaluate the level of interference 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 shall be 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 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 stations.</p> <p>7.3 An administration which receives a request under 7.2 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.</p> <p>7.4 If, at the end of the period of three months, the administration responsible for the fixed-satellite receiving earth station does not receive a reply, it may request the assistance of the Board in this matter.</p> <p>7.5 If the administration responsible for the feeder-link 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 earth station under consideration.</p> | <p>7.1 This provision is interpreted as meaning that when an administration A in Region 2 intends to bring into use any satellite network in the band 17.7 - 17.8 GHz in the direction space-to-Earth, it shall :</p> <p>a) apply the advance publication procedure;</p> <p>7.1 cont. b) apply the coordination RRI060 with any administration B having an assignment in the Appendix 30A Plan which may be affected.</p> <p>The service of administration B may be affected by the interference caused to its receiving space station by the transmitting fixed-satellite space station which is the subject of this provision. This interference is evaluated by applying Appendix 29 with a threshold of 10%. (See comments under Section 1 of Annex 4.) The transmitting feeder-link earth station of administration B may affect the receiving earth station of the fixed-satellite service of administration A. This interference is treated in provision 7.2.</p> <p>7.2 1) This provision refers to "the closest feeder-link earth station located on the border of the territory of another administration". This earth station is to be considered as a typical earth station at the worst location. By referring to "the border of the territory" this provision confirms the Board's interpretation of the service area as being the territory within the coverage beam and not the polygon defined in item 1.7 of Annex 2. In the case of territory covered with more than one beam, the hypothetical earth station should be within the territory of administration B and at the closest limit of the beam coverage concerned.</p> <p>2) The comments under provision 6.2 apply.</p> <p>7.5 The comments under provision 6.4 apply.</p> | <p>ARTICLE 7</p> <p>Procedure Concerning Notification and Recording in the Master Register of Frequency Assignments to Stations in the Fixed-Satellite Service (Space-to-Earth) in Region 1 in the Band 17.7-18.1 GHz and in Regions 2 and 3 in the Band 17.7-17.8 GHz, when Frequency Assignments to Feeder-Link Stations for the Broadcasting-Satellite Service Stations Appearing in the Regions 1 and 3 Plan or the Region 2 Plan are Involved</p> <p>CEPT-1/39/53 MOD</p> <p>7.1 The provisions of Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to transmitting space stations in the fixed-satellite service of Region 2 in the band 17.7-17.8 GHz together with the provisions of Annex 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.</p> <p>CEPT-1/39/54 MOD</p> <p>7.2 Administrations planning to implement assignments for receiving earth stations in Region 1 in the band 17.7-18.1 GHz and in Regions 2 and 3 in the 17.7-17.8 GHz band in the fixed-satellite service (space-to-Earth) should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix, that might be caused by the closest feeder-link earth station located on the border of the territory of another administration. <del>In cases where the entry in the Plan or the Master Register contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix.</del> Should this administration planning receiving earth stations find that interference may be caused by the feeder-link earth stations to its planned fixed-satellite earth stations, it may request the administration responsible for the feeder-link earth stations to indicate the planned actual locations of the geographical coordinates, antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.</p> <p>CEPT-1/39/56 MOD</p> <p>7.3 In Region 2 where the entry in the Plan contains information on specific earth stations this shall be used in the interference calculations mentioned in 7.2 above. In Region 2 where such information is not contained in the Plan an administration which receives a request under 7.2 shall, within a period of three months, <del>indicate the actual locations of its</del> provide the details of the feeder link earth stations and communicate <del>to</del> them to the administration planning the receiving earth station and to the Board in order to update the Plan.</p> <p>CEPT-1/39/57 ADD</p> <p>7.4 In Regions 1 and 3 an administration which receives a request under 7.2 shall within a period of three months provide the details of the feeder link earth stations and communicate them to the administration planning the receiving earth station and to the Board for information.</p> <p>CEPT-1/39/58 (MOD) 7.5</p> <p>If, at the end of the period of three months, the administration responsible for the fixed-satellite receiving earth station does not receive a reply, it may request the assistance of the Board in this matter.</p> <p>CEPT-1/39/59 MOD 7.5 7.6</p> <p>If the administration responsible for the feeder-link 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 <del>may</del> shall only implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite earth station under consideration.</p> |



| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)  | Proposals from Administrations  |
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| <p>ARTICLE 8</p> <p>Miscellaneous Provisions Relating to the Procedures</p> <p>Section I. Studies and Recommendations</p> <p>8.1.1 If it is requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these provisions, or of harmful interference.</p> <p>8.1.2 The Board shall thereupon prepare and forward to the administrations concerned a report containing its findings and recommendations for the solution of the problem.</p> <p>8.1.3 On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.</p> <p>8.1.4 In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these administrations within a period of four months, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.</p> <p>Section II. Miscellaneous Provisions</p> <p>8.2.1 If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:</p> <p>a) computation necessary in the application of Annexes 1, 3 and 4 to this Appendix;</p> <p>b) any other assistance of a technical nature for completion of the procedures in this Appendix.</p> <p>8.2.2 In making a request to the Board under paragraph 8.2.1, the administration shall furnish the Board with the necessary information.</p> <p>ARTICLE 9</p> <p>The Plan for the Feeder Links in the Fixed-Satellite Service in the Frequency Band 17.3 - 17.8 GHz in Region 2</p> <p>9.1 COLUMN HEADINGS OF THE PLAN</p> <p>....</p> <p>Col. 9 Location of earth station(s) in the band 17.7 - 17.8 GHz.</p> <p>9.1 Geographical coordinates.</p> <p>9.2 Antenna characteristics.</p> <p>9.3 Elevation angle of the horizon around the earth station using the band 17.7 - 17.8 GHz.</p> <p>....</p> | <p>9.1 Column 9 is indicated for use in the band 17.7 - 17.8 GHz only. Nothing prevents administrations from including in the Plan specific fixed earth stations in the 17.3 - 17.7 GHz band which should be recorded in this column (see comments under item 1.2 of Article 1 of Appendix 30A above).</p> | <p>ARTICLE 8</p> <p>NOC Miscellaneous Provisions Relating to the Procedures<br/>Section I Studies and Recommendations</p> <p>NOC 8.1.1 to 8.2.2</p> <p>ARTICLE 9</p> <p>NOC The Plan for the Feeder Links in the Fixed-Satellite Service in the<br/>Frequency Band 17.3-17.8 GHz in Region 2</p> <p>NOC 9.1 COLUMN HEADINGS OF THE PLAN</p> <p>NOC 9.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN</p> <p>NOC 1 to 8</p> |

| Text in force<br>(RR Appendix 30A)  | IFRB Rules of Procedure (Doc. 18) | Proposals from Administrations  |
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| <p>9.2 TEXT FOR SYMBOLS IN REMARKS<br/>COLUMN OF THE PLAN</p> <p>....</p> <p>9/GR... This assignment is part of a group, the number of which follows the symbol. The group consists of the beams and has the number of channels assigned to it as indicated in the Table 1.</p> <p>a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution 42 (Orb-85) shall be calculated on the following basis:</p> <ul style="list-style-type: none"><li>- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; and</li><li>- for the calculation of interference from assignments belonging to a group to assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.</li></ul> <p>b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregated C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of a) above.</p> |                                   | <p>CEPT-1/39/60<br/>MOD 9/GR... This assignment is part of a group, the number of which follows the symbol. The group consists of the beams and has the number of channels assigned to it as indicated in the table below.</p> <p>a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution 42 (Orb-85) shall be calculated on the following basis:</p> <ul style="list-style-type: none"><li>- for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; and</li><li>- for the calculation of interference from assignments belonging to a group to assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.</li></ul> <p>b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregated C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of a) above.</p> <p>NOC TABLE 1</p> <p>NOC Country symbols</p> <p>NOC TABLE 2</p> <p>NOTE</p> <p>The Plan is not reproduced in this draft document.</p> <p>ARTICLE 10</p> <p>CEPT-1/39/61<br/>MOD The Plan for the Feeder Links in the Fixed-Satellite Service in the Frequency Band <del>17.3-17.8 GHz in Region 2</del> 14.5-14.8 GHz and 17.3-18.1 GHz <del>in Region 1 and 14.5-14.8 GHz and 17.3-17.8 GHz in Region 3</del></p> <p>CEPT-1/39/62<br/>ADD 10.1 COLUMN HEADINGS OF THE PLAN</p> <p>Col 1 Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No B1 of the Preface to the International Frequency List followed by the symbol designating the service area).</p> <p>Col 2 Nominal orbital position, in degrees and hundredths of a degree.</p> <p>Col 3 Channel number (see Table showing channel numbers and corresponding assigned frequencies).</p> <p>Col 4 Boresight geographical coordinates, in degrees and hundredths of a degree.</p> <p>Col 5 Antenna beamwidth. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross section half-power beam, in degrees and hundredths of a degree.</p> <p>Col 6 Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.</p> <p>Col 7 Polarization (1 - direct, 2 - indirect).<sup>1</sup></p> <p>Col 8 Earth station eirp in the direction of maximum radiation, in dBW.</p> <p>CEPT-1/39/63<br/>Col 9 Remarks.</p> <p>ADD 10.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN</p> <p>[Details to be inserted later when Plan is completed]</p> |

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| <p>ARTICLE 10</p> <p>Interference</p> <p>10.1 The Members of the Union in Region 2 shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plan.</p> <p>ARTICLE 11</p> <p>Period of Validity of the Provisions and Associated Plan</p> <p>11.1 For Region 2, the provisions and associated Plan have been prepared in order to meet the requirements for feeder links for the broadcasting-satellite service in the bands concerned for a period extending until at least 1 January 1994.</p> <p>11.2 In any event, the provisions and associated Plan shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.</p> |                                   | <p>ARTICLE 11</p> <p>Interference</p> <p>CEPT-1/39/64</p> <p>MOD 11.1 The Members of the Union in <del>Region 2</del> shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.</p> <p>ARTICLE 12</p> <p>CEPT-1/39/65</p> <p>MOD Period of Validity of the Provisions and Associated Plans</p> <p>CEPT-1/39/66</p> <p>MOD 12.1 <del>For Region 2</del> The provisions and associated Plans have been prepared in order to meet the requirements for feeder links for the broadcasting-satellite service in the bands concerned for a period extending until at least 1 January 1994.</p> <p>CEPT-1/39/67</p> <p>MOD 12.2 In any event, the provisions and associated Plans shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.</p> <p><sup>1</sup> See Annex 3 (paragraph 3.8) to this Appendix</p> |

| Text in force<br>(RR Appendix 30A)   | IFRB Rules of Procedure (Doc. 18)   | Proposals from Administrations   |
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| <p>ANNEX 1</p> <p>Limits for Determining Whether a Service of an Administration Is Considered to Be Affected by a Proposed Modification to the Plan or When It Is Necessary Under This Appendix to Seek the Agreement of Any Other Administration<sup>1</sup></p> <p>1. Limits applicable to protect a frequency assignment in the band 17.7-17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth)</p> <p>An administration shall be considered as being affected if, upon application of the procedures of Section 3 of Annex 4 to this Appendix, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.</p> <p>For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.</p> <p>2. Limits applicable to protect a terrestrial station in the band 17.7-17.8 GHz</p> <p>An administration shall be considered as being affected if, upon application of the procedures of Appendix 28 to the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.</p> <p>For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.</p> <p><sup>1</sup> Except for Section 3, the limits specified in this Annex relate to the power flux-densities which would be obtained assuming free space propagation conditions.</p> <p>3. Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Plan<sup>1</sup></p> <p>With respect to the modification to the Plan and when it is necessary under this Appendix to seek the agreement of any other administration, except in cases covered by Resolution 42 (Orb-85), an administration shall be considered as being affected if the overall equivalent protection margin<sup>2</sup> corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:</p> <ul style="list-style-type: none"><li>- the Plan as established by the 1983 Conference; or</li><li>- a modification of the assignment in accordance with this Appendix; or</li><li>- a new entry in the Plan under Article 4 of this Appendix; or</li><li>- any agreement reached in accordance with this Appendix except for Resolution 42 (Orb-85).</li></ul> <p><sup>1</sup> With respect to Section 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with Section 2.5 of Annex 3 to this Appendix.</p> <p><sup>2</sup> For the definition of the overall equivalent protection margin, see Section 1.14 of Annex 5 to Appendix 30 (Orb-85).</p> | <p>2</p> <p>The application of Appendix 28 requires a set of characteristics which are defined in Appendix 28, some of them different from those given in Annex 3. The Board was faced with the problem of deciding which of these characteristics should be used. Taking account of the specific character of feeder links, it decided to use the following characteristics:</p> <p>1) - Transmitting antenna pattern: the co-polar antenna pattern given in Figure 3 of Annex 3 will be used to replace patterns given in Appendix 28. When the actual earth station uses an antenna diameter greater than 5 m, the patterns appearing in Appendix 28 will be used.</p> <p>2) - Transmit power: as given in section 3.5 of Annex 3, i.e. 1 000 watts per 24 MHz (or 27 MHz for some countries). The increase permitted by section 3.10 of the same Annex will not be taken into account.</p> <p>2 cont.</p> <p>3) - Percentage of time: values indicated in Table I of Appendix 28 will be used.</p> <p>4) - Horizon elevation angle: For a typical earth station at the worst location a horizon elevation angle of 0 degrees will be used. For specific earth stations the notified values will be used.</p> <p>3.9 There are no criteria in Annex 1 to allow the Board to determine which administrations under provision 4.2.1.4 are affected, even though provision 4.2.1.6 refers to Annex 1 for the criteria. In the absence of any such specific criteria the Board will use the 4% limit of Appendix 29.</p> | <p>ANNEX 1</p> <p>CEPT-1/39/68 MOD Limits for Determining Whether a Service of an Administration is Considered to be Affected by a Proposed Modification to one of the Regional the Plans When it is Necessary Under This Appendix to Seek the Agreement of any other Administration<sup>1</sup></p> <p>CEPT-1/39/69 ADD 1. Limits applicable in the band 17.3-17.8 GHz (of Region 2 or Regions 1 and 3) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder links to broadcasting satellites in Regions 1 and 3 or Region 2 respectively.</p> <p>CEPT-1/39/70 ADD An Administration shall be considered as being affected if the proposed use would cause on a feeder-link to broadcasting satellites an increase in noise temperature at the feeder-link space station, which, calculated in accordance with the method of Appendix 29 to Radio Regulations and Annex 4, section 4 of this Appendix exceeds a threshold value of <math>\Delta T/T</math> corresponding to 3%</p> <p>CEPT-1/39/71 MOD<sup>1</sup> 2. Limits applicable to protect a frequency assignment in the band 17.7-<del>17.8</del> 18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth).</p> <p>NOC An administration shall be considered as being affected if, upon application of the procedures of Section 3 of Annex 4 to this Appendix, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.</p> <p>NOC For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.</p> <p>CEPT-1/39/72 MOD<sup>1</sup> 3. Limits applicable to protect a terrestrial station in the bands <u>14.5-14.8 GHz</u> and <u>17.7-<del>17.8</del> 18.1 GHz</u>.</p> <p>NOC An administration shall be considered as being affected if, upon application of the procedures of Appendix 28 to the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.</p> <p>NOC For this purpose, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 to this Appendix, shall be used.</p> <p>CEPT-1/39/73 SHIP 1</p> <p>CEPT-1/39/74 MOD 3 4. Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the <u>Region 2 Plan</u><sup>1</sup></p> <p>CEPT-1/39/75 MOD With respect to the modification to the Plan and when it is necessary under this Appendix to seek the agreement of any other administration, except in cases covered by Resolution <del>42-Orb-85</del> <u>CEPT [N]</u><sup>2</sup> an administration shall be considered as being affected if the overall equivalent protection margin<sup>2</sup> corresponding to a test point of its entry in the Plan including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:</p> <ul style="list-style-type: none"><li>- the Plan as established by the 1983 Conference; or</li><li>- a modification of the assignment in accordance with this Appendix; or</li><li>- a new entry in the Plan under Article 4 of this Appendix; or</li><li>- any agreement reached in accordance with this Appendix except for Resolution No <del>42-Orb-85</del> <u>CEPT [N]</u><sup>2</sup>.</li></ul> <p>CEPT-1/39/76 (MOD) 1 With respect to section 3-4 the limit specified relates to the overall equivalent protection margin calculated in accordance with section 2.5 of Annex 3 to this Appendix.</p> <p>NOC 2 For the definition of the overall equivalent protection margin, see Section 1.14 of Annex 5 to Appendix 30 (Orb-85).</p> |

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| <p>ANNEX 1 (contd.)</p>            |                                   | <p>USA/12/70</p> <p>ANNEX 1</p> <p>Limits for Determining Whether a Service of an Administration Is Considered to Be Affected by a Proposed Modification to the Plan or When It Is Necessary Under This Appendix to Seek the Agreement of Any Other Administration</p> <p>4. Limits applicable to protect a frequency assignment in the band 17.3-18.1 GHz (Regions 1 and 3) and 17.3-17.8 GHz (Region 2) to a receiving space station in the fixed-satellite service (Earth-to-Space)</p> <p>An administration in one Region shall be considered affected by a proposed modification in another Region (including cases covered by Resolution No. 41) when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station exceeds a threshold value of <math>(\Delta T/T)'</math> corresponding to 3%.</p> <p>where:</p> <p><math>(\Delta T/T)'</math> is calculated in accordance with the method given in Appendix 29 for <math>\Delta T/T</math>, except that the maximum power densities are replaced by power densities averaged over the total RF bandwidth of the feeder link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3). The calculation shall be made for faded conditions, that is, the value of <math>(\Delta T/T)'</math> shall correspond to the value not exceeded for more than 1% of the worst month.</p> <p>Reason: To adopt common, world-wide threshold value as proposed in section 5.2 of the Report of CCIR JIWP/ORB(2) to determine the need to coordinate with an administration in another Region when modifications to the feeder link Plans or interim systems are initiated.</p> <p>B/8/2, 3</p> <p>a) To insert a new paragraph 1 in Annex 1 to Appendix 30A as follows:</p> <p><u>"1. Limits applicable in the band 17.3 - 17.8 GHz (of Region 2) to protect a frequency assignment to the fixed - satellite service (Earth-to-space) for feeder links to broadcasting satellites in Regions 1 and 3 and, in the same band 17.3 - 17.8 GHz (of Regions 1 and 3), to protect a frequency assignment to the fixed - satellite service (Earth-to-space) for feeder links to broadcasting satellites in Region 2.</u></p> <p><u>An Administration of Region 1 or 3 shall be considered as being affected if the proposed use would cause an increase of at least 3% in the noise temperature of its feeder-link space station. To determine this increase in noise temperature the power density of the interfering emission is averaged over the total RF bandwidth of the interfered with feeder link carrier.</u></p> <p><u>An Administration of Region 2 shall be considered as being affected if the proposed use would cause an increase of at least 3% in the noise temperature of its feeder-link space station. To determine this increase in noise temperature the power density of the interfering emission is averaged over the total RF bandwidth of the interfered with feeder link carrier."</u></p> <p>b) To renumber in the same Annex the existing paragraphs 1, 2 and 3 as 2, 3 and 4.</p> |

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| <p>AP30A-127</p> <p>ANNEX 2</p> <p>Basic Characteristics to be Furnished in Notices<sup>1</sup> Relating to Feeder-Link Stations in the Fixed-Satellite Service Operating in the Frequency Band 17.3 - 17.8 GHz in Region 2<sup>2</sup></p> <p>ANNEX 3</p> <p>Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application</p> | <p>1 The gain of the transmitting space station antenna in the fixed-satellite service in the direction of the geostationary-satellite orbit is to be notified in accordance with Appendix 3 of the Radio Regulations.</p> | <p>CEPT-1/39/77</p> <p>ANNEX 2</p> <p>MOD Basic Characteristics to be Furnished in Notices<sup>1</sup> Relating to Feeder-Link Stations in the Fixed-Satellite Service Operating in the Bands <del>17.3-17.8 GHz in Region 2<sup>2</sup></del> <u>14.5-14.8 GHz and 17.3-18.1 GHz<sup>2</sup></u></p> <p>CEPT/39/78-93</p> <p>NOC</p> <p>ANNEX 3</p> <p>Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application</p> <p>CEPT/39/94-99</p> |

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|---|---|---|
| <p>AP30A-161</p> <p>ANNEX 4</p> <p>Criteria for Sharing Between Services in Region 2</p> <p>1. <i>Threshold values for determining 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 17.7-17.8 GHz</i></p> <p>With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting-satellite in the Region 2 Plan is required, for inter-satellite geocentric angular separations less than 10° or greater than 150°, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which, calculated in accordance with the method given in Appendix 29, exceeds a threshold value of <math>\Delta T/T</math> corresponding to 10%. The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of <math>-123 \text{ dB(W/m}^2/24 \text{ MHz)}</math> on the Earth's surface at the equatorial Earth limb.</p> <p>2. <i>Not used.</i></p> <p>3. <i>Method for the determination of the coordination area around a feeder-link transmitting earth station of the Region 2 Plan with respect to receiving earth stations in the fixed-satellite service in Region 2 in the frequency band 17.7-17.8 GHz</i></p> | <p>C.L. 719:</p> <p>3.13 Annex 4, section 1, line 3 should read "broadcasting-satellite feeder-link station".</p> | <p>ANNEX 4</p> <p>Criteria for Sharing Between Services<br/><del>in Region 2</del></p> <p>CEPT-1/39/100<br/>MOD<br/>CEPT-1/39/101<br/>MOD</p> <p>1 <u>Threshold values for determining 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 17.7-17.8 GHz 18.1 GHz</u></p> <p>With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting-satellite <u>Feeder link</u> in the Region 2 and Regions 1 and 3 Plans is required, for inter-satellite geocentric angular separations of less than <u>3°-40° or greater than 150°</u>, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which, calculated in accordance with the method given in Appendix 29, exceeds a threshold value of <math>\Delta T/T</math> corresponding to <u>10% 4%</u> (i.e. <math>C/I = 38 \text{ dB}</math>), under faded conditions, that is rain attenuation not exceeded for more than <u>1% of the worst month</u> and with a C/N ratio on the feeder-links equal to <u>24 dB</u>. <del>The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of <math>-123 \text{ dB(W/m}^2/24 \text{ MHz)}</math> on the Earth's surface at the equatorial Earth limb.</del></p> <p>2 Not used</p> <p>CEPT-1/39/102<br/>MOD</p> <p>3 <u>Method for the determination of the coordination area around a feeder-link transmitting earth station of the Region 2 and Regions 1 and 3 Plans with respect to receiving earth stations in the fixed-satellite service in Region 2 in the frequency band 17.7-17.8 GHz 18.1 GHz</u></p> <p><u>Region 2:</u></p> <p>NOC 3.1 to 3.7</p> <p>CEPT-1/39/103<br/>ADD</p> <p><u>Regions 1 and 3:</u></p> <p><u>CCIR Report 999 provides a means of evaluating the locus of worst case possibilities indicating a need for co-ordination.</u></p> <p><u>CCIR Report 1010 provides a means of evaluating the coupling in practical cases, with separations as low as 10 km implied for 1 per cent worst month.</u></p> <p>CEPT-1/39/104<br/>ADD</p> <p>4 <u>Threshold values for determining when coordination is required in the band 17.3-17.8 GHz (of Region 2 or Regions 1 and 3) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder-links to the broadcasting satellites.</u></p> <p><u>The threshold value of <math>\Delta T/T = 3\%</math> stipulated in Annex 1 section 1 applies when the wanted signal is faded by rainfall attenuation exceeded for 1% of the worst month and the carrier to noise ratio of the feeder-link is 24 dB.</u></p> <p><u>The C/I ratio for <math>\Delta T/T = 3\%</math> under the conditions specified above is 39 dB. In the case of the assessment of interference into feeder-links to the BSS where the RF channel bandwidth of the wanted signal is known, a simple relationship - which is different to the method employed in Appendix 29 to Radio Regulations, where the power density per Hertz of the interfering power is averaged over the worst 1 MHz of bandwidth for carrier frequencies <math>&gt;15 \text{ GHz}</math> and over 4 kHz for carrier frequencies <math>&lt;15 \text{ GHz}</math> - can be established relating the C/I ratio to the increase in noise temperature <math>\Delta T/T</math>, as follows:</u></p> <p><u><math>C/I = C/N - 10 \log (\Delta T/T) \text{ dB}</math> where: <math>\Delta T/T</math> is expressed as a numeric ratio</u></p> <p><u>The relationship holds only if the reference bandwidth for the interfering power, <math>T</math>, corresponds to the wanted BSS RF channel bandwidth, ie 24 or 27 MHz for the Plans of Region 2 and Regions 1 and 3 respectively.</u></p> |

| Text in force<br>(RR Appendix 30A) | IFRB Rules of Procedure (Doc. 18) | Proposals from Administrations  |
|------------------------------------|-----------------------------------|---|
|                                    |                                   | <p>B/8/4 a) <u>To change the title of Annex 4 to read - "Criteria for sharing between services".</u></p> <p>B/8/5 b) <u>To insert a new paragraph 2 in Annex 4, as follows:</u></p> <p><u>"2. threshold values for determining when a inter-regional 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.</u></p> <p><u>With respect to paragraph 7.1, Article 7 of this Appendix, inter-regional coordination between a transmitting space station in the fixed-satellite service and a receiving space station of a broadcasting-satellite in the feeder-link Plan is required, for inter-satellite geocentric angular separations of 3° or less, when an increase of at least 4% in the noise temperature of the feeder-link space station, due to the FSS interfering emission, is observed. To determine this increase in noise temperature the power density of the interfering emission is averaged over the total RF bandwidth of the interfered with feeder link carrier".</u></p> <p>B/8/6 a) To change the title of paragraph 3 of Annex 4 by removing the reference to Region 2.</p> <p>B/8/7 b) To replace paragraph 3 of Annex 4 to Appendix 30A by the contents of the Annex 8 of CPM WARC-ORB-85 Report which are related to 18 GHz band.</p> <p>USA/12/71 MOD</p> <p style="text-align: center;">ANNEX 4</p> <p style="text-align: center;">Criteria for Sharing Between Services<br/><del>for Region 2</del></p> <p>Threshold values for determining when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plans in the 17.7-17.8-18.1 GHz (Regions 1 and 3) and 17.7-17.8 GHz (Region 2).</p> <p>With respect to paragraph 7.1, Article 7 of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting satellite in the Region 1 and 3 Plan or the Region 2 Plan is required, for inter-satellite geocentric angular separations less than <math>\pm 3^\circ</math> or greater than <math>150^\circ</math>, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which, calculated in accordance with the method given in Appendix 29, exceeds a threshold value of <math>(\Delta T/T)^1</math> corresponding to <math>\pm 4\%</math>, <math>4\%</math> where <math>(\Delta T/T)^1</math> is calculated in accordance with the method given in Appendix 29 for <math>\Delta T/T</math>, except that the maximum power densities are replaced by power densities averaged over the total RF bandwidth of the feeder link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3). The calculation shall be made for faded conditions, that is, the value of <math>(\Delta T/T)^1</math> shall correspond to the value not exceeded for more than 1% of the worst month. The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds <math>150^\circ</math> of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of <math>-123 \text{ dB (W/m}^2 \text{ /24 MHz)}</math> for Region 2 and <math>-123 \text{ dB (W/m}^2 \text{ /27 MHz)}</math> for Regions 1 and 3 on the Earth's surface at the equatorial Earth limb.</p> |



WORKING GROUP  
OF THE PLENARY

Draft

SECOND REPORT OF THE WORKING GROUP  
OF THE PLENARY TO THE PLENARY

TERMS OF REFERENCE, ITEM 3 OF THE WORKING GROUP OF THE PLENARY  
CONCERNING THE BANDS BETWEEN 18.1 AND 30.0 GHz

1. Introduction

The First Session asked the CCIR "to study the technical character of the FSS in the frequency band 20/30 GHz and to report to the Second Session with the view of taking a decision on the future plan of these bands by a future competent conference". Specifically, the frequency bands 18.1 to 20.2 GHz and 27.0 to 30.0 GHz were included under the improved procedures part of the planning method and were covered under this note.

The CCIR has examined these frequency bands at meetings of Interim Working Party 4/1 of Study Group 4 in both 1986 and 1987, at the final meeting of Study Group 4 in October 1985, at the interim meeting of Study Group 4 in November 1987 and at the Joint Interim Working Party (JIWP) in December 1987. The Report of the JIWP to the Second Session is the culmination of these efforts and contains the response of the CCIR to the request of the First Session.

2. Discussion

The Report of the JIWP has been submitted to this Conference as Document 3 and the subject of these frequency bands is covered in Chapter 3, section 3.12. The conclusions of the JIWP are summarized in section 2 of the Executive Summary and the following is a quote from the Report of the JIWP:

"The CCIR considers that it would be extremely unwise for the 30/20 GHz bands to be subject to planning before the CCIR is in possession of much more extensive propagation data and information on practical techniques to combat the resulting carrier fades and depolarization. It is considered important for the CCIR to pursue the appropriate studies vigorously."

The Working Group of the Plenary has examined the Report of the JIWP and has also considered proposals from two administrations (the United States and Japan) which support the conclusions of the CCIR. (The Working Group also feels that it is not possible to forecast that this situation will change in the foreseeable future.)

3. Conclusion

The Working Group of the Plenary concludes from these examinations that the CCIR findings are valid and accordingly makes the following Recommendation to the Conference:

3.1 The bands in question should not be included in any planning method, but should continue to be treated under Articles 11 and 13.

3.2 A draft Resolution to be considered for adoption by this Conference is attached as the annex.

R. RYVOLA  
Chairman of the Working Group of the Plenary

Annex: 1

ANNEX

RESOLUTION [GT-PLN/1]

Planning of the Fixed-Satellite Service in  
the Bands 18.10 - 20.20 GHz and 27.00 - 30.00 GHz

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 (Orb-88),

considering

- a) that WARC ORB(1) requested the CCIR to study the technical characteristics of the fixed-satellite service in the 18.10 - 20.20 GHz and 27.00 - 30.00 GHz bands with a view to taking a decision on the future planning of these bands for the fixed-satellite service by a future competent conference;
- b) that the CCIR concluded that it would be extremely unwise for these bands to be subject to planning and that further study would be necessary;

recognizing

- 1. that these bands have not been exploited extensively due to technical and economical reasons, although they potentially have great capacity;
- 2. that the required satellite orbital spacing may be reduced resulting in easy coordination between satellite networks because narrower satellite antenna beamwidth can be achieved than in the lower frequency bands;
- 3. that different performance criteria may well be necessary from those which currently exist for frequency bands below 15 GHz, since the propagation characteristics are different;
- 4. that the CCIR will be continuing its studies into the technical characteristics of the relevant bands;

resolves

that the 18.10 - 20.20 GHz and 27.00 - 30.00 GHz bands be not included in frequency bands identified for planning.

---

WORKING GROUP  
OF THE PLENARY

DRAFT INFORMATION TEXTS TO COMMITTEE 6 ON THE  
LIST OF TECHNICAL ISSUES RELATING TO APPENDICES 3 AND 4

At the request of the Working Group of the Plenary, I would like to transmit for your information the following list of technical issues relating to Appendices 3 and 4 which have been identified and will be discussed in our Group before receiving any guidance from your Committee:

- 1) Power density averaging bandwidth
- 2) Steerable beams
- 3) Inclined orbits
- 4) Satellite networks and typical earth stations
- 5) Standardized projection for the footprints
- 6) Objective values for C/N

R. RYVOLA  
Chairman of the Working Group  
of the Plenary

# 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 DL/8-E  
6 September 1988  
Original: English

SUB-WORKING GROUP 5-B-2

### WORKING DOCUMENT BY THE CHAIRMAN

#### 1. Draft summary of proposals for SBSS

|     | <u>Subject</u>   | <u>Related documents</u>   |
|-----|--|--|
| 1.1 | No conference yet. Just further study for now                  | 7(USSR), 12(USA), 65(ALG), 86(SEN), 88(VEN), 99(MEX), 107(PRG), 116(CHL), 134(CLM, EQA, VEN)   |
| 1.2 | Call for a conference to allocate specific band (F-L included) | 40(CEPT) in 1992, 49(AUS), 54(J) in 1992, 60(CAN) at first conference dealing with this band, 73(NZL)  |
| 1.3 | Allow time to accommodate existing services                    | 60(CAN)  |
| 1.4 | Accommodate new requirements at same time                      | 60(CAN)  |
| 1.5 | Band proposed for consideration                                | 12(USA) a wideband to facilitate geographic sharing, 40(CEPT) 0.5 - 3 GHz with preference for 0.5 - 2 GHz, 49(AUS) 0.5 - 2 GHz, 54(J) 1 - 3 GHz, 60(CAN), 0.5 - 3 GHz, 107(PRG) <u>not</u> in 825 - 845, 870 - 890, 1 429 - 1 525 MHz, 116(CHL) up to 3 GHz, 134(CLM, EQA, VEN) 0.5 - 2 GHz, 141(IND) 1 517 - 1 521 for India. Now |
| 1.6 | Call for a planning conference                                 | 60(CAN)  |

#### 2. Draft summary of proposals for satellite HDTV

|     | <u>Subject</u>   | <u>Related documents</u>                             |
|-----|--|--|
| 2.1 | No conference yet. Just further study for now                  | 12(USA), 54(J), 65(ALG)                              |
| 2.2 | Call for a conference to allocate specific band (F-L included) | 42(CEPT), 37(S), 49(AUS), 60(CAN), 87(SEN), 102(MEX) |
| 2.3 | Allow time to accommodate existing services                    | 42(CEPT), 37(S), 60(CAN)                             |
| 2.4 | Accommodate new requirements                                   | 60(CAN)  |

| <u>Subject</u>                      | <u>Related documents</u>  |
|-------------------------------------|---|
| 2.5 Band proposed for consideration | 12(USA) HDTV to begin in 12 GHz,<br>22.5 - 23 GHz has sharing problems,<br>17.3 - 17.7 needs further study,<br>36(B) 22.5 - 23 GHz not usable for<br>high rainfall areas, 12 GHz is<br>appropriate, 42(CEPT) within<br>11.7 - 23 GHz, 37(S) 11.7 - 12.5,<br>17.3 - 17.7 GHz, 21.4 - 22 GHz,<br>49(AUS) 21.4 - 23 GHz with preference<br>for 21.4 - 22 GHz, 54(J)<br>22.5 - 23 GHz no change, 60(CAN)<br>22.5 - 23 GHz, but would consider<br>others for world-wide allocation,<br>88(VEN) above 20.2 GHz and in the<br>30 GHz for F-L |
| 2.6 Call for a planning conference  | 60(CAN)   |

R. ZEITOUN  
Chairman of Sub-Working Group 5-B-2

# 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 DL/9-E  
6 September 1988  
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SUB-WORKING GROUP 1  
OF THE WORKING GROUP  
OF THE PLENARY

### Draft

#### TERMS OF REFERENCE OF SUB-WORKING GROUP 1 OF THE WORKING GROUP OF THE PLENARY

1. The Group is convened to examine the accuracy of the values given in the proposed amendment to Table II of Appendix 28 in respect of the meteorological-satellite service in the frequency bands 1 670 - 1 700 MHz and 1 700 - 1 790 MHz (as contained in proposal USA/12/58, page 43 of Document 12).
2. Additionally, the Group should confirm that the format of data presentation conforms to the existing format, to provide clarity and precision.

R.M. TAYLOR  
Chairman of Sub-Working Group 1  
of the Working Group of the Plenary

CONF\ORB-2\DL\009E.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

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SUB-WORKING GROUP 6-B-1

Draft

PROPOSALS FROM ADMINISTRATIONS TO THE CONFERENCE ON  
AGENDA ITEM 4 (SIMPLIFIED PROCEDURES) IN CONNECTION  
WITH ARTICLE 11

L. SONESSON  
Chairman of Sub-Working Group 6-B-1



RR11-1

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 <sup>1</sup>**

MOD F/20/4, ~~VAN/60/7~~, CAN/60/7

ADD

SUP

**Section I. Procedures for the Advance Publication of  
Information on Planned Satellite Networks <sup>2</sup>**

MOD CAN/60/8, LUX/126/1

ADD

SUP

A.11.1  
Orb-85

<sup>1</sup> For the coordination of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2) as well as the coordination of frequency assignments to feeder-link stations utilizing the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in these bands in Region 2, see also Article 15 and Article 15A respectively.

MOD CAN/60/12, LUX/126/4

ADD

SUP

A.11.2

<sup>2</sup> These procedures may be applicable to stations on board satellite launching vehicles.

MOD

ADD CAN/60/14

SUP CAN/60/13

**1041**      *Publication of Information*

MOD      CAN/60/9 , *IND/141/43*

ADD

SUP

**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 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.

MOD      F/20/5, CAN/60/10, USA/76/1, *IND/141/44, LUX/126/2, ARG/180/1*

ADD      CAN/60/11, CAN/60/15 , *LUX/126/3*

SUP

**1043**              (2) Any amendments to the information sent concerning a planned satellite system in accordance with No. 1042 shall also be sent to the Board as soon as they become available.

MOD      CAN/60/16, *IND/141/45, LUX/126/5*

ADD      F/20/6-7, CAN/60/17-32 , *LUX/126/6*

SUP

**1044**              (3) The Board shall publish 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 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.

MOD      F/20/8 , *IND/141/46, LUX/126/7*

ADD

SUP      CAN/60/33

- 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.

MOD F/20/9, IND/141/47, LUX/126/8  
ADD  
SUP CAN/60/33

1046 *Comments on Published Information*

MOD CAN/60/34  
ADD  
SUP

- 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, it shall, within four months after the date of the weekly circular publishing the complete information listed in Appendix 4, send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. If no such comments are 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.

MOD F/20/10, CAN/60/35, ~~VEN/92/7~~, LUX/126/9  
ADD CAN/60/36 - 37  
SUP

1048 *Resolution of Difficulties*

MOD CAN/60/38  
ADD  
SUP

- 1049** § 3. (1) An administration receiving comments sent in accordance with No. 1047 shall endeavour to resolve any difficulties that may arise and shall provide any additional information that may be available.

MOD USA/12/17, F/20/11, CAN/60/39

ADD

SUP

- 1050** (2) In case of difficulties arising when any planned satellite network of a system is intended to use the geostationary-satellite orbit:

MOD USA/12/18, CAN/60/40

ADD

SUP

- 1051** a) the administration responsible for the planned system 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 of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned to solve these difficulties;

MOD USA/12/19, CAN/60/41, ~~USA/12/20~~, LUX/12/6/10

ADD

SUP

- 1052** b) an administration receiving a request under No. 1051 shall, in consultation with the requesting administration, explore all possible means of meeting the requirements of the requesting administration, for example, by 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 operational characteristics;

MOD CAN/60/42

ADD

SUP

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 effort to resolve these difficulties by means of mutually acceptable adjustments, for example, to geostationary space station locations and to other characteristics of the systems involved in order to provide for the normal operation of both the planned and existing systems.

MOD USA/12/20, CAN/60/43, ~~LUX/126/41~~

ADD

SUP

1054

- (3) In their attempts to resolve the difficulties mentioned above administrations may seek the assistance of the Board.

MOD USA/12/21, CAN/60/44, ~~USA/60/45~~, ~~IND/141/48~~

ADD USA/12/22-24, F/20/13-16, CAN/60/45, ~~USA/60/46~~

SUP

1055 *Results of Advance Publication*

MOD CAN/60/46

ADD

SUP

1056

- § 4. 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 publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

MOD F/20/17, CAN/60/47, ~~LUX/126/42~~

ADD CAN/60/48

SUP

**1057**      *Commencement of Coordination or Notification Procedures*

MOD          F/20/18

ADD

SUP

**1058**      § 5.      In complying with the provisions of Nos. 1049 to 1054, an administration responsible for a planned satellite system shall, 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 of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the six months mentioned above.

MOD          F/20/19, CAN/60/49, *LUX/126/13*

ADD          CAN/60/50

SUP

**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**

MOD          USA/12/25, F/20/20, B/35/2, USA/56/12, CAN/60/51

ADD          USA/56/13

SUP

**1059**      *Requirement for Coordination*

MOD

ADD

SUP

**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.

MOD USA/12/26, F/20/21, B/35/3, CAN/60/52, ~~VEN/92/33~~, **LUX/126/14**  
ADD USA/12/27, F/20/22, CAN/59/2, CAN/60/53-54, USA/75/1  
SUP

**1061** (2) Frequency assignments to which the provisions of No. **1060** are applicable are those:

MOD F/20/23, CAN/60/55  
ADD  
SUP

**1062** a) in the same frequency band as the planned assignment and in conformity with No. 1503; *and*

MOD F/20/24, CAN/60/56  
ADD  
SUP

**1063** b) either recorded in the Master Register, or coordinated under the provisions of this Section; *or*

MOD CAN/60/57  
ADD  
SUP

**1064** c) to be taken into account for coordination with effect from the date of receipt by the Board, in accordance with No. 1074, of the relevant information as annotated in Appendix 3; *or*

MOD F/20/25, CAN/60/58  
ADD  
SUP

**1065**                      *d)*    notified to the Board without any coordination in those cases where Nos. **1066** to **1071** apply.

MOD    CAN/60/59

ADD    CAN/60/60

SUP

**1066**                      (3) No coordination under No. **1060** is required:

MOD    CAN/60/61

ADD

SUP

**1067**                      *a)*    when the use of a new frequency assignment will cause, to any service of another administration, an increase in the noise temperature of any space station receiver or earth station receiver, or an increase in the equivalent satellite link noise temperature, as appropriate, calculated in accordance with the method given in Appendix 29, which does not exceed the threshold value defined therein;

MOD    F/20/26

ADD

SUP

**1068**                      *b)*    when the interference resulting from a modification to a frequency assignment which has previously been coordinated will not exceed that value agreed during coordination;

MOD

ADD

SUP



**1069**

- c) when an administration proposes to notify or bring into use a new earth station within a service area of an existing satellite network, provided that the new earth station would not cause interference of a level greater than that which would be caused by an earth station pertaining to the same satellite network and whose characteristics have been published, together with the information concerning the space station, in accordance with No. 1078;

MOD USA/12/28, F/20/27, B/35/4, CAN/60/62, ~~VEN/92/12~~

ADD

SUP

**1070**

- d) when, for a new frequency assignment to a receiving station, the notifying administration states that it accepts the interference resulting from the frequency assignments referred to in Nos. 1061 to 1065;

MOD

ADD

SUP

**1071**

- e) between earth stations using frequency assignments in the same direction (either Earth-to-space or space-to-Earth).

MOD

ADD

SUP

**1072**      *Coordination Data*

MCD CAN/60/64

ADD

SUP

1073 § 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 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.

*F/20 Corr.1/28(Rev.)*  
MOD USA/12/29, *F/20/28(Rev.)*, B/35/5, CAN/60/65, ~~V/22/82/13~~, *LUX/126/15*  
ADD CAN/60/66-67, USA/56/22  
SUP

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 required for coordination and the name(s) of the administration(s) with which coordination is sought. 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 circular telegram.

MOD F/20/29, CAN/60/68, *LUX/126/16*  
ADD CAN/60/69-74  
SUP

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

MOD CAN/60/75  
ADD  
SUP

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 date of receipt of the information; this date shall be considered as the date from which the assignment will be taken into account for coordination;

MOD F/20/30, *LUX/126/17*  
ADD CAN/60/76  
SUP

- 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 by telegram;

MOD    CAN/ 60/77

ADD    CAN/60/78 - 82

SUP

- 1078                    c)    publish in 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 circular 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.

MOD    F/20/31, CAN/60/83, *LVS/126/48*

ADD    F/20/32-34

SUP

1079        *Requests for Inclusion in the Coordination Procedure*

MOD

ADD

SUP

- 1080        § 9.        An administration believing that it should have been included in the coordination procedure under No. 1060 shall have the right to request that it be brought into the coordination procedure. Such a request shall be sent to the administration initiating the coordination procedure, with a copy to the Board, as soon as possible.

MOD    F/20/35, CAN/60/84

ADD

SUP

**1081**      *Acknowledgement of Receipt of Coordination Data*

MOD

ADD

SUP      F/20/36

**1082**      § 10.      An administration with which coordination is sought under No. **1060** shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days after the date of the weekly circular publishing the information under No. **1078**, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of fifteen days.

MOD      CAN/60/85

ADD

SUP      F/20/37

**1083**      *Examination of Coordination Data and Agreement Between Administrations*

MOD

ADD

SUP

**1084** § 11. (1) On receipt of the coordination data, an administration shall promptly examine the matter with regard to interference<sup>1</sup> 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 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.

MOD F/20/38, CAN/60/86, *LUX/126/19*

ADD USA/56/23

SUP

**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.

MOD

ADD USA/12/30, F/20/39-42

SUP

**1084.1** <sup>1</sup> The calculation methods and the criteria to be employed in evaluating the interference should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

MOD CAN/60/87

ADD

SUP

**1086**     *Results of Coordination*

MOD

ADD

SUP

- 1087**     § 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. 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 publish this information in a special section of its weekly circular and, when the weekly circular contains information on changes in the characteristics published, it shall so inform all administrations by circular telegram.

MOD     B/35/6, CAN/60/88 , ~~LUX/126/20~~

ADD     CAN/60/89-96

SUP

**1088**     *Requests to the IFRB for Assistance in Effecting Coordination*

MOD

ADD

SUP

- 1089**     § 13. (1) An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

MOD     CAN/60/97

ADD

SUP

- 1090**                      a)    an administration with which coordination is sought under No. 1060 fails to acknowledge receipt, under No. 1082, within forty-five days after the date of the weekly circular publishing the information relating to the request for coordination;

MOD

ADD

SUP    F/20/43

- 1091**                      b)    an administration has acknowledged receipt under No. 1082, but fails to give a decision within four months from the date of the relevant weekly circular;

MOD    F/20/44

ADD    USA/75/2

SUP

- 1092**                      c)    there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable interference;  
*or*

MOD

ADD

SUP

- 1093**                      d)    coordination between administrations is not possible for any other reason.

MOD

ADD    F/20/45

SUP

- 1094**                      (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

MOD    CAN/60/99

ADD

SUP

**1095**      *Action to Be Taken by the IFRB*

MOD   CAN/60/100

ADD

SUP

**1096**      § 14. (1) Where the Board receives a request under No. 1090, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

MOD   CAN/60/101 , LUX/126/21

ADD

SUP   F/20/46

**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 forthwith send a telegram to the administration concerned requesting an early decision in the matter.

MOD   F/20/47 , LUX/126/22

ADD

SUP

**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 Nos. 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.

MOD   USA/75/3,   F/20/48

ADD   F/20/49

SUP

**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 the administrations concerned of the results obtained.

MOD   LUX/126/23

ADD

SUP



- 1100** (5) The Board may request additional information which it may require to assess the interference to the services concerned.

MOD CAN/60/102

ADD

SUP

- 1101** (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under No. 1096, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. 1097, it shall be deemed that the administration with which coordination was sought has undertaken:

MOD USA/75/4, F/20/50

ADD

SUP

- 1102** a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its space radiocommunication stations by the use of the assignment for which coordination was requested;

MOD B/35/7, F/20/51, CAN/60/103

ADD

SUP

- 1103** b) that its space radiocommunication stations will not cause harmful interference to the use of the assignment for which coordination was requested.

MOD B/35/8, F/20/52

ADD

SUP

**1104**     *Notification of Frequency Assignments in the Event of Continuing Dis-  
agreement*

MOD

ADD

SUP

**1105**     § 15.     In the event of continuing disagreement between an adminis-  
tration seeking to effect coordination and one with which coordination  
has been sought, the administration seeking coordination shall, except  
in the cases where the assistance of the Board has been requested, defer  
the submission of its notice concerning the proposed assignment by six  
months from the date of publication of the request for coordination  
under No. **1078**, taking into consideration the provisions of No. **1496**.

MOD     B/35/9, F/20/53, CAN/60/104

ADD

SUP

**Section III.   Coordination of Frequency Assignments to an Earth Station  
in Relation to Terrestrial Stations**

MOD     CAN/60/105

ADD

SUP

**1106**     *Requirement for Coordination*

MOD

ADD

SUP

- 1107** § 16. (1) Before an administration notifies to the Board or brings into use any frequency assignment to an earth station, whether for transmitting or receiving, in a particular band allocated with equal rights to space and terrestrial radiocommunication services in the frequency spectrum above 1 GHz, it shall, except in the cases described in Nos. 1108 to 1111, effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area<sup>1</sup> of the planned earth station. The request for coordination concerning an earth station may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

MOD S/55/25, CAN/60/106

ADD

SUP

- 1108** (2) No coordination under No. 1107 is required when an administration proposes:

MOD

ADD

SUP

- 1107.1** <sup>1</sup> Appendix 28, which shall be used for the calculation of the coordination area, contains criteria relating only to coordination between earth stations and stations in the fixed or mobile services. The criteria relating to other terrestrial radiocommunication services should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise.

In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

MOD

ADD

SUP

**1109**

- a) to bring into use an earth station the coordination area of which does not include any of the territory of any other country;

MOD J/53/9

ADD CAN/60/107

SUP

**1110**

- b) to change the characteristics of an existing assignment in such a way as not to increase the interference to or from the terrestrial radiocommunication stations of other administrations;

MOD CAN/60/108

ADD

SUP

**1111**

- c) to operate a mobile earth station. However, if the coordination area associated with the operation of such a mobile earth station, in a frequency band referred to in No. 1107, includes any of the territory of another country, the operation of such a station shall be subject to agreement on coordination between the administrations concerned. This agreement shall apply to the characteristics of the mobile earth station(s), or to the characteristics of a typical mobile earth station, and shall apply to a specified service area. Unless otherwise stipulated in the agreement, it shall apply to any mobile earth stations in the specified service area provided that interference caused by them shall not be greater than that caused by a typical earth station for which the technical characteristics appear in the notice and have been or are being submitted in accordance with No. 1494.

MOD CAN/60/109

ADD B/35/10, CAN/60/110

SUP

**1112**      *Coordination Data*

MOD    CAN/60/111

ADD

SUP

- 1113**      § 17.      For the purpose of effecting coordination, the administration requesting coordination shall send to each administration concerned under No. 1107 a copy of diagrams drawn to an appropriate scale indicating for both transmission and reception the location of the earth station and its associate coordination areas, or the coordination area related to the service area in which it is intended to operate the mobile earth station, and the data on which the diagrams are based, including all pertinent information concerning the proposed frequency assignment as listed in Appendix 3, and an indication of the approximate date on which it is planned to begin operations. A copy of this information with the date of dispatch of the request for coordination shall also be sent for the information of the Board.

MOD    CAN/60/112

ADD

SUP

**1114**      *Acknowledgement of Receipt of Coordination Data*

MOD

ADD

SUP

- 1115**      § 18.      An administration with which coordination is sought under No. 1107 shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days of dispatch of the coordination data, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of fifteen days.

MOD    CAN/60/113

ADD

SUP

**1116**     *Examination of Coordination Data and Agreement Between Administrations*

MOD

ADD

SUP

**1117**     § 19. (1) On receipt of the coordination data an administration shall, having regard to the proposed date of bringing into use of the assignment for which coordination was requested, promptly examine the matter with regard to both:

MOD     CAN/60/114

ADD

SUP

- 1118            a) interference<sup>1</sup> which would be caused to the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer; *and*

MOD

ADD

SUP

- 1119            b) interference<sup>1</sup> which would be caused to reception at the earth station by the service rendered by its terrestrial radiocommunication stations operating in accordance with the Convention and these Regulations, or to be so operated prior to the planned date of bringing the earth station assignment into service, or within the next three years, whichever is the longer.

MOD

ADD

SUP

- 1120            (2) The periods referred to in Nos. 1118 and 1119 may be extended by agreement between the administrations concerned in order to take planned terrestrial networks into account.

MOD

ADD

SUP

- 
- 1118.1 }  
1119.1 }            <sup>1</sup> The calculation methods and the criteria to be employed in evaluating the interference should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

MOD    CAN/60/115

ADD

SUP

- 1121 (3) The administration with which coordination is sought shall, within four months from dispatch of the coordination data:

MOD

ADD

SUP

- 1122 a) notify the administration requesting coordination of its agreement with a copy to the Board, indicating, where appropriate, the part of the allocated frequency band containing the coordinated frequency assignments; *or*

MOD

ADD

SUP

- 1123 b) send to that administration a request for inclusion in coordination of the terrestrial radiocommunication stations mentioned in Nos. 1118 and 1119; *or*

MOD

ADD

SUP

- 1124 c) notify that administration of its disagreement.

MOD

ADD

SUP

- 1125 (4) In the cases mentioned in Nos. 1123 and 1124, the administration with which coordination is sought shall send to the administration requesting coordination a copy of a diagram drawn to an appropriate scale indicating the location of those terrestrial radiocommunication stations which are or will be within the coordination area of the earth transmitting or receiving station, as appropriate, together with all other relevant basic characteristics and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

MOD

ADD

SUP



- 1126 (5) When the administration with which coordination is sought sends to the administration seeking coordination the information required in the case of No. 1124, a copy thereof shall also be sent to the Board. The Board shall consider as notifications in accordance with Section I of Article 12 only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three months.

MOD

ADD

SUP

- 1127 (6) When an agreement on coordination is reached, as a consequence of Nos. 1121 to 1125, the administration responsible for the terrestrial stations may send to the Board the information concerning those terrestrial stations covered by the agreement which are intended to be notified in accordance with Section I of Article 12. The Board shall consider as notifications in accordance with that Section only that information relating to existing terrestrial radiocommunication stations or to those to be brought into use within the next three years.

MOD

ADD

SUP

- 1128 (7) 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.

MOD

ADD

SUP

- 1129 *Requests to the IFRB for Assistance in Effecting Coordination*

MOD

ADD

SUP

**1130** § 20. (1) An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

MOD CAN/60/116

ADD

SUP

**1131** a) an administration with which coordination is sought under No. 1107 fails to acknowledge receipt, under No. 1115, within forty-five days of dispatch of the coordination data;

MOD

ADD

SUP

**1132** b) an administration has acknowledged receipt under No. 1115, but fails to give a decision within four months from dispatch of the coordination data under No. 1113;

MOD

ADD

SUP

**1133** c) there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable interference;  
*or*

MOD

ADD

SUP

**1134** d) coordination between administrations is not possible for any other reason.

MOD

ADD

SUP

- 1135 (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

MOD

ADD

SUP

- 1136 *Action to Be Taken by the IFRB*

MOD

ADD

SUP

- 1137 § 21. (1) Where the Board receives a request under No. 1131, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

MOD

ADD

SUP

- 1138 (2) Where the Board receives an acknowledgement following its action under No. 1137, or where the Board receives a request under No. 1132, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

MOD

ADD

SUP

- 1139 (3) Where the Board receives a request under No. 1134, it shall endeavour to effect coordination in accordance with the provisions of No. 1107. Where the Board receives no acknowledgement to its request for coordination within the periods specified in No. 1115 it shall act in accordance with No. 1137.

MOD

ADD

SUP

- 1140** (4) Where necessary, as part of the procedure under Nos. 1130 to 1135, the Board shall assess the interference. In any case, the Board shall inform the administrations concerned of the results obtained.

MOD

ADD

SUP

- 1141** (5) The Board may request additional information which it may require to assess the interference to the services concerned.

MOD

ADD

SUP

- 1142** (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under No. 1137, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. 1138, it shall be deemed that the administration with which coordination was sought has undertaken:

MOD

ADD

SUP

- 1143** a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its terrestrial stations by the use of the assignment for which coordination was requested;

MOD

ADD

SUP

- 1144** b) that its terrestrial stations will not cause harmful interference to the use of the assignment for which coordination was requested.

MOD

ADD

SUP

**1145**     *Notification of Frequency Assignments in the Event of Continuing Dis-  
agreement*

MOD

ADD

SUP

**1146**     § 22.     In the event of continuing disagreement between an adminis-  
tration seeking to effect coordination and one with which coordination  
has been sought, the administration seeking coordination shall, except  
in the cases where the assistance of the Board has been requested, defer  
the submission of its notice concerning the proposed assignment by six  
months from the date of the request for coordination, taking into con-  
sideration the provisions of No. **1496**.

MOD     CAN/60/117

ADD

SUP

**Section IV.   Coordination of Frequency Assignments to a Terrestrial Station  
for Transmission in Relation to an Earth Station**

MOD

ADD

SUP

**1147**     *Requirement for Coordination*

MOD

ADD

SUP

- 1148**      § 23. (1) Before an administration notifies to the Board, or brings into use any frequency assignment to a terrestrial station within the coordination area<sup>1</sup> of an earth station, in a band above 1 GHz allocated with equal rights to terrestrial radiocommunication services and space radiocommunication services (space-to-Earth), excepting the broadcasting-satellite service, it shall, except in cases described in Nos. **1155** to **1158**, effect coordination of the proposed assignment with the administration responsible for the earth station with respect of the frequency assignments which are: \*

MOD      CAN/60/118

ADD

SUP

- 1149**                      a)      in conformity with No. **1503**; *and*

MOD

ADD

SUP

- 1150**                      b)      either coordinated under No. **1107**; *or*

MOD

ADD

SUP

**1148.1**

<sup>1</sup> Appendix 28, which shall be used for the calculation of the coordination area, contains criteria relating only to coordination between earth stations and stations in the fixed or mobile services. The criteria relating to other terrestrial radiocommunication services should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise.

In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be conducted without prejudice to other administrations.

MOD

ADD

SUP

1151                    c)    to be taken into account for coordination with effect  
                              from the date of communication of the information  
                              referred to in No. 1107; *or*

MOD

ADD  
SUP

1152                    d)    recorded in the Master Register with a favourable  
                              finding with respect to No. 1505; *or*

MOD

ADD  
SUP

1153                    e)    recorded in the Master Register with an unfavourable  
                              finding with respect to No. 1505 and a favourable  
                              finding with respect to No. 1509; *or*

MOD

ADD  
SUP

1154                    f)    recorded in the Master Register with an unfavourable  
                              finding with respect to Nos. 1505 and 1509, the noti-  
                              fying administration having stated that it has accepted  
                              the interference resulting from the existing terrestrial  
                              stations located within the coordination area of the  
                              earth station on the date of its recording.

MOD

ADD  
SUP

1155                    (2) No coordination under Nos. 1148 to 1154 is required when  
                              an administration proposes:

MOD

ADD  
SUP

**1156**

- a) to bring into use a terrestrial station which is located, in relation to an earth station, outside the coordination area;

MOD

ADD

SUP

**1157**

- b) to change the characteristics of an existing assignment in such a way as not to increase the interference to the earth stations of other administrations;

MOD

ADD

SUP

**1158**

- c) to bring into use a terrestrial station within the coordination area of an earth station, provided that the proposed terrestrial station assignment is outside any part of a frequency band coordinated under No. 1122 for reception by that earth station.

MOD

ADD

SUP

**1159**      *Coordination Data*

MOD    CAN/60/119

ADD

SUP



- 1160**     § 24.     For the purpose of effecting coordination, the administration requesting coordination shall send to any other administration concerned under Nos. 1148 to 1154, by the fastest possible means, a copy of a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to bring the station into use. The request for coordination may specify all or some of the frequency assignments expected to be used within the next three years by stations of a terrestrial network wholly or partly within the coordination area of the earth station. This period may be extended by agreement between the administrations concerned. Thereafter each assignment shall be dealt with individually.

MOD     CAN/60/120

ADD

SUP

**1161**     *Acknowledgement of Receipt of Coordination Data*

MOD

ADD

SUP

- 1162**     § 25.     An administration with which coordination is sought under Nos. 1148 to 1154 shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within thirty days of dispatch, the administration seeking coordination may dispatch a telegram requesting acknowledgement of receipt of the coordination data, to which the receiving administration shall reply within a further period of fifteen days.

MOD     CAN/60/121

ADD

SUP

**1163**     *Examination of Coordination Data and Agreement Between Administrations*

MOD

ADD

SUP

**1164** § 26. (1) On receipt of the coordination data, the administration with which coordination is sought shall promptly examine the matter with regard to interference<sup>1</sup> which would be caused to the services rendered by its earth stations covered by Nos. 1148 to 1154, which are operating, or are to be operated, within the next three years.

MOD CAN/60/122

ADD

SUP

**1165** (2) In so doing, the administration may take into account any frequency assignment communicated to it for use more than three years in advance.

MOD

ADD

SUP

**1166** (3) The administration with which coordination is sought shall, within an overall period of four months<sup>2</sup> from dispatch of the coordination data, either notify the administration requesting coordination of its agreement to the proposals or, if this is not possible, indicate the reasons therefor and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

MOD CAN/60/123

ADD

SUP

**1164.1** <sup>1</sup> The calculation methods and the criteria to be employed in evaluating the interference should be based on relevant CCIR Recommendations agreed by the administrations concerned either as a result of Resolution 703 or otherwise. In the event of disagreement on a CCIR Recommendation or in the absence of such Recommendations, the methods and criteria shall be agreed between the administrations concerned. Such agreements shall be concluded without prejudice to other administrations.

MOD

ADD

SUP

**1166.1** <sup>2</sup> This period may be extended with the agreement of the administration which requested the coordination.

MOD

ADD

SUP

**1167**     § 27.     Either the administration seeking coordination or the administration with which coordination is sought may request additional information which it may require to assess the interference to the services concerned.

MOD     CAN/60/124

ADD

SUP

**1168**     *Requests to the IFRB for Assistance in Effecting Coordination*

MOD

ADD

SUP

**1169**     § 28. (1) An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

MOD     CAN/60/125

ADD

SUP

**1170**             a)     an administration with which coordination is sought under Nos. 1148 to 1154 fails to acknowledge receipt under No. 1162 within thirty days of dispatch of the coordination data;

MOD     CAN/60/126

ADD

SUP

**1171**             b)     an administration has acknowledged receipt under No. 1162 but fails to give a decision within four months of dispatch of the coordination data;

MOD

ADD

SUP

1172 c) there is disagreement between the administration  
seeking coordination and an administration with which  
coordination is sought as to the acceptable interference;  
or

MOD

ADD

SUP

1173           d) coordination between administrations is not possible  
for any other reason.

