



**Documents of the World Administrative Radio Conference for the Planning of the
Broadcasting-Satellite Service in Frequency Bands 11.7-12.2 GHz (Regions 2 and 3)
and 11.7-12.5 GHz (Region 1) (WARC SAT-77)**

(Geneva, 1977)

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- This PDF includes Document No. 201 - 300.
- The complete set of conference documents includes Document No. 1 - 388, DL No. 14 – 50 (incomplete), DT No. 1 - 53.

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BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 201-E

7 February 1977

Original : English/French

PLENARY MEETING

Mauritius

STATEMENT

The Government of Mauritius wishes to invite the attention of the Conference to the fact that the Land Territories which include, the Islands of Rodrigues, Agalega, Tromelin and Cargados Carajos Archipelago, comprised in the service area of Mauritius, described in Document No. 16, Addendum No. 1, page 27, are integral parts of the territory over which Mauritius holds full sovereignty. Consequently, any proposal for coverage of any part of the territory of Mauritius by any other state would have to be submitted for approval by the Government of Mauritius.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 202-E

2 February 1977

Original : French

COMMITTEE 4

SUMMARY RECORD
OF THE
SIXTH MEETING OF COMMITTEE 4
(TECHNICAL)

Tuesday, 25 January 1977, at 1400 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

Subject discussed :

Documents Nos.

1. Approval of documents

97, 105(Rev.1), 112,
113(Rev.1), 117(Rev.1),
129, 104, 132, DT/23

1. Approval of documents (Documents Nos. 97, 105(Rev.1), 112, 113(Rev.1), 117(Rev.1), 129, 104, 132, DT/23)

The Chairman, referring to the documents submitted for approval by the Committee, said that Document No. 99(Rev.1) had to be recast and consequently would have to be taken up later. Document No. 112 would need to be added to the agenda as well as Document No. 104, which together with Document No. 97 would need to be discussed in conjunction with Document No. 132.

It was so decided.

Document No. 105(Rev.1) - Radio propagation factors

The Chairman of Working Group 4A stated that the Working Group had approved the above-mentioned document with the following changes :

- paragraph 5, first line : insert the words "as far as possible" after the word "recommends";
- paragraph 6 : add a new sentence at the end reading "The effects of sand and dust storms should be studied by the CCIR and the results submitted to the 1979 WARC".

Document No. 105(Rev.1), as amended, was approved.



Document No. 112 - Choice of polarization to be used in planning for the Broadcasting-Satellite Service

The Chairman stated that after discussing the subject with the Chairman of Committee 5, it was agreed that Committee 4 should frame a recommendation on the choice of polarization for purposes of planning the Broadcasting-Satellite Service. Referring to paragraphs 2 and 3 of the document, he asked the Chairman of Working Group 4B to indicate which two administrations had made reservations about adopting circular polarization.

The Chairman of Working Group 4B replied that it had been the Administration of the United States of America for Region 2 and that of Iran for Region 3.

The Chairman suggested that Document No. 112 be approved and that a text be submitted to the Plenary Meeting stating that Committee 4 recommended the use of circular polarization in Regions 1, 2 and 3 for planning purposes and also mentioning the reservations expressed by the two above-mentioned Administrations.

It was so decided.

Document No. 113(Rev.1) - Out-of-band spurious emissions from broadcasting satellites - Planning considerations

Document No. 113(Rev.1) was approved as it stood.

Document No. 117(Rev.1) - Cross-section of antenna beams

The Chairman of Working Group 4A, introducing the document, stated that in the first formula the figure "27,000/ab" should be replaced by the figure "27,843/ab" and in the second formula the figure "44.3" should be replaced by the figure "44.44". He also proposed the addition at the end of the document of a sentence reading "An antenna efficiency of 55 % is assumed".

Document No. 117(Rev.1), as amended, was approved.

Document No. 129 - Control of output power in the satellite transmitter

The Chairman of Working Group 4A said that in the second line of paragraph 2 the word "controlling" should be replaced by the word "limiting".

It was so agreed.

The delegate of France said that while it was possible to impose an upper limit on the output power of a satellite transmitter, it was difficult to impose a lower limit on it since that would imply regulation of the life of the satellite and there could be no question of doing that. He further felt

that the value of 0.25 dB indicated in paragraph 1 was rather strict. A value of 0.5 dB would be preferable. He therefore proposed that the sign "+" should be deleted and the text of paragraph 1 should be amended as follows: "For planning purposes Committee 4 considers that it should be possible to limit the maximum output power of a satellite transmitter to within 0.5 dB of its nominal value throughout the life of the satellite."

The delegate of Canada said that it was customary to express tolerance limits by the signs + and -. He did not see the value of the amendment proposed by the French delegate.

The delegate of the USSR shared the view expressed by the previous speaker. Moreover, he was opposed to any change in the value of 0.25 dB indicated in paragraph 1 and asked that the paragraph should be approved as it stood.

The delegate of the United States of America supported that proposal and said that he would be glad to provide the French delegation with technical arguments to justify the adoption of that value.

The delegate of the United Kingdom, supported by the delegates of India and the Federal Republic of Germany, thought that the problem might be solved by the following amendment to paragraph 1:

"1. For planning purposes Committee 4 considers that it should be possible to limit the maximum output power of a satellite transmitter to within 0.25 dB of its nominal value ...".

It was so agreed.

Document No. 129, as amended, was approved.

Documents Nos. 104 and 132 - Definitions

Referring to Document No. 104, the Chairman of Working Group 4A said that the Working Group had agreed on only one definition, that of the nominal orbit position (sub-paragraph 3.3), subject to the following amendments: the addition in the first line after the word "geostationary" of the word "satellite"; and the replacement in the second line (of the English text) of the word "the" by "a" and the addition after the word "radiocommunication" of the word "service".

In order to make the contents of Document No. 132 more readily understandable, it would be desirable, in the Final Acts of the Conference, for the definitions appearing in the Annex to the document to be immediately followed by explanatory notes a), b) and c) in the document.

The delegate of France said that a number of amendments to the French text of the document would be necessary. Referring to the last sentence of paragraph a), he said that the Working Group had adopted the definitions mentioned in that paragraph without precise knowledge of Committee 6's requirements. The latter should therefore be consulted, so as to determine whether or not it would be necessary to draw up a "further technical definition".

The Chairman said that he would send a note to Committee 6 to draw its attention to that point and to inform it that, in the Final Acts, explanatory notes a), b) and c) should be placed immediately after the definitions given in the Annex to Document No. 132.

Documents No. 104 (sub-paragraph 3.3) and No. 132, as amended, were approved.

Document No. 97 - Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam

The Chairman of Working Group 4A said that the words "the absolute value of" should be inserted in the first line after the word "planning,". The words "greater than" in the third line should be deleted. Lastly, since a definition of "coverage area" had now been adopted, the "Note" appearing in the document should be deleted and replaced by the following text : "Note : If the beam area is larger than the coverage area the value will be less than 3 dB".

Document No. DT/23 - Note from the Chairman of Committee 4 to Committee 6

The Chairman recalled that the draft Note had been prepared at the request of a certain number of delegations.

The delegate of Australia suggested the addition of the following text at the end of the first paragraph : ", subject to coordination with the other administrations concerned".

The delegate of the USSR supported the Australian delegate's suggestion and further suggested the addition of the words "and taking into account CCIR Recommendation 446-1(Rev.76)".

The delegate of India thought that the text in its present form took full account of the arguments advanced by his delegation. The changes just proposed were related to procedures, a subject which lay within the competence of Committee 6 and not of Committee 4.

The delegate of Turkey recalled the reservations entered by his delegation at the Committee's previous meeting.

The Chairman proposed the setting up of a small group to draft a revised version of Document No. DT/23. The group would be chaired by a member of the delegation of Australia and would be composed of representatives of the delegations of India, France, the USSR, Iran and Turkey.

It was so decided.

The meeting rose at 1515 hours.

Co-Secretaries :

J. RUTKOWSKI/M. AHMAD

The Chairman :

F. KRÁLÍK

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Addendum No. 1 to
Document No. 203-E
11 February 1977
Original : English

COMMITTEE 6

SUMMARY RECORD
OF THE
FIFTH MEETING OF COMMITTEE 6

Page 1

In connection with item 2, Document No. DT/26 is attached hereto,
and Document No. DL/27 was subsequently issued as Document No. 152.

Annex : Document No. DT/26



A N N E X

COMMITTEE 6

FINAL ACTS

As there appears to be some doubt as to the actual content of the Final Acts of the Conference despite the agreement on the principles at the 4th Meeting of Committee 6 the following thoughts on the make up of the final Document are submitted to Committee 6 for consideration.

Plan (s) and Associated Provisions to govern the use of the bands 11.7 - 12.2 GHz in Regions 2 and 3 and 11.7 - 12.5 GHz in Region 1, by the Broadcasting-Satellite Service, and related information

Part I

1. Preamble
2. Definitions (General definitions) ?
3. Indication of scope of Final Acts - what frequency bands ?
which services ?
4. Implementation of Plan (same as "execution of the Agreement" in LF/MF BC Conference R1 + R3)
5. Communication of approval procedures by Members (participants and non participants in Conference)
6. (Abrogation of Res Spa2 - 3 for the band in question) (Resolution ?)
7. Date of entry into force of the Final Acts
8. Duration.

II. Procedures

1. Procedures covering the bringing into use of assignments included in the Plan (s)
 2. Procedures covering modifications to the Plan (s) (Results of Working Group 6A)
 3. Procedures covering the other services vis-à-vis BC/SAT
 - 3.1 Fixed Satellite Service stations
 - 3.2 Terrestrial Services stations
- (Results of Working Group 6B)

III. Plan (s)

1. Plan (s)
2. Annex to the Plan (s) = Technical data used in preparation of the Plan (s) and to be used in the application (?) of the Plan (s) and Associated Provisions and including technical definitions

IV. Sharing criteria

Sharing criteria for the band in question between the services to which the band is allocated (question of harmful interference ?) (separate booklet ?)

V. Protocols

VI. Resolutions (or Recommendations)

- Up-dating Master Register at the date entry into force Final Acts
Associated
- to 1979 WARC, to incorporate Plan and/Provisions in Radio Regulations
- to Administrative Council, to include this question in the agenda of that Conference
Associated
- to enable revision of the Plan and/Provisions only by a competent Administrative Radio Conference in accordance with Article 54 Convention
- covering relations between Regions, if Region 2 does not have a plan (see Radio Regulations No. 117)
- to cover any modification to the Radio Regulations which would be necessary (such as abrogation of Res Spa2 - 3 for the bands in question).
- Transitional Resolution (or Protocol) to cover the situation pending incorporation of the Plan and Associated Provisions in the Radio Regulations
- Resolution relating to the re-arrangement of the Radio Regulations.

R.J. BUNDLE
Chairman of Committee 6

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 203-E
2 February 1977
Original : English

COMMITTEE 6

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 6

Tuesday, 25 January 1977, at 1405 hrs

Chairman : Mr. R.J. BUNDLE (New Zealand)

Subjects discussed :

Documents Nos. :

1. Approval of the summary records of the first, third and fourth meetings of Committee 6
2. Formation of a Working Group to prepare miscellaneous provisions of the Final Acts
3. Reports from Working Groups 6A and 6B

83, 115, 119

101, DT/26, DL/27

1. Approval of the summary records of the first, third and fourth meetings of Committee 6 (Documents Nos. 83, 115, 119)

The summary records contained in the above-mentioned documents were approved.

2. Formation of a Working Group to prepare miscellaneous provisions of the Final Acts (Documents Nos. 101, DT/26, DL/27)

The Chairman drew attention to the proposed terms of reference of the future Working Group 6D set out in Document No. DL/27, adding that the new Working Group would probably have to consider some of the provisions listed in Part I of Document No. DT/26 and certainly the Resolutions or Recommendations contained in Part VI of that document.



The delegate of the United Kingdom said that the word "determined" in the first line of the terms of reference was too strong and proposed that it be replaced by "drafted".

The delegate of the USSR suggested that the word "provisions" would be more appropriate than "procedures" in the first line, since the outline in Document No. DT/26 was generally concerned with the contents of the Final Acts.

The delegate of the Netherlands proposed that the word "decide" in that line be replaced by "examine".

The terms of reference for Working Group 6D, as amended, were approved.

In reply to questions by the delegate of Japan concerning the legal status of the Final Acts, the Deputy Secretary-General explained that in ITU practice the Final Acts of any Conference comprised a record of the understandings and agreements reached at the Conference, duly signed by participants representing their countries, administrations or governments, according to the status of the Conference. Delegations were given an opportunity to enter reservations, provisional or other, with respect to points on which they could not accept the majority view, in a Final Protocol. Thus preliminary commitments were made. It was also the practice of the Union for the Final Acts to have a title such as "Agreement", "Plan and Procedures, etc." or "Partial (or full) Revision of the Radio Regulations" and by a preamble giving the historical background of the Conference and the conditions under which participants would sign the Final Acts. Some Final Acts also contained other Protocols taking the place of Resolutions where that was deemed necessary, Resolutions, Recommendations and Opinions; sometimes transitional provisions were included in Protocols or Resolutions. A feature common to all ITU Conferences was the action taken after the Conference to communicate the approval procedures; the Final Acts of Administrative Conferences usually contained provisions along the lines of Article 42 of the Convention assuring communication of approval to the Secretary-General.

The delegate of the USSR added that the question whether or not the Final Acts of a Conference bore the title "Agreement" clearly made no difference where the binding obligations of the signatories were concerned. In a formal agreement, more stress was laid on the obligations assumed by each country and the instrument might be independent of other acts of the Union, whereas Final Acts as such constituted a joint, less individualized document which, moreover, was appended to or incorporated in the Radio Regulations; nevertheless, the Acts had full legal force under Article 7 of the Torremolinos Convention and had to be approved by the competent organs of Member countries of the Union.

The delegate of the United Kingdom endorsed the statements of the preceding speakers. Under Resolution Spa2 - 2, the Final Acts of the Conference, signed by accredited delegates and approved by the competent government authorities, would constitute a de facto agreement, representing concerted action by the Members of the Union to decide on certain procedures, plans and conditions.

The fact that the Final Acts were not entitled "Agreement" would in no way diminish their authority as a legal instrument.

The Committee formally decided to establish Working Group 6D.

The Chairman called for nominations for the post of Chairman of the Working Group.

The delegate of Singapore, supported by the delegates of Norway, the Federal Republic of Germany and the United Kingdom, proposed Mr. De Zwart of the Netherlands delegation.

Mr. De Zwart (Netherlands) was elected Chairman of Working Group 6D.

3. Reports from Working Groups 6A and 6B

The Chairman of Working Group 6A said that the Group had set up two sub-groups with the terms of reference defined in Document No. DT/17. Sub-Working Group 6A1 had met several times and had established a drafting group which based its work on Documents Nos. 11 and 18. Work on coordination procedures was nearly completed, and the Sub-Group would then take up notification and registration procedures. Sub-Working Group 6A2 had not yet met, since it considered that much of its work depended on guidelines from Working Group 5B and that it should have regard to that of Sub-Working Group 6A1.

The Chairman of Working Group 6B said that his Group had also established two sub-groups. Sub-Working Group 6B1 had completed its work on procedures for the implementation of the Fixed-Satellite Service relative to the Broadcasting-Satellite Service and its report appeared in Document No. DT/19. Sub-Working Group 6B2 on procedures for the implementation of the Terrestrial Service relative to the Broadcasting-Satellite Service had also finished its work and would be producing a report shortly.

The meeting rose at 1505 hours.

The Secretary :

R. PLUSS

The Chairman :

R.J. BUNDLE

BROADCASTING SATELLITE CONFERENCE

Document No. 204(Rev.1)-E

4 February 1977

Original : English

(Geneva, 1977)

COMMITTEE 5

First Report of Working Group 5B

1. Working Group 5B herewith submits the results of its work carried out in accordance with the terms of reference given to it in Document No. 84.
 2. The Working Group had previously approved Document No. 110 which provided the planning principles on which the attachment to this Report is based, and which the Working Group has agreed should be included in the attachment (Annex A).
 3. The attachment contains the procedures which will govern the use of the frequency band, 11.7 to 12.2 GHz, by the Broadcasting-Satellite Service in Region 2 until a detailed plan is drawn up at a future Regional Conference, to be held not later than 1982, and for which the provisions are also set out in the attachment.
 4. The intent of the second paragraph of Section 2 of the Annex is to ensure that, if broadcasting satellites are operated in accordance with the technical characteristics for the Broadcasting-Satellite Service for Region 2 as given in the relevant Appendix of the Final Acts, they may operate without further restriction within the limits of the orbit, referred to in Section 1 of the Annex, for the Broadcasting-Satellite Service.
 5. In the attachment, reference is made several times to an Appendix to the Final Acts of this Conference. The relevant Appendix is that which deals, in so far as Region 2 is concerned, with the sharing criteria and technical characteristics of the Broadcasting-Satellite Service and the other Services with which the frequency band, 11.7 to 12.2 GHz, is shared in Region 2.
- Square brackets have been inserted around the last portion of Section 15 of the attachment, since it was agreed in the Working Group that the guidance of Committee 6 should be sought in regard to the procedures implied therein.

Respectfully submitted,

B.C. BLEVIS
Chairman of Working Group 5B

Annex : 1



A N N E X

PROVISIONS WHICH WILL GOVERN THE BROADCASTING-SATELLITE SERVICE

IN REGION 2 UNTIL A DETAILED PLAN HAS BEEN DRAWN UP

In accordance with the principles set forth in Annex A, the following procedures shall apply in the interim period until the drafting, according to the provisions set out herein, of a detailed plan for the Broadcasting-Satellite Service for Region 2 in the frequency band 11.7 to 12.2 GHz.

1. Space stations in the Broadcasting-Satellite Service shall be located in the following portions of the orbit :

- 75°W to 100°W longitude; for service to Canada, USA and Mexico, the relevant portion is only between 75°W and 95°W longitude,
- 140°W to 170°W longitude.

Space stations in the Broadcasting-Satellite Service could also be located in the remaining portions of the orbit; they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations. As an exception to the foregoing, it is accepted that, for Greenland, a position in the geostationary satellite orbit between 55°W and 60°W may be used for the Broadcasting-Satellite Service as a primary service. All efforts should be made by the administrations concerned to allow for the sharing of a broadcasting satellite for Greenland and the fixed satellites of other administrations in Region 2 in this portion of the arc.

2. Space stations in the Fixed-Satellite Service shall be located in those portions of the orbit other than those referred to in Section 1 above. Such space stations could also be located in the portions of the orbit referred to in Section 1 above; they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations.

2.1 Space stations in the Broadcasting-Satellite Service located in the portions of the orbit referred to in Section 1 above and space stations in the Fixed-Satellite Service located in the remaining portions of the orbit shall be operated in such a way that no unacceptable interference is caused by stations of one service to stations of other services. The level of unacceptable interference shall be determined in accordance with the latest CCIR Recommendations and Appendix /_ of the Final Acts_/ as a guide. Notwithstanding the above, broadcasting-satellite space stations may be located up to the edge of the portion of the orbit referred to in Section 1, provided that such stations are in accordance with the relevant technical characteristics for Region 2 outlined in Appendix /_ of the Final Acts_/.

3. Prior to the Regional Conference, referred to in Section 7 below, systems in the Broadcasting-Satellite Service shall be experimental and shall be operated in accordance with the sharing criteria and technical characteristics contained in Appendix /_ of the Final Acts_/.

4. Administrations may implement systems which utilize values for the technical characteristics different than the relevant values of Appendix [] of the Final Acts [], provided that such action does not create interference to operational or planned systems of other administrations in excess of that determined in accordance with Appendix [] of the Final Acts [].
5. The introduction of systems in the Fixed-Satellite Service shall be in accordance with the relevant provisions of the Radio Regulations and, in particular, with Article 9A.
6. Space systems in the frequency band 11.7 to 12.2 GHz shall use, to the maximum extent technically and economically practicable, available techniques in order to make most efficient use of the geostationary orbit and frequency spectrum. Examples of such techniques are described in Annex B.
- 7.1 A Regional Administrative Radio Conference*) shall be held not later than 1982 for the purpose of carrying out detailed planning for the Broadcasting-Satellite and Fixed-Satellite Services, as set forth in the following paragraphs.
- 7.2 The said Regional Administrative Radio Conference shall draw up a detailed plan for the orbit-spectrum available for the Broadcasting-Satellite Service in the 11.7 to 12.2 GHz band. The plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the Broadcasting-Satellite Service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels for the operation of the Broadcasting-Satellite Service (4). Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account.
- 7.3 Planning shall be based on individual reception, but each administration may use the reception system which meets its requirements best, namely : individual, community, or both. Account shall also be taken of the decisions of the World Administrative Radio Conferences (Geneva, 1977 and 1979) and of the relevant Recommendations of the CCIR in the case of parameters covered by that body's studies and research.
- 7.4 When planning the Broadcasting-Satellite Service, it shall be borne in mind that systems should be designed with a view to reduce to a minimum technical differences and incompatibilities with the systems of other Regions.
- 7.5 The Conference shall also take into account on an equitable basis the needs of the Fixed-Satellite Service to which this frequency band is also allocated in Region 2.

8. All administrations in Region 2 shall submit their Broadcasting-Satellite Service requirements to the IFRB not later than one year before the start of the Regional Conference responsible for planning this service in Region 2. These requirements may be updated as required by each administration. "Requirements" are understood to mean the number and boundaries of service areas and the number of channels requested for each of them. Six months before the deadline for submitting requirements, the IFRB shall remind administrations of the need to submit them by means of a circular-letter and/or telegram.

9. No systems existing or planned prior to the implementation of any detailed plan such as referred to above shall cause interference to any systems operating in accordance with such a plan.

10. Existing or previously planned broadcasting-satellite systems shall not necessarily be recognized in the drawing up of the detailed plan for the Broadcasting-Satellite Service in the 11.7 to 12.2 GHz band in Region 2. Consequently, the installation or planning of such a system by an administration prior to the drawing up of the said plan shall not confer upon that system any rights or recognition.

11. Until such time as a detailed plan may be adopted for the Broadcasting Satellite Service, the provisions of Spa2 - 3 shall continue to apply for Region 2 to the Broadcasting-Satellite Service in the frequency band 11.7 to 12.2 GHz / , except that for receiving earth stations in the Broadcasting-Satellite Service, the particulars in Section C of Appendix 1A to the Radio Regulations, referred to in 2.1 of Spa2 - 3, may describe a typical station indicating the related service area of the associated space station /.

Annex A

PLANNING PRINCIPLES

The following principles have been used in the development of the provisions governing the introduction of space services in the frequency band, 11.7 to 12.2 GHz, in Region 2 :

1. Equality for allocated services

The 11.7 to 12.2 GHz band is allocated by Article 5 of the Radio Regulations to Broadcasting-Satellite, Fixed-Satellite and Terrestrial Services on an equal, primary basis. Each Administration within Region 2 has the right to decide for itself which of these Services are to be implemented within its own territory.

2. Equal rights for Regions sharing the usable geostationary orbit

When any segment of the geostationary orbital arc is visible and therefore usable by more than one Region, in accordance with the Convention, Radio Regulations and the Resolutions in force, it shall be shared equitably between the Regions concerned so that the burden of sharing falls equally on those Regions. (This principle does not affect any sovereign rights which might exist.)

3. Recognition of national requirements

All Administrations of Region 2 shall take into consideration the national requirements which have been presented or shall be presented in the future.

4. Equitable rights of access to the geostationary orbit spectrum resource

Subject to the provisions of the Convention, Radio Regulations, and the Resolutions in force, it is recognized that all Administrations have a right to access the geostationary orbit spectrum resource in order to fulfill their requirements. (This principle does not affect any sovereign rights which might exist.)

5. Flexible planning approach*)

The Plan adopted must be sufficiently flexible to allow for : future technical developments, definition of future requirements, changes in existing or stated requirements, requirements by Administrations not represented at the Conference, further information on propagation data, and diverse system design approaches. The Plan can be modified only by a competent administrative radio conference.

6. Efficient geostationary orbit and spectrum utilization

The Plan shall use, to the maximum extent technically and economically practicable, available techniques in order to make most efficient use of the geostationary orbit and frequency spectrum to fulfill the Region's requirements, and the individual requirements of each Administration.

7. Consultations among Administrations

Administrations shall consult all other Administrations affected or concerned in planning for the implementation of systems in the 11.7 to 12.2 GHz band.

8. Reception

The plan shall have as a basis individual reception, although each Administration may choose the reception system that it finds most suitable according to its requirements, namely individual, community, or both.

*) Paragraph 5 does not imply recognition of systems existing prior to the implementation of the Plan.

Annex B

Spectrum-orbit utilization

Since sharing the spectrum-orbit resource in Region 2 between the Broadcasting-Satellite Service and the Fixed-Satellite Service on an equal basis is inherently difficult and may impose some restrictions on both services, it is important that the technical parameters be chosen, and the techniques for efficient spectrum-orbit utilization be applied, in such a way that both space services will benefit as much as possible.

The following techniques are among those identified as leading to more efficient spectrum-orbit utilization, and should therefore be applied to the maximum extent, technically and economically, possible, consistent with the capability of systems to fulfil the requirements which they were designed to satisfy.

1. Clustering

Extensive analyses have shown that orbit-utilization is improved when satellites are grouped according to the sensitivity to interference, and the potential for generating interference, of the system of which they are a part. In most cases, this means that satellites of similar characteristics should be grouped in the same part of the orbit.

2. Cross-polarization

The proper use of cross-polarization can significantly improve spectrum-orbit utilization by providing additional isolation between potentially interfering systems.

3. Crossed-beam geometry

The principle of crossed-beam geometry is that adjacent satellites should not serve adjacent service areas. In that way, discrimination from both the satellite and the earth station antennae can be utilized to achieve maximum isolation between systems.

4. Paired service areas

The principle of crossed-beam geometry can be extended : If service areas are far enough apart, then the satellite antenna discrimination alone may be sufficient to permit satellites serving these widely separated service areas to be colocated in the orbit, leading to practical doubling of the orbit capacity.

5. Frequency interleaving

The mutual interference between channels in different systems is usually a maximum when the two carrier frequencies coincide. When channelling design is such that frequencies are interleaved, or more generally such that coincidence of carrier frequencies is avoided, mutual interference can be greatly reduced in many cases.

6. Minimum satellite spacings

It is obvious that, for maximum orbit utilization, satellites should be placed as close to each other as possible, consistent with keeping the mutual interference to acceptable levels.

7. Satellite antenna discrimination

The discrimination in the sidelobes of the satellite antenna determines how much isolation exists between beams serving non-overlapping or non-adjacent service areas. To achieve maximum isolation, all efforts should be made to improve the discrimination by technological advances in antenna design.

8. Earth-station antenna discrimination

The sidelobe discrimination of the earth-station antenna determines how much isolation is obtained from satellite spacing. To achieve maximum isolation, every effort should be made to improve the discrimination by taking advantage of technological advances in antenna design.

9. Minimizing e.i.r.p. differences

The interference caused by relatively high-power satellites (broadcasting or certain types of fixed satellites) to the earth-station receivers of relatively low-power satellite systems is directly proportional to the difference between their e.i.r.p.'s. Sharing among such systems is greatly facilitated if this difference is kept as small as possible, consistent with the requirements.

10. Realistic quality and reliability objectives

The quality and reliability objectives for a TV channel (or any channel in the Fixed-Satellite Service) have a significant effect on spectrum-orbit utilization. If the objectives are set unnecessarily high, the capacity of the orbit is decreased. Quality and reliability objectives should be set no higher than are absolutely necessary.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to
Document No. 204-E
3 February 1977

COMMITTEE 5

Report by Working Group 5B

1. Annex A to Document No. 204 should be replaced by the attached Annex.
2. On page 2 of Document No. 204, the reference to "[Document No. 110]" in the second line in the English text (first line of the Spanish and French texts) should be deleted.
3. In the Spanish text (a) in the title, replace "Suposiciones" by "Disposiciones".

(b) in the third line of Section 1, a semi-colon should appear between "Oeste" and "para", and in the following line, a comma should follow "México".

(c) in Section 9, in the third line after "o communal" the following words should be added "or both".
4. In the French text, in the third line of Section 1, a semi-colon should appear between "longitude" and "pour le Canada".

Annex : 1



Annex A

PLANNING PRINCIPLES

The following principles have been used in the development of the provisions governing the introduction of space services in the frequency band, 11.7 to 12.2 GHz, in Region 2 :

1. Equality for allocated services

The 11.7 to 12.2 GHz band is allocated by Article 5 of the Radio Regulations to Broadcasting-Satellite, Fixed-Satellite and Terrestrial Services on an equal, primary basis. Each Administration within Region 2 has the right to decide for itself which of these Services are to be implemented within its own territory.

2. Equal rights for Regions sharing the usable geostationary orbit

When any segment of the geostationary orbital arc is visible and therefore usable by more than one Region, in accordance with the Convention, Radio Regulations and the Resolutions in force, it shall be shared equitably between the Regions concerned so that the burden of sharing falls equally on those Regions. (This principle does not affect any sovereign rights which might exist.)

3. Recognition of national requirements

All Administrations of Region 2 shall take into consideration the national requirements which have been presented or shall be presented in the future.

4. Equitable rights of access to the geostationary orbit spectrum resource

Subject to the provisions of the Convention, Radio Regulations, and the Resolutions in force, it is recognized that all Administrations have a right to access the geostationary orbit spectrum resource in order to fulfill their requirements. (This principle does not affect any sovereign rights which might exist.)

Annex to Document No. 204-E
Page 6

5. Flexible planning approach*)

The Plan adopted must be sufficiently flexible to allow for : future technical developments, definition of future requirements, changes in existing or stated requirements, requirements by Administrations not represented at the Conference, further information on propagation data, and diverse system design approaches. The Plan can be modified only by a competent administrative radio conference.

6. Efficient geostationary orbit and spectrum utilization

The Plan shall use, to the maximum extent technically and economically practicable, available techniques in order to make most efficient use of the geostationary orbit and frequency spectrum to fulfill the Region's requirements, and the individual requirements of each Administration.

7. Consultations among Administrations

Administrations shall consult all other Administrations affected or concerned in planning for the implementation of systems in the 11.7 to 12.2 GHz band.

8. Reception

The plan shall have as a basis individual reception, although each Administration may choose the reception system that it finds most suitable according to its requirements, namely individual, community, or both.

*) Paragraph 5 does not imply recognition of systems existing prior to the implementation of the Plan.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 204-E

2 February 1977

Original : English

COMMITTEE 5

Report of Working Group 5B

1. Working Group 5B herewith submits the results of its work carried out in accordance with the terms of reference given to it in Document No. 84.
2. The Working Group had previously approved Document No. 110 which provided the planning principles on which the attachment to this Report is based, and which the Working Group has agreed should be included in the attachment (Annex A).
3. The attachment contains the procedures which will govern the use of the frequency band, 11.7 to 12.2 GHz, by the Broadcasting-Satellite Service in Region 2 until a detailed plan is drawn up at a future Regional Conference, to be held not later than 1982, and for which the provisions are also set out in the attachment.
4. In the attachment, reference is made several times to an Appendix to the Final Acts of this Conference. The relevant Appendix is that which deals, in so far as Region 2 is concerned, with the sharing criteria and technical characteristics of the Broadcasting-Satellite Service and the other Services with which the frequency band, 11.7 to 12.2 GHz, is shared in Region 2.

Square brackets have been inserted around the last portion of Section 15 of the attachment, since it was agreed in the Working Group that the guidance of Committee 6 should be sought in regard to the procedures implied therein.

The delegation of the United States of America has requested that I advise Committee 5 that it has so far reserved its judgement in respect of the wording of Section 2 of the attachment.

Respectfully submitted,

B.C. BLEVIS
Chairman of Working Group 5B

Annex : 1



A N N E X

PROVISIONS WHICH WILL GOVERN THE BROADCASTING-SATELLITE SERVICE
IN REGION 2 UNTIL A DETAILED PLAN HAS BEEN DRAWN UP

In accordance with the principles set forth in Annex A / Document No. 110 /, the following procedures shall apply in the interim period until the drafting according to the provisions set out herein, of a detailed plan for the Broadcasting-Satellite Service for Region 2 in the frequency band 11.7 to 12.2 GHz.

1. Space stations in the Broadcasting-Satellite Service shall be located in the following portions of the orbit :

- 75°W to 100°W longitude; for service to Canada, USA and Mexico, the relevant portion is only between 75°W and 95°W longitude,
- 140°W to 170°W longitude.

Space stations in the Broadcasting-Satellite Service could also be located in the remaining portions of the orbit; they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations. As an exception to the foregoing, it is accepted that, for Greenland, a position in the geostationary satellite orbit between 55°W and 60°W may be used for the Broadcasting-Satellite Service as a primary service. All efforts should be made by the administrations concerned to allow for the sharing of a broadcasting satellite for Greenland and the fixed satellites of other administrations in Region 2 in this portion of the arc.

2. Space stations in the Fixed-Satellite Service shall be located in those portions of the orbit other than those listed in paragraph 1 above and shall be operated in such a way that unacceptable interference is not caused to, nor received from, services which may be provided by space stations in the Broadcasting-Satellite Service, which may be located in the portions of the orbit listed in paragraph 1 above. The level of unacceptable interference shall be determined by agreement between the administrations concerned using the latest CCIR Recommendations and Appendix /_ of the Final Acts_/ as a guide. However, this protection to the Broadcasting-Satellite Service is afforded only to the extent that the applicable criteria for Region 2 outlined in Appendix /_ of the Final Acts_/ are met.

Space stations in the Fixed-Satellite Service could also be located in the portions of the orbit listed in paragraph 1 above; they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations.

3. Prior to the Regional Conference, referred to in Section 7 below, systems in the Broadcasting-Satellite Service shall be experimental and shall be operated in accordance with the sharing criteria and technical characteristics contained in Appendix /_ of the Final Acts_/.

4. Administrations may implement systems which utilize values for the technical characteristics different than the relevant values of Appendix /_ of the Final Acts /, provided that such action does not create interference to operational or planned systems of other administrations in excess of that determined in accordance with Appendix /_ of the Final Acts /.

5. The introduction of systems in the Fixed-Satellite Service shall be in accordance with the relevant provisions of the Radio Regulations and, in particular, with Article 9A.

6. Space systems in the frequency band 11.7 to 12.2 GHz shall use, to the maximum extent technically and economically practicable, available techniques in order to make most efficient use of the geostationary orbit and frequency spectrum. Examples of such techniques are described in Annex B.

7. A Regional Administrative Radio Conference*) shall be held not later than 1982 for the purpose of carrying out detailed planning for the Broadcasting-Satellite and Fixed-Satellite Services, as set forth in the following paragraphs.

8. The said Regional Administrative Radio Conference shall draw up a detailed plan for the orbit-spectrum available for the Broadcasting-Satellite Services in the 11.7 to 12.2 GHz band. The plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the Broadcasting-Satellite Service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels for the operation of the Broadcasting-Satellite Service (4). Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account.