MOD

ADD

SUP

1174 (2) In so doing, the administration shall furnish the necessary information to enable the Board to endeavour to effect such coordination.

MOD

ADD

SUP

1175 *Action to Be Taken by the IFRB*

MOD

ADD

SUP

1176 § 29. (1) Where the Board receives a request under No. 1170, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

MOD CAN/60/127

ADD

SUP

- 1177** (2) Where the Board receives an acknowledgement following its action under No. 1176, or where the Board receives a request under No. 1171, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

MOD

ADD

SUP

- 1178** (3) Where the Board receives a request under No. 1173, it shall endeavour to effect coordination in accordance with the provisions of Nos. 1148 to 1154. Where the Board receives no acknowledgement of its request for coordination within the period specified in No. 1162, it shall act in accordance with No. 1176.

MOD

ADD

SUP

- 1179** (4) Where necessary, as part of the procedure under Nos. 1169 to 1174, the Board shall assess the interference. In any case, the Board shall inform the administrations concerned of the results obtained.

MOD

ADD

SUP

- 1180** (5) The Board may request additional information which it may require to assess the interference to the services concerned.

MOD

ADD

SUP

- 1181** (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under No. 1176 requesting an acknowledgement, or fails to give a decision in the matter within two months of dispatch of the Board's telegram of request sent under No. 1177, it shall be deemed that the administration with which coordination was sought has undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station being coordinated to the service rendered by its earth station.

MOD CAN/60/128

ADD

SUP

- 1182** *Notification of Frequency Assignments in the Event of Continuing Disagreement*

MOD

ADD

SUP

- 1183** § 30. In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed assignment by six months from the date of the request for coordination, taking into consideration the provisions of Nos. 1230 and 1496.

MOD CAN/60/129

ADD

SUP

#### Section V. Special Assistance by the IFRB

MOD

ADD

SUP

**1184** § 31. (1) If it is requested by an administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:

MOD CAN/60/130

ADD

SUP

**1185** a) computation of the increases in noise temperatures in accordance with No. 1066;

MOD

ADD

SUP

**1186** b) preparation of diagrams showing the coordination areas as in No. 1113;

MOD

ADD

SUP

**1187** c) any other assistance of a technical nature for completion of the procedures in this Article.

MOD

ADD

SUP

**1188** (2) In making a request to the Board under Nos. 1184 to 1187, the administration shall furnish the Board with the necessary information.

MOD

ADD

SUP

1189  
to NOT allocated.  
1213

MOD CAN/60/131-134

ADD

SUP



A N N E X 1

NOC

ARTICLE 11

F/20/4

MOD

Coordination of Frequency Assignments to Stations in a Space Radiocommunication Service Using the Frequency Bands Other than those Used for the Planning of the Space Services of the Fixed-Satellite Service. Except Stations in the Broadcasting-Satellite Service and to Appropriate Terrestrial Stations<sup>1</sup>

CAN/60/7

MOD

Coordination of Frequency Assignments to Stations in Space Radiocommunication Service Except Stations in the Broadcasting Satellite Service and to Appropriate Terrestrial Stations 1,2

CAN/60/8

MOD

Section I. Procedures for the Advance Publication of Information on Planned Satellite Networks <sup>2</sup>

USA PROPOSALS

USA/76/1

MOD 1042

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 six 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.

USA/12/17 MOD 1049

§3. (1) An administration receiving comments sent in accordance with No. 1047 and administrations sending such comments shall endeavor to resolve any difficulties that may arise and shall provide any additional information that may be available.

USA/12/18 MOD 1050

(2) In case of difficulties arising when any planned satellite network of a system is intended to use the geostationary-satellite orbit, and taking into account the relevant CCIR Recommendations:

USA/12/19 MOD 1051

a) the administration responsible for the planned system 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 of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned individually or collectively in order to mutually resolve ~~solve~~ these difficulties; either through bilateral or multilateral consultations;

- USA/12/20 (MOD) 1053      c)    if after following the procedure outlined in Nos. MOD 1051 and 1052 there are unresolved difficulties, the administrations concerned shall together make every possible effort to resolve these difficulties by means of mutually acceptable adjustments, for example, to geostationary space station locations and to other characteristics of the systems involved in order to provide for the normal operation of both the planned and existing systems.
- USA/12/21 MOD 1054    (3) In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board to aid in:
- USA/12/22 ADD 1054A      a)    evaluating the levels of interference;
- USA/12/23 ADD 1054B      b)    defining, with the agreement of the administrations concerned, the technical criteria to be used;
- USA/12/24 ADD 1054C      c)    making administrative arrangements to facilitate joint discussions as mutually agreed by the administrations concerned.

F PROPOSALS

F/20/5

MOD 1042 § 1. (1) An administration (or one acting on behalf of a group of named administrations) which intends to establish a satellite system having to use the frequency bands not adopted for planning 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 4.

NOC 1043

F/20/6

ADD 1043A (3) On receiving the information referred to in Nos. 1042 and 1043, the Board:

F/20/7

ADD 1043B a) For planned geostationary-satellite networks, examine the information received to identify administrations whose services may be affected. The satellite networks involved in the examination to be carried out by the Board comprise any network using a same frequency band as the planned network for which the Board has received relevant information, such as that specified in Appendix 4, on the date of receipt of the information on the planned network.

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NOC A.11.1  
Orb-85

NOC A.11.2

F/20/8

MOD 1044

~~(3)~~ b) ~~The Board shall publish~~ Publish the information sent under Nos. 1042 and 1043, as well as the results of the examination carried out under No. 1043B for geostationary-satellite networks, within six weeks from the date on which the Board receives the complete information specified in No. 1042, in a special section of its weekly circular 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 a geostationary satellite, the orbital location of the space station. If the Board is unable to meet the above-mentioned deadline for the publication of the information, it shall notify the administrations as soon as possible by telegram indicating: the identity of the satellite network, the frequency bands to be used, the date of receipt of the information, the reasons why the deadline for publication has not been met and, in the case of a planned satellite network intending to use the geostationary-satellite orbit, the orbital position of the space station.

F/20/9

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, and the period of six months specified in No. 1076, shall count from the date of publication, under No. 1044, of the complete information.

NOC 1046

F/20/10

MOD 1047

§ 2. If, after studying the information published under No. 1044, any administration, or an administration not included in the list published under No. 1043B in the case of a geostationary-satellite network, is of the opinion that interference which may be unacceptable may be caused to its existing or planned space radiocommunication services, it shall, within four months after the date of the weekly circular publishing the complete information listed in Appendix 4, send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. The Board shall publish its comments in a special section of the weekly circular. If no such comments are received from an administration or the Board within the period mentioned above, or if, in the case of a geostationary-satellite network, no network is identified by the Board under No. 1043B, it

may be assumed that ~~that~~ no administration has ~~no~~ any basic objections to the planned satellite network(s) of that system on which details have been published.

NOC 1048

F/20/11

MOD 1049 § 3. (1) With regard to networks identified under Nos. 1043B or 1047, An the administration receiving comments sent in accordance with No. 1047 shall endeavour to resolve any difficulties that may arise and shall provide any additional information that may be available.

NOC 1050

NOC 1051

NOC 1052

F/20/12 NOC 1053;

NOC 1054

F/20/13

ADD 1054A This assistance by the Board may consist in:

F/20/14

ADD 1054B a) evaluating the levels of interference caused to the services concerned;

F/20/15

ADD 1054C b) determining, with the agreement of the administrations concerned, the methods and criteria to be applied;

F/20/16

ADD 1054D c) taking administrative steps to facilitate any discussions mutually acceptable to the administrations concerned.

NOC 1055

F/20/17

MOD 1056 § 4. 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 publish this information by updating the in a special section of its weekly circular specified in No. 1044 and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

F/20/18  
MOD 1057      Commencement of ~~Coordination or~~ Notification Procedures

F/20/19  
MOD 1058      § 5.      In complying with the provisions of Nos. 1049 to 1054D 1054, an administration responsible for a planned satellite system shall, 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 of those administrations with which difficulties have been resolved or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the six months mentioned above.~~

CAN PROPOSALS

CAN/60/9  
MOD

1041 ~~Publication-of-Information~~  
Information Required for Advanced Publication

CAN/60/10  
MOD

1042 . § 1.(1) An administration (or one acting  
on behalf..etc... planned system...except as provided  
for in No. 1043G...listed in Section 1 of  
Appendix 4[3/4].

CAN/60/11  
ADD

1042A (2) If the information submitted involves the  
use of a steerable beam by a space station, the  
equivalent boresight area shall be specified. If the  
steerable beam is intended to be pointed at two or  
more non-adjacent areas, the network shall be  
considered to have two or more beams.

CAN/60/12  
MOD

A.11.1 Delete existing text and add simple reference  
to Articles 15 and 15A.

CAN/60/13  
SUP

A.11.2.

CAN/60/14  
ADD

A.11.2 <sup>2</sup>For the coordination of frequency  
assignments to stations in the fixed-satellite service  
see also Articles 11A and 15B.

CAN/60/15  
ADD  
CAN/60/16  
(MOD)

1042B Amendments to Advance Publication Information

1043       § 2 (2) (1) Any amendments to the information sent Administrations shall send all amendments to the information concerning a planned satellite system sent in accordance with No. 1042 shall also be sent to the Board as soon as they become available.

CAN/60/17  
ADD

1043A (2) If the modifications involve: an orbital position outside the published service arc; an extended service arc, frequency range or service area, or, a date of bringing into service greater than seven years from the date of the advance publication of information, the procedure shall be applied again from the start with respect to the modified network.

CAN/60/18  
ADD

1043AA (3) In any case, if such modifications result in the identification of other networks which might be affected in the application of No. 1043I, the period specified in No. 1045 for the sending of comments shall be extended by an additional four months from the date of publication of the amendments with respect to any additional administration which might thus be affected.

CAN/60/19  
ADD  
CAN/60/20  
ADD

1043B Simultaneous Submission of Coordination Data

1043C       § 3.(1) The information required for coordination under the provisions of No. 1073 may be sent to the Board at the same time as the information under No. 1042.

CAN/60/21  
ADD

1043D (2) When the information sent in accordance with No. 1043C is received by the Board at the same time as the information sent in accordance with



No. 1042, it shall be taken into account by the Board for network protection purposes only after the advanced publication procedure has been completed. (See No. 1055A).

CAN/60/22  
ADD

1043E When submitting information in accordance with Nos. 1042, 1043, 1043C and 1073, administrations shall take into account the time constraints associated with the submission of frequency assignment notices in No. 1496.

CAN/60/23  
ADD  
CAN/60/24  
ADD

1043F Extension of Bringing Networks into Use

1043G § 4.(1) The projected date of bringing a satellite network into use may be extended on request of the notifying administration by eighteen 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 granted, but the overall period should not exceed twenty-four months from the original projected date of bringing into use. Extensions beyond twenty-four months will only be approved by the Board with the agreement of any other administration which may be affected.

CAN/60/25  
ADD

1043GG (2) Where the projected date of bringing into use of a satellite network is less than five years, then a maximum time-frame of seven years shall be applied by the Board when considering requests for extension.

CAN/60/26  
ADD  
CAN/60/27  
ADD

1043H Action by the Board

1043I § 5.(1) Upon receipt of the information sent in accordance with No. 1042 and 1043C, the Board shall identify the administrations whose satellite networks are considered to be affected in accordance with the provisions of Appendix 29 of the Radio Regulations. The networks to be taken into consideration are those for which complete information was sent under No. 1042 and published by the Board under No. 1043J.

CAN/60/28  
ADD

1043J (2) The Board shall publish the information sent under Nos. 1042 and 1043C in a special section of its weekly circular. Only one special section shall be published for each satellite network. It will be updated, if necessary, as the definition of the network becomes more precise in accordance with the information sent under Nos. 1043, 1043C and 1074.

CAN/60/29  
ADD

1043K (3) When the weekly circular contains such information, the Board shall so advise all administrations by telegram. The telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the proposed orbital position of the satellite.

CAN/60/30  
ADD

1043L (4) In the case of a geostationary satellite, the information published in accordance with No. 1043J shall contain the names of the administrations whose satellite network(s) are considered to be affected. The publication will contain sufficient details to identify clearly such networks.

CAN/60/31  
ADD

1043M (5) If the information is found to be incomplete, the Board shall publish it under No. 1043J and immediately seek, from the administration concerned, any information not provided. In such case the period of four months specified in No. 1045 shall count from the date of publication, under No. 1043J, of the complete information.

CAN/60/32  
ADD

1043N (6) If no reply is received within three months from the date on which the information was requested, the documents received under No. 1042 or 1043C shall be returned to the administration. The Board shall inform all administrations accordingly. Thereafter, the procedure will have to be re-applied from the beginning.

CAN/60/33  
SUP

1044-1045

CAN/60/34  
(MOD)  
CAN/60/35  
MOD

~~1046~~ 1044 Comments on Published Information

~~1047~~ 1045 § 2.(1) If, after studying the information published under No. ~~1044~~ 1043J, any administration is of the opinion that interference which may be unacceptable may be caused to its existing or planned space radiocommunications services satellite network(s) on which complete information was sent to the Board under No. ~~1042~~, it shall, within four months after the date of the weekly circular publishing containing the complete information listed in the applicable section of Appendix 4 [3/4], send its comments to the administration concerned with respect to the advanced information. A copy of ... have been published.

CAN/60/36  
ADD

1045A (2) In exceptional cases, an administration with which agreement is sought may choose to send its comments directly to the Board. In this case, the Board shall so advise the administration seeking agreement and publish the information received.

CAN/60/37  
ADD

1046 (2) If no comments are received from an administration within the periods mentioned in No. 1045, it shall be assumed that that administration has no objections to the information contained in the advanced publication.

CAN/60/38  
(MOD)

~~1048~~ 1047 Resolution of Difficulties

CAN/60/39  
MOD

~~1049~~ 1048 § 3.(1) An administration receiving comments sent in accordance with No. ~~1047~~ 1045 shall endeavour to resolve...may be available.

CAN/60/40  
(MOD)

~~1050~~ 1049 (2) In case of difficulties ... geostationary-satellite orbit:

CAN/60/41  
MOD

~~1051~~ 1050 a) the administration...of other systems on which complete information has been published by the Board under No. ~~1043J~~, and without...If no such means can be found, the administration concerned is then free to may then request apply to other administrations concerned to solve these difficulties, help resolve the difficulties;

CAN/60/42  
(MOD)  
CAN/60/43  
(MOD)

~~1052~~ 1051 b) an administration ... operational characteristics:

~~1053~~ 1052 c) if, after following the procedure outlined in Nos. ~~1051~~ 1050 and ~~1052~~ 1051 there are unresolved difficulties, the administrations concerned... to geostationary space station ~~locations~~ positions; to other...end existing systems.

CAN/60/44  
(MOD)  
CAN/60/45  
ADD

~~1054~~ 1053 (3) In their attempts ... of the Board.

1053A In seeking the assistance of the Board, the administration(s) concerned shall send details of the comments which have given rise to the difficulties and make any suggestions that it may consider useful. In any case, the Board shall communicate the results of its investigations to the concerned administrations at the earliest date possible.

CAN/60/46  
(MOD)  
CAN/60/47  
(MOD)

~~1055~~ 1054 Results of Advance Publication

~~1056~~ 1055 § 4.(1) An administration on behalf of which information on details of planned satellite networks ~~have has been~~ published in accordance with the provisions ~~of Nos. 1042 to 1044~~ No. 1043J, shall, after the period of four months specified in No. ~~1047~~ 1045, inform the Board whether or not the comments provided for in No. 1047 1045 have been received...by circular telegram.

CAN/60/48  
ADD

1055A (2) If the coordination information was also published under No. 1043J, the Board shall, at the appropriate time in the application of the procedures, and upon request from the administration concerned, advise all administrations of the date on which the network is to be taken into account for network protection purposes and of the formal commencement of the coordination procedure.

NOC

1057

CAN/60/49

MOD

1058           § 5 In complying with the provisions of Nos. 1048 to 1053 an administration responsible for a planned satellite system shall if necessary requested to do so by the Board, as a result of a request by the objecting administration(s) based on potential incompatibilities, defer its commencement...containing the information listed in Section 1 of Appendix [3/4] Appendix 4 on the relevant satellite network. However, in respect of those administrations with which difficulties have been resolved, or which have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the six months mentioned above period.

CAN/60/50

ADD

1058A If the administration responsible for the planned satellite system does not submit the information required for coordination under No. 1060 within six and one-half years from the date of publication of the advanced information prescribed by No. 1043J, the proposed system shall be deemed to be cancelled. If the administration later decides to implement the system, the advanced publication procedure will be re-applied.

IND PROPOSALS

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 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\*.

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.

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 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.

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.~~

IND/141/48  
MOD 1054 (3) In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board for providing support for bilateral/multilateral discussions including technical analysis as considered appropriate.

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\* This is obtained by merging existing Appendices 3 and 4. Consequential (numbering) changes will have to be made, wherever necessary.

LUX PROPOSALS

LUX/126/1

MOD

Section 1 Procedures for the Advance  
Publication of Information on  
Planned Satellite Networks<sup>2</sup>

LUX/126/2

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 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

ADD 1042A

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

LUX/126/4

MOD A.11.1

<sup>1</sup>For the coordination of frequency assignments to stations in the broadcasting satellite service and other services in the frequency 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

MOD 1043

(2) Any amendments to the information sent concerning a planned satellite system in accordance with No. 1042 shall also be sent on the standard form of notice to the Board as soon as they become available.

LUX/126/6

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.

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.~~

ORB(2)/DL/10-E

LUX/126/8

MOD 1045

(4) If the information is found to be incomplete<sup>3</sup>, the Board shall not publish it under No. 1044 and but shall 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.

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 date of the weekly circular publishing the complete information listed in Appendix [3/4], send its comments to the administration concerned. A copy of these comments shall also be sent to the Board. If no such comments are 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.

LUX/126/10

MOD 1051

(a) the administration responsible for the planned system network 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 such means can be found, the administration concerned is then free to apply to other administrations concerned to solve these difficulties;

LUX/126/11

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 effort to resolve these difficulties by means of mutually acceptable 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.

<sup>3</sup> The Conference shall define what is meant by incomplete.



ORB(2)/DL/10-E

LUX/126/12

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 circular contains such information, so inform all administrations by circular telegram.~~

LUX/126/13

MOD 1058

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.~~

#### ARG PROPOSALS

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 five six 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.

A N N E X 2

USA/12/25 MOD

Section II. Coordination  
of Frequency Assignments to a Space Station  
on a Geostationary Satellite or an and Earth Stations Communicating with  
Such a Space Station in Relation to Stations of Other  
Geostationary-Satellite Networks

F/20/20

MOD

Section II. Coordination of Frequency Assignments  
to Stations of a Geostationary Satellite Network  
Using the Frequency Bands not Adopted for Planning  
~~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

B/35/2

MOD

Section II. Coordination of ~~Frequency Assignments to a Space~~  
~~Station on a Geostationary Satellite Network or~~  
~~an Earth Station Communicating with Such a Space~~  
~~Station in Relation to Stations of Other~~  
Geostationary Satellite Networks

CAN/60/51

MOD

Section II Procedures for the Coordination of  
Frequencies 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.

USA/56/12

MOD

Section II. Coordination  
of Frequency Assignments to a Space Station  
on a Geostationary Satellite or ~~an and~~  
Earth Stations Communicating with  
Such a Space Station in Relation to Stations of Other  
Geostationary-Satellite Networks<sup>3</sup>

USA/56/13

ADD A.11.3

<sup>3</sup>This includes geostationary satellites with orbital  
inclinations of less than 15° for which a frequency  
assignment on the geostationary-satellite orbit has been  
recorded or is sought.

USA/12/ 26 MOD 1060

§6. (1) Before an administration<sup>1</sup> (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.

USA/12/ 27 ADD 1060.1

<sup>1</sup>The administration responsible for the space  
station shall also be responsible for performing the  
coordination for earth stations associated with the  
space station pursuant to the provisions of this  
section.

USA/75/1

ADD 1060A

Any administration, which is required to effect coordination of an assignment with any other administration whose assignment for a space station on a geostationary satellite might be affected, may use correspondence, telephonic communication or bilateral or multilateral meetings with the affected administrations as necessary to effect coordination of the assignment.

USA/12/28 MOD 1069

c) when an administration proposes to notify or bring into use a new earth station within a service area of an existing satellite network, providing that the new earth station would not cause interference of a level greater than that which would be caused by an earth station pertaining to the same satellite network and whose network characteristics including typical earth stations with their service area have been published, ~~together with the information concerning the space station,~~ in accordance with No. 1078 or notified to the Board without coordination in those cases where Nos. 1066 to 1071 apply in which case the Form of Notice shall be suitably annotated.

USA/12/29 MOD 1073

§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 Section B of MOD Appendix 3 required for the coordination including associated typical earth stations and their service area. The request concerning coordination of a network space station or an associated earth station may specify all or some of the frequency assignments expected to be used by that satellite network space station, ~~but thereafter each assignment shall be dealt with individually.~~

USA/56/22

ADD 1073.1 Administrations may optionally send the information contained in the Annex to Appendix 3A for the purpose of facilitating coordination.

USA/12/30 ADD 1085A

(3) Affected administrations as well as the administration seeking coordination shall mutually resolve any difficulties.

USA/75/2

ADD 1091A

b bis) Any affected administration fails to agree to participate in bilateral or multilateral meetings under No. 1060A.

USA/75/3

MOD(3) 1098

Where the Board receives a request under Nos. 1091A and 1093, it shall endeavour to effect coordination in accordance with the provisions of Nos. 1060 and 1060A. The Board shall also act in accordance with Nos. 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.

ORB(2)/DL/10-E

USA/75/4

MOD(6) 1101

Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting acknowledgement sent under No. 1096, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. 1097, or fails to attend bilateral or multilateral meetings under No. 1060A in response to the request from the Board under 1098 it shall be deemed that the administration with which coordination was sought has undertaken:

F PROPOSALS

- F/20/21 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 each any frequency assignment to stations of a geostationary-satellite network ~~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 each assignment of the stations of the satellite network concerned with any other administration having a satellite network with at least one station with a frequency assignment that ~~whose assignment, for a space station on~~
- F/20/22 ADD 1060.1 1. For the application of No 1060, the administration responsible for the satellite network may coordinate the reference earth stations associated with the space station of the network concerned in cases where this concept of reference earth station is applicable. Otherwise, the coordination of the real earth station remains compulsory.
- F/20/23 MOD 1061 (2) Frequency assignments- Satellite networks to which the provisions of No. 1060 are applicable are those having a station for which at least one frequency assignment is:
- F/20/24 MOD 1062 a) in the same frequency band as the-planned an assignment of a station of a planned satellite network and in conformity with No. 1503; and
- F/20/25 MOD 1064 c) to be taken into account for coordination with effect from the date determined in accordance with No. 1076 of receipt by the Board, in accordance with No. 1074, of the relevant information as annotated in Appendix 3; or
- F/20/26 MOD 1067 a) when the use of a new frequency assignment will cause, to any service of another administration, an increase in the noise temperature of any space station receiver or earth station receiver, or an increase in the equivalent satellite link noise temperature, as appropriate, calculated in accordance with the method given in Appendix 29, which does not exceed the threshold values defined therein;
- F/20/27 MOD 1069 c) when an administration proposes to notify or bring into use a new earth station within a service area of an existing satellite network, provided that the new earth station would not cause interference of a level greater than that which would be caused by an

earth station pertaining to the same satellite network and whose characteristics, including the characteristics of a reference earth station and the associated service area in accordance with No. 1060.1, have been published together with the ~~information concerning the space station,~~ in accordance with No. 1078;

F/20/28(Rev.)

MOD 1073

§ 7. (1) For the purpose of effecting coordination, the administration ~~requesting coordination~~ shall send to the Board ~~any other administration concerned under No. 1060~~ all the information listed in Appendix 3 required for the coordination, including the characteristics of a reference earth station and the associated service area in accordance with No. 1060.1. It may also send the name(s) of the administration(s) with which coordination is sought. The request concerning coordination of the satellite network concerned a space station or an associated earth station may specify all or some of the frequency assignments expected to be used by ~~that~~ the space stations of the satellite network, ~~but thereafter each assignment shall be dealt with individually.~~

F/20/29

MOD 1074

(2) The administration requesting coordination ~~may shall~~ at the same time send to the Board a copy of the request for ~~coordination, with the~~ administration(s) whose services might be affected under No. 1060 all the information listed in Appendix 3 required for coordination, and the name(s) of the ~~administration(s) with which coordination is sought.~~ An administration believing that the provisions of Nos. 1066 to 1071 apply to its ~~planned~~ an assignment of a station of its planned network may send to the Board the relevant information listed in Appendix 3, either under ~~this provision No. 1073~~ or in accordance with Nos. 1488 to 1491. In the latter case, the Board shall immediately inform all administrations by circular telegram.

F/20/30

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 date of receipt of the information; this date shall be considered as the date from which the assignment will be taken into account for coordination; determine the date from which each frequency assignment of the stations of the satellite network concerned is taken into account for coordination. This date is the date on which the Board receives the complete Appendix 3 information, except when this date is within a period less than six months from the date on which the Board receives the Appendix 4 information; in such case, the date on which the planned satellite network is taken into account is the date of publication of the complete Appendix 4 information, plus six months.~~

F/20/31

MOD 1078

- c) ~~publish in a special section of its weekly circular within six weeks from the date of its receipt by the Board the information received under Nos. 1074 and 1073 and the result of the examination under Nos. 1076 and 1077, together with a reference to the weekly circular~~

~~in which details of the satellite network were published in accordance with Section I of this Article updating the special section specified in No. 1044 in its weekly circular.~~ When the weekly circular contains such information, the Board shall so inform all administrations by circular telegram. This publication shall be regarded as the official request for coordination.

F/20/32

ADD 1078A

If the information supplied is considered to be incomplete, the Board shall immediately request the administration concerned for any necessary clarification and all particulars which have not been supplied. In such case, the date on which the network specified in No. 1076 is to be taken into consideration is determined from the date on which the Board received the complete information under No. 1073.

F/20/33

ADD 1078B

When an administration provides the Board with the information for advance publication (Appendix 4) and the detailed characteristics (Appendix 3) of the planned network simultaneously, their examination by the Board shall be carried out under No. 1043A for the advance publication information and 1076 for coordination respectively. Following the examination, all the information and the results of the examinations carried out by the Board shall be published simultaneously under No. 1078.

F/20/34

ADD 1078C

If the date on which a satellite network is taken into consideration is later than the publication of a network notified to the Board under No. 1078B but prior to the date on which the network, identified by the Board as being unfavourably affected, is taken into consideration, the Board shall publish an addendum to the special section referred to in No. 1078 for the network notified to the Board under No. 1078B, supplementing the list of administrations whose services may be affected.

F/20/35

MOD 1080

§ 9. An administration believing that it should have been included in the coordination procedure under No. 1060 shall have the right to request that it be brought into the coordination procedure. Such a request shall be sent to ~~the administration~~



~~initiating the~~ coordination procedure, with a copy to the Board, ~~as soon as possible with a copy to the administration concerned~~ within four weeks following the Board's publication of the information under No. 1078. The Board shall publish this request in a special section of its weekly circular.

F/20/36  
SUP 1081

F/20/37  
SUP 1082

F/20/38  
MOD 1084

§ 11. (1) On receipt of the coordination data, an Administration identified under No. 1077 or 1080 shall promptly examine the matter with regard to interference<sup>1</sup> 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 each~~ assignment of the stations of the network concerned 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 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.

F/20/39  
ADD 1085A

To resolve the difficulties of any kind that may arise:

F/20/40  
ADD 1085B

- a) the administration responsible for the planned system shall first seek all possible means of meeting its requirements, having regard to the characteristics of the geostationary-satellite networks of other systems and without taking account of the fact that changes may be introduced in systems coming under other administrations. If it is unable to find such means, the administration concerned may then approach the other administrations concerned with a view to overcoming these difficulties;

F/20/41

ADD 1085C

- b) an administration which receives a request under No. 1085B shall seek, in conjunction with the requesting administration, all possible means of meeting the latter's requirements, for example, by altering the position of one or more of its own geostationary space stations involved or by modifying the transmissions, the use of frequencies (including frequency band changes), or other technical or operating characteristics;

F/20/42

ADD 1085D

- c) if, after application of the procedure described in Nos. 1085B and 1085C, difficulties persist, the administrations concerned shall make all possible joint efforts to overcome these difficulties through changes acceptable to both parties, for example, by altering the positions of geostationary space stations or other characteristics of the systems involved in order to allow normal operation both of the planned system and the existing systems.

F/20/43

SUP 1090

F/20/44

MOD 1091

- a) an administration ~~has acknowledged receipt under No. 1082, but~~ fails to give a decision within four months from the date of the relevant weekly circular;

F/20/45

ADD 1093A

- d) the administration requests the IFRB for assistance for a special reason;

F/20/46  
SUP 1096

F/20/47  
MOD 1097     ~~(2)~~ (1) Where the Board ~~receives an acknowledgement following its action under No. 1096, or where the Board~~ receives a request under No. 1091, it shall forthwith send a telegram to the administration concerned requesting an early decision on the matter.

F/20/48  
MOD 1098     ~~(3)~~ (2) Where the Board receives a request under No. 1092 or 1093, it shall endeavour to effect coordination in accordance with the provisions of No. 1060. The Board shall also act in accordance with Nos. 1075 to 1078 1078C. ~~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.~~

F/20/49  
ADD 1098A     (3) When the Board receives a request under No. 1093A, it shall endeavour to meet the administration's requirement.

F/20/50  
MOD 1101     (6) Where an administration ~~fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under No. 1096, or~~ fails to give a decision on the matter within thirty days of dispatch of the Board's telegram of request under No. 1097, it shall be deemed that the administration with which coordination was sought has undertaken:

F/20/51  
MOD 1102     a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its space radiocommunication stations by the use of the assignment of a station of the satellite network concerned for which coordination was requested;

F/20/52  
MOD 1103     b) that its space radiocommunication stations will not cause harmful interference to the use of ~~the any~~ assignment of any station of the satellite network concerned for which coordination was requested.

F/20/53

MOD 1105

§ 15. In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of ~~its each~~ notice concerning ~~the proposed each~~ assignment to a station of the planned network by six months from the date of publication of the request for coordination under No. 1078, taking into consideration the provisions of No. 1496.

B PROPOSALS

B/35/3

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 network 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 corresponding satellite network~~ 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 network~~ might be affected.

B/35/4

MOD 1069

- c) when an administration proposes to notify or bring into use a new earth station within a service area of an existing satellite network, provided that the new earth station would not cause interference of a level greater than that which would be caused by ~~an~~ a typical earth station pertaining to the same satellite network and ~~whose characteristics which~~ has been published coordinated previously together with the information concerning the space station, in accordance with No. 1078;

B/35/5

MOD 1073

§ 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 required for the coordination. The request concerning coordination of a ~~space station or an associated earth station satellite network~~ may specify all or some of the frequency assignments expected to be used by that network space station, but thereafter each assignment shall be dealt with individually.

B/35/6 MOD 1087

§ 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~~ satellite network. 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 publish this information in a special section of its weekly circular and, when the weekly circular contains information on changes in the characteristics published, it shall so inform all administrations by circular telegram.

B/35/7

MOD 1102

- a) that no complaint will be made in respect of any harmful interference which may be caused to the service rendered by its ~~space radiocommunication stations~~ satellite network by the use of the network assignment for which coordination was requested;

B/35/8

MOD 1103

- b) that its ~~space radiocommunication stations~~ satellite network will not cause harmful interference to the use of the network assignment for which coordination was requested.

B/35/9

MOD 1105

§ 15. In the event of continuing disagreement between an administration seeking to effect coordination and one with which coordination has been sought, the administration seeking coordination shall, except in the cases where the assistance of the Board has been requested, defer the submission of its notice concerning the proposed satellite network assignment by six months from the date of publication of the request coordination under No. 1078, taking into consideration the provisions of No. 1496.

CAN PROPOSALS

CAN/60/51  
MOD

Section II Procedures for the Coordination of  
Frequencies assignments to a Space Station or a  
Geostationary Satellite or an Earth Station  
Communicating with Such a Space Station in Relation  
to Stations of Other Geostationary-Satellite Networks.

CAN/60/52  
MOD

1060 § 6.(1) Before an administration...effect  
coordination of the assignment(s) 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 networks might be affected.

CAN/60/53  
ADD

1060bis (See Document 59, CAN/59/2).

CAN/60/54  
ADD

1060A Networks to be Taken into Account

CAN/60/55  
MOD

1061 § 7. Frequency assignments to which the provisions of No. 1060 are applicable are those; Networks to be taken into account when applying the coordination procedures are those:

CAN/60/56  
MOD

1062 a) having an assignment in the same frequency band as the planned assignment(s) and in conformity with No. 1503; and

CAN/60/57  
MOD

1063 b) either recorded in the Master Register, and afforded protection, or coordinated under the provisions of this section; or for which the coordination procedures have been successfully applied or have been notified to the Board in accordance with No. 1496; or

CAN/60/58  
MOD

1064 c) to be taken into account for coordination with effect from the date of receipt by the Board, in accordance with No. 1074, of the relevant information as annotated in Appendix 3, or on which complete information in accordance with Section II of Appendix [3/4] has been received by the Board in accordance with Nos. 1043C or 1074 at the same time or earlier than the information on the network for which coordination is sought taking into account the provisions of No. 1055A.

CAN/60/59  
(MOD)

1065 d e) that have been notified to the Board... Nos. 1066 to 1071 apply.

CAN/60/60  
ADD

1065A Exemption from Coordination

CAN/60/61  
(MOD)

1066 § 8.{3} No coordination under No. 1060 is required:

CAN/60/62  
MOD

1069 c) when an administration proposes to notify or intends to bring into use...earth station would will not cause...pertaining to of the same satellite network...in accordance with No. 1078;



CAN/60/64  
(MOD)  
CAN/60/65  
MOD

1072 Coordination-Data Required for Coordination

1073 § 9. (1) For the purpose of effecting coordination...all of the information listed in Appendix 3 Section II of Appendix [3/4] required for coordination,...by that space station. but thereafter each assignment shall be dealt with individually.

CAN/60/66  
ADD

1073A (2) The information sent under No. 1073 shall contain the data on both the space station and such associated earth stations as are required for network coordination.

CAN/60/67  
ADD

1073B (3) If the request for coordination involves the use of a typical earth station, the service area within which the associated earth station will operate shall be specified.

CAN/60/68  
MOD

1074 (2) The administration requesting coordination... for coordination including with all the information listed in Appendix 3 the name(s) of the administration(s)... listed in Appendix 3 Section II of Appendix [3/4], either under this provision or...all administrations by circular telegram.

CAN/60/69  
ADD

Section IIA Special provisions relating to the coordination of the space segment

CAN/60/70  
ADD

1074B a) In the case of a change to the orbital position of a satellite, the existing position shall be protected until coordination has been successfully completed for the proposed position;

CAN/60/71  
ADD

1074C b) Once coordination is completed, however, another administration may proceed with the coordination phase of its network predicated on the use of the existing position of the satellite being relocated. This position cannot be occupied, however, until the notified date of bringing the proposed assignments into use at the new position.

CAN/60/72  
ADD

1074D c) An administration, or one acting on behalf of named administrations, shall not coordinate or bring into use different networks with overlapping time-frames for the same orbital position as part of the initial coordination procedure except as provided in No. 1504. Thereafter, each network shall be subject to separate coordination, as appropriate.

CAN/60/73  
ADD

1074E d) An administration, or one acting on behalf of named administrations, shall not, as part of the original coordination procedure, request coordination for more than one orbital position for the operational lifetime of the same satellite, or coordinate more than one satellite for the same orbital position. Thereafter, each change in orbital position shall be subject to separate coordination, as appropriate.

CAN/60/74  
ADD  
CAN/60/75  
(MOD)

1074F Action by the Board

1075 ~~§ 8.~~ § 10. On the receipt of the information referred to in Nos. 1074 and 1074A, the Board shall:

CAN/60/76  
ADD

1076A b) If, due to unavoidable circumstances, the examination of the information sent under No. 1074 is expected to take longer than three weeks, the Board shall immediately send a telegram to the administration concerned indicating the reason for the delay and when the examination is expected to be completed. It shall, at the same time, inform all administrations of the date of receipt of the information;

CAN/60/77  
MOD

1077b) c) examine the information received with a view to identifying those administrations whose services assignment(s) might be affected, ... concerned by telegram;

CAN/60/78  
ADD  
CAN/60/79  
ADD

1077A Procedure in Case of Incomplete Information

1077B § 11. If the request for coordination does not contain all of the information required, it shall be regarded as incomplete. A telegram requesting the missing information shall be sent to the responsible administration by the Board.

CAN/60/80  
ADD

1077C a) If the information requested is received by the Board within 7 days of dispatch of the telegram, the date of receipt of the original information shall be considered as the date mentioned in No. 1076. If the information is received later than 7 days, the date of receipt of the complete information shall be considered as the date of receipt.

CAN/60/81  
ADD

1077D b) If no reply is received by the Board within three months after the date on which it was requested, the information received under No. 1074 shall be returned to the administration and the Board shall inform all administrations accordingly.

CAN/60/82  
ADD

1077E If the information referred to in No. 1074 is received by the Board in accordance with No. 1043C the action required under Nos. 1076-1077C will only be initiated by the Board at the time of commencement of the formal coordination procedure referred to in No. 1055A.

CAN/60/83  
MOD

1078 e) The Board shall publish an updated version of the relevant special section of its weekly circular containing the information received under No. 1074 Nos. 1043C, 1055A, 1074 and 1077B. The result of the examination under Nos. 1076 and 1077 shall be published at the

same time, together with a reference to  
Weekly Circular in which details of the  
satellite network were published in  
accordance with Section 1 of this Article.  
When...by circular telegram.

CAN/60/84  
MOD

1080 §-9. § 12. An administration believing ... into the  
coordination procedure if its assignments conform to the appropriate  
provisions of Nos. 1061-1065. Such a request ... as soon as possible.

CAN/60/85  
(MOD)

1082 § 10. § 13.

CAN/60/86  
MOD

1084 §-11. § 13.(1) On receipt of the  
coordination data...be caused to the services rendered  
by its stations assignments in respect of which  
coordination is sought under No. 1060 or caused by  
these stations assignments. In so doing...  
Appendix 3[3/4] which have not ...also be sent to the  
Board.

CAN/60/87

MOD

1084.1 1 The calculation methods and criteria to be  
employed...the methods and criteria shall be either  
agreed between the administration concerned or as  
defined in the Radio Regulations. Such agreements...  
to other administrations.

CAN/60/88  
MOD

1087 § 12. § 14(1) An administration... of its frequency assignment(s). 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 publish this information in a special section of its weekly circular and, when the weekly circular contains information or changes in the characteristics published, it shall so inform all administrations by circular telegram.

CAN/60/89  
ADD

1087A (2) In the case where the request for coordination was submitted in accordance with No. 1043C, it shall communicate to the Board, on expiry of the period of four months following the date established under the provisions of No. 1055A for network protection purposes, the names of the administrations with which agreement has been reached and any change in the characteristics of its frequency assignment(s).

CAN/60/90  
ADD

1087B (3) It shall also inform the Board of the progress made in effecting coordination with any other administration considered to be affected or of any difficulties encountered. Thereafter, the Board shall be informed every six months as to the status of the matter.

CAN/60/91  
ADD

1087C (4) The Board shall publish the information received under Nos. 1087-1087B as an update to the relevant special section of its weekly circular and when the weekly circular contains information on changes in the characteristics published, it shall so inform all administrations by circular telegram.

CAN/60/92  
ADD  
CAN/60/93  
ADD

1087D Amendments to the Coordination Information

1087E § 15. a) Either the administration seeking agreement or the administration(s) with which agreement is sought may modify the characteristics of its satellite networks.

CAN/60/94  
ADD

1087F b) Where such modifications affect the assignment(s) of an administration not previously affected or for which the complete coordination information was received by the Board under Nos. 1074 and 1077B, as

appropriate, or No. 1043C when the period specified in No. 1043D has expired, a request for coordination shall be sent to such administrations by the administration seeking agreement. A copy of the request shall be sent to the Board at the same time.

CAN/60/95  
ADD

1087G c) The request for coordination shall be examined by the Board and published as an update to the relevant special section of its weekly circular. The administrations with assignments which might be affected will be so identified by the Board and they will have four months in which to respond. The provisions of Nos. 1081-1087 shall be applied, as appropriate, with respect to the modification(s).

CAN/60/96  
ADD

1087H e) Where the request for coordination has been published under No. 1087C, the modified characteristics will be taken into account by the Board when applying the provisions of No. 1087G.

CAN/60/97  
(MOD)

1089     ~~§ 13~~     § 16.(1)

CAN/60/99  
(MOD)

1094 (2) In so doing, the administration shall furnish provide the Board with the necessary information to enable the Board to endeavour to effect help it effect such coordination.

CAN/60/100  
(MOD)

1095     Action to be Taken by the IFRB Board

CAN/60/101  
(MOD)

1096     ~~§ 14.~~     § 17.

CAN/60/102  
MOD

1100 (5) The Board may request additional information which it may require to assess the interference to the services assignments concerned.

CAN/60/103  
MOD

1102 a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its space radiocommunications its assignments by the use of the assignments for which coordination was requested.

NOC  
CAN/60/104  
MOD

1103-1104

1105 ~~S-15.~~ § 19. In the event of continuing disagreement...has been sought, and when the latter administration has sent its objection within four months of the date of publication of the coordination information under No. 1078 or the date established for network protection under No. 1055A in the case of coordination information submitted under No. 1043C, the administration seeking coordination shall...the provisions of No. 1496.

LUX PROPOSALS

LUX/126/14

MOD 1060

s 6. (1) Before an administration (or, ~~in--the--case--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 geostationary satellite, might be  
affected.

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.

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.

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--circular--telegram.~~

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~~  
The 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;

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.~~



LUX/126/19

MOD 1084

§ 11. (1) On receipt of the coordination data, an administration shall promptly examine the matter with regard to interference<sup>1</sup> 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.

LUX/126/20

MOD 1087

§ 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, it shall so inform all administrations by circular telegram.~~

LUX/126/21

MOD 1096

§ 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.

LUX/126/22

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.

LUX/126/23

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 within thirty days of receipt the administrations concerned of the results obtained.

A N N E X     3

CAN/60/105  
MOD

Section III. Coordination of Frequency Assignments to  
an Earth Station Operating in Both Geostationary and  
Non-Geostationary Satellite Networks in Relation to  
Terrestrial Stations

CAN PROPOSALS

CAN/60/106  
MOD

1107     ~~S -16.~~     S 20.(1) Before an  
administration... ~~but thereafter~~-each assignment shall  
be dealt with individually.

CAN/60/107  
ADD

1109A b) to bring into use an earth station the  
characteristics of which do not increase the  
interference to the terrestrial radiocommuni-  
cations of other administrations beyond that  
agreed at the time of network coordination;

CAN/60/108  
(MOD)  
CAN/60/109  
(MOD)

1110b) c)  
1111e) d) to operate a mobile earth station.  
However, if the coordination area  
associated with the operation of such a  
mobile earth station...to agreement on  
~~coordination~~ between the administrations  
concerned. This agreement shall apply  
either to the characteristics of the mobile  
earth station(s), or to the characteris-  
tics of a typical mobile earth station,  
within shall apply to a specified service  
area. Unless otherwise stipulated...  
provided that interference caused by them  
shall not...appear in the notice and have  
been or are being submitted in accordance  
with No. 1494.

CAN/60/110  
ADD

1111A to bring into use a new frequency assignment to  
a receiving earth station and the notifying adminis-  
tration states that it accepts the interference  
resulting from the assignments to terrestrial stations  
for which the procedures of Section IV have been  
successfully applied.

CAN/60/111  
MOD  
CAN/60/112  
MOD

1112 Coordination Data Required for Coordination

1113 ~~§ 17.~~ § 21. For the purpose of effecting ~~coordination~~. The administration requesting ~~coordination~~ seeking agreement shall send to each administration concerned under No. 1107...as listed in Appendix 3 Section II of Appendix [3/4], and an indication...also be sent ~~for the information of~~ to the Board for information.

CAN/60/113  
(MOD)

1115 ~~§ 18.~~ § 22.

CAN/60/114  
(MOD)

1117 ~~§ 19.~~ § 23.

NOC  
CAN/60/115  
MOD

1118-1129

1118.1 and 1119.1 <sup>1</sup>The calculation method to be employed...the methods and criteria shall be either agreed between the administrations concerned or as defined in the Radio Regulations. Such agreements...to other administrations.

CAN/60/116  
(MOD)

1130 ~~§-20,~~ § 24.

CAN/60/117  
MOD

1146 ~~§ 22.~~ § 25. In the event of continuing disagreement...has been sought, and when the latter administration has sent its objection within four months of the date of dispatch of the coordination information under No. 1113, the administration...the provisions of No. 1496.

JAPAN PROPOSAL

J/53/9

MOD 1109 a) to bring into use an earth station or to change the location of an earth station, when the coordination area includes any of the territory of any other country, the coordination area of which does not include any of the territory of any other country is included in the coordination area of which has previously been completed in accordance with No.1107;

B PROPOSAL

B/35/10

ADD 1111A

d) to bring into use a receiving earth station for which the administration accepts the interference that may be caused by terrestrial stations.

S PROPOSAL

S/55/25

MOD 1107

§16. (1) Before an administration notifies to the Board or brings into use any frequency assignment to an earth station, whether for transmitting or receiving, in a particular band allocated with-equal-rights to space and terrestrial radiocommunication services in the frequency spectrum above 1 GHz, it shall, except in the cases described in Nos. 1108 to 1111, effect coordination of the assignment with each administration whose territory lies wholly or partly within the coordination area<sup>1</sup> of the planned earth station. The request for coordination concerning an earth station may specify all or some of the frequency assignments of the associated space station, but thereafter each assignment shall be dealt with individually.

A N N E X 4

Section IV. Coordination of Frequency Assignments to a Terrestrial Station  
for Transmission in Relation to an Earth Station

CAN PROPOSALS

CAN/60/118  
(MOD) 1148 ~~§ 23.~~ § 26.

CAN/60/119  
(MOD) 1159 ~~Coordination~~ Data Required for Coordination

CAN/60/120  
(MOD) 1160 ~~§ 24.~~ § 27.

CAN/60/121  
(MOD) 1162 ~~§ 26.~~ § 28.

CAN/60/122  
MOD 1164 ~~§ 26.~~ § 29. (1) On receipt...within  
the next three years and afforded protection.

CAN/60/123  
(MOD) 1166 (3) The administration...indicate the reasons  
for therefore its objection and...solution of the  
problem.

CAN/60/124  
(MOD) 1167 ~~§ 27.~~ § 30.

CAN/60/125  
(MOD)

1169 § 28. § 31.

CAN/60/126  
MOD

1170 a) an administration...under No. 1162 within ~~thirty days~~ forty-five days of dispatch of the coordination date;

CAN/60/127  
(MOD)

1176 § 29. § 32.

CAN/60/128  
MOD

1181 (6) Where an administration fails to reply...or fails to give a decision in the matter within ~~two months~~ 30 days of dispatch...rendered by its earth station.

CAN/60/129  
MOD

1183 ~~§ 30.~~ § 33. In the event of continuing disagreement...has been sought and when the latter administration has sent its objection within four months of the date of dispatch of the coordination information under No. 1160, the administration seeking coordination shall...the provisions of Nos. 1230 and 1496.

CAN/60/130  
(MOD)

1184 ~~§ 31.~~ § 34.

CAN/60/131  
ADD

1189 (3) In the case of difficulty in the application of the coordination procedure, for example, where coordination with a number of administrations is required; lack of sufficient spectrum to meet all demands meriting consideration, etc., the Board may, on its own initiative or upon request from one of the parties concerned, and subject to the agreement of all the parties concerned, convene a meeting to effect coordination of all the proposals.

CAN/60/132  
ADD

1190 a) The Board shall provide the facilities and the technical information necessary for the meeting and provide for appropriate representation of the Board;

CAN/60/133  
ADD

1191 b) Solutions reached shall be fair and equitable taking into account, inter alia, technical, and operational constraints associated with the various networks, regulatory priorities, and, the need for administrations to provide for its minimum requirements.

CAN/60/134  
ADD

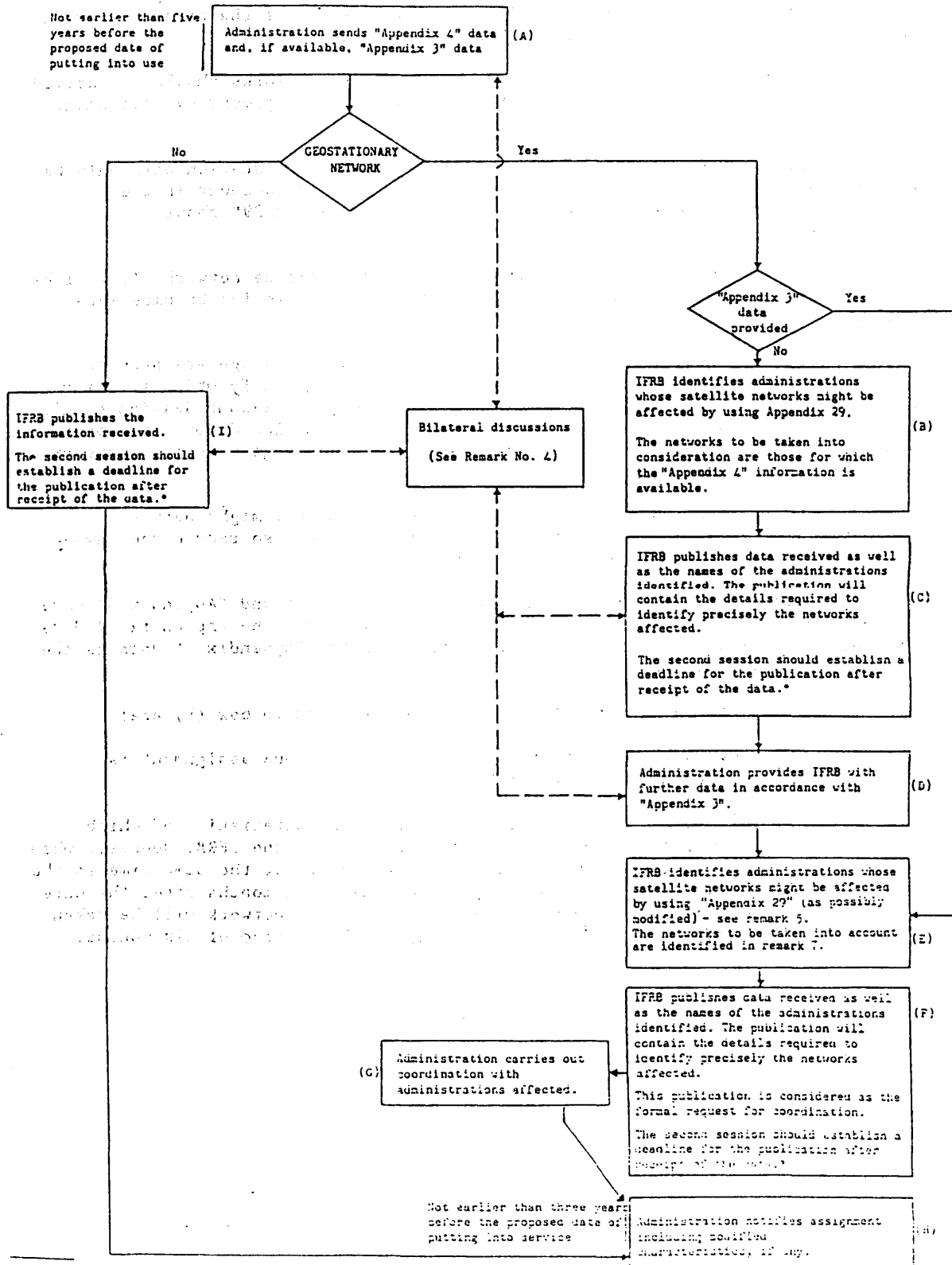
1192 (4) In providing assistance to administrations, the Board may protect identified assignments and associated orbital positions during the period required for consultation with the administration concerned. The relevant information shall be published in a special section of the weekly circular.

ANNEX 5

**Guidelines for regulatory procedures for space services  
and frequency bands not identified for planning**

**4.1 Section I: Guidelines concerning Sections I and II of Article 11**

4.1.1 The First Session of the Conference recommends that the Second Session should revise Sections I and II of Article 11 of the Radio Regulations in accordance with the following flowchart and associated remarks.



\* A period of six years was proposed.



Remarks relating to the flowchart

1. Appendices 3 and 4 are merged in order to avoid duplication of information. The first section of the merged appendix contains the information required for advance publication (referred to as "Appendix 4" data); the second section contains the information required to carry out detailed and precise calculations (referred to as "Appendix 3" data). The use of the merged Appendix in application of Article 14 should also be considered.

2. The coordination procedure between satellite networks should be carried out on the basis of a satellite network and not on an assignment-by-assignment basis.

The coordination of an earth station with a space station will only be required when its characteristics exceed those taken into account in the coordination procedure (i.e. when application of "Appendix 29" shows coordination to be necessary).

3. Only one special section is published per satellite network. It will be updated, if necessary, as the definition of the characteristics becomes more precise.

4. Bilateral discussions at the advance publication stage are presently covered by RR 1047 to RR 1053. These provisions do not specify which existing and planned assignments should be taken into account; the Second Session should consider these provisions and modify them if so decided. The Second Session is also requested to provide for the assistance the IFRB may give in the framework of the advance publication (RR 1054).

5. An "improved Appendix 29" (to be used in box (E)) might permit more precise identification of the networks affected, and so reduce the number of cases in which coordination is required.

6. When an administration communicates "Appendix 4" and "Appendix 3" data at the same time, they may be published at the same time: the "Appendix 4" data are then considered as the advance publication and the "Appendix 3" data as the request for coordination.

7. The satellite networks to be taken into account in box (E) are:

- any satellite network for which at least one assignment is recorded in the Master Register;
- any satellite network, the detailed characteristics of which ("Appendix 3" data) have been received by the IFRB. However, when this information is received by the Board at the same time as the "Appendix 4" information, or less than six months after the date of the advance publication, the satellite network will be taken into account only at the expiry of this period of six months.

8. The Second Session of the Conference shall consider retaining the principle contained in RR 1080 when reviewing Article 11.

Note - The Second Session of the Conference should consider how to deal with any modification to the characteristics communicated under the advance publication or the coordination procedures.

4.1.2 The First Session of the Conference noted that a change of orbit location may lead to a situation where a given satellite may be afforded protection in more than one orbit location, thus causing difficulties for other administrations in the planning, coordination and notification of their space systems. It is therefore recommended that the Second Session of this Conference should study the problem and make an appropriate decision on the matter, which may also concern Article 13.

4.1.3 The First Session of the Conference noted that in some instances different networks with overlapping time frames may be notified in a single orbit location by the same administration. This situation could lead to excessive coordination difficulties and inefficient use of the orbit/spectrum resource. The Second Session should therefore consider this problem and take an appropriate decision on this matter.

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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 DL/11-E  
6 September 1988  
Original: English

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SUB-WORKING GROUP 5-B-2

DRAFT

The text of Resolution No. 505 of WARC-79 is reproduced hereunder.

R. ZEITOUN  
Chairman of Sub-Working Group 5-B-2

Attachment

RES505-1

## RESOLUTION No. 505

**Relating to the Broadcasting-Satellite Service (Sound) in the  
Frequency Range 0.5 GHz to 2 GHz**

The World Administrative Radio Conference, Geneva, 1979,

*considering*

- a) that several administrations have made proposals concerning frequency band allocations for broadcasting-satellite service (sound) in the range 0.5 - 2 GHz;
- b) that the frequency bands presently allocated to the broadcasting-satellite service do not provide the possibility of individual reception of sound programmes by portable receivers and receivers installed in automobiles;
- c) that the introduction of the broadcasting-satellite service (sound) in the range 0.5 - 2 GHz is technically feasible and will afford the possibility of individual reception with portable and automobile receivers;
- d) that simulated experiments have confirmed certain postulations made in theoretical studies; however, no working system has yet been demonstrated;
- e) that further studies are necessary before the implementation of operational systems;
- f) that CCIR has initiated studies concerning this service in accordance with Study Programme 34B/10;
- g) that the appropriate frequency range for the service is limited at the lower end to 0.5 GHz (because of increasing man-made noise and transmit antenna size with decreasing frequency) and at the upper end to 2 GHz (because of decreasing effective area of the receive antenna with increasing frequency);

RES505-2

- h) that, because of the high power flux-density requirement, sharing with terrestrial services seems extremely difficult;

*noting*

- a) that there are proposals by administrations for the frequency range 1 429 - 1 525 MHz;
- b) that the radio astronomy service has an allocation in a lower neighbouring band and that for that reason the lower part of the band 1 429 - 1 525 MHz may not be considered for an allocation to the broadcasting-satellite service (sound);
- c) that in the experimental phase a bandwidth of a few hundred kHz would suffice;

*resolves*

1. that administrations shall be encouraged to carry out experiments with a broadcasting-satellite service (sound) within the band 0.5 - 2 GHz, in appropriately placed narrow sub-bands, subject to agreement of administrations concerned. One area where such a sub-band may be placed is the band 1 429 - 1 525 MHz;
2. that the CCIR shall continue and expedite studies relating to the technical characteristics of a satellite sound-broadcasting system for individual reception by portable and automobile receivers, the feasibility of sharing with terrestrial services, and the appropriate sharing criteria;
3. that the next world administrative radio conference dealing with space radiocommunication services in general or with a specific space radiocommunication service shall be authorized to consider the results of various studies and to take appropriate decisions regarding the allocation of a suitable frequency band;
4. that the aforementioned conference shall also develop appropriate procedures for protection, and if necessary re-accommodation in other bands, of assignments to stations of terrestrial services which may be affected.

# 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 DL/12-E

6 September 1988

Original: English

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SUB-WORKING GROUP 5-B-1

DRAFT

As agreed at the first meeting of Sub-Working Group 5-B-1, the text of Resolution No. 2(Sat-R2) is reproduced hereunder.

S. SELWYN  
Chairman of Sub-Working Group 5-B-1

Attachment: 1

RESOLUTION No. 2(Sat-R2)

Relating to Interim Systems

The Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983,

*considering*

- a) that it has prepared a Plan for the broadcasting-satellite service in Region 2 in the band 12.2 - 12.7 GHz and a Plan for the associated feeder links in the band 17.3 - 17.8 GHz on the basis of the requirements submitted by administrations and of the technological information available to it;
- b) that in the implementation of their assignments in the Plans, the administrations may find it more appropriate to adopt a phased approach and initially to use characteristics different from those appearing in the Plans;
- c) that some administrations may cooperate in the joint development of a space system with a view to covering two or more service areas from the same orbital position or to using a beam which would encompass two or more service areas;
- d) that some administrations may cooperate in the joint development of a space system with a view to covering two or more feeder-link service areas from the same orbital position or to using a beam which encompasses two or more feeder-link service areas;
- e) that there may be some advantage in using interim systems as a phased approach to implementing the assignments in the Plans on condition that the use of such systems does not lead to a degradation of the service rendered by the assignments in the Plans unless coordinated between the administrations concerned and affected;
- f) that interim systems shall not adversely affect the Plans nor hamper the implementation and evolution of the Plans;
- g) that the number of assignments to be used in an interim system shall not in any case exceed the number of assignments appearing in the appropriate Plan which are to be suspended;
- h) that an interim system shall not be introduced without the agreement of all the administrations whose space and terrestrial services are considered to be affected;

*resolves*

that the administrations and the IFRB shall apply the procedure contained in the Annex to this Resolution;

*recommends the First Session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It, Geneva, 1985*

1. to consider and adopt the *resolves* part of this Resolution in order to apply it to all countries of Region 2;
2. to instruct the IFRB to publish the interim uses introduced in application of Resolution No. 1(Sat-R2) in a special section of its weekly Circular in order to enter them in the Interim List referred to in paragraph 11 of the Annex to this Resolution.

ANNEX TO RESOLUTION No. 2(Sat-R2)

1. An administration or a group of administrations may, after successful application of the procedure contained in this Annex, use an interim system during a specified maximum period not exceeding 12 years in order:

1.1 *for an interim system in the broadcasting-satellite service*

- a) to use an increased e.i.r.p. in any direction relative to that appearing in the Plan provided that the power flux-density does not exceed the limits given in Annex 5 to Part I of the present Final Acts;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the Plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;
- c) to change the coverage area by displacing boresight, or by increasing the major or minor axis or by rotating them;
- d) to use a coverage area appearing in the Plan or a coverage area encompassing two or more coverage areas appearing in the Plan from an orbital position which shall be one of the corresponding orbital positions appearing in the Plan;
- e) to use a polarization different from that in the Plan.

1.2 *for an interim feeder-link system*

- a) to use an increased e.i.r.p. in any direction relative to that appearing in the Plan;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the Plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;
- c) to change the feeder-link beam area by displacing boresight, or by increasing the major or minor axis or by rotating them;
- d) to use a feeder-link beam area appearing in the Plan or a feeder-link beam area encompassing two or more feeder-link beam areas appearing in the Plan in relation to an orbital position which shall be one of the corresponding orbital positions appearing in the Plan;
- e) to use a polarization different from that in the Plan.