9. Planning shall be based on individual reception, but each administration may use the reception system which meets its requirements best, namely : individual, community, or both. Account shall also be taken of the decisions of the World Administrative Radio Conferences (Geneva, 1977 and 1979) and of the relevant Recommendations of the CCIR in the case of parameters covered by that body's studies and research.

10. When planning the Broadcasting-Satellite Service, it shall be borne in mind that systems should be designed with a view to reduce to a minimum technical differences and incompatibilities with the systems of other Regions.

11. The Conference shall also take into account on an equitable basis the needs of the Fixed-Satellite Service to which this frequency band is also allocated in Region 2.

*) The Administrative Council is invited to make the necessary preparations for this Conference using the provisions as set out herein as a basis for drawing up the relevant Resolutions and draft terms of reference.

12. All administrations in Region 2 shall submit their Broadcasting-Satellite Service requirements to the IFRB not later than one year before the start of the Regional Conference responsible for planning this service in Region 2. These requirements may be updated as required by each administration. "Requirements" are understood to mean the number and boundaries of service areas and the number of channels requested for each of them. Six months before the deadline for submitting requirements, the IFRB shall remind administrations of the need to submit them by means of a circular-letter and/or telegram.

13. No systems existing or planned prior to the implementation of any detailed plan such as referred to above shall cause interference to any systems operating in accordance with such a plan.

14. Existing or previously planned broadcasting-satellite systems shall not necessarily be recognized in the drawing up of the detailed plan for the Broadcasting-Satellite Service in the 11.7 to 12.2 GHz band in Region 2. Consequently, the installation or planning of a system by an administration prior to the drawing up of the said plan shall not confer upon that system any rights or recognition.

15. Until such time as a detailed plan may be adopted for the Broadcasting Satellite Service, the provisions of Spa2 - 3 shall continue to apply for Region 2 to the Broadcasting-Satellite Service in the frequency band 11.7 to 12.2 GHz / , except that for receiving earth stations in the Broadcasting-Satellite Service, the particulars in Section C of Appendix 1A to the Radio Regulations, referred to in 2.1 of Spa2 - 3, may describe a typical station indicating the related service area of the associated space station_/_.

Annex A

Document No. 110-E
20 January 1977
Original : English/
Spanish

COMMITTEE 5

Report of Working Group 5B to Committee 5

PLANNING PRINCIPLES

The following principles have been adopted by Working Group 5B for guidance in development of a plan of Region 2. This document is also referred to Working Group 5A for its information.

1. Equality for allocated services

The 11.7 to 12.2 GHz band is allocated by Article 5 of the Radio Regulations to Broadcasting-Satellite, Fixed-Satellite and Terrestrial Services on an equal, primary basis. Each Administration within Region 2 has the right to decide for itself which of these Services are to be implemented within its own territory.

2. Equal rights for Regions sharing the usable geostationary orbit

When any segment of the geostationary orbital arc is visible and therefore usable by more than one Region, in accordance with the Convention, Radio Regulations and the Resolutions in force, it shall be shared equitably between the Regions concerned so that the burden of sharing falls equally on those Regions. (This principle does not affect any sovereign rights which might exist.)

3. Recognition of national requirements

All Administrations of Region 2 shall take into consideration the national requirements which have been presented or shall be presented in the future.

4. Equitable rights of access to the geostationary orbit spectrum resource

Subject to the provisions of the Convention, Radio Regulations, and the Resolutions in force, it is recognized that all Administrations have a right to access the geostationary orbit spectrum resource in order to fulfill their requirements. (This principle does not affect any sovereign rights which might exist.)

5. Flexible planning approach*)

The Plan adopted must be sufficiently flexible to allow for : future technical developments, definition of future requirements, changes in existing or stated requirements, requirements by Administrations not represented at the Conference, further information on propagation data, and diverse system design approaches. The Plan can be modified only by a competent administrative radio conference.

6. Efficient geostationary orbit and spectrum utilization

The Plan shall use, to the maximum extent technically and economically practicable, available techniques in order to make most efficient use of the geostationary orbit and frequency spectrum to fulfill the Region's requirements, and the individual requirements of each Administration.

7. Consultations among Administrations

Administrations shall consult all other Administrations affected or concerned in planning for the implementation of systems in the 11.7 to 12.2 GHz band.

8. Reception

The plan shall have as a basis individual reception, although each Administration may choose the reception system that it finds most suitable according to its requirements, namely individual, community, or both.

B.C. BLEVIS
Chairman of Working Group 5B

*) Paragraph 5 does not imply recognition of systems existing prior to the implementation of the Plan.

Annex B

Spectrum-orbit utilization

Since sharing the spectrum-orbit resource in Region 2 between the Broadcasting-Satellite Service and the Fixed-Satellite Service on an equal basis is inherently difficult and may impose some restrictions on both services, it is important that the technical parameters be chosen, and the techniques for efficient spectrum-orbit utilization be applied, in such a way that both space services will benefit as much as possible.

The following techniques are among those identified as leading to more efficient spectrum-orbit utilization, and should therefore be applied to the maximum extent, technically and economically, possible, consistent with the capability of systems to fulfil the requirements which they were designed to satisfy.

1. Clustering

Extensive analyses have shown that orbit-utilization is improved when satellites are grouped according to the sensitivity to interference, and the potential for generating interference, of the system of which they are a part. In most cases, this means that satellites of similar characteristics should be grouped in the same part of the orbit.

2. Cross-polarization

The proper use of cross-polarization can significantly improve spectrum-orbit utilization by providing additional isolation between potentially interfering systems.

3. Crossed-beam geometry

The principle of crossed-beam geometry is that adjacent satellites should not serve adjacent service areas. In that way, discrimination from both the satellite and the earth station antennae can be utilized to achieve maximum isolation between systems.

4. Paired service areas

The principle of crossed-beam geometry can be extended : If service areas are far enough apart, then the satellite antenna discrimination alone may be sufficient to permit satellites serving these widely separated service areas to be colocated in the orbit, leading to practical doubling of the orbit capacity.

5. Frequency interleaving

The mutual interference between channels in different systems is usually a maximum when the two carrier frequencies coincide. When channelling design is such that frequencies are interleaved, or more generally such that coincidence of carrier frequencies is avoided, mutual interference can be greatly reduced in many cases.

6. Minimum satellite spacings

It is obvious that, for maximum orbit utilization, satellites should be placed as close to each other as possible, consistent with keeping the mutual interference to acceptable levels.

7. Satellite antenna discrimination

The discrimination in the sidelobes of the satellite antenna determines how much isolation exists between beams serving non-overlapping or non-adjacent service areas. To achieve maximum isolation, all efforts should be made to improve the discrimination by technological advances in antenna design.

8. Earth-station antenna discrimination

The sidelobe discrimination of the earth-station antenna determines how much isolation is obtained from satellite spacing. To achieve maximum isolation, every effort should be made to improve the discrimination by taking advantage of technological advances in antenna design.

"9. Minimizing e.i.r.p. differences

The interference caused by relatively high-power satellites (broadcasting or certain types of fixed satellites) to the earth-station receivers of relatively low-power satellite systems is directly proportional to the difference between their e.i.r.p.'s. Sharing among such systems is greatly facilitated if this difference is kept as small as possible, consistent with the requirements."

11. Realistic quality and reliability objectives

The quality and reliability objectives for a TV channel (or any channel in the Fixed-Satellite Service) have a significant effect on spectrum-orbit utilization. If the objectives are set unnecessarily high, the capacity of the orbit is decreased. Quality and reliability objectives should be set no higher than are absolutely necessary.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 205-E

2 February 1977

Original : Spanish

Spain

NOTE BY THE SPANISH DELEGATION TO THE
BROADCASTING-SATELLITE CONFERENCE

In view of the Note by the French delegation concerning the Principality of Andorra, the Spanish delegation, in accordance with its Government's instructions, wishes to state the following :

1. Sovereignty in the Principality of Andorra is exercised jointly by two co-princes having equal competence both for internal and external affairs.

For this reason, the Spanish delegation cannot accept the statement made by the French delegation to the effect that the French co-prince is alone empowered to handle the international representation of Andorra, in disregard of the sovereign rights of the other co-prince.

2. The Spanish delegation does not wish, and never has wished, to raise a legal and political question foreign to the competence and purposes of this Conference. In its view, the problem is to find a formula safeguarding the broadcasting-satellite requirements of the Principality of Andorra at the purely technical level and within the purview of the Conference, leaving aside the legal and political question of Andorra's international representation.

3. The Spanish delegation enters a formal reservation to the above-mentioned French statement claiming exclusive representation of the Principality of Andorra and reserves Spain's right to take, as appropriate, such action as it may consider juridically necessary in view of circumstances arising out of this question,

The Spanish delegation requests that this Note should receive identical treatment with that accorded to the French Note.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 206-E

2 February 1977

Original : English

PLENARY MEETING

Morocco, Tunisia, Mauritania, Egypt, Sudan, Syria, Lebanon, Jordan,
Yemen A.R., Yemen (P.D.R. of), Kuwait, Qatar, United Arab Emirates,
Bahrain, Oman, Pakistan, Malaysia, Bangladesh, Indonesia, Uganda,
Senegal, Chad, Niger

ISLAMIC PROGRAMME COVERAGE

All the Islamic countries mentioned above give their full support to requirements already submitted and based upon the proposal of the Administration of the Kingdom of Saudi Arabia for the allocation of a single channel for each country, apart from their respective requirements, for the Islamic programme to be beamed over their respective territories coinciding with one of their national beams.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 207-E

2 February 1977

Original : English

PLENARY MEETING

Note by the Chairman of the Conference

REQUIREMENTS TO BE TAKEN INTO CONSIDERATION FOR
PLANNING IN REGIONS 1 AND 3

In the light of the discussions at the fifth plenary meeting on 2 February and subsequent discussions with representatives of delegations concerned, it is proposed that the planning proceed on the basis of the List of Requirements contained in Document No. 103(Rev.2) and its Corrigenda, taking into consideration the possible further reductions indicated in written comments received to date.

It is further proposed that the Chairman of the Conference pursue consultations with a small number of delegations with a view to obtaining a more balanced distribution of channels among countries in the geographical areas concerned. As a result of these consultations, it is envisaged that the difficulties in planning will be reduced.

Ib LØNBERG
Chairman of the Conference



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 208-E
2 February 1977
Original : English

WORKING GROUP 5A and
COMMITTEE 5

INTENTIONAL EXTENDED SERVICE AREA

1. Pursuant to a decision of Committee 5 (Planning), information is provided below on agreement reached concerning intentional extended service area (see No. 428A of the Radio Regulations).

2. The situation in this connection resulting from successful negotiations involving reductions in service areas is shown below.

Country symbol and Serial No. of the Requirement	Agreement has been reached with :
CVA 0085 D 0087	F, I, MCO SUI
DNK 0090	FNL, NOR, S
DNK 0091 FNL 0103 FNL 0104	ISL S DNK, NOR, S
ISL 0050 MCO 0117	DNK F
NOR 0121	DNK, FNL, S
S 0139	DNK, FNL, NOR
TUN 0272	ALG, LBY, MRC, MRT

Any remaining intentional extended service areas which may come to light should be reduced in conformity with the decision of Committee 5 (Planning) (see Document No. 123, paragraph 5).

A. PETTI
Chairman
Committee 5 (Planning)



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 209-E

2 February 1977

Original : English

Saudi Arabia

The Government of Kingdom of Saudi Arabia has initiated consultations with a number of Governments of Islamic countries on the subject of the inclusion in the Plan of multiple coverage beams to cover the concerned countries interested in receiving religious programmes from Saudi Arabia.

According to the Radio Regulations No. 428A, the Saudi Arabian Delegation has obtained prior agreement from the Delegations mentioned below to cover their countries :

Bahrain, Egypt, Indonesia, Jordan, Kuwait, Lebanon, Malaysia, Morocco, Mauritania, Niger, Oman, Pakistan, Tunisia, United Arab Emirates, Uganda, Yemen A.R., Yemen (PDR of), Qatar, Bangladesh, Chad, Senegal.

The parameters or characteristics of these beams are to be defined after the orbital position and polarization ETC of the requirements of the above-mentioned Delegation submitted to the Conference are selected and indicated finally in the initial draft of the Plan. For this reason the Delegation of Saudi Arabia is not at present in a position to communicate to the Conference the exact characteristics of the beams in the requirements of Saudi Arabia already submitted under 0003 and 0275 which are for national coverage only. The Delegation of Saudi Arabia will submit the requirements of intentional coverage for Islamic Religious programmes in the territories of the concerned countries, together with the list of such countries and the written prior agreements obtained by the Saudi Arabian Delegation before 6 p.m. of Friday 28 January 1977.

As some more delegations are expected to give their agreement the Delegation of Saudi Arabia reserves the right to submit further modifications to these requirements.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 210-E

3 February 1977

Original: English

COMMITTEE 8

First series of texts adopted by Committee 6

Relating to the procedures for the modifications to the [Plan],
the notification, examination and recording in the Master Register of
Frequency Assignments to Space Stations in the Broadcasting-Satellite Service.

These procedures apply to those countries in Regions covered by
a [Plan].

R.J. BUNDLE
Chairman of Committee 6



Article 4

PROCEDURE FOR MODIFICATIONS TO THE PLAN

4.1 When a Contracting Member Member Administration intends to make a modification to the Plan, i.e. either

- to change the characteristics of any of its frequency assignments to a space station in the Broadcasting-Satellite Service shown in the Plan, or for which the procedures in this Article have been successfully applied, whether or not the station has been brought into use, or
- to include in the Plan a new frequency assignment to a space station in the Broadcasting-Satellite Service, or
- to cancel a frequency assignment to a space station in the Broadcasting-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 Agreement these Final Acts).

4.2 In the remainder of the present Article, the term "frequency assignment in accordance with the Agreement Final Acts" means any frequency assignment appearing in the Plan or for which the procedure of this Article has been successfully applied.

4.3 Proposed changes to a frequency assignment in accordance with the
Agreement Final Acts or the inclusion in the Plan of a
new frequency assignment

4.3.1 Any Administration proposing a change in the characteristics of a frequency assignment in accordance with the Agreement Final Acts or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those Administrations :

- having a frequency assignment to a space station in the Broadcasting-Satellite Service in the same channel or an adjacent channel in accordance with the Plan, or in respect of which, modifications to the Plan have been published by the Board in accordance with the provision of this Article ; or

* The expression "frequency assignment to a space station" wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

- having no frequency assignment in the Broadcasting-Satellite Service in the channel concerned but in whose territory the power flux-density value exceeds the prescribed limit as a result of the proposed modification; or
- having a frequency assignment in the band 11.7 - 12.2 GHz to a space station in the Fixed-Satellite Service recorded in the Master Register, or which has been coordinated or is being coordinated under the provisions of No. 639AJ of the Radio Regulations; or those of paragraph 2.1 of Article DT/42;

which are considered to be affected. A frequency assignment is considered to be affected when the limits shown in Appendix A are exceeded.

4.3.2 An Administration intending to make a modification to the Plan shall send to the Board not earlier than five years, but not later than 18 months, before the date on which the assignment is to be brought into use the relevant information listed in Appendix B.

4.3.2.1 Where as a result of the intended modification the limits defined in Appendix A are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.3.2. The Board shall then publish this information in a special section of its weekly circular.

4.3.2.2 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 in 4.3.1 as well as of those with whom agreement has already been reached.

4.3.3 The Board shall determine on the basis of Appendix A the Administrations whose frequency assignments are considered to be affected within the meaning of 4.3.1. The Board shall include the names of those Administrations with the information received under 4.3.2.2 and shall publish the complete information in a special section of its weekly circular. The results of these calculations shall be sent immediately by the Board to the Administration proposing the modification to the Plan.

4.3.4 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 also send them the results of its calculations.

4.3.5 Any Administration which considers that it should have been included in the list of Administrations whose services are considered to be affected may, giving the technical basis for so doing, request the Board to include its name. The Board shall study this request on the basis of Appendix A and shall send a copy of the request with an appropriate recommendation to the Administration proposing the modification to the Plan.

Note : Appendix A contains the p.f.d. limits

Appendix B lists the basic characteristics of the frequency assignments.

4.3.6 Any change in a frequency assignment in accordance with the Agreement Final Acts or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in Appendix A shall be subject to the agreement of all affected Administrations.

4.3.7 Either the Administration seeking agreement, or the Administration with which agreement is sought, may request any additional information of a technical character it considers necessary. The Board shall be informed of such requests.

4.3.8 Comments from Administrations on the information published pursuant to 4.3.3 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.

4.3.9 An Administration which has not notified its comments either to the Administration seeking agreement or to the Board within a period of 120 days following the date of the weekly circular referred to in 4.3.2.1 or 4.3.3 shall be understood to have agreed to the proposed change. This time limit may be extended by 80 days in the case of an Administration which has requested additional information in response to 4.3.7 or of an Administration which has requested the assistance of the Board in conformity with 4.3.17. In the latter case the Board shall inform the Administrations concerned of this request.

4.3.10 If in seeking agreement an Administration makes changes in its initial proposal, it shall again apply the provisions of 4.3.2 and the consequent procedure with respect to any other Administration whose services might be affected due to changes made to the initial proposal.

4.3.11 If no comments have been received on expiry of the periods specified in 4.3.9 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 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.

4.3.12 The agreement of the Administrations affected can also be obtained in accordance with this Article, for a specified period.

4.3.13 When the proposed modification to the Plan involves developing countries Administrations shall seek all practicable solutions conducive to economical development of the broadcasting-satellite system of these countries.

4.3.14 The Board shall publish in a special section of its weekly circular the information received under 4.3.11 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 accordance with the Agreement Final Acts.

4.3.15 When an Administration proposing to change 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.

4.3.16 If no agreement is reached between the Administrations concerned, the Board shall make 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 it may be able to offer for the solution of the problem.

4.3.17 Any 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.

4.3.18 The relevant provisions of Article 5 of this Agreement these Final Acts shall be applied when frequency assignments are notified to the Board.

4.4 Cancellation of frequency assignments

When a frequency assignment in accordance with the Agreement Final Acts is released, 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.

4.5 Master copy of the Plan

4.5.1 The Board shall maintain an up-to-date master copy of the Plan taking account of the application of the procedure specified in 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.

4.5.2 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 as and when the circumstances justify.

Article 5

NOTIFICATION, EXAMINATION AND RECORDING IN THE
MASTER REGISTER OF FREQUENCY ASSIGNMENTS TO SPACE STATIONS
IN THE BROADCASTING-SATELLITE SERVICE

5.1 Notification

5.1.1 Whenever an Administration intends to bring into use a frequency assignment to a space station in the Broadcasting-Satellite Service it shall notify this frequency assignment to the Board. The notifying Administration shall apply for this purpose the following provisions.

5.1.2 For any notification under paragraph 5.1.1 an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A³⁾, 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.

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. The notice must reach the Board in any case not later than ninety days¹ before this date.

5.1.4 Any frequency assignment, the notice of which reaches the Board after the applicable period specified in paragraph 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 paragraph 5.1.3.

5.1.5 Any notice made under paragraph 5.1.1 which does not contain the characteristics specified in Appendix 1A³⁾ shall be returned by the Board immediately by airmail to the notifying Administration with the reasons therefore.

5.1.6 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in the weekly circular referred to in No. 497 of the Radio Regulations*, 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.

5.1.3.1 ¹ The notifying Administration shall take this limit into account when deciding, where appropriate, to initiate the procedure for modifications to the Plan.

Note: Appendix 1A in paragraph 5.1.2 corresponds with Appendix B in Article 4, paragraph 4.3.2.

3) These characteristics and the Appendix are to be established by the Conference.

* or the corresponding number of the Radio Regulations currently into force.

5.1.8 Complete notices shall be considered by the Board in the order of their receipt. 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.

5.2 Examination and recording

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 and Appendix ..¹⁾ (with the exception of those relating to conformity with the Plan);
- b) with respect to its conformity with the Plan.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1, the frequency assignment of a Contracting Member / Member / Administration shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d of the Master Register. In relations between Contracting Members / Members / Administrations all frequency assignments brought into use in conformity with the Agreement / Final Acts 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 Where the Board reaches an unfavourable finding with respect to paragraph 5.2.1, 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.

5.2.4 Where the notifying Administration resubmits the notice and the Finding of the Board becomes favorable with respect to 5.2.1, the notice shall be treated as in 5.2.2.

5.2.5 If the notifying Administration resubmits the notice without modification and insists that the notice should be reconsidered, if the Board's Finding with respect to 5.2.1 remains unfavourable, the notification should be returned to the notifying Administration in accordance with 5.2.3. In this case, the notifying Administration undertakes not to bring into use the frequency assignment until the condition specified in paragraph 5.2.4 is fulfilled. The agreement of the Administrations affected can also be obtained in accordance with Article 4 for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified.

1) This Appendix relates to the sharing criteria

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 211-E

3 February 1977

Original : French

COMMITTEE 4

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 4

(TECHNICAL)

Thursday, 27 January 1977, at 1400 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

Subjects discussed

Documents Nos.

1. Approval of documents

108(Rev.1) + Corr.2
111(Rev.2), 129(Rev.1),
130(Rev.1), 144, 147,
153, 156

2. Addendum to Document No. 113(Rev.1)

1. Approval of documents (Corr.No. 2 to Document No. 108(Rev.1), Nos. 111(Rev.2), 129(Rev.1), 130(Rev.1), 144, 147, 153 and 156)

The Chairman said that Document No. 157 had not yet been approved by Working Group 4A and that the Committee would therefore take it up later.

Corrigendum No. 2 to Document No. 108(Rev.1) - Technical parameters required for planning

The Chairman of Working Group 4A, introducing the document, said that the following changes should be made :

- on page 1, with reference to curve B, replace the words "in all Regions" by "in Regions 1 and 3";
- on page 4, last paragraph, third line, after the words "digital modulation of" insert the words "sound and".

Corrigendum No. 2 to Document No. 108(Rev.1), as amended, was approved.



Document No. 111(Rev.2) - Protection requirements for sharing between services in the 12 GHz band

The Chairman of Working Group 4B said that after a long discussion, his Group had approved the above document, with the following changes :

- on page 1, paragraph 2, in the English version of the table, in the third and fourth lines of the third column, add the initials "FSS" after "BSS";
- in the last two columns, in the third line, add a reference to Note 5), and in the last column, in the penultimate line, a reference to Note 6);
- add two new notes : "5) see CCIR Recommendation 483" and "6) see point 4.1.5 of CCIR Report 631 of Document No. 2";
- on page 2, paragraph 4, add at the end of the second sentence :
", for the Fixed-Satellite Service, and for all but 1 % of the worst month for the Broadcasting-Satellite Service and the Broadcasting Service".

In addition, a number of editorial amendments would have to be made to paragraph 9 and Figure 1. They would not affect the content of the document but would make it easier to apply.

The delegate of India, referring to the table on page 1, asked for some explanation of the figure of $-128 \text{ dBW/m}^2/4 \text{ kHz}$ (last column, fifth line), which seemed to him open to question.

The delegate of the USSR explained that the figure was taken from CCIR draft Report 631 and that it had been calculated at the interim meetings of Study Groups 10, 11 and 9.

The Chairman of Working Group 4B said that the question had already been raised by the French delegation in the Working Group, which was why it had been agreed to add Note 6) referring to CCIR Report 631.

The delegate of China also considered that the figure given in the table in Document No. 111 was not correct. In his view, it should be $-125 \text{ dBW/m}^2/4 \text{ kHz}$.

After a thorough discussion, the Chairman of Working Group 4B, supported by the delegate of the USSR, proposed that a small group consisting of representatives of the delegations of China, France, India, the USSR and the United States of America should be set up to try and settle the question.

The delegate of France, supporting the proposal, suggested that the small group should also review the figures in the fifth and sixth columns, third line, of the table.

The delegate of Canada said that in view of the French delegate's proposal he would like to join in the group's discussions.

It was decided that the Committee should reconsider Document No. 111(Rev.2) in the light of the conclusions reached by the group of representatives of the delegations of Canada, China, France, India, the USSR and the United States of America.

Document No. 129(Rev.1) - Limitation of output power in the satellite transmitter

Document No. 129(Rev.1) was approved without change.

Document No. 130(Rev.1) - Effects of propagation on cross-polarization

The Chairman of Working Group 4A said that the Working Group had approved the above document with the following changes :

- in paragraph 1, second line, the word "relative" should be deleted;
- in the third line, after " A_d ", the words "relative to the level of the co-polar component" should be added.

Document No. 130(Rev.1), as amended, was approved.

Document No. 144 - Draft Recommendation to the CCIR on up-link considerations

The Chairman of Working Group 4B, introducing the document, said that in preambular paragraph b) the words "which influence planning" should be deleted.

Document No. 144, as amended, was approved.

Document No. 147 - Summary Record of the fourth meeting of Committee 4 (Technical)

Document No. 147 was approved without change.

Document No. 153 - Reference antenna diameter for a fixed-satellite earth station for calculating interference from satellites in the Broadcasting Service

The Chairman of Working Group 4B said that the Working Group had approved the above document, on the understanding that in paragraph 3 the word "inversely" should be added before "proportional".

In addition, the following changes should be made to the French text of paragraph 3 :

- in the second line, the words "le volume" should be replaced by "la quantité";
- in the third line, the words "pourrait être proportionnel" should be replaced by "serait inversement proportionnelle";
- in the fourth line, the words "décroît proportionnellement à l'augmentation du diamètre" should be replaced by "décroît lorsque le diamètre d'antenne croît".

Document No. 153, as amended, was approved.

Document No. 156 - Note from the Chairman of Committee 4 to Committee 6

The delegate of the United Kingdom said that his delegation would like due account to be taken of the reservations it had previously expressed about the practical possibility of applying the proposal made in the document.

Document No. 156 was approved.

2. Addendum to Document No. 113(Rev.1)

The delegate of the United States of America, referring to out-of-band spurious emissions, pointed out that Document No. 113(Rev.1) made no mention of harmonics. He therefore requested that the fourth paragraph of Document No. 96(Rev.2) should be inserted in Document No. 113(Rev.1).

The Chairman said that since Document No. 113(Rev.1) had already been approved, the addition would take the form of an addendum.

It was so decided.

The meeting rose at 1510 hours.

Co-Secretaries :

S. RUTKOWSKI/M. AHMAD

The Chairman :

F. KRÁLÍK

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 212-E

3 February 1977

Original : English

WORKING GROUP 5A

Sub-Group 5A5

DRAFT APPENDIX TO THE PLAN

PERMITTED CHARACTERISTICS OF ASSIGNMENTS IN
THE BROADCASTING-SATELLITE SERVICE IN THE
BAND 11.7-12.5 GHz

1. The characteristics of assignments to space stations in the Broadcasting-Satellite Service in the band 11.7-12.2 GHz (12.5 GHz in Region 1) shall conform to the following characteristics :

1.1 Type of polarization

The emissions of all space stations shall be circularly polarized.

1.2 Occupied bandwidth (see Radio Regulation No. 90)

The occupied bandwidth of any emission from a space station associated with a particular assignment shall not exceed 22 MHz. An assignment may be sub-divided into a number of emissions providing the occupied bandwidth of all those emissions does not exceed 22 MHz.

1.3 Modulation characteristics

1.3.1 The modulation characteristics of any emission from a space station associated with a particular assignment may depart from the reference characteristics given in Table 1 providing the interfering effect on another signal having the reference characteristics in Table 1, is, according to a recommendation of CCIR or by agreement amongst administrations concerned or affected, no more severe than would have been the case for an interfering signal having the reference characteristics given in Table 1.

1.3.2 Where a CCIR recommendation has quantified how much more severe the interfering effect is for a particular set of modulation characteristics over those given in Table 1, or where a value has been agreed amongst administrations concerned or affected, those new modulation characteristics may be used providing there is a directly corresponding reduction in the power flux-density from the limit given in Section 2.1 below.



TABLE 1

Reference modulation characteristics of an emission
from a space station in the Broadcasting-Satellite Service

PARAMETER	VALUE
Reference video signal before pre-emphasis	1 volt sync-tip to peak-white level
Pre-emphasis of video signal and gain of pre-emphasis network for reference purposes	CCIR Recommendation 405 for the television standard used
Deviation of main carrier for 1 volt peak-to-peak sine wave at frequency of zero gain of pre-emphasis network	<u> </u> For 625-line systems : <u> </u> 13.5 MHz peak-to-peak
Frequency of subcarrier used for sound channel	In range 4.5 to 6.5 MHz
Deviation of main carrier due to subcarrier	<u> </u> For 625-line systems : <u> </u> <u> </u> \pm 2.8 MHz peak

1.4 Satellite station-keeping

A space station associated with a particular assignment shall maintain its position within $\pm 0.1^\circ$ in both east-west and north-south directions of the nominal orbit position given in column of the Plan associated with that assignment irrespective of the cause of variation.

1.5 Satellite antenna beam pointing accuracy

All space stations shall maintain the pointing direction of the antenna beam to within 0.1° of the nominal pointing direction, irrespective of the cause of the error. For space stations operating in accordance with an assignment in the plan, this tolerance may be relaxed provided that it is associated with a corresponding reduction in radiated power such that the power flux-density produced at any point on the surface of the earth satisfies the requirements of Section 2.3 below.

1.6 Spurious emissions

The level of spurious emissions from any broadcasting-satellite station shall be such that the maximum power flux-density produced at any point on the surface of the earth under all conditions shall not exceed the value given in Table 2.

TABLE 2

Limit of power flux-density
produced by spurious emissions

	Frequency	Limit
All Regions	11.7 GHz	- 177 dBW/m ² /4 kHz
	below 11.7 GHz	reducing from - 177 dBW/m ² /4 kHz at 11.7 GHz to - 200 dBW/m ² /4 kHz at a rate of 2 dB/MHz
Region 1	12.5 GHz	- 171 dBW/m ² /4 kHz
	above 12.5 GHz	reducing from - 171 dBW/m ² /4 kHz at 12.5 GHz to - 200 dBW/m ² /4 kHz at a rate of 2 dB/MHz
Regions 2 and 3	12.2 GHz	- 171 dBW/m ² /4 kHz
	above 12.2 GHz	reducing from - 171 dBW/m ² /4 kHz at 12.2 GHz to - 200 dBW/m ² /4 kHz at a rate of 2 dB/MHz

1.7 Dispersal of emissions

An emission from a space station associated with a particular assignment shall be modulated continuously by a suitable signal, or the emission shall be sufficiently suppressed, such that at all times and under all conditions the value of power flux-density at the edge of the coverage area as measured in a 4 kHz bandwidth is at least 22 dB below the value given in column of the Plan for that assignment.

PERMITTED CHARACTERISTICS OF ASSIGNMENTS IN THE PLAN

2. The characteristics of assignments to space stations in the Broadcasting-Satellite Service shown in the Plan shall conform to the following characteristics :

2.1 Power flux-density

The power flux-density at the Earth's surface at the edge of the coverage area produced by an emission from a space station associated with a particular assignment shall not exceed the value given in column in the Plan which is indicated for that assignment by more than 0.25 dB. This value shall not be exceeded for all conditions and for all methods of modulation.

2.2 Designation of polarization in the Plan

The terms direct and indirect polarization used in column of the Plan shall have the following meaning :

CCIR Report 321 (Volume XII, Geneva 1974).

2.3 Radiation of co-polarized and cross-polarized component outside of the service area

The radiation characteristics of the co-polarized and cross-polarized components of a satellite transmitting antenna shall be specified by assuming that the beam employed gives a power flux-density at the point of intersection of the antenna beam axis with the Earth's surface which exceeds the power flux-density at the edge of the coverage area given in column of the Plan by 3 dB, or in some cases by a lower value than 3 dB as determined by the use of the minimum practicable beam dimensions to cover smaller areas in agreement with the Plan.

The value of power flux-density of each component at the Earth's surface outside of the coverage area produced under all conditions by a space station associated with a particular assignment shall not exceed :

$$F_e + \Delta G - D$$

where : F_e is the maximum permissible power flux-density at the edge of the coverage area as given in column of the Plan for that assignment,

ΔG is either 3 dB or (in the case where the beam area is larger than the coverage area) some lower figure corresponding to the actual maximum power flux-density minus the power flux-density at the edge of the coverage area when using a transmitting antenna having the agreed minimum size of beam,

and D is the magnitude of the relative antenna gain in decibels for the transmitting antennae as a function of the angle ϕ from the beam axis. The expression for D is the lower of the two values given below for the component concerned. (ϕ_0 is the beamwidth to the -3 dB points. The values of ϕ_0 corresponding to the major and minor axes of an elliptical coverage beam or the value for a circular coverage beam are given in column of the Plan.)

Co-Polar Component:

$$\text{either } \begin{cases} 12 (\phi/\phi_0)^2 & \text{for } 0 \leq \phi \leq 1.44\phi_0 \\ 25 & \text{for } 1.44\phi_0 < \phi \leq 3.16\phi_0 \\ 12.5 + 25 \log_{10}(\phi/\phi_0) & \text{for } \phi > 3.16\phi_0 \end{cases}$$

or the on-axis gain

Cross-Polar Component:

$$\text{either} \quad \begin{cases} 40 + 40 \log_{10} |(\phi/\phi_0) - 1| & \text{for } 0 \leq \phi \leq 0.33\phi_0 \\ 33 & \text{for } 0.33\phi_0 < \phi \leq 1.67\phi_0 \\ 40 + 40 \log_{10} |(\phi/\phi_0) - 1| & \text{for } \phi > 1.67\phi_0 \end{cases}$$

or the on-axis gain

The above restriction is to apply when the satellite transmitting beam axis is aligned in its nominal direction towards the point on the earth given in column of the Plan and, for non-circular beams, when the orientation of the beam about its axis is correct. Power flux changes consequent upon pointing and orientation errors within the agreed maximum permissible values of 0.1 degree and 2 degrees respectively can be accepted provided that the transmission and the beam characteristics conform to the requirements of the Plan and to the other technical provisions forming part of the Agreement.

2.4 Accuracy of orientation of major axis of elliptical beams

For any assignment in which the coverage area is formed by an elliptical cross section antenna beam, the orientation of the major axis of the beam shall be kept within $\pm 2^\circ$ of the value given in column of the Plan for that assignment.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 213-E
3 February 1977
Original : French

COMMITTEE 2

Working Group of Committee 2

(CREDENTIALS)

2nd REPORT

1. The Working Group set up by Committee 2 at its meeting on 14 January 1977 to examine in detail the credentials submitted by delegations met again on 3 February 1977.
2. During the meeting, it examined the credentials of the delegations listed in the Annex and found them to be in order.
3. The credentials examined at the two previous meetings of the Working Group are listed in its first report (Document No. 151).

A. DIONE

Chairman of the Working Group

Annex : 1



A N N E X

CREDENTIALS EXAMINED

AFGHANISTAN (Republic of)

AUSTRIA

BRAZIL (Federative Republic of)

BULGARIA (People's Republic of)

IVORY COAST (Republic of the)

UNITED ARAB EMIRATES

INDONESIA (Republic of)

ICELAND

MALAYSIA

MOROCCO (Kingdom of)

OMAN (Sultanate of)

PAKISTAN

PANAMA (Republic of)

PHILIPPINES (Republic of the)

PORTUGAL

DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA

ROUMANIA (Socialist Republic of)

YEMEN ARAB REPUBLIC

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 214-E

4 February 1977

Original : English

COMMITTEE 6

Note from the Chairman of Committee 4

The attention of Committee 6 is invited to Document No. 182 (Summary Record of the Fifth Meeting of Committee 4) and more particularly to the statement of the Indian delegation concerning energy dispersal.

F. KRÁLÍK
Chairman of Committee 4



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 215-E

3 February 1977

Original : English

COMMITTEE 6

United Kingdom

The attached table has been prepared to assist Committee 6 to appreciate the various facets of the regulatory provisions which are currently being developed. The table illustrates that so far as the :

1. broadcasting satellites within a plan in Regions 1 and 3 are concerned, all the necessary procedures to protect the other services in the band are in the course of preparation apart from those to protect broadcasting-satellite stations in Region 2. It is suggested that protection could be ensured on the basis of orbital separation which could be the subject of an agreement incorporated in the Final Acts;
2. Terrestrial Services in all Regions and Fixed-Satellite Services in Region 2 are concerned, provisions exist in the RRS or are being prepared to ensure the protection of the other services;
3. broadcasting satellites in Region 2 are concerned, it will be seen that some alternative courses are being pursued. It is for the Conference to decide whether to associate a Plan for Region 2 with the "agreement". If it is decided to do so Resolution No. Spa2 - 3 would no longer apply under Resolves 3 of Resolution No. Spa2 - 2 and Resolves 1 of Resolution No. Spa2 - 3. If the Conference decides that the provisions for Region 2 are satisfactorily met by the existing provisions of Resolution No. Spa2 - 3 without repeating them in the "agreement", then the additional procedures, if any, to complement those in Resolution No. Spa2 - 3 could be contained in relevant provisions in the Final Acts.

In any event it will be necessary to resolve any ambiguity by a suitable declaration in the Final Acts, either

- a) to the effect that the provisions in Articles to and appendices constitute an "agreement" with an associated Plan for Regions 1 and 3 only, or
- b) associated Plans for Regions 1 and 3 and Region 2 respectively, within the meaning of Resolves 1 of Resolution No. Spa2 - 2.

In the case of a) Resolution No. Spa2 - 3 must apply to Broadcasting-Satellite Services in Region 2. In the case of b) Resolution No. Spa2 - 3 would not apply to these services.



PROVISIONS TO REGULATE THE SERVICES IN THE 12 GHz BAND

Broadcasting-satellite stations in a plan for Regions 1 and 3	Terrestrial services all Regions	Fixed-Satellite Service Region 2	Region 2 : Broadcasting satellites not in a plan
<p>After the adoption of a plan, subsequent modifications could cause interference to :</p> <p>(a) <u>other broadcasting-satellite stations in the plan</u> : provisions to ensure protection are being prepared (Document No. 187).</p> <p>(b) <u>Terrestrial services (all Regions)</u> : Provisions to ensure protection are being prepared. Document No. 187 requires co-ordination when interfering pfd increased by more than $\angle x /$ dB.</p> <p>(c) <u>Fixed satellite services in Region 2</u> : as for (b).</p> <p>(d) <u>Broadcasting-satellite stations in Region 2</u> : No special provisions are as yet being prepared. In the absence of a plan protection could be ensured by orbital separation agreement.</p>	<p>These services could cause interference to :</p> <p>(a) <u>Broadcasting-satellite stations in a plan for Regions 1 and 3</u> : Provisions to ensure protection being prepared in Document No. 185 coordination being based on pfd limitation at the edge of a service area (See Note).</p> <p>(b) <u>Region 2 broadcasting-satellite stations not in a plan</u> - RR 405 BB (See Note).</p> <p>(c) <u>Fixed-Satellite Service in Region 2</u> : covered by Article 9 of RR.</p> <p>(d) <u>Other terrestrial services</u> - covered by Article 9 of the RR.</p> <p><u>Note</u> : Document No. 169 gives Technical Annex for determining when coordination between terrestrial and broadcasting satellite service is required and covers broadcasting satellites in Regions 1 and 3 and Region 2.</p>	<p>This service could cause interference to :</p> <p>(a) <u>Broadcasting-satellite stations in a plan in Regions 1 and 3</u> : Provisions to ensure protection being prepared (draft DT/43) coordination based on pfd and orbital separation.</p> <p>(b) <u>Broadcasting satellites Region 2</u>. Article 9A of RR applies.</p> <p>(c) <u>Fixed-Satellite Service Region 2</u>. Article 9A of RR applies.</p>	<p>(a) <u>Broadcasting-satellite stations in Region 2</u>.</p> <p>(b) <u>Fixed satellite in Region 2</u>.</p> <p>(c) <u>Terrestrial services in all Regions</u>.</p> <p>For (a), (b) and (c) Spa 2 - 3 applies.</p> <p>(d) <u>Broadcasting satellites in a plan for Regions 1 and 3</u> : protection could be ensured by orbital <u>separation agreement</u>.</p> <p>Document No. 196 has been prepared to make provision for regulating all the items (a) to (d) above, based on Article 9A and Spa2 - 3.</p>

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Addendum No. 1 to
Document No. 216-E
4 February 1977
Original : English

WORKING GROUP 4B

Drafting Group 4B

INFORMATION CONCERNING THE POWER FLUX-DENSITY LIMIT NECESSARY
TO PROTECT THE FIXED-SATELLITE SERVICE IN REGION 2

Add the following pages to Document No. 216.



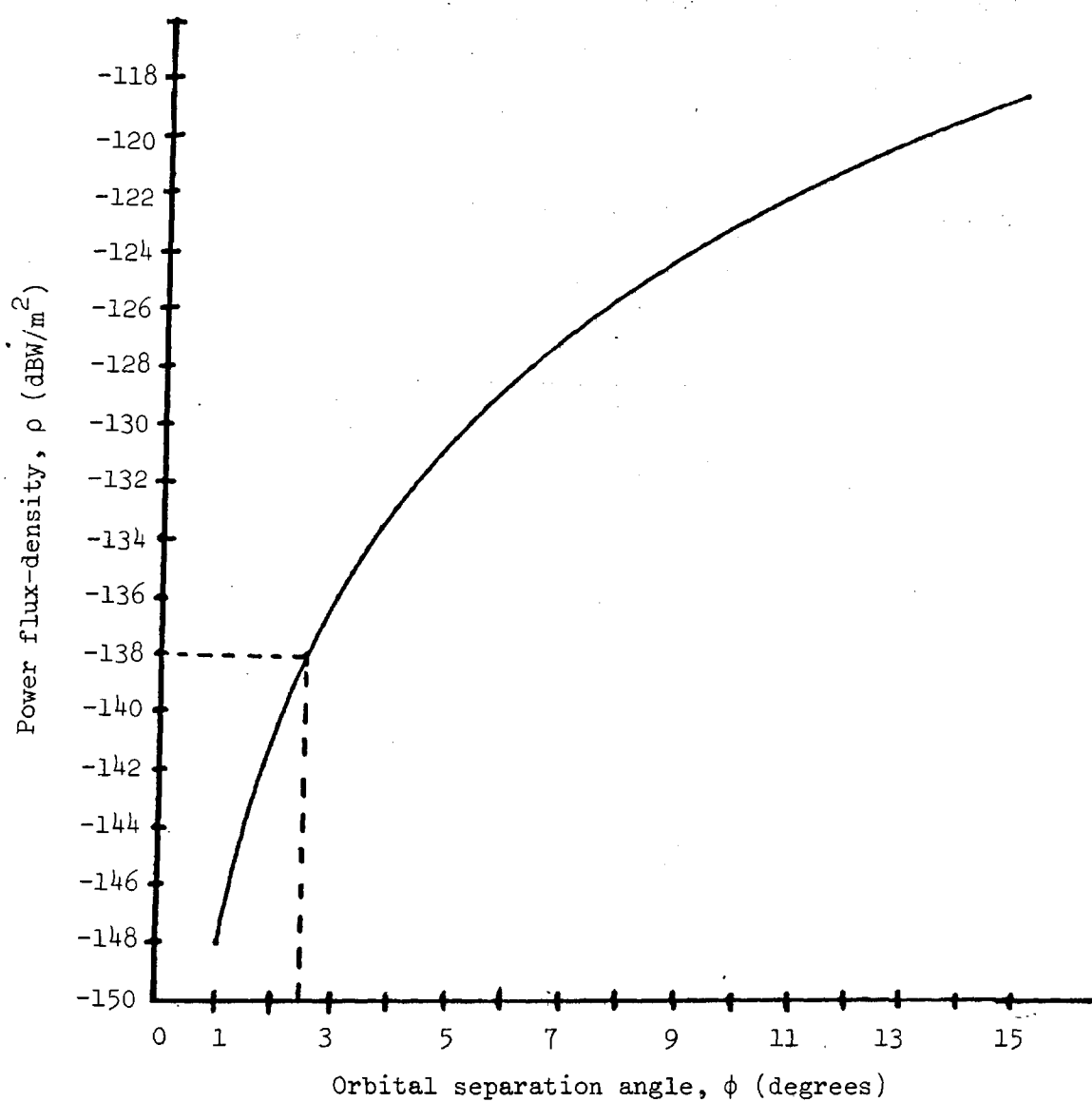


Figure 1 - Required orbital separation for SCPC, PCM-PSK

A N N E X

1. This Annex describes step-by-step the derivation of equation (1) of the main document.

2. A generally simpler approach to evaluating the received carrier to interference power ratio, C/I, is to work with both the desired and interfering power flux-density at the earth station. This is to be contrasted with making detailed link calculations for both the victim and interfering system. Using the former approach, the desired carrier power at the output of the antenna and the interfering carrier power, also at the output of the antenna, may be expressed by :

$$C = A_{iso} \rho_1 G(\phi) \quad (1)$$

$$I = A_{iso} \rho_2 G(\phi) \quad (2)$$

where,

$A_{iso} = \frac{\lambda^2}{4\pi}$, m² is the equivalent area of an isotropic antenna

ρ_1 = the desired power flux-density, Watts/m²

ρ_2 = the interfering power flux-density, Watts/m²

$G(\phi)$ = earth station antenna gain

$G(\phi)$ = earth station antenna gain in the direction of the interfering transmitter

ϕ = angular separation between the desired and interfering transmitters, degrees.

The carrier to interference power ratio, C/I, becomes simply,

$$\frac{C}{I} = \frac{\rho_1 G(\phi)}{\rho_2 G(\phi)} \quad (3)$$

3. Because the required received carrier power will vary as a function of the amount of information (audio, telephony, multichannel FDM/FM, TV, etc.) and the modulation method used, it is convenient to have an equation which relates the required received carrier power to the amount of information being transmitted, one practical measure of the amount of information which can be received over a space channel is the ratio of the total received carrier power to the thermal noise power in a 1 Hz bandwidth, $\frac{C}{n_i}$ (Hz).

n_i

This may be formulated simply as :

$$\frac{C}{\eta_1} = \frac{A_{iso} \rho_1 G(o)}{KT}, \text{ Hz} \quad (4)$$

where K = Boltzman's constant, joules/deg. Kelvin

T = earth station receiving system noise temperature referenced to the output of the antenna, deg. K

Solving (4) for $\rho_1 G(o)$ and substituting in (3) yields :

$$\frac{C}{I} = \frac{KT}{A_{iso}} \cdot \frac{C}{\eta_1} \cdot \frac{1}{\rho_2 G_1(\phi)} \quad (5)$$

Solving (5) for the interfering power flux-density, ρ_2 , yields :

$$\rho_2 = \frac{KT}{A_{iso}} \cdot \frac{C}{\eta_1} \cdot \frac{1}{C/I} \cdot \frac{1}{G(\phi)}, \text{ Watts/m}^2 \quad (6)$$

Other factors which enter into (6) are the polarization mismatch, Δ_{pol} , energy dispersal advantage Δ_{ED} , and miscellaneous losses, antenna pointing, etc., Δ_{misc} .

Taking these factors into account gives :

$$\rho_2 = \frac{KT}{A_{iso}} \cdot \frac{C}{\eta_1} \cdot \frac{\Delta_{pol}}{C/I} \cdot \frac{\Delta_{ED}}{G(\phi)} \cdot \frac{1}{\Delta_{misc}} \quad (7)$$

Equation (7) provides a very simple means to determine the allowable interfering power flux-density given :

- a) T , the earth station receiving system noise temperature,
- b) C/η_1 , the carrier-to-noise density to be protected,
- c) C/I , the single entry protection ratio,
- d) $G(\phi)$, the antenna gain in the direction of the interfering transmitter.

It is noted that K is a constant and A_{iso} is dependent only on the carrier frequency (or wavelength) of the system being considered.

If it is assumed that the earth station antenna meets the criteria, $\frac{D}{\lambda} > 100$, then :

$$10 \log G(\phi) = 32 - 25 \log \phi, \text{ dB} \quad (8)$$

$$1^\circ \leq \phi < 48^\circ$$

Expressing equation (7) in dB, substituting values (in dB) for K and A_{iso} and substituting in equation (8) gives :

$$\rho_2 = - 217.6 + 10 \log T + 10 \log \frac{C}{\eta_i} - 10 \log \frac{C}{I} + 25 \log \phi \\ + \Delta_{pol} + \Delta_{ED} + \Delta_{misc}, \text{ dBW/m}^2 \quad (9)$$

with the constant :

$$1^\circ \leq \phi < 48^\circ \quad (10)$$

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 216-E

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WORKING GROUP 4B

Drafting Group 4B

INFORMATION CONCERNING THE POWER FLUX-DENSITY LIMIT NECESSARY TO PROTECT THE FIXED-SATELLITE SERVICE IN REGION 2

1. Introduction

The required power flux-density limit of $-138 \text{ dBW/m}^2/27 \text{ MHz}$ is derived on the basis of protecting the most sensitive service likely to be implemented in the Fixed-Satellite Service in Region 2.

This value is further founded on the principles set forth in section /428A/ of the Radio Regulations and Article 33, paragraph 131 of the International Telecommunication Convention. Simply stated, the orbit-spectrum resource is a limited natural resource that must be used efficiently and economically. It so happens that segments of the orbit which are being considered in the Plan for Regions 1 and 2 are also useful to Region 2. However, these orbital segments are only useful to Region 2 administrations if the power flux-density onto territories of Region 2 are limited.

Because the Plan will utilize the full allocation 11.7 - 12.5 GHz (Region 1) and 11.7 - 12.2 GHz (Region 3) at each orbital location east of about /37° W. longitude/, the only way that Region 2 Fixed-Satellite Service satellites can utilize the orbital segment between /10° E. and 37° W. longitude/ is to place the Region 2 satellites between the satellites of the Plan. With 6° spacing between satellites of the Plan it should be feasible to place two Region 2 fixed satellites in between adjacent broadcasting satellites. One possible spacing is 1° between fixed satellites and 2.5° between the fixed satellites and the broadcasting satellites of the Plan.

Further, because the Plan, by its very nature, forecloses the possibility of coordination on a case-by-case basis between the Fixed-Satellite Service of Region 2 and the broadcasting satellites of the Plan, it is necessary to determine the power flux-density limit on the basis of the most interference sensitive service to be implemented in a Region 2 Fixed-Satellite Service system.

To summarize, the value is derived on the following principles :

1. equitable access to the orbit;
2. minimum spacing of 2.5°;
3. protection of the most sensitive service.



2. Derivation2.1 Assumptions :

1. Single channel per carrier, pulse code modulation, phase shift keying (SCPC, PCM-PSK) is the most sensitive service to be protected;
2. 56 kbit/s is the bit rate (I/T);
3. 13 dB = bit-energy to noise density ratio required for 99.9 % of the time $\left(\frac{E_b}{N_0}\right)$;
4. 9.5 dB = rain attenuation margin;
5. 30 dB = single-entry carrier to interference power ratio;
6. 3.6 dB = single-entry reduction in interference due to 600 kHz peak-to-peak energy dispersal;
7. 200° K = noise temperature (clear weather) of Fixed-Satellite Service earth station;
8. $100 < D/\lambda$ = ratio of the diameter of the Fixed-Satellite Service earth station antenna to the wavelength;
9. 3 dB = reduction in interference due to polarization mismatch (linear vs circular);
10. 0 dB = miscellaneous losses including pointing.

2.2 Power flux-density limit

As derived in the Annex, the power flux-density limit is given by,

$$\rho_2 = - 217.6 + 10 \log T + 10 \log \frac{C}{\eta_i} - 10 \log \frac{C}{I} + 25 \log \phi + \Delta_{pol} + \Delta_{\beta} + \Delta_{misc}, \text{ dBW/m}^2 \quad (1)$$

Substituting in the values of Section 2.1 and noting that (the value given includes the 9.5 dB rain margin),

$$\frac{C}{\eta_i} = \frac{E_b}{N_0} \cdot \frac{1}{T} \quad (2)$$

Equation (1) reduces to,

$$\rho_2 = - 148.0 + 25 \log \phi, \text{ dBW/m}^2 \quad (3)$$

for $\phi = 2.5^\circ$,

$$\rho_2 = - 138.0 \text{ dBW/m}^2$$

2.3 Effect of earth station antenna diameter

As shown in equation (1), the required power flux-density limit is independent of earth station antenna diameter at least for $D/\lambda > 100$. This constraint is met for antenna diameters greater than 2.5 metres.

Annex : (published separately)

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 217-E

4 February 1977

Original : French

PLENARY MEETING

FINAL REPORT OF THE BUDGET CONTROL COMMITTEE TO THE PLENARY MEETING

The Budget Control Committee held three meetings during the Conference and considered the various points deriving from its terms of reference.

Under the provisions of Chapter XI, Article 77, point 5, Nos. 442 and 445 of the Convention, it is the task of Committee 3 :

- a) to determine the organization and the facilities available to the delegates,
- b) to examine and approve the accounts for expenditure incurred throughout the duration of the Conference.

1. Determination of the organization and the facilities available to the delegates

No delegation having advanced any criticisms on the subject, Committee 3 noted that the organization and the facilities available to the delegates had given full satisfaction.

2. Budget of the Conference

Committee 3 took note of the budget of the Conference, as adopted by the Administrative Council of the Union, i.e. :

- a) Preparatory work charged to the 1976 budget :
494,000 Swiss francs, increased to 531,400 Swiss francs to take into account the salary adjustments made in application of Resolution No. 647 of the Union's Administrative Council. Committee 3 noted with satisfaction that the Union's accounts show a total expenditure of 368,231 Swiss francs for this item, which is 163,169 Swiss francs less than the amount allocated in the revised budget.
- b) Work of the Conference proper, charged to the 1977 budget :
1,594,000 Swiss francs.



3. Situation concerning expenditure of the Conference in 1977

Under Nos. 442-445 of the Convention, the Budget Control Committee had to present a report to the Plenary Meeting showing, as accurately as possible, the estimated total expenditure of the Conference.

Annex I accordingly contains a statement showing the amounts allocated by the Administrative Council, broken down by budget subheads and items, and also the credit transfers and actual expenditure up to 31 January 1977. The statement also shows the commitments to expenditure up to that date and the estimated expenditure up to the close of the Conference.

The statement shows that the total expenditure is estimated at 1,530,000 Swiss francs, leaving a margin of 64,000 Swiss francs compared with the budget figures.

It should be noted that the Budget Control Committee, by virtue of Article 15 of the Union's Financial Regulations, has authorized a credit transfer of 150,000 Swiss francs from subhead II to subhead III of the budget, in order to finance the publication of an updated edition of the report prepared for the 1979 WARC by the Group of Experts set up to study the possible re-arrangement of the Radio Regulations and the Additional Radio Regulations.

4. Final Acts of the Conference

The Budget Control Committee has studied particularly the financial problems which may arise from the accumulation at the end of the meeting of the documents constituting the Final Acts of the Conference. Owing to the volume of the Final Acts (estimated at present at about 250 pages) and the difficulty of reproducing them in time for signature by the delegations on Friday evening, 11 February 1977, the question arises of how to determine the number of copies which can be run off without incurring excessive expenditure on overtime and without recourse to outside printers, which would mean a considerable increase in cost.

The Budget Control Committee suggests to the Plenary Meeting that if it is not possible to give a copy of the Final Acts to each delegate at the end of the Conference, a limited number of copies should be handed to each delegation; it would be understood that additional copies will be sent later to delegations at their request.

5. Contributions of recognized private operating agencies and international organizations not exempted from payment

Under Article 16 of the Union's Financial Regulations, the report of the Budget Control Committee to the Plenary Meeting must include a list of the recognized private operating agencies and of the international organizations which are required to contribute to defrayal of the expenses of the Conference. To this list must be added a list of the international organizations exempted from payment in accordance with No. 548 of the Convention.

The list in question will be found in Annex 2 to this document.

* * *

According to the provisions of No. 445 of the Convention, this report, together with the observations of the Plenary Meeting, must be transmitted to the Secretary-General for submission to the Administrative Council at its next annual session.

* * *

The Plenary Meeting is requested to approve this report.

V.A.D. RAYALU
Chairman

Annexes : 2

Number	Item	Budget approved by AC	Revised budget 1)	Credit transfers		Credits available	Expenditure at 31 January 1977				Difference +/-
				Item to item	Subhead to subhead ²⁾		Actual	Committed	Estimated	Total	
1	2	3	4	5	6	7	8	9	10	11	12
	<u>Subhead I - Staff</u>										
11.101	<u>Salaries and related expenses</u>										
	Interpretation	671,600	671,600	-	-	671,600	257,250	378,702	10,048	646,000	+ 25,600
	Common services	3)	-	-	-	-	-	-	-	-	-
		671,600	671,600	-	-	671,600	257,250	378,702	10,048	646,000	+ 25,600
11.102	<u>Travel expenses</u>										
	Travel expenses	86,000	86,000	-	-	86,000	11,334	56,451	2,215	70,000	+ 16,000
11.103	<u>Insurance</u>										
	Sickness	10,000	10,000	-	-	10,000	-	-	9,900	9,900	+ 100
	Accidents	4,400	4,400	-	-	4,400	-	-	4,100	4,100	+ 300
		14,400	14,400	-	-	14,400	-	-	14,000	14,000	+ 400
TOTAL	Subhead I	772,000	772,000	-	-	772,000	268,584	435,153	26,263	730,000	+ 42,000

Number	Item	Budget approved by AC	Revised budget 1)	Credit transfers		Credits available	Expenditure at 31 January 1977				Difference +/-
				Item to item	Subhead to subhead ²⁾		Actual	Committed	Estimated	Total	
1	2	3	4	5	6	7	8	9	10	11	12
Subhead II - Premises and equipment											
11.111	<u>Premises, furniture, machines</u>										
	Rental CIGC	575,000	575,000	-20,000	-140,000	415,000	201,300	201,300	10,400	413,000	+ 2,000
	Cleaning	10,000	10,000	-	-	10,000	-	-	10,000	10,000	-
	Guards	10,000	10,000	-	- 2,000	8,000	-	-	8,000	8,000	-
	Machine rental	10,000	10,000	-	- 8,000	2,000	-	-	2,000	2,000	-
		605,000	605,000	-20,000	-150,000	435,000	201,300	201,300	30,400	433,000	+ 2,000
11.112	<u>Computer costs</u>										
	ITU computer	10,000	10,000	+10,000	-	20,000	-	6,000	14,000	20,000	-
11.113	<u>Document production</u>										
	Document production	55,000	55,000	-	-	55,000	29,600	-	25,400	55,000	-
11.114	<u>Office supplies and overheads</u>										
	Supplies	30,000	30,000	-	-	30,000	5,000	-	8,000	13,000	+17,000
	Local transport	5,000	5,000	-	-	5,000	-	5,000	-	5,000	-
		35,000	35,000	-	-	35,000	5,000	5,000	8,000	18,000	+17,000

Number	Item	Budget approved by AC	Revised budget 1)	Credit transfers		Credits available	Expenditure at 31 January 1977				Difference +/-
				Item to item	Subhead to subhead 2)		Actual	Committed	Estimated	Total	
1	2	3	4	5	6	7	8	9	10	11	12
11.115	<u>PTT</u>										
	Postage	10,000	10,000	+10,000	-	20,000	203	-	19,797	20,000	-
	Telephone	3,000	3,000	-	-	3,000	-	-	3,000	3,000	-
	Telegrams	2,000	2,000	-	-	2,000	-	-	2,000	2,000	-
		15,000	15,000	+10,000	-	25,000	203	-	24,797	25,000	-
11.116	<u>Technical material</u>										
		3,000	3,000	-	-	3,000	-	-	-	-	+ 3,000
11.117	<u>Sundry and unforeseen</u>										
		9,000	9,000	-	-	9,000	1,641	-	7,359	9,000	-
TOTAL	Subhead II	732,000	732,000	-	-150,000	582,000	237,744	212,300	109,956	560,000	+ 22,000
<hr/>											
	<u>Subhead III - Other expenses</u>										
11.121	<u>Final Acts of the Conference</u>										
	Final Acts	40,000	40,000	-	-	40,000	-	-	40,000	40,000	-
	Chinese Translation	25,000	25,000	-	-	25,000	-	-	25,000	25,000	-
	Russian Translation	25,000	25,000	-	-	25,000	-	-	25,000	25,000	-

Number	Item	Budget approved by AC	Revised budget 1)	Credit transfers		Credits available	Expenditure at 31 January 1977				Difference +/-
				Item to item	Subhead to subhead2)		Actual	Committed	Estimated	Total	
1	2	3	4	5	6	7	8	9	10	11	12
	Doc. RR	-	-	-	+150,000	150,000	-	-	150,000	150,000	-
	TOTAL Subhead III	90,000	90,000	-	+150,000	240,000	-	-	240,000	240,000	-
	GENERAL TOTAL	1,594,000	1,594,000	-	-	1,594,000	506,328	647,453	376,219	1,530,000	+ 64,000
	<u>Pro memoria</u>										
	Budget 1976										
	Preparatory work	494,000	531,400	-	-	531,400	368,231	-	-	368.231	+163,169

- Notes :
- 1) Budget approved by the Administrative Council, account being taken of the additional credits under Administrative Council Resolution No. 647.
 - 2) In keeping with the Financial Regulations of the Union, Article 15, paragraph 3.
 - 3) Pursuant to a change in the budgetary structure decided upon by the Administrative Council in 1976, staff expenses under the head of Common Services of the General Secretariat are to be transferred to a special section from the 1977 budget onwards (Section 17).

A N N E X 2

PARTICIPATION OF INTERNATIONAL ORGANIZATIONS
AND PRIVATE OPERATING AGENCIES TO THE WORK OF THE CONFERENCE

	<u>Class of contribution</u>
<u>1. International organizations</u>	
a) <u>International organizations exempted from any contribution under Resolution No. 574 of the Union's Administrative Council</u>	
Inter-Union Commission on Allocation of Frequencies for Radio Astronomy and Space Science (IUCAF)	-
International Council of Scientific Unions (ICSU)	-
International Radio and Television Organization (OIRT)	-
Asian Broadcasting Union (ABU)	-
Arab States Broadcasting Union (ASBU)	-
Union of National Radio and Television Organizations of Africa (URTNA)	-
European Broadcasting Union (EBU)	-
International Amateur Radio Union (IARU)	-
b) <u>Other international organizations</u>	
European Space Agency (ESA)	$\frac{1}{2}$ unit
International Telecommunications Satellite Consortium (INTELSAT)	$\frac{1}{2}$ unit
International Space Telecommunication Organization (INTERSPUTNIK)	*)
<u>2. Recognized private operating agencies</u>	
None	

*) On 1 February 1977, the class of contribution chosen had not yet been notified to the Secretary-General.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 218-E

4 February 1977

Original : English

COMMITTEE 5B

United States of America

SUGGESTED AMENDMENT TO DOCUMENT No. 204

Replace paragraph 2 of Document No. 204 by the following :

2. Space stations in the Fixed-Satellite Service shall be located in those portions of the orbit other than those listed in paragraph 1 above. Such Space stations could also be located in the portions of the orbit listed in paragraph 1 above, they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations.

2A. Space stations in the Broadcasting-Satellite Service located in the portion of the orbit listed in paragraph 1 above and space stations in the Fixed-Satellite located in the remaining portions of the orbit shall be operated in such a way that no unacceptable interference is caused by stations of one service to stations of other services. The level of unacceptable interference shall be determined in accordance with the latest CCIR Recommendations and Appendix 1 (Document No. ... Committee 4) as a guide. Notwithstanding the above, broadcasting-satellite space stations may be located up to the edge of the portion of the orbit listed in paragraph 1, provided that such stations are in accordance with the technical characteristics outlined in Appendix (of the Final Acts).



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 219-E

4 February 1977

Original : English

United Arab Emirates

PROXY

The United Arab Emirates delegation to the WARC on Satellite Broadcasting hereby gives mandate to the delegate of the State of Bahrain under 371 of Article 67 of the Convention to vote on behalf of the United Arab Emirates.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 220-E
4 February 1977
Original: English

COMMITTEE 6

SECOND REPORT OF WORKING GROUP 6A

1. Reconsideration of Document No. 187

1.1 At the sixth Meeting of Committee 6 held on 1st February, Document No. 156, relating to energy dispersal, was referred to Working Group 6A for consideration. This Document is now being studied by an Ad Hoc 4/6 Group.

1.2 Document No. 187 was also referred back to Working Group 6A for detailed study of items 5.3, 5.4, 5.5, 5.6 and the Miscellaneous Provisions. The result of studies by the Working Group is contained in Annex 1 and is submitted to Committee 6 for consideration and, if adopted, for addition to Document No. 210. The provisions contained in this Annex should be added after paragraph 5.2.5 of Document No. 210.

1.3 As a consequence of the Working Group's studies of the latter sections of Document No. 187, it is recommended that the following sentence be added to paragraph 4.3.2 of Article [4] of Document No. 210:

"If the assignment is not brought into use by that date, the modification shall lapse".

1.4 It should also be noted that the following words are to be added to paragraph 5.2.5 of Article 5 of Document No. 210:

"The notifying Administration using the frequency assignment during a specified period shall not use this circumstance subsequently for this continued use of this frequency beyond the period specified if it does not obtain the agreement of the administration or the administrations concerned, as the case may be".

1.5 Some members of the Group, noting that the new paragraphs 5.3.1 to 5.4.2 were concerned with examination and recording, considered that they should be brought within section 5.2, and that 5.4.1 would in any case be better placed immediately following 5.2.2. The section on Cancellation of Entries in the Master Register would then become 5.3. The reconciliation between old and new paragraphs would be as follows:

5.4.1	becomes	5.2.3
5.2.3	"	5.2.4
5.2.4	"	5.2.5
5.2.5	"	5.2.6
5.3.1	"	5.2.7

5.3.2	becomes	5.2.8
5.4.2	"	5.2.9
5.6	"	5.3
5.6.1	"	5.3.1
5.6.2	"	5.3.2



2. Document No. 196 - Report of Sub-Working Group 6A2

2.1 The Working Group considered a set of procedures prepared by Sub-Working Group 6A2 for coordination, notification and registration of broadcasting-satellite stations in Region 2.

2.2 Some delegations expressed the opinion that the procedures covered in Document No. 196 were unnecessary as the situation was adequately covered by Resolution No. Spa2 - 3 if no plan resulted from the work in Committee 5, (in particular Working Group 5B). This opinion is reflected in paragraph 15 of Document No. 204. However, as Document No. 204 has yet to be considered in full by Committee 5 and as the schedule of meetings for Committee 6 and its Working Groups is very tight, the Working Group considered Document No. 196 on the understanding that its inclusion in the [Final Acts] would be dependent upon decisions taken during the remaining days of the Conference. Thus should the procedure be required, the necessary preliminary texts have been compiled.

2.3 In considering the procedures contained in Annex 2, the attention of the Group was brought to Note 1 of page 1 of Annex 2 relating to the expression "frequency assignment". Some delegations expressed the opinion that it was desirable for all such definitions to appear in the Article of the Final Acts devoted to "Definitions". The Group which drafted the words pointed out that the note was an expression contained in Article 9A of the Radio Regulations and which was also applicable in Resolution No. Spa2 - 3. The note remained in square brackets to allow further study.

2.4 A number of delegates expressed concern with the provisions of paragraph 2.1 and reserved the right to re-consider the matter in Committee 6, if necessary. Depending on the result of these considerations, consequential modifications to paragraph 5.4 may be considered necessary.

A. D'ARCEY
Chairman of Working Group 6A

A N N E X 1

5.3.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to the provisions of paragraph 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.

5.3.2 When the Board has received confirmation that the frequency assignment has come into use, the Board shall remove the symbol in the Master Register.

5.4.1 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 Column 13a.

5.4.2 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

5.6 Cancellation of entries in the Master Register

5.6.1 In an administration has not confirmed the bringing into use of a frequency assignment under 5.3.2, the Board will make inquiries of the administration not earlier than 6 months after the expiry of the period 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.

5.6.2 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within ninety days of such discontinuance, whereupon the entry shall be removed from the Master Register.

Miscellaneous provisions

1. If it is requested by any administration, and if the circumstances appear to warrant, 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.

The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.

2. 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 ninety days, 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.

3. If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render its assistance for the computation necessary in the application of the Appendices

A N N E X 2

/ ARTICLE /

COORDINATION, NOTIFICATION AND RECORDING IN THE MASTER INTERNATIONAL
FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS¹⁾ TO
STATIONS IN THE BROADCASTING-SATELLITE SERVICE
IN REGION 2

1. Procedure for the advance publication of information on planned
satellite systems

1.1 An administration (or one acting on behalf of a group of named administrations) which intends to establish a broadcasting-satellite system shall, prior to the coordination procedure in accordance with paragraph 2.1 where applicable, send to the International Frequency Registration Board not earlier than five years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix / 1B. /

1.2 Any amendments to the information sent concerning a planned satellite system in accordance with paragraph 1.1 shall also be sent to the Board as soon as they become available.

1.3 The Board shall publish the information sent under paragraphs 1.1 and 1.2 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.

1.4 If, after studying the information published under paragraph 1.3 any administration is of the opinion that interference, which may be unacceptable, may be caused to its existing or planned space radiocommunication services including those identified requirements of Region 2 administrations filed with the Board in accordance with the / Agreement / / Final Acts / /, as well as those frequency assignments appearing in the Regions 1 and 3 Plan, / it shall within one hundred and twenty days after the date of the weekly circular publishing the information listed in Appendix / 1B, / 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.

/ 1) 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). /

1.5 An administration receiving comments sent in accordance with paragraph 1.4 shall endeavour to resolve any difficulties that may arise.

1.6 In case of difficulties arising when any planned satellite network of a system is intended to use the geostationary satellite orbit :

1.6.1 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 including the Broadcasting-Satellite Services in Regions 1 and 3, 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;

1.6.2 an administration receiving a request under 1.6.1 above 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; any resulting modifications to broadcasting-satellite assignments in the Regions 1 and 3 Plan must be in accordance with the provisions of Article 4 of the Agreement / Final Acts /;

1.6.3 if after following the procedure outlined in 1.6.1 and 1.6.2 above 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; any resulting modifications to broadcasting-satellite assignments in the Regions 1 and 3 Plan must be in accordance with the provisions of Article 4 of the Agreement / Final Acts /.