2. In all cases, an interim system shall correspond to assignments in the Plan(s); the number of assignments to be used in an interim system shall not in any case exceed the number of assignments appearing in the Plan(s) which are to be suspended. During the use of an interim system, the use of the corresponding assignments in the Plan(s) is suspended; they shall not be brought into use before the cessation of use of the interim system. However, the suspended assignments, but not the interim system's assignments, of an administration shall be taken into account when other administrations apply the procedure of Article 4 of Part I or Part II of these Final Acts, as appropriate, in order to modify the Plan(s) or the procedure of this Annex in order to bring an interim system into use.

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<sup>1</sup> For example, modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics.

3. When an administration proposes to use an assignment in accordance with paragraph 1, it shall communicate to the IFRB the information listed in Annex 2 to Part I or Part II of these Final Acts as appropriate nor earlier than five years but, preferably, not later than twelve months before the date of bringing into use. The administration shall also indicate:

- a) the maximum specified period during which the interim assignment is intended to remain in use;
- b) the assignment(s) in the Plan(s) the use of which will remain suspended for the duration of use of the corresponding interim assignment;
- c) the names of the administrations with which an agreement for the use of the interim assignment has been reached, together with any comment relating to the period of use so agreed and the names of administrations with which an agreement may be required but has not yet been reached.

4. An administration is considered to be affected:

4.1 *for an interim system in the broadcasting-satellite service*

- a) if any overall equivalent protection margin of one of its assignments in the Plan, calculated in accordance with Annex 5 to Part I of these Final Acts, including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 3b), becomes negative or a former negative value is made more negative;
- b) if it has a frequency assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations, or which has been published in accordance with No. 1044 of the Radio Regulations or of paragraph 7.1.3 of Part I of these Final Acts and the appropriate limits of Annex 1 to Part I of these Final Acts are exceeded;
- c) if, although having no frequency assignment in the broadcasting-satellite service in the channel concerned, it nevertheless would receive on its territory a power flux-density value which exceeds the limits given in Annex 1 to Part I of these Final Acts as a result of the proposed interim assignment;
- d) if in countries of Region 1 having a frequency assignment to a space station in the broadcasting-satellite service with a necessary bandwidth any portion of which falls within the necessary bandwidth of the proposed assignment, and which is in accordance with the Plan contained in Appendix 30 to the Radio Regulations or in respect of which modifications have been published by the Board in accordance with the provisions of that Appendix and the appropriate limits of Annex 1 to Part I of these Final Acts are exceeded;
- e) if it has a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 to 12.7 GHz in Region 3 with a necessary bandwidth any portion of which falls within the necessary bandwidth of the proposed assignment, and which:
  - is recorded in the Master Register; *or*
  - has been coordinated or is being coordinated under the provisions of Resolution No. 33 of the World Administrative Radio Conference, Geneva, 1979; *or*
  - appears in a Region 3 plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference,

and the appropriate limits of Annex 1 to Part I of the present Final Acts are exceeded.



4.2 *for interim feeder-link systems*

- a) if any overall equivalent protection margin of one of its assignments in the Plan, calculated in accordance with Annex 3 to Part II of these Final Acts, including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 3.b), becomes negative or a former negative value is made more negative;
- b) if it has a frequency assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations and the appropriate limits of Annex 1 to Part II of these Final Acts are exceeded;
- c) if it has a frequency assignment in the band 17.7- 17.8 GHz to a terrestrial station, in use or intended to be brought into use within three years of the projected date of bringing into use of the feeder-link earth station, which is located within the coordination area of the feeder-link earth station concerned and the appropriate limits of Annex 1 to Part II of these Final Acts are exceeded;

5. The Board shall publish in a special section of its weekly circular the information received under paragraph 3, together with the names of the administrations it has identified in application of paragraph 4.

6. When the Board finds that the suspended assignment of an administration having an interim system is not affected, it shall examine the projected interim system with respect to the interim system of that administration and if there is an incompatibility, it shall request the two administrations concerned to adopt any measures that may enable the new interim system to be operated.

7. The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

8. Any administration not listed in the special section which considers that its planned interim assignment may be affected shall so inform the administration responsible for the interim system and the Board, and the two administrations shall endeavour to resolve the difficulty before the proposed date of bringing the interim assignment into use.

9. An administration which has not sent its comments either to the administration seeking agreement or to the Board within a period of four months following the date of the weekly circular referred to in paragraph 5 shall be understood as having agreed to the proposed interim use.

10. On the expiry of four months following the date of publication of the weekly circular referred to in paragraph 5, the Board shall review the matter and, depending on the results obtained, shall inform the administration proposing the interim assignment that:

- a) it may notify its proposed use under Article 5 of Part I or Part II of these Final Acts, as appropriate, if no agreement is required or the required agreement has been obtained from the administrations concerned. In this case the Board shall update the Interim List;
- b) it may not bring into use its interim system before having obtained the agreement of the administrations affected, either directly or by applying the procedure described in Article 4 of Part I or Part II of these Final Acts, as appropriate, as a means of obtaining that agreement.

11. The Board shall include all the interim assignments in an Interim List in two parts, one each for the broadcasting-satellite service and the feeder-link assignments, and shall update it in accordance with this Annex. The Interim List shall be published together with the Plans but does not constitute part of them.

12. One year prior to the expiry of the interim period, the Board shall draw the attention of the administration concerned to this fact and request it to notify in due time the deletion of the assignment from the Master Register and the Interim List.

13. If, notwithstanding the reminders by the Board, an administration does not reply to its request sent in application of paragraph 12, the Board shall, at the termination of the interim period:

- a) enter a symbol in the Remarks Column of the Master Register to indicate the lack of response and that the entry is for information only;
- b) not take into account that assignment in the Interim List;
- c) inform the administrations concerned and affected of its action.

14. Where an administration confirms the termination of the use of the interim assignment, the Board shall delete the assignment concerned from the Interim List and the Master Register. Any corresponding assignment in the Plan(s), suspended earlier, may then be brought into use.

15. An administration which considers that its interim system may continue to be used after the expiry of the interim period may extend it by not more than two years and to this effect shall apply the procedure described in this Annex.

16. Where an administration applies the procedure in accordance with paragraph 15, but was unable to obtain the agreement of one or more affected administrations, the Board shall indicate this situation by inserting an appropriate symbol in the Master Register. Upon receipt of a complaint of harmful interference, the administration shall immediately cease operation of the interim assignment.

17. Where an administration, having been informed of a complaint of harmful interference, does not cease transmission within a period of thirty days after the receipt of complaint, the Board shall apply the provisions of paragraph 13.

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SUB-WORKING GROUP 6-B-1

Draft

FIRST REPORT OF SUB-WORKING GROUP 6-B-1  
TO WORKING GROUP 6-B

The Sub-Working Group has held three meetings during which a general presentation of all proposals relating to the provisions of Article 11 was firstly carried out.

Following the consideration of the detailed proposals the Sub-Working Group reached the following conclusion regarding the wording of the introductory part of Article 11, Section I:

|       |            |   |
|-------|------------|---|
|       | ARTICLE 11 |   |
| [NOC] | [          | Coordination of Frequency Assignments to Stations in<br>a Space Radiocommunication Service Except Stations in<br>the Broadcasting-Satellite Service<br>and to Appropriate Terrestrial Stations <sup>1</sup> |
|       | ]          |   |

Remarks by the Chairman of Sub-Working Group 6-B-1: The title will be kept within square brackets pending decision on the final structure and content of Article 11(Rev.).

NOC      Section I. Procedures for the Advance Publication of  
Information on [Planned] Satellite Networks<sup>2</sup>

Remarks by the Chairman: The attention of the Editorial Committee should be drawn to the use of the English word "planned" here and elsewhere in the text of Article 11 with a view to avoid any confusion which could be caused with respect to planned allotment, planned band, etc. The problem does not exist in the French text.

MOD    A.11.1                    <sup>1</sup> For the coordination of frequency assignments to  
stations in the broadcasting-satellite service and other services  
in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and  
11.7 - 12.5 GHz (in Region 1), see also Article 15.

NOC    A.11.2                    <sup>2</sup> These procedures may be applicable to stations      on-  
board satellite launching vehicles.

MOD 1042 § 1. (1) An administration (or one acting on behalf of a group of named administrations) which intends to bring into use a satellite network within a satellite system [having to use the frequency bands not adopted for planned allotments] shall, prior to the coordination procedure in accordance with No. [1060] where applicable, send to the International Frequency Registration Board, not earlier than [five\*] [six\*] 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 [ ]. [The date of publication of the special section referred to in No. [1044] shall be the date of reference from which the elapsed time is to be determined.] [The date of initially bringing into use of the satellite network may be extended subject to the provisions of No. [1550 MOD].]

Remarks by the Chairman: The time frame of five or six years will be reconsidered in light of the decision relating to proposals for MOD 1550.

MOD 1043 (2) [Any] [All] amendments to the information sent concerning a [planned] satellite system in accordance with No. 1042 shall also be sent to the Board as soon as they become available. [Should the Board conclude that the modifications are of such a nature as to significantly change the character of the network, then the Board shall advise the administration concerned to recommence the advance publication procedure.]

Remarks by the Chairman: The attention of the Editorial Committee should be drawn to the appropriateness of the English word "any" as compared to the corresponding French wording.

The concluding sentence within square brackets is a kind of compromise following extensive discussions of proposals CAN/60/16 and others. It was concluded that there was no need to list, within the framework of Article 11, details regarding amendments which may be considered as major. The Board, should be permitted a certain flexibility and freedom in interpretation in their application of the various provisions of the Radio Regulations.

L. SONESSON  
Chairman of Sub-Working Group 6-B-1

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\* A cross-reference to RR 1550 is necessary.

Draft

POWER CONTROL

BSS FEEDER-LINK POWER CONTROL

including

Annex 1: Examples of permitted power control

Annex 2: Calculation method for other orbit positions

### Objectives

Ideally power control would:

- 1) fully compensate all rainfalls;
- 2) cause no interference to others;
- 3) be simple procedurally;
- 4) be practically feasible;
- 5) be available now.

Some of the objectives appear to conflict. Some compromise, or risk, may be necessary.

### Options

The options available include the methods:

- a) as described in the report of the First Session of the Conference;
- b) as described in the Joint Interim Working Party report;
- c) as adopted for the Region 2 plan;
- d) as described in Document 49 (Australia);
- e) as described in Document 54 (Japan).

Option A (First Session) has a limited range of control but may be adequate.

Option B (JIWP) has a wider range but may be more complex procedurally.

Option C (Region 2) is very simple and available now but is not applicable at elevation angles below 40°.

Option D (Australia) gives another calculation method for the permitted range of control but may not protect other links from interference.

Option E appears to give the biggest range of control and to safeguard other feeder links. It may not be amenable to a simple procedure and cannot be calculated on the existing IFRB software during the Conference or without knowing the feeder-link locations.

In order to help judge its effect once the IFRB software can be modified and when the feeder-link locations are known some examples are given below (see Annex 1).

### Practical limitations

From a practical viewpoint it is evident that a higher e.i.r.p. than that of the Plan would involve larger antennas than 5 metres in diameter. For example, a 10 dB increase would imply an antenna diameter of 15 metres approximately.

To limit interference to other orbit positions the off-axis antenna performance must be defined. A simple  $32-25 \log \theta$  rule may be sufficient for the co-polar performance but it may be necessary to define the cross-polar performance off-axis

also. It may be appropriate to define that radiometer measurements be used to determine the instantaneous rain attenuation. Measurements of the down log attenuation, in a different frequency band, may be considered insufficiently accurate to be used to determine the level of interference to others.

#### A possible procedure

If this approach is to be adopted the procedure would appear to be:

1) An administration wishing to introduce power control would notify the IFRB and give the feeder-link location, the proposed antenna characteristics, including off-axis performance, would also be needed both for co-polar and cross-polar performance.

2) The IFRB would calculate the theoretical increase in power which could be used without affecting other satellites sharing the same orbit location.

The formula to be used is:

$$\Delta P_i = R_i \cdot \frac{1}{1 + \frac{A}{\frac{1}{XPI_{sat}} + \frac{1}{XPI_{es}}}}$$

$\Delta P_i$ : maximum permissible power increase of earth transmitter by power control.

$A$ : coefficient of depolarization due to rain as expressed in the following equation:

$A = 10^{-(XPD/10)}$ , where  $XPD$  is the rain depolarization, in dB, as a function of rain attenuation and elevation angle;

$XPI_{sat}$ : ratio of co-polar ( $G_{rcwi}$ ) to cross-polar ( $G_{rxwi}$ ) components of the wanted-satellite receiving antenna in the direction of the interfering earth station as expressed in the following equation:

$$XPI_{sat} = G_{rcwi} / G_{rxwi}$$

$XPI_{es}$ : ratio of co-polar ( $G_{ici}$ ) to cross-polar ( $G_{ixi}$ ) components of the interfering earth-station transmitting antenna in the direction of the wanted-satellite as expressed in the following equation:

$$XPI_{es} = G_{ici} / G_{ixi}, \text{ where this value is constant for co-located satellites.}$$

$R_i$ : rain attenuation on the wanted link.

If the feeder-link channel assignment is the same or if plural interfered satellites in the adjacent channel are assumed, the value of  $\Delta P_i$  for each interfered satellite shall be calculated and the minimum  $\Delta P_i$  value shall be used.

The formula can be expressed in dB as follows:

$$\Delta P = A_p - 10 \log \left[ 1 + \frac{\cos^4 \theta - f^{-3} - A_p^a}{\frac{XPI_{sat}}{0.79} + \frac{XPI_{es}}{0.79}} \right] \text{ (dB)}$$

$\Delta P$ : maximum permissible power increase of earth transmitter by power control in dB.

- $\theta$ : elevation angle of the earth station in degrees.
- $A_p$ : rain attenuation at the earth station concerned in dB.
- $XPI_{es}$ : the difference (dB) between co-polar gain and cross-polar gain of the earth station antenna in the direction of the interfered satellite, for co-located satellite (including slight separation)  $XPI_{es} = 30$  dB.
- $XPI_{sat}$ : the difference (dB) between co-polar gain and cross-polar gain of the interfered-with satellite in the direction of the earth station concerned. (Beam parameters and reference patterns of satellite receiving antenna should be those decided in the Plan).

The value for  $R_i$ , rain attenuation, would be that given by the CCIR for the rain zone of the feeder-link location. 1% or 0.1% time may be used but a maximum power increase of [10 dB] would be imposed.

3) The IFRB would then calculate the interference to all other feeder links according to the calculation in Annex 2 and compare the resulting EPM with the clear sky value given in the Plan. Any increase greater than 0.5 dB would not be allowed.

4) The IFRB would notify the submitting administration the maximum power increase which may be used and would notify those other administrations whose EPM is increased by 0.5 dB.

Subsequent requests for power control may be acceptable on the assumption that the interference may not be correlated.

B. SALKELD  
Chairman of Sub-Working Group 5-A-2  
ad hoc 2



ANNEX 1

Examples of permitted power control

Administration A

Location of earth station: (Tokyo)

Longitude 139.7°E

Latitude 35.7°N

Rain zone M

Elevation 38°

\*

\* \*

Co-located satellite suffering interference beam parameters:

Boresight 127.5°E 36.0°N

Elliptical beam 1.84° x 1.02°

Tilt angle 168°

Frequency 17.32748 GHz

\*

\* \*

Calculation:

$$XPI_{es} = 30 \text{ dB}$$

$$XPI_{sat} = 14 \text{ dB}$$

Case 1 - rain attenuation (99% worst month)

$$R_i = 5.8 \text{ dB (WARC ORB-85 model)}$$

Therefore

$$\Delta P_i = 5.3 \text{ dB (by formula)}$$

Case 2 - rain attenuation (99.9% worst month)

$$R_i = 19.1 \text{ dB (5.8 dB x 3.3)}$$

Therefore

$$\Delta P_i = 14.7 \text{ dB (by formula)}$$

The conclusion by the IFRB in this case would be that the maximum power increase would be [10 dB].

ANNEX 2

Calculation method for other orbit position

The C/I equation is given in equation 8 of Report 952:

$$\frac{C}{I_u} = \frac{P_w}{P_i} \cdot \frac{L_i}{L_w} \cdot \frac{R_i}{R_w} \cdot \frac{G_{rcww}}{G_{rcwi}} \cdot \frac{1}{A + \frac{1}{XPI_{sat}} + \frac{1}{XPI_{es}}}$$

where

$P_w$ : e.i.r.p. at the interfered-with earth station;

$P_i$ : e.i.r.p. at the earth station concerned, including power increase by power control;

$L_w$ : free space loss on the interfered-with path;

$L_i$ : free space loss on the feeder link concerned;

$R_w$ : rain attenuation on the interfered-with path; for [99% of worst month] decided in the Conference

$R_i$ : rain attenuation on the feeder link concerned;

$G_{rcww}$ : co-polar component of the interfered-with satellite receiving antenna in the direction of the interfered-with earth station; (reference patterns of the antenna should be those decided in the Conference)

$G_{rcwi}$ : co-polar component of the interfered-with satellite receiving antenna in the direction of the earth station concerned; (reference patterns of the antenna should be those decided in the Conference)

$A$ : coefficient of depolarization due to rain as expressed in the following equation:

$A = 10^{-XPD/10}$ , where XPD is the rain depolarization given in § 6.2.2.17.2 OF WARC ORB(1) report, in dB, as a function of rain attenuation and elevation angle;

$XPI_{sat}$ : ratio of co-polar ( $G_{rcwi}$ ) to cross-polar ( $G_{rxwi}$ ) components of the interfered-with satellite receiving antenna in the direction of the earth station concerned as expressed in the following equation:

$$XPI_{sat} = G_{rcwi}/G_{rxwi}$$

XPI<sub>es</sub>: ratio of co-polar ( $G_{tci}$ ) to cross-polar ( $G_{txi}$ ) components of the transmitting antenna of the earth station concerned in the direction of the interfered-with satellite as expressed in the following equation:

XPI<sub>es</sub> =  $G_{tci}/G_{txi}$ , where this value is constant for co-located satellites.

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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 DL/15-E

8 September 1988

Original: English

SUB-WORKING GROUP 5-B-2

AD HOC 1

Draft

AGENDA ITEM 9

### DECISIONS CONCERNING THE VARIOUS ASPECTS OF SATELLITE SOUND-BROADCASTING SYSTEMS

This document contains the text of the specific proposals (made to the Conference by administrations) which call for a conference to allocate a specific band for satellite sound-broadcasting systems.

P. SHELSWELL

Chairman of Sub-Working Group 5-B-2 ad hoc 1

CEPT/40/1  
ADD

RECOMMENDATION [A]

Relating to a Review of Frequency Allocations  
in the Range 0.5 - 3 GHz

The World Administrative Radio Conference on the Use of the  
Geostationary-Satellite Orbit and the Planning of Space Services Utilizing  
It, Geneva, 1988,

considering

- a) that the World Administrative Radio Conference, Geneva 1979  
(WARC-79), adopted Resolution No. 505;
- b) that satellite sound-broadcasting is technically feasible;
- c) that there will be a need for broadcasting-satellite (sound)  
services for individual reception with low cost, portable and mobile  
receivers with simple antennas, in rural and urban areas;
- d) that several administrations made proposals to the WARC-79  
concerning frequency band allocations for broadcasting-satellite service  
(sound) in the range 0.5 - 2 GHz;
- e) that, at the CPM (1984), the CCIR indicated that further work  
would be needed to define the system parameters;
- f) that studies to date have shown that accommodation of the  
broadcasting-satellite service (sound) in the frequency range 0.5 - 2 GHz  
or nearby is likely to cause considerable sharing difficulties with other  
services, and that implementation of such a service may not be possible  
unless an appropriate frequency band is allocated on an exclusive basis;
- g) that currently it is not possible to allocate an exclusive band in  
the range 0.5 - 3 GHz to the broadcasting-satellite service (sound) on a  
world-wide basis;
- h) that recent studies and developments have shown that the  
application of advanced digital modulation techniques may facilitate  
band-sharing with other radio services;
- i) that, nevertheless, due to the planning constraints which would  
result from band-sharing, there is a strong preference for an exclusive  
allocation to the broadcasting-satellite (sound) service within the  
frequency range 0.5 - 3 GHz;
- j) that due consideration should also be given to the provision of  
the necessary associated feeder links to the broadcasting-satellite  
(sound) service;
- k) that more time is required to design and plan a sound-broadcasting  
system which might be introduced in the early part of the next century  
and, where necessary to plan and effect the re-accommodation of existing  
services;

- 1) that this Conference was not empowered to make the necessary changes to Article 8 of the Radio Regulations in order to facilitate the introduction of the broadcasting-satellite (sound) within the band 0.5 - 3 GHz;

noting

that the World Administrative Radio Conference for High Frequency Broadcasting, Second Session, Geneva 1987, has in Recommendation COM5/A already raised the question of a future world administrative radio conference to review and as necessary revise the Table of Frequency Allocations in the high frequency portion of the spectrum; and that the World Administrative Radio Conference for the Mobile Services, Geneva, 1987, in Recommendation COM4/14 has also raised the question of a world administrative radio conference to be held not later than 1992, to consider a partial revision of the frequency allocation table in the range 1 - 3 GHz;

further noting

that the parameters for satellite sound-broadcasting are similar to those for mobile-satellite services and hence a similar frequency range can be considered;

recommends

that the Plenipotentiary Conference, 1989, should take appropriate steps for the convening of a world administrative radio conference, not later than 1992, to revise certain parts of the frequency allocation table in Article 8 of the Radio Regulations in the range 0.5 - 3 GHz with a view to providing if practicable the necessary allocation for the broadcasting-satellite service (sound), which should preferably be located in the band 0.5 - 2 GHz, and to make appropriate provisions for the associated feeder links;

further recommends

that this Recommendation is brought to the attention of the Administrative Council.

AUS/49/43

MOD

RESOLUTION 505 (Rev.Orb-88)\*

NOC Relating to the Broadcasting-Satellite Service (Sound)  
in the Frequency Range 0.5 to 2 GHz

MOD The World Administrative Radio Conference ~~Geneva, 1979,~~ on the Use  
of the Geostationary-Satellite Orbit and the Planning of Space Services  
Utilizing It. Geneva, 1988.

considering

SUP a)

(MOD) ~~b)~~ a) that the frequency bands presently allocated to the broadcasting-satellite service do not provide the possibility of individual reception of sound programmes by portable receivers and receivers installed in automobiles;

(MOD) ~~e)~~ b) that the introduction of the broadcasting-satellite service (sound) in the range 0.5 - 2 GHz is technically feasible and will afford the possibility of individual reception with portable and automobile receivers;

MOD ~~d)~~ c) that ~~simulated~~ experiments have confirmed certain postulations made in theoretical studies ~~however, no working system has yet been demonstrated;~~

NOC e) that further studies are necessary before the implementation of operational systems;

MOD ~~f)~~ d) that CCIR has ~~initiated~~ conducted studies concerning this service in accordance with Study Programme 34B/10;

(MOD) ~~g)~~ f) that the appropriate frequency range for the service is limited at the lower end to 0.5 GHz (because of increasing man-made noise and transmit antenna size with decreasing frequency) and at the upper end to 2 GHz (because of decreasing effective area of the receive antenna with increasing frequency);

SUP h)

ADD g) that Resolution No. 505 of the World Administrative Radio Conference, Geneva, 1979 empowered the next competent conference to make an allocation in the Table of Frequency Allocations for the broadcasting-satellite (sound) service;

ADD h) that Recommendation No. 2 of the First Session of this Conference (WARC ORB(1)) instructed the Second Session to consider the results of various up-to-date studies and to take appropriate decisions concerning the various aspects of satellite sound-broadcasting;

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\* Replaces Resolution No. 505 of the World Administrative Radio Conference, Geneva, 1979.

ADD i) that the CCIR has provided this Conference with a report on its studies into the broadcasting-satellite (sound) service;

recognizing

ADD a) that, due to propagation factors, it is advisable to consider a frequency band allocation for this purpose in the range 0.5 - 2.0 GHz;

ADD b) that steeply incident satellite signals lead to high elevation angles of receiving antennas which has the advantage of reduced fading margins (and consequently lower satellite powers) and less blocking effects to portable and mobile receivers with low-positioned antennas;

ADD c) that such a situation is particularly achieved for countries within the tropical region of the Earth, if geostationary satellites are used;

ADD d) that, for countries located at high geographical latitudes, a non-geostationary satellite system may also be considered to achieve the same advantages;

ADD e) that advanced digital modulation systems have amongst others the advantage of low transmitting powers and, consequently, a possibility of sharing with other services;

ADD f) that the amount of spectrum space required can be restricted by inter-service sharing such as the application of multi-user satellites;

noting

SUP a)

SUP b)

MOD ~~a)~~ a) that in the experimental phase a bandwidth of a few hundred kHz would suffice, but that studies by the CCIR indicate a bandwidth of the order of [ . . . . MHz] would be required for operational systems;

ADD b) that the WARC MOB-87 in Resolution No. 104 [COM4/14] recommended to the Plenipotentiary Conference, 1989, that it take appropriate steps for the convening of a world administrative radio conference, not later than 1992, to consider revising certain parts of the Table of Frequency Allocations in Article 8 of the Radio Regulations in the approximate range 1 - 3 GHz and other relevant provisions in the Radio Regulations with a view to providing the necessary spectrum for the mobile-satellite services as well as for the mobile services taking into account Resolutions Nos. 2 and 4 of the WARC-79;



resolves

MOD 1. that administrations shall be encouraged to carry out experiments with a broadcasting-satellite service (sound) within the band 0.5 - 2 GHz, in appropriately placed narrow sub-bands, subject to the agreement of administrations concerned. ~~One area where such a sub-band may be placed is the band 1 429 - 1 525 MHz;~~

SUP 2.

SUP 3.

SUP 4.

ADD invites the Plenipotentiary Conference, 1989

to authorize the Conference referred to in noting above for the purpose of allocating a band in the Table of Frequency Allocations for the broadcasting-satellite (sound) service within the range 500 MHz to 2 GHz;

ADD requests the CCIR

to continue its studies relating to the technical characteristics of a satellite sound-broadcasting system for individual reception by portable and automobile receivers, the feasibility of sharing with terrestrial services, and the appropriate sharing criteria, and to produce a report for consideration by the Conference referred to in resolves;

ADD invites the Administrative Council

to bring this Resolution to the attention of the Plenipotentiary Conference, 1989,

J/54/49

From the situations described above, it is proposed that frequency allocation related to Resolution No. 505 should be investigated at the WARC to consider revising frequency allocations to the mobile-satellite service and the mobile service in the approximate range 1 - 3 GHz scheduled to be held by 1992, and that the CCIR should continue the effort to define further the system parameters, technical feasibility of the space segment and suitable bands for this system.

CAN/60/290  
ADD

RESOLUTION NN  
(replaces Resolution No. 505)

Relating to a Future Change in Article 8 for the  
Broadcasting-Satellite Service (Sound) In the  
Frequency Range 470 MHz to 2 690 MHz

The World Administrative Radio Conference on the Use of the  
Geostationary-Satellite Orbit and the Planning of Space Services Utilizing  
It, Geneva, 1988,

considering

- a) that the use of satellites to provide nationwide sound broadcasting service to portable receivers and receivers in automobiles is not supported in the bands allocated to the broadcasting-satellite service;
- b) that sound broadcasting by satellite may in some cases be the most economical way of establishing a national radio service;
- c) that although no working systems have been demonstrated, extensive studies by the CCIR have identified several alternative candidate systems and their sharing possibilities with other services;
- d) that the introduction of sound broadcasting by satellite requires a specific frequency allocation in order to be developed and implemented, and the allocation may need to be exclusive on a world-wide basis;
- e) that the World Administrative Radio Conferences in 1979 and 1985 indicated that an appropriate allocation might be found in the range 0.5 to 2 GHz or in its vicinity;
- f) that existing services are now using frequencies in that range and requirements for other new services in that frequency range are becoming known;

noting

- a) that Resolution No. 507 requires the establishment of plans for the broadcasting-satellite service;
- b) that although the studies of the CCIR are not yet complete it appears an allocation in the order of 50 MHz is sufficient;
- c) that based on the proposals to this Conference an appropriate allocation will most likely be found in the range 470 MHz to 2 690 MHz;

resolves

- 1. that a future competent world administrative radio conference allocate spectrum for the introduction of this service, recommend as necessary a suitable date for a planning conference, accommodate affected services, and satisfy other new demands which may arise for this part of the spectrum;

2. that no other radio conference should be made competent to reallocate spectrum in this range for any service, before the conference requested in this Resolution is convened;

invites the Administrative Council

to bring to the attention of the Plenipotentiary Conference the need for a decision by that Conference on the establishment of a conference in accordance with this Resolution;

to consider in the future schedule of conferences, the establishment of a conference in accordance with this Resolution;

invites

1. administrations to study and carry out experiments for the delivery of sound broadcasting by satellite to portable and vehicular receivers in the frequency range 470 MHz to 2 690 MHz;
2. the CCIR to continue studies relating to the technical characteristics of alternative systems and their characteristics of sharing with existing services;
3. the CCIR to recommend a preferred technical standard for sound broadcasting by satellite, so that an appropriate conclusion can be drawn regarding the exact amount of spectrum that is required, and the sharing conditions with other services, for the use of administrations in the preparation of their proposals.

NZL/73/5

It is the New Zealand view that the allocation of spectrum to sustain satellite sound-broadcasting should continue to be studied by administrations and the CCIR, with a view to the next competent conference being given the authority to consider a decision on the allocation.

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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 DL/16-E  
8 September 1988  
Original: English

SUB-WORKING GROUP 2  
OF THE WORKING GROUP  
OF THE PLENARY

Draft

### TERMS OF REFERENCE OF SUB-WORKING GROUP 2

To consider additions or modifications to Appendix 4 of the Radio Regulations and any impact on Appendix 3 resulting from the proposals contained in Attachment 2 of Document 56 and Annex 2 to Document 187.

J.B. POTTS  
Chairman of the Sub-Working Group 2  
of the Working Group of the Plenary

CONF\ORB-2\DL\016E.TXS

WORKING GROUP 6-B  
AD HOC 1

Draft

FIRST REPORT OF WORKING GROUP 6-B AD HOC 1  
TO WORKING GROUP 6-B

The Working Group 6-B ad hoc 1 held its first meeting on 6 September 1988, with the participation of 20 delegates and observers representing 14 administrations and an international organization.

The meeting gave initial consideration to Document 147, which is a note from the Chairman of the Working Group of the Plenary to Committee 6. The ad hoc Group concluded that at this point of time, only tentative and partial replies can be offered to some of the questions appearing in the annex to Document 147.

1. Question 1: Will Appendices 3 and 4 to the Radio Regulations be merged?

Working Group 6-B ad hoc 1 comments:

It appeared that so far only three administrations (Japan, Document 53, Annex 2-1, Canada, Proposals CAN/60/250 to CAN/60/264 and Luxembourg, Proposal LUX/127/1) had made explicit proposals for the merging of AP3 and AP4. On the other hand, there seemed to be a majority among the restricted number of participants in the Group in favour of retaining the current concept of separate appendices, subject to any amendments that may ensue from the examination of various proposals relating to each of these appendices. With this in mind, Working Group 6-B ad hoc 1 agreed to peruse its deliberations, based on the detailed proposals for an amended AP3 as had been presented by France (Proposal F/23/1) and the United States (Proposals USA/56/16 to USA/56/19). The Group will therefore continue its work on the assumption that there will be a separate AP3 and AP4.

2. Question 3: ... What functions would they (AP3 and AP4) serve in the Improved Procedures and Simplified Procedures and to what extent would they be used?

Working Group 6-B ad hoc 1 comments:

Appendix 3 would serve to implement network coordination and notification provisions of Articles 11 (Sections II and III) and 13. Amendments are also proposed to introduce the notion of typical earth station(s).

Appendix 4 would provide the basis for the advance publication, possibly amended to permit the application of the Appendix 29 method with a view to determine which other "existing" geostationary-satellite networks might be affected.

3. Question 4: ... [What are] the principles of coordination at network level and the use of typical earth stations?

Working Group 6-B ad hoc 1 comments:

It appears that the subject has been addressed in Document DT/19(Rev.), presently being examined by Working Group 6-B.

4. Question 5: To be advised on the expression of views concerning amendments to AP3 and AP4 to the Radio Regulations as given in Documents 22 and 23.

Working Group 6-B ad hoc 1 comments:

In fact, the Group is obliged to study all proposals related to AP3 and AP4 amendments, in particular those contained in Documents 22, 23, 49, 53, 56, 60, 77, 91, 92 and 127, also bearing in mind the reports originating from the CCIR (Document 3) and the IFRB (Documents 18 and 68). Certain uncertainties prevailed regarding the division of responsibilities for the specification of data elements. A close collaboration and coordination between the Working Group of the Plenary and Committee 6 should be established.

L. SONESSON  
Chairman of Working Group 6-B ad hoc 1

Draft

REPORT OF WORKING GROUP 4-C AD HOC 1  
CONCERNING PROCEDURES FOR COMBINING  
ALLOTMENTS FOR SUBREGIONAL SYSTEMS

1. The Drafting Group was asked to prepare a text for consideration by Working Group 4-C concerning procedures for converting two or more allotments into a subregional system, based on proposals submitted by CAN (59), USA (12, 56), F (29) and J (53).

2. Discussions in Working Group 4-C indicated that there were several procedures by which administrations may implement subregional systems including:

- a) modification of the Plan;
- b) inclusion of additional requirements;
- c) combination of all or part of their national allotments.

The Drafting Group's task was to develop approach c).

3. Administrations wishing to combine all or part of their allotments with a view to providing for a subregional system may do so in accordance with the following principles and procedures.

3.1 These subregional systems shall have assignments for a fixed term which may be extended or reduced on a decision of the members of the system.

3.2 The members of the subregional system shall obtain the agreement of the affected administrations in accordance with [Annex       ].

3.3 That part of the national allotments used for the subregional system shall be suspended.

3.4 Suspended national allotments shall be protected as other allotments.\*

3.5 The subregional system will receive the same protection as allotments in the Plan.\*

---

\* The IFRB will not take into consideration mutual interference between the subregional system and its members' suspended national allotments.

3.6 The IFRB will be informed immediately of the withdrawal of an administration from the subregional system.

4. Guidelines for the procedures are as follows.

4.1 Administrations participating in the subregional system will appoint one of their number to represent their interests within the ITU on this matter.

4.2 The representative administration will provide full details of the system to the IFRB. This information will include inter alia a statement of undertaking to participate from each of its constituent members, a clear indication of the nature and composition of the subregional system and the duration of the agreement. The information will also include notices for each assignment.

4.3 The subregional system will be implemented by one of the following methods:  
[ ].

4.4 The representative administration may at any stage in the procedure described, or before applying it, request the assistance of the Board along the lines of RR 1184 to RR 1188.

4.5 The Board, in addition to providing this assistance will take the action prescribed by [ ].

4.6 The initial information published by the Board on the subregional system will include a clear description of the individual full or partial allotments which have been suspended. Thereafter the Board will publish on a [biannual] basis a summary of all subregional systems planned and in operation along with those that have expired since the last [biannual] summary.

4.7 The Board shall also cause an entry to be made in the MIFR to indicate the nature and duration of the subregional system.

4.8 When a subregional system is terminated, the representative administration shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the MIFR.

J. ZAVATTIERO  
Chairman of Working Group 4-C ad hoc 1



# 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 DL/19-E  
9 September 1988  
Original: English

SUB-WORKING GROUP 6-B-1

### Draft

#### NOTE FROM THE CHAIRMAN

The underlined text is the proposal from the United States and Canada concerning the text of RR 1051.

In those bands where simplified procedures apply:

MOD 1051

- a) the administration responsible for the planned network 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 networks of other administrations. If no such means can be found, the administration concerned may then request other administrations, either bilaterally or multilaterally, to mutually help resolve these difficulties;

L. SONESSON

Chairman of Sub-Working Group 6-B-1

CONF\ORB-2\DL\019E.TXS

WORKING GROUP 6-B

Draft

ORGANIZATION OF WORK CONCERNING THE EXAMINATION  
OF PROPOSALS ON ARTICLE 14

During the presentation of the various proposals from administrations concerning Article 14 at the third meeting of Working Group 6-B some concerns in principle were raised.

It might facilitate the work of the Group if these items were presented in a document for further review in deciding how the various proposals may be handled.

The various items are:

1. Should the 5-year rule for bringing into use the planned assignments mentioned in some proposals be taken into account or not?
2. Does a PFD trigger limit affect the regulatory relationship between the space and terrestrial services?
3. Must the Articles 11 and 14 procedures always be applied in cases where both procedures are applicable?
4. What about the relationship between space services in cases where Article 14 is applicable?

A. CAREW  
Chairman of Working Group 6-B

Source: Document 41

SUB-WORKING GROUP 5-B-1

Draft

RESOLUTION [COM5/1]

Relating to the Use of Interim Systems in Region 2 in the  
Broadcasting-Satellite and Fixed-Satellite (Feeder Link) Services  
in Region 2 for the Bands Covered by Appendix 30 and Appendix 30A

The World Administrative Radio Conference on the Use of the  
Geostationary Satellite Orbit and the Planning of the Space Services  
Utilizing It, Second Session, Geneva, 1988.

Considering

- a) that the Regional Administrative Radio Conference for the  
Planning of the Broadcasting-Satellite Service in Region 2,  
Geneva, 1983, prepared a Plan for the broadcasting-satellite  
service in the band 12.2 - 12.7 GHz and a Plan for the associated  
feeder links in the band 17.3 - 17.8 GHz with the provision of  
implementing Interim Systems in accordance with Resolution 2  
(SAT-R2);
- b) that in the implementation of their assignments in the  
Plans, administrations of Region 2 may find it more appropriate to  
adopt a phased approach and initially use characteristics  
different from those appearing in the appropriate Region 2 Plan;

- c) that some administrations of Region 2 may cooperate in the joint development of a space system with a view to covering two or more service areas from the same orbital position or to use a beam which would encompass two or more service areas;
- d) that some administrations of Region 2 may cooperate in the joint development of a space system with a view to using two or more feeder-link service areas from the same orbital position or to use a beam which encompasses two or more feeder-link service areas;
- e) that interim systems shall not adversely affect the Plans nor hamper the implementation and evolution of the Plans;
- f) that the number of assignments to be used in an interim system shall not in any case exceed the number of assignments appearing in the Region 2 Plan which are to be suspended;
- g) that the interim systems shall not in any case use orbital positions that are not in the Region 2 Plan;
- h) that an interim system shall not be introduced without the agreement of all administrations whose space and terrestrial services are considered to be affected;

Resolves

that administrations and the IFRB shall apply the procedure contained in the Annex to this Resolution.

ANNEX TO RESOLUTION [COM5/1]

1 An administration or a group of administrations in Region 2 may, after successful application of the procedure contained in this Annex and with the agreement of the affected administrations, use an interim system during a specified period not exceeding [10] years in order:

1.1 for an interim system in the broadcasting-satellite service

- a) to use an increased e.i.r.p in any direction relative to that appearing in the Region 2 Plan provided that the power flux-density does not exceed the limits given in Annex 5 of Appendix 30;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the Region 2 Plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;
- c) to change the coverage area by displacing boresight, or by increasing the major or minor axis or by rotating them, from an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 Plan;
- d) to use a coverage area appearing in the Region 2 Plan or a coverage area encompassing two or more coverage areas appearing in the Region 2 Plan from an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 Plan;
- e) to use a polarization different from that in the Region 2 Plan.

1.2 for an interim feeder-link system

- a) to use an increased e.i.r.p in any direction relative to that appearing in the Region 2 feeder-link Plan;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;

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<sup>1</sup> For example, modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics.

- c) to change the feeder-link beam area by displacing the boresight, or by increasing the major or minor axis or by rotating them, in relation to an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 feeder-link Plan;
- d) to use a feeder-link beam area appearing in the Region 2 feeder-link Plan or a feeder-link beam area encompassing two or more feeder-link beam areas appearing in the Region 2 feeder-link Plan in relation to an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 feeder-link Plan;
- e) to use a polarization different from that in the Region 2 feeder-link Plan.

2.1 In all cases, an interim system shall correspond to assignments in the Region 2 Plans; the number of assignments to be used in an interim system shall not in any case exceed the number of assignments appearing in the Region 2 Plan which are to be suspended. During the use of an interim system, the use of the corresponding assignments in the Region 2 Plan is suspended; they shall not be brought into use before the cessation of the use of the interim system. However, the suspended assignments, but not the interim system's assignments, of an administration shall be taken into account when other administrations apply the procedure of Article 4 of Appendix 30 and of Appendix 30A, as appropriate, in order to modify the Plans, or the procedure of this Annex in order to bring an interim system into use. The assignments of interim systems shall not be taken into account in applying the procedure of Article 6 or Article 7 of Appendix 30 and the procedure of Article 6 or Article 7 of Appendix 30A.

2.2 As a consequence of paragraph 2 above, interim systems' assignments shall not obtain protection from, or cause harmful interference to, new or modified assignments appearing in the Plans following the successful application of the procedures of Article 4 of Appendix 30 or Appendix 30A as appropriate, even if such a modification is concluded and becomes operational within the time-limit specified in paragraph 3(a).

3 When an administration proposes to use an assignment in accordance with paragraph 1, it shall communicate to the IFRB the information listed in Annex 2 of Appendix 30 or Appendix 30A as appropriate not earlier than five years but, preferably, not later than twelve months before the date of bringing into use. The administration shall also indicate:

- a) the maximum specified period during which the interim assignment is intended to remain in use;

- b) the assignments in the Region 2 Plans the use of which will remain suspended for the duration of the use of the corresponding interim assignment;
- c) the names of the administrations with which an agreement for the use of the interim assignment has been reached, together with any comment relating to the period of use so agreed and the names of administrations with which an agreement may be required but has not yet been reached.

4 Administrations are considered to be affected as follows:

4.1 for an interim system in the broadcasting-satellite service

- a) an administration of Region 2 is considered to be affected if any overall equivalent protection margin of one of its assignments in the Region 2 Plan, calculated in accordance with Annex 5 to Appendix 30 including the cumulative effect of all interim use during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignments (paragraph 3b), becomes negative or a former negative value is made more negative;
- b) an administration of Region 1 or 3 is considered to be affected if it has an assignment which is in conformity with the Regions 1 and 3 Plan contained in Appendix 30 to the Radio Regulations or in respect of which proposed modifications have already been published by the Board in accordance with the provisions of Article 4 of that Appendix with a necessary bandwidth which falls within the necessary bandwidth of the proposed interim assignment and the appropriate limits of Annex 1 of Appendix 30 are exceeded;
- c) an administration of Region 1 or 3 is considered to be affected if it has a frequency assignment in the fixed satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations or under Article 7 of Appendix 30 or which has been published in accordance with No. 1044 of the Radio Regulations or of paragraph 7.1.3 of Appendix 30 and the appropriate limits of Annex 1 of Appendix 30 are exceeded.
- d) an administration of Region 1 or 3 is considered to be affected if, although having no frequency assignment in the appropriate Regional Plan in the channel concerned, it nevertheless would receive on its territory a power flux-density value which exceeds the limits given in

Annex 1 of Appendix 30 as a result of the proposed interim assignment, or if it has such an assignment for which its associated service area does not cover the whole of the territory of the administration, and in its territory outside that service area the power flux-density from the interim system space station exceeds the limits given in Annex 1 to Appendix 30;

- e) an administration of Region 3 is considered to be affected if it has a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 - 12.7 GHz with a necessary bandwidth any portion of which falls within the necessary bandwidth of the proposed assignment, and which:
- is recorded in the Master Register; or
  - has been coordinated or is being coordinated under the provisions of Resolution 33 of the World Administrative Radio Conference, Geneva 1979; or
  - appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference,

and the appropriate limits of Annex 1 to Appendix 30 are exceeded.

#### 4.2 for interim feeder-link systems

- a) if any overall equivalent protection margin of one of its assignments in the Plan, calculated in accordance with Annex 3 to Appendix 30A including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 3.b), becomes negative or a former negative value is made more negative;
- b) if it has a frequency assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations and the appropriate limits of Annex 1 to Appendix 30A are exceeded;
- c) if it has a frequency assignment in the band 17.7 - 17.8 GHz to a terrestrial station, in use or intended to be brought into use within three years of the projected date of bringing into use of the feeder-link



earth station, which is located within the coordination area of the feeder-link earth station concerned and the appropriate limits of Annex 1 to Appendix 30A are exceeded;

5 The Board shall publish in a special section of its weekly circular the information received under paragraph 3, together with the names of the administrations the Board has identified in application of paragraph 4.

6 When the Board finds that the suspended assignment of an administration having an interim system is not affected, it shall examine the projected interim system with respect to the interim system of that administration and if there is an incompatibility, it shall request the two administrations concerned to adopt any measures that may enable the new interim system to be operated.

7 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

8 Any administration not listed in the special section which considers that its planned interim assignment may be affected shall so inform the administration responsible for the interim system and the Board, and the two administrations shall endeavour to resolve the difficulty before the proposed date of bringing the interim assignment into use.

9 An administration which has not sent its comments either to the administration seeking agreement or to the Board within a period of four months following the date of the weekly circular referred to in paragraph 5 shall be understood as having agreed to the proposed interim use.

10 On the expiry of four months following the date of publication of the weekly circular referred to in paragraph 5, the Board shall review the matter and, depending on the results obtained, shall inform the administration proposing the interim assignment that:

- a) it may notify its proposed use under Article 5 of Appendix 30 or Article 5 of Appendix 30A, as appropriate, if no agreement is required or the required agreement has been obtained from the administrations concerned. In this case the Board shall update the Interim List;
- b) it may not bring into use its interim system before having obtained the agreement of the administrations affected, either directly or by applying the procedure

described in Article 4 of Appendix 30 or Article 4 of Appendix 30A, as appropriate, as a means of obtaining that agreement.

11 The Board include all the interim assignments in an Interim List in two parts, one each for the broadcasting-satellite service and the feeder-link assignments, and shall update it in accordance with this Annex. The Interim List shall be published together with the Region 2 Plans but does not constitute part of them.

12 One year prior to the expiry of the interim period, the Board shall draw the attention of the administration concerned to this fact and request it to notify in due time the deletion of the assignment from the Master Register and the Interim List.

13 If, notwithstanding the reminders by the Board, an administration does not reply to its request sent in application of paragraph 12, the Board shall, at the termination of the interim period:

- a) enter a symbol in the Remarks Column of the Master Register to indicate the lack of response and that the entry is for information only;
- b) not take into account that assignment in the Interim List;
- c) inform the administrations concerned and affected of its action.

14 Where an administration confirms the termination of the use of the interim assignment, the Board shall delete the assignment concerned from the Interim List and the Master Register. Any corresponding assignment in the plan(s), suspended earlier, may then be brought into use.

15 An administration which considers that its interim system may continue to be used after the expiry of the interim period may extend it by not more than [four] years and to this effect shall apply the procedure described in this Annex.

16 Where an administration applies the procedure in accordance with paragraph 15, but was unable to obtain the agreement of one or more affected administrations, the Board shall indicate this situation by inserting an appropriate symbol in the Master Register. Upon receipt of a complaint of harmful interference, the administration shall immediately cease operation of the interim assignment.

17 Where an administration, having been informed of a complaint of harmful interference, does not cease transmission within a period of thirty days after the receipt of complaint, the Board shall apply the provisions of paragraph 13.

S. SELWYN  
Chairman of Sub-Working Group 5-B-1 ad hoc 1

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

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WORKING GROUP 6-B  
AD HOC 1

Draft

APPENDIX 3 DATA ITEMS RELATING TO TRANSMITTING EARTH STATION  
AND RECEIVING SPACE STATION

J. CHRISTENSEN  
Chairman of Working Group 6-B ad hoc 1

Annexes: 2

ANNEX 1

APP. 3

**Section B. Basic Characteristics to Be Furnished  
in Notices Relating to Frequencies Used  
by Earth Stations for Transmitting**

F

**Section C. Characteristics of the Satellite Network  
in the Earth-to-Space Direction**

USA

**Section B. Basic Characteristics to Be Furnished  
in Notices Relating to Frequencies Used  
by a Geostationary Satellite Network  
including Associated Typical Earth Stations  
and Associated Space Stations**

**I. Characteristics of the Network**

APP3

**Item 1 Assigned frequency (frequencies)**

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

F

**Item C 3. Assigned frequencies and frequency bands**

**a) Assigned frequency (frequencies)**

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. At least one separate notice should be submitted for each antenna radiation beam.

USA  
B.II

**Item 4 Assigned frequency (or frequencies)**

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

In the case 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.

APP.3

Item 2 Assigned frequency band

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

F. C3

b) Assigned frequency band

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

USA  
B.II

Item 5 Assigned frequency band

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

APP.3

Item 3 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 this Section (except in the case of a change in *Item 4 a*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

F

Item B 2. Date of bringing into use<sup>2</sup>

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 this section~~, except in the case of a change in item B 1a, the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

<sup>2</sup> See also Resolution No. 4.

USA  
B.I

Item 2 Date of bringing into use

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

2) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Item 1), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

APP.3

Item 4 Identity and location of the transmitting earth station

- 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 the International Frequency List should be used.
- c) Indicate the geographical coordinates of the transmitter site (longitude and latitude in degrees and minutes). Indicate also the seconds<sup>1</sup> with an accuracy of one-tenth of a minute.

APP.3

Item 5 Station(s) with which communication is to be established

Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a reflecting satellite, the identity of the satellite and the location of the associated receiving earth station(s). In the case of a geostationary satellite, indicate also its orbital position.

F

Item B 1. Identity of the satellite network

- a) Indicate the identity of the space station(s) and the name by which the associated earth station(s) (are) is known or the name of the locality in which it is (they are) situated.

USA  
B.III

Item 3 Service area or transmitting station(s)

- a) In the case where the associated transmitting stations are earth stations, indicate the service area or areas on the Earth or the name of the locality and country or geographical area in which each receiving station is located.

APP.3

Item 6 Class of station and nature of service

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

F

Item C 2. Class of stations and nature of service

Indicate the class of the station(s) and the nature of the service to be performed, using the symbols shown in Appendix 10.

USA B.II

Item 6 Class of station and nature of service

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

**APP. 3**

**Item 7 Class of emission, necessary bandwidth and description of transmission**

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the emission(s);
- c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

**F**

**Item C 8. Class of emission and necessary transmission bandwidth**

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the emission(s);
- c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

<sup>1</sup> This information need be provided only when such information has been used as a basis to effect coordination with another administration.

**USA BII Item 9**

**Class of emission, necessary bandwidth and description of the transmission(s) to be received**

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission of the transmission(s) to be received;
- b)<sup>2</sup> indicate the carrier frequency or frequencies of the transmission(s) to be received;
- c)<sup>2</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>2</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

<sup>2</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

APP. 3

Item 8 Power characteristics of the transmission

- a)<sup>1</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.
- b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))<sup>2</sup> supplied to the input of the antenna averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

---

<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

<sup>2</sup> The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.

F

Item C 4. Power characteristics of the earth station transmission

- a)<sup>1</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the antenna input.
- b) Indicate the total peak envelope power (dBW) supplied to the antenna input.
- c) Indicate the types of carrier to be considered,<sup>2</sup> and, for each type, the maximum power density<sup>3</sup> per Hz (dB (W/Hz)) supplied to the antenna input averaged over the worst 4 kHz band for carriers below 15 GHz, or averaged over the worst 1 MHz band for carriers above 15 GHz.
- d) Indicate for each carrier the minimum value of the peak envelope power supplied to the antenna input.

USA  
B. III

Item 5 Power characteristics of the transmission

- a)<sup>2</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.
- b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))<sup>3</sup> supplied to the input of the antenna averaged 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)<sup>2</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

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2. This information need only be furnished when such information has been used as a basis to effect coordination with another administration.



APP

Item 9 Transmitting 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 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)<sup>1</sup> 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.

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<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

F

Item C 5. Earth station transmitting 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 or, if appropriate, the diameter of the antennas.
- 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)<sup>1</sup> 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.

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<sup>1</sup> This information need be provided only when such information has been used as a basis to effect coordination with another administration.

USA

B.III.

Item 6 Transmitting 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.

USA DII 6.

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 giving due regard to possible inclined-orbit operation of the associated space station.

f) Indicate in degrees, clockwise from True North, the planned range of operating azimuthal angles for the direction of maximum radiation giving due regard to possible inclined-orbit operation of the associated space station.

g)/2 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.

APP.3

Item 10<sup>1</sup> 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 signal: 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 characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with 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, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

Item C 9. 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 signal: 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 characteristic. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with 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-side-band): 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, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.
- g) indicate, in dB, the value of the objective (C/N) ratio required for each carrier.

USA B.III

Item 7 Modulation characteristics<sup>2</sup>

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 signal: 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 characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with 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, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

2. This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

### APP.3

#### Item 11 Regular hours of operation

Indicate, in UTC, the regular hours of operation on the frequency of each carrier.

F

#### Item C 10. Regular hours of operation

Indicate, in UTC, the regular hours of operation on the frequency of each carrier.

USA

B.I

#### Item 3 Regular hours of operation

Indicate, in UTC, the regular hours of operation of the space station.

### APP.3

#### Item 12 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.

F

#### Item G 2. Earth station 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.

APP. 3

Item 13 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.

F.

Item G 3. Agreements

Give also, 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.

USA C. VI. Other Related Information

Item 1 Agreements

a) Give, if appropriate, the names of any administration with which agreement has been effected in accordance with Article 14.

b) Give, if appropriate, the names of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations.

APP. 3

Item 14 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).

F.

Item B 3. 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).

USA

C. VI

Item 2 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 and questions referring to the technical operation of stations (see Article 22).

ANNEX 2

APP. 3

Section E. Basic Characteristics to Be Furnished  
in Notices Relating to Frequencies to Be Received  
by Space Stations

F

Section C. Characteristics of the Satellite Network  
in the Earth-to-Space Direction

USA

Section B. Basic Characteristics to Be Furnished  
in Notices Relating to Frequencies Used  
by a Geostationary Satellite Network  
including Associated Typical Earth Stations  
and Associated Space Stations

I. Characteristics of the Network

APP. 3

Item 1 Assigned frequency (or frequencies)

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. At least one separate assignment notice should be made out for each antenna radiation beam.

F

Item C 3. Assigned frequencies and frequency bands

a) Assigned frequency (frequencies)

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. At least one separate notice should be submitted for each antenna radiation beam.

USA

B. II

Item 4 Assigned frequency (or frequencies)

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

In the case 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.

APP.3

Item 2 Assigned frequency band

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

F

C3

b) Assigned frequency band

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

USA B.II

Item 5 Assigned frequency band

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

APP.3

Item 3 Date of bringing into use<sup>1</sup>

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Item 4), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

---

<sup>1</sup> See also Resolution 4.

F

Item B 2. Date of bringing into use<sup>2</sup>

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 this section~~, except in the case of a change in item B 1a, the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

---

<sup>2</sup> See also Resolution No. 4.



USA

B.I. Item 2 Date of bringing into use

- 1) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of bringing the frequency assignment into use.
- 2) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Item 1), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

APP. 3

Item 4 Identity of the receiving space station(s)

Indicate the identity of the receiving space station(s).

F

Item B 1. Identity of the satellite network

- a) Indicate the identity of the space station(s) and the name by which the associated earth station(s) (are) is known or the name of the locality in which it is (they are) situated.

USA

B.II

Item 1 Receiving satellite antenna beam name

Indicate the name of the satellite antenna beam by a three character code. For steerable beams, the last character shall be an "R" for repositionable.

APP. 3

Item 5 Orbital information

a) In the case of a space station aboard a geostationary satellite, indicate the planned nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:

- 1) 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;
- 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 arc 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.

F

Item B 4.

#### Orbital information

- a) In the case of a space station aboard a geostationary satellite indicate the nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:

- 1) 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;
- 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 arc 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.

USA  
B.I

Item 4 Orbital information

Indicate the nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion<sup>1</sup>. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:

- 1) 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;
- 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 arc 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.

---

<sup>1</sup>An inclination excursion of more than 15 degrees will not be considered a geostationary satellite.

### APP.3

Item 6 Associated transmitting earth station(s) or space station(s)

Identify the associated transmitting earth station(s) or space station(s) by reference to the notifications thereof or in any other appropriate manner.

### F

Item C 1. Earth-to-space service area(s)

Indicate the service area(s) on the Earth associated with each receiving antenna of the space station.

### USA B. II

Item 7 Service area or transmitting station(s)

a) In the case where the associated transmitting stations are earth stations, indicate the service area or areas on the Earth or the name of the locality and country or geographical area in which each transmitting station is located.

b) In the case where the associated transmitting stations are space stations, identify each station by reference to the notification thereof or in any other appropriate manner.

### APP 3

Item 7 Class of station and nature of service

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

### F

Item C 2. Class of stations and nature of service

Indicate the class of the station(s) and the nature of the service to be performed, using the symbols shown in Appendix 10.

USA

B.II

Item 6 Class of station and nature of service

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

APP 3

Item 8 Class of emission, necessary bandwidth and description of the transmission(s) to be received

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission of the transmission(s) to be received;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the transmission(s) to be received;
- c)<sup>1</sup> indicate, for each carrier to be received, the class of emission, necessary bandwidth and description of the transmission(s) to be received.

---

<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

F

Item C 8. Class of emission and necessary transmission bandwidth

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the emission(s);
- c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

---

<sup>1</sup> This information need be provided only when such information has been used as a basis to effect coordination with another administration.

U S A

B. II

Item 9

Class of emission, necessary bandwidth and description of the transmission(s) to be received

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission of the transmission(s) to be received;
- b)<sup>2</sup> indicate the carrier frequency or frequencies of the transmission(s) to be received;
- c)<sup>2</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>2</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

---

2. This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

APP. 3

Item 9 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 10 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 non-geostationary 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)<sup>1</sup> 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 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.

---

<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration.

F

Item C 6. 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, 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 10 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 non-geostationary 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 or, if appropriate, the diameter of the antennas.

- c)<sup>1</sup> 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 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.

---

<sup>1</sup> This information need be provided only when such information has been used as a basis to effect coordination with another administration.

USA

B. II Item 8

Space station receiving antenna beam characteristics

a) In the case of a satellite antenna beam that is intended to receive from 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 center of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain decrement of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated. In the case where a steerable beam (see ADD No. 168A) is used, the gain contours shall be provided as follows:

- 1) in the case of the equivalent boresight area (see ADD No. 168B) being identical with the global or nearly global service area, provide only the maximum antenna gain. The maximum antenna gain is applicable to all points on the visible Earth's surface.

- 2) in the case of the equivalent boresight area (see ADD No. 168B) being less than the global or nearly global service area, provide only the equivalent antenna gain contours (see ADD No. 168C) which correspond to a gain decrement of 2, 4, 6, 10, and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain.

Where more than one beam shares frequencies with a steerable beam, indicate the minimum exocentric angular beam separation(s) required or any other consequential beam separation or pointing constraints.

In the case where a space station is to operate with orbital inclinations greater than [1 degree], provide the gain contours in the form of worst case envelopes of the individual gain contours for all locations of the space station, giving due regard to the expected variation in the boresight direction of the antenna beam.

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 satellite receive antenna beam directed towards another 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) in the case of a satellite receive antenna beam receiving in a band allocated in the Earth-to-space direction and in the space-to-Earth or space-to-space 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.

### APP.3

#### Item 10 Noise temperature

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

F

#### Item C 7. Noise temperature

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

USA  
B.II

#### Item 10 Noise temperature

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



APP.3

Item 11 Regular hours of reception

Indicate, in UTC, the regular hours of reception on the frequency of each carrier.

F

Item C 10. Regular hours of operation

Indicate, in UTC, the regular hours of operation on the frequency of each carrier.

USA  
B.I

Item 3 Regular hours of operation

Indicate, in UTC, the regular hours of operation of the space station.

APP.3

Item 12 Coordination

Give the name of any administration or group of administrations with which the use of the satellite network to which the space station belongs has been successfully coordinated in accordance with No. 1060.

F

Item G 1. Space station coordination

Give the name of any administration or group of administrations with which the use of the satellite network to which the space station belongs has been successfully coordinated in accordance with No. 1060.

USA  
B.VI

Item 1 Coordination

Give the name of any administration with which the use of this frequency has been successfully coordinated in accordance with No. 1060 and, if appropriate, the name of any administration with which coordination has been sought but not effected.

APP3

Item 13 Agreements

Give also, 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.

F

Item G 3. Agreements

Give also, 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.

USA  
B.VI

Item 2 Agreements

- a) Give, if appropriate, the names of any administration with which agreement has been effected in accordance with Article 14.
- b) Give, if appropriate, the names of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations.

APP.3

Item 14 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 and questions referring to the technical operation of stations (see Article 22).

F

Item F 9. Operating administration or company

Indicate the identity 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 and questions referring to the technical operation of stations (see Article 22).

USA  
B.VI

Item 3 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 and questions referring to the technical operation of stations (see Article 22).

DRAFT TEXT FOR APPENDIX 30A, ANNEX 3

Add to paragraph 3.10:

In Regions 1 and 3 the permitted amount of power control has been calculated and included in the Plan. The method of calculation is shown below:

1. Method of calculation of permitted e.i.r.p. increase for an assignment in relation to the value included in to the Plan

1.1 Establish a list of all assignments (A, B, C, ... ) potentially affected by the assignment concerned.

1.2 For every measurement point of the assignment concerned, calculate the interfering power of the assignment in relation to assignment A by clear sky.

1.3 For every measurement point of the assignment concerned, calculate the interfering power of the assignment in relation to assignment A in the following conditions:

- for the assignment concerned: atmospheric attenuation for 1% of the least favourable month and corresponding value of atmospheric depolarization;
- for assignment A: clear sky

1.4 For every measurement point of the assignment concerned, calculate the difference between interfering powers obtained at points 1.2 and 1.3 and take the smaller value of the differences.