1.7 In their attempts to resolve the difficulties mentioned above administrations may seek the assistance of the Board.

1.8 In complying with the provisions of paragraphs 1.5 to 1.7 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, until two hundred days after the date of the weekly circular containing the information listed in Appendix 1B on the relevant satellite network. However, in respect of those administrations with whom difficulties have been resolved or who have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the two hundred days mentioned above.

1.9 An administration on behalf of which details of planned satellite networks in its system have been published, in accordance with the provisions of paragraphs 1.1 to 1.3, shall periodically inform the Board whether or not comments have been received and of the progress made, with other administrations, in resolving any difficulties. 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.

2. Coordination procedure between stations in the Broadcasting-Satellite Service and space systems of other administrations

2.1 Before an administration in Region 2 notifies to the Board or brings into use any frequency assignment to a space station in the Broadcasting-Satellite Service or to an earth station that is to receive transmission from such a space station it shall effect coordination¹⁾ of the assignment with the administrations of any Region 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 is recorded in the Master Register, or has been coordinated or is being coordinated under the provisions of this paragraph or No. 639AJ of the Radio Regulations. For this purpose, the administration requesting coordination shall send to any other such administration the information listed in Appendix / 1A /. This coordination procedure does not apply to Broadcasting-Satellite Services in Regions 1 and 3 which are governed by the provisions in Article / ... /.

2.2 No coordination under paragraph 2.1 is required :

2.2.1 when the use of a new frequency assignment will not produce in the service area of another administration a power flux-density above the level calculated in accordance with / Appendix A /;

2.2.2 when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of any service of another administration, meet the requirements of sub-paragraph 2.2.1 above, or, where this assignment has previously been coordinated, will not exceed the conditions agreed during coordination.

2.3 An administration initiating the coordination procedure referred to in paragraph 2.1 shall at the same time send to the Board a copy of the request for coordination, with the information listed in Appendix / 1A / and the name(s) of the administration(s) with which coordination is sought. The Board shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system were published in accordance with paragraph 1 of this / Article /. When the weekly circular contains such information, the Board shall so inform all administrations by circular telegram.

2.4 An administration believing that it should have been included in the coordination procedure under paragraph 2.1 shall have the right to request that it be brought into the coordination procedure.

2.5 An administration with which coordination is sought under paragraph 2.1 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 paragraph 2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to

1) The technical data to be used in effecting coordination and the criteria to be employed in evaluating interference levels shall be based upon the technical information contained in the / Agreement / / Final Acts / or upon relevant CCIR Recommendations and shall be agreed between the Administrations concerned.

which the receiving administration shall reply within a further period of thirty days. Upon 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 interference¹⁾ which would be caused to the service rendered by its stations in respect of which coordination is sought under paragraph 2.1; and shall, within ninety days from the date of the relevant weekly circular, notify the administration requesting coordination of its agreement. If 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, and make such suggestions as it may be 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.

2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where :

2.6.1 an administration with which coordination is sought under paragraph 2.1 fails to acknowledge receipt, under paragraph 2.5, within sixty days after the date of the weekly circular publishing the information relating to the request for coordination;

2.6.2 an administration has acknowledged receipt under paragraph 2.5, but fails to give a decision within ninety days from the date of the relevant weekly circular;

2.6.3 there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable level of interference;

2.6.4 coordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

2.7 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

2.8 Where the Board receives a request under sub-paragraph 2.6.1 it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

1) The technical data to be used in effecting coordination and the criteria to be employed in evaluating interference levels shall be based upon the technical information contained in the / Agreement / / Final Acts / or upon relevant CCIR Recommendations and shall be agreed between the Administrations concerned.

2.9 Where the Board receives an acknowledgement following its action under paragraph 2.8, or where the Board receives a request under sub-paragraph 2.6.2, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

2.10 Where the Board receives a request under sub-paragraph 2.6.4, it shall endeavour to effect coordination in accordance with the provisions of paragraph 2.1. The Board shall also, where appropriate, act in accordance with paragraph 2.3. Where the Board receives no acknowledgement to its request for coordination within the period specified in paragraph 2.5, it shall act in accordance with paragraph 2.8.

2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 2.9, it shall be deemed that the administration with which coordination was sought has undertaken :

2.11.1 that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its space or terrestrial radiocommunication stations by the use of the assignment for which coordination was requested;

2.11.2 that its space or terrestrial radiocommunication stations will not cause harmful interference to the use of the assignment for which coordination was requested.

2.12 Where necessary, as part of the procedure under paragraph 2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after one hundred and fifty days from the date of the request for coordination, taking into consideration the provisions of paragraph 4.4, send its notice concerning the proposed assignment to the Board.

3. Coordination procedure between space stations in the Broadcasting-Satellite Service and terrestrial stations in Region 2

3.1 Before an administration in Region 2 notifies to the Board or brings into use any frequency assignment to a space station in the Broadcasting-Satellite Service, it shall coordinate the use of this assignment with the administrations of any Region whose terrestrial radiocommunication services may be affected. For this purpose, it shall inform the Board of all the technical characteristics of the station, as listed in the relevant sections of / Appendix 1A to the Radio Regulations /, which are necessary to assess the risk of interference to a terrestrial radiocommunication service¹⁾.

- 1) The technical data to be used in effecting coordination and the criteria to be employed in evaluating interference levels shall be based upon the technical information contained in the / Agreement / / Final Acts / or upon relevant CCIR Recommendations and shall be agreed between the Administrations concerned.

3.2 Coordination under paragraph 3.1 is only required when the prescribed limits shown in Appendix A are exceeded.

3.3 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 advise all administrations by circular telegram.

3.4 Any administration which considers that its terrestrial radio-communication services may be affected shall forward its comments to the administration seeking coordination and, in any case, to the Board. These comments must be forwarded within one hundred and twenty days from the date of the relevant weekly circular. It shall be deemed that any administration which has not forwarded comments within that period considers that its terrestrial radiocommunication services are unlikely to be affected.

3.5 Any administration which has forwarded comments on the projected station shall either give its agreement or, if this is not possible, send to the administration seeking coordination all the data on which its comments are based as well as any such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

3.6 The administration which plans to bring into use a space station in the Broadcasting-Satellite Service as well as any other administration which believes that its terrestrial radiocommunication services are likely to be affected by the station in question may request the assistance of the Board at any time during the coordination procedure.

3.7 If the assistance of the Board has been sought and there is a continuing disagreement between the administration seeking coordination and the administration which has forwarded its comments, the administration seeking coordination may, after a total period of two hundred days, from the date of the relevant weekly circular, send to the Board its notice concerning the frequency assignment in question.

4. Notification of frequency assignments

4.1 Any frequency assignment to a space station in the Broadcasting-Satellite Service shall be notified to the Board. Similar notice shall be given for any frequency to be used for the reception of transmissions from space stations in this Service.

4.2 A notice submitted in accordance with paragraph 4.1 and relating to a frequency assignment to a receiving earth station in the Broadcasting-Satellite Service shall pertain to a typical station indicating the related service area and shall include the information prescribed in Section ... of Appendix 1A to the Radio Regulations /.

4.3 For any notification under paragraphs 4.1 or 4.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A, 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.

4.4 For a frequency assignment to an earth or space station, each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than ninety days¹⁾ before this date.

4.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 4.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 4.4.

5. Procedure for the examination of notices and the recording of frequency assignments in the Master Register

5.1 Any notice which does not contain at least those basic characteristics specified in Appendix 1A, shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefore.

5.2 The Board shall examine each notice with respect to :

5.2.1 its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations and the provisions of this Agreement/Final Acts, (with the exception of those relating to the coordination procedures and to the probability of harmful interference);

5.2.2 its conformity, where applicable, with the provisions of paragraph 3.1 above, relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.2.3 its conformity, where applicable, with the provisions of paragraph 2.1, relating to coordination of the use of the frequency assignment with the other administrations concerned;

5.2.4 where appropriate, the probability of harmful interference to the service rendered by a station in a space or terrestrial radiocommunication service for which a frequency assignment has already been recorded in the Master Register in conformity with the provisions of No. 501 or 639BM of the Radio Regulations as appropriate, if that assignment has not, in fact, caused harmful interference to the service rendered by a station for which an assignment has been previously recorded in the Master Register and which itself is in conformity with No. 501 or 639BM as appropriate.

5.3 Depending upon the findings of the Board subsequent to the examination prescribed in sub-paragraphs 5.2.1 to 5.2.4, further action shall be as follows :

5.3.1 Where the Board reaches an unfavourable finding with respect to sub-paragraph 5.2.1 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.

1) The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

5.3.2 Where the Board reaches a favourable finding with respect to sub-paragraph 5.2.1, or where it reaches the same finding after resubmission of the notice, it shall examine the notice with respect to the provisions of sub-paragraphs 5.2.2 and 5.2.3.

5.3.3 Where the Board finds that the coordination procedures mentioned in sub-paragraphs 5.2.2 and 5.2.3 have been successfully completed with all administrations whose services 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.

5.3.4 Where the Board finds that the coordination procedures mentioned in sub-paragraph 5.2.2 or 5.2.3 have not, as appropriate, been applied or have been unsuccessfully applied, the notice shall be returned immediately by airmail to the notifying administration with the reason for its return and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.3.5 Where the notifying administration resubmits the notice and the Board finds that the coordination procedures have been successfully completed with all administrations whose services may be affected, the assignment shall be treated as indicated in sub-paragraph 5.3.3.

5.3.6 Where the notifying administration resubmits the notice and states that it has been unsuccessful in endeavouring to effect the coordination, the notice shall be examined by the Board with respect to sub-paragraph 5.2.4.

5.3.7 Where the Board reaches a favourable finding with respect to sub-paragraph 5.2.4, the assignment shall be recorded in the Master Register. The appropriate symbol indicating the finding by the Board shall indicate that the coordination procedures, as appropriate, referred to in paragraph 2.1 or 3.1 were not successfully completed. The date of receipt by the Board of the notice shall be entered in Column 2d.

5.3.8 Where the Board reaches an unfavourable finding with respect to sub-paragraph 5.2.4, the notice shall be returned immediately by airmail to the notifying administration with the reasons for the Board's findings and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.4 If the administration resubmits the notice unchanged with the insistence that it be reconsidered, but should the Board's unfavourable finding under sub-paragraph 5.2.4 remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. An appropriate remark shall be placed in Column 13 to indicate that the assignment is not in conformity with the provisions of sub-paragraphs 5.2.1 to 5.2.4, as appropriate. In the event that the administration concerned receives no complaint of harmful interference concerning the operation of the station in question for a period of one year from the commencement of operation, the Board shall review its finding.

6. Categories of frequency assignments

6.1 If harmful interference is actually caused to the reception of any space station in the Broadcasting-Satellite Service in Region 2 whose frequency assignment has been recorded in the Master Register as a result of a favourable finding with respect to sub-paragraphs 5.2.1 to 5.2.4, as appropriate, by the use of a frequency assignment to a space station which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 5.4 or of No. 639CP of the Radio Regulations, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

6.2 If harmful interference is actually caused to the reception of any space radiocommunication station using an assignment recorded in the Master Register as a result of a favourable finding with respect to Nos. 639BM, 639BN, 639BO, 639BP, 639BQ and 639BR of the Radio Regulations, as appropriate, by the use of an assignment to a space station in the Broadcasting-Satellite Service in Region 2 which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 5.4, the station using the latter assignment must, on receipt of advice thereof, immediately eliminate this harmful interference.

6.3 If harmful interference is actually caused to the reception of any terrestrial station using an assignment recorded in the Master Register as a result of a favourable finding with respect to No. 501 of the Radio Regulations, by the use of an assignment to a space station in the Broadcasting-Satellite Service in Region 2 which has been subsequently recorded in the Master Register in accordance with the provisions of paragraph 5.4, the station using the latter assignment must, on receipt of advice thereof, immediately eliminate this harmful interference.

6.4 If harmful interference to the reception of any station whose assignment is in accordance with sub-paragraph 5.2.1, is actually caused by the use of a frequency assignment which is not in conformity with sub-paragraph 5.2.1, or with No. 501, 570AB or 639BM of the Radio Regulations, the station using the latter frequency assignment, must, upon receipt of advice thereof, immediately eliminate this harmful interference.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

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COMMITTEE 6

Second Report of Working Group 6B

Submitted herewith is the Report of Working Group 6B concerning procedures for the implementation of stations in the Fixed-Satellite Service in the band 11.7 - 12.2 GHz in Region 2 in cases where broadcasting satellite stations are involved.

The procedures contained in the Annex are largely based on Article 9A of the Radio Regulations. The most significant change is the substitution of a power flux-density limit, in lieu of Appendix 29, to determine the need for initiating the coordination procedure.

The Annex has been prepared with the understanding that only geostationary satellites would be utilized for space services in the band in question. It was the view of the Working Group that it would be desirable if that restriction could be stated in an appropriate section of the Final Acts.

To complete the text in the Annex, several items of technical information are needed from Committee 4, as follows :

- a) Appendix 1 to the Annex is to establish the maximum power flux-density for purposes of initiating coordination. Such information is contained in Document No. 188 which is under review in Committee 4.
- b) Appendix 1A and Appendix 1B to the Radio Regulations need to be reviewed to ascertain that they provide for all the information needed to carry out the coordination process. It is understood that Committee 4 has undertaken a similar review in response to Document No. 194.

F.S. URBANY
Chairman, Working Group 6B

Annex : 1



A N N E X

ARTICLE / 7

PRELIMINARY PROCEDURES, NOTIFICATION AND RECORDING IN THE MASTER
INTERNATIONAL FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS TO STATIONS IN
THE FIXED-SATELLITE SERVICE IN THE FREQUENCY BAND 11.7 - 12.2 GHz (IN REGION 2)
IN CASES WHERE BROADCASTING-SATELLITE STATIONS IN THE / PLAN / ARE INVOLVED¹⁾

SECTION I - PROCEDURE FOR THE ADVANCE PUBLICATION OF INFORMATION
ON PLANNED FIXED-SATELLITE SYSTEMS

1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 2.1 where applicable, send to the International Frequency Registration Board not earlier than five years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 1B to the Radio Regulations / 2⁷

1.2 Any amendments to the information sent concerning a planned satellite system in accordance with paragraph 1.1 shall also be sent to the Board as soon as they become available.

1.3 The Board shall publish the information sent under paragraphs 1.1 and 1.2 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.

1.4 If, after studying the information published under paragraph 1.3, any administration is of the opinion that interference, which may be unacceptable, may be caused to its frequency assignments contained within the Broadcasting-Satellite / Plan /, it shall within ninety days after the date of the weekly circular publishing the information listed in Appendix 1B to the Radio Regulations, 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 fixed-satellite network(s) of that system on which details have been published.

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- 1) These provisions do not replace the procedures prescribed in Article 9A of the Radio Regulations in cases where stations other than those of the Broadcasting-Satellite Service as contained in the / Plan / are involved.

/ 2) Committee 4 to advise if any additional information is needed /

1.5 An administration receiving comments sent in accordance with paragraph 1.4 shall endeavour to resolve any difficulties that may arise without considering the possibility of adjustment to broadcasting-satellite 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, provided that any modification which may result to the / Plan / are in accordance with Article / Article 4 (Document No. 187) /.

1.6 In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board.

1.7 In complying with the provisions of paragraphs 1.5 and 1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 2.1 or where this is not applicable, the sending of its notices to the Board, until one hundred and fifty days after the date of the weekly circular containing the information listed in Appendix 1B to the Radio Regulations on the relevant satellite network. However, in respect of those administrations with whom difficulties have been resolved or who have responded favourably, the coordination procedure, where applicable, may be commenced prior to the expiry of the one hundred and fifty days mentioned above.

1.8 An administration on behalf of which details of planned fixed-satellite networks in its system have been published, in accordance with the provisions of paragraphs 1.1 to 1.3, shall periodically inform the Board whether or not comments have been received and of the progress made, with other administrations, in resolving any difficulties. 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.

SECTION II - COORDINATION PROCEDURES TO BE APPLIED IN APPROPRIATE CASES

2.1 Before an administration notifies to the Board or brings into use any new or modified frequency assignment to a space station in the Fixed-Satellite Service, it shall seek the agreement of any other administration having an assignment to a broadcasting-satellite station appearing in the / Plan /, if

- any portion of the occupied bandwidth proposed for the space station in the Fixed-Satellite Service falls within the occupied bandwidth of a broadcasting-satellite assignment, and
- the power flux density which would be produced by the proposed fixed-satellite assignment exceeds the value specified in Appendix / 1 / *.

For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix 1A to the Radio Regulations / 1 /.

/ * to be provided by Committee 4.

2.2 No additional agreement is necessary when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of the Broadcasting-Satellite Service of another administration, meet the requirements of paragraph 2.1 above, or, where this assignment has previously been the subject of agreement, and will not cause any interference potential over that previously agreed.

2.3 An administration seeking coordination under paragraph 2.1 shall at the same time send to the Board a copy of the request for coordination with the information listed in Appendix 1A to the Radio Regulations and the name(s) of the administration(s) with which coordination is sought. The Board shall determine on the basis of Appendix 1 whose frequency assignments in the [Plan] are considered to be affected. The Board shall include the names of those administrations with the information received from the administration seeking agreement and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system 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.

2.4 An administration believing that it should have been included in the procedure under paragraph 2.1 shall have the right to request that it be brought into the procedure.

2.5 An administration with which coordination is sought under paragraph 2.1 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 paragraph 2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of thirty days. Upon receipt of the coordination data, an administration shall, having regard to the proposed date of bringing into use of the assignment for which agreement was requested, promptly examine the matter with regard to interference²⁾ which would be caused to the service rendered by its stations in respect of which coordination is sought under paragraph 2.1, and shall, within ninety days from the date of the relevant weekly circular, notify of its agreement. If 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, and make such suggestions as it may be 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.

[1) Committee 4 to advise if any additional information is needed]

2) The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in [the Final Acts] or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.

2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where :

- a) an administration with which coordination is sought under paragraph 2.1 fails to acknowledge receipt, under paragraph 2.5, within sixty days after the date of the weekly circular publishing the information relating to the request for coordination;
- b) an administration has acknowledged receipt under paragraph 2.5, but fails to give a decision within ninety days from the date of the relevant weekly circular;
- c) there is disagreement between the administration seeking coordination and an administration with which coordination is sought as to the acceptable level of interference;
- d) coordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

2.7 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

2.8 Where the Board receives a request under paragraph 2.6 a), it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

2.9 Where the Board receives an acknowledgement following its action under paragraph 2.8, or where the Board receives a request under paragraph 2.6 b), it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

2.10 Where the Board receives a request under paragraph 2.6 d), it shall endeavour to effect coordination in accordance with the provisions of paragraph 2.1, as appropriate. The Board shall also, where appropriate, act in accordance with paragraph 2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 2.5, it shall act in accordance with paragraph 2.8.

2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 2.9, it shall be deemed that the administration with which coordination was sought has undertaken :

- a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its broadcasting-satellite stations by the use of the assignment for which coordination was requested;
- b) that its broadcasting-satellite stations will not cause harmful interference to the use of the assignment for which coordination was requested.

2.12 Where necessary, as part of the procedure under paragraph 2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after one hundred and fifty days from the date of the request for coordination, taking into consideration the provisions of paragraph 3.4, send its notice concerning the proposed assignment to the Board. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 4.11.2 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

SECTION III - NOTIFICATION OF FREQUENCY ASSIGNMENTS

3.1 Any frequency assignment to a space station in the Fixed-Satellite Service shall be notified to the Board :

- a) if the use of the frequency concerned is capable of causing harmful interference to an assignment for a broadcasting-satellite station in the [Plan]¹⁾ of another administration; or
- b) if it is desired to obtain international recognition of the use of the frequency.

3.2 Similar notice shall be given for any frequency to be used for reception by an earth station where one or more of the conditions specified in paragraph 3.1 are applicable.

3.3 For any notification under paragraph 3.1 or 3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case together with such further data as it may consider appropriate. [*]

3.4 Each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than ninety days²⁾ before this date.

1) Attention of administrations is specifically drawn to the application of paragraph 2.1 above.

[*] Committee 4 to advise if any additional information is needed.

2) The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 3.4.

SECTION IV - PROCEDURE FOR THE EXAMINATION OF NOTICES
AND THE RECORDING OF FREQUENCY ASSIGNMENTS IN THE MASTER REGISTER

4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 1A to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

4.2 Upon receipt of a complete notice, the Board shall include the particulars thereof, 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.

4.3 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

4.4 Complete notices shall be considered by the Board in the order of their receipt. 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.

4.5 The Board shall examine each notice :

4.5.1 a) with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of the / Final Acts / (with the exception of those relating to the coordination procedures and the probability of harmful interference);

4.5.2 b) where appropriate, with respect to its conformity with the provisions of paragraph 2.1, relating to the coordination of the use of the frequency assignment with the other administrations concerned having an assignment to a broadcasting-satellite station appearing in the / Plan /;

4.5.3 c) where appropriate, with respect to the probability of harmful interference to the service rendered or to be rendered by a broadcasting-satellite station existing in the / Plan /.

4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 4.5.1, 4.5.2 and 4.5.3, as appropriate, further action shall be as follows :

4.7 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are not applicable.

- 4.7.1 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.
- 4.8 Finding unfavourable with respect to paragraph 4.5.1.
- 4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is favourable with respect to paragraphs 4.5.2 and 4.5.3, 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.
- 4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is unfavourable with respect to paragraphs 4.5.2 or 4.5.3, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 4.8.1 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not use those circumstances subsequently for a continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.
- 4.8.3 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. 115 of the Radio Regulations, it 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 the satisfactory solution of the problem.
- 4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 4.8.1 or 4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 4.5.1, it shall be treated as a new notice.

4.9 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are applicable.

4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose assignments to broadcasting-satellite stations appearing in the /Plan/ 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.

4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take appropriate action and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with paragraph 4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3.

4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and 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 and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose assignments to broadcasting-satellite stations appearing in the /Plan/ 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.

4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 2.1, it shall be treated in accordance with the provisions of paragraph 4.9.2. 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.

4.9.6 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, the Board shall inform the administrations concerned thereof. The notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3, as appropriate. 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.

4.10 Finding favourable with respect to paragraphs 4.5.1 and 4.5.3.

4.10.1 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.

4.11 Finding favourable with respect to paragraph 4.5.1, but unfavourable with respect to paragraph 4.5.3.

- 4.11.1 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 the satisfactory solution of the problem.
- 4.11.2 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 4.5.3, 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.
- 4.11.3 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 paragraph 4.11.2 to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the notification should again be returned to the notifying administration in accordance with paragraph 4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 4.11.2 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note in the Remarks Column indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment over a specified period shall not use those circumstances subsequently for a continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

4.12 Change in the basic characteristics of assignments already recorded in the Master Register.

- 4.12.1 A notice of a change in the basic characteristics of an assignment in the Fixed-Satellite Service already recorded, as specified in Appendix 1A of the Radio Regulations (except the name of the station or the name of the locality in which it is situated) shall be examined by the Board according to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and the provisions of paragraphs 4.7 to 4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended according to the notice.

- 4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 4.5.1, should the Board reach a favourable finding with respect to paragraphs 4.5.2 and 4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to assignments to broadcasting-satellite stations appearing in the / Plan /, 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.
- 4.12.3 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.
- 4.13 Recording of frequency assignments in the Fixed-Satellite Service notified before being brought into use.
- 4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.
- 4.13.2 If, within thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.
- 4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 4.13.2, the entry concerned shall be cancelled. The Board shall advise the administration concerned before taking such action.

SECTION V - RECORDING OF FINDINGS IN THE MASTER REGISTER

5. 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 Column 13a. In addition, a remark indicating the reasons for any unfavourable finding shall be inserted in the Remarks Column.

SECTION VI - CATEGORIES OF FREQUENCY ASSIGNMENTS

- 6.1 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment appears in the /Plan/, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of paragraph 4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

6.3 If harmful interference to the reception of any broadcasting-satellite station whose assignment is in accordance with the /Plan/, is actually caused by the use of a frequency assignment which is not in conformity with paragraph 4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

SECTION VII - REVIEW OF FINDINGS

7.1 The review of a finding by the Board may be undertaken :

- at the request of the notifying administration;
- at the request of any other administration interested in the question, but only on the grounds of actual harmful interference;
- on the initiative of the Board itself when it considers this is justified.

7.2 The Board, in the light of all the data at its disposal shall review the matter, taking into account paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.3 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.

7.4 If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

SECTION VIII - MODIFICATION, CANCELLATION AND REVIEW OF ENTRIES IN THE MASTER REGISTER

8.1 Where the use of a recorded assignment to a station in the Fixed-Satellite Service 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.

8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 8.1, that a recorded assignment to a space station in the Fixed-Satellite Service has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.

8.3 If no reply is received within six months of action by the Board under paragraph 8.2, or if the reply does not confirm that the assignment to a space station in the Fixed-Satellite Service is to be brought back into regular use within this six-month limit, a symbol should be entered against the entry in the Master Register.

8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within ninety days of such discontinuance, whereupon the entry shall be removed from the Master Register.

8.5 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 the entry.

8.6 If, in connection with an inquiry by the Board under paragraph 8.5 the notifying administration has failed to supply the Board within forty-five days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

SECTION IX - STUDIES AND RECOMMENDATIONS

9.1 If it is requested by any administration, and if the circumstances appear to warrant, 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.

9.2 The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.

9.3 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 ninety days, 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.

SECTION X - MISCELLANEOUS PROVISIONS

10.1 If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance :

- a) computation necessary in the application of Appendix [1];
- b) any other assistance of a technical nature for completion of the procedures in this Article.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 222-E

4 February 1977

Original : French

Viet Nam (Socialist Republic of)

"Noting that some of the documents distributed to the States invited to the Broadcasting-Satellite Conference of 10 January 1977 to keep them informed on frequency band registrations for satellite broadcasting contain explicit references to the archipelagos of the Paracels and Spratleys, the Government of the Socialist Republic of Viet Nam wishes to reaffirm that the said archipelagos come under the territorial sovereignty of the Socialist Republic of Viet Nam".



INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to

Document No. 223-E

7 February 1977

Original : Spanish

COMMITTEES 5 and 6

Colombia

Does not concern the English text.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 223-E

4 February 1977

Original : Spanish

COMMITTEES 5 AND 6

Colombia

All the various concepts of geostationary orbit planning put forward at this Conference entail the assignment of frequencies and orbital positions to Administrations and Regions in perpetuity.

The introduction of the concept of frequency-orbit in the footnote on page 3 of Document No. 187 confirms that the Conference is not only seeking to allocate frequencies, but also to assign geographically fixed points in space.

The task of apportioning the geostationary orbit cannot have been assigned to the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in frequency bands 11.7-12.2 GHz (in Regions 2 and 3) and 11.7-12.5 GHz (in Region 1) either by Resolution No. 27 of the Plenipotentiary Conference of Malaga-Torremolinos, 1973, or by Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, or by ITU Administrative Council Resolution No. 762. There is no provision in the Convention or in its associated Regulations empowering the Union, its organs or its Administrative Conferences to dispose of physical space in any sense whatever. The purposes of the Union and its organs are fully set out in Article 4 of the Convention. This Conference, therefore, has no legal power to assign segments or locations in perpetuity for fixed communications stations.

We take the view, therefore, that this matter must be clearly settled before giving final form to the work of the Conference.



PLENARY MEETING

B.3(Rev.1)

3rd SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
	108(Rev.1) }	Technical data which were used in
	122 }	establishing the Plan and which should
C.4	159 }	be used for the modification of the
	177)	Plan

Miss M. HUET
Chairman of the
Editorial Committee

Note : Differences between Document No. 224(Rev.1) and Document No. 224 are indicated by vertical lines in the margin and by notes from the Editorial Committee.

Annexes : 20 pages



TECHNICAL DATA WHICH WERE USED IN ESTABLISHING
THE PLAN AND WHICH SHOULD BE USED FOR THE MODIFICATION OF THE PLAN

1. DEFINITIONS

1.1 Service area

The area on the surface of the earth in which the Administration responsible for the service has the right to demand that the agreed protection conditions be provided.

Note : In the definition of service area, it is made clear that within the service area the agreed protection conditions can be demanded. This is the area where there should be at least the wanted power flux density and protection against interference based on the agreed protection ratio for the agreed percentage of time should be achieved.

1.2 Coverage area

The area on the surface of the earth delineated by a contour of a constant given value of power flux density which would permit the wanted quality of reception in the absence of interference.

Note 1 : In accordance with the provisions of No. 428A of the Radio Regulations, the coverage area must be the smallest area which encompasses the service area.

Note 2 : The coverage area, which will normally encompass the entire service area, will result from the intersection of the antenna beam (elliptical or circular) with the surface of the earth, and will be defined by a given value of power flux density. For example, in the case of a Region 1 or 3 country with a service planned for individual reception, it would be the area delineated by the contour corresponding to a level of -103 dBW/m^2 for 99 % of the worst month. There will usually be an area outside the service area but within the coverage area in which the power flux density will be at least equivalent to the minimum specified value; however, protection against interference will not be provided in this area.

1.3 Beam area

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the earth.

Note : The beam area is simply that area on the earth's surface corresponding to the -3 dB points on the satellite antenna radiation pattern. In many cases the beam area would almost coincide with the coverage area, the discrepancy being accounted for by the permanent difference in path lengths from the satellite throughout the beam area, and also by the permanent variations, if any, in propagation factors across the area. However, for a service area where the maximum dimension as seen from the satellite position is less than 0.6° (the agreed minimum practicable satellite antenna half-power beamwidth), there could be a significant difference between the beam area and the coverage area.

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.

2. RADIO PROPAGATION FACTORS

2.1 The propagation loss on the space to earth path is equal to the free space path loss plus the attenuation exceeded for not more than 1 % of the worst month; the latter being given in Figure 1 for the five rain-climatic zones shown in Figure 2.

2.2 In using the curves of Figure 1, the difference between clear weather attenuation and the attenuation for 99 % of the worst month should be limited to a maximum of 2 dB by appropriate choice of angle of elevation.

2.3 In planning the broadcasting-satellite service, for emissions applying circular polarization, the level of the depolarized component relative to the level of the co-polar component should be taken as :

for rain-climatic zones 1 and 2 : -27 dB

for rain-climatic zones 3, 4 and 5 : -30 dB

/ Note from the Editorial Committee :

2.1 New text

2.2 As original 2.4

2.3 As original 3.3

Note to Figure 2 : First sentence of original 2.1

Original 2.2 transferred to new 3.3

Original 2.3 deleted.

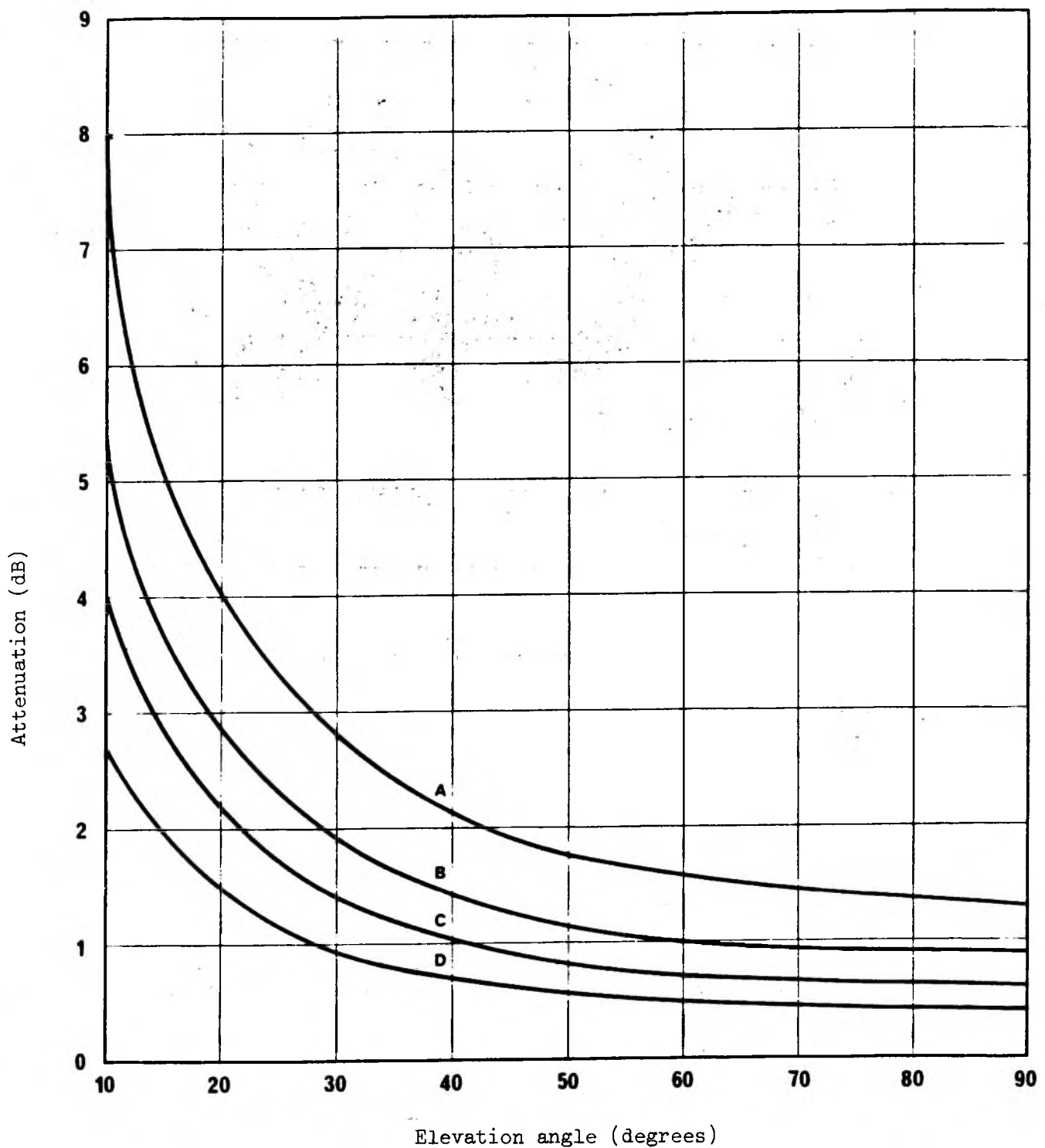


FIGURE 1

Predicted attenuation values exceeded for not more than 1 % of the worst month (0.25 % of the time) at 12 GHz in the rain-climatic zones indicated in Figure 2.

A	: Climatic zone 1	C	: Climatic zones 3 and 4
B	: Climatic zone 2	D	: Climatic zone 5

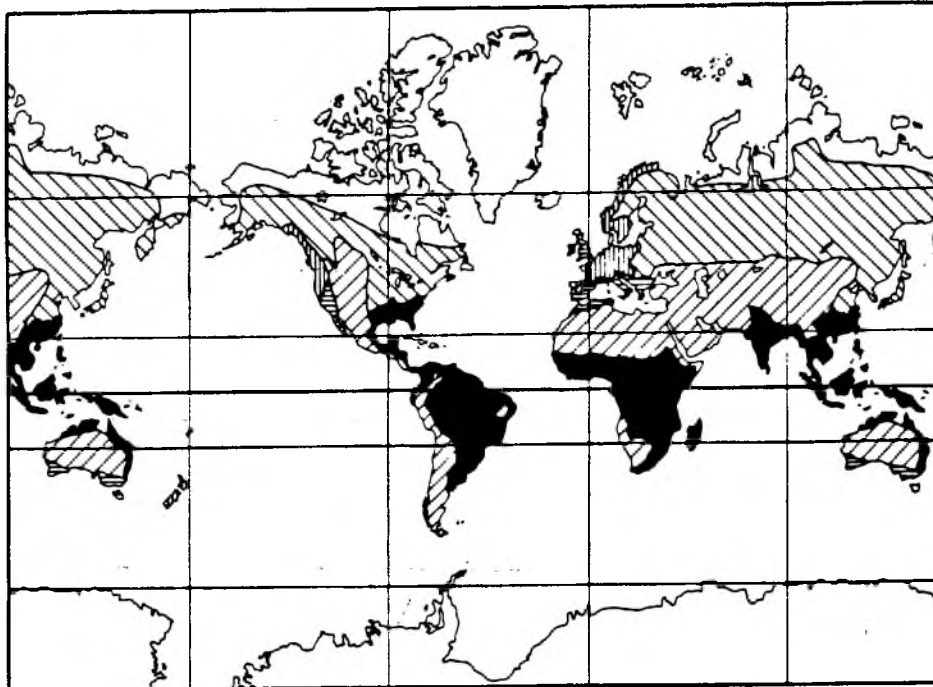


FIGURE 2

Regions corresponding to rainfall rate distributions of Fig. 11



It should be noted that extensive measurements of attenuation due to rainfall have not been carried out in the tropical countries, especially in the African region.

3. BASIC TECHNICAL CHARACTERISTICS

3.1 Type of modulation

Planning of the broadcasting-satellite service, is based on the use of a signal consisting of a video signal with an associated carrier, frequency modulated by a sound signal, both frequency-modulating a carrier in the 12 GHz band, with a pre-emphasis characteristic in accordance with Figure 3 (from CCIR Recommendation 405).

/ Note from Editorial Committee : The second paragraph of the original text of 3.3 has been transferred to another annex dealing with limits to be observed in modifications to the Plan. /

3.2 Polarization

3.2.1 For the planning of the broadcasting-satellite service, circular polarization shall be used in Regions 1, 2 and 3.*)

3.2.2 If possible, the polarization of different beams intended to serve the same area should be the same.

*) The administration of the United States of America expressed a reservation regarding the adoption of circular polarization for Region 2 and indicated that the very probable adoption of linear polarization by the fixed-satellite service would preclude the use of cross-polarization to facilitate sharing between the two space services and would affect orbit and spectrum utilization within the Region.

The administration of Iran expressed a reservation regarding the adoption of circular polarization for planning the broadcasting-satellite service in Region 3 and stated its intention to use linear polarization.

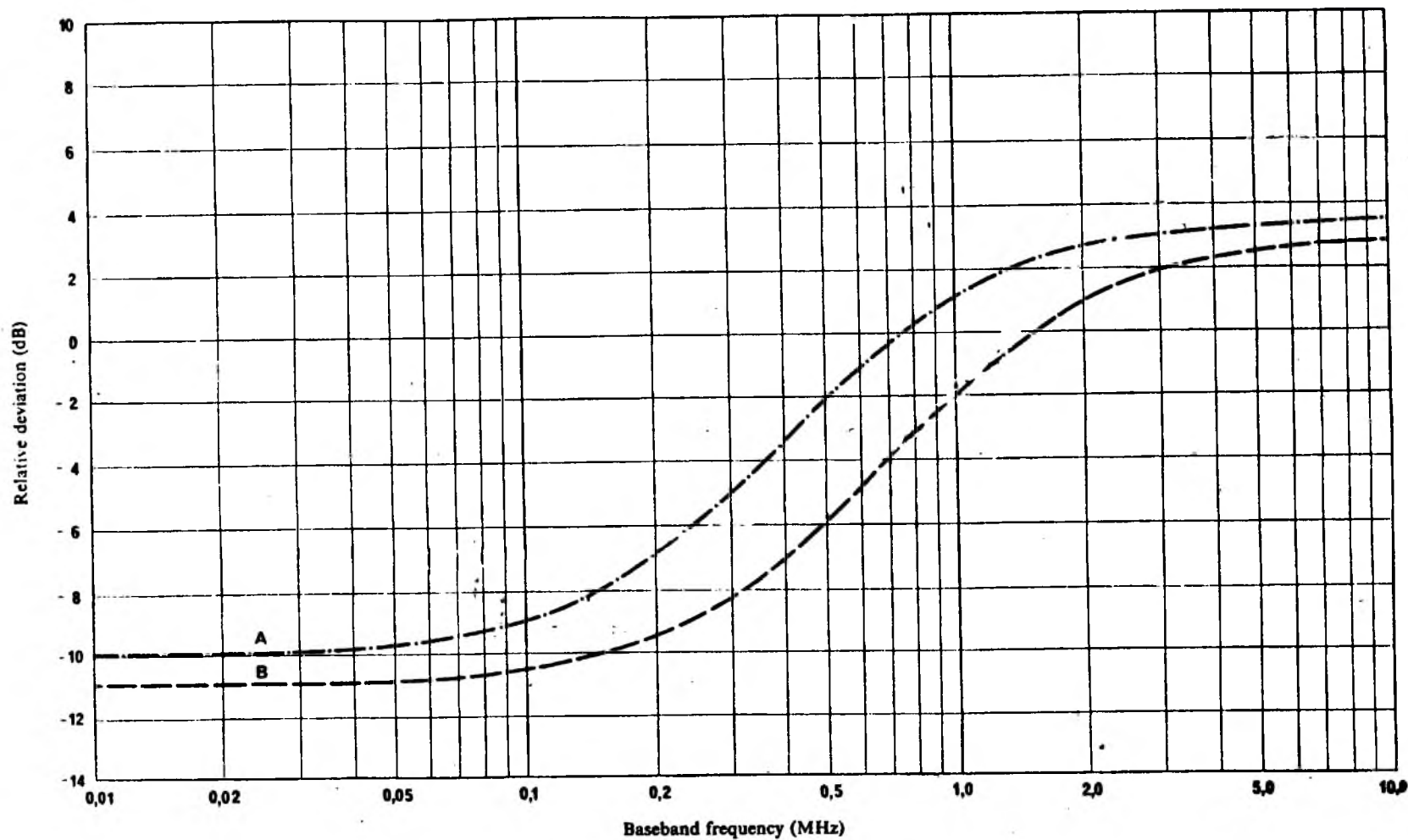


FIGURE 3

Pre-emphasis characteristic for television on 525- and 625-line systems

Curve A: 525-line system
Curve B: 625-line system

3.3 Carrier-to-noise ratio

For the purpose of planning the broadcasting-satellite service, the carrier-to-noise ratio is equal to 14 dB for 99 % of the worst month.

The reduction in quality in the down-link due to thermal noise in the up-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio not exceeding 0.5 dB for 99 % of the worst month.

/ Note from the Editorial Committee :

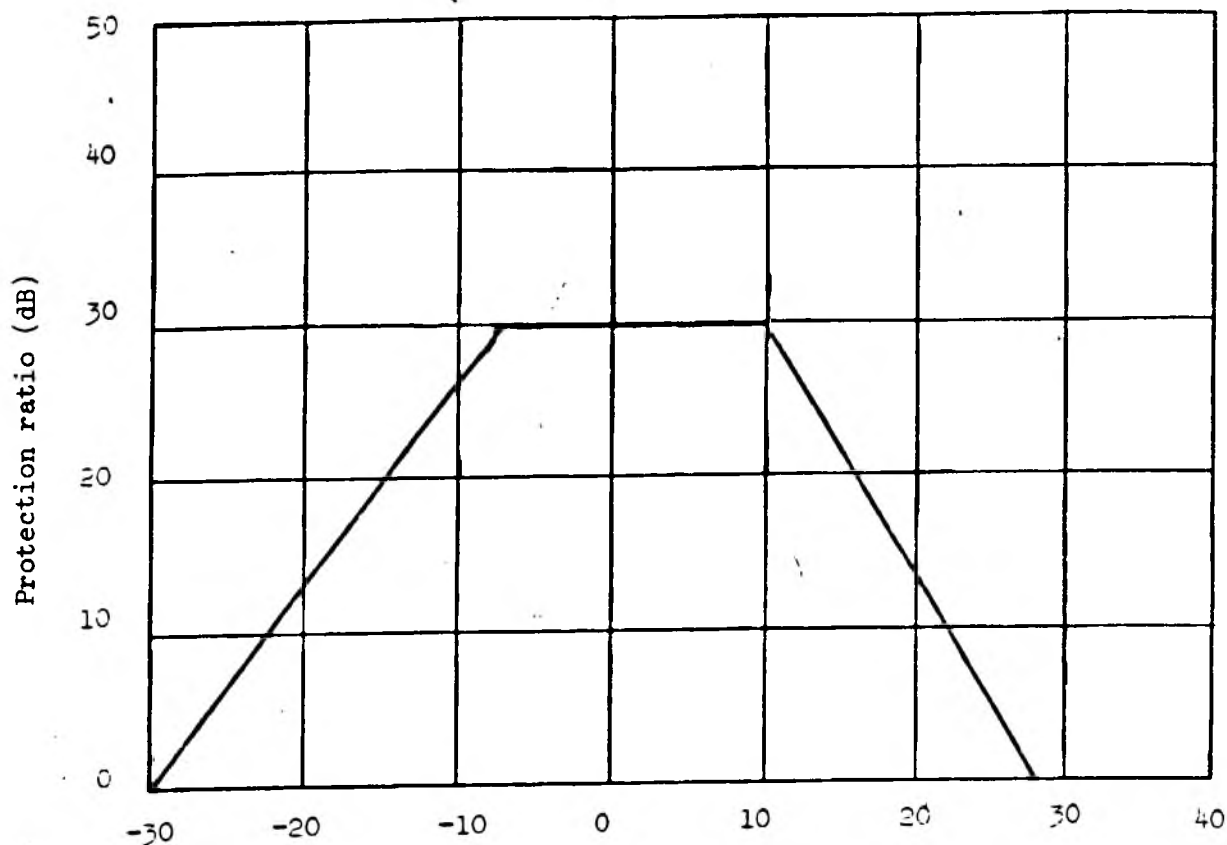
1st paragraph - original 2.2 (first sentence only, second sentence deleted)

2nd paragraph - original 3.10.6./

3.4 Protection ratio between two FM television signals

3.4.1 For the planning of the broadcasting-satellite service, the protection ratio curve given in Figure 4 is used, for all television standards.

3.4.2 It should be noted that this curve applies solely in those cases where there is no energy dispersal signal or where the amount of energy dispersal is limited to the value given in annex / sharing criteria /.



Difference between carrier frequencies of unwanted and
wanted signals (MHz)

$$\Delta f = (f_{\text{unw}} - f_w)$$

FIGURE 4

Protection ratio between two FM television signals

3.4.3 For planning in Regions 1 and 3 the following protection ratios have been adopted :

31 dB for co-channel signals

15 dB for adjacent channel signals.

3.5 Figure of merit (G/T) of a receiving installation in the broadcasting-satellite service

In planning the broadcasting-satellite service, the value of the figure of merit (G/T) used is :

6 dB/K for individual reception

14 dB/K for community reception.

The values are calculated from the following formula which allows for pointing error, polarization effects, and ageing :

$$G/T = \frac{\alpha \beta G_r}{\alpha T_a + (1-\alpha) T_0 + (n-1) T_0}$$

where

α : the total coupling losses, expressed as a power ratio

β : the total losses due to the pointing error, polarization effects and ageing, expressed as a power ratio

G_r : the effective gain of the receiving antenna, expressed as a power ratio and taking account of the method of feeding and the efficiency

T_a : the effective temperature of the antenna, taken in the example below as 150 K

T_0 : the reference temperature = 290 K

n : the overall noise factor of the receiver, expressed as a power ratio.

See also CCIR Report 473-1 (Annex I).

/ Note from Editorial Committee :

value for individual reception : original 3.51

value for community reception : original 3.3.5 (third paragraph)

formula : CCIR Report 473-1 (Annex I) 7

3.6 Receiving antenna3.6.1 Minimum diameter of receiving antenna

For planning the broadcasting-satellite service the minimum diameter of receiving antenna considered is such that the half-power beamwidth, ϕ_0 , is :

- a) for individual reception : 2° in Regions 1 and 3
 1.8° in Region 2
- b) for community reception : 1° in all Regions.

[Note from Editorial Committee :
 values for individual reception : original 3.5.2.2
 value for community reception : original 3.5.3 (1st paragraph)]

3.6.2 Receiving antenna reference patterns

The co-polar and cross-polar reference patterns of receiving antennae are given in Figures 5 and 6.

- a) The relative antenna gain (dB) is given by the curves in Figure 5 for :
 - individual reception in Regions 1 and 3 :
 - Curve A for the co-polar component and
 - Curve B for the cross-polar component;
 - community reception :
 - in all Regions, Curve A' up to the intersection with Curve C, then Curve C, for the co-polar component,
 - in Regions 1 and 3, Curve B for the cross-polar component.

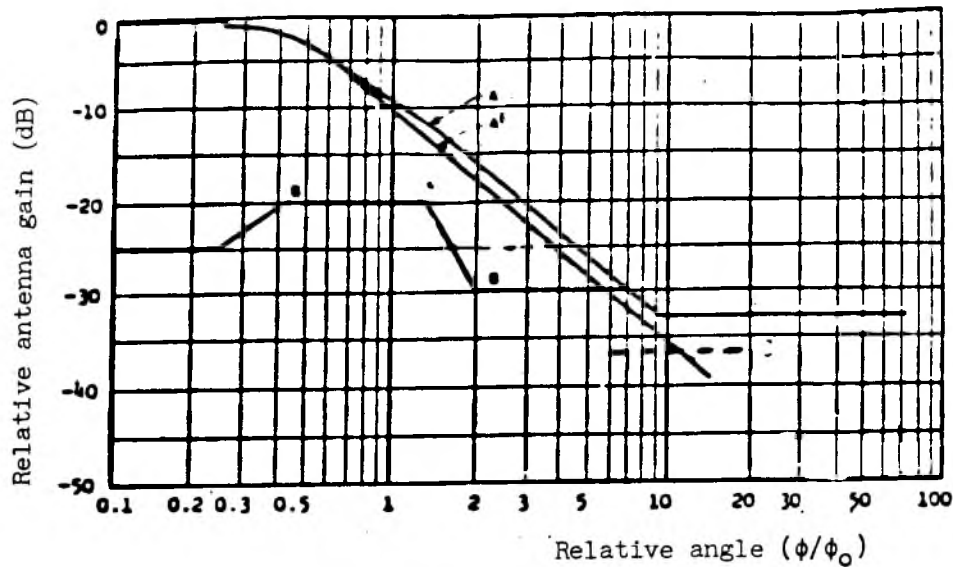


FIGURE 5

Co-polar and cross-polar reference patterns
for receiving antenna



Curve A : Co-polar component for individual reception without sidelobe suppression

$$\begin{aligned} & 0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\ & -12\left(\frac{\phi}{\phi_0}\right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\ & -\left[9.0 + 20 \log_{10}\left(\frac{\phi}{\phi_0}\right)\right] && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\ & -\left[8.5 + 25 \log_{10}\left(\frac{\phi}{\phi_0}\right)\right] && \text{for } 1.26 \phi_0 < \phi \leq 9.55 \phi_0 \\ & -33 && \text{for } 9.55 \phi_0 < \phi \end{aligned}$$

Curve A' : Co-polar component for community reception without sidelobe suppression

$$\begin{aligned} & 0 && \text{for } 0 \leq \phi/\phi_0 \leq 0.25 \\ & -12(\phi/\phi_0)^2 && \text{for } 0.25 < \phi/\phi_0 \leq 0.86 \\ & -\left[10.5 + 25 \log_{10}(\phi/\phi_0)\right] && \text{for } 0.86 < \phi/\phi_0 \text{ up to intersection with} \\ & && \text{Curve C, (then Curve C)} \end{aligned}$$

Curve B : Cross-polar component for both types of reception

$$\begin{aligned} & -25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\ & -(30 + 40 \log_{10}|\frac{\phi}{\phi_0} - 1|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\ & -20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\ & -(30 + 25 \log_{10}|\frac{\phi}{\phi_0} - 1|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0 \\ & -30 && \text{until intersection with co-polar component curve; then as for} \\ & && \text{co-polar component} \end{aligned}$$

Curve C : Minus the on-axis gain

Note : for values of ϕ_0 see 3.6.1

b) For Region 2, the relative antenna gain (dB) is given by the curves in Figure 6 for :

- individual reception, for which use should be made of :

Curve A for the co-polar component;

Curve B for the cross-polar component;

- community reception for which Curve B should be used for the cross-polar component (the co-polar component being given in Figure 5).

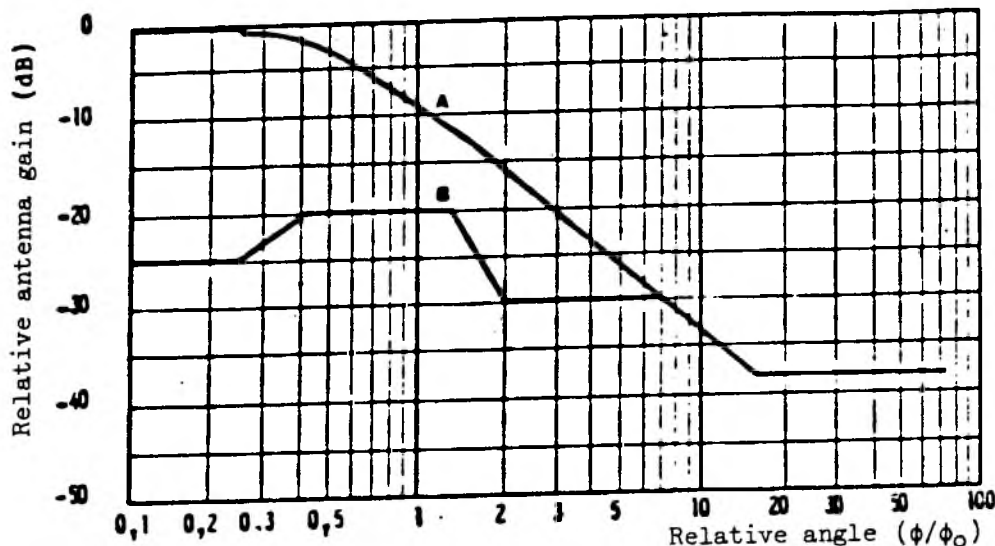


FIGURE 6

Reference patterns for co-polar and cross-polar components for receiving antennae for individual reception in Region 2



Curve A : Co-polar component without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-12 \left(\frac{\phi}{\phi_0} \right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\
 &-9.0 + 20 \log_{10} \left(\frac{\phi}{\phi_0} \right) && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\
 &-8.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right) && \text{for } 1.26 \phi_0 < \phi \leq 15.14 \phi_0 \\
 &-38 \text{ dB} && \text{for } \phi > 15.14 \phi_0
 \end{aligned}$$

Curve B : Cross-polar component

$$\begin{aligned}
 &-25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-(30 + 40 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\
 &-20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\
 &-(30 + 25 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0 \\
 &-30 && \text{until intersection with co-polar component curve; then as for co-polar component}
 \end{aligned}$$

Note : for values of ϕ_0 see 3.6.1

13.7 Grouping of channels in the same beam

Planning in Region 1 has been carried out by trying to group all the channels radiated within a single antenna beam within a frequency range of 400 MHz, in order to simplify receiver construction.

/ Note from Editorial Committee : Original 3.5.4 with second and third paragraphs deleted _/

13.8 Necessary bandwidth

The necessary bandwidth considered is as follows :

- 625-line systems : 27 MHz

- 525-line system M of Region 2 : / individual reception : 23 MHz _/
/ community reception : 18 MHz _/

3.9 Guard bands

A guard band is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel.

For the planning of the broadcasting-satellite service, the guard bands necessary to protect the services in adjacent frequency bands are shown in the table below.

Regions	Guard band at the lower edge of the band (11.7 GHz)	Guard band at the upper edge of the band (12.2/12.5 GHz)
1	14 MHz	11 MHz
2	12 MHz	9 MHz
3	14 MHz	/ 11 MHz /

/ Note from Editorial Committee : The second paragraph of the original 3.7.2 and all of the original 3.7.3 have been deleted. _/

3.10 Channel spacing

The spacing between two adjacent channels is $\underline{19.18}_7$ MHz. The Plan gives the assigned frequency for each channel.

$\underline{1}$ Note from Editorial Committee : from Document No. DT/48. $\underline{7}$

3.11 Orbital spacing

The Plan for Regions 1 and 3 has been based on nominal orbital positions spaced uniformly at intervals of 6° .

3.12 Satellite station keeping

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy of better than $\pm 0.1^\circ$ in both the N-S and E-W direction is considered feasible for broadcasting satellites. (These tolerances lead to a maximum excursion of $\pm 0.14^\circ$ from the nominal satellite position).

3.13 Elevation angle of receiving antennae

The Plan has been based on the consideration of a minimum angle of elevation of 20° to minimize the required e.i.r.p. of the satellite and to reduce the effects of shadowing and the possibility of interference from terrestrial services. However, for areas situated in latitudes above about 60° , the angle of elevation is of necessity less than 20° .

For mountainous areas where an angle of 20° may not suffice, an angle of at least 30° has been provided where possible to provide an acceptable service. An angle of elevation of up to 40° or even higher has been considered for service areas subject to high precipitation (e.g. climatic zone 1).

Some dry, non-mountainous areas may be given an acceptable service at angles of elevation less than 20° .

In areas with small angles of elevation, the shadowing effect of tall buildings may have to be taken into account.

In choosing a satellite position designed to give the maximum angle of elevation at the ground, the influence of such a position on the eclipse period has been borne in mind.

3.14 Transmitting antenna3.14.1 Cross-section of transmitted beam

Planning has been based on the use of transmitting antennae with beams of elliptical or circular cross-section.

If the cross-section of the transmitted beam is elliptical, the effective beamwidth ϕ_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 :

$$G_m(\text{dB}) = 44.44 - 10 \log_{10} a - 10 \log_{10} b$$

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.

3.14.2 Minimum beamwidth of transmitting antenna

A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been agreed for planning.

3.14.3 Transmitting antenna reference patterns

The reference patterns for the co-polar and cross-polar components of satellite transmitting antenna used in preparing the Plan are given in Figure 7.

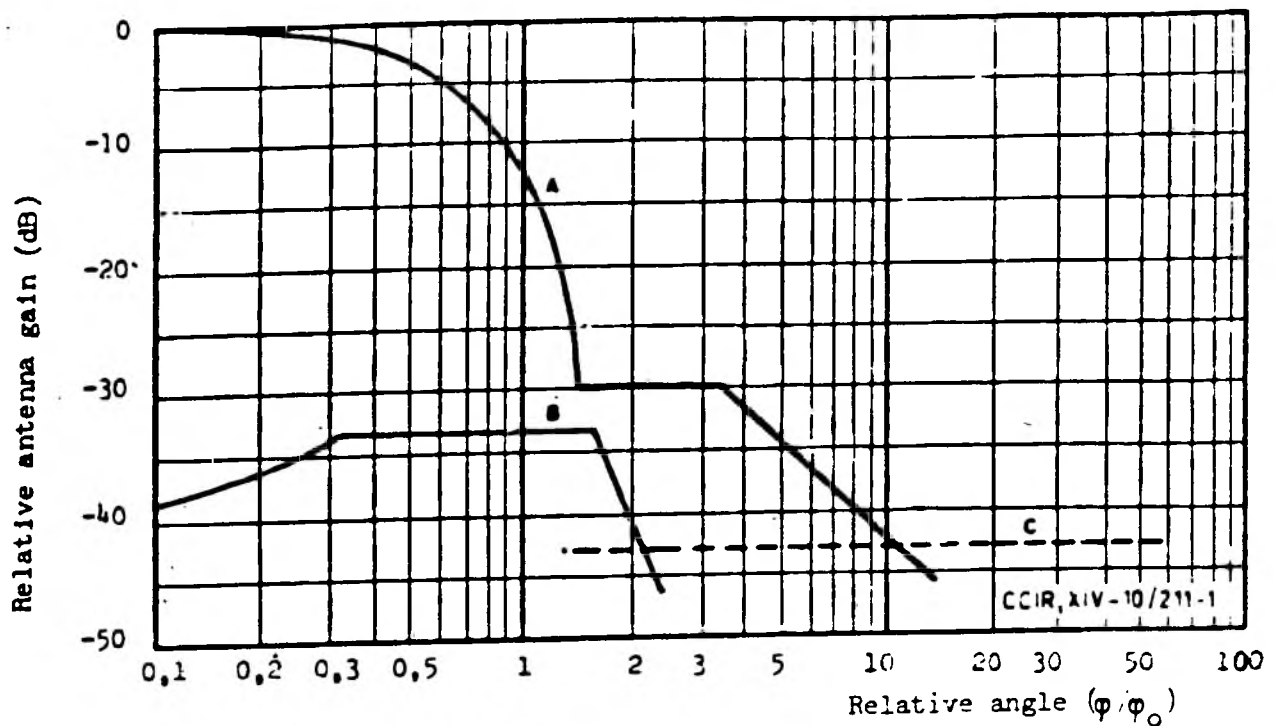


FIGURE 7

Reference patterns for co-polar and cross-polar components
for satellite transmitting antenna

Curve A : Co-polar component

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \text{ for } 0 \leq \varphi \leq 1.58 \varphi_0$$

$$-30 \text{ for } 1.58 \varphi_0 < \varphi \leq 3.16 \varphi_0$$

$$-17.5 + 25 \log_{10}\left(\frac{\varphi}{\varphi_0}\right) \text{ for } 3.16 \varphi_0 < \varphi$$

after intersection with curve C : as curve C

Curve B : Cross-polar component

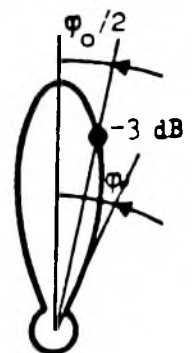
$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 0 \leq \varphi < 0.33 \varphi_0$$

$$-33 \text{ for } 0.33 \varphi_0 < \varphi \leq 1.67 \varphi_0$$

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 1.67 \varphi_0 < \varphi$$

after intersection with curve C : as curve C

Curve C : Minus the on-axis gain



/ Note from Editorial Committee : Figure taken from Document No. 243
with corrections noted in plenary meeting /

3.15 Spacing between channels of same beam

Owing to technical difficulties in the output circuit of a satellite transmitter, the spacing between two channels feeding a common antenna must be greater than 40 MHz.

3.16 Pointing accuracy of satellite antennae

3.16.1 The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a transmitting beam about its axis must not exceed a limit of $\pm 2^\circ$; this latter limit is not necessary for beams of circular cross-section using circular polarization.

3.16.2 The following additional factors contribute to the total variation in the area on the surface of the earth illuminated by the satellite beam :

- variations in satellite station-keeping;
- the variations caused by the pointing tolerances, which become more significant for coverage areas with low angles of elevation;
- the increase in yaw error as the beam ellipse lengthens.

3.16.3 If linear polarization is used for an emission, yaw error makes a significant contribution to increasing the transmitted cross-polarized component; this increases the interference with other carriers which were originally cross-polarized with the emission in question.

3.16.4 The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the area covered will vary as the geometry of the satellite beam varies, and it would not be reasonable to indicate a single value of shift in the area covered for all situations.

3.17 Limitation of output power in the satellite transmitter

The output power of a space station in the broadcasting-satellite service must not rise by more than 0.25 dB relative to its nominal value throughout the life of the satellite.

3.18 Power flux density at edge of coverage area

The value of the power flux density at the edge of the coverage area for 99 % of the worst month is :

- 103 dBW/m² for individual reception in Regions 1 and 3
- 105 dBW/m² for individual reception in Region 2
- 111 dBW/m² for community reception in all Regions

/ Note from Editorial Committee :

values for individual reception from original 3.11.2

values for community reception from original 3.5.3_/

3.19 Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam

For planning, the absolute value of the difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam should preferably be 3 dB.

If the beam area is larger than the coverage area, the value will be less than 3 dB.

/ Note from Editorial Committee : The substance of 3.10.7 will become the subject of a recommendation to administrations._/

Document No. 224-E
4 February 1977

PLENARY MEETING

B.3

3rd SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.4	108(Rév.1) 122 159 177	} Technical data which were used in establishing the Plan /s_/ and which should be used in the application of the Plan /s_/

Miss M. HUET

Chairman of the
Editorial Committee

Annexes : 19 pages



Document No. 224-E

Page 2

TECHNICAL DATA WHICH WERE USED IN ESTABLISHING
THE PLAN /S/ AND WHICH SHOULD BE USED IN THE APPLICATION OF THE /PLAN /S/_/

CHAPTER 1

Definitions

1.1 Service area

1.2 Coverage area

The area on the surface of the earth delineated by a contour of a constant given value of power flux density which would permit the wanted quality of reception in the absence of interference.

Note 1 : In accordance with the provisions of No. 428A of the Radio Regulations, the coverage area must be the smallest area which encompasses the service area.

Note 2 : The coverage area, which will normally encompass the entire service area, will result from the intersection of the antenna beam (elliptical or circular) with the surface of the earth, it will be defined by a given value of power flux density. For example, in the case of a Region 1 or 3 country with a service planned for individual reception, it would be the area delimited by the contour corresponding to a level of -103 dBW/m^2 for 99 % of the worst month. There will usually be an area outside the service area but within the coverage area in which the power flux density will be at least equivalent to the minimum specified value; however, protection against interference will not be provided in this area.

1.3 Beam area

The area delineated by the intersection of the half-power beam of the satellite transmitting antenna with the surface of the earth.

Note : The beam area is simply that area on the earth's surface corresponding to the -3 dB points on the satellite antenna radiation pattern. In many cases the beam area would almost coincide with the coverage area, the discrepancy being accounted for by the permanent difference in path lengths from the satellite throughout the beam area, and also by the permanent variations, if any, in propagation factors across the area. However, for a service area where the maximum dimension as seen from the satellite position is less than 0.6° (the agreed minimum practicable satellite antenna half-power beamwidth), there could be a significant difference between the beam area and the coverage area.

1.4 Nominal orbital position

The longitude of the orbital position of a geostationary satellite associated with a frequency assignment to a space station in a space radiocommunication service. The position is given in degrees from the Greenwich meridian.

CHAPTER 2RADIO PROPAGATION FACTORS *)

2.1 It should be noted that extensive measurements of attenuation due to rainfall have not been carried out in the tropical countries, especially in the African region. On the basis of the meteorological data which the countries may provide, they can be divided into rain-climatic zones as set out in CCIR Report 563.

2.2 For the purpose of planning the broadcasting-satellite service, it is recommended that planning should be based only on achieving a carrier-to-noise ratio of 14 dB for 99 % of the worst month. It is understood that the time percentage for the worst month is about four times greater than the yearly percentage. However, this is on a provisional estimate which should be used with caution.

2.3 Appropriate curves relating to 1 % of the worst month for the five rain-climatic zones are shown in Figure 1.

2.4 In using these curves, it is recommended that the difference between clear weather attenuation and the attenuation for 99 % of the worst month should be limited to a maximum of 2 dB by appropriate choice of angle of elevation.

*) See also 3.3 and 3.10.6

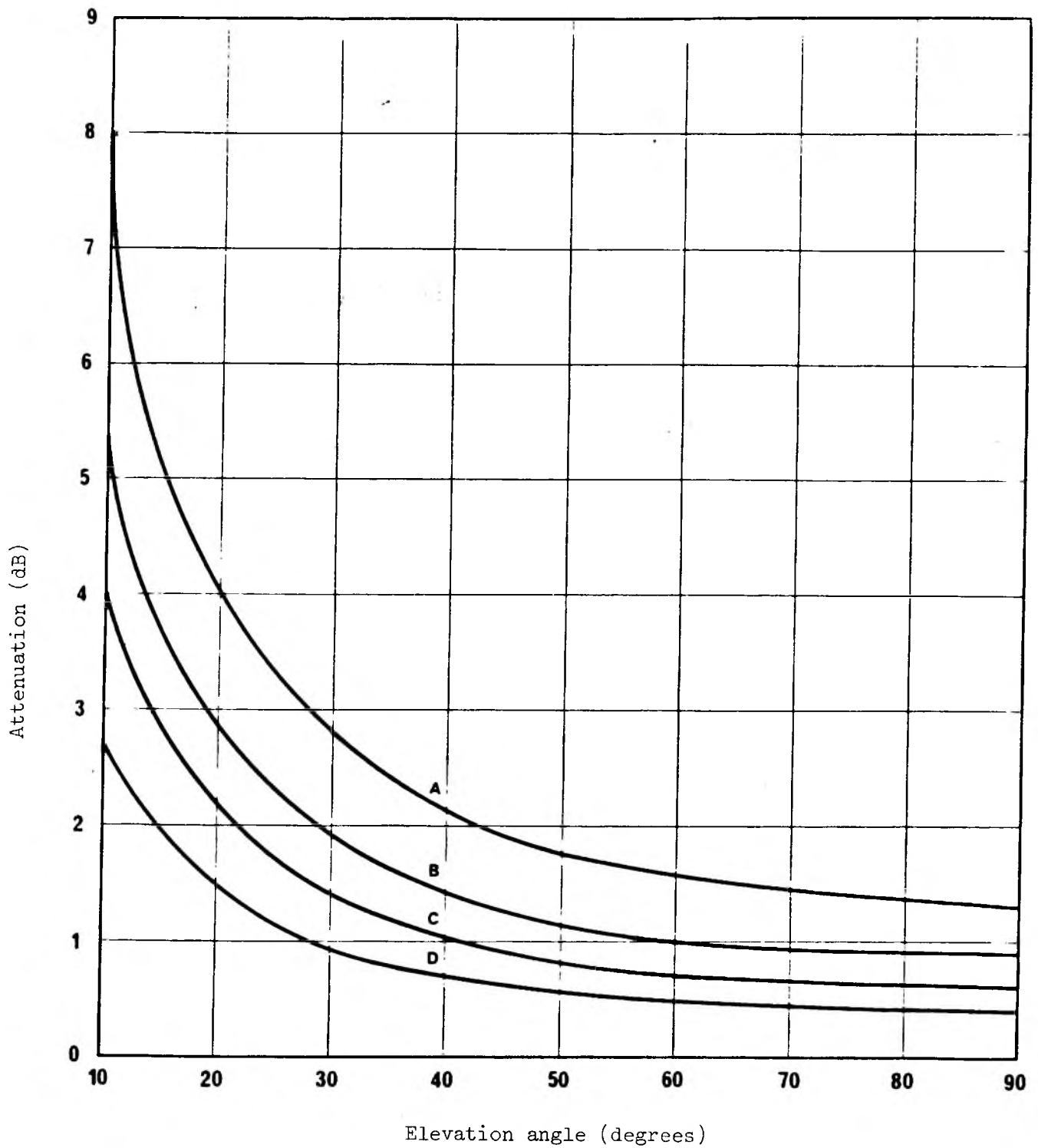


FIGURE 1

Predicted attenuation values exceeded for not more than 1 % of the worst month (0.25% of the time) on earth-space paths at 12 GHz in the rain-climatic zones indicated in CCIR Report 563.