This smaller difference is equal to the permitted e.i.r.p. increase for the assignment concerned, without degradation, for any given measurement point, in the equivalent protection margin of feeder-link A, taking into consideration only the interference of the assignment concerned in relation to assignment A.

Note - If the interfering power calculated at point 1.3 is greater than that calculated at point 1.2, permitted e.i.r.p. increase is nil.

1.5 Repeat the calculations of points 1.2, 1.3 and 1.4 for the other assignments (B, C, .... ) potentially be affected by the assignment concerned.

1.6 Take the smallest of the smallest differences calculated for point 1.4. This value is the final permitted e.i.r.p. increase for the assignment concerned.

2. Propogation model

2.1 For the calculation of atmospheric attenuation for 1% of the least favourable month, the ORB-85 model should be used.

2.2 Atmospheric depolarisation shall be calculated, on the basis of attenuation, using the method described in paragraph 6.2.2.17.2 of the Report of the First Session.

B. SALKELD  
Chairman of Sub-Working Group 5-A-2  
ad hoc 2

# 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 DL/24-E  
12 September 1988  
Original: English

WORKING GROUP 4-C AD HOC 3

### Draft

#### ADDITIONAL REQUIREMENTS

During the deliberations of Working Group 4-C on 10 September 1988, it was resolved that a Sub-Working Group, 4-C ad hoc 3, comprising of Kenya, the United States, China, Canada, France and Japan under the chairmanship of Mr. Lubanga (KEN) be created in order to deal with the above item which is item 3.3.4.8 of the Report to the Second Session of the Conference.

The Group was asked to consider procedures which may enable multi-administrations, subregional systems and individual administrations which have used their allotments, to request additional frequencies in the bands of the Allotment Plan. The procedures will be based on the protection of allotments and assignments under the Plan including systems that may be added through these procedures.

The following documents will be considered by the Working Group: 12(USA), 29(F), 53(J), 59(C), 81(CTI), 89(VEN), 118(CHN) and some Articles of the Radio Regulations.

R.J. LUBANGA  
Chairman of Working Group 4-C ad hoc 3

CONF\ORB-2\DL\024E.TXS

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Sub-Working Group 6-B-1

Draft

NOTE FROM THE CHAIRMAN OF SUB-WORKING GROUP 6-B-1

During its seventh meeting the Group agreed in principle to the text of the amended provisions Nos. 1054 to 1054D and No. 1058A as presented in the annex.

L. SONESSON  
Chairman of Sub-Working Group 6-B-1

Annex: 1

ANNEX

- MOD 1054 (3) In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board in:
- ADD 1054A a) evaluating the levels of interference;
- ADD 1054B b) defining, with the agreement of the administrations concerned, the method and criteria to be used;
- ADD 1054C c) making arrangements to facilitate discussions as mutually agreed by the administrations concerned.
- ADD 1054D In seeking the assistance of the Board, the administration(s) concerned shall send the details of the comments which have given rise to the difficulties and make any suggestions that it may consider useful.
- ADD 1058A When, upon expiry of a period of five years and eighteen months after the date of the publication of the special section referred to in No. 1044, the administration responsible for the network has not submitted the Appendix 3 informations for the application of the coordination under No. 1060 or for notification under No. 1488, as appropriate, and unless the administration following the procedures outlined in Nos. 1049 to 1053 has sought the assistance of the Board under Nos. 1054 to 1054D, the information published under No. 1044 is deemed to have been cancelled.
-

SUB-WORKING GROUP 3  
OF THE WORKING GROUP  
OF THE PLENARY

Draft

TERMS OF REFERENCE  
OF SUB-WORKING GROUP 3  
OF THE WORKING GROUP OF THE PLENARY

APPENDICES 3 AND 4 - STEERABLE BEAMS

Based on available input documents, develop text concerning steerable satellite antenna beams, for incorporation into relevant sections of Appendices 3 and 4 of the Radio Regulations.

The text should address:

- identification of steerable beams;
- provision of additional technical information where available.

For Appendix 3, the relevant sections are D.10 and E.9.

For Appendix 4, the appropriate sections must be selected for inclusion of the developed text elements.

(Note - The texts developed by this Sub-Working Group will be subject to appropriate alignment to conform to the definitions relating to steerable beams which are being developed within Committee 6.)

G.F. JENKINSON  
Chairman of Sub-Working Group 3  
of the Working Group of the Plenary



# 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 DL/27-E  
13 September 1988  
Original: English

SUB-WORKING GROUP 5-A-2  
AD HOC 2

## Draft

TEXT FOR APPENDIX 30A (ANNEX 3)

POWER CONTROL FOR BSS FEEDER LINKS

Add to paragraph 3.10:

In Regions 1 and 3 the permitted amount of power control has been calculated and included in the Plan. The method of calculation is shown below:

1. Method of calculation of permitted power control for an assignment in relation to the value included in the Plan

1.1 Establish a list of all assignments (A, B, C, ... ) potentially affected and which are co-located or in the adjacent orbit position.

1.2 For every feeder link test point calculate the interfering power to assignment A in clear sky.

1.3 For every feeder link test point calculate the interfering power to assignment A in the following conditions:

- for the interfering feeder link: atmospheric attenuation for 0.1% of the worst month and corresponding value of atmospheric depolarization;
- for assignment A: clear sky.

1.4 For every feeder link test point calculate the difference between interfering powers obtained in 1.2 and 1.3 and take the smallest value of these differences.

This smallest difference is equal to the permitted amount of power control without degradation in the equivalent protection margin of feeder link A.

Note - If the interfering power calculated at point 1.3 is greater than that calculated at point 1.2, permitted amount of power control is nil.

1.5 Repeat the calculations of points 1.2, 1.3 and 1.4 for the other assignments (B, C, .... ) potentially affected.

1.6 Take the smallest of the smallest differences calculated for point 1.4. This value is the final permitted e.i.r.p. increase for the assignment concerned.

## 2. Propagation model

2.1 For the calculation of atmospheric attenuation for 0.1% of the least favourable month, the ORB-85 model should be used. It shall be assumed that the 0.1% value is 3.3 times the 1% value in dB.

2.2 Atmospheric depolarization shall be calculated, on the basis of attenuation, using the method described in paragraph 6.2.2.17.2 of the Report of the First Session.

### Procedure to be incorporated into Article 5 to Appendix 30A

1) An administration wishing to introduce power control shall notify the IFRB and give the feeder-link location and the proposed antenna characteristics, including off-axis performance, for co-polar and cross-polar performance.

2) The IFRB will calculate the theoretical increase in power which may be used without affecting other satellites sharing the same orbit location using the steps described in Annex 3.

The formula to be used is:

$$\Delta P_i = R_i \cdot \frac{1}{1 + \frac{A}{\frac{1}{XPI_{sat}} + \frac{1}{XPI_{es}}}}$$

$\Delta P_i$ : maximum permissible power increase of earth transmitter by power control.

$A$ : coefficient of depolarization due to rain as expressed in the following equation:

$A = 10^{-(XPD/10)}$ , where  $XPD$  is the rain depolarization, in dB, as a function of rain attenuation and elevation angle;

$XPI_{sat}$ : ratio of co-polar ( $G_{rcwi}$ ) to cross-polar ( $G_{rxwi}$ ) components of the wanted-satellite receiving antenna in the direction of the interfering earth station as expressed in the following equation:

$$XPI_{sat} = G_{rcwi} / G_{rxwi}$$

$XPI_{es}$ : ratio of co-polar ( $G_{ici}$ ) to cross-polar ( $G_{ixi}$ ) components of the interfering earth-station transmitting antenna in the direction of the wanted-satellite as expressed in the following equation:

$$XPI_{es} = G_{ici} / G_{ixi}, \text{ where this value is constant for co-located satellites.}$$

$R_i$ : rain attenuation on the wanted link.

If the feeder-link channel assignment is the same or if plural interfered satellites in the adjacent channel are assumed, the value of  $\Delta P_i$  for each interfered satellite shall be calculated and the minimum  $\Delta P_i$  value shall be used.

The formula can be expressed in dB as follows:

$$\Delta P = A_p - 10 \log \left[ 1 + \frac{\cos^4 \theta - f^{-3} - A_p^a}{\frac{XPI_{sat}}{0.79} + \frac{XPI_{es}}{0.79}} \right] \text{ (dB)}$$

- $\Delta P$ : maximum permissible power increase of earth transmitter by power control in dB.
- $\theta$ : elevation angle of the earth station in degrees.
- $A_p$ : rain attenuation at the earth station concerned in dB.
- $XPI_{es}$ : the difference (dB) between co-polar gain and cross-polar gain of the earth station antenna in the direction of the interfered satellite, for co-located satellite (including slight separation)  $XPI_{es} = 30$  dB.
- $XPI_{sat}$ : the difference (dB) between co-polar gain and cross-polar gain of the interfered-with satellite in the direction of the earth station concerned. (Beam parameters and reference patterns of satellite receiving antenna should be those decided in the Plan).

The value for  $R_i$ , rain attenuation, would be that given by the CCIR for the rain zone of the feeder-link location. 1% or 0.1% time may be used but a maximum power increase of [10 dB] would be imposed.

Calculation for other orbit positions may be needed, see Annex 1.

3) The IFRB would then calculate the interference to all other feeder links according to the calculation in Annex 1 and compare the resulting EPM with the clear sky value given in the Plan. Any increase greater than 0.5 dB would not be allowed.

4) The IFRB would notify the submitting administration the maximum power increase which may be used and would notify those other administrations whose EPM is increased by 0.5 dB.

The maximum power to be applied to the antenna input is 30 dBW.

An administration wishing to use power control must achieve any further increase in power by means of an increase in antenna size. In any case the permitted increase in e.i.r.p. by means of power control shall not be greater than 10 dB above that shown in the Plan.

The increase in power must correspond to the instantaneous rain attenuation as shown in Figure 1.

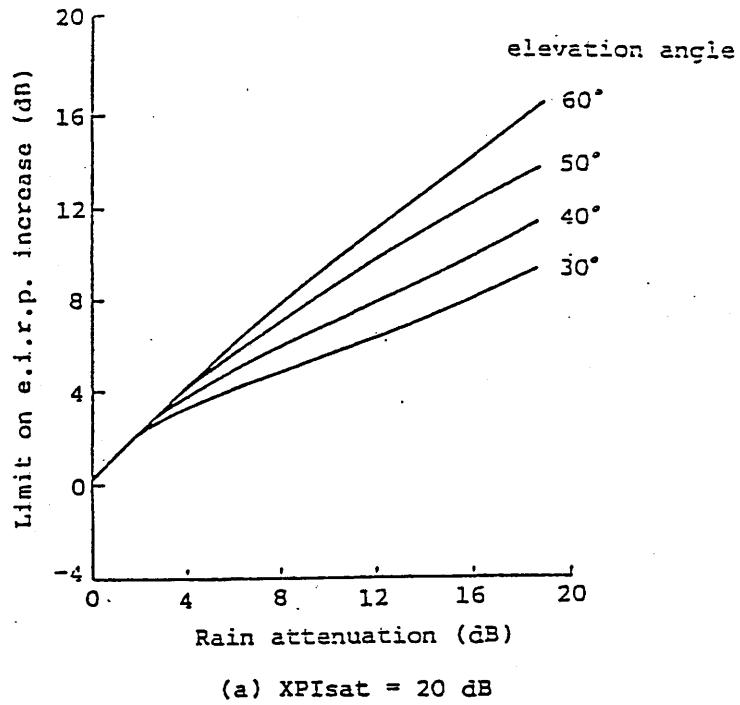


FIGURE 1

Limit on the earth-station e.i.r.p. increase

ANNEX 1

Calculation method for other orbit position

The C/I equation is given in equation 8 of Report 952:

$$\frac{C}{I_u} = \frac{P_w}{P_i} \cdot \frac{L_i}{L_w} \cdot \frac{R_i}{R_w} \cdot \frac{G_{rcww}}{G_{rcwi}} \cdot \frac{1}{A + \frac{1}{XPI_{sat}} + \frac{1}{XPI_{es}}}$$

where

- $P_w$ : e.i.r.p. at the interfered-with earth station;
- $P_i$ : e.i.r.p. at the earth station concerned, including power increase by power control;
- $L_w$ : free space loss on the interfered-with path;
- $L_i$ : free space loss on the feeder link concerned;
- $R_w$ : rain attenuation on the interfered-with path; for [99% of worst month] decided in the Conference
- $R_i$ : rain attenuation on the feeder link concerned;
- $G_{rcww}$ : co-polar component of the interfered-with satellite receiving antenna in the direction of the interfered-with earth station; (reference patterns of the antenna should be those decided in the Conference)
- $G_{rcwi}$ : co-polar component of the interfered-with satellite receiving antenna in the direction of the earth station concerned; (reference patterns of the antenna should be those decided in the Conference)
- $A$ : coefficient of depolarization due to rain as expressed in the following equation:
- $A = 10^{-(XPD/10)}$ , where XPD is the rain depolarization given in § 6.2.2.17.2 OF WARC ORB(1) report, in dB, as a function of rain attenuation and elevation angle;
- $XPI_{sat}$ : ratio of co-polar ( $G_{rcwi}$ ) to cross-polar ( $G_{rxwi}$ ) components of the interfered-with satellite receiving antenna in the direction of the earth station concerned as expressed in the following equation:

$$XPI_{sat} = G_{rcwi}/G_{rxwi}$$

XPI<sub>es</sub>: ratio of co-polar ( $G_{tci}$ ) to cross-polar ( $G_{txi}$ ) components of the transmitting antenna of the earth station concerned in the direction of the interfered-with satellite as expressed in the following equation:

XPI<sub>es</sub> =  $G_{tci}/G_{txi}$ , where this value is constant for co-located satellites.

B. SALKELD  
Chairman of Sub-Working Group 5-A-2 ad hoc 2

# 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 DL/28-E  
13 September 1988  
Original: English

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Source: Documents 14, 233

WORKING GROUP 5-B

### Draft

It is proposed that the following modified text be adopted for RR 480:

"In Region 2, the use of the band 1 605 - 1 705 kHz by stations of the 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)."

1. Page 2, replace § 1.1 by the following:

"The term feeder link, as defined in No. 109 of the Radio Regulations is further qualified to indicate a fixed-satellite service link in the frequency band 17.3 - 17.8 GHz in the Region 2 broadcasting-satellite service Plan and in the frequency bands 14.5 - 14.8 GHz, 17.3 - 18.1 GHz in the Regions 1 and 3 Plan."

2. Page 2, replace the § 1.6 title by the following:

"1.6 second adjacent channel (Region 2)".

3. Page 3, § 1.6bis replace the " $M\mu$ " by "Mu" in the formula.

4. Page 3 and page 4, add at the end of the titles of sections 1.7, 1.8, 1.9, 1.10 the terms:

"(Region 2)".

5. Page 5, delete the "s" at the end of "second adjacent" in the second line of the first paragraph.

6. Page 10, § 2.2, replace the first sentence of the first paragraph by the following:

"The propagation model for feeder links using circularly polarized signals is based on the value of rain attenuation exceeded for one percent of the worst month."

7. Page 10, § 2.2 insert after the first paragraph, the following:

"Figure 4 presents plot of rain attenuation of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz as a function of earth station latitude and elevation angle for each of the rain climatic zones in Region 2."

8. Page 10, § 2.2, just before "Step 1...", add at the end of "i.e. 17.7 GHz and 14.65 GHz", the terms:

"for Regions 1 and 3, and 17.5 GHz for Region 2".



9. Page 14, "Step 6", at the third sentence which begins by "R0.01 is..." insert:

- after "Table 5": "for each climatic zone. The"
- after "k and  $\alpha$ ": "are given"
- after "rain climatic zones": "are given"
- after "respectively": for Regions 1, 2 and 3.

10. Page 14, in Table 6, add a fourth column at the table so it reads:

| Frequency GHz | k      | $\alpha$ |                     |
|---------------|--------|----------|---------------------|
| 14.65         | 0.0327 | 1.149    | For Regions 1 and 3 |
| 17.5          | 0.0521 | 1.114    | For Region 2        |
| 17.7          | 0.0531 | 1.110    | For Regions 1 and 3 |

11. Page 21, § 3, 9, add square brackets in front of all the paragraphs.

12. Page 22, § 3.15, suppress at the end of the title the words  
"in Regions 1 and 3".

13. Page 22, add at the end of the page

"Region 2"

"4 basic technical characteristics"

"No change".

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

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13 September 1988  
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SUB-WORKING GROUP 5-A-2  
AD HOC 3

Draft

ANNEX 3 OF APPENDIX 30A

At the request of Sub-Working Group 5-A-2, the attached text is presented for consideration.

M. GIOVACHINI  
Chairman of Sub-Working Group 5-A-2 ad hoc 3

### ANNEX 3

#### Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application

## 1. DEFINITIONS

### 1.1 *Feeder link*

In the Region 2 broadcasting-satellite service Plan, the term feeder link, as defined in No. 109 of the Radio Regulations is further qualified to indicate a fixed-satellite service link in the frequency band 17.3 - 17.8 GHz from any earth station within the feeder-link service area to the associated space station in the broadcasting-satellite service. In Regions 1 and 3 broadcasting-satellite service Plan, the frequency bands are 14.5 - 14.8 GHz and 17.3 - 18.1 GHz.

### 1.2 *Feeder-link beam area*

The area delineated by the intersection of the half-power beam of the satellite receiving antenna with the surface of the Earth.

### 1.3 *Feeder-link service area*

The area on the surface of the Earth within the feeder-link beam area within which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

### 1.4 *Nominal orbital position*

The longitude of a position in the geostationary-satellite orbit associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

### 1.5 *Adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately higher or lower in frequency with respect to the RF reference channel.

### 1.6 *Second adjacent channel*

The RF channel in the broadcasting-satellite service frequency Plan, or in the associated feeder-link frequency Plan, which is situated immediately beyond either of the adjacent channels.

#### 1.6bis Feeder-link equivalent protection margin for Regions 1 and 3

The feeder-link equivalent protection margin (M) is given by the formula:

$$M_{\mu} = -10 \log (10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10}) \text{ dB}$$

where  $M_1$  is the value in dB of the protection margin for the same channel, i.e.:

$$M_1 = \frac{\text{wanted power (dB)}}{\text{sum of the co-channel interfering powers}} - \text{co-channel protection ratio (dB)}$$

$M_2$  and  $M_3$  are the values in dB of the protection margin for respectively the upper and lower adjacent channel, i.e.:

$$M_2 = \frac{\text{wanted power (dB)}}{\text{sum of the upper adjacent channel interfering powers}} - \text{adjacent channel protection ratio (dB)}$$

$$M_3 = \frac{\text{wanted power}}{\text{sum of the lower adjacent channel interfering powers}} - \text{adjacent channel protection ratio}$$

All powers are evaluated at the receiver input. All protection ratios are given in section 3.3 of this annex.

#### 1.7 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio is the ratio of the wanted carrier power to the sum of all interfering RF powers in a given channel including both feeder links and down links. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder-link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively<sup>1</sup>.

<sup>1</sup> In Region 2 there are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels and upper and lower second adjacent channels. In Regions 1 and 3, three ratios are used, namely, co-channel and upper and lower adjacent channels; furthermore, it was decided to assess the relative contributions of the feeder links and down-links separately.

1.8 *Overall co-channel protection margin*

The overall co-channel protection margin in a given channel is the difference in dB between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

1.9 *Overall adjacent channel protection margin*

The overall adjacent channel protection margin is the difference, in dB, between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

1.10 *Overall second adjacent channel protection margin*

The overall second adjacent channel protection margin is the difference in dB between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

1.11 *Overall equivalent protection margin*

The overall equivalent protection margin  $M$  is given in dB by the expression:

$$M = -10 \log \left( \sum_{i=1}^5 10^{(-M_i/10)} \right) \quad (\text{dB})$$

where:

$M_1$  = overall co-channel protection margin, in dB (as defined in 1.8),

$M_2, M_3$  = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in 1.9),

$M_4, M_5$  = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in 1.10).

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacents as well as co-channel interference sources have been included.

For Regions 1 and 3

The overall equivalent protection margin M is given in dB by the expression:

$$M = -10 \log \left[ 10^{-[M_u+R_{cu}]/10} + 10^{-[M_d+R_{cd}]/10} \right] - R_{co}$$

where:

$M_u$  = equivalent protection margin for the feeder link (as defined in 1.6bis)

$M_d$  = equivalent protection margin for the down-link (as defined in Appendix 30 in section 3.4)

$R_{cu}$  = co-channel feeder link protection ratio

$R_{cd}$  = co-channel down-link protection ratio

$R_{co}$  = co-channel overall protection ratio.

The values of the protection ratios are as follows:

$R_{cu} = 40$  dB

$R_{cd} = 31$  dB

$R_{co} = 30$  dB

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent channels as well as co-channel interference sources have been included.

2. Radio propagation factors

The propagation loss on an earth-space path is equal to the free-space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

## 2.1 Atmospheric absorption

The loss due to atmospheric absorption (i.e. clear sky attenuation) is given by:

$$A_a = \frac{92.20}{\cos \theta} (0.020 F_o + 0.008 \rho F_w) \quad (\text{dB}) \quad \text{for } \theta < 5^\circ$$

where:

$$F_o = \left\{ 24.88 \tan \theta + 0.339 \sqrt{1416.77 \tan^2 \theta + 5.51} \right\}^{-1}$$

$$F_w = \left\{ 40.01 \tan \theta + 0.339 \sqrt{3663.79 \tan^2 \theta + 5.51} \right\}^{-1}$$

and:

$$A_a = \frac{0.0478 + 0.0118 \rho}{\sin \theta} \quad (\text{dB}) \quad \text{for } \theta \geq 5^\circ$$

where:

$\theta$  = the elevation angle (degrees),

$\rho$  = the surface water vapour concentration, g/m<sup>3</sup>, with

$\rho = 10 \text{ g/m}^3$  for rain-climatic zones A to K and

$\rho = 20 \text{ g/m}^3$  for rain-climatic zones M to P

(see Figure 1 for Region 1)

(see Figure 2 for Region 2)

(see Figure 3 for Region 3)

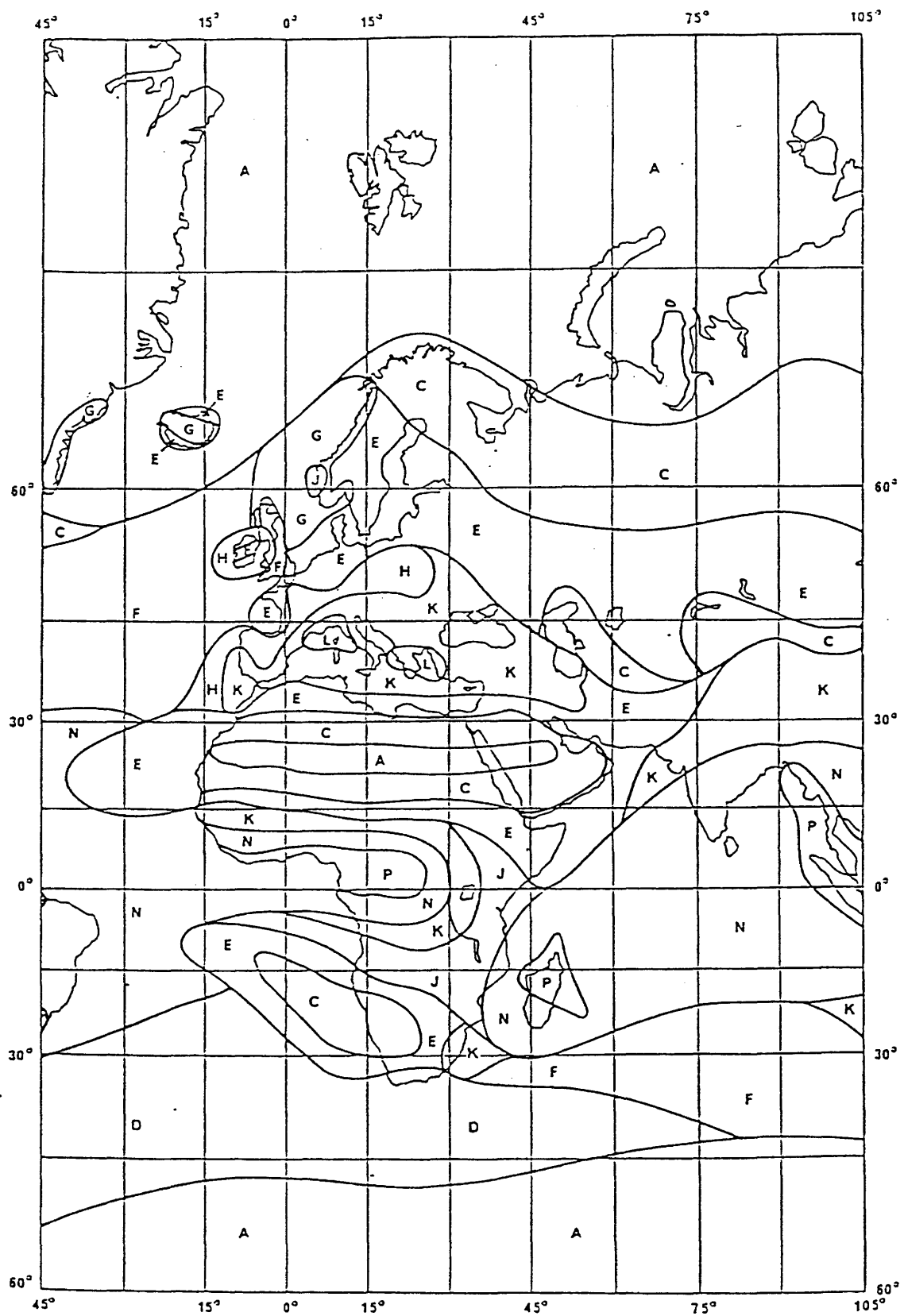


FIGURE 1  
Rain climatic zones (Region 1)



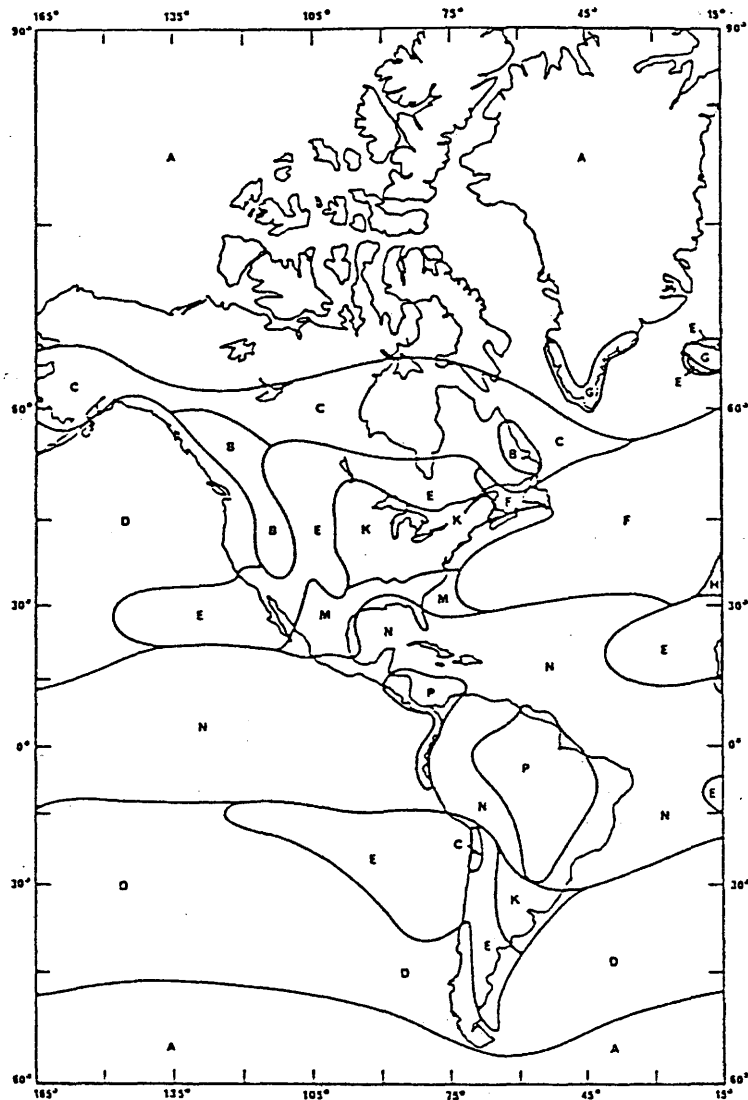


FIGURE 2

Rain climatic zones (Region 2)

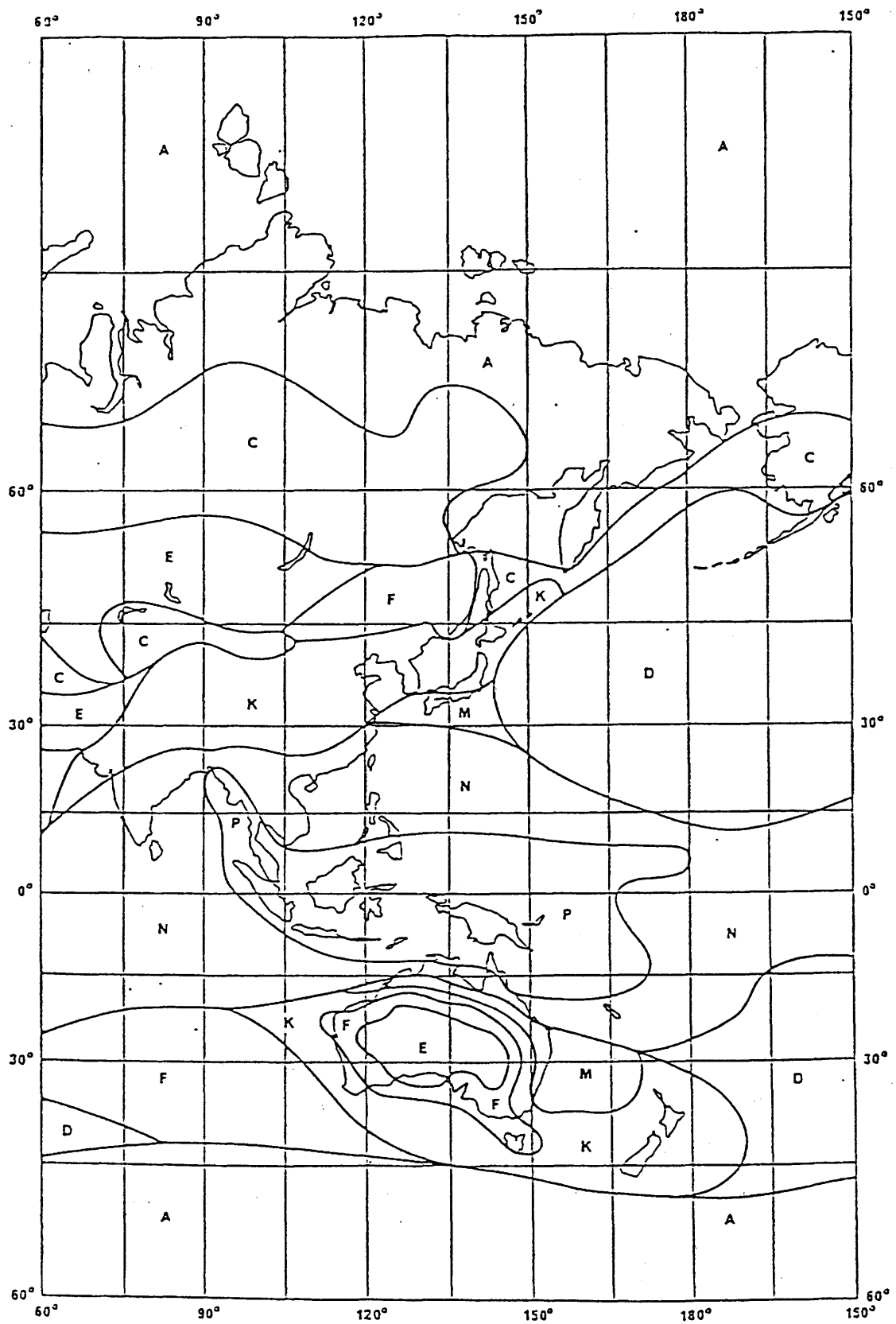


FIGURE 3

Rain climatic zones (Region 3)

## 2.2 Rain attenuation

The propagation model for feeder links is based on the value of rain attenuation exceeded for one per cent of the worst month.

For calculation, the following data are needed:

$R_{0.01}$ : point rainfall rate for the location exceeded for 0.01% of an average year (mm/h)

$h_0$ : The height above mean sea level of the earth station (km)

$\theta$ : the elevation angle (degrees)

$f$ : frequency (GHz)

$\zeta$ : latitude of earth station (degrees)

Mean frequencies will be used for calculations for the two bands, i.e. 17.7 GHz and 14.65 GHz.

Step 1 - The mean zero-degree isotherm height  $h_F$  is:

$$h_F = 5.1 - 2.15 \log \left( 1 + 10^{\frac{(\zeta/ - 27)}{25}} \right) \text{ (km)}$$

Step 2 - The rain height  $h_R$  is:

$$h_R = C \cdot h_F$$

where:

$$C = 0.6 \text{ for } 0^\circ \leq \zeta / < 20^\circ$$

$$C = 0.6 + 0.02 (\zeta / - 20) \text{ for } 20^\circ \leq \zeta / < 40^\circ$$

$$C = 1 \text{ for } \zeta / \geq 40^\circ$$

Step 3 - The slant-path length,  $L_S$ , below the rain height is:

$$L_S = \frac{2 (h_R - h_0)}{\left( \sin^2 \theta + 2 \left( \frac{h_R - h_0}{R_e} \right)^{1/2} + \sin \theta \right)} \text{ (km)}$$

where:

$R_e$  is the effective radius of the Earth (8,500 km)

Step 4 - The horizontal projection,  $L_G$ , of the slant-path is:

$$L_G = L_S \cos \theta \text{ (km)}$$

Step 5 - The rain path reduction factor  $r_{0.01}$ , for 0.01% of the time is:

$$r_{0.01} = \frac{90}{90 + 4 L_G}$$

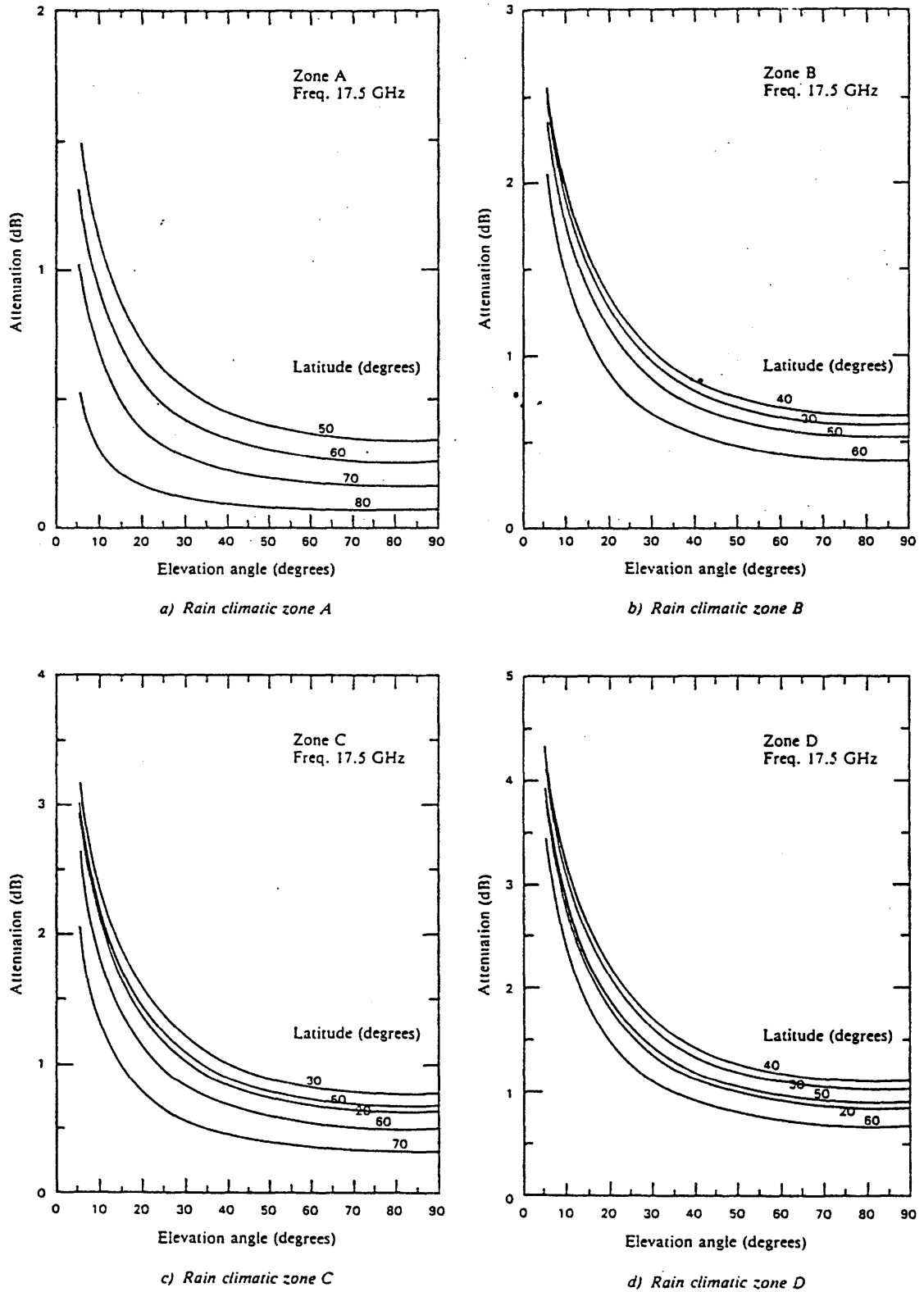
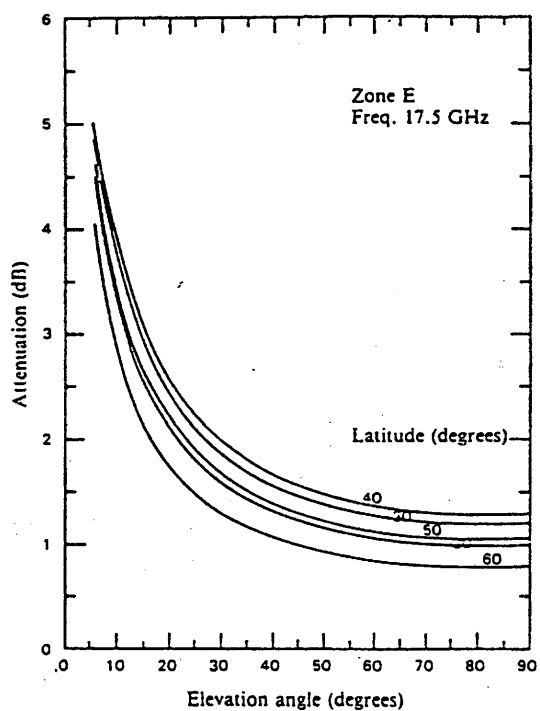
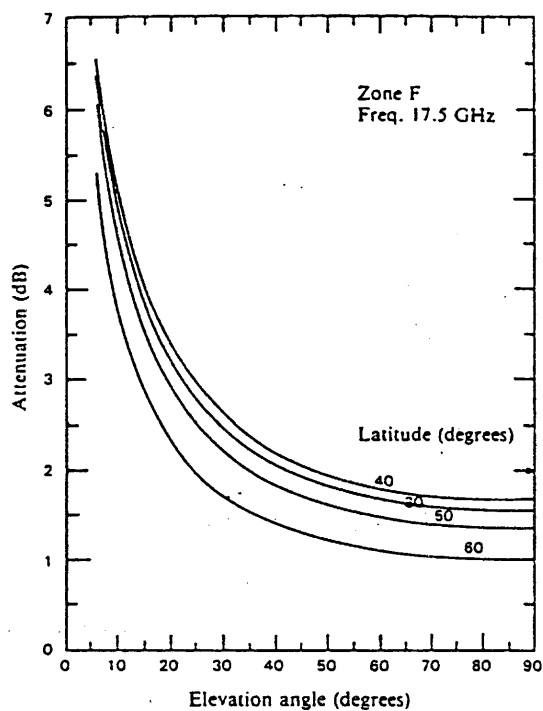


FIGURE 4

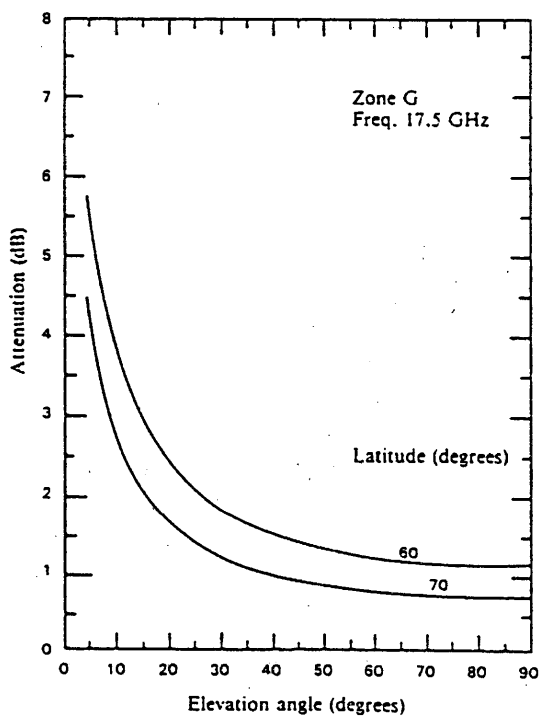
*Rain attenuation values exceeded for 1% of the worst month (sea level)  
for Region 2 rain climatic zones*



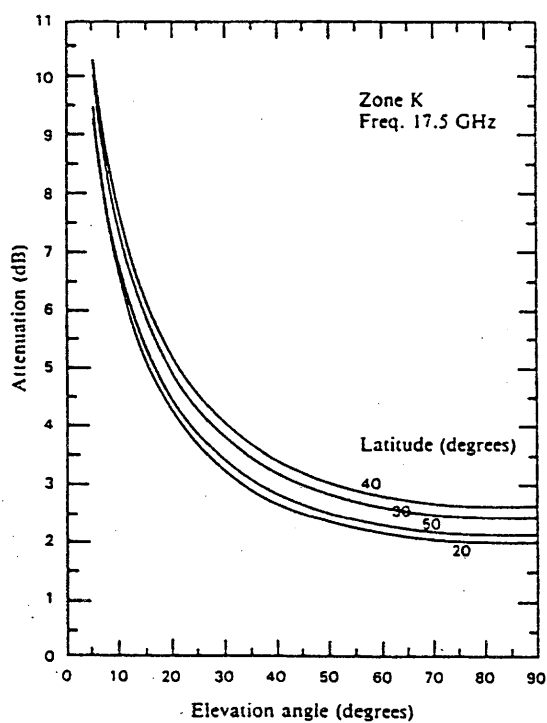
e) Rain climatic zone E



f) Rain climatic zone F



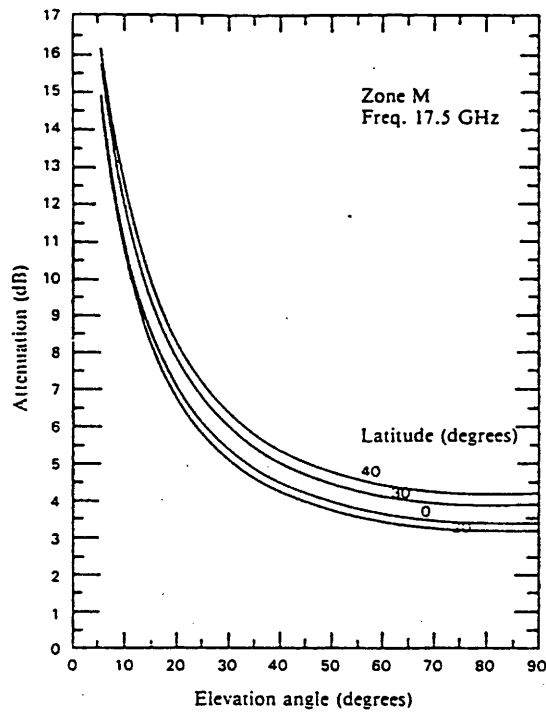
g) Rain climatic zone G



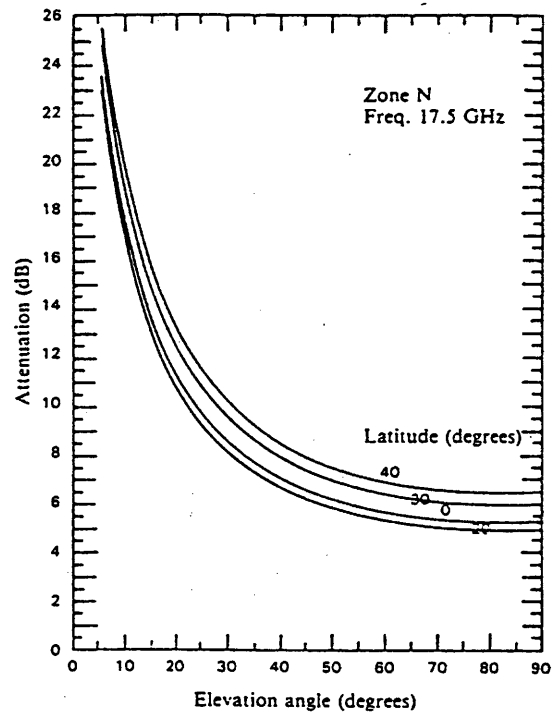
h) Rain climatic zone K

FIGURE 4(cont.)

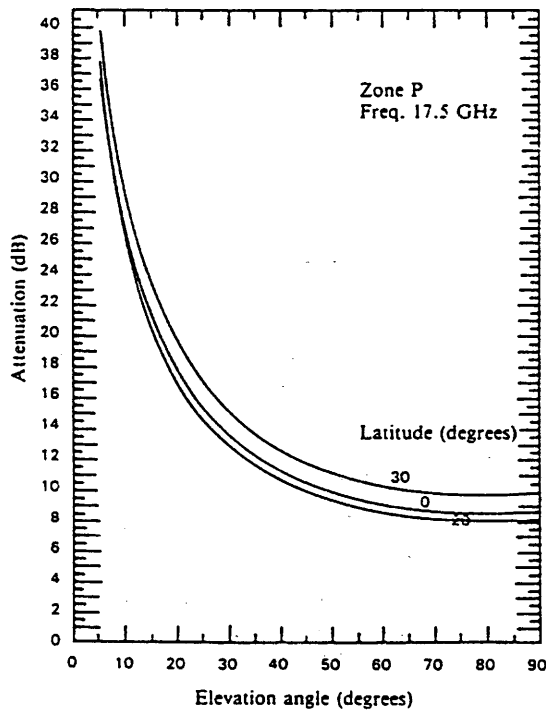
Rain attenuation values exceeded for 1% of the worst month (sea level)  
for Region 2 rain climatic zones



i) Rain climatic zone M



j) Rain climatic zone N



k) Rain climatic zone P

FIGURE 4(cont.)

Rain attenuation values exceeded for 1% of the worst month (sea level)  
for Region 2 rain climatic zones

Step 6 - The specific attenuation,  $\gamma_R$ , is determined from:

$$\gamma_R = k (R_{0.01})^\alpha \text{ (dB/km)}$$

where:

$R_{0.01}$  is given in Table 5 frequency dependent coefficients  $k$  and  $\alpha$  in Table 6 and rain climatic zones in Figures 1, 2, 3 respectively.

TABLE 5

Rainfall intensity (R) for the rain climatic zones  
(exceeded for 0.01% of an average year)

| Rain-clim-<br>atic zone         | A | B  | C  | D  | E  | F  | G  | H  | J  | K  | L  | M  | N  | P   |
|---------------------------------|---|----|----|----|----|----|----|----|----|----|----|----|----|-----|
| Rainfall<br>intensity<br>(mm/h) | 8 | 12 | 15 | 19 | 22 | 28 | 30 | 32 | 35 | 42 | 60 | 63 | 95 | 145 |

TABLE 6

Frequency dependent coefficients

| Frequency<br>GHz | k      | $\alpha$ |
|------------------|--------|----------|
| 14.65            | 0.0327 | 1.149    |
| 17.5             | 0.0521 | 1.114    |
| 17.7             | 0.0531 | 1.110    |

Frequency dependent coefficients are calculated using the following formulas and Table 7:

$$k = [k_H + k_V + (k_H - k_V) \cos^2 \theta \cos 2\tau] / 2$$

$$\alpha = [k_H \alpha_H + k_V \alpha_V + (k_H \alpha_H - k_V \alpha_V) \cos^2 \theta \cos 2\tau] / 2k$$

where  $\theta$  is the path elevation angle and  $\tau$  is the polarization tilt angle relative to the horizontal ( $\tau = 45^\circ$  for circular polarization).

The formulas for  $k$  and  $\alpha$  are general. In the case of circular polarization, the third terms in both equations are equal to zero, so that for circular polarization, the formulas for  $k$  and  $\alpha$  may be written:

$$k = (k_H + k_V) / 2$$

$$\alpha = (k_H \alpha_H + k_V \alpha_V) / 2k$$

TABLE 7  
Regression coefficients for estimating  
specific attenuation

| Frequency<br>(GHz) | $k_H$  | $k_V$  | $a_H$ | $a_V$ |
|--------------------|--------|--------|-------|-------|
| 12                 | 0.0188 | 0.0168 | 1.217 | 1.200 |
| 15                 | 0.0367 | 0.0335 | 1.154 | 1.128 |
| 20                 | 0.0751 | 0.0691 | 1.099 | 1.065 |

Step 7 - The attenuation exceeded for 1% of the worst month is:

$$A_{1\%} = 0.223 \gamma_R L_s r_{0.01} \text{ (dB) for Regions 1 and 3}$$

$$A_{1\%} = 0.21 \gamma_R L_s r_{0.01} \text{ (dB) for Region 2}$$

### 2.3 Rain attenuation limit

In the analysis of the Plan, a maximum rain attenuation on the feeder link of 13 dB in Region 2 and [ ] in Regions 1 and 3 was considered assuming that other means would be used at the implementation stage to compensate for larger rain attenuation on the feeder link.

### 2.4 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For the feeder link, the XPD ratio, in dB, not exceeded for 1% of the worst month, is given by:

$$XPD = 30 \log f - 40 \log (\cos \theta) - V \log A_p \text{ (dB) for } 5^\circ \leq \theta \leq 60^\circ$$

where

$$V = 20 \text{ for } 14.5 - 14.8 \text{ GHz}$$

and

$$V = 23 \text{ for } 17.3 - 18.1 \text{ GHz}$$

where

$A_p$ : co-polar rain attenuation exceeded for 1% of the worst month,

$f$ : frequency (GHz),

$\theta$ : elevation angle (degrees).

For values of  $\theta$  greater than  $60^\circ$ , use  $\theta = 60^\circ$  in the above equation.



2.5 *Procedure for calculating the carrier-to-interference ratio at a space station receiver input*

The calculation of the feeder-link carrier-to-interference ratio (exceeded for 99% of the worst month) at a space station receiver input used to obtain the overall equivalent protection margin at a test point assumes a rain attenuation value exceeded for 1% of the worst month on the wanted feeder-link path.

For the interfering feeder-link signal path, clear sky propagation (i.e. including atmospheric absorption only) is assumed.

Regions 1 and 3

3 BASIC TECHNICAL CHARACTERISTICS

3.1 Translation frequency and guard bands

a) 17 GHz Feeder-Links.

The feeder-link Plan is based on the use of a single frequency translation of 5.6 GHz between the 17 GHz feeder-link channels and the 12 GHz down-link channels. Other values of the translation frequency may be used, provided that the corresponding channels have been assigned to the space station of the administration concerned.

With a single value frequency translation between the feeder-link frequency band (17.3-18.1 GHz in Region 1 and 17.3 - 17.8 GHz in Region 3) and the down-link frequency band (11.7-12.5 GHz in Region 1 and 11.7-12.2 GHz in Region 3), the guard bands present in the down-link Plan result in corresponding bandwidths of 11 MHz at the upper and 14 MHz at the lower feeder-link band edges. These feeder-link guard bands may be used for transmissions in the space operation service

b) 14 GHz Feeder-links

As the maximum available bandwidth for the feeder-link band 14.5-14.8 GHz is only 300 MHz as against 800 and 500 MHz in the down-link Plan for Regions 1 and 3, respectively several translation frequencies must be considered to allow any channel in the Plan to be used. Consequently, a particular feeder-link channel has been assigned to several BSS Plan channel simultaneously.

The translation frequencies are:

- a) 2 797.82 MHz for BSS channels 1 to 14
- b) 2 529.30 MHz for BSS channels 15 to 28
- c) 2 260.78 MHz for BSS channels 29 to 40

The guard bands are 11.80 MHz at the lower band edge and 11.86 MHz at the upper band edge.

### 3.2 Carrier-to-noise ratio

Section 3.3 of Annex 5 to Appendix 30 (Orb-85) provides guidance for planning and the basis for the evaluation of the carrier-to-noise ratios of the feeder-link and down-link Plans.

As guidance for planning, the reduction in quality in the down-link due to thermal noise in the feeder-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB not exceeded for 99% of the worst month. This requires the feeder-link carrier-to-noise ratio to be 10 dB higher than that used for the down-link planning.

For down-links, the WARC-BS-77 has adopted a figure of C/N equal to 14.5 dB for 99% of the worst month at the edge of the service area. The feeder-link C/N used for planning is thus 24 dB for 99% of the worst month, at the edge of the service area to produce an overall C/N performance of 14 dB.

### 3.3 Protection ratios

For planning in Regions 1 and 3 the following protection ratios have been applied for the purpose of calculating the feeder-link equivalent protection margins:

- co-channel protection ratio = 40 dB;
- adjacent channel protection ratio = 21 dB.

The method for the calculation of the feeder-link equivalent protection margin is given in section 1.6bis of this annex.

### 3.3bis Feeder-link e.i.r.p.

To be precised later.

The level of e.i.r.p. specified in the Plan can only be exceeded under certain conditions explained in section 3.10 of this annex.

### 3.4 Transmitting antenna

#### 3.4.1 Antenna diameter

The feeder-link Plan is based on an antenna diameter of 5 metres for the band 17.3-18.1 GHz and 6 metres for the band 14.5-14.8 GHz.

The minimum antenna diameter permitted in the Plan is 2.5 metres. However, the feeder-link carrier-to-noise ratio and carrier-to-interference ratio resulting from the use of antennas with diameters smaller than 5 metres for the 18 GHz band and 6 metres for the 14 GHz band would generally be less than those calculated in the Plan.

### 3.4.2 On-axis gain

The on-axis gain for the 5 m antenna at 17.3-18.1 GHz and for the 6 m antenna at 14.5 to 14.8 GHz is taken as 57 dBi.

### 3.4.3 Off-axis eirp of transmitting antennas

The co-polar and cross-polar off-axis eirps for planning in Regions 1 and 3 are given in Figure [A]

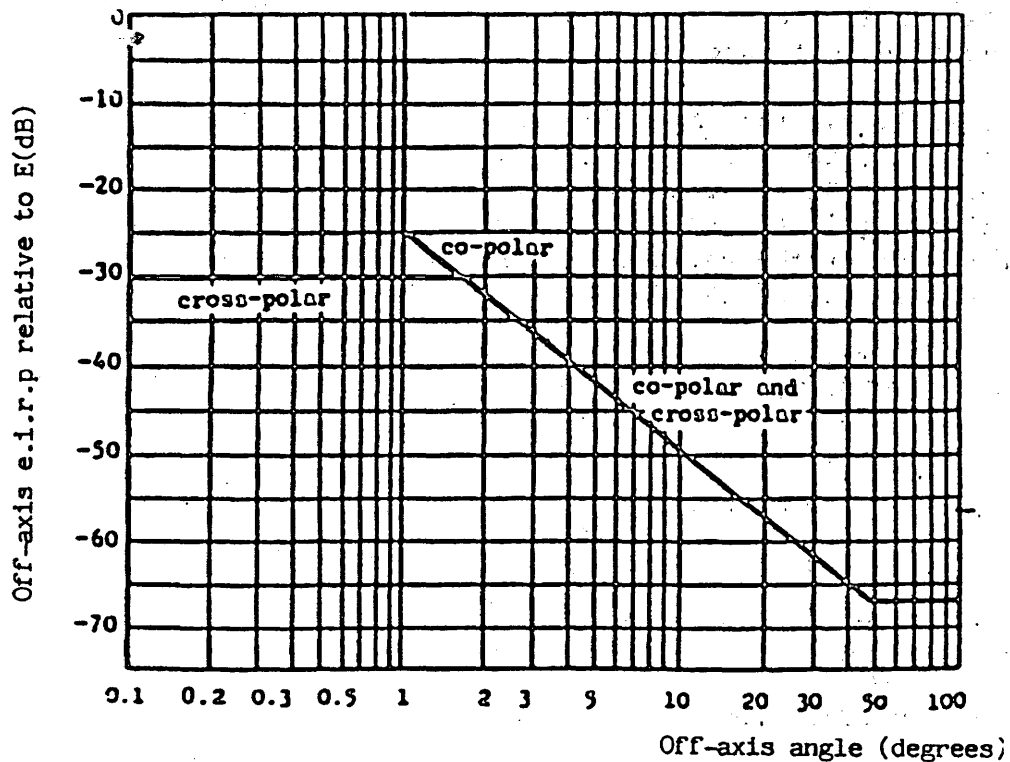


Figure [A]  
Earth Station off-axis eirp

Co-Polar Component (dBW):

$E$  (dBW) for  $0^\circ < \theta \leq 0.1^\circ$   
 $E - 21 - 20 \log \theta$  (dBW) for  $0.1^\circ < \theta \leq 0.32^\circ$   
 $E - 5.7 - 53.2 \theta^2$  (dBW) for  $0.32^\circ < \theta \leq 0.44^\circ$   
 $E - 25 - 25 \log \theta$  (dBW) for  $0.44^\circ < \theta \leq 48^\circ$   
 $E - 67$  (dBW) for  $\theta > 48^\circ$

Cross-polar component (dBW):

$E - 30$  (dBW) for  $0^\circ \leq \theta \leq 1.6^\circ$   
 $E - 25 - 25 \log \theta$  (dBW) for  $1.6^\circ < \theta \leq 48^\circ$   
 $E - 67$  (dBW) for  $\theta > 48^\circ$

where  $E$  (dBW) is the earth station on-axis eirp

and  $\theta$  = off-axis angle referred to the main lobe axis (degrees)

The value of "E" to be taken into account in the above formula is given in section 3.3bis of this annex.

#### 3.4 4 Pointing accuracy

The Plan has been developed to accommodate a loss in gain due to earth station antenna mis-pointing of 1 dB.

#### 3.5 Transmitter power

The maximum transmitter power delivered to the input of the antenna of the feeder-link earth station per 27 MHz television channel should be such as to ensure that the eirp envelope in Section 3.4.3 is not exceeded except under certain conditions specified in Section 3.10 of this Annex.

#### 3.6 Receiving antenna

##### 3.6.1 Cross-section of receiving antenna beam

Planning has been based on beams of elliptical or circular cross-section. When the assignments are implemented, or when the Plan is modified, administrations may use non-elliptical or shaped beams.

If the cross-section of the receiving antenna beam is elliptical, the effective beamwidth  $\varphi_0$  is a function of the angle of rotation  $q$  between the plane containing the satellite and the major axis of the beam cross-section and the plane in which the beamwidth is required.

The relationship between the maximum gain of an antenna and the half-power beamwidth can be derived from the expression:

$$G_m = 27\,843/ab$$

or

$$G_m(\text{dB}) = 44.44 - 10 \log a - 10 \log b$$

where:

$a$  and  $b$  are the angles (in degrees) subtended at the satellite by the major and minor axes of the elliptical cross-section of the beam.

An antenna efficiency of 55% is assumed.

##### 3.6.2 Minimum beamwidth

A minimum value of  $0.6^\circ$  for the half-power beamwidth of the receiving antenna has been agreed for planning.

### 3.6.3 Reference patterns

[If a common transmit/receive antenna is used the co and cross-polar patterns to be used are as given in Figure 9 of Annex 5 to Appendix 30 (Orb-85) of Radio Regulations.

Where separate antennas are used for transmit and receive] the reference patterns for the co and cross-polar components of the satellite receiving antenna used in preparing the Plan are given in Figure [B].