A	: Climatic zone 1	C	: Climatic zones 3 and 4
B	: Climatic zone 2	D	: Climatic zone 5

CHAPTER 3BASIC TECHNICAL CHARACTERISTICS3.1 Type of modulation

For the planning of the broadcasting-satellite service, the signal should be assumed to consist of a video signal with an associated FM sound signal, both frequency-modulating a carrier in the 12 GHz band, assuming a pre-emphasis characteristic consistent with CCIR Recommendation 405.

This does not preclude the use of other modulating signals having different characteristics (e.g. 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), provided that the use of such characteristics does not cause greater interference than that caused by the system considered in the [Plan].

3.2 Polarization

3.2.1 For the planning of the broadcasting-satellite service, circular polarization shall be used in Regions 1, 2 and 3.*)

3.2.2 If possible, the polarization of different beams deliberately intended to serve the same area should be the same. [Nevertheless, the specific requirements of any administration should be satisfied.]

-
- *)
- The administration of the United States of America expressed a reservation regarding the adoption of circular polarization for Region 2 and indicated that the very probable adoption of linear polarization by the fixed-satellite service would preclude the use of cross-polarization to facilitate sharing between the two space services and would affect orbit and spectrum utilization within the Region.
 - The administration of Iran expressed a reservation regarding the adoption of circular polarization for planning the broadcasting-satellite service in Region 3 and stated its intention to use linear polarization.

3.3 Effects of propagation on cross-polarization

In planning the broadcasting-satellite service, for emissions applying circular polarization, the level of the depolarized component A_d relative to the level of the co-polar component should be taken as :

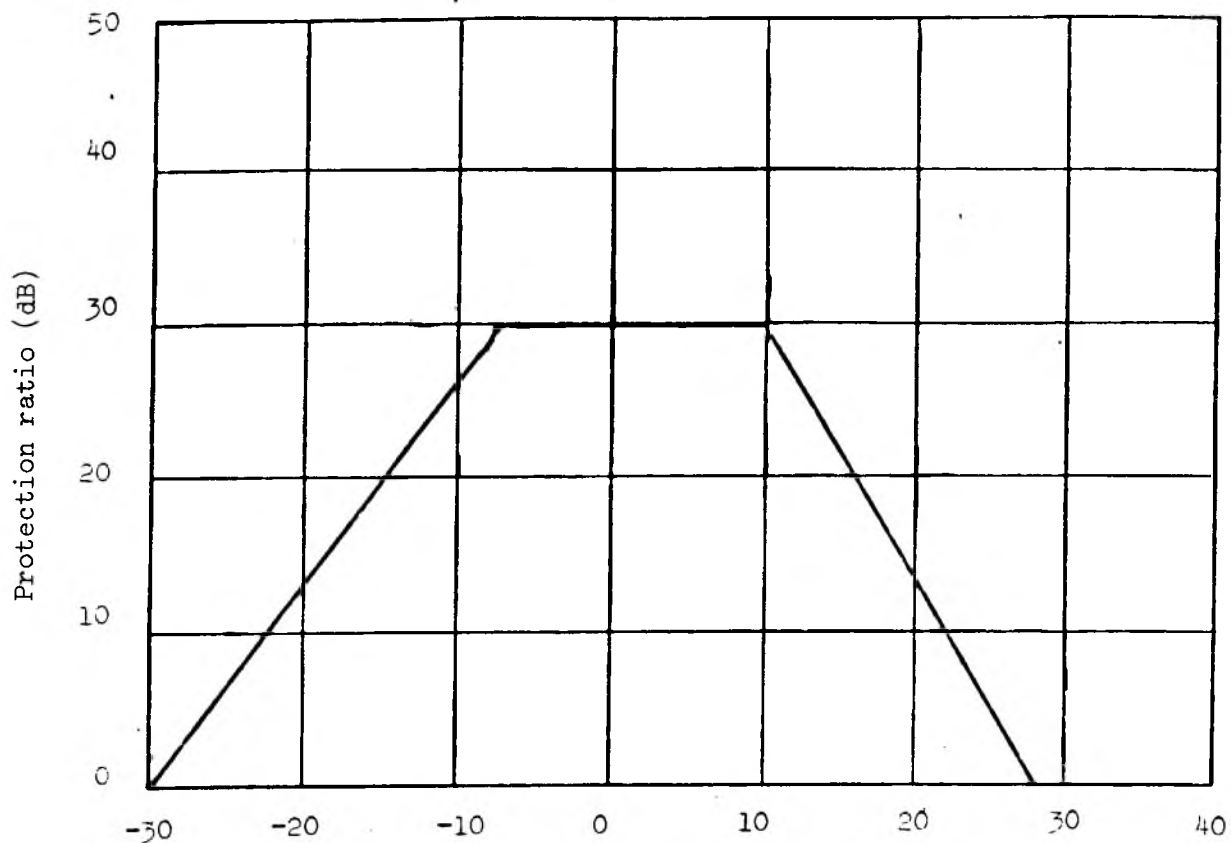
- 27 dB for rain-climatic zones 1 and 2,
- 30 dB for rain-climatic zones 3, 4 and 5.

3.4 Protection ratio between two FM television signals

3.4.1 The protection ratio is given by the curve in Figure 2.

Although the protection ratio values differ for the different television standards, a compromise value has been adopted for planning.

3.4.2 It should be noted that this curve applies solely in those cases where there is no energy dispersal signal or where the amount of energy dispersal is small.



Difference between mid-frequencies of unwanted and
wanted signals (MHz)
 $\Delta f = (f_{\text{unw}} - f_w)$

FIGURE 2

Protection ratio between two FM television signals

3.5 Receiving installation

3.5.1 Figure of merit (G/T) of an individual reception installation in the broadcasting-satellite service

In planning for individual reception in the broadcasting-satellite service, a value of 6 dB/K should be used. This value was calculated in accordance with the method used in Annex I of CCIR Report 473-1(Rev.76) / and is based on the contributions to this Conference. /

3.5.2 Receiving antenna

3.5.2.1 Receiving antenna reference patterns

The co-polar and cross-polar reference patterns of receiving antennae are given in Figures 3 and 4.

3.5.2.1.1 The relative antenna gain (dB) is given by the curves in Figure 3 for :

- individual reception in Regions 1 and 3 :
 - Curve A for the co-polar component and
 - Curve B for the cross-polar component;

- community reception :

in all Regions, Curve A' up to the intersection with Curve C, then Curve C, for the co-polar component,

in Regions 1 and 3, Curve B for the cross-polar component.

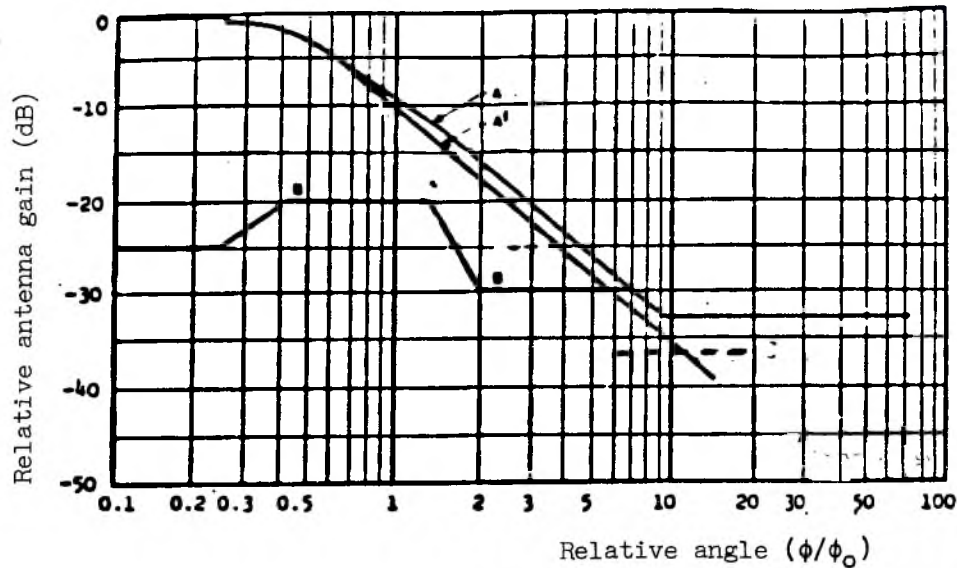


FIGURE 3

Co-polar and cross-polar reference patterns
for receiving antenna

Curve A : Co-polar component for individual reception without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-12\left(\frac{\phi}{\phi_0}\right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\
 &-\left[9.0 + 20 \log_{10}\left(\frac{\phi}{\phi_0}\right)\right] && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\
 &-\left[8.5 + 25 \log_{10}\left(\frac{\phi}{\phi_0}\right)\right] && \text{for } 1.26 \phi_0 < \phi \leq 9.55 \phi_0 \\
 &-33 && \text{for } 9.55 \phi_0 < \phi
 \end{aligned}$$

Curve A' : Co-polar component for community reception without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi/\phi_0 \leq 0.25 \\
 &-12(\phi/\phi_0)^2 && \text{for } 0.25 < \phi/\phi_0 \leq 0.86 \\
 &-\left[10.5 + 25 \log_{10}(\phi/\phi_0)\right] && \text{for } 0.86 < \phi/\phi_0 \text{ up to intersection with} \\
 &&& \text{Curve C, (then Curve C)}
 \end{aligned}$$

Curve B : Cross-polar component for both types of reception

$$\begin{aligned}
 &-25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-(30 + 40 \log_{10}|\frac{\phi}{\phi_0} - 1|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\
 &-20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\
 &-(30 + 25 \log_{10}|\frac{\phi}{\phi_0} - 1|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0 \\
 &-30 && \text{until intersection with co-polar component curve; then as for} \\
 &&& \text{co-polar component}
 \end{aligned}$$

Curve C : Minus the on-axis gain

Note : for values of ϕ_0 see [3.5.2.2].

3.5.2.1.2 For Region 2, the relative antenna gain (dB) is given by the curves in Figure 4 for :

- individual reception, for which use should be made of :
 Curve A for the co-polar component;
 Curve B for the cross-polar component;
- community reception for which Curve B should be used for the cross-polar component (the co-polar component being given in Figure 3).

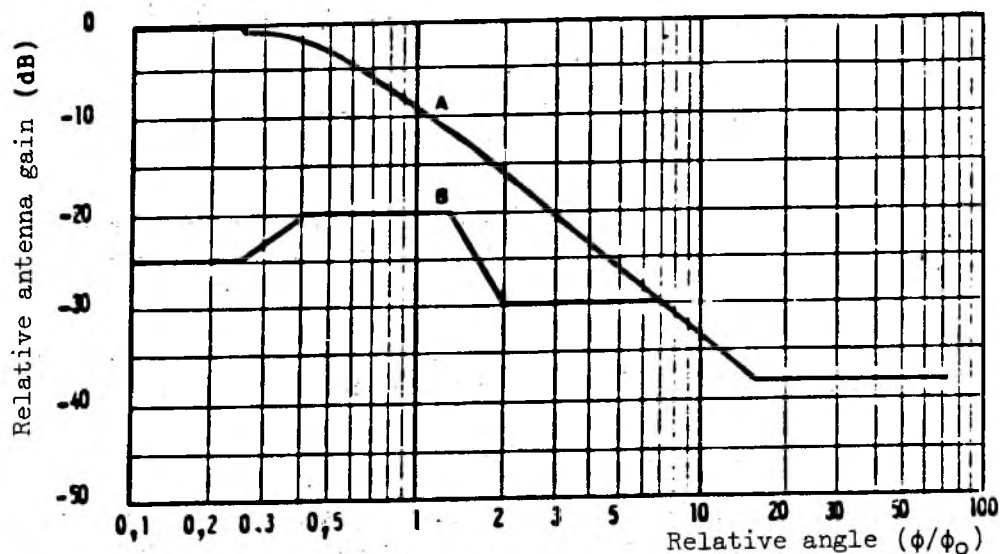


FIGURE 4

Reference patterns for co-polar and cross-polar components for receiving antennae for individual reception in Region 2

Curve A : Co-polar component without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-12 \left(\frac{\phi}{\phi_0} \right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\
 &-\sqrt{-9.0 + 20 \log_{10} \left(\frac{\phi}{\phi_0} \right)} && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\
 &-\sqrt{-8.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right)} && \text{for } 1.26 \phi_0 < \phi \leq 15.14 \phi_0 \\
 &-38 \text{ dB} && \text{for } \phi > 15.14 \phi_0
 \end{aligned}$$

Curve B : Cross-polar component

$$\begin{aligned}
 &-25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-(30 + 40 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\
 &-20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\
 &-(30 + 25 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0
 \end{aligned}$$

-30 until intersection with co-polar component curve; then as for co-polar component

Note : for values of ϕ_0 see 3.5.2.2.

3.5.2.1.3 For planning purposes subsequent to this Conference, the latest CCIR Recommendations should be used.

3.5.2.2 Receiving antennae for individual reception

In Region 2, the minimum diameter of the receiving antenna should be such that the half-power beamwidth is 1.8° .

In Regions 1 and 3, the minimum diameter of the receiving antenna should be such that the half-power beamwidth is 2° .

3.5.3 Characteristics of a community reception installation in the broadcasting-satellite service

the minimum diameter of the receiving antenna should be such that the half-power beamwidth is 1° ;

the figure of merit (G/T) of the receiving station should be 14 dB/K. This value was calculated in accordance with the method used in Annex I of CCIR Report 473-1(Rev.76);

the power flux density at the edge of the coverage area should be -111 dBW/m^2 for 99 % of the worst month.

3.5.4 Tuning range of television receivers

For a given country, all the channels radiated within a single antenna beam should if possible lie within a frequency range of 400 MHz.

Moreover, for countries using more than one beam, it is desirable that all the channels used in the various beams should be accommodated in the same 400 MHz range. However, in view of the total number of channels available, it may be very difficult to satisfy this condition.

This problem is considered to be less significant in Regions 2 and 3, where the total available bandwidth is only 500 MHz.

3.6 Bandwidth

The necessary bandwidth depends upon the television standard used, the pre-emphasis characteristic, the frequency deviation and the amount of energy dispersal, if any.

For 625-line systems a value of 27 MHz should be used for planning.

For 525-line system M (Region 2), values of 18 and 23 MHz have been used for planning.

3.7 Channel spacing and guard bands

3.7.1 A guard band is defined as the portion of the frequency spectrum between the edge of the allocated band and the edge of the necessary bandwidth of the emission in the nearest channel.

3.7.2 For the planning of the broadcasting-satellite service, the guard bands necessary to protect the services in adjacent frequency bands against spurious emissions are shown in the table below.

Regions	Guard band at the lower edge of the band (11.7 GHz)	Guard band at the upper edge of the band (12.2/12.5 GHz)
1 and 3	14 MHz	11 MHz
2	12 MHz	9 MHz

These guard bands assume maximum beam centre e.i.r.p. values of 67 dBW for Regions 1 and 3 and 63 dBW for Region 2 (values relating to individual reception), and a filter roll-off of 2 dB/MHz. If smaller e.i.r.p. values are assumed, the guard bands can be reduced in width by 0.5 MHz for each decibel decrease in e.i.r.p.

3.7.3 Since developments in technology or the choice of lower e.i.r.p. values than those given above are likely to permit a reduction in the necessary guard bands, it is recommended that, for purposes other than "a priori" planning at this Conference, the latest CCIR Recommendations concerning spurious emissions from broadcasting satellites should be followed.

3.8 Orbit utilization

3.8.1 Orbital spacing

3.8.2 Elevation angle of receiving antennae

A minimum angle of elevation of 20° would be desirable to minimize the required e.i.r.p. of the satellite and to reduce the effects of shadowing and the possibility of interference from terrestrial services. However, for areas situated in latitudes above about 60° , the angle of elevation will, of necessity, often be less than 20° .

For mountainous areas, an angle of 20° may not suffice. For example, an angle of at least 30° may be necessary to provide acceptable service in alpine valleys. An angle of elevation of up to 40° or even higher may be required in service areas subject to high precipitation (e.g. climatic zone 1).

Some dry, non-mountainous areas may be given an acceptable service at angles of elevation less than 20° .

In areas with small angles of elevation, the shadowing effect of tall buildings may have to be taken into account.

In choosing a satellite position designed to give the maximum angle of elevation at the ground, the influence of such a position on the eclipse period should be borne in mind.

3.8.3 Satellite station keeping

An accuracy of better than $\pm 0.1^{\circ}$ in both the N-S and E-W direction is considered feasible for broadcasting satellites. (This degree of accuracy leads to a maximum excursion of $\pm 0.14^{\circ}$ from the nominal satellite position).

3.9 Use of energy dispersal in planning for the broadcasting-satellite service

3.9.1 Artificial energy dispersal is useful in promoting sharing between the broadcasting-satellite service and the other services to which the band is also allocated.

3.9.2 Such energy dispersal is achieved by the addition at baseband of a triangular waveform to the video signal to form a composite baseband which, in turn, is used to frequency-modulate the up-link carrier. The frequency of the triangular waveform is usually synchronized at a sub-multiple of the TV frame frequency. Typical frequencies range from 12.5 Hz to 30 Hz.

3.9.3 The table below gives the relative reduction in spectral power flux density in a 4 kHz bandwidth as a function of the peak-to-peak deviation due to the energy dispersal signal. This table is based on the following equation :

$$\left. \begin{array}{l} \text{Relative reduction in dB} \\ \text{relative to 4 kHz} \end{array} \right\} = 10 \log \frac{\Delta F_{pp} + \delta f_{rms}}{4}$$

where ΔF_{pp} = peak-to-peak deviation due to the energy dispersal signal (kHz)

δf_{rms} = rms deviation due to "natural" energy dispersal (kHz)

In compiling the table below, a value of 40 kHz has been assumed for δf_{rms} , on the basis of the value of 10 dB for "natural" dispersion given in Table 4 of draft Report 631(Rev.76).

Reduction of spectral power flux density relative to a 4 kHz bandwidth

Peak-to-peak deviation (kHz)	Relative reduction (dB)
0	10
100	15.44
200	17.78
300	19.29
400	20.41
500	21.30
600	22.04
700	22.67
800	23.22
900	23.71
1 000	24.15

3.9.4 For planning, an energy dispersal value has been adopted which reduces by 22 dB the spectral power flux density measured in a 4 kHz bandwidth in relation to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

3.10 Satellite transmitter

3.10.1 Antenna beam

3.10.1.1 For technical reasons, planning in the broadcasting-satellite service should be based only on the use of transmitting antennae with beams of elliptical or circular cross-section.

3.10.1.2 If the cross-section of the transmitted beam is elliptical, the effective beamwidth ϕ_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.

3.10.1.3 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 :

$$G_m \text{ (dB)} = 44.44 - 10 \log_{10} a - 10 \log_{10} b$$

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.

3.10.2 Minimum beamwidth of transmitting antenna

For a transmitting antenna in the broadcasting-satellite service, a value of 0.6° between the -3 dB points is taken as the minimum beamwidth currently practicable.

[For planning subsequent to this Conference, the latest CCIR Recommendations should be used.]

3.10.3 Transmitting antenna reference patterns

For the purpose of planning the broadcasting-satellite service, the reference patterns for the co-polar and cross-polar components of satellite transmitting antenna given in Figure 5 shall be used.

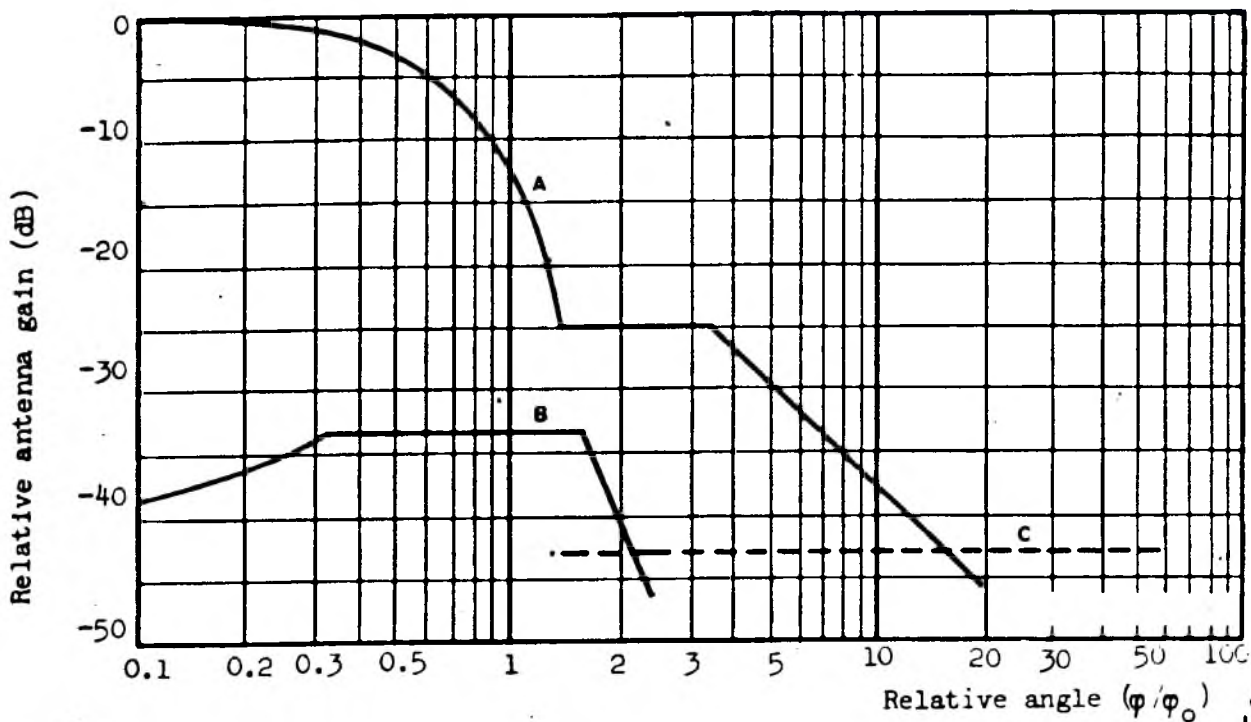
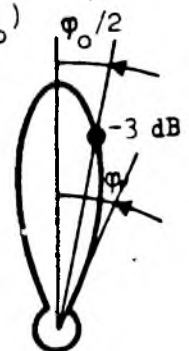


FIGURE 5

Co-polar and cross-polar reference patterns
for the satellite transmitting antenna



Curve A : $-12\left(\frac{\phi}{\phi_0}\right)^2$ for $0 < \phi \leq 1.44\phi_0$
 -25 for $1.44\phi_0 < \phi \leq 3.16\phi_0$
 $-\left[12.5 + 25 \log_{10}\left(\frac{\phi}{\phi_0}\right)\right]$ for $3.16\phi_0 < \phi$

Curve B : $-(40 + 40 \log_{10}|\frac{\phi}{\phi_0} - 1|)$ for $0 \leq \phi \leq 0.33\phi_0$
 -33 for $0.33\phi_0 < \phi \leq 1.67\phi_0$
 $-(40 + 40 \log_{10}|\frac{\phi}{\phi_0} - 1|)$ for $1.67\phi_0 < \phi$

Curve C : Minus the on-axis gain

The relation antenna gain (dB) is given :

- for the co-polar component, by Curve A, then Curve C after their intersection;
- for the cross-polar component, by Curve B, then Curve C after their intersection.

3.10.4 Spacing between channels of same beam

Owing to technical difficulties in the output circuit of a satellite transmitter, the spacing between two channels feeding a common antenna must be greater than 40 MHz.

3.10.5 Pointing accuracy of satellite antennae

3.10.5.1 The deviation of the antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of the transmitting beam about its axis must not exceed a limit of $\pm 2^\circ$; this latter limit is not necessary for beams of circular cross-section using circular polarization.

3.10.5.2 The following additional factors contribute to the total variation in the area on the surface of the earth illuminated by the satellite beam :

- variations in satellite station-keeping;
- the variations caused by the pointing tolerances, which become more significant for coverage areas with low angles of elevation;
- the increase in yaw error as the beam ellipse lengthens.

3.10.5.3 If linear polarization is used for an emission, yaw error makes a significant contribution to increasing the transmitted cross-polarized component; this increases the interference with other carriers which were originally cross-polarized with the emission in question.

3.10.5.4 The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the area covered will vary as the geometry of the satellite beam varies, and it would not be reasonable to indicate a single value of shift in the area covered for all situations.

3.10.6 Thermal noise in the up-link

For individual reception, the reduction in quality in the down-link due to thermal noise in the up-link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio not exceeding 0.5 dB for 99 % of the worst month.

3.10.7 Emission of harmonics of fundamental frequency

Attention will also need to be given to the control of emissions of harmonics of the fundamental frequency. The JWP Report, in Section 7.4.2, makes particular reference to the concerns of the radio astronomy service, which has an exclusive allocation at 23.6 - 24.0 GHz.

3.11 Satellite power3.11.1 Limitation of output power in the satellite transmitter

It should be possible to prevent the output power of a satellite transmitter from rising by more than 0.25 dB relative to its nominal value throughout the life of the satellite.

3.11.2 Power flux density for individual reception at edge of coverage area

For individual reception in Regions 1 and 3, the power flux density at the edge of the coverage area should be -103 dBW/m² for 99 % of the worst month.

In planning for individual reception in the broadcasting-satellite service in Region 2, the power flux density at the edge of the coverage area should be -105 dBW/m² for 99 % of the worst month.

3.11.3 Difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam

/ For the purpose of planning, the absolute value of the difference between the e.i.r.p. directed towards the edge of the coverage area and that on the axis of the beam should preferably be 3 dB. /

/ Note : If the beam area is larger than the coverage area, the value will be less than 3 dB. /

PLENARY MEETING

B.4(Addendum No. 2)

ADDENDUM No. 2 TO THE
4th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

Page 2, Article / 4 /, Procedures for modifications to the Plan

In the second line of paragraph 4.1, after the word "modification",
insert note " 1) ";

at the bottom of the same page, add the following note 1) with the
two optional texts :

- / 1) The introduction of energy dispersal should be optional but subject to coordination with the administrations affected. If energy dispersal is not applied, a continuous modulation of the carrier signal shall be ensured. The agreement of the affected administrations should be obtained according to the procedure of Article 4. /
- / 1) The intention not to employ energy dispersal consistent with section 3.4 of Annex ... / Addendum No. 1 to Document No. 231 / shall be treated as a modification and thus subject to the appropriate provisions of this Article. /



PLENARY MEETING

B.4 (Addendum)

ADDENDUM TO THE
4th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for
first reading :

<u>Source</u>	<u>Document</u> <u>No.</u>	<u>Title</u>
C.6	220 DL/55	Additions to Article 4 (procedure for modification to the Plan) and to Article 5 (notification, examination and recording in the Master Register of Frequency Assignments to space stations in the broadcasting- satellite service in Regions 1 and 3)

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 3 pages



For addition between the first and second indented paragraphs in
4.3.1 of Document No. 225 (B.4)

- having a frequency assignment to a space station in the broadcasting-satellite service in Region 2 with an occupied bandwidth, any portion of which falls within the occupied bandwidth of the proposed assignment and which is recorded in the Master Register; or which has been coordinated or is being coordinated under the provisions of Resolution No. Spa2 - 3; or which appears in a Region 2 plan [1]) adopted at a future Regional Administrative Radio Conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference; or

[1) The Region 2 plan adopted at a future Regional Administrative Radio Conference shall not degrade the protection afforded to the frequency assignments of Regions 1 and 3 plan below the limits specified in these Final Acts.]

B.4 (Add.) 2

Add the following sentence to paragraph 4.3.2:

If the assignment is not brought into use by that date, the modification shall lapse.

Insert the following new paragraph 5.2.3 and renumber the existing paragraphs 5.2.3 to 5.2.5 to read 5.2.4 to 5.2.6:

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.

Add the following sentence to paragraph 5.2.6 (formerly 5.2.5):

The notifying administration using the frequency assignment over a specified period shall not subsequently invoke this fact to justify the continued use of the frequency beyond the period specified unless it obtains the agreement of the administration(s) concerned.

Add the following new paragraphs:

5.2.7 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to the provisions of paragraph 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.

3.4(Add.)3

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.

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 6 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 ninety days, whereupon the entry shall be removed from the Master Register.

Miscellaneous provisions

1. At the request of any administration, and if the circumstances appear to warrant such action, the Board shall apply appropriate means at its disposal to conduct a study of cases of alleged contravention or non-observance of these provisions, or of harmful interference.

The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.

2. If, as the result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and if no answer is received from one or more of these administrations within a period of ninety days, the Board shall consider that the suggestions or recommendations are unacceptable to the administration(s) concerned. If it is the requesting administration which fails to answer within this period, the Board shall close the study.

3. At the request of any administration, particularly an administration of a country requiring special assistance, and if the circumstances appear to warrant such action, the Board, applying appropriate means at its disposal, shall assist in carrying out the calculations necessary for compliance with the provisions of the [Appendices]—[Articles].

B.4 (Add.) 4

PLENARY MEETING

B.4

4th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.6	210	<u>Article 4</u> Procedure for modifications to the Plan
		<u>Article 5</u> Notification, examination and recording in the Master Register of Frequency Assignments to space stations in the broadcasting-satellite service in Regions 1 and 3

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 6 pages



Article 4PROCEDURE FOR MODIFICATIONS TO THE PLAN

4.1 When a Contracting Member Member Administration intends to make a modification to the Plan, i.e. either

- to modify the characteristics of any of its frequency assignments to a space station* in the broadcasting-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
- to include in the Plan a new frequency assignment to a space station in the broadcasting-satellite service, or
- to cancel a frequency assignment to a space station in the broadcasting-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 these Final Acts).

4.2 In the remainder of the present Article, the term "frequency assignment in accordance with the Final Acts" means any frequency assignment which appears in the Plan or for which the procedure of this Article has been successfully applied.

4.3 Proposed modifications to a frequency assignment in accordance with the Final Acts or the inclusion in the Plan of a new frequency assignment

4.3.1 An administration proposing a modification to the characteristics of a frequency assignment in accordance with the Final Acts or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those administrations :

- having a frequency assignment to a space station in the broadcasting-satellite service in the same channel or an adjacent channel, which is in accordance with the Plan or in respect of which modifications to the Plan have been published by the Board in accordance with the provision of this Article; or

* The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

- having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux density value exceeds the prescribed limit as a result of the proposed modification; or
- having a frequency assignment in the band 11.7 - 12.2 GHz to a space station 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. 639AJ of the Radio Regulations; or those of paragraph 2.1 of Article /.. /DT/42;

which are considered to be affected.

A frequency assignment is considered to be affected when the limits shown in /Appendix A are exceeded.

4.3.2 An administration intending to modify characteristics in /Plan shall send to the Board not earlier than five years, but not later than 18 months, before the date on which the assignment is to be brought into use the relevant information listed in /Appendix B.

4.3.2.1 Where as a result of the intended modification the limits defined in /Appendix A are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.3.2. The Board shall then publish this information in a special section of its weekly circular.

4.3.2.2 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 4.3.1 as well as of those with which agreement has already been reached.

4.3.3 The Board shall determine on the basis of /Appendix A the administrations whose frequency assignments are considered to be affected within the meaning of 4.3.1. The Board shall include the names of those administrations with the information received under 4.3.2.2 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.

4.3.4 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 also send them the results of its calculations.

4.3.5 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 insert its name. The Board shall study this request on the basis of /Appendix A and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the /Plan.

Note : Appendix A contains the power flux density limits

Appendix B lists the basic characteristics of the frequency assignments.

4.3.6 Any modification to a frequency assignment which is in accordance with the /Final Acts/ or any inclusion in the /Plan/ of a new frequency assignment which would have the effect of exceeding the limits specified in /Appendix A/ shall be subject to the agreement of all affected administrations.

4.3.7 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.

4.3.8 Comments from administrations on the information published pursuant to 4.3.3 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.

4.3.9 An administration which has not notified its comments either to the administration seeking agreement or to the Board within a period of 120 days following the date of the weekly circular referred to in 4.3.2.1 or 4.3.3 shall be understood to have agreed to the proposed modification. This time limit may be extended by 80 days for an administration which has requested additional information under 4.3.7 or for an administration which has requested the assistance of the Board under 4.3.17. In the latter case the Board shall inform the administrations concerned of this request.

4.3.10 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.3.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.3.11 If no comments have been received on the expiry of the periods specified in 4.3.9, or if agreement has been reached with the the administrations which have made comments and with which agreement is necessary, the administration proposing the modification /may continue with the appropriate procedure 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.

4.3.12 The agreement of the administrations affected can also be obtained in accordance with this Article, for a specified period.

4.3.13 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.

4.3.14 The Board shall publish in a special section of its weekly circular the information received under 4.3.11 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 accordance with the /Plan/.

4.3.15 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.

4.3.16 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 it may be able to offer for the solution of the problem.

4.3.17 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.

4.3.18 The relevant provisions of Article / 5 / of / these Final Acts / shall be applied when frequency assignments are notified to the Board.

4.4 Cancellation of frequency assignments

When a frequency assignment in accordance with the / Plan / is released, 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.

4.5 Master copy of the / Plan /

4.5.1 The Board shall maintain an up-to-date master copy of the / Plan / taking account of the application of the procedure specified in 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.

4.5.2 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.

Article 5NOTIFICATION, EXAMINATION AND RECORDING IN THE
MASTER REGISTER OF FREQUENCY ASSIGNMENTS TO SPACE STATIONS
IN THE BROADCASTING-SATELLITE SERVICE IN REGIONS 1 AND 35.1 Notification

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a space station in the broadcasting-satellite service, it shall notify this frequency assignment to the Board. 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 Appendix 1A³⁾, the various Sections of which specify the basic characteristics to be provided as appropriate. It is recommended that the notifying administration should also supply the additional data called for in Section A of that Appendix, together with any other data it considers 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 ninety days¹ before this date.

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 Appendix 1A³⁾ shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

5.1.6 Upon receipt of a complete notice, the Board shall include its particulars, with the date of receipt, in the weekly circular referred to in No. 497 of the Radio Regulations*, 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.

5.1.3.1¹ Where appropriate the notifying administration shall initiate the procedure for modifying the Plan in sufficient time to ensure that this limit is observed.

Note : Appendix 1A in paragraph 5.1.2 corresponds with Appendix B in Article 4, paragraph 4.3.2.

3) These characteristics and the Appendix are to be established by the Conference.

* or the corresponding number of the Radio Regulations currently into force.

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.