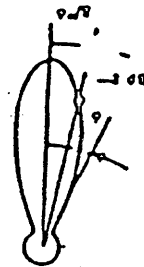
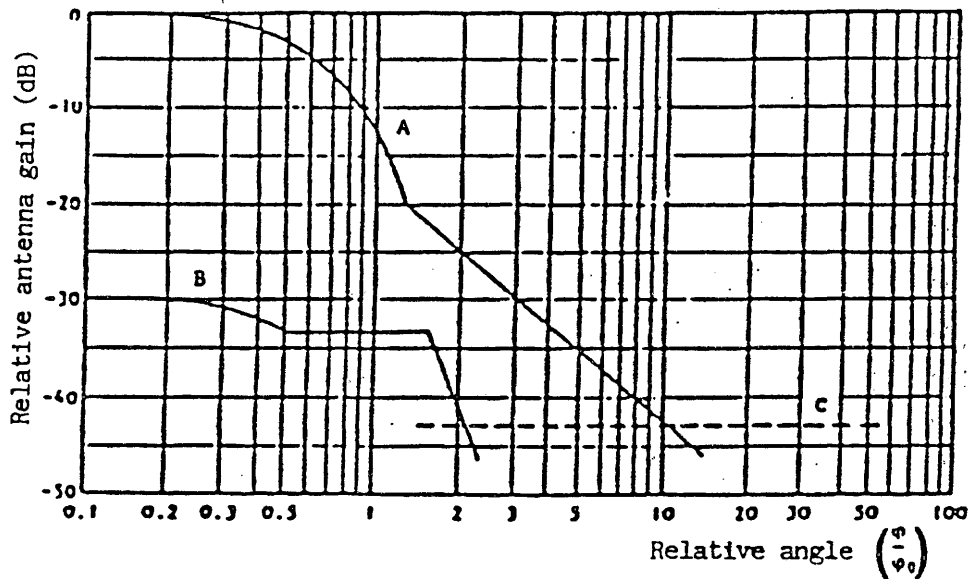


FIGURE [B]  
Satellite receive antenna reference pattern  
For Regions 1 and 3

Curve A - co-polar component

The co-polar reference pattern is given by the formula :

Co-polar relative gain (dB)

$$G = -12 \left( \frac{\phi}{\phi_0} \right)^2 \text{ for } 0 \leq \frac{\phi}{\phi_0} \leq 1.30$$

$$G = -17.5 - 25 \log \left( \frac{\phi}{\phi_0} \right) \text{ for } \frac{\phi}{\phi_0} > 1.30$$

After intersection with curve C: as curve C

(curve C equals minus the on-axis gain).

Curve B - cross-polar component

The cross-polar reference pattern is given by the formula:

Cross-polar relative gain (dB)

$$G = -30 - 12\left(\frac{\varphi}{\varphi_0}\right)^2 \text{ for } 0 \leq \frac{\varphi}{\varphi_0} \leq 0.5$$

$$G = -33 \text{ for } 0.5 < \frac{\varphi}{\varphi_0} \leq 1.67$$

$$G = -40 + 40 \log \left( \frac{\varphi}{\varphi_0} - 1 \right) \text{ for } \frac{\varphi}{\varphi_0} > 1.67$$

After intersection with curve C: as curve C

(curve C equals minus the on-axis gain).

#### 3.6.4 Pointing accuracy

The deviation of the receiving antenna beam from its nominal pointing direction must not exceed 0.2 in any direction. Moreover, the angular rotation of the receiving beam about its axis must not exceed  $\pm 1^\circ$ ; this latter limit is not necessary for beams of circular cross-section using circular polarisation.

#### 3.7 System noise temperature

The Plan is based on a value of 1800K for the satellite system noise temperature for 17 GHz and 1500K for 14 GHz.

#### 3.8 Polarization

3.8.1 In Regions 1 and 3, for the purpose of planning the feeder-links, circular polarization is used.

3.8.2 In the cases where there are polarization constraints, use of polarization other than circular is permitted only upon agreement of administrations that may be affected. If an administration has requested linear polarization as a special case, this is indicated by a mark in the relevant column of the Plan.

#### 3.9 Automatic gain control

The down-link plan was based on constant satellite output power. However, the Plan does not take account of the effect of A.G.C. on board satellites. Up to 15 dB of A.G.C. is permitted, subject to no increase in interference to other satellite systems.

#### 3.10 Power control

[To be completed when Sub-Working Group 5-A-2 ad hoc 2]  
will have finished its work.]

### 3.11 Site Diversity

Site diversity refers to the alternate use during rain of two or more transmitting earth stations which may be separated by sufficient distance to ensure uncorrelated rainfall conditions.

The use of site diversity is permitted and is considered to be an effective technique for maintaining high carrier-to-noise ratio and carrier-to-interference ratio during periods of moderate to severe rain attenuation. However, the Plan is not based on the use of site diversity.

### 3.12 Depolarization compensation

The Plan is developed without the use of depolarization compensation. Depolarization compensation is permitted only to the extent that interference to other satellites does not increase by more than 0.5<sup>1</sup> dB relative to that calculated in the feeder-link Plan.

#### 3.12 bis Amplitude-modulation to phase-modulation conversion

The degradation caused by AM to PM conversion was taken into account when calculating the carrier-to-noise ratio of the feeder-link. A value of 2.0 dB was allowed.

### 3.15 Minimum separation between satellites in Regions 1 and 3

The minimum distance between satellites is either 6 degrees in the nominal position, or 5.6 degrees when the small separation, which is one of the method to resolve incompatibilities is applied.

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<sup>1</sup> Note - This margin has to be shared between power control effects and depolarization compensation effects, when both are involved (see 3.10).

WORKING GROUP 6-B

Draft

NOTE BY THE CHAIRMAN OF WORKING GROUP 6-B IN RELATION TO  
THE IMPACT OF THE NETWORK COORDINATION AND NOTIFICATION  
PRINCIPLE ON ARTICLE 13

1. The current Article 13 and Appendix 3 of the Radio Regulations specify that the notification of frequency assignments shall be made separately for:

- transmitting earth stations and
- receiving space stations for the up-link;

and for:

- transmitting space station and
- receiving earth stations for the down-link.

2. At the present stage of discussion in Committee 6, it has been decided that coordination (RR 1060) of space radiocommunication stations should normally be done on a network basis (i.e. transmitting and receiving space station including characteristics of typical earth stations).

3. For notification, under Article 13, of space radiocommunication stations, further discussions are needed. The following possibilities may be envisaged:

3.1 Satellite networks are coordinated (RR 1060) on a network basis, however, current Article 13 procedure will continue to be used for a separate notification of space and earth stations for transmission and receptions. For this purpose the notification, under Article 13, of the network should be done by the current practice of notifying space stations (transmitting and receiving) and earth stations (transmitting and receiving) individually or as typical earth stations. This solution of the problem can be implemented by some relatively minor amendments.

3.2 In a second alternative, the notification, under Article 13, of frequency assignments for space radiocommunications will be made either:

3.2.1 By the notification of the transmitting stations only (i.e. the administration responsible for the space station notifies the transmitting space station and the administration responsible for the earth station notifies the transmitting earth station) with indication of the receiving stations; or

3.2.2 Only the space station is notified for transmission and reception, with indication of the associated earth station.



3.2.3 Either of the two new approaches needs a close consideration of the coordination with the terrestrial services. It can be envisaged that the notification, under Article 13, of a specific earth station is not mandatory in the case if its coordination contour does not overlap the territory of another administration. To cover such a situation, the revised Article 13 should contain provisions to stipulate that the administration responsible for the earth station not notified is deemed to accept interference from and not to cause interference to terrestrial services of other administrations.

A. CAREW  
Chairman of Working Group 6-B

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 DL/31-E  
13 September 1988  
Original: English

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WORKING GROUP 5-B

The attached draft Resolution as adopted by Sub-Working Group 5-B-1 is submitted for consideration.

C. DOSCH  
Chairman of Working Group 5-B

Attachment: 1

Draft

RESOLUTION [42 (MOD)]

Relating to the Use of Interim Systems in Region 2 in the  
Broadcasting-Satellite and Fixed-Satellite (Feeder Link) Services  
in Region 2 for the Bands Covered by Appendix 30 and Appendix 30A

The World Administrative Radio Conference on the Use of the  
Geostationary Satellite Orbit and the Planning of the Space Services  
Utilizing It, Second Session, Geneva, 1988.

Considering

- a) that the Regional Administrative Radio Conference for the  
Planning of the Broadcasting-Satellite Service in Region 2,  
Geneva, 1983, prepared a Plan for the broadcasting-satellite  
service in the band 12.2 - 12.7 GHz and a Plan for the associated  
feeder links in the band 17.3 - 17.8 GHz with the provision of  
implementing Interim Systems in accordance with Resolution 2  
(SAT-R2);
- b) that in the implementation of their assignments in the  
Plans, administrations of Region 2 may find it more appropriate to  
adopt a phased approach and initially use characteristics  
different from those appearing in the appropriate Region 2 Plan;
- c) that some administrations of Region 2 may cooperate in the  
joint development of a space system with a view to covering two or  
more service areas from the same orbital position or to use a beam  
which would encompass two or more service areas;
- d) that some administrations of Region 2 may cooperate in the  
joint development of a space system with a view to using two or  
more feeder-link service areas from the same orbital position or  
to use a beam which encompasses two or more feeder-link service  
areas;
- e) that interim systems shall not adversely affect the Plans  
nor hamper the implementation and evolution of the Plans;
- f) that the number of assignments to be used in an interim  
system shall not in any case exceed the number of assignments  
appearing in the Region 2 Plan which are to be suspended;
- g) that the interim systems shall not in any case use orbital  
positions that are not in the Region 2 Plan;
- h) that an interim system shall not be introduced without the  
agreement of all administrations whose space and terrestrial  
services are considered to be affected;

Resolves

that administrations and the IFRB shall apply the procedure  
contained in the Annex to this Resolution.

ANNEX TO RESOLUTION [42 (MOD)]

1 An administration or a group of administrations in Region 2 may, after successful application of the procedure contained in this Annex and with the agreement of the affected administrations, use an interim system during a specified period not exceeding 10 years in order:

1.1 for an interim system in the broadcasting-satellite service

- a) to use an increased e.i.r.p in any direction relative to that appearing in the Region 2 Plan provided that the power flux-density does not exceed the limits given in Annex 5 of Appendix 30;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the Region 2 Plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;
- c) to change the coverage area by displacing boresight, or by increasing the major or minor axis or by rotating them, from an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 Plan;
- d) to use a coverage area appearing in the Region 2 Plan or a coverage area encompassing two or more coverage areas appearing in the Region 2 Plan from an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 Plan;
- e) to use a polarization different from that in the Region 2 Plan.

1.2 for an interim feeder-link system

- a) to use an increased e.i.r.p in any direction relative to that appearing in the Region 2 feeder-link Plan;
- b) to use modulation characteristics<sup>1</sup> different from those appearing in the Annexes to the plan and resulting in an increased probability of harmful interference or in a wider assigned bandwidth;

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<sup>1</sup> For example, modulation with sound channels frequency-multiplexed within the bandwidth of a television channel, digital modulation of sound and television signals, or other pre-emphasis characteristics.

- c) to change the feeder-link beam area by displacing the boresight, or by increasing the major or minor axis or by rotating them, in relation to an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 feeder-link Plan;
- d) to use a feeder-link beam area appearing in the Region 2 feeder-link Plan or a feeder-link beam area encompassing two or more feeder-link beam areas appearing in the Region 2 feeder-link Plan in relation to an orbital position which shall be one of the corresponding orbital positions appearing in the Region 2 feeder-link Plan;
- e) to use a polarization different from that in the Region 2 feeder-link Plan.

2.1 In all cases, an interim system shall correspond to assignments in the Region 2 Plan; the number of assignments to be used in an interim system shall not in any case exceed the number of assignments appearing in the Region 2 Plan which are to be suspended. During the use of an interim system, the use of the corresponding assignments in the Region 2 Plan is suspended; they shall not be brought into use before the cessation of the use of the interim system. However, the suspended assignments, but not the interim system's assignments, of an administration shall be taken into account when other administrations apply the procedure of Article 4 of Appendix 30 and of Appendix 30A, as appropriate, in order to modify the Plans, or the procedure of this Annex in order to bring an interim system into use. The assignments of interim systems shall not be taken into account in applying the procedure of Article 6 or Article 7 of Appendix 30 and the procedure of Article 6 or Article 7 of Appendix 30A.

2.2 As a consequence of paragraph 2.1 above, interim systems' assignments shall not obtain protection from, or cause harmful interference to, new or modified assignments appearing in the Plans following the successful application of the procedures of Article 4 of Appendix 30 or Appendix 30A as appropriate, even if such a modification is concluded and becomes operational within the time-limit specified in paragraph 3(a).

3 When an administration proposes to use an assignment in accordance with paragraph 1, it shall communicate to the IFRB the information listed in Annex 2 of Appendix 30 or Appendix 30A as appropriate not earlier than five years but, preferably, not later than twelve months before the date of bringing into use. The administration shall also indicate:

- a) the maximum specified period during which the interim assignment is intended to remain in use;

- b) the assignments in the Region 2 Plans the use of which will remain suspended for the duration of the use of the corresponding interim assignment;
  - c) the names of the administrations with which an agreement for the use of the interim assignment has been reached, together with any comment relating to the period of use so agreed and the names of administrations with which an agreement may be required but has not yet been reached.
- 4 Administrations are considered to be affected as follows:
- 4.1 for an interim system in the broadcasting-satellite service
- a) an administration of Region 2 is considered to be affected if any overall equivalent protection margin of one of its assignments in the Region 2 Plan, calculated in accordance with Annex 5 to Appendix 30 including the cumulative effect of all interim use during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignments (paragraph 3b), becomes negative or a former negative value is made more negative;
  - b) an administration of Region 1 or 3 is considered to be affected if it has an assignment which is in conformity with the Regions 1 and 3 Plan contained in Appendix 30 to the Radio Regulations or in respect of which proposed modifications have already been published by the Board in accordance with the provisions of Article 4 of that Appendix with a necessary bandwidth which falls within the necessary bandwidth of the proposed interim assignment and the appropriate limits of Annex 1 of Appendix 30 are exceeded;
  - c) an administration of Region 1 or 3 is considered to be affected if it has a frequency assignment in the fixed satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations or under Article 7 of Appendix 30 or which has been published in accordance with No. 1044 of the Radio Regulations or of paragraph 7.1.3 of Appendix 30 and the appropriate limits of Annex 1 of Appendix 30 are exceeded.
  - d) an administration of Region 1 or 3 is considered to be affected if, although having no frequency assignment in the appropriate Regional Plan in the channel concerned, it nevertheless would receive on its territory a power flux-density value which exceeds the limits given in

Annex 1 of Appendix 30 as a result of the proposed interim assignment, or if it has such an assignment for which its associated service area does not cover the whole of the territory of the administration, and in its territory outside that service area the power flux-density from the interim system space station exceeds the limits given in Annex 1 to Appendix 30;

- e) an administration of Region 3 is considered to be affected if it has a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 - 12.7 GHz with a necessary bandwidth any portion of which falls within the necessary bandwidth of the proposed assignment, and which:
- is recorded in the Master Register; or
  - has been coordinated or is being coordinated under the provisions of Resolution 33 of the World Administrative Radio Conference, Geneva 1979; or
  - appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference,

and the appropriate limits of Annex 1 to Appendix 30 are exceeded.

#### 4.2 for interim feeder-link systems

- a) if any overall equivalent protection margin of one of its assignments in the Plan, calculated in accordance with Annex 3 to Appendix 30A including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 3.b), becomes negative or a former negative value is made more negative;
- b) if it has a frequency assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No. 1060 of the Radio Regulations and the appropriate limits of Annex 1 to Appendix 30A are exceeded;
- c) if it has a frequency assignment in the band 17.7 - 17.8 GHz to a terrestrial station, in use or intended to be brought into use within three years of the projected date of bringing into use of the feeder-link

earth station, which is located within the coordination area of the feeder-link earth station concerned and the appropriate limits of Annex 1 to Appendix 30A are exceeded;

5 The Board shall publish in a special section of its weekly circular the information received under paragraph 3, together with the names of the administrations the Board has identified in application of paragraph 4.

6 When the Board finds that the suspended assignment of an administration having an interim system is not affected, it shall examine the projected interim system with respect to the interim system of that administration and if there is an incompatibility, it shall request the two administrations concerned to adopt any measures that may enable the new interim system to be operated.

7 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

8 Any administration not listed in the special section which considers that its planned interim assignment may be affected shall so inform the administration responsible for the interim system and the Board, and the two administrations shall endeavour to resolve the difficulty before the proposed date of bringing the interim assignment into use.

9 An administration which has not sent its comments either to the administration seeking agreement or to the Board within a period of four months following the date of the weekly circular referred to in paragraph 5 shall be understood as having agreed to the proposed interim use.

10 On the expiry of four months following the date of publication of the weekly circular referred to in paragraph 5, the Board shall review the matter and, depending on the results obtained, shall inform the administration proposing the interim assignment that:

- a) it may notify its proposed use under Article 5 of Appendix 30 or Article 5 of Appendix 30A, as appropriate, if no agreement is required or the required agreement has been obtained from the administrations concerned. In this case the Board shall update the Interim List;
- b) it may not bring into use its interim system before having obtained the agreement of the administrations affected, either directly or by applying the procedure



described in Article 4 of Appendix 30 or Article 4 of Appendix 30A, as appropriate, as a means of obtaining that agreement.

11 The Board include all the interim assignments in an Interim List in two parts, one each for the broadcasting-satellite service and the feeder-link assignments, and shall update it in accordance with this Annex. The Interim List shall be published together with the Region 2 Plans but does not constitute part of them.

12 One year prior to the expiry of the interim period, the Board shall draw the attention of the administration concerned to this fact and request it to notify in due time the deletion of the assignment from the Master Register and the Interim List.

13 If, notwithstanding the reminders by the Board, an administration does not reply to its request sent in application of paragraph 12, the Board shall, at the termination of the interim period:

- a) enter a symbol in the Remarks Column of the Master Register to indicate the lack of response and that the entry is for information only;
- b) not take into account that assignment in the Interim List;
- c) inform the administrations concerned and affected of its action.

14 Where an administration confirms the termination of the use of the interim assignment, the Board shall delete the assignment concerned from the Interim List and the Master Register. Any corresponding assignment in the plan(s), suspended earlier, may then be brought into use.

15 An administration which considers that its interim system may continue to be used after the expiry of the interim period may extend it by not more than four years and to this effect shall apply the procedure described in this Annex.

16 Where an administration applies the procedure in accordance with paragraph 15, but was unable to obtain the agreement of one or more affected administrations, the Board shall indicate this situation by inserting an appropriate symbol in the Master Register. Upon receipt of a complaint of harmful interference, the administration shall immediately cease operation of the interim assignment.

17 Where an administration, having been informed of a complaint of harmful interference, does not cease transmission within a period of thirty days after the receipt of complaint, the Board shall apply the provisions of paragraph 13.

S. SELWYN  
Chairman of Sub-Working Group 5-B-1

# 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

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Document DL/32-E  
13 September 1988  
Original: English

### SUB-WORKING GROUP 5-B-2

The attached draft Resolution as adopted by Sub-Working Group 5-B-2 ad hoc 1 is submitted for consideration.

R. ZEITOUN  
Chairman of Sub-Working Group 5-B-2

Attachment

ORB(2)/DL/32-E

Draft

RESOLUTION [COM5/1]

**Relating to a Future Change in Article 8 for the  
Broadcasting-Satellite (Sound) In the  
Frequency Range 500 MHz to 3 000 MHz**

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 the subject of the broadcasting-satellite service (sound) has  
been under consideration within the Union for a quarter of a century and  
that Resolution 505 of the WARC, Geneva 1979 resolved;

that the next world administrative radio conference dealing with  
space radiocommunication services in general or with a specific space  
radiocommunication service shall be authorized to consider the results of  
various studies and to take appropriate decisions regarding the allocation  
of a suitable frequency band;

and that Recommendation 2 of the First Session of this Conference  
recommended that the Second Session of this Conference should consider the  
results of the various up-to-date studies and in reviewing the situation  
prevailing at that time take appropriate decisions concerning the various  
aspects of this system as outlined in Resolution 505;

b) that, at the CPM (1984), the CCIR indicated that further work  
would be needed to define the system parameters;

that the CCIR has provided this Conference with a report on its  
studies into the broadcasting-satellite service (sound);

and that the broadcasting-satellite service (sound) is technically  
feasible;

c) that there is a need for many administrations for Broadcasting-  
Satellite Services (Sound) for individual reception with low cost,  
portable and mobile receivers with simple antennas, in rural and urban  
areas;

that the frequency bands presently allocated to the broadcasting-  
satellite service do not provide the possibility of individual reception  
of sound programmes by portable receivers and receivers installed in  
automobiles;

ORB(2)/DL/32-E

that several administrations made proposals to the WARC-79 concerning frequency band allocations for broadcasting-satellite service (sound) in the range 500 MHz to 2 000 MHz;

d) that, based on technical characteristics of the systems and on propagation factors, as studied by the CCIR, the band 500 to 2 000 MHz would be preferable for the implementation of the service, the lower end at approximately 500 MHz because of increasing man-made noise and transmit antenna size with decreasing frequency, and the upper end at approximately 2 000 MHz because of the decreasing effective area of the receiving antenna and reduced diffraction round obstacles with increasing frequency;

e) that studies to date have shown that accommodation of the broadcasting-satellite service (sound) in the frequency range 500 to 2 000 MHz or nearby will cause considerable sharing difficulties with other services and that extensive use of this frequency range is now being made by many services making extremely difficult the allocation of a band to the Broadcasting-Satellite Service (Sound) on a world-wide basis.

f) that recent studies and developments included in the Report of the CCIR to this Session of the Conference have shown that the use of FM modulation techniques in low latitudes, the application of advanced digital modulation techniques in higher latitudes and the possibilities of sharing on the basis of geographical separation may, under the conditions specified in the CCIR Report, facilitate band-sharing with other radio services; and by considering the extended band from 500 MHz to 3 000 MHz the possibility of identifying a new frequency band for the broadcasting-satellite service (sound) is enhanced although, nevertheless, due to the planning constraints which would result from band-sharing, there is a strong preference for an exclusive allocation to the broadcasting-satellite (sound) service within the frequency range 500 MHz to 3 000 MHz;

g) that due consideration should also be given to the provision of the necessary associated feeder links to the broadcasting-satellite service (sound);

h) that more time is required to design and plan a sound-broadcasting system which might be introduced in the early part of the next century and, where necessary to plan and effect the re-accommodation of existing services;

considering also, as regards the work of the CCIR

a) that the frequency range now being considered is 500 to 3 000 MHz;

b) that experiments have confirmed certain postulations made in theoretical studies and further, that an experimental system using advanced digital modulation techniques has been identified;

c) that advanced digital modulation systems have amongst others the advantage of low transmitting powers and, consequently, a possibility of sharing with other services although further studies are required;

ORB(2)/DL/32-E

- d) that further system studies are necessary before the implementation of operational systems;
- e) that the CCIR has conducted studies concerning this service in accordance with Study Programme 2K-1/10 and 11;
- f) that the appropriate frequency range for the service is limited by man-made noise, the size of both the transmit and receive antennas, by propagation factors, satellite transmit power, and by sharing (including sharing on a geographic basis);
- g) that the bandwidth requirements of the broadcasting-satellite service (sound) will depend on the extent of the possibilities of frequency reuse;

noting

that the World Administrative Radio Conference for High Frequency Broadcasting, Second Session, Geneva, 1987, has in Recommendation COM5/A already raised the question of a future world administrative radio conference to review and as necessary revise the Table of Frequency Allocations in the high frequency portion of the spectrum; and that the World Administrative Radio Conference for the Mobile Services, Geneva, 1987 in Recommendation COM4/14 has also raised the question of a world administrative radio conference to be held not later than 1992 to consider a partial revision of the frequency allocation table in the range 1 000 to 3 000 MHz;

further noting

that the parameters for satellite sound broadcasting are similar to those for mobile-satellite services and hence a similar frequency range can be considered;

resolves

- a) that a band (or bands) of frequencies in the range 500 MHz to 3 000 MHz be allocated to the broadcasting-satellite service (sound);
- b) that appropriate provisions be made for the associated feeder links;
- c) that appropriate provisions be made to regulate the sharing wherever applicable of any bands identified in resolves a) and b) with other radio services;
- d) that appropriate provisions be made to take into account and to accommodate existing services which might be affected;

resolves to recommend

that the Plenipotentiary Conference in 1989 should include into the agenda of the next competent conference, the Revision of the Table of Frequency Allocations in Article 8, as referred to in "noting", with a preference for the Conference proposed in Recommendation COM4/14 by the WARC-MOB, Geneva, 1987 provisions, in order to provide if possible for the necessary allocation to the Broadcasting-Satellite Service (Sound) within the frequency range 500 - 3 000 MHz and the appropriate provisions to accommodate the associated feeder links.

invites the CCIR

to continue further its technical studies on the Broadcasting-Satellite Service (Sound) in the frequency range 500 - 3 000 MHz, especially on the following issues:

- a) the impact of choice of frequency on system parameters, especially satellite power requirements, the characteristics of transmit and receive antennas and on propagation characteristics;
- b) the bandwidth required by the service;
- c) the technical aspects of sharing between services with special consideration to geographic sharing,

and to provide a report to the Conference referred to in resolves to recommend above;

invites the Administrative Council

to bring this Resolution to the attention of the Plenipotentiary Conference, 1989,

Source: Document DL/33

WORKING GROUP 6-B

Draft

THIRD REPORT BY THE CHAIRMAN OF SUB-WORKING GROUP 6-B-1  
TO WORKING GROUP 6-B

On page 2

1) Delete:

ADD 1060B                      Networks to be taken into account

2) Change NOC 1061 to read:

MOD 1061                      (2) Frequency assignments to be taken into account in the application of No. 1060 are those in the same frequency band as the planned assignment, pertaining to the same service or to another service to which the band is allocated with equal rights or a higher category of allocation, and which are:

3) Delete:

[ADD 1061A                      aa) with equal or higher category of allocation, and]

4) Change NOC 1062 to read:

MOD 1062                      a) in conformity with No. 1503; and

5) Change [1064 c)] to read:

MOD 1064                      c) included in the coordination procedure with effect from [the date of receipt by the Board, in accordance with No. 1074, of the relevant information as annotated Appendix 3]; or

On page 3

6) Change ADD 1085B to read:

ADD 1085B                      All administrations may use correspondence, any appropriate means of telecommunication, or bilateral or multilateral meetings as necessary to effect coordination with any other administration. The results thereof are communicated to the Board in accordance with No. 1087.

L. SONESSON  
Chairman of Sub-Working Group 6-B-1

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SUB-WORKING GROUP 6-B-1

Draft

THIRD REPORT BY THE CHAIRMAN OF SUB-WORKING GROUP 6-B-1  
TO WORKING GROUP 6-B

During its eighth and ninth meetings the Sub-Working Group considered proposals relating to Article 11, Section II, also taking into account the excellent preparatory work done by the ad hoc Group 6-B-2 chaired by Mr. M.J. Bates (United Kingdom).

The Group reached conclusions on the wording of the provisions as presented in the annex.

L. SONESSON  
Chairman of Sub-Working Group 6-B-1

Annex: 1



ANNEX

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

MOD 1060 § 6. (1) Before an administration (or, ~~in the case of a space-station, one acting on behalf of a group of one or more other~~ 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.

ADD 1060A Coordination in accordance with No. 1060 of the Radio Regulations may be effected for a network using the information relating to the space station including its service area and the parameters of one or more typical earth stations which may be located in all or part of the space station service area.

ADD 1060B Networks to be taken into account.

NOC 1061 (2) Frequency assignments to which the provisions of No. 1060 are applicable are those:

[ADD 1061A aa) with equal or higher category of allocation, and]

NOC 1062 a) in the same frequency band as the planned assignment and in conformity with No. 1503; and

NOC 1063 b) either recorded in the Master Register, or coordinated under the provisions of this Section; or

[1064 c) to be taken into account for coordination with effect from the date of receipt by the Board, in accordance with No. 1074, of the relevant information as annotated in Appendix 3; or]

MOD 1065 d) that have been notified to the Board without any coordination in those cases where Nos. 1066 to 1071 apply.

ADD 1065A Exemption from coordination.

NOC 1066 (3) No coordination under No. 1066 is required:

- ADD 1066A                    aa) when an administration proposes to notify or bring into use, within the service area of the satellite network, a typical earth station or an earth station which would not cause or suffer interference of a level greater than the typical earth station;
- MOD 1067                    a) when the use of a new frequency assignment will cause, to any service of another administration, an increase in the noise temperature of any space station receiver or earth station receiver, or an increase in the equivalent satellite link noise temperature, as appropriate, calculated in accordance with the method given in Appendix 29, which does not exceed the threshold value[s] defined therein;
- NOC 1068                    b) when the interference resulting from a modification to a frequency assignment which has previously been coordinated will not exceed that value agreed during coordination;
- MOD 1069                    c) when an administration proposes to notify or bring into use a new earth station ~~within a service area of an existing satellite network, provided that the new earth station which~~ would not cause or suffer interference of a level greater than that which would be caused by an earth station pertaining to the same satellite network and whose characteristics have been published ~~together with the information concerning the space station, in accordance with No. 1078, or notified to the Board without coordination in those cases where coordination was not required;~~
- NOC 1070                    d) when, for a new frequency assignment to a receiving station, the notifying administration states that it accepts the interference resulting from the frequency assignments referred to in Nos. 1061 to 1065;
- NOC 1071                    e) between earth stations using frequency assignments in the same direction (either Earth-to-space or space-to-Earth).
- ADD 1085B                    Any administration may use correspondence, any appropriate means of telecommunication, or bilateral or multilateral meetings with the affected administrations as necessary to effect coordination, provided the results thereof are concluded and communicated to the Board in accordance with No. 1087.
- [ ADD 1060AA                    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. ]

FOR INFORMATION:

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.

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Draft

POWER REGULATION

DETERMINATION OF THE INCREASE IN E.I.R.P. FOR AN ASSIGNMENT  
OVER THE PLAN VALUE

Condition to be observed

The increase in e.i.r.p. of the assignment studied must not entail an impairment of more than 0.5 dB of the equivalent up-link protection margin of any other assignment.

Calculation method

1. Compile a list of all assignments (A, B, C,...) liable to suffer interference from the assignment studied. [It is assumed that we can confine ourselves to the assignments of the same orbital position as the assignment studied and the two adjacent positions.]
2. Calculate the equivalent up-link margin of assignment A in clear-sky conditions, taking account of all interference sources affecting A at the least favourable test points, namely
  - for assignment A: the point corresponding to the minimum C/N ratio;
  - for each interference source affecting A: the point corresponding to the maximum interference power affecting A.
3. Introduce for the assignment studied the atmospheric attenuation for [0.1%] of the worst month and the corresponding atmospheric depolarization value.
4. Recalculate the equivalent up-link margin of assignment A at the least favourable test points, namely:
  - for assignment A: the test point used in 2 above;
  - for the assignment studied: the test point corresponding to the maximum interference power affecting A.

At this stage, the e.i.r.p. of the assignment studied is that contained in the Plan.

5. Increase the e.i.r.p. of the assignment studied by 0.1 dB and recalculate the equivalent up-link margin of A as in 4 above.

6. Repeat the operation of 5 above until the equivalent up-link margin of assignment A is impaired by more than 0.5 dB in relation to the value found under 2 above. Adopt the e.i.r.p. increase in the preceding iteration step.
7. Repeat the operations in points 2 to 6 above, considering the assignments B, C,...
8. Adopt the smallest of the increases in e.i.r.p. found under 6 above for the various assignments A, B, C, ...

This value is the final increase in e.i.r.p. allowed for the assignment studied.

Propagation model

The atmospheric attenuation for 1% of the worst month is obtained from the ORB-85 propagation model. We adopt a multiplying factor of 3.34 for atmospheric attenuation for 0.1% of the worst month. The atmospheric depolarization is deduced from the atmospheric attenuation by means of the formula given in section 6.2.2.17.2 of the report of the First Session.

B. SALKELD  
Chairman of Sub-Working Group 5-A-2  
ad hoc 2

SUB-WORKING GROUP 4  
OF THE WORKING GROUP  
OF THE PLENARY

Draft

TERMS OF REFERENCE OF SUB-WORKING GROUP 4  
OF THE WORKING GROUP OF THE PLENARY

INCLINED ORBITS

1. Prepare a draft Resolution on the issue of inclined orbits taking into account the following factors:
  - present regulations;
  - impact on other satellite networks;
  - impact on services sharing the same frequency bands;
  - limit of inclination;
  - present CCIR information;
  - others.
2. Any impact (cross-reference to) on Appendices 3 and 4.
3. Prepare draft comments on Document 193 for Working Group Plenaries.

V. RAWAT  
Chairman of Sub-Working Group 4  
of the Working Group of the Plenary

SUB-WORKING GROUP 4  
OF THE WORKING GROUP  
OF THE PLENARY

Draft

RESOLUTION [...]

**Relating to Inclination Limits of Orbits of  
Geostationary Space Stations**

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 station-keeping fuel on geostationary space stations constitutes a major fraction of in-orbit mass and tends to be the limiting factor of a space station's geostationary in-orbit life;
- b) that north-south station-keeping consumes up to 90% of the total fuel;
- c) that some space stations may be designed or required to operate without north-south station-keeping to preserve fuel or extend in-orbit space station life;
- d) that, in the absence of north-south station-keeping, the orbital inclination of a geostationary space station is subject to only moderate annual change, no more than about 0.9°/year, and will never exceed a maximum of about 15°;
- e) that the interference geometry of inclined geostationary space stations is considerably more complex than otherwise would be the case, and has not been studied in detail;
- f) that, as a consequence, more complex problems may arise in three areas:
  - interference between satellite networks;
  - coordination between earth stations and terrestrial stations; and
  - sharing constraints to limit interference between satellites and terrestrial stations;

recognizing

1. that, administrations need to be in a position to assess the interference effects of inclined-orbit operation;

2. that the use, by any space service, of geostationary space stations in inclined orbits should not place additional regulatory constraints on other services which share the same frequency band(s);
3. that an administration whose services may be affected by another administration's operation of or with a geostationary space station in an inclined orbit should accede to a request for coordination;
4. that from the above there is a need to clarify the Radio Regulations concerning the coordination of networks, using geostationary space stations in inclined orbits, with other services using the same frequency bands;
5. that the IFRB lacking relevant rules in the Radio Regulations, considers that a geostationary satellite is any geosynchronous satellite having an inclination excursion equal to or less than 5°;
6. that the CCIR has examined the technical aspects including those related to interference and coordination only in a very preliminary fashion;

resolves

to invite the CCIR to continue its study of the technical aspects of inclined-orbit operation of geostationary space stations, with emphasis on the development of appropriate interference prediction and evaluation methods, with a view to determining the need for orbital inclination limits.

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Draft

RESOLUTION [...]

Relating to Inclination Limits of  
Geostationary Space Stations

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 station-keeping fuel on geostationary space stations constitutes a major fraction of in-orbit mass and tends to be the limiting factor of a space station's geostationary in-orbit life;
- b) that north-south station-keeping consumes about 90% of the total fuel;
- c) that some space stations may be designed or required to operate without north-south station-keeping to preserve fuel or extend in-orbit space station life;
- d) that, in the absence of north-south station-keeping, the orbital inclination of a geostationary space station is subject to only moderate annual change, no more than about 0.9°/year, and will never exceed a maximum of about 15°;
- e) that the interference geometry of inclined geostationary space stations is considerably more complex than otherwise would be the case, and has not been studied in detail;
- f) that, as a consequence, more complex problems may arise in three areas:
  - interference between satellite networks;
  - coordination between earth stations and terrestrial stations; and
  - sharing constraints to limit interference between satellites and terrestrial stations;

recognizing

1. that, administrations need to be in a position to assess the interference effects of inclined-orbit operation;

2. that the use, by any space service, of geostationary space stations in inclined orbits should not place additional regulatory constraints on other services which share the same frequency band(s);
3. that an administration intending operation of or with a geostationary space station in a slightly inclined orbit should coordinate the involved station(s) under its jurisdiction pursuant to the relevant provisions of the Radio Regulations;
4. that an administration whose services may be affected by another administration's operation of or with a geostationary space station in an inclined orbit should accede to a request for coordination;
5. that from the above there is a need to clarify the Radio Regulations concerning the coordination of networks, using geostationary space stations in inclined orbits, with other services using the same frequency;
6. that the IFRB lacking relevant rules in the Radio Regulations, considers that a geostationary satellite is any geosynchronous satellite having an inclination excursion equal to or less than 5°;

resolves

to invite the CCIR to continue its study of the technical aspects of inclined-orbit operation of geostationary space stations, with emphasis on the development of appropriate and simple interference prediction and evaluation methods, with a view to determining the need for orbital inclination limits.

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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 DL/37-E  
15 September 1988  
Original: English

WORKING GROUP  
OF THE PLENARY

Draft

### MODIFICATIONS TO

APPENDIX 3: Section D, Item 10 a) and Section E, Item 9 a)  
APPENDIX 4: Section C, Item 5 a) and Section D, Item 5 a)

Modify the referenced texts as follows:

" ... [~~The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated.~~] The space station antenna gain contours shall be drawn as isolines of the isotropic or absolute gain at least for -2, -4, -6, -10, and -20 dB and at 10 dB intervals thereafter, as necessary, relative to the maximum antenna gain when any of these contours is located either totally or partially anywhere within the limit of visibility of the Earth from the given geostationary satellite. Whenever possible the gain contours of the space station [transmitting] [receiving] antenna should also be provided in the form of a numerical equation [~~or in tabular form~~];  
... "

R. RYVOLA  
Chairman of the Working Group  
of the Plenary

DRAFTING GROUP 6-B-1

Draft

REPORT OF THE DRAFTING GROUP ON THE SIMULTANEOUS SUBMISSION  
OF APPENDICES 3 AND 4 INFORMATION

1. A Drafting Group comprised of representatives from Canada, the United States, France and the IFRB was established by Sub-Working Group 6-B-1 at its eighth meeting with the following terms of reference:

- to consider appropriate provisions for Sections I and II of Article 11 to accommodate the principle adopted in the Sub-Working Group of the simultaneous submission of coordination information with the advanced information;
- to consider, in the same context, appropriate provisions for the notification of non-geostationary satellite networks.

2. The Drafting Group has completed its work and its decisions are contained in the annex to this report.

A.V. CAREW  
Chairman of Drafting Group 6-B-1

ANNEX

Section I

Delete the existing text and replace with the following:

- MOD 1058                   When communicating to the Board the information referred to in No. 1042, an administration may, at the same time, or, at a later time, communicate the information required for the coordination of a frequency assignment to a geostationary-satellite network in accordance with the provisions of No. 1074. A copy of the request for coordination sent to any other administration shall be included. If the information pertains to a geostationary-satellite network, the Board will treat the information received in accordance with Nos. 1076 to 1078.
- ADD 1058A                The information required for notification of a frequency assignment to a non-geostationary-satellite network, or, to a geostationary-satellite network for which coordination is not required, may also be sent to the Board at the same time as the information referred to in No. 1042.
- ADD 1058B                The coordination or notification information, as the case may be, shall be considered as having been received by the Board not earlier than six months after the date of receipt of the information referred to in No. 1042.

Section II

- MOD 1076                   ... date of receipt<sup>1</sup>
- ADD 1076.1               <sup>1</sup> See No. 1058 concerning the examination and publication of information communicated in accordance with that provision.

INTERNATIONAL TELECOMMUNICATION UNION

**ORB-88**

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16 September 1988  
Original: English

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WORKING GROUP 6-B  
AD HOC 1

Draft

FIRST REPORT OF THE DRAFTING GROUP OF  
WORKING GROUP 6-B AD HOC 1, CHAIRED BY MR. GARNONS WILLIAMS  
(UNITED KINGDOM), CONCERNING PROPOSED STRUCTURE OF THE NEW APPENDIX 3

J. CHRISTENSEN  
Chairman of Working Group 6-B ad hoc 1

INDEX

APPENDIX 3

**Notices Relating to Space Radiocommunication  
and Radioastronomy Stations**

(see Articles 11, 13 and 14)

SECTION 1

**General Instructions**

(Text to be presented later)

SECTION 2

**Notices Relating to Coordination of Satellite Networks  
and Notification of Space Stations**

A. General characteristics to be provided for the satellite network

2.A.1 D4 Identity of the [satellite network]

2.A.2 D3 [Date of bringing into use]

2.A.3 D15 Operating administration or company

2.A.4 D5 Orbital information

2.A.5 D13 Coordination

2.A.6 D14 Agreements

2.A.7 Characteristics of the satellite network for reception at the space station

[All these items are to be provided for each satellite beam if a network is to be coordinated or notified.]

B. Information related to satellite receive beam

2.B.1 Name of satellite receive beam

2.B.2 Service area or transmitting stations

2.B.3 E1 Assigned frequency (frequencies)

2.B.4 E2 Assigned frequency band

2.B.5 E7 Class of station(s) and nature of service

2.B.6 E9 Space station receiving antenna characteristics

2.B.7 E10 Noise temperature

Information related to associated transmitting station(s)

2.B.8 Type and identity of associated [transmitting] station<sup>3</sup>

2.B.9 E7 B6 Class of earth station and nature of service<sup>3</sup>

2.B.10 B9 Earth station transmitting antenna characteristics<sup>3</sup>

2.B.11 B7 Class of emission, necessary bandwidth<sup>3</sup>

2.B.12 B8 Power characteristics of the [earth station] transmission<sup>3</sup>

2.B.13 B10 Modulation characteristics<sup>3</sup>

[2.B.14<sup>2</sup> B5 Space stations with which communication is to be established]

C. Characteristics of the satellite network for transmission from the space station

[All these items are to be provided for each satellite beam if a network is to be coordinated or notified.]

Satellite transmitting beams

2.C.1 Name of satellite transmitting beam

2.C.2 Service area or receiving stations

2.C.3 D10 Space station transmitting antenna characteristics

2.C.4 D1 Assigned frequency (frequencies)

2.C.5 D2 Assigned frequency band

2.C.6 D7 Class of station[s] and nature of service

2.C.7 D8 Class of emission, necessary bandwidth and description of this transmission<sup>4</sup>

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<sup>2</sup> Not required for network coordination

<sup>3</sup> Required for each type of station

<sup>4</sup> Required for each [type] of station



- 2.C.8 D9 Power characteristics of the transmission<sup>4</sup>
- 2.C.9 D11 Modulation characteristics<sup>4</sup>

Information related to associated receiving stations

- 2.C.10 Type and identity of associated receiving station<sup>4</sup>
- 2.C.11 C6 Class of station[s] and nature of service<sup>4</sup>
- 2.C.12 C8 Earth station receiving antenna characteristics<sup>4</sup>
- 2.C.13 C9 Noise temperature of the associated receiving station(s)<sup>4</sup>
- [2.C.14<sup>2</sup> C5 Space stations with which communication is to be established]

D. Overall link characteristics

For the case of simple frequency changing transponders the following information is to be provided:

- 2.D.1 E1 as F/23
- 2.D.2 E2 as F/23 Associated with Tables I and II. F/23 page 26.

SECTION 3

**Notices Relating to Coordination [Under No. 1107]  
and Notification of Specific [and Typical] Earth Stations**

A. General characteristics to be provided for an earth station

- 3.A.1 B4 Identity and location of the earth station
- 3.A.2 B5 Date of bringing into use
- 3.A.3 B14 Operating administration or company
- 3.A.4 B6 Class of station and nature of service
- 3.A.5 B5 Space stations with which communication is to be established
- 3.A.6 B12 Coordination
- 3.A.7 B13 Agreements

---

<sup>2</sup> Not required for network coordination

<sup>4</sup> Required for each [type] of station

B. Characteristics of the transmitting earth station

- [3.B.1 Name of satellite receiving beam]<sup>7</sup>
- 3.B.2 B1 Assigned frequency (frequencies)
- 3.B.3 B2 Assigned frequency band
- 3.B.4 B7 Class of emission, necessary bandwidth and description of transmission
- 3.B.5 B8 Power characteristics of the transmission
- 3.B.6 B9 Transmitting antenna characteristics
- [3.B.7 B10 Modulation characteristics]<sup>7</sup>

C. Characteristics of the receiving earth station

- [3.C.1 Name of satellite transmitting beam]<sup>7</sup>
- 3.C.2 C1 Assigned frequency (frequencies)
- 3.C.3 C2 Assigned frequency band
- 3.C.4 C7 Class of emission, necessary bandwidth and description of the transmission to be received
- 3.C.5 C8 Receiving antenna characteristics
- 3.C.6 C9 Noise temperature, [link noise temperature and transmission gain]<sup>7</sup>

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<sup>7</sup> Not required for coordination under No. 1107

SECTION 4

**Notices Relating to Frequencies to be Received  
by Radioastronomy Stations**

A. General characteristics to be provided for the radioastronomy station

4.A.1 F2 Date of bringing into use

4.A.2 F3 Name and location of the station

4.A.3 F6 Regular hours of reception

4.A.4 F9 Operating

B. Characteristics of the frequencies to be received

4.B.1 F1 Observed frequency

4.B.2 F4 Bandwidth

4.B.3 F5 Antenna characteristics

4.B.4 F7 Noise temperature

4.B.5 F8 Class of observations

SECTION 5

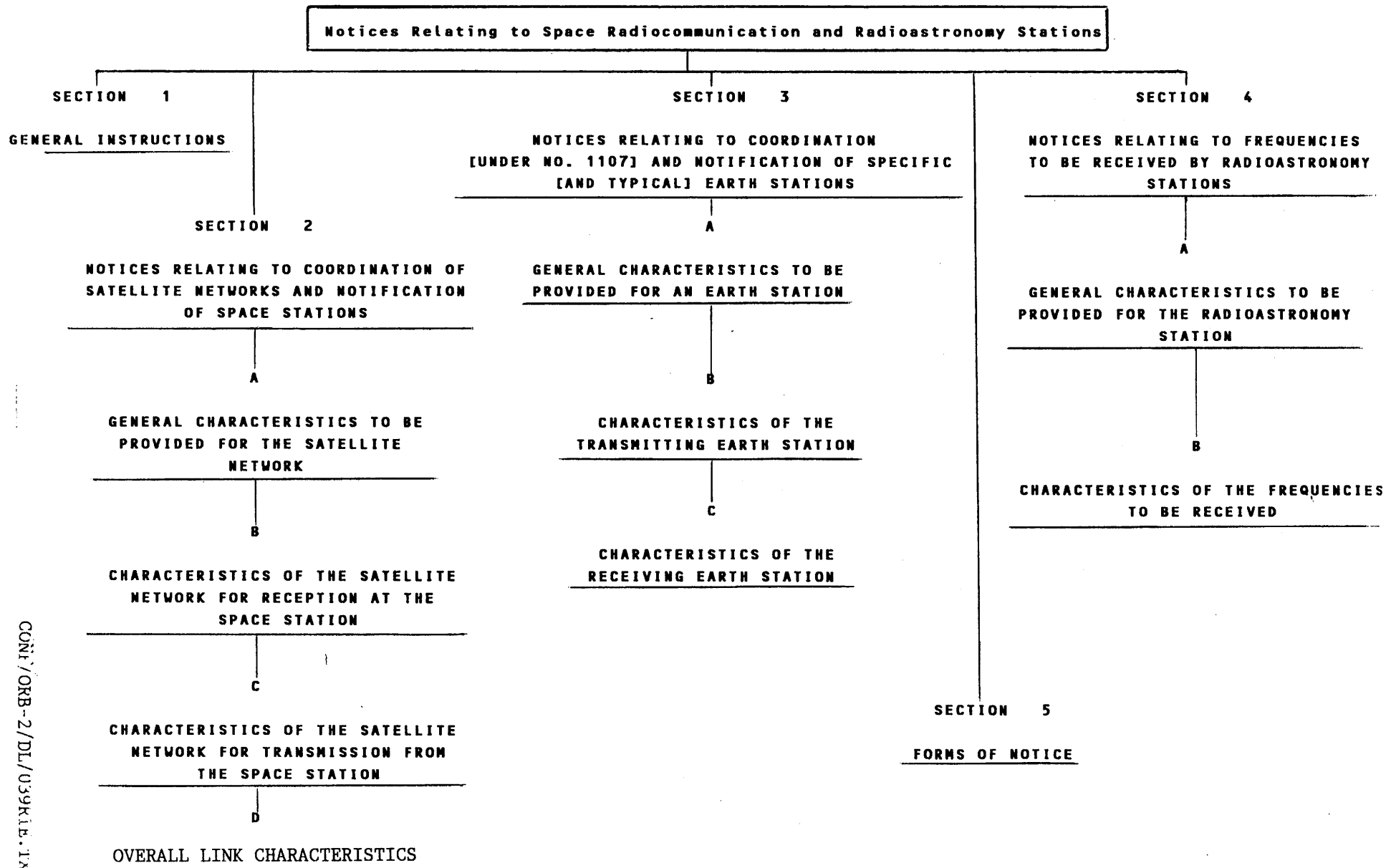
**Forms of Notice**

5.1 MOD Section G

SUP Section H

ANNEX

APPENDIX 3 based on the Network Approach



ORB(2)/DL/39(Rev.1)-E  
- 7 -

INTERNATIONAL TELECOMMUNICATION UNION

**ORB-88**

WARC ON THE USE OF THE  
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WORKING GROUP 6-B  
AD HOC 1

Draft

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J. CHRISTENSEN  
Chairman of Working Group 6-B ad hoc 1

INDEX

APPENDIX 3

**Notices Relating to Space Radiocommunication  
and Radioastronomy Stations**

(see Articles 11, 13 and 14)

SECTION 1

**General Instructions**

(Text to be presented later)

SECTION 2

**Notices Relating to Satellite Networks**

A. General characteristics to be provided for the satellite network

- 2.1 D4 Identity of the [satellite network]
- 2.2 D3 Date of bringing into use
- 2.3 D15 Operating administration or company
- 2.4 D5 Orbital information
- 2.5 D12 [Regular hours of operation]
- 2.6 D13 Coordination
- 2.7 D14 Agreements

B. Characteristics of the satellite network in the Earth-to-space direction

[All these items are to be provided for each satellite beam if a network is to be coordinated or notified.]

[Satellite Receive Beam]

- 2.8 Name of satellite receive beam
- 2.9 Service area or transmitting beams
- 2.10 E1 Assigned frequency
- 2.11 E2 Assigned frequency band
- 2.12 E7 Class of station(s) and nature of service

2.13 E9 Space station receiving antenna characteristics

2.14 E10 Noise temperature

[[Associated] transmitting station(s)]

2.15 Type of associated [transmitting/earth] station<sup>3</sup>

2.16 E7 B6 Class of earth station and nature of service<sup>3</sup>

2.17 B9 Earth station transmitting antenna characteristics<sup>3</sup>

2.18 B7 Class of emission, necessary bandwidth<sup>3</sup>

2.19 B8 Power characteristics of the [earth station] transmission<sup>3</sup>

2.20 B10 Modulation characteristics<sup>3</sup>

2.21<sup>2</sup> B5 Stations with which communication is to be established

C. Characteristics of the satellite network in the space-to-earth direction

[All these items are to be provided for each satellite beam if a network is to be coordinated or notified.]

Satellite transmitting beams

2.22 Name of satellite transmitting beam

2.23 Service area at receiving stations

2.24 D10 Space station transmitting antenna characteristics

2.25 D1 Assigned frequency (frequencies)

2.26 D2 Assigned frequency band

2.27 D7 Class of station and nature of service

2.28 D8 Class of emission, necessary bandwidth and description of this transmission<sup>4</sup>

---

<sup>2</sup> Not required for network coordination

<sup>3</sup> Required for each type of station

<sup>4</sup> Required for each [type] of station

- 2.29 D9 Power characteristics of the transmission<sup>4</sup>
- 2.30 D11 Modulation characteristics<sup>4</sup>

Associated receiving stations

- 2.31 Type of associated receiving station<sup>4</sup>
- 2.32 C6 Class of station and nature of service<sup>4</sup>
- 2.33 C8 Earth station receiving antenna characteristics<sup>4</sup>
- 2.34 C9 Noise temperature of the associated receiving station(s)<sup>4</sup>
- 2.35 [C5 Stations with which communication is to be established]

D. Overall link characteristics

For the case of simple frequency changing transponders the following information is to be provided:

- 2.26 E1 as F/23
- 2.37 E2 as F/23 Associated with Tables I and II. F/23 page 26.

SECTION 3

**Notices Relating to Coordination and Notification of  
Specific and Typical Earth Stations**

A. General characteristics to be provided for an earth station

- 3.1 B4 Identity and location of the earth station
- 3.2 B5 Date of bringing into use
- 3.3 B14 Operating administration or company
- 3.4 B6 Class of station and nature of service
- 3.5 B5 Stations with which communication is to be established
- 3.6 B12 Coordination
- 3.7 B13 Agreements

---

<sup>4</sup> Required for each [type] of station



B. Characteristics of the transmitting earth station

- 3.8 Name of satellite receiving beam
- 3.9 B1 Assigned frequency (or frequencies)
- 3.10 B2 Assigned frequency band
- 3.11 B7 Class of emission, necessary bandwidth and existing description of transmission
- 3.12 B8 Power characteristics of the transmission
- 3.13 B9 Transmitting antenna characteristics
- 3.14 B10 Modulation characteristics

C. Characteristics of the receiving earth station

- 3.15 Name of satellite transmitting beam
- 3.16 C1 Assigned frequency (or frequencies)
- 3.17 C2 Assigned frequency bands
- 3.18 C7 Class of emission, necessary bandwidth and description of the transmission to be received
- 3.19 C8 Earth station receiving characteristics
- 3.20 C9 Noise temperature

SECTION 4

**Notices Relating to Frequencies to be Received  
by Radioastronomy Stations**

A. General characteristics to be provided for the radioastronomy station

- |     |    |                                  |    |      |
|-----|----|----------------------------------|----|------|
| 4.1 | F2 | Date of bringing into use        | 18 | 01.7 |
| 4.2 | F3 | Name and location of the station | 11 | 01.7 |
| 4.3 | F6 | Regular hours of reception       | 04 | 01.2 |
| 4.4 | F9 | Operating                        | 12 | 01.4 |

B. Characteristics of the frequencies to be received

- |     |    |                         |    |      |
|-----|----|-------------------------|----|------|
| 4.5 | F1 | Observed frequency      | 10 | 01.0 |
| 4.6 | F4 | Bandwidth               | 01 | 01.0 |
| 4.7 | F5 | Antenna characteristics | 10 | 01.0 |
| 4.8 | F7 | Noise temperature       | 10 | 01.0 |
| 4.9 | F8 | Class of observations   | 10 | 01.5 |

SECTION 5

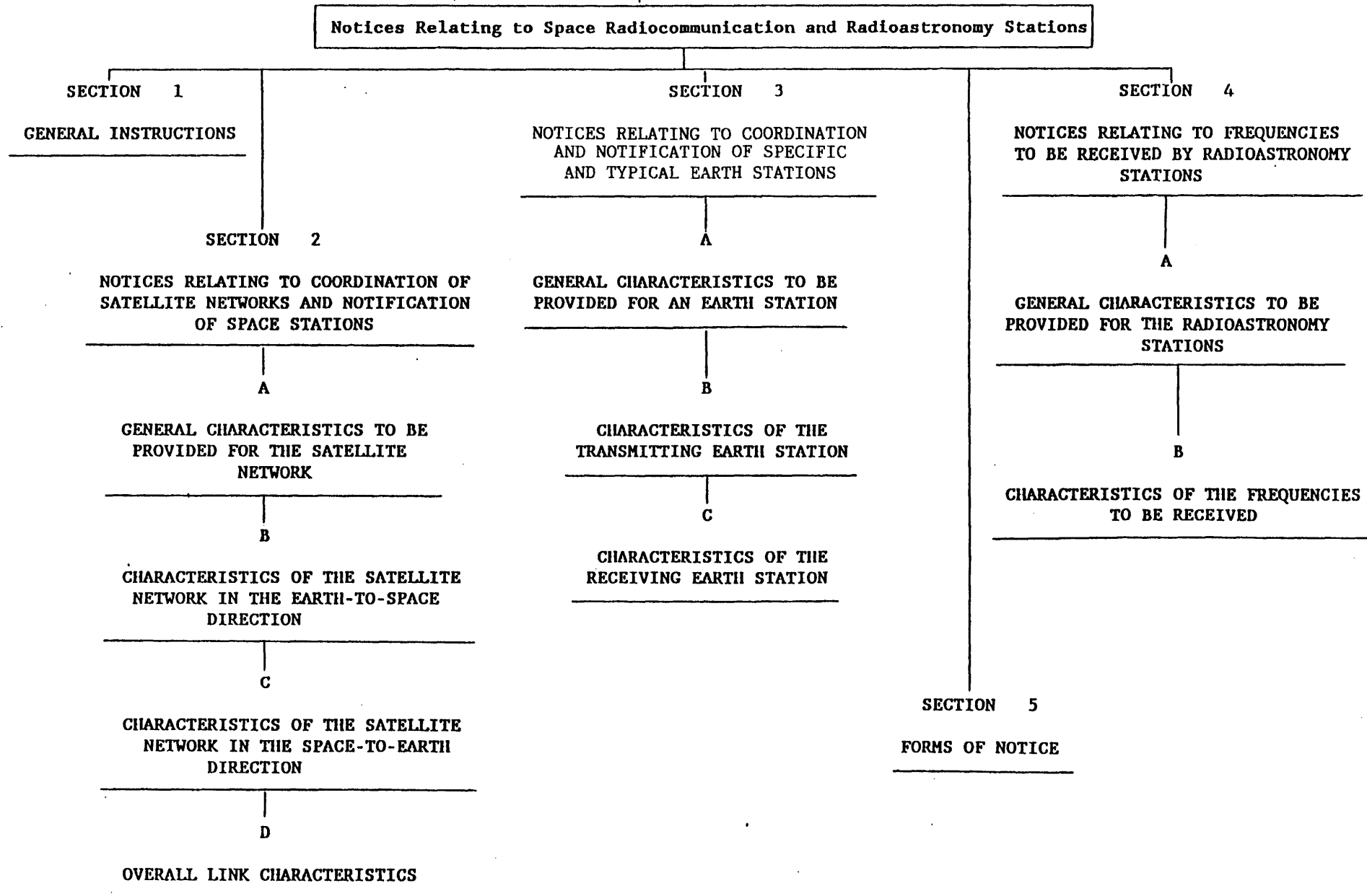
**Forms of Notice**

MOD Section G

SUP Section H

ANNEX

APPENDIX 3 based on the Network Approach



# INTERNATIONAL TELECOMMUNICATION UNION

ORB-88

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GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING  
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19 September 1988  
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SUB-WORKING GROUP  
5-A-2 AD HOC 2

Draft

## BSS FEEDER LINK POWER CONTROL

The further work referred to in Document 254 has been completed and a revised text for inclusion in Annex 3 of Appendix 30A is attached.

B. SALKELD  
Chairman of Sub-Working Group 5-A-2 ad hoc 2

Attachment: 1

Draft

TEXT FOR APPENDIX 30A (ANNEX 3)

POWER CONTROL FOR BSS FEEDER LINKS

Add to paragraph 3.10:

In Regions 1 and 3 the permitted amount of power control which may be used is to be calculated by the IFRB and notified by circular letter. The method of calculation is shown below.

In the calculation, in cases where satellites do not use common or adjacent channels cross-polarizing each other, the maximum permissible e.i.r.p. increase, which must not exceed [10 dB], corresponds to the amount of rain attenuation which occurs on the interfering feeder link, since the (C/I)<sub>u</sub> increases as the interfering feeder-link signal is faded due to rain.

On the other hand, in those cases where satellites use common or adjacent channels cross-polarized, the maximum permissible e.i.r.p. increase is expressed as a function of the rain attenuation, but is in general less than the amount of rain attenuation due to rain-induced depolarization.

1. Method for determination of the increase in e.i.r.p. during rain attenuation for an assignment over the Plan value

Condition to be observed

The increase in e.i.r.p. of the assignment studied must not entail an impairment of more than 0.5 dB of the equivalent up-link protection margin of any other assignment.

Calculation method

1.1 Compile a list of all assignments (A, B, C,...) liable to suffer interference from the assignment studied. [It is assumed that we can confine ourselves to the assignments of the same orbital position as the assignment studied and the two adjacent positions.]

1.2 Calculate the equivalent up-link margin of assignment A in clear-sky conditions, taking account of all interference sources affecting A at the least favorable test points, namely

- for assignment A: the point corresponding to the minimum C/N ratio;
- for each interference source affecting A: the point corresponding to the maximum interference power affecting A.

1.3 Introduce for the assignment studied the atmospheric attenuation for 0.1% of the worst month and the corresponding atmospheric depolarization value.

1.4 Recalculate the equivalent up-link margin of assignment A at the least favorable test points, namely:

- for assignment A: the test point used in 2 above;
- for the assignment studied: the test point corresponding to the maximum interference power affecting A.

At this stage, the e.i.r.p. of the assignment studied is that contained in the Plan.

1.5 Increase the e.i.r.p. of the assignment studied by 0.1 dB and recalculate the equivalent up-link margin of A as in 4 above.

1.6 Repeat the operation of 5 above until the equivalent up-link margin of assignment A is impaired by more than 0.5 dB in relation to the value found under 2 above. Adopt the e.i.r.p. increase in the preceding iteration step.

1.7 Repeat the operations in points 2 to 6 above, considering the assignments B, C,...

1.8 Adopt the smallest of the increases in e.i.r.p. found under 6 above for the various assignments A, B, C, ...

This value is the final increase in e.i.r.p. allowed for the assignment studied.

## 2. Propagation model

2.1 For the calculation of atmospheric attenuation for 0.1% of the least favorable month, the ORB-85 model should be used. It shall be assumed that the 0.1% value is 3.3 times the 1% value in dB.

2.2 Atmospheric depolarization shall be calculated, on the basis of attenuation, using the method described in paragraph 6.2.2.17.2 of the Report of the First Session.

## 3. Variation of power with rain attenuation

The increase in power at any time, as the rain attenuation varies, must not exceed the limit shown in Figure [A].

## 4. Procedure

4.1 An administration wishing to introduce power control may use the value given in the IFRB circular letter or may confirm the value for a specific up-link site. In this case it shall notify the IFRB and give the feeder-link location and the proposed antenna characteristics, including off-axis performance, for co-polar and cross-polar performance.

4.2 The IFRB will calculate the theoretical increase in power which may be used without affecting other satellites using the method described above.

4.3 The IFRB will notify the submitting administration the maximum power increase which may be used and will notify those other administrations whose EPM is increased by 0.5 dB.

In any case the permitted increase in e.i.r.p. by means of power control shall not be greater than [10 dB] above that shown in the Plan.