5.2 Examination and recording

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 and Appendix 1¹⁾ (with the exception of those relating to conformity with the Plan);
- b) with respect to its conformity with the Plan.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 the frequency assignment of a Contracting Member / Member / Administration shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d. In relations between Contracting Members / Members / 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.

5.2.3 Where the Board reaches an unfavourable finding with respect to 5.2.1, 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.

5.2.4 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to 5.2.1, the notice shall be treated as in 5.2.2.

5.2.5 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 5.2.3. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.4 is fulfilled. The agreement of the administrations affected can also be obtained in accordance with Article 4 for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified.

1) This Appendix relates to the sharing criteria.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 226-E

4 February 1977

Original : English

COMMITTEE 5

Second Report by Working Group 5B

Attached for the approval of Committee 5, in accordance with the discussion that took place at the fifth meeting of Committee 5, are four Resolutions which have been approved by the Working Group, as follows :

- Annex A Resolution No. BS ... Concerning the convening of a regional administrative radio conference for carrying out detailed planning for the space services in the frequency band, 11.7 to 12.2 GHz, in Region 2.
- Annex B Resolution No. BS ... To the CCIR relating to the preparation for an administrative radio conference in Region 2 for the planning of the space services in the frequency band, 11.7 to 12.2 GHz.
- Annex C Resolution No. BS ... To the IFRB relating to the submission of requirements for the Broadcasting-Satellite Service in Region 2.
- Annex D Resolution No. BS ... Concerning the provisions of Resolution No. Spa2 - 3, WARC-ST (Geneva, 1971).

B.C. BLEVIS
Chairman of Working Group 5B

Annexes : 4



A N N E X A

RESOLUTION No. BS

CONCERNING THE CONVENING OF A REGIONAL ADMINISTRATIVE RADIO CONFERENCE
FOR CARRYING OUT DETAILED PLANNING FOR THE SPACE SERVICES IN THE
FREQUENCY BAND, 11.7 TO 12.2 GHz, IN REGION 2

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

noting

a) that the detailed requirements of all administrations in
Region 2 for the Broadcasting-Satellite Service in the frequency band, 11.7 to
12.2 GHz are not as yet known;

b) that, because of the large demands expected for the various
services with which this band is shared, there is a need to ensure that this
frequency band and the geostationary orbit are used as efficiently as possible;

c) that a future Regional Administrative Radio Conference for the
detailed planning of space services in the frequency band, 11.7 to 12.2 GHz
would be able to take advantage of experiments now being carried out, of
further technological advances, and of additional studies by the CCIR;

considering

a) the decision of the WARC-BS (Geneva, 1977) to hold a future
Regional Administrative Conference to carry out detailed planning for the
space services in the frequency band, 11.7 - 12.2 GHz;

b) the provisions adopted by the WARC-BS (Geneva, 1977) to govern
the implementation of space services in the frequency band, 11.7 - 12.2 GHz
until the drafting of a detailed plan;

resolves

a) that a Regional Administrative Radio Conference shall be held
not later than 1982 for the purpose of carrying out detailed planning for the
Broadcasting-Satellite and Fixed-Satellite Services in Region 2, in
accordance with b), c), d) and e) below;

b) that the said Regional Administrative Radio Conference shall draw up a detailed plan for the orbit-spectrum available for the Broadcasting-Satellite Services in the 11.7 to 12.2 GHz band. The plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the Broadcasting-Satellite Service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels for the operation of the Broadcasting-Satellite Service (4). Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account;

c) that planning shall be based on individual reception, but each administration may use the reception system which meets its requirements best, namely : individual, community, or both. Account shall also be taken of the decisions of the World Administrative Radio Conferences (Geneva, 1977 and 1979) and of the relevant Recommendations of the CCIR in the case of parameters covered by that body's studies and research;

d) that, when planning the Broadcasting-Satellite Service, it shall be borne in mind that systems should be designed with a view to reduce to a minimum technical differences and incompatibilities with the systems of other Regions;

e) that the Conference shall also take into account on an equitable basis the needs of the Fixed-Satellite Service to which this frequency band is also allocated in Region 2;

invites the Administrative Council

to make preparations for convening the said Regional Administrative Conference using the provisions as set out herein as a basis for the agenda of the Conference.

A N N E X B

RESOLUTION No. BS ...

TO THE CCIR RELATING TO THE PREPARATION FOR AN ADMINISTRATIVE RADIO
CONFERENCE IN REGION 2 FOR THE PLANNING OF THE SPACE SERVICES
IN THE FREQUENCY BAND, 11.7 to 12.2 GHz

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

considering

a) that a regional administrative radio conference has been requested to be held no later than 1982, to carry out detailed planning for the space services in the frequency band, 11.7 to 12.2 GHz, in Region 2;

b) that the technical criteria and procedures adopted at the WARC-BS (Geneva, 1977), the WARC (1979) and the relevant CCIR Recommendations will be used in the interim;

c) that a considerable amount of technical information will be required to ensure the success of this Regional Conference;

invites the CCIR

to carry out such additional studies as are necessary to ensure timely provision of the technical information likely to be needed as a basis for the work of the Regional Conference.

A N N E X C

RESOLUTION No. BS ...

TO THE IFRB RELATING TO THE SUBMISSION OF REQUIREMENTS
FOR THE BROADCASTING-SATELLITE SERVICE IN REGION 2

The World Administrative Broadcasting-Satellite Conference, Geneva,
1977,

considering

a) the decision taken by the above Conference that a Region 2
Administrative Radio Conference be held not later than 1982;

b) that the said Regional Administrative Radio Conference shall draw
up a detailed plan for the orbit-spectrum available for the Broadcasting-Satellite
Services in the frequency band, 11.7 to 12.2 GHz, taking into account on an
equitable basis the needs of the Fixed-Satellite Service to which this frequency
band is also allocated in Region 2.

c) that the plan shall provide for the detailed assignment of the
orbital positions and frequency channels available, ensuring that the
Broadcasting-Satellite Service requirements of the various administrations are
met in an equitable manner satisfactory to all the countries concerned.

invites the IFRB

1. to request all administrations in Region 2 to submit their
Broadcasting-Satellite Service requirements to the IFRB not later than one year
before the start of the said Regional Administrative Radio Conference. These
requirements are understood to include the number and boundaries of service
areas and the number of channels requested for each of them. They may be updated
as required by each administration;

2. to remind administrations, by means of a circular-letter and/or
telegram six months before the above deadline for submitting requirements, of
the need to submit them;

3. to assemble the information submitted by administrations in a
form permitting a comparative study thereof and to communicate it to the
Secretary-General for publication and despatch to administrations not later than
9 months prior to the said Regional Administrative Radio Conference.

A N N E X D

RESOLUTION No. BS ...

CONCERNING THE PROVISIONS OF RESOLUTION No. Spa2 - 3, WARC-ST (GENEVA, 1971)

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

considering

a) that Region 2 will not have a detailed plan for the Broadcasting-Satellite Service in the frequency band 11.7 to 12.2 GHz, until the convening of a Regional Administrative Conference for the purpose of such detailed planning;

resolves

a) that the provisions of Resolution No. Spa2 - 3 adopted by the WARC-ST (Geneva, 1971) continue to apply in Region 2 until such time as the Final Acts of the said Regional Administrative Conference come into force.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Addendum No. 1 to
Document No. 227-E
5 February 1977
Original : English, French

COMMITTEE 6

Working Group 6D

RESOLUTION No. C

RELATING TO THE UPDATING OF THE MASTER INTERNATIONAL FREQUENCY
REGISTER FOR REGIONS 1 AND 3 ON THE DATE OF ENTRY
INTO FORCE OF THE FINAL ACTS

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

considering

- a) that the Final Acts of this Conference will enter into force before the entry into force of the revised Radio Regulations of the WARC 1979 and up to this time the relevant provisions of the Radio Regulations and Resolutions Nos. Spa2 - 2 and Spa2 - 3 are still valid;
- b) that according to No. 405BA in the band 11.7 - 12.2 GHz in Region 3 and in the band 11.7 - 12.5 GHz in Region 1 existing and future Fixed, Mobile and Broadcasting Services shall not cause harmful interference to broadcasting-satellite stations operating with the decisions of this Conference;
- c) that the subsequent coordination procedure (Resolution No. Spa2 - 3) shall be applied only until Plans pursuant to Resolution No. Spa2 - 2 enter into force;

resolves

- 1. that all the administrations having or intending to have frequency assignments to Terrestrial Services in the bands concerned by the Broadcasting-Satellite Plan shall examine as soon as possible, whether or not these assignments will concern the broadcasting-satellite stations existing in the Plan (if necessary with the assistance of the IFRB);
- 2. that, if it is found that broadcasting-satellite stations could be interfered with, the administrations shall inform the IFRB as to measures they intend to take to ensure the protection of the broadcasting-satellite stations concerned before the date of entry into force of the Final Acts;



3. that administrations concerned may continue to use frequency assignments not in conformity with the Broadcasting-Satellite Plan provided agreement is reached with the administrations whose broadcasting-satellite stations are affected;

4. that the administrations asking for agreement shall inform the IFRB of this agreement reached;

5. that, upon receipt of such information the IFRB shall insert a symbol in the Remarks column of the Master Register indicating the duration specified in the agreement which shall also be published in a special section of the IFRB Weekly Circular;

invites the IFRB

to assist administrations in implementing the provisions of this Resolution.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

COMMITTEE 6

Working Group 6D

The annexed draft texts were prepared by Working Group 6D during four meetings.

The first draft texts were prepared by six ad-hoc groups convened respectively by Mr. Rajasingam (SNG), Mr. Svensson (FNL), Mrs. Calov (DDR), Mr. Benacer (ALG), Mr. Schult (D) and Mr. Galli (SUI).

The main difficulties encountered in the debates in the Working Group were due to :

- the situation for Region 2;
- the legal status of the Final Acts;
- the understanding of the terminology to use.

I was asked to inform Committee 6 that the USA delegate reserves his position on the use of the term "Member of the Union" throughout the Final Acts where he believes that the term "Contracting Member" is more appropriate. He also reserved his position as regards the draft Resolution B.

H.K. DE ZWART
Chairman, Working Group 6D

Annex : 1



A N N E X

FINAL ACTS OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE FOR THE PLANNING
OF THE BROADCASTING-SATELLITE SERVICE IN FREQUENCY BANDS 11.7 - 12.2 GHz
(12.5 GHz IN REGION 1), GENEVA, 1977

Preamble

The World Administrative Radio Conference, for the planning of the broadcasting-satellite service in frequency bands 11.7 - 12.2 GHz (12.5 GHz in Region 1), having been convened at Geneva on 10 January 1977, under Article 54 of the International Telecommunication Convention and in accordance with Resolution No. 27 of the Plenipotentiary Conference (Malaga-Torremolinos, 1973) and Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications (Geneva 1971) has been charged :

- to establish the sharing criteria for the bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1) between the broadcasting-satellite service and the other services to which these bands are allocated;
- to plan for the broadcasting-satellite service in the above-mentioned bands;
- to establish procedures to govern the use of these bands by the broadcasting-satellite service and by the other services to which these bands are allocated;
- to consider the results of the work of the Group of Experts on the possible re-arrangement of the Radio Regulations.

The delegates of the following Members of the International Telecommunication Union,

- bearing in mind the importance of making the best possible use of the radio-frequency spectrum and the geostationary-satellite orbit as well as the need of an orderly development of the services to which these bands are allocated
- taking into account the equal rights of all countries, large and small, even those countries not represented at the Conference,

have adopted, subject to the approval of their respective competent authorities the following provisions and associated Plan(s).

(list of countries)

Article 1

GENERAL DEFINITIONS

For the purposes of these Final Acts the following terms shall have the meanings defined below :

<u>Union</u>	: The International Telecommunication Union;
<u>Secretary-General</u>	: The Secretary-General of the Union;
<u>WARC</u>	: World Administrative Radio Conference;
<u>Conference</u>	: World Administrative Radio Conference for the planning of the broadcasting-satellite service in frequency bands 11.7 - 12.2 GHz (12.5 GHz in Region 1), called in short Broadcasting-Satellite Conference
<u>IFRB (Board)</u>	: The International Frequency Registration Board;
<u>CCIR</u>	: The International Radio Consultative Committee;
<u>Convention</u>	: The International Telecommunication Convention;
<u>Radio Regulations</u>	: The Radio Regulations annexed to the Convention;
<u>Regions 1, 2 and 3</u>	: The geographical areas defined in Nos. 126 to 132 of the Radio Regulations, Geneva, 1959;
<u>Master Register</u>	: The Master International Frequency Register;
<u>IFRB weekly circular</u>	: The IFRB weekly circular as referred to in No. 497 of the Radio Regulations;
<u>Plan</u>	: The Plan for Regions 1 and 3 and its appendices forming Annex ... to these Final Acts;
<u>Administration</u>	: Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.

Article 2

FREQUENCY BANDS

The provisions of these Final Acts apply to the frequency bands between 11.7 and 12.5 GHz in Region 1 and between 11.7 and 12.2 GHz in Regions 2 and 3.

Article 3

EXECUTION OF THE FINAL ACTS

1. The Members of the Union in Regions 1 and 3 shall adopt for their Broadcasting-Satellite space stations operating in the frequency bands referred to in the Final Acts the characteristics specified in the Plan for those Regions.

2. The Members of the Union shall not change the characteristics specified in the Plan, or establish new Broadcasting-Satellite space-stations as well as stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles of these Final Acts.

Article a

APPROVAL OF THE FINAL ACTS

Members shall notify their approval of these Final Acts, as promptly as possible, to the Secretary-General, who shall at once inform the other Members of the Union. The act of approval shall constitute the agreement of Members to conform with the decisions jointly decided upon at the World Broadcasting-Satellite Administrative Radio Conference, Geneva 1977 and these Final Acts shall be regarded as an "agreement and associated plan" in accordance with resolves 1 of Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications (Geneva 1971) which requires the stations in the Broadcasting-Satellite Service to be established and operated in accordance with such agreements and associated plans.

Article b

ENTRY INTO FORCE OF THE FINAL ACTS

These Final Acts shall enter into force on 1st of January 1979 at 0001 hours GMT.

Article c

DURATION OF THE PROVISIONS AND ASSOCIATED PLAN(S)

1. The provisions and associated Plan have been prepared in order to meet the requirements of the Broadcasting-Satellite Service in the bands concerned for a period of at least ... years from the date of the entry into force of the Final Acts.

The duration of a plan for Region 2 will be determined by a competent Conference.

2. In any event, the Final Acts 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.

IN WITNESS WHEREOF, the Delegates of the Members of the Union mentioned above have, on behalf of their respective competent authorities, signed these Final Acts in a single copy in the Chinese, English, French, Russian and Spanish languages, in which, in case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the ITU.

Done at Geneva, February 1977

(Signatures)

RESOLUTION No. A

RELATING TO THE ANNEXING TO THE RADIO REGULATIONS OF THE
PROVISIONS AND ASSOCIATED PLAN CONTAINED IN THE
FINAL ACTS OF THE 1977 BROADCASTING-SATELLITE CONFERENCE

The World Administrative Broadcasting-Satellite Conference, Geneva,
1977,

noting

a) that the World Administrative Radio Conference for Space Telecommunications, 1971, adopted Resolution No. Spa2 - 2 envisaging that stations in the Broadcasting-Satellite Service shall be established and operated in accordance with agreements and associated plans adopted by World or Regional Administrative Radio Conferences;

b) that the Conference has adopted provisions for all Regions and an associated Plan for Regions 1 and 3;

considering

a) the wish expressed by the Conference to annex the provisions and associated Plan to the Radio Regulations;

b) that this Conference is not competent to amend the Radio Regulations;

resolves

that the general World Administrative Radio Conference, 1979, be requested to annex the provisions and associated Plan to become an integral part of the Radio Regulations, in the form (and to the extent) it deems most appropriate without thereby affecting their content or integrity;

requests

the Administrative Council to include in the agenda of the World Administrative Radio Conference 1979 the request referred to in the above paragraph.

RESOLUTION No. B

RELATING TO THE PERIOD BETWEEN THE ENTRY INTO FORCE OF THE
FINAL ACTS OF THE CONFERENCE AND THE DATE FOR THE ANNEXING OF
THE PROVISIONS AND ASSOCIATED PLAN TO THE RADIO REGULATIONS

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

considering

- a) that its Final Acts will come into force on 1 January 1979;
- b) that it in its Resolution No. has requested the 1979 WARC to annex to the Radio Regulations the provisions and associated Plan established by the Conference;
- c) that there will be an interim period between a) and b) above;

further considering

that these Final Acts shall be regarded as including a World agreement and associated Plan in accordance with Resolution No. Spa2 - 2 of the WARC, Geneva, 1971;

resolves

1. that during this interim period, as well as after the date when they have been annexed to the Radio Regulations, the Final Acts shall retain their integrity as a legal instrument and shall be binding on all Members;
 2. that during this period the IFRB and the other relevant organs of the Union shall be guided by the provisions of these Final Acts and the Radio Regulations.
-

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 228-E

4 February 1977

Original : English

PLENARY MEETING

Turkey

ISLAMIC PROGRAMME COVERAGE

The Delegation of Turkey supports in principle the proposal of the Administration of the Kingdom of Saudi Arabia for the allocation of channels for an Islamic programme; and confirms its appreciation and sympathy for the idea which forms the basis of this proposal.

That the Delegation of Turkey has been unable to have its name included in the list of countries which have given their prior agreement to this proposal is exclusively due to legislative and constitutional obstacles. The Delegation of Turkey is of the opinion that every effort should be exercised to accommodate these requirements in accordance with the procedures adopted by the Conference.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 229-E

4 February 1977

Original : Spanish

PLENARY MEETING

Ecuador

GEOSTATIONARY ORBIT

1. In submitting to the Conference the view that the segments of the geostationary orbit corresponding to their national territories constitute a natural resource over which they exercise sovereign rights, the equatorial countries are not endeavouring to obtain or negotiate recognition of their national sovereignty. They merely wish to reaffirm before the international community that these inalienable sovereign rights exist and must be respected by the ITU Conference.
2. Bearing in mind that the planning of the geostationary orbit being undertaken by this Conference might affect their sovereign rights, the equatorial States which signed or acceded to the Bogotá Declaration of 3 December 1976 clearly notified the Conference at its first plenary session when the agenda was approved that the Conference was not competent to apportion the geostationary orbit segments belonging to the equatorial States without obtaining the prior agreement of those States.
3. At the inaugural session of the Conference and at the Committee and Working Group meetings, at which the equatorial countries constantly reaffirmed their position, as reflected in the various documents, neither the Chairmen nor the participating delegations tabled procedural motions regarding the competence of the Conference with respect to the position of the equatorial States. Consequently Document No. 181 submitted by Australia is not only irrelevant but also untimely now that the Conference is drawing to a close. As the central theme of the Conference is the planning of the geostationary orbit and a common legal position has been adopted by a group of sovereign states which are entitled to enjoy the same rights as all Members of the ITU, there is no legal basis whatsoever for limiting the right of the equatorial countries to defend their sovereignty.
4. In view of the reference to Article 2 of the United Nations Treaty on Outer Space of 1967 in the Australian document, attention is drawn to Chapter 4 of the Declaration of Bogotá. It should also be pointed out that, if a definition of outer space existed which included the geostationary orbit, the Delegations of the countries parties to the 1967 Treaty would be violating Article 2 of the Treaty in approving orbital assignments at the present conference, in view of the permanent character of such assignments.



5. The truth of the matter is that other United Nations fora are also competent to deal with the question of the legal status of the geostationary orbit, for example the Committee on the Peaceful Uses of Outer Space and its Legal and Scientific and Technical Sub-Committees. This shows that the elaboration of space law is still in its early stages and that no international rules can therefore be invoked to limit the sovereign rights of the equatorial States. In confirmation of this point, the Delegation of the Republic of Colombia, acting on behalf of the equatorial States, stated at one of the plenary meetings : "It is premature for this Conference or any other international body to enter into any discussion concerning the distribution of the geostationary orbit, without having reached agreement with the equatorial countries on the status of the segments of the orbit situated over their territories".

6. As regards the reference made in the Australian document to Article 33, paragraph 131, of the International Telecommunication Convention, it is stressed that this provision is fully in line with the position of the equatorial countries since the geostationary orbit is a natural resource to which access should be provided on a genuinely equitable basis. If, in the name of an alleged common benefit, countries with more advanced economic and technical resources were to impose the criterion that priority in the utilization of natural resources should be granted on a first come first served basis without taking any account of the sovereign rights of States, the international community would be backsliding into the era of colonialism from which the peoples of the world have fortunately almost entirely freed themselves.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 230-E

5 February 1977

Original : English

COMMITTEE 4

COMMITTEE 6

United States of America

POWER FLUX-DENSITY LIMITS TO INITIATE COORDINATION

1. Taking into account the relevant documents and views expressed by the delegates, Committee 4B recommends the following values of power flux-density be used to initiate coordination for changes to the frequency assignments in the Plan or for inclusion in the Plan of a new frequency assignment.

2. Broadcasting-Satellite Service in Regions 1 and 3

2.1 For co-channel frequency assignments which would be co-polar or cross-polar, curves A or B, respectively, of Figure 1 would apply taking into account the requested orbital position relative to the orbital position in the Plan.

2.2 For adjacent-channel frequency assignments, the power flux-density given by curves A and B would be allowed to escalate taking into account Figure 3 of Document No. 108(Rev.1).

3. Limits on the Broadcasting-Satellite Service in order to protect Terrestrial Services

The power flux-density limits necessary to protect Terrestrial Services from interference from the Broadcasting-Satellite Service are set forth in Document No. 188(Rev.1).

The values shown there to protect Regions 1 and 3 are limits for a single entry of interference. Therefore, any changes in the Plan which would result in any space station thereof exceeding these values requires coordination with the administrations protected by the limit, on whose territories these p.f.d.'s would be exceeded.

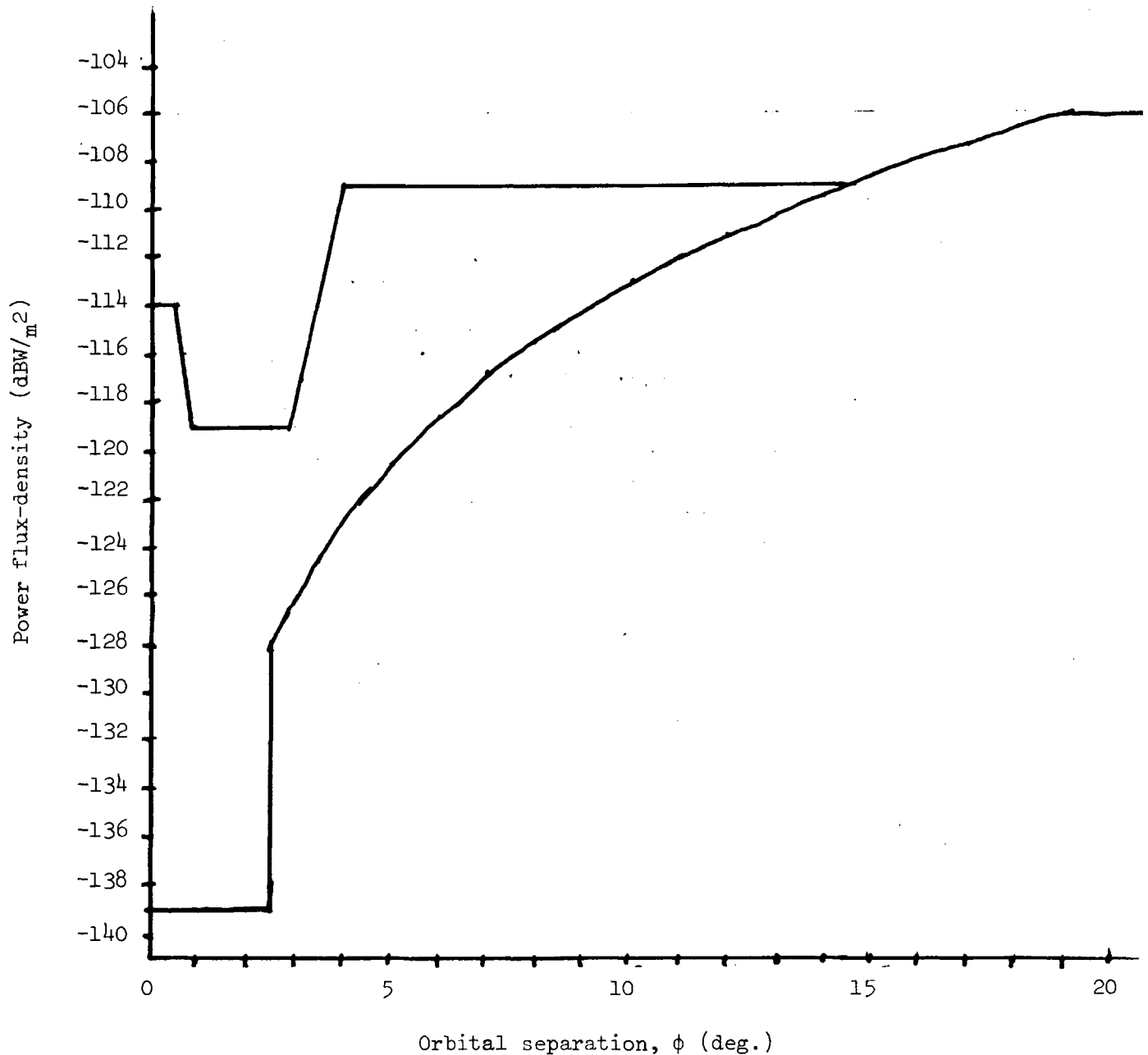
The values shown there to protect Region 2 is also based on a single entry of interference. ☐ No change can be made in the Plan which would result in exceeding this p.f.d. on the territories of administrations protected by the limit. ☐ Any change in the Plan which would result in any space station thereof exceeding these values would require coordination with the administration protected by the limit on whose territory these values would be exceeded. ☐



4. Protection of the Fixed-Satellite Service in the band 11.7 to 12.2 GHz

Any broadcasting satellite serving a Region 1 or a Region 3 administration shall not produce in the territory of any Region 2 administration a power flux-density exceeding the values given in [Document No. 188, Section 2.3]. If this p.f.d. limit is exceeded, coordination with the affected Region 2 administrations is to be initiated. The primary criteria to be applied in the coordination are the interference protection requirements listed for the Fixed-Satellite Service in Section 2 of [Document No. 111(Rev.3)].

For types of signals not listed in [Document No. 111], the required protection shall not exceed that specified for the most interference-sensitive signal listed for the Fixed-Satellite Service.



A. Co-polar power flux-density

- 139, dBW/m² $0^\circ \leq \phi < 2.5^\circ$
- $138 + 25 \log \phi$, dBW/m² $2.5^\circ \leq \phi < 19.1^\circ$
- 106, dBW/m² $\phi \geq 19.1^\circ$

B. Cross-polar power flux-density

- 114, dBW/m² $0^\circ \leq \phi < 0.5^\circ$
- $109 - 40 \log \left| \frac{\phi}{2.0} - 1 \right|$, dBW/m² $0.5^\circ \leq \phi \leq 0.88^\circ$
- 119, dBW/m² $0.88^\circ \leq \phi < 2.8^\circ$
- $109 - 25 \log \left| \frac{\phi}{2.0} - 1 \right|$, dBW/m² $2.8^\circ \leq \phi \leq 4.0^\circ$
- 109, dBW/m² until intersection with Curve A

PLENARY MEETING

B.5(Addendum)

ADDENDUM TO THE
5th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for
first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.4	224(B.3) pp. 15-16	[Annex sharing criteria between services] Use of energy dispersal in the broadcasting- satellite service

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 1 page



ANNEX - Sharing criteria between services

3. Use of energy dispersal in the broadcasting-satellite service

3.1 Artificial energy dispersal is useful in promoting sharing between the broadcasting-satellite service and the other services to which the band is also allocated.

3.2 Such energy dispersal is achieved by the addition at baseband of a triangular waveform to the video signal to form a composite baseband which, in turn, is used to frequency-modulate the up-link carrier. The frequency of the triangular waveform is usually synchronized at a sub-multiple of the television frame frequency. Typical frequencies range from 12.5 Hz to 30 Hz.

3.3 The table below gives the relative reduction in spectral power flux density in a 4 kHz bandwidth as a function of the peak-to-peak deviation due to the energy dispersal signal. This table is based on the following equation :

$$\left. \begin{array}{l} \text{Relative reduction (in dB)} \\ \text{in a 4 kHz band} \end{array} \right\} = 10 \log \frac{\Delta F_{pp} + \delta f_{rms}}{4}$$

where ΔF_{pp} = peak-to-peak deviation due to the energy dispersal signal (kHz)

δf_{rms} = rms deviation due to "natural" energy dispersal (kHz)

In compiling the table below, a value of 40 kHz has been assumed for δf_{rms} , on the basis of the value of 10 dB for "natural" dispersion given in Table 4 of CCIR draft Report 631(Rev.76).

Reduction of spectral power flux density relative to a 4 kHz bandwidth

Peak-to-peak deviation (kHz)	Relative reduction (dB)
0	10
100	15.44
200	17.78
300	19.29
400	20.41
500	21.30
600	22.04
700	22.67
800	23.22
900	23.71
1 000	24.15

3.4 The value of energy dispersal for the broadcasting-satellite service has been determined such that the spectral power flux density measured in a 4 kHz bandwidth is reduced by 22 dB relative to that measured in the entire bandwidth; this reduction corresponds to a peak-to-peak deviation of 600 kHz.

Document No. 231-E

5 February 1977

PLENARY MEETING

B.5

5th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.4	177	1. Protection requirements for sharing between services in the 12 GHz band
		2. Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 5 pages



Document No. 231-E

Page 2

1. Protection requirements for sharing between services in the 12 GHz band

1.1 For the planning of the broadcasting-satellite service, sharing between the different services using the 12 GHz band should be based on the protection requirements listed in the table below :

Protected service ¹⁾	Protected signal ¹⁾	Interfering service ¹⁾	Interfering signal ¹⁾	Protection requirements ²⁾	
				Total acceptable ³⁾	Single entry
BSS	TV/FM	BSS, FSS, FS, BS	TV/FM	C/I = 30 dB ⁴⁾⁷⁾	C/I = 35 dB ⁴⁾
FSS	FDM/FM	BSS	TV/FM	N = 500 pWOp ⁸⁾	N = 300 pWOp
FSS	TV/FM	BSS, FSS	TV/FM	C/I = 32 dB ⁵⁾	C/I = 37 dB ⁵⁾
FSS	4 ϕ - PSK	BSS, FSS	TV/FM	C/I = 30 dB	C/I = 35 dB
FSS	FDM/FM	FSS	FDM/FM	N = 1000 pWOp	N = 400 pWOp
FS	FDM/FM	BSS	TV/FM	N = 1000 pWOp	-125 dBW/m ² /4 kHz ⁶⁾
BS	TV/VSB	BSS	TV/FM	C/I = 50 dB	not applicable

Notes : 1) BSS = broadcasting-satellite service
 FSS = fixed-satellite service
 BS = broadcasting service
 FS = fixed service
 TV = television
 FM = frequency modulation
 FDM = frequency division multiplex
 4 ϕ -PSK = four-level phase shift keying
 VSB = vestigial sideband

2) These limits include both up-link and down-link contributions.
 They are expressed :

- in dB for carrier-to-interference ratio;
- in pWOp for noise
- in dBW/m²/4 kHz for power flux-density in a 4 kHz band.

3) Values in dB are protection ratios for the sum of interfering signals.
 Values in pWOp represent interference noise in the worst telephone channels caused by the sum of interfering signals.

4) For BSS satellites located at the interfaces of Regions 1/3 and Region 2, the C/I ratios should be 1 dB higher.

5) See CCIR Recommendation 483.

6) This value may be suitably modified for tropical regions to take account of rain attenuation. Allowance may also be made for polarization discrimination.

7) C/I = ratio of wanted-to-interfering signal

8) N = noise power

1.2 The values given as "total acceptable" are those necessary to protect the protected signal. The "single entry" values are those which should be used as a guide for planning purposes. The total interference from all sources must be calculated, since satisfying the "single entry" criteria for each source may not guarantee that the total interference meets the above protection requirements. A "single entry" is defined as the aggregate of emissions from any one station entering any receiver in the protected service within the channel to be protected.

1.3 The term C/I refers to the ratio of interfered with to interfering power at the interfered with ground station. The value given shall be exceeded for all but 20 % of the worst month for the fixed-satellite service (FSS), and for all but 1 % of the worst month for the broadcasting service (BS) and the broadcasting-satellite service (BSS).

1.4 The term N refers to the post-detection noise power at a point of 0 dBm0 relative test tone level in any voice channel of an FDM/FM telephony system. The value given shall not be exceeded for more than 20 % of the worst month.

1.5 The specified values of protection ratio (i.e., the carrier-to-interference power ratio corresponding to a specified picture quality) are applicable, for planning purposes, to television signals of any of the several television standards.

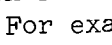
1.6 For BSS systems with FM/TV as the protected signal, the protection ratios are given for particular reference conditions, the most important of which are :

- a) frequency deviation of the protected signal (12 MHz peak-to-peak)
- b) quality of service protected (grade 4.5)*
- c) co-channel carriers (no carrier-frequency offset).

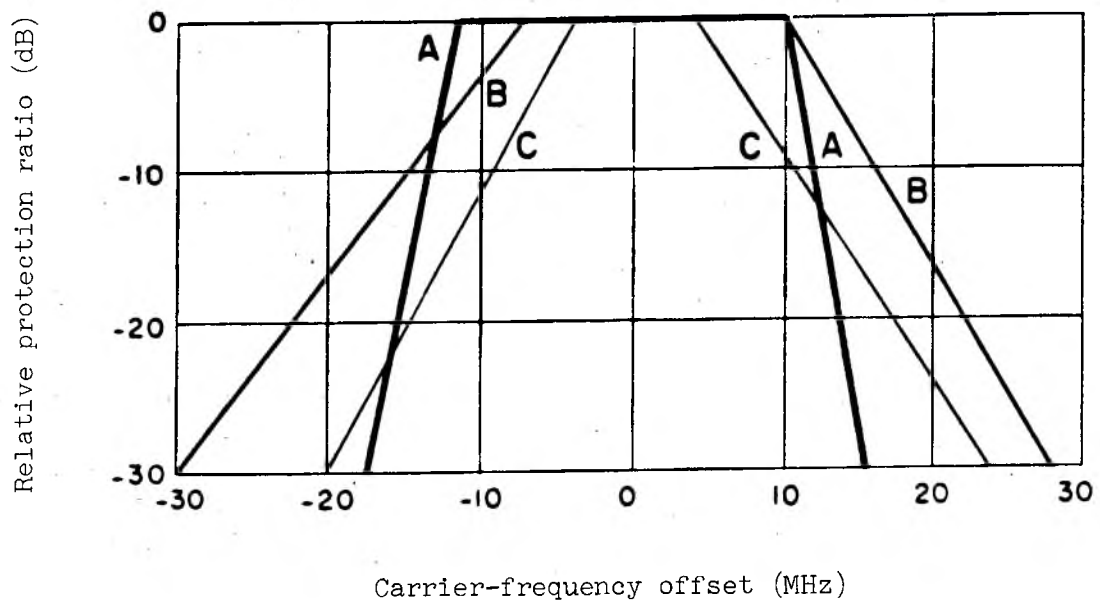
1.7 If system design is based on conditions other than a) and b) above, the FM/TV protection ratio is given by :

$$PR = 12.5 - 20 \log (Dv/12) - Q + 1.1 Q^2 \quad (\text{dB})$$

where Dv = nominal peak-to-peak frequency deviation (MHz)
 Q = the impairment grade, concerning the interference only.