4.4 In the event of a modification to the Plan the IFRB shall recalculate the values of power control and shall notify the administrations affected.

The formula to be used is:

$$\Delta P_i = R_i \cdot \frac{1}{1 + \frac{A}{\frac{1}{XPI_{sat}} + \frac{1}{XPI_{es}}}}$$

$\Delta P_i$ : maximum permissible power increase of earth transmitter by power control.

$A$ : coefficient of depolarization due to rain as expressed in the following equation:

$A = 10^{-(XPD/10)}$ , where  $XPD$  is the rain depolarization, in dB, as a function of rain attenuation and elevation angle:

$XPI_{sat}$ : ratio of co-polar ( $G_{cpw}$ ) to cross-polar ( $G_{cpw}$ ) components of the wanted-satellite receiving antenna in the direction of the interfering earth station as expressed in the following equation:

$$XPI_{sat} = G_{cpw} / G_{cpw}$$

$XPI_{es}$ : ratio of co-polar ( $G_{cp}$ ) to cross-polar ( $G_{cp}$ ) components of the interfering earth-station transmitting antenna in the direction of the wanted-satellite as expressed in the following equation:

$$XPI_{es} = G_{cp} / G_{cp}, \text{ where this value is constant for co-located satellites.}$$

$R_i$ : rain attenuation on the wanted link.

If the feeder-link channel assignment is the same or if plural interfered satellites in the adjacent channel are assumed, the value of  $\Delta P_i$  for each interfered satellite shall be calculated and the minimum  $\Delta P_i$  value shall be used.

The formula can be expressed in dB as follows:

$$\Delta P = A_p - 10 \log \left[ 1 + \frac{\cos^4 \theta \cdot f^{-3} \cdot A_p^a}{\frac{XPI_{sat}}{0.79} + \frac{XPI_{es}}{0.79}} \right] \text{ (dB)}$$

$\Delta P$ : maximum permissible power increase of earth transmitter by power control in dB.

$\theta$ : elevation angle of the earth station in degrees.

$A_p$ : rain attenuation at the earth station concerned in dB.

$f$ : frequency in GHz

$a$ : 2.0 for 14 GHz  
2.3 for 17 GHz

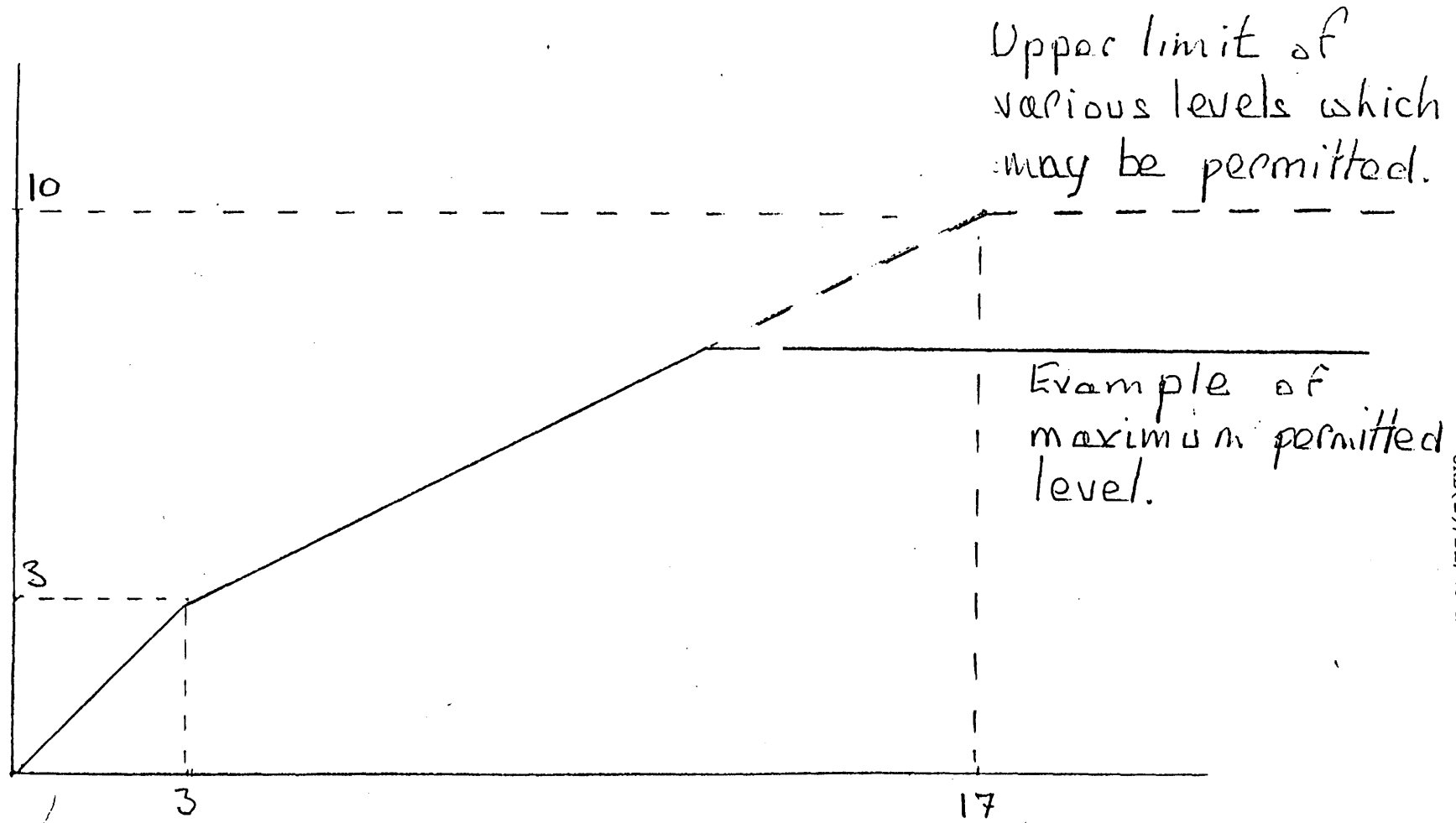
$XPI_{es}$ : the difference (dB) between co-polar gain and cross-polar gain of the earth station antenna in the direction of the interfered satellite, for co-located satellite (including slight separation)  $XPI_{es} = 30$  dB.

$XPI_{sat}$ : the difference (dB) between co-polar gain and cross-polar gain of the interfered-with satellite in the direction of the earth station concerned. (Beam parameters and reference patterns of satellite receiving antenna should be those decided in the Plan).

The value for  $R_i$ , rain attenuation, for 0.1% of the worst month would be that given by the CCIR for the rain zone of the feeder link location. A maximum power increase of [10 dB] would be imposed.

For the case of other orbit positions  $\Delta P_i$  can also be calculated by setting the  $XPI_{es}$  value to zero dB.

Temporary power increase  
depending on the instantaneous  
rain attenuation, (dB).



Instantaneous rain attenuation (dB)

Fig[A] Characteristic for uplink power control



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SUB-WORKING GROUP 5-B-1

Draft

ANNEX 2 OF APPENDIX 30A

The attached text which is a proposed revision of Annex 2 of Appendix 30A is presented for consideration by the Sub-Working Group.

The documents submitted to Committee 5 have been examined for proposals related to this matter. The only specific proposals identified are those in Document 39 viz: CEPT/39/77 to CEPT/39/93.

The present text of Annex 2 has been revised to:

- take account of these proposals;
- ensure consistency with the technical details of the feeder-link plan and with Annex 3 of Appendix 30A;
- improve readability by clearly separating system, earth station (transmit), and space station (receive), characteristics;
- expand the scope of the annex to encompass feeder-link plans for Regions 1, 2, and 3.

K. MALCOLM

Attachment:

ANNEX 2

Basic Characteristics to be Furnished in Notices<sup>1</sup>  
Relating to Feeder-Link Stations in the Fixed-Satellite  
Service Operating in the Frequency Bands  
14.5 - 14.8 GHz and 17.3 - 18.1 GHz<sup>2</sup>

1. The following information shall be provided in notices relating to both transmitting earth stations and receiving space stations<sup>3</sup>.

- 1.1 Country and beam identification.
- 1.2 Assigned frequency or channel number.
- 1.3 Assigned frequency band.
- 1.4 Date of bringing into use.
- 1.5 Description of emission (as per Article 4 of the Radio Regulations).
- 1.6 Modulation characteristics:
  - a) type of modulation;
  - b) pre-emphasis characteristics;
  - c) TV system;
  - d) sound-broadcasting characteristics;
  - e) frequency deviation;
  - f) composition of the baseband;
  - g) type of multiplexing of the video and sound signals;
  - h) energy dispersal characteristics.

---

<sup>1</sup> The Board shall develop and keep up-to-date forms of notice to meet fully the statutory provisions of this Annex and related decisions of the 1983 and 1988 Conferences. The Board is further invited to consider the feasibility of a single notice for feeder-link earth stations operating within more than one feeder-link service area.

<sup>2</sup> Only those notices relating to frequency assignments for space stations and earth stations used for telecommand and tracking purposes associated with the Plan shall be furnished in accordance with Appendix 3.

<sup>3</sup> Where notices for earth and space stations are submitted at the same time this information need only be supplied once.

2. The following additional information shall be provided in notices relating to transmitting earth stations.

2.1 Identity of the transmitting feeder-link station.

2.2 Geographical coordinates of the feeder-link earth station transmitting in the bands 14.5 - 14.8 GHz or 17.7 - 18.1 GHz.

2.3 Feeder-link service area for a feeder-link earth station transmitting in the band 17.3 - 17.7 GHz identified

by a set of geographical coordinates of the polygon points of the feeder-link service area

or alternatively

by a set of feeder-link test points [up to ten test points]

or alternatively

by the characteristics of the receiving space station antenna that describe the -3 dB gain contour of that antenna projected on to the Earth's surface (see Part [ ] of this Annex).

2.4 Identity of the space station with which communication is to be established.

2.5 Rain-climatic zone<sup>4</sup>.

2.6 Power characteristics of the transmission:

a) The following information is required for each assigned frequency:

- transmit power (dBW) supplied to the input of the antenna;

- maximum power density per Hz (dB(W/Hz)), averaged over the worst 1 MHz band, supplied to the antenna.

b) Additional information required if power control is used (see Parts 3.10 and 4.10 of Annex 3 to this Appendix):

- mode of control;

- range, expressed in dB, above the transmit power used in a) above.

c) Additional information required if site diversity is used (see Parts 3.11 and 4.11 of Annex 3 to this Appendix):

- identity of other earth station with which diversity operation is to be employed.

d) Additional information required if depolarization compensation is used (see Parts 3.12 and 4.12 of Annex 3 to this Appendix):

- characteristics.

---

<sup>4</sup> This information as defined in Annex 3 is required for frequency assignments in the bands 14.5 - 14.8 GHz and [17.3] - 18.1 GHz.

2.7 Transmitting antenna characteristics:

- a) antenna diameter (metres);
- b) gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);
- c) beamwidth in degrees between the half-power points (describe in detail if not symmetrical);
- d) the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation), or the reference radiation diagram to be used for coordination;
- e) type of polarization;
- f) sense of polarization;
- g) the horizon elevation angle in degrees and the antenna gain in the direction of the horizon for each azimuth<sup>[5]</sup> around the earth station<sup>[6]</sup>;
- h) altitude of the antenna above mean sea level in metres<sup>[6]</sup>;
- i) minimum elevation angle in degrees<sup>[6]</sup>.

2.8 Regular hours of operation (UTC).

2.9 Coordination.

2.10 Agreements.

2.11 Other information.

2.12 Operating administration or company.

3. The following information shall be provided in notices relating to receiving space stations.

3.1 Orbital position (xxx.xx degrees [East West] from the Greenwich Meridian).

3.2 Identity of the space station.

3.3 Class of station.

3.4 Antenna characteristics:

- a) gain of the antenna in the direction of maximum radiation referred to an isotropic radiator (dBi);
- b) shape of the beam (circular, elliptical or other);

---

[5] At suitable increments, e.g. every five degrees, in tabular or graphic form.

[6] This information is required for frequency assignments in the bands [14.5 - 14.8 GHz and [17.7] - 18.1 GHz.]

- c) pointing accuracy;
- d) type of polarization;
- e) sense of polarization;
- f) for circular beams, indicate the following:
  - half-power beamwidth (degrees);
  - co-polar and cross-polar radiation patterns;
  - nominal intersection of the antenna beam axis with the Earth; (boresight longitude and latitude);
- g) for elliptical beams, indicate the following:
  - co-polar and cross-polar radiation patterns;
  - rotation accuracy;
  - orientation;
  - major axis (degrees) at the half-power beamwidth;
  - minor axis (degrees) at the half-power beamwidth;
  - nominal intersection of the antenna beam axis with the Earth; (boresight longitude and latitude);
- h) for beams of other than circular or elliptical shape, indicate the following:
  - co-polar and cross-polar 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 shall be indicated at each contour which corresponds to a decrease in gain of 2, 4, 6, 10 and 20 dB and thereafter at 10 dB intervals down to a value of 0 dB relative to an isotropic radiator;
  - wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;
- i) for an assignment in the bands 14.5 - 14.8 GHz or 17.7 - 18.1 GHz, the gain in the direction of those parts of the geostationary-satellite orbit which are not obstructed by the Earth. Use a diagram showing estimated gain versus orbit longitude.

- 3.5 Receiver system noise temperature referred to the output of the antenna.
- 3.6 Station-keeping accuracy.
- 3.7 Regular hours of operation (UTC).
- 3.8 Coordination.
- 3.9 Agreements.
- 3.10 Other information.
- 3.11 Operating administration or company.
- 3.12 Range of automatic gain control<sup>[7]</sup>.

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[7] See Part 3.9 of Annex 3 to this Appendix.

INTERNATIONAL TELECOMMUNICATION UNION

**ORB-88**

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16 September 1988  
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Source: Documents 8, 12, 39, 185

SUB-WORKING GROUP 5-B-1

Draft

ANNEX 4 OF APPENDIX 30A

The attached text is presented for consideration, having drawn upon those proposals directed at Annex 4 to Appendix 30A in the cited references.

K.R.E. DUNK

Attachment: 1

ANNEX 4 OF APPENDIX 30A

CEPT-1/39/100  
MOD

Criteria for Sharing Between  
~~Services in Region 2~~

CEPT-1/39/101  
USA/12/71  
MOD

1. Threshold values for determining 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 - 17.8 GHz - 18.1 GHz (Regions 1 and 3) and 17.7 - 17.8 GHz (Region 2)

With respect to paragraph [7.1, Article 7] of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting satellite Feeder link in the Region 2 and Regions 1 and 3 Plans is required, for inter-satellite geocentric angular separations of less than 3° 10' ~~[or greater than 150°]~~, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station which, calculated in accordance with the method given in Appendix 29, exceeds a threshold value of  $(\Delta T/T)'$  corresponding to ~~10% 4%~~ (i.e.  $C/I = 38$  dB), under faded conditions, that is rain attenuation not exceeded for more than 1% of the worst month and with a C/N ratio on the feeder-links equal to 24 dB assuming maximum power densities are replaced by power densities averaged over the total RF bandwidth of the feeder-link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3). ~~[The above provision does not apply when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of 123 dB(W/m<sup>2</sup>/24 MHz) on the Earth's surface at the equatorial Earth limb.]~~

B/8/5

2. [Not used.] [Threshold values for determining when an interregional coordination is required...]



CEPT-1/39/102  
MOD

3. Method for the determination of the coordination area around a feeder-link transmitting earth station of the Region 2 and Regions 1 and 3 Plans with respect to receiving earth stations in the fixed-satellite service ~~in Region 2~~ in the frequency band 17.7 - ~~17.8 GHz~~ 18.1 GHz

Region 2:

NOC

3.1 to 3.7

Regions 1 and 3:

CEPT-1/39/103  
ADD

CCIR Report 448 provides a means of determination of the interference potential between earth stations and terrestrial stations.

CCIR Report 999 provides a means of evaluating the locus on worst case possibilities indicating a need for co-ordination.

CCIR Report 1010 provides a means of evaluating the coupling in practical cases, with separations as low as 10 km implied for 1 per cent worst month.

CEPT-1/39/104  
ADD

4. Threshold values for determining when coordination is required in the bands 17.7 - 17.8 GHz (for Region 2) or 17.7 - 18.1 GHz (for Regions 1 and 3) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder-links to the broadcasting satellites

The threshold value of  $(\Delta T/T)' = 3\%$  stipulated in Annex 1 section 1 applies when the wanted signal is faded by rainfall attenuation exceeded for 1% of the worst month and the carrier to noise ratio of the feeder-link is 24 dB.

The C/I ratio for  $(\Delta T/T)' = 3\%$  under the conditions specified above is 39 dB. In the case of the assessment of interference into feeder-links to the BSS where the RF channel bandwidth of the wanted signal is known, a simple relationship - which is different to the method employed in Appendix 29 to the Radio Regulations, where the power density per Hertz of the interfering power is averaged over the worst 1 MHz of bandwidth for carrier frequencies >15 GHz and over 4 kHz for carrier frequencies <15 GHz - can be established relating the C/I ratio to the increase in noise temperature  $\Delta T/T$ , as follows:

$$C/I = C/N - 10 \log (\Delta T/T)' \text{ dB}$$

where  $(\Delta T/T)'$  is expressed as a numeric ratio

The relationship holds only if the reference bandwidth for the interfering power, T, corresponds to the wanted BSS RF channel bandwidth, i.e. 24 or 27 MHz for the Plans of Region 2 and Regions 1 and 3 respectively.

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SUB-WORKING GROUP 4  
OF THE WORKING GROUP  
OF THE PLENARY

DRAFT RESOLUTION [GT-PLEN/2]

[Provisional Procedure for the  
Coordination of Circular Geosynchronous Satellites]

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 1 of the Radio Regulations contains a definition of geosynchronous satellite;
- b) that Article 1 of the Radio Regulations also contains a definition of geostationary satellite identifying it as a geosynchronous satellite with its circular orbit in the plane of the Earth's Equator (see RR 181);
- c) that the Radio Regulations do not distinguish between geostationary and other groups of geosynchronous satellites;
- d) that the IFRB adopted in its Rules of Procedure a limit of 5° inclination in considering a geosynchronous satellite in all satellite services as a geostationary satellite;
- e) that geostationary and circular geosynchronous satellites operate in the same environment but a void exists in the regulatory procedures for dealing with circular geosynchronous satellites using inclined orbits that exceed 5°;
- f) that the provisions governing the operation on non-geostationary space stations is given in RR 2613;
- g) that the CCIR has not yet studied in detail the technical matters concerning circular geosynchronous satellites and will be determining the need for inclination limits for the orbits of geostationary satellites;
- h) that the satellite services share many frequency bands with other services;
- i) that satellites in circular geosynchronous orbits with an inclination exceeding 5° will not exceed the power flux-density limits specified in Article 28;
- j) that no limitations other than those specified in Article 27 will be imposed on terrestrial services with the view to protect regions around the geostationary satellite orbit;

k) [that in the interim there is a need for a provisional procedure;]

resolves

1. that the use by any space service of space stations in inclined circular geosynchronous orbits should not place additional regulatory constraints on other services which share the same frequency bands;
2. that administrations and the IFRB should apply the procedures contained in Articles 11 and 13, to frequency assignments for satellites in circular geosynchronous orbits with inclinations greater than 5°;
3. that the need to coordinate between such space stations and geostationary space stations should be based on the nominal geographical longitude on the geostationary-satellite orbit taking into account the variation in satellite antenna gain on the surface of the Earth due to orbit inclination;
4. that the need to coordinate between satellite networks using circular geosynchronous orbits should taking into account the variation in satellite antenna gain on the surface of the Earth due to orbit inclination be effected on the basis of criteria to be agreed by the administrations concerned;
5. [that need to coordinate such satellite networks using circular geosynchronous orbit with terrestrial systems shall be effected on the basis of criteria to be agreed between the administrations concerned;]
6. that these provisions should be reviewed in the light of the results of the CCIR studies given in Resolution WG/PL;

requests

- a) that the CCIR expedite the studies referenced in Resolution [...] (see Document DL/36(Rev.1)) taking into account all frequency bands and services that may be affected;
- b) that the IFRB participate in the work of the CCIR and consider inclusion of the results in its Rules of Procedure pending action at a future competent conference.

V. RAWAT  
Chairman of Sub-Working Group 4  
of the Working Group of the Plenary

# INTERNATIONAL TELECOMMUNICATION UNION

## ORB-88

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SUB-WORKING GROUP 4  
OF THE WORKING GROUP  
OF THE PLENARY

### DRAFT RESOLUTION [GT-PLN/2]

#### Provisional Procedure for the Coordination of Circular Geosynchronous Satellites

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 1 of the Radio Regulations contains a definition of geosynchronous satellite and does not specify if it is to be considered as a non-geostationary satellite;
- b) that the IFRB adopted in its Rules of Procedure a limit of 5° inclination in considering a geosynchronous satellite in all satellite services as a geostationary satellite;
- c) that geostationary and circular geosynchronous satellites operate in the same environment but a void exists in the regulatory procedures for dealing with circular geosynchronous satellites using inclined orbits that exceed 5°;
- d) that the Radio Regulations do not indicate which procedures shall be applied to geosynchronous satellites with circular orbit;
- e) that studies of this question will be carried out by the CCIR;
- f) that the results of these studies can be included in the Radio Regulations only by a competent conference;
- g) that in the interim there is a need for a provisional procedure;

#### resolves

- 1. that satellites in circular geosynchronous orbits with an inclination exceeding 5° shall not exceed the power flux-density limits specified in Article 28;
- 2. that no limitations other than those specified in Article 27 shall be imposed on terrestrial services with the view to protect regions around the geostationary satellite orbit;

3. that administrations and the IFRB shall apply the notification and coordination procedures contained in Articles 11 and 13, to frequency assignments for satellites in circular geosynchronous orbits with inclinations greater than 5°;
4. that the coordination between such space stations and geostationary space stations shall be based on the nominal geographical longitude on the geostationary-satellite orbit;
5. that coordination between satellite networks using circular geosynchronous orbits shall be effected on the basis of criteria to be agreed by the administrations concerned;

requests

- a) that the CCIR expedite the studies referenced in Resolution [...] (see DL/36(Rev.1));
- b) that the IFRB participate in the work of the CCIR and consider inclusion of the results in its Rules of Procedure pending action at a future competent conference.

V. RAWAT  
Chairman of Sub-Working Group 4  
of the Working Group of the Plenary

# 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 DL/44-E  
16 September 1988  
Original: English

WORKING GROUP OF  
THE PLENARY

### Draft

#### POSSIBLE MODIFICATIONS TO APPENDIX 3 (SECTION B, ITEM 8 AND SECTION D, ITEM 9)

The following text contains two proposals by France and the United States of America concerning modifications to Appendix 3 with regard to the power characteristics of the transmission.

R. RYVOLA  
Chairman of the Working Group of the Plenary

## MODIFICATION TO APPENDIX 3

1. Proposal by France:

## Section B

|     |                 |   |
|-----|-----------------|---|
| MOD | Item 8          | Power characteristics of the <u>earth station</u> transmission  |
|     | a) <sup>1</sup> | Indicate for each carrier the peak envelope power (dBW) supplied to the antenna input.  |
| SUP | b)              |   |
| ADD | b1)             | Indicate the total peak envelope power (dBW) supplied to the antenna input.   |
| ADD | b2)             | <u>Indicate the types of carrier to be considered<sup>2</sup>, and, for each type,</u> the maximum power density <sup>3</sup> per Hz (dB (W/Hz)) supplied to the antenna input averaged 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) <sup>1</sup> | Indicate for each carrier the minimum value of the peak envelope power supplied to the antenna input.   |

## Section D

|     |                 |   |
|-----|-----------------|---|
| MOD | Item 9          | Power characteristics of the <u>space station</u> transmission  |
|     | a) <sup>1</sup> | Indicate for each carrier the peak envelope power (dBW) supplied to the antenna input.  |
| SUP | b)              |   |
| ADD | b1)             | Indicate the total peak envelope power (dBW) supplied to the antenna input.   |
| ADD | b2)             | <u>Indicate the types of carrier to be considered<sup>2</sup>, and, for each type,</u> the maximum power density <sup>3</sup> per Hz (dB (W/Hz)) supplied to the antenna input averaged 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) <sup>1</sup> | Indicate for each carrier the minimum value of the peak envelope power supplied to the antenna input.   |

<sup>1</sup> This information need be provided only when such information has been used as a basis to effect coordination with another administration.

<sup>2</sup> ADD <sup>2</sup> For types of carrier, see Resolution [ ], Table 1.

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

2. Proposal by the United States of America:

**Section B**

Item 8 Power characteristics of the transmission

- a)<sup>1</sup> Indicate for each carrier the peak envelope (dBW) supplied to the input of the antenna.
- MOD b) Indicate ~~the total peak envelope power (dBW) and~~ the maximum power density per Hz (dB(W/Hz))<sup>2</sup> supplied to the input of the antenna averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.
- ADD d)<sup>1</sup> Indicate the total peak envelope power (in dBW) supplied to the input of the antenna that would be used to meet the up-path performance objectives of the network for each contiguous satellite bandwidth. For a satellite transponder, this corresponds to the bandwidth of each transponder and the peak envelope power necessary to produce saturation.

**Section D**

Item 9 Power characteristics of the transmission

- a)<sup>1</sup> Indicate for each carrier the peak envelope (dBW) supplied to the input the antenna.
- MOD b)<sup>1</sup> Indicate ~~the total peak envelope power (dBW) and~~ the maximum power density per Hz (dB(W/Hz))<sup>2</sup> at the input of the antenna, averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.
- ADD d)<sup>1</sup> Indicate the maximum total peak envelope power (in dBW) at the input of the antenna for each contiguous satellite bandwidth. For a satellite transponder, this corresponds to the maximum saturated peak envelope power and the bandwidth of each transponder.
- MOD The following footnote in all places.

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<sup>1</sup> This information need only be furnished when such information has been used as a basis to effect coordination with another administration. This information may be optionally provided in a Request for Coordination under No. 1073. See Resolution [L].



RESOLUTION [GT-PLN/3]

**Relating to the Calculation of Interference between  
Satellite Networks Using Simplified Methods**

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 CCIR texts contain information on simplified methods which  
may be used to estimate the levels of mutual interference between  
satellite networks;
- b) that these methods can provide a significant improvement in the  
accuracy of interference estimates when compared with Appendix 29  
calculations.
- c) than an improvement in the accuracy of interference estimates  
provides a better basis for resolution of difficulties under Section I of  
Article 11 and facilitates coordination under Section II of Article 11;
- d) that most of the data requirements for these methods are  
identified in Appendix 3;

invites

the CCIR to continue studies on simplified methods for calculating  
interference between satellite networks and to recommend a preferred  
method or methods;

encourages

administrations to participate in the studies of the CCIR to  
assure full consideration of all potential methods;

resolves

that administrations are encouraged to use these methods and to  
provide the necessary data.

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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

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SUB-WORKING GROUP  
5-B-1

Draft

The attached draft of Appendix 30A (Articles 1-12 and Annex 1) as prepared by Sub-Working Group 5-B-1 ad hoc 2 is submitted for consideration.

S. SELWYN  
Chairman of Sub-Working Group 5-B-1

Attachment

APPENDIX 30A

PROVISIONS AND ASSOCIATED PLANS FOR THE FEEDER LINKS FOR THE  
BROADCASTING-SATELLITE SERVICE (11.7-12.5 GHz IN REGION 1, 12.2-12.7 GHz  
IN REGION 2 AND 11.7-12.2 GHz IN REGION 3) IN THE FREQUENCY BANDS  
14.5-14.8 GHz<sup>1</sup> AND 17.3-18.1 GHz IN REGIONS 1 AND 3, AND 17.3-17.8 GHz IN REGION 2.

ARTICLE 1  
General Definitions

1.1 Regions 1 and 3 feeder link Plan: The Plan for the feeder links in the frequency bands 14.5-14.8 GHz<sup>1</sup> and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Regions 1 and 3 Plan.

1.2 Region 2 feeder link Plan: The Plan for the feeder links ~~for the broadcasting-satellite service~~ in the frequency band 17.3-17.8 GHz for the broadcasting-satellite service in Region 2 contained in this Appendix together with any modifications resulting from the successful application of the procedure of Article 4 of this Appendix herein referred to as the Region 2 Plan.

1.3 Frequency assignment in conformity with the ~~Region 2 feeder link~~ Plans: Any frequency assignment for a receiving space station which appears in the Regions 1 and 3 Plan or the Region 2 Plan or for which the procedure of Article 4 of this Appendix has been successfully applied.

1.4 1983 Conference: Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band 12.2-12.7 GHz and Associated Feeder Links in the Frequency Band 17.3-17.8 GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 (RARC-SAT-E2), Geneva, 1983.

1.5 1985 Conference: First session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilising It, Geneva, 1985, called in short WARC-ORB-85.

1.6 1988 Conference: Second session of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilising It, Geneva 1988, called in short WARC-ORB-88<sup>o</sup>

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<sup>1</sup> The use of the band 14.5-14.8 GHz is reserved for countries outside Europe [and for Malta].

## ARTICLE 2

### Frequency Bands

2.1 The provisions of this Appendix apply to the feeder links in the fixed-satellite service (Earth-to-space) in the frequency bands 14.5-14.8 GHz and 17.3-18.1 GHz for the broadcasting-satellite service in Regions 1 and 3, and 17.3-16.8 GHz for the broadcasting-satellite service in Region 2 and to other services to which this band is allocated in Regions 1, 2 and 3 so far as their relationship to the fixed-satellite service (Earth-to-space) in this these bands is concerned.

## ARTICLE 3

### Execution of the Provisions and Associated Plans

3.1 The Members of the Union in Regions 1, 2 and 3 shall adopt for their feeder link space and earth stations in the fixed-satellite service (Earth-to-space) in the frequency bands referred to in this

Appendix the characteristics specified in the appropriate Regional Plan and ~~its~~ the associated provisions.

3.2 Members of the Union ~~in Region 2~~ shall not change the characteristics specified in the Regions 1 and 3 Plan or in the Region 2 Plan, or bring into use assignments to feeder link stations in the fixed-satellite service or to stations of the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles and Annexes of this Appendix.

3.3 In Region 2, the procedures for the use of interim systems for feeder links in the fixed satellite service for the bands covered by Appendix 30A are given in Resolution [MOD Res.42(Orb-85)].

ARTICLE 4

Procedure for Modifications to the ~~Region 2 Plans (17.3-17.8 GHz)~~

4.1 When an administration intends to make a modification to one of the Regional Plans, i.e. either:

- a) to modify the characteristics of any of its frequency assignments in the fixed-satellite service which are shown in the appropriate Regional Plan, or for which the procedure in this Article has been successfully applied, whether or not the station has been brought into use; or
- b) to include in the Plan a new frequency assignment in the fixed-satellite service; or
- c) to cancel a frequency assignment in the fixed-satellite service,

the following procedure shall be applied before any notification of the frequency assignment is made to the International Frequency Registration Board (see Article 5 of this Appendix and Resolution ~~42(Orb-85)~~ (MOD Res. 42(Orb-85))

4.1.1 Before an administration proposes to include in the Plan under the provisions of 4.1 b) a new frequency assignment for reception at a space station<sup>1</sup> or to include in the Plan a new frequency assignment for reception at a space station whose orbital position is not designated in the Plan to ~~which~~ that administration, all of the assignments to the service areas involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Appendix. Should this not be the case, the administration concerned shall inform the Board of the reasons thereof.

4.2 Proposed modifications to a frequency assignment in conformity with one of the Regional Plans or the inclusion in ~~the~~ that Plan of a new frequency assignment.

For Regions 1 and 3

4.2.1 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Regions 1 and 3 Plan or the inclusion of a new frequency assignment in the that Plan shall seek the agreement of those administrations:

4.2.1.1 of Regions ~~1 and 3~~ having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, in the same orbit position or adjacent orbit positions [in the range  $\pm 12.5^\circ$ , which appears in the Plan or in respect of which proposed modifications to the plan have already been published by the Board in accordance with the provisions of ~~Sections~~ paragraphs 4.2.3.1 and 4.2.4 of this Article; or

4.2.1.2 having a frequency assignment in the band 17.7-~~17.8~~ 18.1 GHz to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of No 1060 of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;

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<sup>1</sup> The expression "frequency assignment for reception ~~at~~ at a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

4.2.1.3 having a frequency assignment in the bands 14.5-14.8 GHz or 17.7-17.8 18.1 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder-link modification into use, and which is located within the coordination area of the feeder-link fixed-satellite earth station;

4.2.1.4 having an assignment for feeder links in the fixed-satellite service (Earth-to-space) with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 feeder link Plan, or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of ~~Sections~~ paragraphs 4.2.3.1 and 4.2.4 of this Article; or

4.2.1.5 which are considered affected when the limits shown in Annex 1 to this Appendix are exceeded.

4.2.2bis The agreement referred to in 4.2.1 is not required when an administration proposes to bring into use, with characteristics appearing in the plan, a fixed earth station or a transportable earth station at specified fixed points in the bands 14.5-14.8 GHz or 17.3-17.8 18.1 GHz

For Region 2

4.2.2 An administration proposing a modification to the characteristics of a frequency assignment in conformity with the Region 2 Plan or the inclusion of a new frequency assignment in ~~the~~ that Plan shall seek the agreement of those administrations:

4.2.2.1 of Region 2 having a feeder-link frequency assignment in the fixed-satellite service (Earth-to-space) in the same channel or an adjacent channel, which appears in the Plan or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of ~~Sections~~ paragraphs 4.2.3.1 and 4.2.4 of this Article; or

4.2.2.2 having a frequency assignment in the band 17.7-17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth) which is recorded in the Master Register or which has been coordinated in or is being coordinated under the provisions of No 1060 of the Radio Regulations and which is located within the coordination area of the feeder link fixed-satellite earth station;

4.2.2.3 having a frequency assignment in the band 17.7-17.8 GHz to a terrestrial station in use or intended to be brought into use within three years of the projected date of bringing the feeder-link modification into use, and which is located within the coordination area of the feeder-link fixed-satellite earth station;

4.2.2.4 having an assignment for feeder links in the fixed-satellite service (Earth-to-space) with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in conformity with the Region 2 feeder link Plan, or in respect of which proposed modifications to the Plan have already been published by the Board in accordance with the provisions of ~~Sections~~ paragraphs 4.2.3.1 and 4.2.4 of this Article; or

4.2.2.5 which are considered affected when the limits shown in Annex 1 to this Appendix are exceeded.

4.2.3bis The agreement referred to in 4.2.2 is not required when an administration proposes to bring into use, with characteristics appearing in the Plan, a fixed earth station or a transportable earth station at specified fixed points in the band 17.3-17.8 GHz

For All Regions

4.2.3 An administration intending to modify characteristics in one of the Regional Plans shall send to the Board, not earlier than ~~five~~ eight years but preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2 to this Appendix.

4.2.3.1 Where as a result of the intended modification the limits defined in Annex 1 to this Appendix are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.2.3. The Board shall then publish this information in a special section of its weekly circular.

4.2.3.2 In all other cases the administration shall notify the Board of the names of the administrations whose agreement it considers should be sought in order to arrive at the agreement referred to in 4.2.1 and 4.2.2 as well as of those with which agreement has already been reached.

4.2.4 The Board shall determine on the basis of Annex 1 to this Appendix the administrations whose frequency assignments are considered to be affected within the meaning of 4.2.1 and 4.2.2. The Board shall include the names of those administrations with the information received under 4.2.3.2 and shall publish the complete information in a special section of its weekly circular. The Board shall immediately send the results of its calculations to the administration proposing the modification to the Plan.

4.2.5 The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

4.2.6 An administration which feels that it should have been included in the list of administrations whose services are considered to be affected may, giving the technical reasons for so doing, request the Board to include its name. The Board shall study this request on the basis of Annex 1 to this Appendix and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Plan.

4.2.7 Any modification to a frequency assignment which is in conformity with the Plan or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Annex 1 to this Appendix shall be subject to the agreement of all affected administrations.

4.2.8 The administration seeking agreement or the administration with which agreement is sought may request any additional technical information it considers necessary. The administrations shall inform the Board of such requests.

4.2.9 Comments from administrations on the information published pursuant to 4.2.4 should be sent either directly to the administration proposing the modification or through the Board. In any event the Board shall be informed that comments have been made.

4.2.10 An administration which has not notified its comments either to the administration seeking agreement or to the Board, within a period of four months following the date of the weekly circular referred to in 4.2.3.1 or 4.2.4 shall be understood to have agreed to the proposed modification. This time-limit may be extended by up to three months for an administration which has requested additional information under 4.2.8 or for an administration which has requested the assistance of the Board under 4.2.18. In the latter case the Board shall inform the administrations concerned of this request.

4.2.11 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.2.3 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.2.12 If no comments have been received on the expiry of the periods specified in 4.2.10, or if agreement has been reached with the administrations which have made comments and with which agreement is necessary, the administration proposing the modification may continue with the appropriate procedure in Article 5 of this Appendix and shall inform the Board, indicating the final characteristics of the frequency assignment together with the names of the administrations with which agreement has been reached.

4.2.13 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.2.14 When the proposed modification to the Plan involves developing countries, administrations shall seek all practicable solutions conducive to the economical development of the broadcasting-satellite systems of these countries.

4.2.15 The Board shall publish in a special section of its weekly circular the information received under 4.2.12 together with the names of any administrations with which the provisions of this Article have been successfully applied. The frequency assignment concerned shall enjoy the same status as those appearing in the Plan and will be considered as a frequency assignment in conformity with the Plan.

4.2.16 When an administration proposing to modify the characteristics of a frequency assignment or to make a new frequency assignment receives notice of disagreement from an administration whose agreement it has sought, it should first endeavour to solve the problem by exploring all possible means of meeting its requirement. If the problem still cannot be



solved by such means, the administration whose agreement has been sought should endeavour to overcome the difficulties as far as possible, and shall state the technical reasons for any disagreement if the administration seeking the agreement requests it to do so.

4.2.17 If no agreement is reached between the administrations concerned, the Board shall carry out any study that may be requested by these administrations; the Board shall inform them of the result of the study and shall make such recommendations as it may be able to offer for the solution of the problem.

4.2.18 An administration may at any stage in the procedure described, or before applying it, request the assistance of the Board, particularly in seeking the agreement of another administration.

4.2.19 The relevant provisions of Article 5 of this Appendix shall be applied when frequency assignments are notified to the Board.

#### 4.3 Cancellation of frequency assignments

When a frequency assignment in conformity with one of the Regional Plans is no longer required, whether or not as a result of a modification, the administration concerned shall immediately so inform the Board. The Board shall publish this information in a special section of its weekly circular and delete the assignment from the Plan.

#### 4.4 Master copies of the Plans

4.4.1 The Board shall maintain ~~an~~ up-to-date master copies of the Plans, including the overall equivalent protection margins in respect of Region 2 and the [overall] equivalent protection margins in respect of Regions 1 and 3 of each assignment, taking account of the application of the procedure specified in this Article. ~~This~~ Each master copy shall contain the overall equivalent protection margins derived from the Plan as established by the 1983 Conference in the case of Region 2 and the [overall] equivalent protection margins for the 1988 Conference in the case of Regions 1 and 3 and those derived from all modifications to the Plans as a result of the successful completion of the modification procedure of this Article. The Board shall prepare a document listing the amendments to be made to the Plans as a result of modifications made in accordance with the procedure in this Article.

4.4.2 The Secretary-General shall be informed by the Board of any modifications made to the Regional Plans and shall publish ~~an~~ up-to-date versions of the Plans in an appropriate form when justified by the circumstances.

## ARTICLE 5

### Notification, Examination and Recording in the Master Register of Frequency Assignments to Feeder Link Transmitting Earth Stations and Receiving Space Stations in the Fixed-Satellite Service ~~in the Band Between 17.3 and 17.8 GHz in Region 2~~

#### 5.1 Notification

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a transmitting earth station or receiving space station in the fixed-satellite service in the bands between 14.5 and 14.8 GHz and between 17.3 and 18.1 GHz in Region 1, between 17.3 and 17.8 GHz in Region 2 and between 14.5 and 14.8 GHz and between 17.3 and 18.1 GHz in Region 3, it shall notify this frequency assignment to the Board. [The notifying administration may defer the scheduled date for the use of the frequency assignment by a maximum of 4 months in compliance with a request and in accordance with RR 1550. If the administration requests redeferring the date under special circumstances, such a deferment may be admitted. However, in no cases shall the date be later than 18 months from the originally scheduled date of the start of the use.] For this purpose, the notifying administration shall apply the following provisions.

5.1.2 For any notification under 5.1.1, an individual notice for each frequency assignment shall be drawn up as prescribed in Annex 2 to this Appendix, the various sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date<sup>1</sup>.

5.1.4 Any frequency assignment the notice of which reaches the Board after the applicable period specified in 5.1.3 shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with 5.1.3.

5.1.5 Any notice made under 5.1.1 which does not contain the characteristics specified in Annex 2 to this Appendix shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

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<sup>1</sup> Where appropriate, the notifying administration shall initiate the procedure of Article 4 of this Appendix for modifying the Plan in sufficient time to ensure that this limit is observed.

5.1.6 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in its weekly circular which shall contain the particulars of all such notices received since the publication of the previous circular.

5.1.7 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

5.1.8 Complete notices shall be considered by the Board in order of receipt. The Board shall not postpone its finding unless it lacks sufficient data to reach a decision; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.

NOC 5.2 Examination and recording

MOD 5.2.1 The Board shall examine each notice:

- a) with respect to its conformity with the Convention and the relevant provisions of the Radio Regulations (with the exception of those relating to b), c) and d) below); and
- b) with respect to its conformity with the appropriate Regional Plan; or
- c) with respect to its conformity with the appropriate Regional Plan, however having characteristics differing from those in the Plan in one or more of the following aspects:
  - use of a reduced e.i.r.p.,
  - use of a reduced coverage area entirely situated within the coverage area appearing in the Plan,
  - use of other modulating signals in accordance with the provisions of 3.1.3 of Annex 5 of Appendix 30,
  - in the case of Region 2 use of an orbital position under the conditions specified in paragraph B of Annex 7 of Appendix 30,
  - use of an antenna diameter greater than 5 metres for 17 GHz and 6 metres for 14 GHz without increasing the on-axis e.i.r.p.,
  - in the case of Region 2 a use of an antenna diameter greater than 5 metres resulting in a greater on-axis e.i.r.p. if the orbital separation with any other space station is greater than 0.5°, or
- d) for Region 2 with respect to its conformity with the provisions of Resolution [MOD Res.42(Orb-85)].

NOC 5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 b), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

NOC 5.2.2.1 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 c) the frequency assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations, all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments, the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.

5.2.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a), but an unfavourable finding with respect to 5.2.1. b) and 5.2.1 c), it shall examine the notice with respect to the successful application of the provisions of [MOD Resolution 42 (Orb-85).] A frequency assignment for which the provisions of [MOD Resolution 42 (Orb-85)] have been successfully applied shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. The date of receipt of the notice by the Board shall be entered in Column 2d. In relations between administrations all frequency assignments brought into use following the successful application of the provisions of [MOD Resolution 42 (Orb-85)] and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.

5.2.4 Where the Board reaches an unfavourable finding with respect to 5.2.1 a), 5.2.1 b) and 5.2.1 c), the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of 5.2.1, the notice shall be treated as in 5.2.2, 5.2.2.1 or 5.2.2.2 as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled.

5.2.7 If a frequency assignment notified in advance of bringing into use in conformity with 5.1.3 has received a favourable finding by the Board with respect to the provisions of 5.2.1, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

5.2.8 When the Board has received confirmation that the frequency assignment has been brought into use, the Board shall remove the symbol in the Master Register [within 30 days in accordance with RR 1554.]

5.2.9 The date in Column 2c shall be the date of bringing into use notified by the administration concerned. It is given for information only.

### 5.3. *Cancellation of entries in the Master Register*

5.3.1 If an administration has not confirmed the bringing into use of a frequency assignment under 5.2.8, the Board will make inquiries of the administration not earlier than six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Procedure Concerning Coordination Notification and Recording in the  
Master Register of Frequency Assignments to Receiving  
Terrestrial Stations in Regions 1 and 3 in the  
Bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2  
in the Band 17.7-17.8 GHz, when Frequency Assignments to  
Feeder-Link Transmitting Earth Stations for the Broadcasting-Satellite  
Service in Conformity with the Regions 1 and 3 Plan or the  
Region 2 Plan are Involved

6.1 Administrations planning to implement assignments for terrestrial stations in Regions 1 and 3 in the bands 14.5-14.8 GHz and 17.7-18.1 GHz, and in Region 2 in the 17.7-17.8 GHz band should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Appendix 28 to the Radio Regulations, which 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 contains information on specific earth stations, the level of interference shall be assessed on the basis of coordination contours calculated in accordance with Appendix 28 to the Radio Regulations.~~ Should the administration ~~concerned~~ planning terrestrial stations find that interference may be caused by the feeder-link earth station ~~to its planned terrestrial station~~, it may request the administration responsible for the feeder-link earth station to indicate the ~~planned actual locations of the~~ geographical coordinates, antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.

6.2 In Region 2 where the entry in the Plan contains information on specific earth stations, this shall be used in the interference calculations mentioned in 6.1 above. In Region 2 where such information is not contained in the Plan an administration which receives a request under 6.1 shall, within a period of three months, indicate the actual locations of its provide the details of the feeder-link earth stations and communicate them to the administration planning the terrestrial station and to the Board in order to update the Plan.

6.3 In Regions 1 and 3 an administration which receives a request under 6.1 shall within a period of three months provide the details of the feeder link stations and communicate them to the administration planning the terrestrial station and to the Board for information.

6.4 If, at the end of a period of three months, the administration responsible for the terrestrial station does not receive a reply, it may request the assistance of the Board.

6.5 If the administration responsible for the feeder-link earth stations does not communicate to the Board, within a period of three months the information requested under 6.1, this administration ~~may~~ shall only implement its feeder-link earth station provided it does not cause harmful interference to the terrestrial station under consideration.

ARTICLE 7

Procedure Concerning Coordination Notification and Recording  
in the Master Register of Frequency Assignments to Stations  
in the Fixed-Satellite Service (Space-to-Earth)  
in Regions 1 and 3 in the Band 17.7-18.1 GHz and  
in Region 2 in the band 17.7-17.8 GHz, when Frequency Assignments  
to Feeder-Link Stations ~~Links for the Broadcasting-Satellite Service~~  
Stations Appearing in the Regions 1 and 3 Plan or the Region 2  
Plan are involved

7.1 The provisions of Articles 11 and 13 and Appendix 29 of the Radio Regulations are applicable to transmitting space stations in the fixed-satellite service ~~of Region 2~~ in the band 17.7-~~17.8~~ 18.1 GHz together with the provisions of Annex 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 Section 1 of Annex 4 to this Appendix.

7.2 Administrations planning to implement assignments for receiving earth stations in Region 1 in the band 17.7-18.1 GHz and in Regions 2 and 3 in the 17.7-17.8 GHz band in the fixed-satellite service (space-to-Earth) should evaluate the level of interference assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix, 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 shall be assessed on the basis of coordination contours calculated in accordance with Annex 4 to this Appendix.~~ Should ~~this~~ the administration planning receiving earth stations find that interference may be caused by the feeder-link earth stations ~~to its planned fixed-satellite earth stations~~

it may request the administration responsible for the feeder-link earth stations to indicate the planned actual locations of the geographical coordinates, antenna characteristics and the elevation angle of the horizon around its actual and planned feeder-link earth stations.

7.3 In Region 2 where the entry in the Plan contains information on specific earth stations this shall be used in the interference calculations mentioned in 7.2 above. In Region 2 where such information is not contained in the Plan an administration which receives a request under 7.2 shall, within a period of three months, indicate the actual locations of its provide the details of the feeder link earth stations and communicate ~~it~~ them to the administration planning the receiving earth station and to the Board in order to update the Plan.

7.4 In Regions 1 and 3 an administration which receives a request under 7.2 shall within a period of three months provide the details of the feeder link earth stations and communicate them to the administration planning the receiving earth station and to the Board for information.

7.5 If, at the end of the period of three months, the administration responsible for the fixed-satellite receiving earth station does not receive a reply, it may request the assistance of the Board in this matter.

7.6 If the administration responsible for the feeder-link earth stations does not communicate to the Board, within a period of three months, the information requested under 7.2 ~~the actual locations of its feeder-link earth stations~~, this administration ~~may~~ shall only implement its feeder-link earth station provided it does not cause harmful interference to the fixed-satellite earth station under consideration.

ARTICLE 6

Miscellaneous Provisions Relating to the Procedures  
Section I Studies and Recommendations

8.1.1 to 8.2.2

ARTICLE 9

The Plan for the Feeder Links in the Fixed-Satellite Service in the  
Frequency Band 17.3-17.8 GHz in Region 2

COLUMN HEADINGS OF THE PLAN

MOD Modify heading of column 9 to read "Observations". Remove column 10. [The location of earth stations along with antenna characteristics and elevation angle of the horizon should be given as an annex to the Plans.]

NOC 9.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

NOC 1 to 8

MOD 9/GR... This assignment is part of a group, the number of which follows the symbol. The group consists of the beams and has the number of channels assigned to it as indicated in the table below.

- a) The overall equivalent protection margin to be used for the application of Article 4 and Resolution ~~42 (Orb-85)~~ [MOD Res.42(Orb-85)] shall be calculated on the following basis:
  - for the calculation of interference to assignments that are part of a group, only the interference contributions from assignments that are not part of the same group are to be included; and
  - for the calculation of interference from assignments belonging to a group to assignments that are not part of that same group, only the worst interference contribution from that group shall be used on a test point to test point basis.
- b) If an administration notifies the same frequency in more than one beam of a group for use at the same time, the aggregated C/I produced by all emissions from that group shall not exceed the C/I calculated on the basis of a) above.



NOC

TABLE 1

NOC Country symbols

NOC

TABLE 2

NOTE

The Plan is not reproduced in this draft document.

ARTICLE 10

The Plan for the Feeder Links in the Fixed-Satellite Service  
in the Frequency Band ~~17.3-17.8 GHz in Region 2~~ 14.5-14.8 GHz and  
17.3-18.1 GHz in Regions 1 and 3

10.1 COLUMN HEADINGS OF THE PLAN

- |       |   |
|-------|---|
| Col 1 | Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No B1 of the Preface to the International Frequency List followed by the symbol designating the service area).  |
| Col 2 | Nominal orbital position, in degrees and hundredths of a degree.  |
| Col 3 | Channel number (see Table showing channel numbers and corresponding assigned frequencies).  |
| Col 4 | Boresight geographical coordinates, in degrees and hundredths of a degree.  |
| Col 5 | Antenna beamwidth. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross section half-power beam, in degrees and hundredths of a degree.   |
| Col 6 | Orientation of the ellipse determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree. |
| Col 7 | Polarization (1 - direct, 2 - indirect). <sup>1</sup>   |
| Col 8 | Earth station eirp in the direction of maximum radiation, in dBW.   |
| Col 9 | Remarks.  |

10.2 TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

[Details to be inserted later when Plan is completed]

## ARTICLE 11

### Interference

11.1 The Members of the Union ~~in Region 2~~ shall endeavour to agree on the action required to reduce harmful interference which might be caused by the application of these provisions and the associated Plans.

## ARTICLE 12

### Period of Validity of the Provisions and Associated Plans

12.1 ~~For Region 2~~ The provisions and associated Plans have been prepared in order to meet the requirements for feeder links for the broadcasting-satellite service in the bands concerned for a period extending until at least 1 January 1994.

12.2 In any event, the provisions and associated Plans shall remain in force until their revision by a competent administrative radio conference convened in accordance with the relevant provisions of the Convention in force.

---

<sup>1</sup> See Annex 3 (paragraph [3.8]) to this Appendix

ANNEX 1

MOD Limits for Determining Whether a Service of an Administration  
is Considered to be Affected by a Proposed Modification to  
One of the Regional the Plans ~~or~~ When It Is Necessary Under  
This Appendix to Seek the Agreement of Any Other Administration<sup>†</sup>

NOC 1. Limits applicable to protect a frequency assignment in the  
band 17.7 - ~~17.8~~ 18.1 GHz to an earth station in the  
fixed-satellite service (space-to-Earth)

NOC An administration shall be considered as being affected if,  
upon application of the procedures of Section 3 of Annex 4 to this  
Appendix, that administration is included in the coordination area  
of the frequency assignment to a transmitting feeder-link earth  
station.

NOC For this purpose, the parameters of the transmitting  
feeder-link earth station, as may be modified from those  
parameters given in Annex 3 to this Appendix, shall be used.

NOC 2. Limits applicable to protect a terrestrial station in the  
bands 14.5 - 14.8 GHz and 17.7 - ~~17.8~~ 18.1 GHz

NOC An administration shall be considered as being affected if,  
upon application of the procedures of Appendix 28 to the Radio  
Regulations, that administration is included in the coordination  
area of the frequency assignment to a transmitting feeder-link  
earth station.

NOC For this purpose, the parameters of the transmitting  
feeder-link earth station, as may be modified from those  
parameters given in Annex 3 to this Appendix, shall be used.

NOC            3.    Limits to the change in the overall equivalent protection margin with respect to frequency assignments in conformity with the Region 2 Plan<sup>1</sup>

MOD            With respect to the modification to the Plan and when it is necessary under this Appendix to seek the agreement of any other administration, except in cases covered by [MOD Resolution 42], an administration shall be considered as being affected if the overall equivalent protection margin<sup>2</sup> corresponding to a test point of its entry in the Plan, including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

- the Plan as established by the 1983 Conference; or
- a modification of the assignment in accordance with this Appendix; or
- a new entry in the Plan under Article 4 of this Appendix; or
- any agreement reached in accordance with this Appendix except for [MOD Resolution 42].

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(MOD)            <sup>1</sup> With respect to section 3 the limit specified relates to the overall equivalent protection margin calculated in accordance with Section [1.11 of Annex 3 to this Appendix].

NOC            <sup>2</sup> For the definition of the overall equivalent protection margin, see Section 1.14 of Annex 5 to Appendix 30 (ORB-85).

4. Limits to the change in the feeder-link equivalent protection margin with respect to frequency assignments in conformity with the Regions 1 and 3 Plan<sup>1</sup>

With respect to the modification to the Plan and when it is necessary under this Appendix to seek the agreement of any other administration, an administration shall be considered as being affected if the feeder-link equivalent protection margin<sup>2</sup> corresponding to a test point of its entry in the Plan including the cumulative effect of any previous modification to the Plan or any previous agreement, falls more than 0.25 dB below 0 dB, or, if already negative, more than 0.25 dB below the value resulting from:

- the Plan as established by the 1988 Conference; or
- a modification of the assignment in accordance with this Appendix; or
- a new entry in the Plan under Article 4 of this Appendix; or
- any agreement reached in accordance with this Appendix.

---

(MOD) <sup>1</sup> With respect to section 4 the limit specified relates to the feeder-link equivalent protection margin calculated in accordance with [Section 1.6bis of Annex 3 to this Appendix].

(NOC) <sup>2</sup> For the definition of the equivalent protection margin, see [ ].

5. Limits applicable to protect a frequency assignment in the band 17.3 - 18.1 GHz (Regions 1 and 3) and 17.3 - 17.8 GHz (Region 2) to a receiving space station in the fixed-satellite service (Earth-to-space)

An administration in Regions 1 and 3 shall be considered affected by a proposed modification in Region 2 or vice-versa (including cases covered by Resolution 41) when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station exceeds a threshold value of  $(\Delta T/T)'$  corresponding to 3%,

where:

$(\Delta T/T)'$  is calculated in accordance with the method given in Appendix 29 for  $\Delta T/T$ , except that the maximum power densities are replaced by power densities averaged over the total RF bandwidth of the feeder-link carriers (24 MHz for Region 2 and 27 MHz for Regions 1 and 3). The calculation shall be made for faded conditions, that is, the value of  $(\Delta T/T)'$  shall correspond to the value not exceeded for more than 1% 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 DL/46-E  
17 September 1988  
Original: English

SECOND SESSION, GENEVA, AUGUST/OCTOBER 1988

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SUB-WORKING GROUP 5-B-2

DRAFT

The attached draft Resolution is submitted for consideration.

R. ZEITOUN  
Chairman of Sub-Working Group 5-B-2 ad-hoc 2

Attachment

RESOLUTION [COM5/3]

**Relating to the Selection of a Frequency Band for Use by  
the Broadcasting-Satellite Service and Intended for  
Wide RF-Band High Definition Television\*, Associated  
Frequency Band for HDTV Feeder Links, and the Adoption of  
Related Provisions by a Future Competent Conference**

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 the development of techniques for high definition television broadcasting is rapidly progressing;
- b) that the frequency bands around 12 GHz allocated to the broadcasting-satellite service do not, as presently planned, provide a world-wide allocation suitable for the implementation of HDTV via satellites;
- c) that a world-wide frequency allocation to the broadcasting-satellite service suitable for HDTV transmissions is desirable to facilitate the implementation of a unique world-wide standard for HDTV transmission by satellite and to reduce interregional inter-service sharing constraints;
- d) that the band 22.5 - 23 GHz is allocated to the broadcasting-satellite service only in Regions 2 and 3, and is authorized subject to agreement obtained under the procedure set forth in Article 14 of the Radio Regulations;
- e) that due account should be taken of other radiocommunication services appearing in Article 8 of the Radio Regulations;

considering also

- a) that the CCIR has carried out a number of studies concerning the broadcasting of HDTV signals, propagation aspects, and the difficulties of sharing with other services (see the CCIR Reports to the First and Second Sessions);
- b) that the CCIR in its Report to the Second Session of WARC ORB has concluded that:
  - i) narrow RF-band systems (operating in a 24 - 27 MHz channel) are characterized by relatively high degrees of bandwidth compression and by analogue modulation;
  - ii) wide RF-band systems (both analogue and digital) require an RF channel bandwidth typically in the order of 50 - 120 MHz;

---

\* Hereinafter referred to in this text as simply HDTV.



- iii) some use of the 12 GHz band, as planned, can be made for narrow RF-band systems using single channel, highly compressed signal formats and, at the expense of a significant reduction in the number of available programmes, for formats using two RF channels. However, the 12 GHz band, as planned, will not accommodate single wide RF channel high definition TV, analogue or digital signals on a world-wide basis;
- iv) from a propagation point of view, all bands from 12 GHz to 23 GHz may be suitable, but rain attenuation which increases with frequency needs to be taken into account;
- c) that this Conference has confirmed the need for a suitable band to be made available, preferably on a world-wide basis, for the introduction [in the long term] of HDTV in the BSS with an associated band for HDTV feeder links, also preferably on a world-wide basis.

resolves

- 1. that opportunities be given in Article 8 of the Radio Regulations to achieve a well balanced situation for all Regions to facilitate the introduction of HDTV on a world-wide basis;
- 2. that the frequency range 12.7 - 23 GHz be considered for HDTV keeping in mind that frequencies now allocated to the BSS in the range 11.7 - 12.7 GHz can already be used for certain types of high definition television subject to the limitations discussed above and without prejudice to the existing plans in that band.\*
- 3. that the bands to be considered as candidates for associated HDTV feeder links shall include but not be restricted to [10.7 - 11.7] GHz and [27.0 - 27.5] GHz;
- 4. that further studies (going beyond those presented in the reports of the CCIR to this Conference) will be essential before the most suitable bands can be chosen;
- 5. that if any frequency band chosen for long-term use by HDTV necessitates the re-accommodation or adjustment of existing services, a minimum period of 10 - 15 years should be allowed for these changes to be made before HDTV may be introduced into that band;

resolves to recommend

- 1. that the next Plenipotentiary Conference, when establishing the post-1989 programme of conferences and meetings, should include provision for a WARC to deal with matters relating to HDTV, the timing of which should be sufficiently early to take due account of any period that may be needed to re-accommodate or adjust other services;
- 2. that the Administrative Council, when establishing the agenda for the above-mentioned WARC, should ensure that the Conference is authorized:
  - a. to make the definitive selection and appropriate radio regulatory provisions for a frequency band for HDTV in the BSS [in the long-term] and for an associated HDTV feeder-link band, both preferably on a world-wide basis;

---

\* The United Kingdom reserved its position on this point.

- b. to make appropriate provisions to regulate the sharing of any such bands with other radio services and to take into account the needs of any existing services which may have to be adjusted for re-accommodation elsewhere in the frequency spectrum, including the time required to effect any necessary changes;
- c. to determine the dates for the entry into force of its decisions, including the earliest date for the introduction of HDTV and associated feeder links into any frequency bands selected for those purposes;

invites the CCIR

to undertake the further studies necessitated by this Resolution for feeder links and down-links and to submit its report not later than one year before the WARC mentioned above. These studies are to include the following:

1. the effect of the choice of frequency on system parameters, especially satellite power requirements and receiving system characteristics;
2. system parameters for HDTV emission by satellite, e.g.:
  - modulation,
  - baseband coding,
  - channel coding,
  - satellite and earth station technology,
  - type of polarization (including propagation effects);
3. propagation characteristics, e.g.:
  - attenuation,
  - cross-polar discrimination,
  - atmospheric absorption;
4. inter- and intra-service sharing and interference;
5. interregional sharing.

invites administrations

to carry out studies as required, taking into account the above-listed topics, and communicate the results to the CCIR;

requests

the Secretary-General to bring this Resolution to the attention of the Plenipotentiary Conference, Nice, 1989.

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 DL/47-E  
19 September 1988  
Original: English

SUB-WORKING  
GROUP 6-B-2

Draft

PROPOSALS FROM ADMINISTRATIONS ON AGENDA ITEM 4  
(SIMPLIFIED PROCEDURES) CONCERNING ARTICLE 13

M.J. BATES  
Chairman of Sub-Working Group 6-B-2

CONF\ORB-2\DL\047E.TXS

## ARTICLE 13

### Notification and Recording in the Master International Frequency Register of Frequency Assignments <sup>1</sup> to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service <sup>2</sup>

MOD B/35/11, CAN/60/135  
ADD  
SUP

#### Section I. Notification of Frequency Assignments

MOD B/35/12  
ADD  
SUP

**1488** § 1. (1) Any frequency assignment to be used for transmission or reception by an earth or space station shall be notified to the Board:

MOD F/32/1, B/35/13, USA/12/31  
ADD F/32/2, USA/12/32  
SUP

**1489** a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; *or*

MOD B/35/14  
ADD  
SUP

**1490** b) if the frequency is to be used for international radiocommunications; *or*

MOD B/35/17  
ADD  
SUP

- 1491**                      c) if it is desired to obtain international recognition of the use of the frequency.

MOD            B/35/18  
ADD            B/35/19-23  
SUP

- 1492**                      (2) Any frequency or frequency band to be used for reception by a particular radio astronomy station may be notified if it is desired that such data should be included in the Master Register.

MOD  
ADD  
SUP

- 1493**                      (3) When the Board receives from one administration a notice containing a modification or deletion of a space station assignment already recorded in the Master Register on behalf of a group of administrations, it shall be assumed, in the absence of information to the contrary, that the notice of modification or deletion is submitted on behalf of all the administrations which were associated with the original notification.

MOD            B/35/24  
ADD  
SUP

- 
- A.13.1**                      <sup>1</sup> The expression *frequency assignment*, wherever it appears in this Article, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called *Master Register*).

MOD  
ADD            B/35/15  
SUP

**A.13.2**

**Orb-85**

<sup>2</sup> For notification and recording of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and 12.2 - 12.7 GHz (in Region 2), as well as the notification and recording of frequency assignments to feeder-link stations in the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in these bands in Region 2, see also Article 15 and Article 15A respectively.

MOD CAN/60/136  
ADD B/35/16, CAN/60/137  
SUP

**1494**

(4) A notice submitted in accordance with Nos. 1488 to 1491 and relating to a frequency assignment to mobile earth stations in a satellite system shall include the technical characteristics either of each mobile earth station, or of a typical mobile earth station, and an indication of the service area within which these stations are to be operated.

MOD F/32/3  
ADD B/35/25  
SUP

**1495**

§ 2. For any notification under Nos. 1488 to 1492 or 1494, a notice for each frequency assignment shall be drawn up as prescribed in Appendix 3, the various sections of which specify the basic characteristics to be furnished according to the case. It is recommended that the notifying administration should also supply the additional data called for in Section A of that Appendix, together with such further data as it may consider appropriate.

MOD CAN/60/138  
ADD  
SUP

- 1496** § 3. (1) For a frequency assignment to an earth or space station, each notice shall be submitted in order to reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice shall reach the Board in any case not later than three months<sup>1</sup> before this date, except in the case of assignments in the space research service in bands allocated exclusively to this service or in shared bands in which this service is the sole primary service. In the case of such an assignment in the space research service, the notice should, whenever practicable, reach the Board before the date on which the assignment is brought into use, but it shall in any case reach the Board not later than thirty days after the date it is actually brought into use.

MOD CAN/60/139  
ADD  
SUP

- 1497** (2) Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in No. 1496, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with No. 1496.

MOD B/35/26  
ADD  
SUP

- 
- 1496.1** <sup>1</sup> The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

MOD  
ADD  
SUP CAN/60/140

**Section II. Procedure for the Examination of Notices  
and the Recording of Frequency Assignments in the Master Register**

MOD  
ADD  
SUP

- 1498**    § 4.        Any notice which does not contain at least those basic characteristics specified in Appendix 3 shall be returned by the Board, by airmail, to the notifying administration with the reasons therefor, unless the information not provided is immediately forthcoming in response to an enquiry from the Board. The Board shall advise the administration by telegram when a notice is returned under this provision.

MOD        CAN/60/141  
ADD  
SUP

- 1499**    § 5.        On receipt of a complete notice, the Board shall include the particulars thereof, including diagrams, with the date of receipt, in the weekly circular referred to in No. 1235 to be published within a period of forty days after receipt of the notice. When the Board is not in a position to comply with this time-limit, it shall, as soon as possible, so inform the administrations concerned giving the reasons therefor.

MOD  
ADD  
SUP

- 1500**    § 6.        The circular shall contain the full particulars of all such notices received by the Board since the publication of the previous circular and shall constitute the acknowledgement to each notifying administration of the receipt of the complete notice.

MOD  
ADD  
SUP



- 1501**     § 7.     Complete notices shall be considered by the Board in the order of their receipt, taking into account the time-limit referred to in No. 1583. The Board shall not postpone the formulation of a finding unless it lacks sufficient data to render a decision in connection therewith; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board until it has reached a finding with respect to such earlier notice.

MOD

ADD     CAN/60/142

SUP

- 1502**     § 8.     The Board shall examine each notice:

MOD

ADD

SUP

- 1503**             a)     with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations, with the exception of those relating to the coordination procedures and the probability of harmful interference which are the subject of the following sub-paragraphs;

MOD     J/53/10

ADD     CAN/60/143

SUP

- 1504**             b)     with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis space radiocommunication stations in cases where the provisions of Nos. 1060 or 1066 to 1071 are applicable;

MOD

ADD

SUP

- 1505                    c)    with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis terrestrial radiocommunication stations in cases where the provisions of No. 1107 are applicable;

MOD  
ADD  
SUP

- 1506                    d)    with respect to the probability of harmful interference, when the coordination under No. 1060 has not been successfully effected; this examination<sup>1</sup> shall take into account the frequency assignments for transmission or reception already recorded in the Master Register:

MOD  
ADD  
SUP

- 1507                    1)    in application of No. 1526, 1531, 1534 or 1543; or

MOD  
ADD  
SUP

- 1508                    2)    in application of No. 1544, if that frequency assignment has not in fact caused harmful interference to any other previously recorded frequency assignment which is in conformity with No. 1503;

MOD  
ADD  
SUP

---

1506.1                    <sup>1</sup> The examination of such a notice with respect to any other frequency assignment published under No. 1078 but not yet notified shall be deferred until both assignments have been notified; the Board shall then examine them in the order of their publication under No. 1078.

MOD  
ADD  
SUP

- 1509**                      *e)*    with respect to the probability of harmful interference, when the coordination under No. **1107** has not been successfully effected; this examination shall take into account the frequency assignments for transmission or reception already recorded in the Master Register:

MOD

ADD

SUP

- 1510**                      1)    in application of No. **1248**; *or*

MOD

ADD

SUP

- 1511**                      2)    in application of No. **1362**, **1367**, **1370**, or **1373**; *or*

MOD

ADD

SUP

3) in application of No. 1374 if that assignment has not in fact caused harmful interference to any other previously recorded frequency assignment which is in conformity with No. 1503.

SUP

SUP

SUP

- 1515**     § 11. (1) *Finding Favourable with Respect to No. 1503 in Cases Where the Provisions of Nos. 1504 and 1505 Are Not Applicable (space station on board a non-geostationary satellite).*

MOD  
ADD  
SUP

- 1516**     (2) The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

MOD  
ADD     CAN/60/147-150  
SUP

- 1517**     § 12. (1) *Finding Unfavourable with Respect to No. 1503 in Cases Where the Provisions of Nos. 1504 and 1505 Are Not Applicable (space station on board a non-geostationary satellite).*

MOD  
ADD  
SUP

- 1518**     (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

MOD  
ADD  
SUP

- 1519** (3) Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD  
ADD  
SUP

- 1520** § 13. (1) *Finding Unfavourable with Respect to No. 1503 in Cases Where the Provisions of Nos. 1504 and 1505 Are Applicable.*

MOD  
ADD  
SUP

- 1521** (2) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342, and the finding is favourable with respect to Nos. 1504, 1505, 1506 to 1508 and 1509 to 1512, as appropriate, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

MOD  
ADD  
SUP

- 1522** (3) Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342 and the finding is unfavourable with respect to Nos. 1504, 1505, 1506 to 1508 or 1509 to 1512, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. Should the administration insist upon reconsideration of the notice, the assignment shall be recorded in the Master Register with the understanding that the provisions of No. 1560 shall be applied. The date of receipt by the Board of the original notice shall be entered in Column 2d.

MOD  
ADD  
SUP

- 1523** (4) Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD  
ADD  
SUP

- 1524** (5) If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. 1523. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 342, it shall be treated in accordance with the provisions of No. 1521 or 1522, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. 1503, it shall be treated as a new notice.

MOD  
ADD  
SUP

- 1525** § 14. (1) *Finding Favourable with Respect to No. 1503 in Cases Where the Provisions of No. 1504 or 1505 Are Applicable.*

MOD  
ADD  
SUP

- 1526** (2) Where the Board finds that the coordination procedures mentioned in No. 1504 or 1505 have been successfully completed with all administrations whose space or terrestrial radiocommunication stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

MOD  
ADD  
SUP

- 1527** (3) Where the Board finds that either of the coordination procedures mentioned in Nos. **1504** and **1505** has not been applied and:

MOD  
ADD  
SUP

- 1528** a) if the notifying administration requests the Board to effect the coordination, the Board shall take appropriate action; if the Board's efforts toward securing agreement are successful, it shall so inform the administrations concerned and shall treat the notice in accordance with No. **1526**;

MOD  
ADD  
SUP

- 1529** b) if the Board's efforts toward securing agreement in application of Nos. **1528** or **1089** to **1094** or **1130** to **1135** are unsuccessful, or if, when notifying the assignment, the administration states that it has been unsuccessful and does not request the Board to effect the required coordination, the Board shall examine the notice with respect to the provisions of Nos. **1506** to **1508** and **1509** to **1512**, as appropriate. At the same time, the Board shall so inform the administrations concerned;

MOD  
ADD  
SUP



- 1530**                      c) if the notifying administration does not request the Board to effect the required coordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD

ADD

SUP

- 1531**                      (4) Where the notifying administration resubmits the notice and the Board finds that the coordination procedures mentioned in Nos. **1504** and **1505** have been successfully completed with all administrations whose space or terrestrial radiocommunication stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

MOD

ADD

SUP

- 1532**                      (5) Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under No. **1060** or **1107**, it shall be treated in accordance with the provisions of Nos. **1527** and either **1528** or **1529**. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

MOD

ADD

SUP

**1533**     § 15. (1) *Finding Favourable with Respect to Nos. 1503, 1506 to 1508, and 1509 to 1512, as Appropriate.*

MOD

ADD

SUP

**1534**             (2) The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

MOD

ADD

SUP

**1535**             (3) However, should the examination show that the interference and the percentage of time during which it is likely to occur have values slightly greater than those used for assessing the probability of harmful interference (extreme propagation conditions, abnormal atmospheric humidity, etc.), a remark shall be included in the Master Register to show that there may be a slight risk of harmful interference and hence additional precautions must be taken in the use of the assignment to avoid harmful interference to assignments already recorded in the Master Register.

MOD

ADD

SUP

**1536**             (4) In addition to the examination of a frequency assignment to an earth station under Nos. 1509 to 1512, if there is continuing disagreement, the Board shall examine that frequency assignment with respect to the probability of harmful interference caused to, or caused by, those terrestrial stations for which assignments have been communicated to the Board in application of No. 1126 and are to be brought into use in the next three years.

MOD

ADD

SUP

**1537** (5) Following the examination under No. **1536**, the Board shall, where appropriate:

MOD  
ADD  
SUP

**1538** a) inform the administrations concerned of any unfavourable findings;

MOD  
ADD  
SUP

**1539** b) enter a remark indicating such an unfavourable finding against the assignment to the earth station recorded in the Master Register;

MOD  
ADD  
SUP

**1540** c) record the assignments to terrestrial stations in the Master Register with a remark indicating any unfavourable finding; the date of receipt of the information communicated under No. **1126** shall be entered in Column 2d.

MOD  
ADD  
SUP

**1541** § 16. (1) *Finding Favourable with Respect to No. 1503 but Unfavourable with Respect to Nos. 1506 to 1508 or 1509 to 1512, as Appropriate.*

MOD  
ADD  
SUP

- 1542** (2) The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding together with such suggestions as the Board is able to offer with a view to a satisfactory solution of the problem.

MOD  
ADD  
SUP

- 1543** (3) Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to Nos. **1506 to 1508** or **1509 to 1512**, as appropriate, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

MOD  
ADD  
SUP

- 1544** (4) Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. **1543** to be applied, and should that administration insist upon re-consideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the Board is informed that the new assignment has been in use together with the frequency assignment to the station which was the basis for the unfavourable finding for at least four months without any complaint of harmful interference having been received, provided that the earlier assignment has been brought into use within the additional period mentioned in No. **1550**. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

MOD  
ADD  
SUP

**1545**     § 17. (1) *Notices Relating to Radio Astronomy Stations.*

MOD  
ADD  
SUP

**1546**            (2) A notice relating to a radio astronomy station shall be examined by the Board with respect to No. **1503** only. Whatever the finding, the assignment shall be recorded in the Master Register with a date in Column 2c. The date of receipt by the Board of the notice shall be recorded in the Remarks Column.

MOD  
ADD  
SUP

**1547**     § 18. (1) *Change in the Basic Characteristics of Assignments Already Recorded in the Master Register.*

MOD  
ADD  
SUP

**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 according to No. **1503**, and, where appropriate, Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, and the provisions of Nos. **1515** to **1546** inclusive shall apply. Where the change should be recorded, the recorded assignment shall be amended according to the notice.

MOD     CAN/60/152,   LUX/184/1  
ADD  
SUP

- 1549** (3) However, in the case of a change in the characteristics of an assignment which is in conformity with No. 1503, should the Board reach a favourable finding with respect to Nos. 1504, 1505, 1506 to 1508 and 1509 to 1512, where appropriate, or find that the changes do not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. The date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

MOD  
ADD  
SUP

- 1550** (4) The projected date of bringing into use of a frequency assignment may 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 extension may be provided but it shall in no case exceed eighteen months from the original projected date of bringing into use.

MOD USA/76/2, CAN/60/153, IND/141/49, ARG/180/2  
ADD  
SUP

- 1551** § 19. In applying the provisions of this Section, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board shall be considered as a new notice.

MOD  
ADD  
SUP

- 1552** § 20. (1) *Recording of Frequency Assignments Notified Before Being Brought into Use.*

MOD  
ADD  
SUP

- 1553** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to No. **1503** and, where appropriate, Nos. **1504**, **1505**, **1506** to **1508** and **1509** to **1512**, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

MOD  
ADD  
SUP

- 1554** (3) Within thirty days after the date of bringing into use, either as originally notified or as modified in application of No. **1550**, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.

MOD  
ADD  
SUP

- 1555** (4) If the Board does not receive this confirmation within the period referred to in No. **1554**, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

MOD  
ADD  
SUP

- 1556** (5) In the circumstances described in Nos. **1522** and **1544**, and as long as an assignment which received an unfavourable finding cannot be resubmitted with a statement relating to operation without interference, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. **1544**, the information relating to the absence of complaint of harmful interference.

MOD  
ADD  
SUP

### **Section III. Recording of Findings in the Master Register**

MOD  
ADD  
SUP

- 1557** § 21. In any case where a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in the appropriate column. In addition, a remark indicating the reasons for any unfavourable finding shall be inserted in the Remarks Column.

MOD  
ADD  
SUP



**Section IV. Categories of Frequency Assignments**

MOD  
ADD  
SUP

- 1558**     § 22. (1) The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

MOD  
ADD  
SUP

- 1559**     (2) If harmful interference is actually caused to the reception of any space radiocommunication station whose frequency assignment has been recorded in the Master Register as a result of a favourable finding with respect to Nos. **1503, 1504, 1505, 1506 to 1508 and 1509 to 1512**, as appropriate, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of No. **1544**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

MOD  
ADD  
SUP

- 1560**     (3) If harmful interference to the reception of any station whose assignment is in accordance with No. **1240, 1352 or 1503**, as appropriate, is actually caused by the use of a frequency assignment which is not in conformity with No. **1503**, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

MOD  
ADD  
SUP

**Section V. Review of Findings**

MOD  
ADD  
SUP

**1561**      § 23. (1) The review of a finding by the Board may be undertaken:

MOD  
ADD  
SUP

**1562**                      *a)*    at the request of the notifying administration;

MOD  
ADD  
SUP

**1563**                      *b)*    at the request of any other administration interested in  
the question, but only on the grounds of actual harmful  
interference;

MOD  
ADD  
SUP

**1564**                      *c)*    on the initiative of the Board itself when it considers  
this is justified.

MOD  
ADD  
SUP

- 1565** (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. 1503 and, where appropriate, Nos. 1504, 1505, 1506 to 1508 and 1509 to 1512, and shall render an appropriate finding, informing the notifying administration prior either to the publication of its finding or to any recording action.

MOD CAN/60/154  
ADD  
SUP

- 1566** § 24. (1) After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistence of the notifying administration, following an unfavourable finding with respect to Nos. 1506 to 1508 or 1509 to 1512, this administration may request the Board to review the finding. Thereupon, the Board shall review the matter, having first consulted the administrations concerned.

MOD  
ADD  
SUP

- 1567** (2) If the finding of the Board is then favourable it shall enter in the Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

MOD  
ADD  
SUP

- 1568** (3) If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

MOD  
ADD  
SUP

**Section VI. Modification, Cancellation and Review of Entries  
in the Master Register**

MOD

ADD CAN/60/159, CAN/60/161

SUP

- 1569** § 25. The Board shall, at intervals not exceeding two years, request confirmation from the notifying administration that its assignment has been and will continue to be in regular use in accordance with its recorded characteristics.

MOD

ADD

SUP

- 1570** § 26. (1) Where the use of a recorded assignment to a space station is suspended for a period of eighteen months, the notifying administration shall, within this eighteen-month period, inform the Board of the date on which such use was suspended and of the date on which the assignment is to be brought back into regular use.

MOD CAN/60/155

ADD CAN/60/156

SUP

- 1571** (2) Whenever it appears to the Board, whether or not as a result of action under No. **1570**, that a recorded assignment to a space station has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administrations as to when the assignment is to be brought back into regular use.

MOD CAN/60/157

ADD

SUP

- 1572** (3) If no reply is received within six months of action by the Board under No. 1571, or if the reply does not confirm that the assignment to a space station is to be brought back into regular use within this six-month limit, a mark shall be applied against the entry in the Master Register. Thereafter, the assignment shall be treated in accordance with No. 1513 as one which has been established as having been out of regular use for two years.

MOD CAN/60/158  
ADD  
SUP

- 1573** § 27. In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.

MOD  
ADD  
SUP

- 1574** § 28. Whenever it appears to the Board from the information available that a recorded assignment has not been brought into regular operation in accordance with the notified basic characteristics, or is not being used in accordance with those basic characteristics, the Board shall consult the notifying administration and, subject to its agreement, shall either cancel, or suitably modify, or retain the basic characteristics of the entry.

MOD  
ADD  
SUP

- 1575**     § 29.     If, in connection with an inquiry by the Board under No. 1574, the notifying administration has failed to supply the Board within three months from the date of the enquiry with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

MOD

ADD        CAN/60/160, CAN/60/162-166

SUP

#### **Section VII.   Studies and Recommendations**

MOD

ADD

SUP

- 1576**     § 30. (1) If it is requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these Regulations, or of harmful interference.

MOD

ADD

SUP

- 1577**            (2) The Board shall thereupon prepare and forward to the administrations concerned a report containing its findings and recommendations for the solution of the problem.

MOD

ADD

SUP

- 1578** (3) On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

MOD  
ADD  
SUP

- 1579** § 31. In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these administrations within a period of four months, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

MOD  
ADD  
SUP

#### **Section VIII. Miscellaneous Provisions**

MOD  
ADD  
SUP

- 1580** § 32. (1) If it is requested by any administration, particularly by an administration of a country in need of special assistance, the Board, using such means at its disposal as are appropriate in the circumstances, shall render any assistance of a technical nature in the application of the provisions of this Article.

MOD  
ADD  
SUP

- 1581**           (2) In making a request to the Board under No. 1580, the administration shall furnish the Board with the necessary information.

MOD  
ADD  
SUP

- 1582**       § 33.     The Technical Standards of the Board shall be based on the relevant provisions of these Regulations and the Appendices thereto, the decisions of administrative conferences of the Union, as appropriate, the Recommendations of the CCIR, the state of the radio art and the development of new transmission techniques, account being taken of exceptional propagation conditions which may prevail in certain regions (for example, particularly pronounced ducting).

MOD  
ADD  
SUP

- 1583**       § 34.     The Board shall inform all administrations of its findings and reasons therefor, together with all changes made to the Master Register, through its weekly circular. Such information shall be published within forty-five days of the date of publication of the complete notice in the weekly circular referred to in No. 1235. When the Board is not in a position to comply with the time-limit referred to above it shall, as soon as possible, so inform the administration concerned giving the reasons therefor.

MOD  
ADD  
SUP

- 1584**       § 35.     In case a Member avails itself of the provisions of Article 50 of the Convention, the Board shall, on request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.

MOD  
ADD  
SUP

- 1585**  
to       NOT allocated.  
**1609**

MOD  
ADD  
SUP

CLM/154/1



ANNEX

Proposals from B

B/35/11

MOD

Notification and Recording in the  
Master International Frequency Register of  
Frequency Assignments<sup>1</sup> to Radio Astronomy Stations and  
~~Space Radiocommunication Stations Satellite Networks<sup>1A, 2</sup>~~  
~~Except Stations in the Broadcasting-Satellite Service<sup>2</sup>~~

B/35/12

MOD

Section I. Notification of frequency assignments<sup>3</sup>

B/35/13

MOD

1488 § 1. (1) ~~Any frequency assignment to be used for transmission or reception by an earth or space station. A satellite network shall be notified to the Board:~~

Reasons: To introduce the concept of satellite network using the same frequency assignment for transmission by a space station and receiving by earth stations, and vice-versa.

B/35/14

MOD

1489

- a) if the use of ~~the~~ any frequency of the network concerned is capable of causing harmful interference to any service of another administration; or

Reasons: Same as for 1488.

NOC A.13.1

B/35/15

ADD

A.13.1A

This Article does not apply to the notification and recording in the MIFR of stations in the broadcasting-satellite service.

NOC A.13.2

B/35/16

ADD

A.13.3

In the case of notification of satellite networks, the frequency assignments shall correspond to the transponder centre frequencies.

B/35/17

MOD

1490

- b) if the ~~frequency network~~ is to be used for international radiocommunications; or

Reasons: Same as for 1488.

B/35/18

MOD

1491

- c) if it is desired to obtain international recognition of the use of ~~the~~ any frequency of the network.

Reasons: Same as for 1488.

B/35/19

ADD 1491A (1A) A notification of a satellite network shall comprise the details of the space station and typical earth stations that can operate within the corresponding service area.

Reasons: To clarify the concept of satellite network.

B/35/20

ADD 1491B (1B) Earth stations pertaining to a satellite network shall be notified individually if:

B/35/21

ADD 1491C a) it is capable of causing higher interference levels or requires more protection than the typical earth stations notified in the network; or

B/35/22

ADD 1491D b) it has a coordination area that overlaps the territory of other administrations;

Reasons: To permit the notification of stations other than typical, and to comply with Section III, Article 11.

B/35/23

ADD 1491E (1C) Earth stations pertaining to a multi-administration satellite network can be notified individually by the administration responsible for that earth station. In this case it is sufficient to identify the type of the station and its location.

Reasons: To cover the cases of multi-administration satellite networks.

NOC 1492

B/35/24 MOD 1493

(3) When the Board receives from one administration a notice containing a modification or deletion of a ~~space station~~ satellite network assignment already recorded in the Master Register on behalf of a group of administrations, it shall be assumed, in the absence of information to the contrary, that the notice of modification or deletion is submitted on behalf of all the administrations which were associated with the original notification.

Reasons: Same as for 1488.

NOC 1494

B/35/25

ADD 1494A (5) In case of an earth station causing or receiving higher levels of interference than a typical earth station it shall be subject to coordination procedures before a notice of assignment is sent to the Board.

B/35/26

MOD 1497 (2) Any satellite network ~~frequency~~ assignment ~~to an earth or space station~~, the notice of which reaches the Board after the applicable period specified in No. 1496, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with No. 1496.

Proposals from CAN

CAN/60/135  
MOD

Notification and Recording in the Master International Frequency Register of Frequency Assignments<sup>1</sup> to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service<sup>2,3</sup>

Section 1. Notification of Frequency Assignments

NOC

1488-1493

NOC

A.13.1

CAN/60/136  
MOD

A.13.2 Include appropriate reference to the Region 1 and 3 feeder-link stations. Reword for a more simple reference.

CAN/60/137  
ADD

A.13.3 <sup>3</sup>For the notification and recording of frequency assignments to stations in the fixed-satellite service in frequency bands for which an allotment plan or a multilateral planning meeting has been adopted, see also Article 11A and 15B, respectively.

NOC  
CAN/60/138  
MOD

1494

1495 § 2. For any notification under Nos. 1488 to 1492 or 1494, a notice for each frequency assignment shall be drawn up as prescribed in Section II of Appendix 3 [3/4] the various sections of which specify...may consider appropriate.

Reason: Consequential to the merging of Appendices 3 and 4.

CAN/60/139  
MOD

1496 § 3. (1) For a frequency assignment...in any case not later than three months<sup>2</sup> before this date, except in the case of assignments in the space research service...actually brought into use.

CAN/60/140  
SUP

1496.1

Reason: Consequential to add 1043E under the coordination procedure.

NOC  
CAN/60/141  
MOD

1497

1498 § 4. Any notice which does not contain at least those basic characteristics specified in Section II of Appendix 3 [3/4] shall be returned... unless the information not provided is immediately forthcoming in response to any enquiry from the Board received by the Board within ten days of the date of the telegram requesting the complete information.

NOC  
CAN/60/142  
ADD

1499-1501

1501A Where the Board lacks sufficient data to render a decision, for example, in the case of assignments to an earth station where the corresponding assignments to the space station have not yet been notified, it shall inform the administration concerned and suspend processing until the information is received.

Reason: To recognize the problem raised by the Board in ADD 2 to Circular Letter No. 600.

NOC  
CAN/60/143  
ADD

1502-1503

1503A aa) with respect to its conformity with the provisions of Nos. 1042, 1043A and 1043G, as appropriate;

Reason: To add a provision for examination against the time-frame for bringing assignments into use; for extensions to the time-frame and significant amendments.

NOC  
CAN/60/144  
ADD

1504-1512

1512A f) with respect to its conformity with the provisions relating to agreement under Article 14 where the provisions of Nos. 1610 or 1616G to 1616I are applicable.

CAN/60/145  
ADD

1512B g) with respect to the probability of harmful interference when agreement under No. 1610 has not been successfully effected. This examination shall take into account the frequency assignments recorded in the Master Register and the characteristics of planned assignments sent to the Board in accordance with No. 1622K.

Reason: To add provisions for examination with respect to the requirements of Article 14.

CAN/60/146  
MOD

1513 § 9. When following an examination of a notice with respect to Nos. 1506 to 1508, the Board reaches an unfavourable finding based upon the probability of harmful interference to a recorded assignment for a space station or an earth station which the Board...back into use. Before the assignment is brought back into use, it shall be subject to further coordination in accordance with the provisions of No. 1060 or further examination by the Board with respect to Nos. 1506 to 1508, as appropriate. The date on which the assignment is brought back into use shall then be entered in the Master Register.

CAN/60/147  
ADD 1516A § 11A. (1) Finding favourable with respect to No. 1610:

CAN/60/148  
ADD 1516B (2) The assignment shall be recorded in the Master Register. The date of receipt of the notice by the Board shall be the same as provided for in No. 1516.

CAN/60/149  
ADD 1516C § 11B. (1) Finding unfavourable with respect to No. 1610.

CAN/60/150  
ADD 1516D (2) The assignment shall be recorded in the Master Register with an indication of the administration(s) with which the procedure has not been successfully completed and any other conditions appropriate to the case.

CAN/60/152  
MOD 1548 (2) A notice of a change in the basic characteristics of an assignment already recorded, as specified in Section II of Appendix 3 [3/4].

CAN/60/153  
NOC 1549  
MOD 1550 (4) The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by ~~four~~ eighteen 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 granted but it shall in no case should not exceed ~~eighteen~~ twenty-four months from the original projected date of bringing into use. Extension beyond twenty-four months will only be approved by the Board with the agreement of any other administration which may be affected.

Reason: To specify a maximum period of twenty-four months for extension while allowing the Board some discretion to deal with the very rare case which might warrant further special consideration.

CAN/60/154  
NOC 1551-1564  
MOD 1565 (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account ~~No~~ Nos. 1503, and 1503A and, where appropriate...to any recording action.

CAN/60/155  
NOC 1566-1569  
MOD 1570 § 26.(1) Where the use of a recorded assignment to a space station or an earth station is suspended...into regular use.

CAN/60/156  
ADD 1570A (2) The Board shall publish the information received under No. 1570 in its Weekly Circular and enter an appropriate remark in the Master Register.

CAN/60/157  
MOD 1571 ~~(2)~~ (3) Whenever it appears to the Board, whether or not as a result of action under No. 1570, that a recorded assignment to a space station or an earth station has not been in regular use for more than eighteen months...into regular use.

CAN/60/158  
MOD

1572 {3} (4) If no reply is received...to a space station or earth station is to be brought back...for two years.

Reason: To specify the treatment to be given to a suspended earth station assignment.

NOC  
CAN/60/159  
ADD

1573-1575

VI A. Procedure for bringing a Suspended Assignment Back into Use

CAN/60/160  
ADD

1575A Before a suspended assignment is brought back into use, it shall be subject to further coordination, as appropriate, with respect to assignments notified or published in the relevant weekly circular between the dates of suspending the assignment(s) and their bringing back into use.

CAN/60/161  
ADD

VI B. Procedure Relating to the Period of Validity of Frequency Assignments to Space Stations Using the Geostationary-Satellite Orbit

CAN/60/162  
ADD

1575B The period of validity of frequency assignments to a space station corresponding to the design lifetime of the satellite shall be notified to the Board.

CAN/60/163  
ADD

1575C Information concerning extension of the notified period of validity should be communicated to the Board before the expiration of the period of validity.

CAN/60/164  
ADD

1575D The Board shall publish the information received in a special section of its weekly circular.

CAN/60/165  
ADD

1575E Upon expiration of the period associated with the extension or the operational life of the satellite, whichever occurs first, the assignments in question shall be considered as discontinued.

CAN/60/166  
ADD

1575F Whenever it appears from information available to the Board that an assignment for which an extension has been applied is no longer in use, or is not being used in accordance with its notified characteristics, the Board shall act in accordance with No. 1574.

Proposals from F

- NOC                    **Section I. Notification of Frequency Assignments**
- F/32/1  
MOD 1488            § 1. (1) Any frequency assignment to be used for transmission or reception ~~by~~ of an earth station<sup>1</sup> or by a space station shall be notified to the Board:
- F/32/2  
ADD 1488.1                    <sup>1</sup> The term "earth station" includes the concept of reference earth station associated with the space station of the network taken into account for coordination under No. 1060, in cases where the concept of reference earth station is applicable.
- NOC 1489 to 1491
- F/32/3  
MOD 1494            (4) A notice submitted in accordance with Nos. 1488 to 1491 and relating to a frequency assignment to earth stations in a satellite system not requiring coordination under No. 1107 shall be based on the characteristics of a reference earth station shall include the technical characteristics either of each mobile earth station, or of a typical mobile earth station, and an indication of the service area within which these this reference earth stations is to be operated, in cases where the concept of reference earth station is applicable.

Proposal from J

- J/53/10                    **Section II. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register**
- MOD 1503            a) with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations, with the exception of those relating to the coordination procedures and the probability of harmful interference which are the subject of the following sub-paragraphs and with respect to the validity of the date on which the assignment is brought into use and which shall be within 5-years period following the date of the advanced publication ;

Proposals from USA

**Section I. Notification of Frequency Assignments**

USA/12/31MOD 1488 §1. (1) Any frequency assignment<sup>1</sup> to be used for transmission or reception by an earth<sup>2</sup> or space station shall be notified to the Board:

Reason: Explanatory footnotes provided.

USA/12/32ADD 1488.1 <sup>1</sup>The administration responsible for the coordination pursuant to the provisions of No. 1060 shall also be responsible for the notification of the earth station characteristics of a satellite network.

Reason: Part of a series of proposals to implement the network coordination/notification principle.

USA/12/33ADD 1488.2 <sup>2</sup>The notification of typical earth station characteristics including their associated service area is sufficient to satisfy the requirements of this Article, including Nos. 1489, 1490 and 1491, with respect to other space radiocommunication services.

USA/12/34MOD 1494 (4) A notice of an assignment not requiring coordination pursuant to No. 1107 and submitted in accordance with Nos. 1488 to 1491 and relating to a frequency assignment to mobile any earth stations in a satellite system shall be on the basis of typical earth stations, including an indication of their service area. include the technical characteristics either of each mobile earth station, or of a typical mobile earth station, and an indication of the service area within which these stations are to be operated.

USA/12/35MOD 1504 b) for a notice of a geostationary satellite network including only its typical earth stations, with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis space radiocommunication stations in cases where the provisions of Nos. 1060 or 1066 to 1071 are applicable;

USA/12/36MOD 1505 c) for a non-typical earth station, with respect to its conformity with the provisions relating to the coordination of the use of the frequency assignment with the other administrations concerned, vis-à-vis terrestrial radiocommunication stations in cases where the provisions of No. 1107 are applicable;



USA/76/2

MOD 1550

The projected date of bringing into use of a frequency assignment ~~may~~ will be extended on the 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 extension may be provided~~ but it shall in no case exceed ~~eighteen~~ thirty six months from the original projected date of bringing into use.

Proposal from IND

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~~ 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 original 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.~~

Proposal from LUX

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 on the basis of technical information available to it to determine the possibility of unacceptable interference and according to Nos. 1503, and, where appropriate, Nos. 1504, 1505, 1506 to 1508 and 1509 to 1512. Where the finding is favourable with respect to Nos. 1503 to 1512 and, if the proposed change does not result in unacceptable interference, it shall be recorded. Furthermore, and the provisions of Nos. 1515 to 1546 inclusive shall apply. Where the change should be recorded, the recorded assignment shall be amended according to the notice.

Proposal from ARG

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.

Proposal from CLM

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.

INTERNATIONAL TELECOMMUNICATION UNION

**ORB-88**

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

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WORKING GROUP 6-B  
AD HOC 1

Draft

PROPOSED STRUCTURE AND ITEMS OF  
INFORMATION FOR NEW APPENDIX 3

J. CHRISTENSEN  
Chairman of Working Group 6-B ad hoc 1

CONF\ORB-2\DL\048E.TXS

Appendix 3

AP3-1

Notices relating to Space Radiocommunications and  
Radioastronomy stations

( see Articles 11, 13 and 14 )

SECTION I

GENERAL INSTRUCTIONS

USA 36  
page 36  
USA/56/17

1. A separate notice shall be sent to the International Frequency Registration Board for notifying:

- each geostationary, non-geostationary or deep space satellite network including its associated typical earth stations (see Section 2 of this Appendix);
- each frequency assignment to an earth station when coordination is required pursuant to No. 1107 of the Radio Regulations (see Section 3 of this Appendix);
- each frequency assignment to be received by a radio astronomy station (see Section 4 of this Appendix);
- any new typical earth station to be associated with a previously notified network;
- 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.

2. When submitting notices under [Nos. 1488 to 1491] for frequency assignments to a space station and associated earth stations [types] [classes] that together are to form a [space satellite service] network, for transmission and reception by the space station or any of the associated earth station, a single notice [shall/may] be submitted that covers all basic characteristics of the network and lists the assigned frequencies as prescribed in this appendix. When submitting individual notices under [Nos. 1488 to 1491] for frequency assignments to an earth or space station for transmitting or for frequency assignments to be used for reception by an earth or space station, separate notices shall be submitted to the Board for each assignment. 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.

An individually submitted notice for a transmitting or receiving earth station the basic characteristics of which may cause more interference or require more protection than those of any earth station [type/class] associated with a previously notified network may be associated with that network as a new associated earth station type when it has been successfully coordinated under the provisions of [RR1060] as part of the network.

AP3-2

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.

USA 56  
page 36

4. The notice forms and basic characteristics in this Appendix shall also be used for coordination pursuant to Nos. 1060 and 1107 of the Radio Regulations and for seeking agreement pursuant to Article 14 of the Radio Regulations, as appropriate.

3. The following information, when appropriate, shall be shown on the notice:

- a) the serial number of the notice and the date on which the notice is sent to the Board;
- b) the name of the notifying administration;
- c) whether the notice reflects:
  - 1) the first notification and, if so, whether it is an ADD, MOD or SUP;
  - 2) the resubmission of the notice;

- 3) the request for coordination pursuant to No. 1060 of the Radio Regulations;
- 4) the request for coordination pursuant to No. 1107 of the Radio Regulations;
- 5) the request for agreement pursuant to Article 14 of the Radio Regulations;
- 6) the request for assistance of the IFRB;
- d) reference to the IFRB weekly circular special section providing the advance publication information required in accordance with No. 1042;
- e) reference to the IFRB weekly circular special section providing the coordination information required in accordance with No. 1060;
- f) reference to the IFRB weekly circular special section providing the information required in accordance with Article 14;
- g) basic characteristics as outlined in Sections 2, 3 or 4 as appropriate;
- h) any other information which the administration considers to be relevant, e.g. an indication that an assignment concerned would be operating in accordance with No. 342 of the Radio Regulations, any factors taken into account when applying Appendix 28 for determination of the coordination area or if the transmissions of the station are to be permanently switched off after a certain period.

S E C T I O N 2

Notices relating to coordination of  
satellite networks and notification of space stations

A. General characteristics to be provided for the satellite network.

- satellite network [or of the  
↓  
Identity of the space station(s)]
- 2.A.1      Indicate the identity of the space station(s).
- 2.A.2      Date of bringing into use<sup>5</sup> AP3-3  
item 3
- 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 this Section~~ (except in the case of a change in *Item 1*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).
- 2.A.3      Operating administration or company AP3-8  
item 14
- 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).
- ↑  
the space
- 2.A.4      Orbital information AP3-14  
item 5
- a)    In the case of a space station aboard a geostationary satellite indicate the nominal geographical longitude on the geostationary-satellite orbit and the planned longitudinal tolerance and inclination excursion. Indicate also in the case where a geostationary satellite is intended to communicate with an earth station:
- 1)    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;

AP3-14  
item 5

- 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 arc 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.

#### 2.A.5 Coordination

USA 36  
page 70  
item 1

Give the name of any administration with which the use of this frequency has been successfully coordinated in accordance with No. 1060 and, if appropriate, the name of any administration with which coordination has been sought but not completed.

#### 2.A.6 Agreements

USA 36  
page 63  
item 1

a) Give, if appropriate, the names of any administration with which agreement has been effected to exceed the limits prescribed in these Regulations.

b) Give, if appropriate, the names of any administration with which agreement has been effected in accordance with Article 14.



B. Characteristics of the satellite network for reception at the space station.

All these items are to be provided for each satellite beam if a network is to be coordinated or notified.

Information related to satellite receive beam.

2.B.1 Name of satellite receive beam

2.B.2 Service area or transmitting station(s)

USA 36  
page 54  
item 6

a) In the case where the associated transmitting stations are earth stations, indicate the service area or areas on the Earth or the name of the locality and country or geographical area in which each transmitting station is located.

b) In the case where the associated transmitting stations are space stations, identify each station by reference to the notification thereof or in any other appropriate manner.

2.B.3 Assigned frequency [~~or~~ frequencies]

AP3-13  
item 1

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. ~~At least one separate assignment notice should be made out for each antenna radiation beam.~~

USA 36  
page 53  
item 3

In the case 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.

2.B.4 Assigned frequency band

AP3-14  
item 2

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

2.B.5 Class of station and nature of service

AP3-15  
item 7

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

2.B.6 Space station receiving antenna characteristics

For each receiving beam:

AP3-23  
item 9

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 10 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) 1) 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 non-geostationary 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;

2) ~~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 non-geostationary 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;

AP3-24  
item 9  
continue

- 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 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.

#### 2.B.7 Noise temperature

AP3-24  
item 10

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

Information related to associated transmitting station(s). 3

2.B.8 Types and identity of the associated transmitting station(s)

This information is to be provided for each type of transmitting station associated with each space station antenna beam.

— Type of Associated Transmitting Station.

Indicate whether the associated transmitting station is another space station, a typical earth station of the network, or an earth station for which individual coordination pursuant RR 1060 is sought.

If the associated transmitting station is a typical earth station of the network, its successful coordination pursuant to RR 1060 as part of the network described in Section ... shall imply the successful coordination, pursuant to RR 1060, of any earth station the characteristics of which do not have the potential to cause interference greater than those of the typical earth station, and which complies with all conditions, if any, of the coordination agreement for the typical earth station.

2.B.9 Class of station and nature of service<sup>3</sup>

AP3-4  
item 6

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

Earth station  
2.B.10 Transmitting antenna characteristics<sup>3</sup>

AP3-6  
item 9

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)<sup>1</sup> 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.)

g)

e) Indicate location of the earth station.

- 2.B.11 Class of emission <sup>(and)</sup> necessary bandwidth<sup>3</sup> ~~and description of transmission~~

AP3-5  
item 7

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the emission(s);
- c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

- 2.B.12 Power characteristics of the <sup>(earth station)</sup> transmission<sup>3</sup>

AP3-5  
item 8

a)<sup>1</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))<sup>2</sup> supplied to the input of the antenna averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

- 2.B.13 <sup>1</sup> Modulation characteristics<sup>3</sup>

AP3-7  
item 10

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;

AP3-7  
item 10  
continue

- b) carrier frequency modulated by a television signal: 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 characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals;

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

- d) amplitude modulated carrier (including single-side-band): 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, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

AP3-8  
item 10  
continue

- g) indicate, in dB, the value of the objective (C/N) ratio required for each carrier.

F23  
page 13

AP3-4  
item 5  
modified

2.B.14 {Space} station(s) with which communication is to be established<sup>2</sup>

- a) Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner.
- b) In the case of a geostationary satellite, indicate also its orbital position.

C. Characteristics of the satellite network for transmission from  
the space station.

All these items are to be provided for each satellite beam if a network is to be coordinated or notified.

Information related to satellite transmitting beam.

2.C.1 Name of the satellite transmitting beam.

2.C.2 Service area or receiving station(s)

USA 36  
page 61  
item 3

a) In the case where the associated receiving stations are earth stations, indicate the service area or areas on the Earth or the name of the locality and country or geographical area in which each receiving station is located.

b) In the case where the associated receiving stations are space stations, identify each station by reference to the notification thereof or in any other appropriate manner.

2.C.3 Space station transmitting antenna characteristics

AP3-17  
item 10

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 10 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) ~~1)~~ 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 non-geostationary satellite~~, indicate the isotropic or absolute gain of the space station transmitting antenna in the direction of maximum radiation and the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;



b) 2) ~~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 non-geostationary satellite, indicate the isotropic or absolute gain of the space station transmitting antenna in the direction of maximum radiation and the antenna radiation pattern, taking the gain in the direction of maximum radiation as a reference;

AP3-17  
item 10  
continue

c) <sup>1</sup> 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;

AP3-18  
item 10  
continue

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.

2.C.4 Assigned frequency (or frequencies)

AP3-13  
item 1  
modified

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz. ~~At least one separate assignment notice should be made out for each antenna radiation beam.~~

In the case 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.

AP3-14  
item 2

2.C.5 Assigned frequency band

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

AP3-15  
item 7

2.C.6 Class of station<sup>(s)</sup> and nature of service

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

AP3-15  
item 8

2.C.7 Class of emission, necessary bandwidth and description of<sup>4</sup> transmission

In accordance with Article 4 and Appendix 6:

a) indicate the class of emission of the transmission;

b)<sup>1</sup> indicate the carrier frequency or frequencies of the transmission;

AP3-16  
item 8  
continue

c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;

d)<sup>1</sup> indicate, for the carrier having the smallest bandwidth of assignments in the system, the class of emission, necessary bandwidth and a description of the transmission.

2.C.8

Power characteristics of the transmission<sup>4</sup>

AP3-16  
item 9

a)<sup>1</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))<sup>6</sup> at the input of the antenna, averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

2.C.9

Modulation characteristics<sup>4</sup>

AP3-18  
item 11

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 signal: 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 characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signal(s);

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

AP3-19  
item 11  
continue

AP3-19  
item 11  
continue

- d) amplitude modulated carrier (including single-side-band): 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,  
such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.

- g) indicate, in dB, the value of the objective (C/N) ratio required for each carrier

F23  
page 13

Information related to associated receiving stations.

2.C.10 Types and identity of the associated receiving station(s).<sup>4</sup>

This information is to be provided for each type of receiving station associated with each space station antenna beam.

— Type of Associated receiving Station.

Indicate whether the associated receiving station is another space station, a typical earth station of the network, or an earth station for which individual coordination pursuant RR 1060 is sought.

If the associated receiving station is a typical earth station of the network, its successful coordination pursuant to RR 1060 as part of the network described in Section ... shall imply the successful coordination, pursuant to RR 1060, of any earth station the characteristics of which do not have the potential to cause interference greater than those of the typical earth station, and which complies with all conditions, if any, of the coordination agreement for the typical earth station.

- (s)  
2.C.11 Class of station and nature of service<sup>4</sup> AP3-10  
item 6

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

- 2.C.12 Earth station receiving antenna characteristics<sup>4</sup> AP3-11  
item 8

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 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.

e) Indicate location of the earth station.<sup>2</sup>

- 2.C.13 Noise temperature <sup>4</sup>  
of the associated receiving station(s).  
~~link noise temperature and transmission gain~~ AP3-12  
item 9

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 the associated receiving station is on board another space station, provide all information necessary to determine whether the receiving station may be subject to unacceptable interference from emissions of another network.

|        |  |
|--------|--|
| 2.C.14 | Space station(s) with which communication is to be established <sup>2</sup>  |
| a)     | Identify the associated transmitting space station(s) by reference to the notification thereof or in any other appropriate manner. <del>or, in the case of a reflecting satellite, the identity of</del> |
| b)     | <del>the satellite and the associated transmitting earth station(s).</del> In the case of a geostationary satellite, indicate also its orbital position.   |

D. Overall link characteristics.

For a case of simple frequency changing transponders the following information is to be provided.

2.D.1 Correspondence between "Earth-to-space" and "space-to-Earth" frequency bands.

Indicate, in tabulated form<sup>1</sup> and for each path, the frequency bands (or transponder identification) and the associated space station antennas, with the correspondence of the up-link and down-link bands.

TABLE 1<sup>1</sup>

Frequency ranges

| Frequency ranges (GHz) | "Earth-to-space" links                |                       | "Space-to-Earth" links                |                       |
|------------------------|---------------------------------------|-----------------------|---------------------------------------|-----------------------|
|                        | Frequency band (MHz) (or transponder) | Space station antenna | Frequency band (MHz) (or transponder) | Space station antenna |

2.D.2 Transmission gains and associated link equivalent noise temperatures.

For each planned link<sup>2</sup>, indicate in tabulated form<sup>1</sup>, when simple frequency-changing transponders are used on the space station:

- the lowest equivalent satellite link noise temperature and the associated transmission gain in the conditions defined in Item D 7 (see No. 168);
- the values of the transmission gain and the associated equivalent link noise temperature corresponding to the highest "transmission gain/equivalent satellite link noise temperature" ratio: the transmission gain is evaluated from the output of the space station receiving antenna to the output of the earth station receiving antenna. For each planned use, indicate also the space station receiving antenna(s) to which each simple frequency-changing transponder will be connected.

<sup>2</sup> It will be assumed that different links will be involved when use is made of different types of carrier (according to their maximum spectral power density) or different types of receiving earth stations (according to their receiving antenna gain) or different types of operation (single- or multi-carrier) or different types of space station receiving or transmission antennas.

F23  
page 19  
item E1

F23  
page 26

F23  
page 19  
item E2

F23  
page 19  
footnote

TABLE 2<sup>1</sup>

Transmission gain and  
equivalent link noise temperature

| Type of carrier | Frequency range (GHz) | Space station antenna <sup>2</sup> |              | Receiving earth station | Case: T min   |       | Case: ( $\gamma/T$ ) <sub>max</sub> |       |
|-----------------|-----------------------|------------------------------------|--------------|-------------------------|---------------|-------|-------------------------------------|-------|
|                 |                       | Receiving                          | Transmitting |                         | $\gamma$ (dB) | T (K) | $\gamma$ (dB)                       | T (K) |

The following footnotes are applicable within Appendix 3.

1. This information need only be furnished when such information has been used as a basis to effect coordination with another administration.
2. Not required for network coordination.
3. Required for each [type] of station.
4. Required for each [type] of station.
5. See also Resolution 4.
6. The most recent version of CCIR Report 792 should be used to the extent applicable in calculating the maximum power density per Hz.
7. Not required for RR1107 coordination.



S E C T I O N 3

Notices relating to RR 1107 coordination and notification  
of Specific [and Typical] earth stations

**A - GENERAL CHARACTERISTICS TO BE PROVIDED FOR AN EARTH STATION**

**3.A.1 Identity and location of the earth station**

AP3-4  
item 4

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 the International Frequency List should be used.

c) Indicate the geographical coordinates of ~~the transmitter site~~ (longitude and latitude in degrees and minutes). Indicate also the seconds<sup>1</sup> with an accuracy of one-tenth of a minute.

each transmitting  
and receiving  
antenna site comprising  
the earth station

**3.A.2 Date of bringing into use**

AP3-3  
item 3

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 this Section~~ (except in the case of a change in [Item 1 a)] the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

AP3-4  
item 3  
continue

**3.A.3 Operating administration or company**

AP3-8  
item 14

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 <sup>the</sup> station (see Article 22).

3.A.4 Class of station and nature of service

AP3-4  
item 6

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

3.A.5 Station(s) with which communication is to be established

AP3-4  
item 5

- a) Identify the associated ~~receiving~~ space station(s) by reference to the notification thereof or in any other appropriate manner, ~~or, in the case of a reflecting satellite, the identity of the satellite and the location of the associated receiving earth station(s).~~
- b) ~~station(s).~~ In the case of a geostationary satellite, indicate also its orbital position.

3.A.6 Coordination

AP3-8  
item 12

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.

3.A.7 Agreements

AP3-8  
item 13

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

**B - CHARACTERISTICS OF THE TRANSMITTING EARTH STATION**

3.B.1

Name of the satellite receiving beam<sup>7</sup>

3.B.2

Assigned frequency (frequencies)

AP3-3  
item 1

Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

3.B.3

Assigned frequency band

AP3-3  
item 2

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

3.B.4

Class of emission, necessary bandwidth and description of transmission

AP3-5  
item 7

In accordance with Article 4 and Appendix 6:

- a) indicate the class of emission;
- b)<sup>1</sup> indicate the carrier frequency or frequencies of the emission(s);
- c)<sup>1</sup> indicate, for each carrier, the class of emission, necessary bandwidth and description of transmission;
- d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission.

3.B.5

Power characteristics of the transmission

AP3-5  
item 8

a)<sup>1</sup> Indicate for each carrier the peak envelope power (dBW) supplied to the input of the antenna.

b) Indicate the total peak envelope power (dBW) and the maximum power density per Hz (dB(W/Hz))<sup>6</sup> supplied to the input of the antenna averaged 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)<sup>1</sup> Indicate for each carrier the minimum value of the peak envelope power supplied to the input of the antenna.

3.B.6

Transmitting antenna characteristics

AP3-6  
item 9  
modified

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 from the horizontal plane the planned minimum operating angle of elevation of the antenna in the direction of maximum radiation giving due regard to possible inclined-orbit operation of the associated space station.

USA 56  
Page 67  
e)

f) Indicate in degrees, clockwise from True North, the planned range of operating azimuthal angles for the direction of maximum radiation giving due regard to possible inclined-orbit operation of the associated space station.

USA 56  
Page 67  
e)

g)<sup>1</sup> 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.

3.B.7 Modulation characteristics<sup>7</sup>

AP3-7  
item 10

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 signal: 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 characteristic and the pre-emphasis characteristic itself. Also indicate, where applicable, the characteristics of the multiplexing of the video signal with the sound signal(s) or other signals;
- c) carrier phase-shift modulated by a <sup>digital</sup> ~~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, such as the peak-to-peak frequency deviation (MHz) and the sweep frequency (kHz) of the energy dispersal wave form.
- g) indicate, in dB, the value of the objective (C/N) ratio required for each carrier.

AP3-8  
item 10  
continue

## C - CHARACTERISTICS OF THE RECEIVING EARTH STATION

- 3.C.1 [ Name of the satellite transmitting beam ]<sup>7</sup>
- 3.C.2 Assigned frequency (or frequencies) AP3-9  
item 1
- Indicate the assigned frequency (frequencies), as defined in Article 1 (see No. 142), of the emission to be received, in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.
- 3.C.3 Assigned frequency band AP3-9  
item 2
- Indicate the bandwidth of the assigned frequency band in kHz (see No. 141).
- 3.C.4 Class of emission, necessary bandwidth and description of the transmission to be received AP3-10  
item 7
- In accordance with Article 4 and Appendix 6:
- a) indicate the class of emission of the transmission to be received;
  - b)<sup>1</sup> indicate the carrier frequency or frequencies of the transmission to be received; AP3-11  
item 7  
continue
  - c)<sup>1</sup> indicate, for each carrier to be received, the class of emission, necessary bandwidth and description of the transmission.
  - d)<sup>1</sup> indicate for the carrier having the smallest bandwidth of assignments in the system the class of emission, necessary bandwidth and a description of the transmission. AP3-5  
item 7d)

3.C.5 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) <sup>1</sup> 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.

e) Indicate the location of the earth station.

3.C.6 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 a)* for each assignment (see No. 168).

c) Indicate the value of transmission gain associated with each equivalent satellite link noise temperature given in *Item b)*. 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.

S E C T I O N 4

NOTICES RELATING TO FREQUENCIES TO BE RECEIVED  
BY RADIOASTRONOMY STATIONS

A. General characteristics to be provided for the Radioastronomy stations

4.A.1 Date of bringing into use

a) Indicate the date (actual or foreseen, as appropriate) when reception of the frequency band begins.

AP3-26  
item 2

b) Whenever there is a change in any of the basic characteristics, as shown in this Section (except in the case of a change in *Item 3 b*)), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

4.A.2 Name and location of the station

AP3-26  
item 3

a) Insert the letters "RA".

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

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

d) Indicate the geographical coordinates of the station site (longitude and latitude in degrees and minutes).

4.A.3 Regular hours of reception

Indicate in UTC the regular hours of reception on the observed frequency.

AP3-26  
item 6

4.A.4 Operating administration or company

Indicate the identity 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 and questions referring to the technical operation of stations (see Article 22).

AP3-27  
item 9



B. Characteristics of the frequencies to be received.

4.B.1 Observed frequency

AP3-25  
item 1

Indicate the centre of the frequency band observed, in kHz up to 28 000 kHz inclusive, in MHz above 28 000 kHz to 10 500 MHz inclusive and in GHz above 10 500 MHz.

4.B.2 Bandwidth

AP3-26  
item 4

Indicate the width of the frequency band (in kHz) observed by the station.

4.B.3 Antenna characteristics

Indicate the antenna type and dimensions, effective area and angular coverage in azimuth and elevation.

AP3-26  
item 5

4.B.4 Noise temperature

Indicate, in kelvins, the overall receiving system noise temperature referred to the output of the receiving antenna.

AP3-27  
item 7

4.B.5 Class of observations

Indicate the class of observations to be taken on the frequency band shown in [Item 4] Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

AP3-27  
item 8

S E C T I O N 5

FORMS OF NOTICE

AP3-27  
section H

5.1 The Board shall develop and keep up to date forms of notice to meet fully the statutory provisions of this Appendix and related decisions of future conferences.

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Draft

PROCEDURES FOR ADDITIONAL REQUIREMENTS IN THE FREQUENCY BANDS  
COVERED BY THE ALLOTMENT PLAN IN A COORDINATED MANNER

1. Under the terms of this Article

1.1 An additional requirement is defined as the use of part or all of the frequency bands covered by the Allotment Plan but will not become an allotment in the Plan.

1.2 Additional requirements may be requested by any of the following:

1.2.1 an administration with a requirement not in conformity with the Allotment Plan;

1.2.2 an administration which is already using or will at the same time make use of the same part or all of its allotment;

1.2.3 an administration which is or has been part of a subregional system based on the procedures in [Document 239] or one which has withdrawn from participation in a subregional system but is still subject to the suspension under [Document 239].

1.2.5 a group of administrations.

2. Procedures

2.1 An administration (hereinafter called the administration) or one acting on behalf of a group of named administrations which intends to use frequencies in the bands covered by the Allotment Plan shall apply the provisions of this Article.

2.2 The administration shall seek the agreement of the administrations whose allotments in the Plan or frequency assignments in the MIFR may be affected by applying the procedures of [Appendix [A]] [or the following procedures].

2.3 Additional requirements for which these procedures have been applied successfully will be entered into the MIFR as assignments bearing a special symbol for their period of validity after which the assignments will be removed from the MIFR.

2.4 The additional requirements in [2.3] shall be protected as any other frequencies in the MIFR.

2.5 Any extension to the period of validity or modification (during or after the successful application of these provisions) shall necessitate the application of the procedures of this Article again.

[APPENDIX A]

1. The services of an administration are considered to be affected when the technical limits in [Annex ] would be exceeded.
2. In order to verify [1], an administration or one acting on behalf of a group of administrations proposing an additional frequency requirement in the frequency band of the Allotment Plan, shall send to the Board, not earlier than [ ] years but preferably not later than [ ] months before the date on which the assignment is to be brought into use, the relevant information listed in [Appendix 4].
3. An additional frequency assignment shall lapse if it is not brought into use within [five years] after it is entered in the MIFR.
4. The Board and the administration seeking agreement shall determine, on the basis of [Annex ], the administrations whose services might be considered affected. This will include those in the Allotment Plan or registered in the MIFR.
5. The Board shall publish the complete information in [4] in a special section of a weekly circular and shall at the same time advise all administrations by circular telegram. The circular telegram shall include the results of the Board's findings. The affected administrations in [4] will be required to give their comments, not later than [ ] months after the weekly circular, to the Board and the administration seeking for an additional requirement.
6. Any administration which feels that it should have been included in the list of administrations whose services are considered to be affected in [5] may send its comments within [ ] months after the date of the weekly circular in [5] to both the Board and the administration seeking an additional frequency assignment.
7. The Board shall examine the comments under [6] and issue another circular under [5] if it is necessary.
8. If, after the time stated in [5] elapses without any comments from an affected administration, it shall be assumed that the administration has no objection and will be considered to have given its consent.
9. The Board shall publish in a special section of its weekly circular the information received under [5] together with the names of the administrations with which the provisions of this Article have been successfully applied.
10. When the proposed additional requirements involves developing countries, administrations shall seek all practicable solutions conducive to the development of the telecommunication systems of these countries.
11. In case of a disagreement in [5] the involved administrations should endeavour to overcome the difficulties as far as possible. If no agreement is reached, the Board shall, at the request of the involved administrations, carry out any analysis and make its recommendations.

R.J. LUBANGA  
Chairman of Working Group 4-C ad hoc 3

WORKING GROUP 6-B

Draft

REPORT RECEIVED BY THE CHAIRMAN OF WORKING GROUP 6-B  
FROM THE IFRB CONCERNING STANDARD FORMULATIONS OF  
INTERFERENCE REFERENCES IN ARTICLE 11

1. At the request of Working Group 6-B-1, the Board reviewed the use, in Article 11, of the terms "interference to a service", "interference to an assignment", "interference to a station", "affect the assignments", "affect the service" etc. ... The Board is of the view that the following standard formulations are appropriate:

- an assignment (or a station) may cause interference to or receive interference from another assignment (or station);
- the use of an assignment may affect a service.

2. If this approach is accepted the following modifications would be required taking account of the need to preserve the network approach:

- 1047 ... that interference which may be unacceptable may be caused to assignments of its existing or planned space-radiocommunication services satellite network it shall ...
- 1084 ... which would be caused to the frequency assignments of its network ~~the service-rendered by its stations~~ in respect of which coordination ...
- 1085 }  
1100 } ... interference to assignments of the network ~~the services~~  
1180 } concerned.
- 1102 ... harmful interference affecting the ~~which may be caused to the~~ services rendered by its space radiocommunication stations which may be caused by the use of ...
- 1103 ... interference to ~~the use of~~ the assignment ...
- 1118 ... interference which would be ~~caused to~~ affect the service rendered ...
- 1119 ... earth station by ~~the service rendered by~~ its terrestrial radiocommunication stations ...
- 1143 ... harmful interference affecting ~~which may be caused to the~~ services rendered by its terrestrial stations which may be caused by the use of ...

- 1144 ... interference to ~~the use of~~ the assignment ...
- 1164 ... interference which would be caused to affecting the services rendered by its earth stations ...
- 1167 ... interference to assignments of the network ~~the services~~ concerned.
- 1181 ... interference which may be caused by the terrestrial stations being coordinated which may affect ~~to~~ the service rendered ...

A.V. CAREW  
Chairman of Working Group 6-B

WORKING GROUP 6-B

Draft

REPORT OF THE CHAIRMAN OF WORKING GROUP 6-B TO COMMITTEE 6  
CONCERNING SOME PROVISIONS OF SECTION II OF ARTICLE 11

A.V. CAREW  
Chairman of Working Group 6-B

Annex: 1

ANNEX

- MOD 1087      § 12. (1) 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.~~ 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 publish this information in the a special section of its weekly circular. ~~and, when the weekly circular contains information on changes in the characteristics published, it shall so inform all administrations by circular telegram.~~
- ADD 1087A      (2) An administration which initiated the coordination as well as any administration with which coordination is sought shall communicate to the Board any modification to their respective networks that was required to reach agreement on the proposed network. The Board shall publish this information in accordance with No. 1078 indicating that these modifications resulted from the joint effort of the administrations concerned to reach agreement on coordination and for this reason they should be given special consideration.
- ADD 1091A      b)bis      A bilateral or multilateral meeting is required to achieve coordination concerned experiences difficulties in making arrangement for it.
- ADD 1098A      Where the Board receives a request under No. 1091A, it  
(3bis) shall take appropriate steps to facilitate the holding of such meetings when all parties concerned agree to it and shall also provide requested assistance that may help in achieving coordination.
- MOD 1101      (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting acknowledgement sent under No. 1096, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under No. 1097, or fails to reply to the Board's requests made in application of No. 1098A it shall be deemed that the administration with which coordination was sought has undertaken:



# 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 DL/52-E  
19 September 1988  
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SUB-WORKING GROUP 6-B-2

### Draft

NOTE BY THE CHAIRMAN OF SUB-WORKING GROUP 6-B-2

#### INFORMATION NOTE - REVIEW OF PROPOSALS RELATING TO ARTICLE 13

In this note, I have attempted to group together proposals which are related or which have a common theme. Other proposals are listed at the end, in numerical order of the provision in which they relate.

#### Implementation of notification at the network level

USA/12/31 to 36

F/32/1 to 3

B/35/13, 14 and 17-26

CAN/60/135 and 137

#### Time-frame for the bringing into use of assignments

CAN/60/153

USA/76/2

IND/141/16

ARG/180/2

and also:

J/53/10

CAN/60/143 with CAN/60/154 (consequential)

IND/141/15

#### Suspended assignments

CAN/60/155-160 with CAN/60/146 (consequential)

#### Period of validity of assignments

CAN/60/161-166

Headings and editorial amendments

B/35/11

CAN/60/138

CAN/60/152

Other proposals

|      |                |                 |
|------|----------------|-----------------|
| 1488 | B/35/15-16     | ADD A.13.1A and |
|      | CAN/60/136     | ADD A.13.2      |
|      | CAN/60/137     | ADD A.13.3      |
| 1496 | CAN/60/139-140 | SUP 1496.1      |
| 1498 | CAN/60/141     | MOD             |
| 1501 | CAN/60/142     | ADD 1501A       |
| 1512 | CAN/60/144     | ADD 1512A       |
|      | CAN/60/145     | ADD 1512B       |
| 1516 | CAN/60/147     | ADD 1516A       |
|      | CAN/60/148     | ADD 1516B       |
|      | CAN/60/149     | ADD 1516C       |
|      | CAN/60/150     | ADD 1516D       |
| 1548 | LUX/184/1      | MOD 1548        |
| 1585 | CLM/154/1      | ADD 1585        |

M. J. BATES  
Chairman of Sub-Working Group 6-B-2

# 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 DL/53-E  
20 September 1988  
Original: English

SUB-WORKING GROUP 5-A-1  
AD HOC 1

### Draft

NOTE FROM THE CHAIRMAN OF SUB-WORKING GROUP 5-A-1 AD HOC 1  
TO SUB-WORKING GROUP 5-A-1

At the request of the Chairman of Sub-Working Group 5-A-1 the attached text on BSS feeder-link planning is submitted for consideration.

L. TOMATI  
Chairman of Sub-Working Group 5-A-1 ad hoc 1

Attachment: 1

BSS feeder-link Plan

In creating the feeder-link Plan for Regions 1 and 3 some care is needed to avoid unwanted frequencies falling in the wanted channels.

This type of problem could arise where feeder-link frequencies are not a direct translation of the down-link Plan.

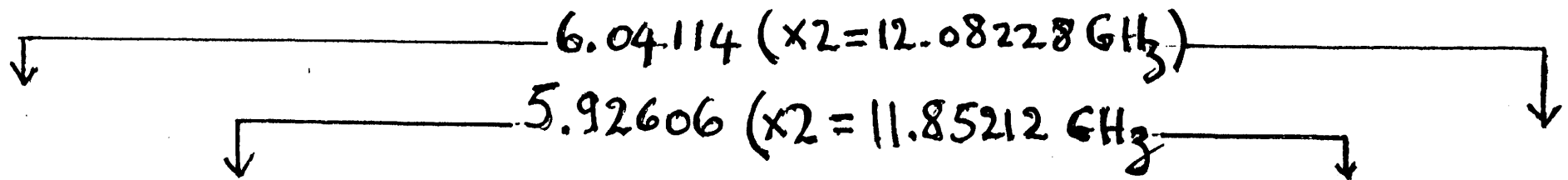
A simple study has shown some combinations of feeder and down-link frequencies which result in the second harmonic of the shift frequency falling in the down-link channels. The interference in this case would be particularly destructive since the interference would be a coherent single frequency.

This type of problem was not extensively studied before the Conference and it appears that there may be other possible interference mechanisms which have not been identified.

It is proposed that the Plan be created by using linear frequency translation only. There may be some special cases in which incompatibilities will remain.

The problem is illustrated below (see also Figures 1 and 2):

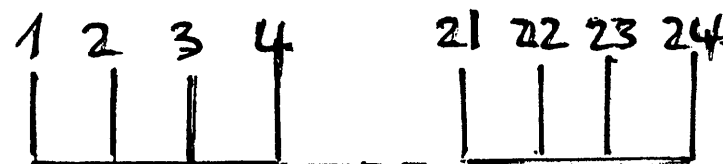
| Channel Separation                    | Shift Frequency (GHz) | 2nd harmonic (GHz) | Down-link Channel Affected |
|---------------------------------------|-----------------------|--------------------|----------------------------|
| 17 (eg. 21-4)                         | 5.92606               | 11.85212           | 7                          |
| 18 (eg. 21-3<br>22-4)                 | 5.94524               | 11.89048           | 9                          |
| 19 (eg. 21-2<br>22-3<br>23-4)         | 5.96442               | 11.82884           | 11, 12                     |
| 20 (eg. 21-1<br>22-2<br>23-3<br>24-4) | 5.98360               | 11.96720           | 14                         |
| 21 (eg. 22-1<br>23-2<br>24-3)         | 6.00278               | 12.00556           | 15, 16                     |
| 22 (eg. 23-1<br>24-2)                 | 6.02196               | 12.04392           | 17, 18                     |
| 23 (eg. 24-1)                         | 6.04114               | 12.08228           | 19, 20                     |



5.6 GHz (linear translation)



DOWN LINKS



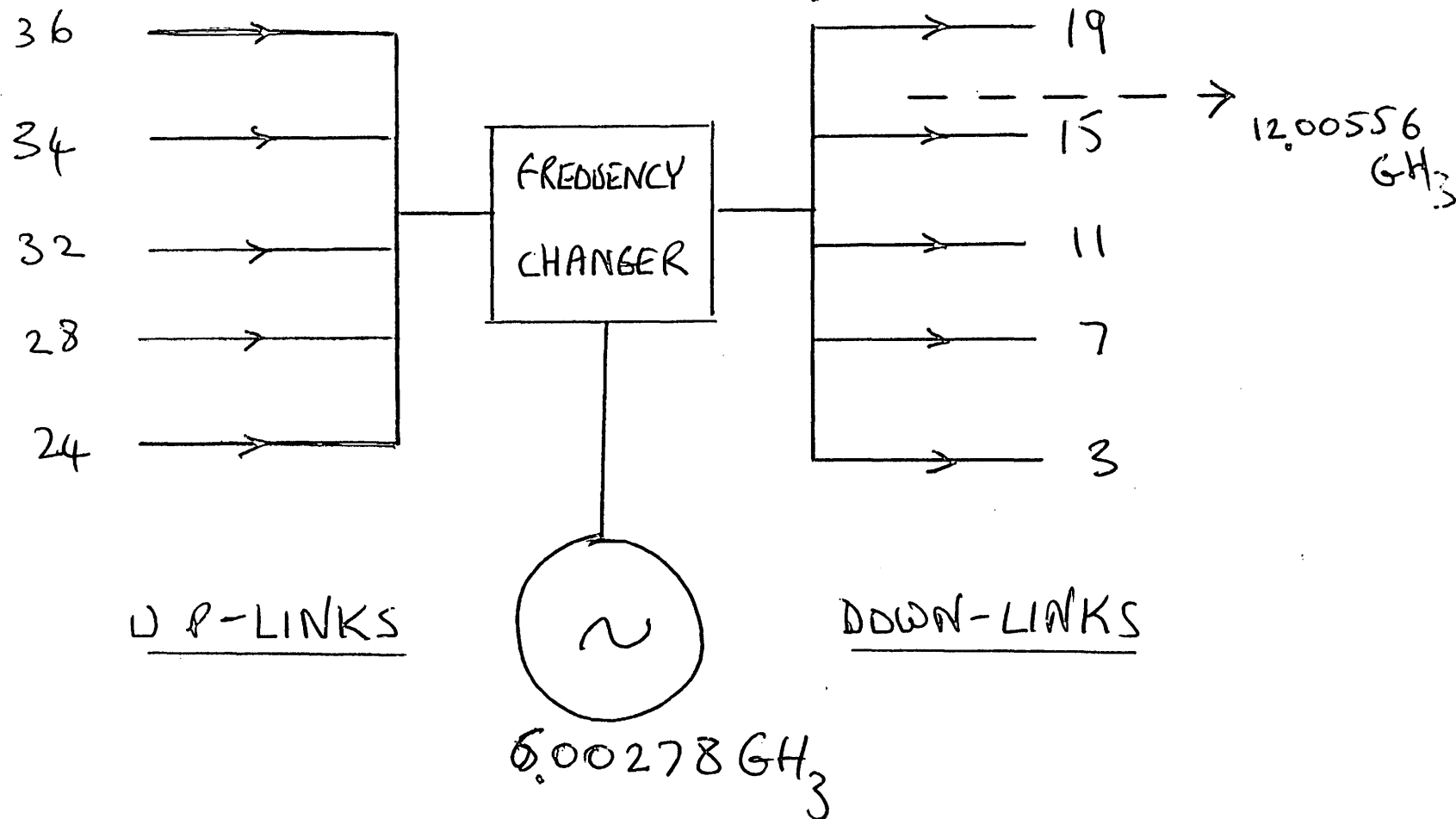
UP LINKS

Some examples of frequency shift

in the BSS plan which

may result in interference.

FIGURE 1



### EXAMPLE OF NON LINEAR TRANSLATION

(Ch 24  $\rightarrow$  Ch 3 =  $6.00278 \text{ GHz}$ ;  $2 \times 6.00278 = 12.00556 \text{ GHz}$   
falling in channels 15 and 16)

FIGURE 2

# 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

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21 September 1988  
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WORKING GROUP 6-B

## Draft

### PROPOSALS TO AMEND SECTIONS III, IV, AND V OF ARTICLE 11

During the consideration of the fourth report by the Chairman of Sub-Working Group 6-B-1 (Document 296), Working Group 6-B at its ninth meeting decided that Section III of Article 11 could be amended if the amendments are consequential in nature.

Document 296 in its fifth paragraph refers to a number of proposals in particular which were drawn to the attention of Sub-Working Group 6-B-1 by one Delegation as falling into the category of consequential changes. Since there was insufficient time to consider these in Sub-Working Group 6-B-1, due to the temporary absence of the Chairman, they were referred for consideration by Working Group 6-B.

As well, consideration of proposals to amend certain provisions of Sections III and IV of Article 11 as contained in Document DL/50 was held in abeyance pending consideration of all the proposals received from administrations to amend the remaining Sections of Article 11. The annex contains the relevant proposals for Working Group 6-B's consideration.

A.V. CAREW  
Chairman of Working Group 6-B

Annex: 1

ANNEX

CAN/60/105  
MOD

Section III. Coordination of Frequency Assignments to  
an Earth Station Operating in Both Geostationary  
and Non-Geostationary Satellite Networks in  
Relation to Terrestrial Stations

Reasons: To clarify that these procedures apply to both types of  
networks.

CAN/60/110

ADD 1111A

To bring into use a new frequency assignment to a  
receiving earth station and the notifying administration states  
that it accepts the interference resulting from the assignments to  
terrestrial stations.

1118

a) interference<sup>1</sup> which would be caused to the service  
rendered by its terrestrial radiocommunication  
stations operating in accordance with the  
Convention and these Regulations, or to be so  
operated prior to the planned date of bringing the  
earth station assignment into service, or within  
the next three years, whichever is the longer; and

1119

b) interference<sup>1</sup> which would be caused to reception at  
the earth station by the service rendered by its  
terrestrial radiocommunication stations operating  
in accordance with the Convention and these  
Regulations, or to be so operated prior to the  
planned date of bringing the earth station  
assignment into service, or within the next three  
years, whichever is the longer.

CAN/60/115

MOD 1118.1 and  
1119.1

<sup>1</sup> The calculation method to be employed ... the methods  
and criteria shall be either agreed between the administrations  
concerned or as defined in the Radio Regulations. Such agreements  
... to other administrations.

1143

a) that no complaint will be made in respect of any  
harmful interference which may be caused to the  
services rendered by its terrestrial stations by  
the use of the assignment for which coordination  
was requested;

1144

b) that its terrestrial stations will not cause  
harmful interference to the use of the assignment  
for which coordination was requested.

1146

§ 22. In the event of continuing disagreement between an  
administration seeking to effect coordination and one which  
coordination has been sought, the administration seeking  
coordination shall, except in the cases where the assistance of  
the Board has been requested, defer the submission of its notice



concerning the proposed assignment by six months from the date of the request for coordination, taking into consideration the provisions of No. 1496.

1164 § 26. (1) On receipt of the coordination data, the administration with which coordination is sought shall promptly examine the matter with regard to interference<sup>1</sup> which would be caused to the services rendered by its earth stations covered by Nos. 1148 to 1154, which are operating, or are to be operated, within the next three years.

CAN/60/123  
(MOD) 1166

(3) The administration ... indicate the reasons for ~~therefore~~ its objection and ... solution of the problem.

CAN/60/126  
MOD 1170

a) an administration ... under No. 1162 within ~~thirty days~~ forty-five days of dispatch of the coordination date;

1181 (6) Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under No. 1176 requesting an acknowledgement, or fails to give a decision in the matter within two months of dispatch of the Board's telegram of request sent under No. 1177, it shall be deemed that the administration with which coordination was sought has undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station being coordinated to the service rendered by its earth station.

CAN/60/128  
MOD 1181

(6) Where an administration fails to reply ... or fails to give a decision in the matter within ~~two months~~ thirty days of dispatch ... rendered by its earth station.

CAN/60/131  
ADD 1189

(3) In the case of difficulty in the application of the coordination procedure, for example, where coordination with a number of administrations is required; lack of sufficient spectrum to meet all demands meriting consideration, etc., the Board may, on its own initiative or upon request from one of the parties concerned, and subject to the agreement of all the parties concerned, convene a meeting to effect coordination of all the proposals.

CAN/60/132  
ADD 1190

a) The Board shall provide the facilities and the technical information necessary for the meeting and provide for appropriate representation of the Board;

CAN/60/133  
ADD 1191

b) Solutions reached shall be fair and equitable taking into account, inter alia, technical, and operational constraints associated with the various networks, regulatory priorities, and, the need for administrations to provide for its minimum requirements.

CAN/60/134

ADD 1192

(4) In providing assistance to administrations, the Board may protect identified assignments and associated orbital positions during the period required for consultation with the administration concerned. The relevant information shall be published in a special section of the weekly circular.

Reasons: To develop further the regulatory provisions concerning assistance the Board may provide to administrations in the application of the coordination procedure.

WORKING GROUP 6-B

Draft

REVIEW OF RESOLUTIONS AND RECOMMENDATIONS

Agenda item 13

A listing of the titles of Resolutions allocated to Working Group 6-B in Document DT/51 together with the associated proposals, is given in the annex to this document.

A.V. CAREW  
Chairman of Working Group 6-B

Annex: 1

ANNEX

RESOLUTION 3

Relating to the Use of the Geostationary-Satellite Orbit  
and to the Planning of Space Services Utilizing It

SUP            USA/12        , CAN/60/269, KEN/69/37, MEX/103/1, PRG/109/2

RESOLUTION 4

Relating to the Period of Validity of Frequency Assignments to Space  
Stations Using the Geostationary-Satellite Orbit

SUP            CAN/60/270, MEX/103/2, PRG/109/3

RESOLUTION 642

Relating to the Bringing into Use of Earth Stations  
in the Amateur-Satellite Service

NOC            KEN/69

WORKING GROUP  
OF THE PLENARY

Draft

MODIFICATION TO PARAGRAPH 7 OF APPENDIX 28

The following text contains modifications to paragraph 7 of Appendix 28 of the Radio Regulations

- MOD 7. Mobile (except aeronautical mobile) earth stations or typical earth stations

For the purpose of establishing whether prior agreement with another administration under the provisions of Nos. 1108 to 1111 or 1494B is required, it is necessary to determine the coordination area which would encompass all coordination areas determined for each location within the service area within which operation of the mobile or typical earth stations is proposed.

The preceding method may be used for this purpose by determining the appropriate individual coordination contours for a sufficiently large number of locations within and on the periphery of the proposed service area and by determining from those a composite coordination area which contains all possible individual coordination areas.

R. RYVOLA

Chairman of the Working Group of the Plenary

# 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

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21 September 1988  
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WORKING GROUP 6-B  
AD HOC 3

### Draft

#### FIRST REPORT OF WORKING GROUP 6-B AD HOC 3

The Group met twice on 21 September and considered the proposals before it for the revision of Article 14. Proposals for the amendment of Articles 11 and 14 are contained in Annex 1. Good progress was made with the preparation of a Recommendation on the future consideration of Article 14 but there was not sufficient time to complete the work. Consequently, the text of an incomplete Recommendation, produced in the Group, is to be found in Annex 2, and suggestions for completing the Recommendation, drawn together by the Chairman, from Documents 47, 144 and 288, are given in Annex 3.

D.J. WITHERS  
Chairman of Working Group 6-B ad hoc 3

Annexes: 3

ANNEX 1

Proposed amendments for Articles 11 and 14

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.<sup>1</sup>

ADD 1060.1 <sup>1</sup> In cases where the application of Article 14 is required with respect to one or more assignments of a network, the agreement obtained in application of Article 14 in relation to an assignment of another satellite network to which No. 1061 to 1065 apply shall be deemed to constitute successful application of the procedure of Section II of this Article.

MOD 1613.1 <sup>1</sup> The information in Appendix 3 or 4 submitted to the Board under Article 11 may also be used for the purpose of this procedure. When the Appendix 4 information is submitted for an assignment to a geostationary-satellite network, the administration seeking agreement under this Article shall also indicate the information required for the application of Appendix 29.

ADD 1619A When an administration intends to use a frequency assignment to a space radiocommunication station, the agreement of an administration having an existing or planned space radiocommunication station may be required with respect to the assignments of this administration:

ADD 1619B a) which are recorded in the Master Register, in conformity with No. 1503; or

ADD 1619C b) for which information under No. [1042] has been received by the Board; or

ADD 1619D c) for which the procedure of this Article has been initiated.

ADD 1619C.1 <sup>1</sup> In the case of a geostationary satellite, the administration will be requested to communicate either the Appendix 3 or any additional information required for the application of Appendix 29.

ANNEX 2

PROPOSED RECOMMENDATION [COM6/C]

[For title, see Annex 3]

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 in the case of continuing disagreement between administrations;
- b) that the applicability of the provisions of Article 14 in many cases to terrestrial services (in showed bands) and, in some cases, to terrestrial services only, places its general revision beyond the competency of the Conference, even though the space services here under consideration are more frequently affected and have experienced some difficulty in its application;
- c) that in some cases in the application of Article 14 there exist no technical criteria to identify the affected administrations;
- d) that recent administrative radio conferences have used extensively the reference to Article 14 when revising existing footnotes or developing new ones;
- e) that there is a need to review the provisions of Article 14 and the consequential changes necessary for an efficient and simplified application of this Article;
- f) that in case the review leads to the modification of these principles some footnotes may need to be modified;
- g) that the review of Article 14 may lead to the need for a review of Article 8, in which case the two Articles should be considered together at the same conference;
- h) that the modification of footnotes to the Table of Frequency Allocations may be possible in some cases where Article 14 has been successfully applied;

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;

invites the Administrative Council

to include the review of the procedure of Article 14 and any consequential changes in Article 8 in the agenda of a future competent world administrative radio conference;



ANNEX 3

Suggestions for the completion of the  
draft Recommendation in Annex 2

**"Relating to the Improvement of the Procedures of  
Article 14 of the Radio Regulations and Development  
Of Technical Criteria for Their Application"**

invites the IFRB

to prepare a report on the action it has taken for the application of procedure of Article 14 and on the difficulties encountered in this application for consideration by a 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.

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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

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SUB-WORKING GROUP 6-B-2  
AD HOC 1

### Draft

#### REPORT OF SUB-WORKING GROUP 6-B-2 AD HOC 1

MOD 1550

The notified date of bringing into use of the first assignment of a satellite network shall not be later than six years following the date of publication of the special section of the weekly circular referred to in No. 1044. This notified date of bringing into use will be extended at the request of the notifying administration by no more than three years.

F.K. WILLIAMS  
Chairman of Sub-Working Group 6-B-2 ad hoc 1

CONF\ORB-2\DL\058E.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 DL/59-E  
26 September 1988  
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WORKING GROUP 6-B

### Draft

NOTE FROM THE CHAIRMAN OF WORKING GROUP 6-B  
ON PROPOSED ALTERNATIVE TEXT FOR ADD 1619C.1

ADD 1619C.1

<sup>1</sup>The administration having such an assignment [may] [will] be requested to communicate the Appendix 3 information [available] or, in the case of a geostationary-satellite network, any information in addition to that communicated in accordance with Appendix 4 which is necessary for the application of Appendix 29.

A.V. CAREW  
Chairman of Working Group 6-B

CONF\ORB-2\DL\059E.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

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WORKING GROUP 6-C

### Draft

#### NOTE FROM THE CHAIRMAN OF WORKING GROUP 6-C CONCERNING POSSIBLE OPTIONS ON RR 839

1. Based on the discussions thus far, both in Committee 6 and the Working Groups, it would seem that one possible solution for the RR 839 proposals might be as shown below. This possible solution is intended to provide a basis for further discussion at the Working Group, incorporating the proposals shown in DT/17.

2. Possible solution

2.1 Maintain ADD 839B (USA/56/11 which incorporates J/54/47).

2.2 Substitute for ADD 839A (USA/56/10) the following:

ADD 839A                      The use of the band 11.7 - 12.2 GHz by the fixed-satellite service in Region 2 is limited to national and subregional systems and is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the table, which may be affected. (See Articles 11, 13 and 14.)

2.3 Maintain SUP 839 (USA/56/9).

L.M. PALMER  
Chairman of Working Group 6-C

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# INTERNATIONAL TELECOMMUNICATION UNION

## **ORB-88**

WARC ON THE USE OF THE  
GEOSTATIONARY-SATELLITE ORBIT AND THE PLANNING  
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WORKING GROUP 6-A

### SUMMARY OF DISCUSSIONS ON DOCUMENT DT/73(REV.1)

To assist our meeting, I have prepared a summary of discussions from my notes from the last meeting.

G.H. RAILTON  
Chairman of Working Group 6-A

MOD 1051

- a) the administration responsible for the planned network 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 networks of other administrations. If no such means can be found, the administration concerned may then request other administrations, either bilaterally or multilaterally, [including in exceptional circumstances through the convening of multilateral meetings similar to that provided for in N 1085C,] to mutually help resolve these difficulties.

ADD 1085C

In exceptional cases the multilateral coordination among the administrations concerned of networks in the FSS operating in the frequency bands, as listed below, may take the form of Multilateral Planning Meeting [MPM] as provided for by Resolution [XX].

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<sup>1</sup>  
12.50 - 12.75 GHz in Region 1 and Region 3<sup>1</sup>  
14.00 - 14.50 GHz

Towards this end, the administration seeking coordination may initiate action to convene an MPM to resolve mutually the difficulties and effect the coordination of the satellite network.

ADD 1087B

When the coordination process takes the form of MPM [see Resolution XX] the administration which sought the coordination of its satellite network shall communicate to the Board and to all other administrations concerned the following information:

- a) the names of administrations with which coordination has been completed and an agreement reached;

---

<sup>1</sup> In these bands the improved procedures shall apply between networks of the fixed-satellite service only.

[and including the FSS in the band referred to in Footnote 845 for Region 3].

- b) any changes agreed upon in the characteristics of frequency assignments of all satellite networks considered by the MPM.

The Board shall publish the information communicated as above by the special section of its weekly circular.

ADD 1189      § 32. (1) If requested by an administration participating in an MPM, the Board, using such means at its disposal as are appropriate in the circumstances, shall render technical assistance for the completion of the procedures of Section II of this Article.

ADD 1190      (2) In making such a request the requesting administration of the MPM shall furnish the Board with all necessary information.

ANNEX

RESOLUTION [COM6/3]

Relating to Improved Procedures for Certain Bands  
of the Fixed-Satellite Service

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 the process of coordination of space services was initially laid down by EARC-63, improved by WARC-71 and further expanded by WARC-79;
- b) that Resolution 2 of WARC-79 reiterated the equitable use by all countries with equal rights of the GSO and the frequency bands allocated to space services, first embodied in Resolution Spa2-1 of WARC-71;
- c) that Resolution 3 of WARC-79 resolved on the need to guarantee in practice for all countries equitable access to GSO and the frequency bands allocated to space services and for this purpose decided on convening the World Administrative Radio Conference to be held in two sessions;
- d) that the First Session of the Conference (ORB-85) agreed on the need for improved regulatory procedures as one of the methods for the planning of FSS and stipulated certain guidelines for this purpose;

noting

that Article 11 of the Radio Regulations has elements of bilateral and multilateral consultations for coordinating the space systems and networks, which administrations plan to bring into use;

noting further

that the concept of Multilateral Planning Meetings (MPMs) is a part of a mechanism to provide equitable access to the limited resources of the GSO and the radio-frequency spectrum;



recognizing

1. that the coordination of technical characteristics of each satellite network presents unique circumstances and requirements;
2. that success in such coordination and resolution of the difficulties of new satellite networks could in some cases necessitate appropriate burden sharing among administrations concerned;
3. that any coordination process requires the cooperation and goodwill of all concerned administrations so as to realise a balance of interests of all parties;
4. the need and obligation of all administrations [affected] [concerned] to reach mutually acceptable solutions in regard to the characteristics of the systems involved in the coordination process;
5. that the provisions of Article 11 as amended by this Conference foresee bilateral and multilateral discussions at any stage in the process of obtaining access to the limited resources of the GSO and the radio-frequency spectrum;
6. that in some circumstances the convening of Multilateral Planning Meetings (MPMs) as a part of the process of obtaining access to the limited resources of the GSO and the radio frequency-spectrum could become an effective means of resolving such difficulties;
7. that the IFRB can assist administrations seeking to resolve complex problems under the provisions 1088 - 1094 of the Radio Regulations;

resolves

1. that the MPMs shall also be a part of the process of coordination for the fixed-satellite service in the band;

- 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<sup>1</sup>  
12.50 - 12.75 GHz in Regions 1 and 3<sup>1</sup>  
14.00 - 14.50 GHz

2. that the convening of such MPMs would be appropriate in exceptional cases where the other processes of coordination are unlikely to yield results, satisfactory to all affected administrations;

---

<sup>1</sup> In these bands the improved procedures shall apply between networks of the fixed-satellite service only.  
[and including the FSS in the band referred to in Footnote 845 for Region 3].

3. that any administration seeking the coordination of a satellite network has the right to propose to the other administrations [concerned][affected] the holding of an MPM;

4. that all administrations affected shall make every effort to participate in the MPM;

5. that all administrations affected shall make every effort for the success of the MPM;

6. that any administration which cannot attend an MPM may delegate another administration to represent it;

7. that if one or more of the affected administrations are unable to attend an MPM for any reason, then the pertinent provisions of Article 11 shall apply;

8. that the provisions 1088 to 1094 and associated provisions of Article 11 shall also apply;

also resolves to recommend

that the representatives of [concerned][affected] multi-administration systems may [be invited] also [to] participate in the MPM;

resolves further

1. that the administration initiating the MPM convey the results of the MPM to the IFRB in accordance with No. 1087;

2. that the MPM may be held at a place agreed by the affected administrations;

3. that the cost of an MPM shall be borne by the participants according to the arrangements agreed upon by all participants;

4. that at the request of the initiating administration [in agreement with the other affected administrations,] the Secretary-General may supply secretarial services under contractual arrangements in accordance with No. 286 of the Nairobi Convention;

5. that any affected administration may call upon the permanent organs of the Union (General Secretariat, IFRB and CCIR) for any technical advice as it deems necessary;

urges administrations

to hold bilateral or multilateral consultation at any stage of the process of obtaining access to the limited resources of the GSO and the radio-frequency spectrum when it is expected that such consultations will assist resolution of difficulties;

calls upon

all administrations [concerned][affected] to cooperate and resolve mutually coordination problems in a spirit of international understanding, so as to uphold the principles of equal rights and equitable access to the GSO and the frequency bands allocated to space services for all administrations;

invites

the Administrative Council to monitor the progress in the application of this Resolution and, if difficulties arise in practice in the assurance of such equitable access, to propose that the MPM process be reviewed by a future competent conference.

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# INTERNATIONAL TELECOMMUNICATION UNION

## ORB-88

WARC ON THE USE OF THE  
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### COMMITTEE 6

#### Draft

#### NOTE FROM THE CHAIRMAN OF COMMITTEE 6

At the fifth meeting of the Plenary, questions were raised about the "deletion", because of linguistic difficulties identified by the Editorial Committee, of the word "contiguous" in the new definition ADD 168A for effective boresight area. Consultations with several administrations and the Editorial Committee produced the additional clarifying sentence for ADD 168A shown below.

ADD 168A      7.10      Effective boresight area (of a steerable satellite beam): an area on the surface of the earth within which the boresight of a steerable satellite beam is intended to be pointed. [There may be more than one disconnected effective boresight area to which a single steerable satellite beam is intended to be pointed.]

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 DL/63-E  
29 September 1988  
Original: English

WORKING GROUP 4  
AD HOC 2

### DRAFT NOTE OF THE CHAIRMAN OF WORKING GROUP 4 AD HOC 2

Further to the discussions held during the two sessions of Working Group 4 ad hoc 2, the consolidated Appendix is submitted for consideration by the Working Group.

S. PINHEIRO  
Chairman of Working Group 4 ad hoc 2

Attachment: 1

[Preamble]

The procedures contained in this Appendix relating to the conversion of allotments into assignments, the introduction of subregional systems and the additional uses shall in no way prevent an allotment from being converted into an assignment.

ARTICLE [J]

The Plan and the Associated List of Assignments

1. The Plan consists of:
  - a) Part A containing a list of national allotments.
  - b) Part B containing the list of networks of existing systems and their characteristics.
- 1bis A list of assignments as described in 5 will be associated with the Plan.
2. The predetermined arc (PDA) is a segment of the geostationary-satellite orbit (GSO) around a nominal orbital position intended to provide flexibility to the Plan.
  - a) An administration will not be considered to be affected if the nominal orbital position associated with its allotment in the Plan or with its assignments in the list is moved within the corresponding PDA while keeping an aggregate C/I  $\geq 26$  dB.
  - b) The site of the PDA depends on the stage of development of the corresponding satellite system:
    - for a system in the pre-design stage, the PDA is the portion of the GSO defined by the intersection between a segment of  $[\pm 10^\circ]$  around the nominal orbital location and the corresponding service arc;
    - for a system in the design stage the PDA as defined in 2 b) is  $[\pm 5^\circ]$ ;
    - for a system in the operational stage the value of the PDA as defined in 2 b) is  $[\pm 2^\circ]$ ;
    - for a system in the operational stage, the PDA will be considered as being zero.
  - c) The PDA concept may be applied only:
    - to provide an allotment to a new number of ITU;
    - in the process of conversion of an allotment into an assignment;
    - to accommodate a subregional system.

3. The existing systems listed in Part B of the Plan may continue in operation for a maximum period of 20 years from the date of entry into force of the Final Acts. During the lifetime of an existing system the recorded characteristics of the related space station and earth station assignments shall not be modified in any way as to affect any allotments or assignments in the list. Changes in the recorded characteristics of an existing system which do not affect allotments or assignments in the list shall be notified to the Board. In the event of a favourable finding the Board shall publish such changes in a special section of its weekly circular and shall update the Plan accordingly.

4. An interaction between Part A and Part B of the Plan will take place as appropriate when an administration initiates the procedure for converting all or part of its allotment into an assignment (see Article [L]). The results of this process will be recorded in the List of assignments associated with the Plan.

5. The List of assignments to be associated with the Plan shall contain:

- a) assignments derived from the allotments having generalized parameters within the limits appearing in the Plan;
- b) assignments derived from the allotments having generalized parameters exceeding the limits appearing in the Plan;
- c) assignments relating to existing systems appearing in Part B of the Plan with their operating characteristics;
- d) assignments relating to existing systems appearing in Part B of the Plan with their modified operating characteristics;
- e) assignments resulting from the introduction of subregional systems;
- f) assignments relating to additional uses.

6. For the application of the provisions of this Appendix additional uses shall be those of an administration:

- a) which has a requirement whose other characteristics differ from those used in the preparation of Part A of the Plan;
- b) which is already using all or part of its national allotment in Part A of the Plan;
- c) which requires the use of all or part of its national allotment that has been suspended in accordance with Section II of Article [L], No. 21;
- d) which intends to participate in more than one subregional system.

ARTICLE [K]

**Procedure for the Addition of a New Allotment to the  
Plan for a New Member of the Union**

1. An administration having joined the Union as a new Member shall obtain a national allotment in Part A of the Plan by the following procedure.
2. The administration shall submit its request for an allotment to the Board with the following information:
  - a) the geographical coordinates of not more than 10 test points for the determination of the minimal ellipse to cover its national territory;
  - b) the height above sea level of each of its test points and the rain zone or zones;
  - c) any special requirement, other than a fixed orbital location, which is to be taken into account to the extent practicable.
3. Upon receipt of the complete information the Board shall find an appropriate orbital location using the PDA concept, if necessary and shall enter the national allotment of the new Member of the Union in Part A of the Plan with the characteristics listed in Article [J] 1 a).
4. For this purpose the Board shall consult, and if necessary seek the agreement of, any administrations that may be affected.

ARTICLE [L]

**Procedure for Implementation of the Plan and  
Regulation of the FSS in the Planned Bands**

**Section I. Procedure for Conversion of  
an Allotment into an Assignment**

1. When an administration intends to convert an allotment into an assignment employing all or part of its allotment in Part A of the Plan it shall, not earlier than three years and not later than three months before the planned date of bringing the networks into use, send to the IFRB the information specified in Annex [2].
2. Upon receipt of a complete notice of a frequency assignment related to that allotment, the Board shall examine it in respect to its conformity with Part A of the Plan.
  - 2A. An assignment is considered to be in conformity with Part A of the Plan if:
    - a) the service area is within the national territory of the notifying administration;
    - b) the generalized parameters are within the limits specified in the corresponding entries of the Plan; and
    - c) the orbital position corresponds to the nominal orbital location in the Plan.



2B. A notice shall be returned to the notifying administration whenever it is not in conformity with Part A of the Plan in respect of 2Aa).

2C. If a notice is not in conformity with Part A of the Plan by reasons other than 2Aa, the provisions in 10A shall apply.

3. A notice which is in conformity with Part A of the Plan shall be examined by the Board with respect to its compatibility with the assignments (see Annex [3]), but without any relocation of orbital positions at this stage:

- a) which appear in the List;
- b) with respect to which the Board previously received complete information in accordance with this Article.

4. When the Board finds that the proposed assignment is compatible; or in the event of incompatibility the notice includes a statement that any affected administration has given its agreement, it shall:

- a) record the assignment in the List;
- b) consider the information received as notified under Article [M].

[5.] Not used.

[6.] Not used.

7. Should the Board find that the proposed assignment is incompatible with any assignment under the provisions in 3, the notifying administration may take the following action:

- a) modify the characteristics of its assignment in order to ensure its compatibility with the above-mentioned assignments;
- b) select an alternative orbital location and resubmit the notice in accordance with 1; or
- c) request the assistance of the Board in either course of action.

8. When the Board is notified of an alternative orbital location under 7 b) it shall examine its compatibility with respect to other allotments in Part A of the Plan and the assignments referred to in 3. When the Board is requested to select an alternative orbital location under 7 c), it shall do so within the PDA associated with the allotment.

8A. If the Board finds that the alternative location is not compatible with other allotments in Part A of the Plan or any assignment referred to in 3, it shall propose the minimum necessary relocation of the proposed assignment and on other allotments and assignments within their PDAs while guaranteeing the agreed protection criteria in their newly selected locations.

8B. In the event of a successful application of 8A, the Board shall publish the results of its calculations and the modified orbital locations in a special section of the weekly circular.

9. If within sixty days from the date of the weekly circular mentioned in 8B the Board receives no comments it shall be deemed that there are no objections to the proposed relocations and the proposed assignment shall be recorded according to the provisions in 4 a) and 4 b). Comments, if any, shall be limited to the case of an administration believing that the agreed protection criteria has not been met. In the event of receiving such comments the Board shall initiate the appropriate action to resolve the matter.

10. If, due to exceptional circumstances, the administrations concerned, with the assistance of the Board, if requested, are unsuccessful in their attempts to select compatible alternative orbital locations, the Board shall identify orbital locations which would result in the minimum degree of incompatibility. The Board shall also identify the allotments and the assignments which would be affected by, or would affect, the assignment related to the orbital location. The Board shall then consult with the administrations concerned to determine the minimum necessary adjustments to ensure the satisfactory completion of the conversion procedure and the guaranteed access to the orbit.

10A. Whenever, in the process of converting an allotment into an assignment, the conformity with Part A of the Plan is not met by reasons other than 2A a), the Board shall examine compatibility with the allotments in the Plan and the assignments referred to in 3. Relocations of the proposed assignment and other allotments and assignments may be made in accordance with the PDA concept.

10B. In the event of a successful application of 10A, provisions in 8B and 9 shall apply.

10C. In the event of an unsuccessful application of 10A, the notice shall be returned to the notifying administration.

11. If it is necessary for the purpose of resolving the incompatibilities mentioned in 7:

- a) an administration responsible for an existing system or an additional use shall, depending on the stage of development of its system, take all technically and operationally possible measures to remove incompatibilities at the planning, design and implementation stages in order to accommodate the requirements of the administration seeking to convert its allotment into an assignment;
- b) an administration whose allotment is being converted into an assignment shall assist in the resolution of incompatibilities;
- c) both administrations, with the assistance of the Board if requested, shall cooperate in reaching an equitable agreement, taking into account the respective stages of development of their systems and recognizing that a means must be found to convert the allotment into an assignment which is acceptable to both parties.

## Section II. Procedure for the Introduction of a Subregional system

12. When a group of administrations intends to bring into use a subregional system it shall select an orbital location for the system, [preferably from one of the national allotments concerned] and send details of the assignment of the proposed network to the Board. For this purpose the administrations shall designate one of their members to act on their behalf in the application of the provisions of this Appendix. The selected administration shall be known as the notifying administration for the system.

13. That all or part of the national allotments used by the subregional system shall be suspended for the period of operation of this subregional system unless it can be used in a way that does not affect allotments in the Plan or assignments made in accordance with the procedures related to the Plan.

13bis Suspended national allotments (see 13) shall remain protected in accordance with the same protection as that afforded to other allotments in the Plan which are not suspended, for use in the event of cessation of the subregional system.

14. Upon receipt of a complete notice relating to the proposed system, the Board shall examine it in regard to the compatibility with (see Annex ...):

- a) the allotments in the Plan;
- b) the assignments which appear in the List;
- c) the assignments with respect to which the Board previously received information in accordance with this Article.

15. In the event of a favourable finding with regard to compatibility the Board shall enter the proposed assignment in the List and shall report the information received as notified under Article [M]. A PDA corresponding to the design stage shall be associated to this assignment.

16. In the event of a unfavourable finding with regard to compatibility, the Board shall return the notice to the notifying administration indicating that it may take the following action:

- a) modify the characteristics of its proposed assignment in order to ensure its compatibility; or
- b) select an alternative orbital location and proceed in accordance with 12; or
- c) request the assistance of the Board in either course of action.

17. When the Board is requested to assist in the selection of an alternative orbital location for the proposed assignment it shall endeavor to identify an orbital location which would ensure compatibility with the allotments in the Plan and the assignments in the List and shall communicate the results to the notifying administration.

18. If it is not possible to find a solution to the problem of incompatibility mentioned in 16 after having considered the possibility of finding an alternative orbital location, the concept of PDA shall be used (see paragraph 2, Article [J]. In order to accommodate the subregional system, the notifying administration or the Board if its assistance is requested, may propose changes in the orbital position of other administrations provided these new orbital positions remain protected within their respective PDA.

18A. In the event of a successful application of paragraph 18, the Board shall publish the result of its calculations and the modified orbital locations in a special section of the weekly IFRB circular.

18B. If within sixty days from the date of the weekly circular mentioned in 8B the Board receives no comments it shall be deemed that there are no objections to the proposed relocations and the proposed assignment shall be recorded according to the provisions in 4 a) and 4 b). Comments, if any, shall be limited to the case of an administration believing that the agreed protection criteria has not been met. In the event of receiving such comments the Board shall initiate the appropriate action to resolve the matter.

18C. In the event of an unsuccessful application of 18, 18A and 18B, the Board shall return the notice to the notifying administration.

19. In the event of an administration withdrawing from a subregional system it shall inform the IFRB. The Board shall take account of this modification when applying the provisions relating to the compatibility of new assignments.

20. If an administration which has withdrawn from a subregional system wishes to implement a national system, and is unable to satisfy the condition of No. 13 for the use of its allotment, it shall proceed under the provisions of Section III of this Article relating to additional uses.

21. When a subregional system is terminated by the participating administrations, the notifying administration shall inform the Board as early as possible and the Board shall:

- a) publish this information in a special section of its weekly circular;
- b) cancel all frequency assignments in the List relating to that system;
- c) modify Part A of the Plan to indicate that the corresponding national allotments are no longer suspended.

22. These bands are used for the FSS Allotment Plan and their use in accordance with this section should be avoided if possible. Administrations are urged to use the unplanned bands.

### Section III. Supplementary Provisions Applicable to Additional Uses in the Planned Bands

22A. An administration, or one acting on behalf of a group of administrations, may apply the procedure of this Section for an additional use as defined in 6 of Article [J] provided that the related assignments will be for a notified period of validity and will not necessitate any relocation of a national allotment in Part A of the Plan or be incompatible with:

- a) the allotments in the Plan;
- b) the assignments which appear in the List;
- c) the assignments with respect to which the Board previously received information in accordance with this Article.

23. For this purpose it shall, not earlier than three years and not later than three months before the planned date of bringing the related assignment into use, send the information specified in [Annex ...] to the IFRB.

24. Upon receipt of a complete notice the Board shall examine it to ensure its compliance with 22A and in the event of non-compliance the notice shall be returned to the notifying administration.

25. In the event of the Board finding that the notice complies with the provisions of 22A it shall enter the assignment in the List and shall consider the information received as notified under Article [M].

26. The provisions of this Section shall not be applied before [two years] after the date of entry into force of this Plan.

#### ARTICLE [M]

##### Procedure for Notification and Recording in the Master Register of Assignments in the Planned Bands for the Fixed-Satellite Service

1. Any assignment for which the relevant procedure of Article [L] has been successfully applied, shall be notified to the Board in accordance with Article 13 of the Radio Regulations indicating only those characteristics communicated under Article [L] which have been modified by the application of the procedure.

1A. Upon reception by the Board of a complete notice for the purpose of notification under Article 13, a PDA corresponding to the design stage shall be associated to this assignment.

2. Such an assignment shall not be subject to the procedures for advance publication and coordination contained in Sections I and II of Article 11 of the Radio Regulations. Consequently, the provisions of Article 13 of the Radio Regulations shall continue to be applicable except with regard to No. 1504 and related provisions. (See Resolution [COM4/1].)

3. No provision of this Appendix [30B] shall be considered as modifying the requirements under Sections III and IV of Article 11 of the Radio Regulations relating to coordination between the fixed-satellite service and stations of terrestrial services sharing the planned bands on an equal primary basis.

4. When the Board is informed by the notifying administration of the bringing into operation of the space station, a PDA corresponding to the operational stage shall be associated to this assignment.

DRAFT

NOC

RESOLUTION [COM4/1]

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 it has adopted an Allotment Plan and associated provisions covering existing systems which had commenced the procedures of Article 11 of the Radio Regulations before 8 August 1985;
- b) that since this date, the same procedures have been applied for other satellite networks which have not been covered by the Plan or its associated procedures;
- c) that in order to safeguard the Plan and its associated procedures, it is essential to prevent other satellite networks from being implemented in the planned bands before the date of entry into force of the Final Acts;
- d) that, nevertheless, the satellite networks referred to in considering b) should be [permitted to continue to apply the procedures of Article 11 with a view to resolving incompatibilities among themselves and with existing systems appearing in Part B of the Plan;]

resolves

- 1. that the provisions of Sections I and II of Article 11 and the related provisions of Article 13 of the Radio Regulations shall be suspended in the planned bands with effect from [5 October 1988] except in respect of satellite networks contained in Part B of the Plan and those listed in the Annex to this Resolution;
- 2. that the Board shall invite the administrations concerned to indicate whether their satellite networks listed in the Annex to this Resolution are to be regarded as a conversion of their national allotments in Part A of the Plan into assignments or as additional uses to be treated in accordance with the relevant provisions of Article C of Appendix [30B].

WORKING GROUP 6-B

Draft

**Section I. General Instructions**

1. A separate notice shall be sent to the International Frequency Registration Board for:

- coordinating under No. 1060 a geostationary network and the characteristics of its associated stations (see Section II of this Appendix);
- coordinating under No. 1060 frequency assignments to specific earth stations (see Section II of this Appendix);
- coordinating under No. 1060 frequency assignments to a new type of typical earth station (see Section II of this Appendix);
- coordinating under No. 1107 frequency assignments to an earth station (see Section III of this Appendix);
- notifying each frequency assignment to a space station of a geostationary, non-geostationary or deep space satellite network taking into account the characteristics of its associated stations (see Section II of this Appendix);
- notifying each frequency assignment to an earth station (see Section III of this Appendix);
- notifying each frequency assignment to be received by a radioastronomy station (see Section IV of this Appendix);
- notifying any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register);
- notifying any total deletion of a frequency assignment recorded in the Master Register.

2. The notice forms and basic characteristics shall also be used for seeking agreement in accordance with Article 14.

A.V. CAREW  
Chairman of Working Group 6-B

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INTERNATIONAL TELECOMMUNICATION UNION

**ORB-88**

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COMMITTEE 4

DRAFT NOTE OF THE CHAIRMAN OF COMMITTEE 4

At my request, the Chairman of Working Group 4-C, in connection with administrations, prepared the options described in Annexes 1, 2 and 3 for the implementation of allotments carrying TV without the need for coordination.

S. PINHEIRO  
Chairman of Committee 4

Annexes: 3



ANNEX 1

A technique to enable the implementation of allotments  
carrying FM-TV without the need to coordinate

It is proposed that Document 409, Annex 1, Section B entitled: "Generalized parameter method of calculation for determining when the assignments of a proposed satellite network are in conformity with the Plan", be modified as follows:

In section 2.3 of the annex, add a second indent:

"- if the calculated A', B', C' and D' values are less than or equal to the reference set, and if it is proposed to place FM-TV carriers on any of the frequencies identified below then the use of the assignment is considered in conformity with the Plan";

Co-channel centres for FM-TV (see Annex 1B)

1. C band, 4.5 - 4.8 GHz - 40 MHz transponder/TV separation

| <u>4.5 - 4.8</u> |      | <u>[6 GHz up-link list]</u> |       |
|------------------|------|-----------------------------|-------|
| 4.52             | 4.54 | 6.745                       | 6.765 |
| 4.56             | 4.58 | 6.785                       | 6.805 |
| 4.60 (or)        | 4.62 | 6.825 (or)                  | 6.845 |
| 4.64             | 4.66 | 6.865                       | 6.885 |
| 4.68             | 4.70 | 6.905                       | 6.925 |
| 4.72             | 4.74 | 6.945                       | 6.965 |
| 4.76             | 4.78 | 6.985                       | 7.005 |

2. Ku band 10.7-10.95, 11.2-11.4, 12.75-13.25 GHz

| <u>10.7-10.95</u> | <u>12.75-13.00</u> | <u>11.2-11.45</u> | <u>13.00-13.25</u> |
|-------------------|--------------------|-------------------|--------------------|
| 10.725            | 12.775             | 11.215            | 13.015             |
| 10.755            | 12.805             | 11.245            | 13.045             |
| 10.785            | 12.835             | 11.275            | 13.075             |
| 10.815            | 12.865             | 11.305            | 13.105             |
| 10.845            | 12.895             | 11.335            | 13.135             |
| 10.875            | 12.925             | 11.365            | 13.165             |
| 10.905            | 12.955             | 11.395            | 13.195             |
| 10.935            | 12.985             | 11.425            | 13.225             |

NB Guard Bands = 10.7-10.71, 11.44-11.45, 12.75-12.76, 13.24-13.25, (20 MHz each way)

(or)

|        |        |        |        |
|--------|--------|--------|--------|
| 10.715 | 12.765 | 11.225 | 13.005 |
| 10.745 | 12.795 | 11.255 | 13.035 |
| 10.775 | 12.825 | 11.285 | 13.065 |
| 10.805 | 12.855 | 11.315 | 13.095 |
| 10.835 | 12.885 | 11.345 | 13.125 |
| 10.865 | 12.915 | 11.375 | 13.155 |
| 10.895 | 12.945 | 11.405 | 13.185 |
| 10.925 | 12.975 | 11.415 | 13.215 |

NB: Guard Bands = 10.94-10.95, 11.20-11.21, 13.3-13.5 (20 MHz each way).

ANNEX 2

An alternate method to implement without  
coordination allotments which will carry TV

1. The following text would be integrated in paragraph 2.3 of Annex 3 (Document 411):

- a) In order to avoid or greatly reduce the probability of incompatibility between assignments when the differences between the spectral power densities of the two assignments becomes significant, the planned bands shall be used by locating the carrier having the higher power spectral density at the upper limit of the band and the carrier having the lower power spectral density at the lower limit of the band.
- b) Proposed assignments which locate their carriers in the manner described in a), shall be in conformity with the Plan.
- c) When the carrier-to-interference ratio is calculated for allotments near the proposed system, it will be assumed that the nearby allotments have the same distribution of carrier power as the proposed system.
- d) When a nearby allotment is implemented which uses a carrier power distribution different from that of the proposed system, any incompatibilities will be dealt with by agreement between the administrations concerned without affecting any other allotment in the Plan or the list of assignments.

ANNEX 3

Technical means to be used in practice to avoid incompatibilities between fixed-satellite systems appearing in the Plan at their implementation stage

1. Frequency modulated TV carrier dispersal with up to 4 - 5 MHz peak-to-peak deviation with combined line and frame frequencies (it can result in a reduction of up to 10 dB for interference from TV-FM carrier).
  2. Frequency separation between signals with high peak spectral density and narrow-band signals (bandwidth segmentation) that will enable the incompatibility between such systems to be removed.
  3. Polarization discrimination together with a co-location of neighbouring orbital positions with the PDA to remove incompatibility.  
  
Such a technique is being already used in practice.
  4. The use of transmitting and receiving antennas with special beams providing minimum gain in the direction to neighbouring satellites. In this case an improvement of up to 10-20 dB can be achieved depending on the angular separation.
  5. Shaped beams for transmitting satellite antennas reduce interference outside the service area.
  6. Transmission (modulation) and reception techniques allowing for the C/I ratios less than 26 dB. For digital systems using forward error correction techniques and signal-code structures this C/I reduction is 5 to 10 dB without actually affecting the system capacity.
-

Aux fins de cette détermination, on utilise les paramètres de la station terrienne d'émission de liaison de connexion notifiés par l'administration qui peuvent différer de ceux donnés dans l'annexe 3 du présent appendice.

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This calculation is made using the feeder-link transmitting earth station parameters notified by the administration, which may differ from those given in Annex 3 to this Appendix.

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A efectos de esta determinación, se utilizan los parámetros de la estación terrena de transmisión de enlace de conexión notificados por la administración, que pueden diferir de los indicados en el anexo 3 del presente apéndice.

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# INTERNATIONAL TELECOMMUNICATION UNION

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### COMMITTEE 4

#### DRAFT NOTE OF THE CHAIRMAN OF COMMITTEE 4

Following discussions in the eighteenth meeting of Committee 4, the text in the annex is proposed to replace No. 103 of Article [J] in Document 466.

S. PINHEIRO  
Chairman of Committee 4

Annex: 1

ANNEX

103. The predetermined arc (PDA) is a segment of the geostationary-satellite orbit (GSO) about a nominal orbital position intended to provide flexibility to the Plan.

- a) The size of the PDA depends on the stage of development of the corresponding satellite system:
- for a system in the pre-design stage, the PDA is the fixed portion of the GSO defined by the intersection between a segment of  $\pm 10^\circ$  about the nominal orbital location established at the Conference and the corresponding service arc;
  - for a system in the design stage, the PDA is the fixed portion of the GSO defined by the intersection between a segment of  $\pm 5^\circ$  about the nominal orbital location as may be modified by the application of this Appendix and the PDA defined for the pre-design stage;
  - for a system in the operational stage, the PDA will be considered as being zero.
- b) The stage of development to be associated with allotments in Part A and assignments in the List derived from allotments in Part A, existing systems in Part B, subregional systems or additional uses, is given in Table 1.

TABLE 1

| stage of development | Part A or subregional systems or additional uses   | Part B  |
|----------------------|--|---|
| pre-design           | allotments   | -   |
| design               | assignments of which the IFRB received complete information under 102 or 206 or 304 of Article [L] | networks of which the IFRB received complete information to start the application of Section I of Article 11  |
| operational          | assignments of which the IFRB received complete information for notification under Article [M]     | networks of which the IFRB received complete information to start the application of Section II of Article 11 |

- c) An administration will not be considered to be affected if the nominal orbital position associated with its allotment in the Plan or with its assignments in the List is moved within the corresponding PDA while keeping an aggregate C/I  $\geq 26$  dB.

Définition de l'arc de service

L'arc de service indiqué dans la colonne 3 de la Partie A du Plan représente le segment de l'orbite des satellites géostationnaires qui est commun à tous les arcs de service individuels associés à chaque point de mesure pour un angle de site minimum donné.

Definition of service arc

The service arc given in column 3 of Part A of the Plan represents that segment of the geostationary orbit which is common to all individual service arcs of each test point for a given minimum elevation angle.

Definición del arco de servicio

El arco de servicio indicado en la columna 3 de la Parte A del Plan representa el segmento de la órbita geoestacionaria que es común a todos los arcos de servicio individuales de cada punto de prueba para un ángulo de elevación mínimo dado.

SEANCE PLENIERE

PLENARY MEETING

SESION PLENARIA

PROPOSITION DANOISE REVISEE CONCERNANT L'ALINEA 103 a) DE L'ARTICLE [J] B.12/9

Après 20 ans à compter de la date d'entrée en vigueur du présent appendice, l'arc prédéterminé pour un système au stade préliminaire à la conception est la partie fixe de l'OSG définie par l'intersection d'un segment de  $\pm 20^\circ$  de part et d'autre de la position orbitale nominale établie par la Conférence et de l'arc de service correspondant, à condition que l'angle de site minimal, après application de la présente procédure, ne soit inférieur à  $20^\circ$  pour tous les allotissements affectés.

REVISED DANISH PROPOSAL ON B.12/9 ARTICLE [J] 103 a)

After twenty years from the date of entry into force of this Appendix, the PDA for a system in the pre-design stage, is the fixed portion of the GSO defined by the intersection between a segment of  $\pm 20^\circ$  about the nominal orbital position established at the Conference and the corresponding service arc, provided that the minimum elevation angle after the application of this procedure will not be less than  $20^\circ$  for all allotments affected.

PROPUESTA DANESA REVISADA EN RELACION CON EL PUNTO 103a)  
DEL ARTICULO [J] QUE FIGURA EN B.12/9

Transcurridos 20 años a partir de la entrada en vigor del presente apéndice, el arco predeterminado (APD) de un sistema en fase de prediseño será la parte fija de la OSG definida por la intersección entre un segmento de  $\pm 20^\circ$  alrededor de la posición orbital nominal establecida en la Conferencia y el arco de servicio correspondiente, siempre que el ángulo de elevación mínimo después de la aplicación de este procedimiento no sea inferior a  $20^\circ$  para todas las adjudicaciones afectadas.

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CONF\ORB-2\DL\069S.TXS



PLENARY MEETING

Page B.12/4 (Article F)

Additional use

a) which has a requirement whose characteristics differ from those used in the preparation of Part A of Plan; any such requirement shall be limited to the national coverage taking into account technical constraints of the administration concerned, unless otherwise agreed. Additionally such requirement can only be met if the allotment of the interested administration, or part of this allotment, has been converted into an assignment or the requirement cannot be met by the conversion of the allotment into an assignment.

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Page B.12/19 (Article L - Section III)

302 An administration .....  
.....  
.....  
and will not, except if agreed to by the administrations affected, require ..  
.....with :

TEXTE DES SYMBOLES DANS LA COLONNE OBSERVATIONS DU PLAN

1. Antenne d'émission et de réception de station spatiale à décroissance rapide.
2. Cet allotissement utilisera un diagramme de lobe latéral d'antenne de réception et d'émission de station terrienne qui sera conforme à  $29 - 25 \log \theta$ .
3. Cet allotissement utilisera un diagramme de lobe latéral d'antenne de réception de station terrienne qui sera conforme à  $29 - 25 \log \theta$ .
4. L'Administration luxembourgeoise (LUX) a accepté de protéger l'allotissement SYR0000 (SYR) pour un rapport (C/I) par un seul brouilleur de 30 dB contre le brouillage causé par le faisceau LUXGDL 62.

TEXT FOR SYMBOLS IN REMARKS COLUMN OF THE PLAN

1. Fast roll-off space station transmitting and receiving antenna
2. This allotment will use an earth station receiving and transmitting antenna side lobe pattern that will conform to  $29 - 25 \log \theta$ .
3. This allotment will use an earth station receiving antenna side lobe pattern that will conform to  $29 - 25 \log \theta$ .
4. The administration of Luxembourg (LUX) agreed to protect the national allotment SYR0000 (SYR) to a single entry (C/I) ratio of 30 dB against the interference from the beam LUXGDL62.

EXPLICACION DE LOS SIMBOLOS QUE APARECEN EN  
LA COLUMNA DE OBSERVACIONES DEL PLAN

1. Antenna transmisora y receptora de estación espacial con régimen de caída rápida.
2. Esta adjudicación utilizará, en la antena receptora y transmisora de estación terrena, un diagrama de radiación de lóbulo lateral conforme a  $29 - 25 \log \theta$ .
3. Esta adjudicación utilizará, en la antena receptora de estación terrena, un diagrama de radiación de lóbulo lateral conforme a  $29 - 25 \log \theta$ .
4. La Administración de Luxemburgo (LUX) ha acordado proteger la adjudicación nacional SYR0000 (SYR) hasta una relación (C/I) de una sola entrada de 30 dB contra la interferencia procedente del haz LUXGDL62.

PLENARY MEETING

ANNEX 5

Application of PDA Concept

1. The following method will be used in the application of the PDA Concept. The concept uses the criteria in paragraph 1.1 below.

1.1 For the purposes of this Annex, an administration will be considered as being affected by another administration if, at its nominal orbital position within the predetermined arc, the calculated single-entry carrier-to-interference ratio is less than or equal to 30 dB (or the calculated value based on the Plan due to that other administration, whichever is lower) at any test point within the service area of the interfered-with satellite network. The single-entry carrier-to-interference ratio is calculated using the method in Attachment 1, Annex 4.

Even if the single-entry carrier-to-interference ratio is above 30 dB (or the calculated value based on the Plan due to that other administration, whichever is lower), an administration shall be considered affected if the overall aggregate C/I, calculated using Attachment 1, falls below 26 dB<sup>1</sup>, or the value for the assignment, whichever is lower.

1.2 The PDA Concept shall be applied in the following steps:

- a) the order of all satellites and also the location of satellites in the "design" or "operational" stages shall be fixed so as to minimize the impact on these systems. Then the nominal positions of "pre-design" systems shall be adjusted so as to compensate for the degraded C/I. The adjustments of nominal positions shall be limited to the range of their respective predetermined arcs;
- b) if compatibility is not obtained through 1.2 a), the order of allotments of "pre-design stage" satellites shall then be subject to change within their predetermined arcs, as defined in [Article 1];
- c) if the C/I [objective is] [objectives are] not achieved, the affected administration may at this stage opt to select other measures than relocation, as described in 1.2 d) below;

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<sup>1</sup> For the allotments with an aggregate carrier-to-interference less than 26 dB, the calculated C/I value based on the Plan will be used. However, through the use of PDA Concept, if this value is improved in the later application of this procedure, the improved value will be used until it reaches up to 26 dB.

- d) If the compatibility is not obtained in trial 1.2 b), and if the agreement in 1.2 c) is not reached, the candidate(s) subject to relocation shall include the systems in the "design" stage, for their predetermined arc as defined in [Article 7].

1.3 The administrations which do not obtain the criteria of 1.1 shall be identified.

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