1.8 When carriers are offset in frequency, condition c) does not apply and the adjacent channel protection ratios should be adjusted to the frequency offset as shown in Figure . For example, at a frequency offset of 20 MHz, the total acceptable ratio of protection against interference to an FM/TV signal from another FM/TV signal is 13 dB. The corresponding "single entry" value is 18 dB.

* Quality grade on a 5-point impairment scale as defined in CCIR Recommendation 500.



$$\Delta f = (f_{\text{int.}} - f_{\text{prot.}})$$

Figure [] - Reference case protection ratios relative to co-channel values

- A. TV/VSB-protected, TV/FM interfering
- B. TV/FM-protected, TV/FM interfering
- C. TV/FM-protected, TV/VSB interfering

2. Reference antenna diameter for a fixed-satellite earth station to be used in calculating interference from space stations in the broadcasting-satellite service

2.1 For antennae larger than 100λ (2.5 m) in the fixed-satellite service, the gain of the sidelobes is given by the equation $32 - 25 \log \theta$ where θ is the angle from the boresight (CCIR Recommendation 465). The sidelobe gain is independent of antenna diameter.

2.2 However, in the case of transmitting earth stations, the level of interference radiated into the up-link of other satellite systems would be inversely proportional to the square of the antenna diameter. In this case, the interference decreases with increasing antenna diameter. Since the 11.7 - 12.2 GHz band is only assigned in the space-to-earth direction in the fixed-satellite service, this point is not of direct concern to the broadcasting-satellite service.

2.3 Hence it does not appear appropriate, for antenna diameters greater than 100λ , to specify a minimum antenna diameter for receiving earth stations in the fixed-satellite service sharing the band 11.7 - 12.2 GHz. It may be useful to consider a 4.5 m antenna having an efficiency of 60 % and an on-axis gain of 53 dB as typical for the purpose of planning the sharing of this band; however, it should be noted that administrations in Region 2 are considering the use of antennae 3 m to 10 m in diameter.

PLENARY MEETING

B.6

6th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.6	169(Rev.1)	Procedure for determining the limiting interfering power flux density at the edge of a broadcasting-satellite service area and for predicting the power flux density produced there by a terrestrial station in the band 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1)

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 8 pages



A P P E N D I X

PROCEDURE FOR DETERMINING THE LIMITING INTERFERING POWER FLUX DENSITY
AT THE EDGE OF A BROADCASTING-SATELLITE SERVICE AREA
AND FOR PREDICTING THE POWER FLUX DENSITY PRODUCED THERE BY A TERRESTRIAL
STATION IN THE BAND 11.7 - 12.2 GHz (IN REGIONS 2 AND 3) AND
11.7 - 12.5 GHz (IN REGION 1)

1. General

1.1 This Appendix describes a method of assessing the interference potential from terrestrial transmitters to broadcasting-satellite receivers in the band 11.7 - 12.2 GHz (12.5 GHz in Region 1).

1.2 The method is in two parts :

- i) the calculation of the maximum permissible interfering power flux density at the edge of the broadcasting-satellite service area concerned;
- ii) the calculation of the likely power flux density produced at any point on the edge of the service area by the terrestrial transmitter of another administration.

1.3 The interference potential of the terrestrial transmitters must be considered case by case; the power flux density produced by each terrestrial transmitter is compared to the limiting power flux density at any point on the edge of the service area of another administration. If, for a given transmitter, the value of the power flux density produced is lower than the value of the limiting power flux density at any point on the edge of the service area, the interference caused to the broadcasting-satellite service by this transmitter is considered to be lower than the permissible value and no coordination is required between administrations before the terrestrial service is brought into use. Where this is not the case, coordination and further, more precise calculations derived from a mutually agreed basis are necessary.

1.4 It is emphasized that, should the calculation described in this Appendix indicate that the maximum permissible power flux density is exceeded, it does not necessarily preclude the introduction of the terrestrial service since the calculations are necessarily based on worst case assumptions for :

- a) the nature of the terrain of the interference path,
- b) the off-beam discrimination of the broadcasting-satellite receiving installations,
- c) the necessary protection ratios for broadcasting-satellite transmissions,
- d) the type of reception in the broadcasting-satellite service, i.e., assuming individual reception, this being more critical than community reception for the angles of elevation concerned.
- e) the value of power flux density to be protected in the broadcasting-satellite service;
- f) the propagation conditions between the terrestrial station and the broadcasting-satellite service area.

2. Limit of power flux density

2.1 General

The limiting power flux density not to be exceeded at the edge of the service area in order to protect the broadcasting-satellite service administration is given by the formula :

$$F = F_0 - R + D + P \quad (1)$$

where

- F = the maximum permissible interfering power flux density (dBW/m^2) in the broadcasting-satellite wanted bandwidth
- F_0 = the wanted power flux-density (dBW/m^2) at the edge of the service area
- R = the protection ratio (dB) between the wanted and interfering signals
- D = angular discrimination (dB) provided by the radiation pattern of the satellite broadcasting receiver antenna
- P = polarization discrimination (dB) between the wanted and interfering signals

2.2 Wanted power flux-density (F_0)

The value of F_0 is equal to

- a) -103 dBW/m^2 for service areas in Regions 1 and 3
- b) -105 dBW/m^2 for service areas in Region 2

2.3 Protection ratio (R)

2.3.1 The single entry protection ratio against all types of terrestrial transmissions, with the exception of AM multichannel TV systems, is 35 dB for carrier frequency differences between the wanted and interfering signals of up to ± 10 MHz, decreasing linearly from 35 dB to 0 dB for carrier frequency differences between 10 MHz and 35 MHz, and is 0 dB for frequency differences in excess of 35 MHz (see Figure 1).

2.3.2 The carrier frequency difference should be determined by reference to the frequency assignments in the broadcasting-satellite plan or, in the case of assignments not contained within a plan, by reference to the description of the characteristics of the proposed or operational system. For AM multichannel TV systems which produce peaks of high power flux density spread over a wide range of their occupied bandwidth, the protection ratio R is 35 dB and is independent of the carrier frequency difference.

2.3.3 A signal from a terrestrial station should be considered only if its occupied bandwidth overlaps, or is separated by less than 7 MHz from, the occupied bandwidth of the broadcasting-satellite assignment.

2.4 Angular discrimination

2.4.1 Broadcasting-satellite service areas in Regions 1 and 3

Where the angle of elevation ϕ for protection ϕ , either as specified in the Plan or selected for the proposed or operational broadcasting-satellite system, for the broadcasting-satellite service area concerned, is equal to or greater than 19° , the value of D to be assumed in expression (1) is 33 dB. When ϕ is less than 19° , D should be derived from expression (2.1) below.

Note : If more than one value of ϕ is specified for a particular service area, the appropriate value of ϕ should be used for each section of the edge of the service area under consideration.

$$\begin{aligned}
 D &= 0 \text{ for } 0 \leq \phi \leq 0.5^\circ \\
 D &= 3\phi^2 \text{ for } 0.5^\circ < \phi \leq 1.41^\circ \\
 D &= 3 + 20 \log_{10} \phi \text{ for } 1.41^\circ < \phi \leq 2.52^\circ \\
 D &= 1 + 25 \log_{10} \phi \text{ for } 2.52^\circ < \phi \leq 19^\circ
 \end{aligned}
 \tag{2.1}$$

Note : For the graphical determination of D see Figure 2.

2.4.2 Broadcasting-satellite service areas in Region 2

Where the angle of elevation ϕ for protection ϕ , either as specified in the Plan or selected for the proposed or operational broadcasting-satellite system, for the broadcasting-satellite service area concerned, is equal to or greater than 27° , the value of D to be assumed in expression (1) is 38 dB. When ϕ is less than 27° , D should be derived from expression (2.2) below.

Note : If more than one value of ϕ is specified for a particular service area, then the appropriate value of ϕ should be used for each section of the edge of the service area under consideration.

$$\begin{aligned} D &= 0 \text{ for } 0 \leq \phi \leq 0.45^\circ \\ D &= 3.7\phi^2 \text{ for } 0.45^\circ < \phi \leq 1.27^\circ \\ D &= 3.9 + 20 \log_{10} \phi \text{ for } 1.27^\circ < \phi \leq 2.27^\circ \\ D &= 2.1 + 25 \log_{10} \phi \text{ for } 2.27^\circ < \phi \leq 27^\circ \end{aligned} \quad (2.2)$$

Note : For the graphical determination of D see Figure 2.

2.5 Polarization discrimination

The value of P is equal to :

a) 3 dB when the interfering terrestrial service uses linear polarization and the broadcasting-satellite service uses circular polarization or vice versa.

b) 0 dB when the interfering terrestrial service and the broadcasting-satellite service both use circular or both use linear polarization.

3. Power flux density produced by a terrestrial station

The power flux density F_p (in dBW/m²) produced at any point on the edge of the service area by the terrestrial station is determined from the following formula :

$$F_p = E - A + 43 \quad (3)$$

where E = the equivalent isotropically radiated power (dBW) of the terrestrial station in the direction of the point on the edge of the service area concerned

and A = the total path loss in dB.

3.1 Evaluation of path loss A for a terrestrial station at a distance greater than 100 km from the edge of the service area of the broadcasting-satellite

For path lengths greater than 100 km, A is given by :

$$A = 137.6 + 0.2324 d_t + 0.0814 d_m \quad (4)$$

where d_t and d_m are the overland and oversea path lengths respectively, in km.

3.2 Evaluation of path loss A for a terrestrial station at a distance equal to or less than 100 km from the edge of the service area of the broadcasting-satellite

For path lengths equal to or less than 100 km, A is calculated using equations (4) and (5) and the lowest value obtained is substituted in formula (3) to calculate the power flux density produced at the point on the edge of the service area :

$$A = 109.5 + 20 \log (d_t + d_m) \quad (5)$$

The variation in A for different path lengths and proportions of oversea path is shown in Figure 3.

3.3 Distance beyond which the method need not be applied

The method need not be applied and consultation is unnecessary when the distance between the terrestrial station and the service area of the broadcasting-satellite is greater than :

- a) 400 km in the case of all overland paths, or
- b) 1200 km in the case of all oversea or mixed paths.

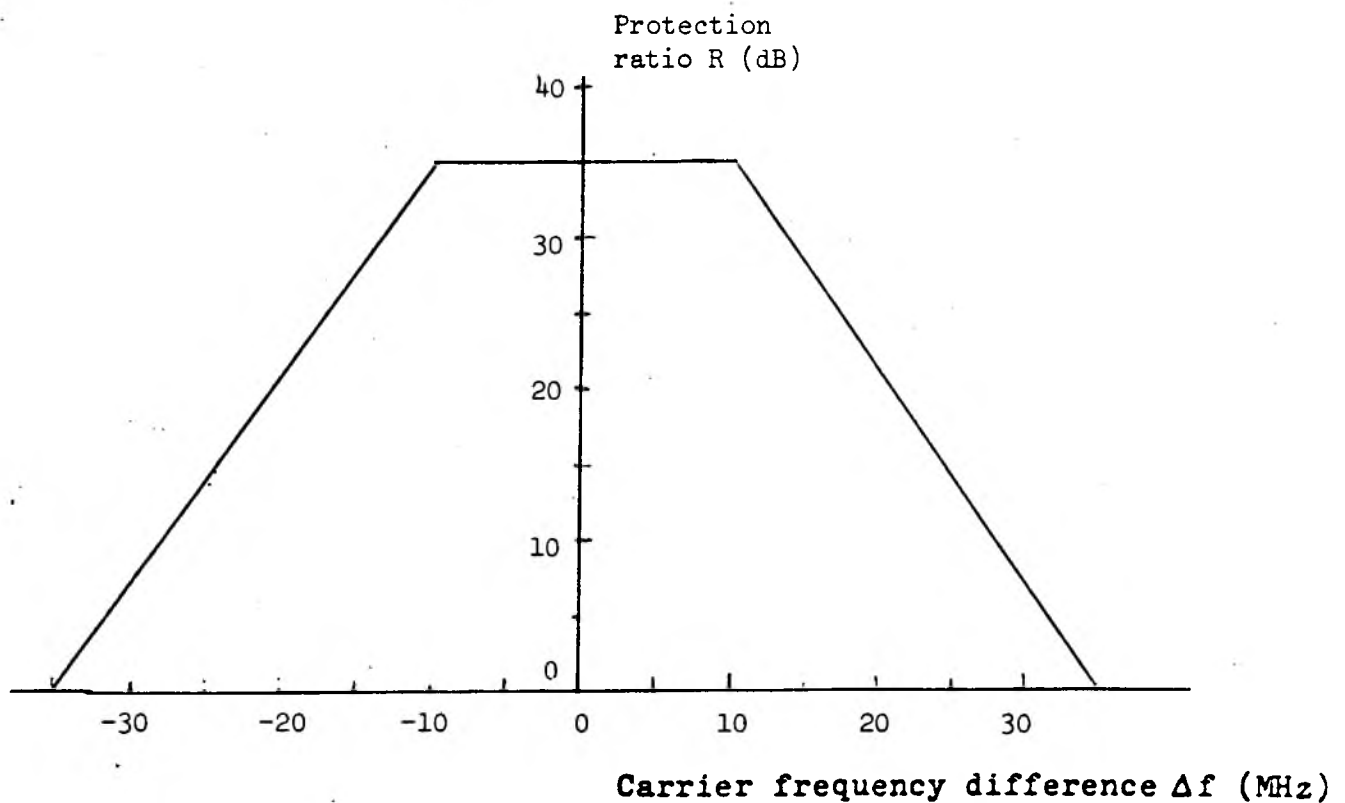


FIGURE 17

Protection ratio R (dB) for a broadcasting-satellite signal against a single entry of interference from a terrestrial service (except for AM multichannel TV systems)

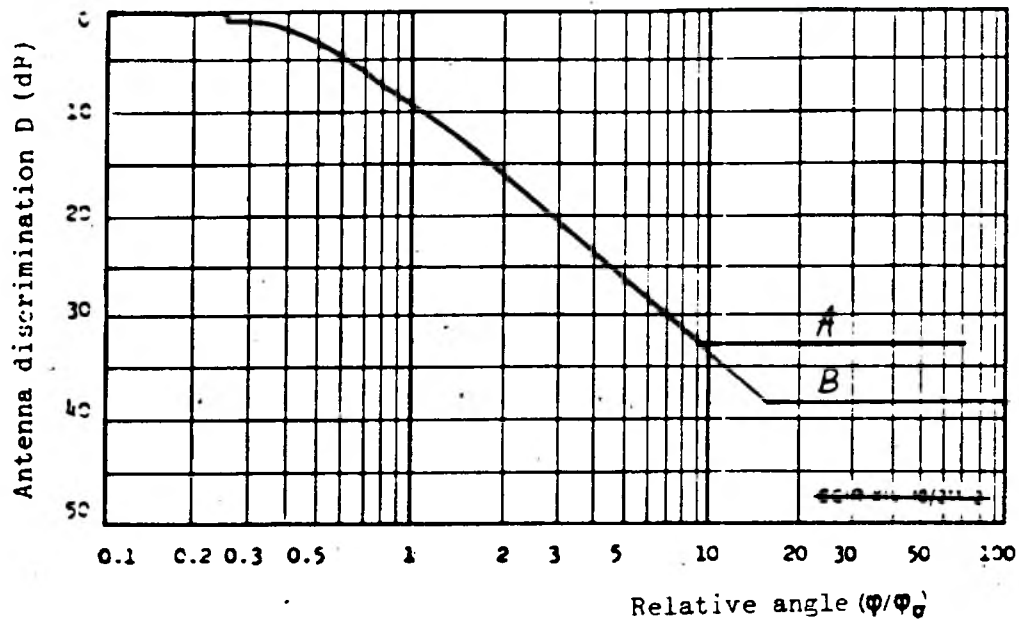
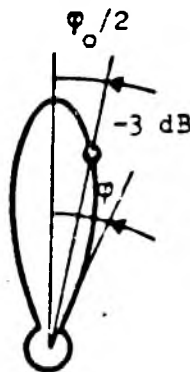


FIGURE [2]

Discrimination of broadcasting-satellite receiver antenna
as a function of satellite elevation angle

For service areas in Regions 1 and 3 $\phi_0 = 2^\circ$ and Curve A applies
For service areas in Region 2 $\phi_0 = 1.8^\circ$ and Curve B applies



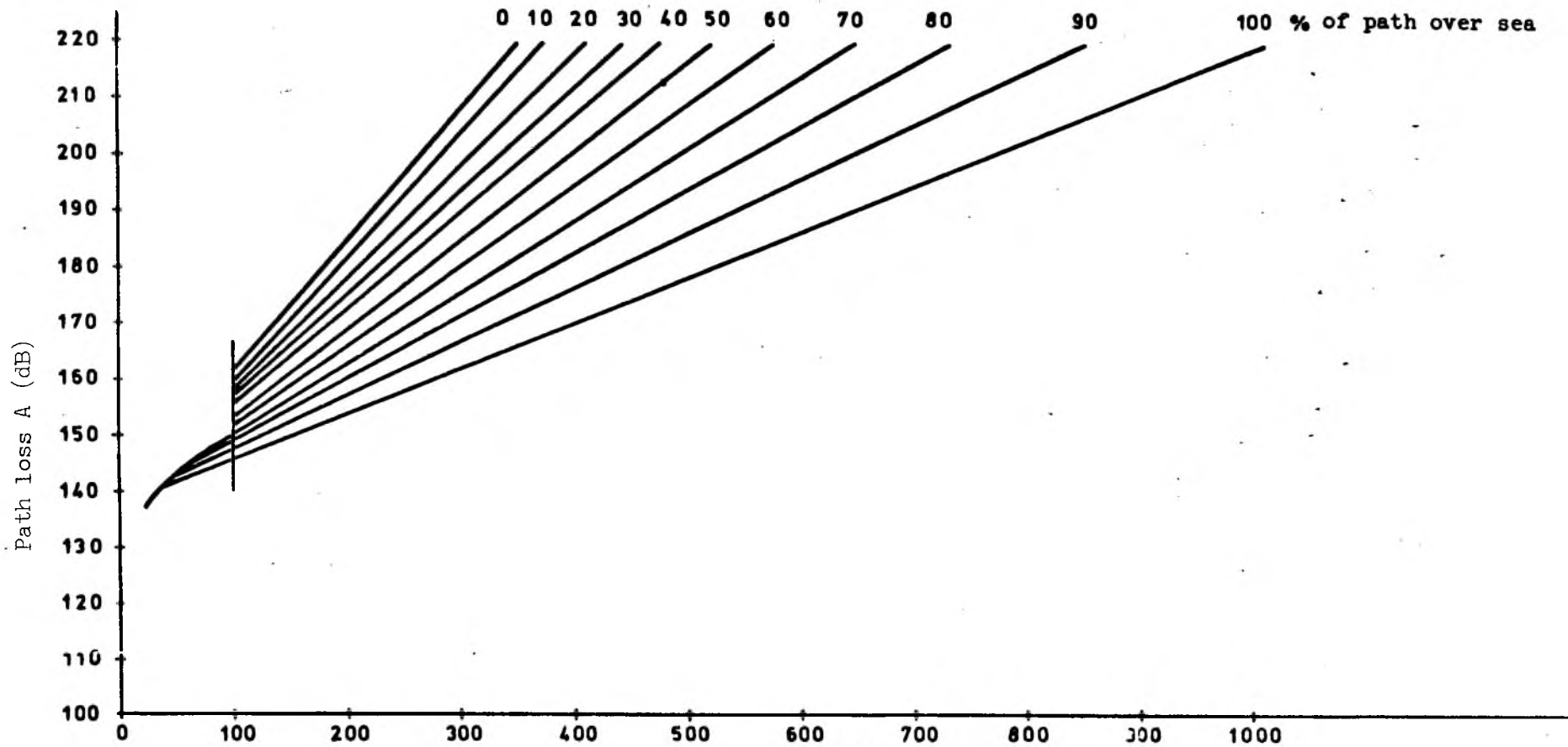


FIGURE [3]

Total path loss A versus total path length ($d_t + d_m$) and
proportions of oversea path (km)

UNION INTERNATIONALE DES TELECOMMUNICATIONS
CONFERENCE DE RADIODIFFUSION
PAR SATELLITE

(Genève, 1977)

Document N° 233-F/E/S
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anglais
espagnol

COMMISSION 5

Note du Président de la Commission 5 (Planification)

CARACTERISTIQUES DU FAISCEAU DE L'ANTENNE

La Commission 5 (Planification) a demandé la publication des caractéristiques du faisceau de l'antenne sur lesquelles est basé le projet de Plan pour les Régions 1 et 3 (voir le Document N° 265 du 10 février 1977).

Ces renseignements sont contenus dans le présent document.

A. PETTI
Président
Commission 5 (Planification)

COMMITTEE 5

Note by the Chairman of Committee 5 (Planning)

ANTENNA BEAM CHARACTERISTICS

Committee 5 (Planning) requested the publication of the antenna beam characteristics on which the draft Plan for Regions 1 and 3 is based (Document No. 265 of 10 February 1977 refers).

This information is contained in the present document.

A. PETTI
Chairman
Committee 5 (Planning)

COMISIÓN 5

Nota del Presidente de la Comisión 5 (Planificación)

CARACTERÍSTICAS DEL HAZ DE LA ANTENA

La Comisión 5 (Planificación) ha pedido la publicación de las características del haz de la antena sobre las que está basado el proyecto de Plan para las Regiones 1 y 3 (véase el Documento N.º 265 de 10 de febrero de 1977).

Esos datos están contenidos en el presente documento.

A. PETTI
Presidente
Comisión 5 (Planificación)

Pour des raisons d'économie, ce document n'a été tiré qu'en nombre restreint. Les participants sont donc priés de bien vouloir apporter à la conférence leurs documents avec eux, car il n'y aura que fort peu d'exemplaires supplémentaires disponibles.



- Col. 1 Symbole désignant le pays et numéro de série de l'I.F.R.B.
 Col. 2 Position orbitale nominale en degrés
 Col. 4 Coordonnées géographiques du point de visée en degrés et centièmes

Par exemple:

-073.10	-48.60	=	073.10W	48.60S
037.50	32.00	=	037.50E	32.00N
124.50	-15.50	=	124.50E	15.50S
-002.05	49.17	=	002.05W	49.17N

- Col. 5a Ouverture du faisceau d'antenne. Grand axe de la section elliptique du faisceau d'antenne à demi-puissance
 Col. 5b Ouverture du faisceau d'antenne. Petit axe de la section elliptique du faisceau d'antenne à demi-puissance
 Col. 6 Orientation de l'ellipse

-
- Col. 1 Country symbol and I.F.R.B. Serial Number
 Col. 2 Nominal orbit position in degrees
 Col. 4 Boresight geographical co-ordinates in degrees and hundredths

e.g.

-073.10	-48.60	=	073.10W	48.60S
037.50	32.00	=	037.50E	32.00N
124.50	-15.50	=	124.50E	15.50S
-002.05	49.17	=	002.05W	49.17N

- Col. 5a Antenna aperture. Major axis of the elliptical cross-section half power beam
 Col. 5b Antenna aperture. Minor axis of the elliptical cross-section half power beam
 Col. 6 Orientation of the ellipse

-
- Col. 1 Símbolo designativo del país y número de serie de la I.F.R.B.
 Col. 2 Posición orbital nominal en grados
 Col. 4 Coordenadas geográficas del centro de puntería en grados y centésimas

Por ejemplo:

-073.10	-48.60	=	073.10W	48.60S
037.50	32.00	=	037.50E	32.00N
124.50	-15.50	=	124.50E	15.50S
-002.05	49.17	=	002.05W	49.17N

- Col. 5a Abertura del haz de la antena. Eje mayor de la sección transversal elíptica del haz a potencia media
 Col. 5b Abertura del haz de la antena. Eje menor de la sección transversal elíptica del haz a potencia media
 Col. 6 Orientación de la elipse

1		2	4		5a	5b	6
AFG	0245	50.00	70.27	35.50	1.32	1.13	53.13
AFG	0246	50.00	64.53	33.12	1.44	1.40	21.43
AFI	0099	23.00	42.50	11.70	0.60	0.60	
AFS	0021	5.00	24.50	-28.00	3.13	1.68	27.21
AGL	0295	-13.00	16.50	-12.00	3.09	2.26	84.82
ALB	0296	-7.00	19.83	41.30	0.68	0.60	146.69
ALG	0251	-25.00	5.20	33.70	2.70	1.51	172.82
ALG	0252	-25.00	1.60	25.50	3.64	2.16	152.27
AND	0238	-37.00	1.40	42.70	0.60	0.60	
ARS	0003	17.00	41.14	23.90	3.52	1.68	134.00
ARS	0275	17.00	48.36	24.62	3.84	1.40	138.00
ARS	0340	17.00	52.37	24.89	2.68	0.84	143.00
AUS	0004	98.00	122.30	-23.90	4.26	2.64	49.15
AUS	0005	98.00	133.00	-18.80	3.62	1.69	66.49
AUS	0006	98.00	135.90	-30.30	2.55	1.87	46.95
AUS	0007	128.00	146.50	-39.10	1.83	1.39	134.34
AUS	0008	128.00	143.40	-20.50	3.76	2.71	112.78
AUS	0009	128.00	143.70	-33.00	2.17	1.21	15.00
AUT	0016	-19.00	12.20	47.50	1.14	0.63	166.23
AZR	0134	-31.00	-23.43	36.19	2.56	0.70	158.00
BDI	0270	11.00	29.92	-3.13	0.71	0.60	80.54
BEL	0018	-19.00	4.63	50.62	0.82	0.60	167.02
BGD	0220	74.00	90.37	23.60	1.46	0.84	135.00
BHR	0255	17.00	50.50	26.13	0.60	0.60	
BLR	0062	23.00	27.83	52.68	1.08	0.72	1.00
BOT	0297	-1.00	23.40	-22.25	2.13	1.50	36.06
BRM	0298	74.00	97.11	19.15	3.58	1.48	104.00
BRU	0330	74.00	114.73	4.44	0.60	0.60	
BUL	0020	-1.00	24.04	42.78	1.04	0.60	165.00
CAF	0258	-13.00	21.00	6.33	2.25	1.68	31.90
CAR	0338	122.00	149.50	7.97	5.36	0.77	178.00
CBG	0299	68.00	105.00	12.75	1.01	0.90	110.34
CHN	0154	62.00	83.92	40.55	2.75	2.05	177.65

1		2	4		5a	5b	6
CHN	0155	62.00	88.35	31.56	3.38	1.45	162.51
CHN	0156	62.00	97.80	36.40	2.56	1.58	157.15
CHN	0157	62.00	102.31	27.88	2.56	1.58	127.00
CHN	0158	80.00	111.86	38.05	2.60	1.74	124.00
CHN	0159	80.00	109.44	27.30	2.14	1.72	107.40
CHN	0160	92.00	123.86	45.80	2.43	1.62	153.71
CHN	0161	92.00	118.16	31.18	2.49	1.69	117.64
CHN	0162	92.00	115.91	21.01	2.74	2.42	23.50
CHN	0163	80.00	116.08	39.28	1.20	0.80	132.00
CHN	0164	80.00	112.21	37.43	1.06	0.76	111.00
CHN	0165	80.00	111.43	41.89	1.58	1.20	15.00
CHN	0166	92.00	121.12	41.75	1.52	0.78	154.00
CHN	0167	92.00	124.40	43.76	1.98	0.72	156.00
CHN	0168	92.00	124.89	48.11	2.68	0.92	157.00
CHN	0169	92.00	118.52	36.46	1.16	0.76	11.00
CHN	0170	92.00	119.57	32.97	1.34	0.64	155.00
CHN	0171	92.00	117.27	32.00	1.20	0.74	126.00
CHN	0172	92.00	120.46	29.19	0.96	0.84	123.00
CHN	0173	92.00	115.71	27.44	1.14	0.94	99.00
CHN	0174	92.00	118.15	25.93	1.02	0.84	82.00
CHN	0175	92.00	121.49	23.85	1.14	0.82	64.00
CHN	0176	80.00	113.77	33.94	1.20	0.80	141.00
CHN	0177	80.00	111.86	30.84	1.42	0.82	160.00
CHN	0178	80.00	111.59	27.43	1.22	0.86	130.00
CHN	0179	92.00	112.21	21.96	1.84	1.22	37.00
CHN	0180	92.00	113.77	12.95	3.76	2.18	72.00
CHN	0181	80.00	108.57	23.83	1.41	1.08	153.47
CHN	0182	80.00	108.72	35.13	1.42	0.88	109.00
CHN	0183	62.00	104.90	38.98	1.48	0.60	142.30
CHN	0184	62.00	101.02	37.91	2.78	0.82	144.00
CHN	0185	62.00	95.71	35.44	2.10	1.14	156.00
CHN	0186	62.00	102.56	30.21	1.91	1.23	147.60
CHN	0187	80.00	106.68	26.79	1.14	0.94	179.00

1		2	4		5a	5b	6
CHN	0188	62.00	101.53	25.20	1.86	1.08	132.00
CKH	0052	158.00	-160.00	-19.85	1.02	0.64	132.61
CKN	0053	158.00	-163.06	-11.25	1.76	0.72	49.76
CLN	0219	50.00	80.60	7.79	1.18	0.60	106.00
CME	0300	-13.00	12.77	6.26	2.54	1.68	87.00
CNR	0130	-31.00	-15.73	28.45	1.54	0.60	5.00
COG	0235	-13.00	14.68	-0.76	2.02	1.18	59.00
COM	0207	29.00	44.11	-12.20	0.76	0.60	149.00
CPV	0301	-31.00	-24.01	16.05	0.86	0.70	144.00
CTI	0237	-31.00	-5.70	7.52	1.60	1.22	108.00
CVA	0083	-37.00	12.44	41.90	0.60	0.60	
CVA	0085	-37.00	10.50	42.00	2.08	0.66	152.00
CYP	0086	5.00	33.40	35.13	0.60	0.60	
D	0087	-19.00	9.41	49.54	1.62	0.72	147.40
DAH	0233	-19.00	2.26	9.56	1.44	0.68	97.00
DDR	0216	-1.00	12.61	52.11	0.83	0.63	172.28
DNK	0089	5.00	12.30	57.20	1.20	0.60	177.00
DNK	0090	5.00	17.00	61.50	2.00	1.00	10.00
E	0129	-31.00	-3.20	39.92	2.10	1.14	154.00
EGY	0026	-7.00	29.75	26.85	2.33	1.72	136.65
ETH	0092	23.00	39.74	9.19	3.50	2.50	124.00
F	0093	-19.00	2.70	45.92	2.50	0.98	160.00
FJI	0193	152.00	179.45	-17.92	1.04	0.98	67.93
FNL	0103	5.00	22.50	64.50	1.38	0.76	171.65
FNL	0104	5.00	17.00	61.50	2.00	1.00	10.00
G	0027	-31.00	-3.55	53.86	1.84	1.72	142.00
GAB	0260	-13.00	11.83	-0.70	1.43	1.12	64.72
GHA	0108	-25.00	-1.27	7.94	1.48	1.06	102.00
GMB	0302	-37.00	-15.20	13.41	0.79	0.60	4.37
GNE	0303	-19.00	10.39	1.59	0.68	0.60	10.00
GNP	0304	-31.00	-15.03	12.00	0.90	0.60	172.00
GRC	0105	5.00	24.10	38.12	1.78	0.98	138.00
GUI	0192	-37.00	-11.06	10.27	1.58	1.04	147.00

1		2	4		5a	5b	6
GUM	0331	122.00	144.50	13.20	0.60	0.60	
HNG	0106	-1.00	19.50	47.25	0.92	0.60	176.00
HOL	0213	-19.00	5.44	52.09	0.76	0.60	171.00
HVO	0107	-31.00	-1.58	12.25	1.45	1.14	29.94
I	0082	-19.00	12.30	41.32	2.38	0.98	137.00
IND	0037	68.00	93.00	25.50	1.46	1.13	71.32
IND	0038	56.00	75.94	33.43	1.52	1.08	131.00
IND	0039	56.00	72.75	11.26	1.26	0.60	107.00
IND	0040	56.00	72.98	25.05	1.82	1.48	58.00
IND	0041	56.00	78.45	15.97	2.08	1.38	35.00
IND	0042	68.00	79.38	27.75	2.14	1.16	147.00
IND	0043	56.00	77.85	11.13	1.36	1.28	172.00
IND	0044	68.00	79.50	22.40	2.19	1.42	146.90
IND	0045	56.00	76.22	19.57	1.58	1.58	21.25
IND	0046	68.00	84.72	20.54	1.60	0.86	30.00
IND	0047	68.00	93.34	11.14	1.92	0.60	96.27
IND	0048	68.00	86.29	24.99	1.56	0.90	120.00
INS	0028	80.00	101.72	-1.70	3.46	1.44	131.00
INS	0030	80.00	112.30	-8.17	3.14	1.46	169.00
INS	0032	80.00	112.31	-0.32	2.66	2.32	109.00
INS	0035	104.00	124.31	-3.22	3.34	1.94	82.00
INS	0036	104.00	135.22	-3.80	2.46	2.00	147.00
IRL	0211	-31.00	-8.27	53.25	0.84	0.60	162.00
IRN	0109	32.00	54.25	32.43	3.82	1.82	149.00
IRQ	0256	11.00	43.68	32.89	1.88	0.96	143.00
ISL	0049	-31.00	-19.08	64.96	1.00	0.60	177.08
ISL	0050	5.00	-15.82	64.26	1.60	0.60	177.00
ISR	0110	-13.00	34.94	31.44	0.94	0.60	117.00
J	0111	110.00	134.53	31.58	3.52	3.30	68.00
JOR	0224	11.00	35.88	31.41	0.84	0.78	114.00
KEN	0249	11.00	37.92	1.20	2.29	1.56	94.33
KOR	0112	110.00	127.56	36.07	1.24	1.02	168.00
KRE	0286	110.00	127.15	40.10	1.06	0.76	31.00

1		2	4		5a	5b	6
KWT	0113	17.00	47.60	29.25	0.68	0.60	145.00
LAO	0284	74.00	103.74	18.15	2.16	0.78	133.00
LBN	0279	11.00	35.88	33.94	0.60	0.60	
LBR	0244	-31.00	-9.36	6.67	1.22	0.70	133.00
LBY	0280	-25.00	21.48	26.03	2.50	1.04	119.00
LBY	0321	-25.00	13.13	27.25	2.36	1.12	129.00
LIE	0253	-37.00	9.58	47.10	0.60	0.60	
LSO	0305	5.00	27.87	-29.82	0.66	0.60	36.00
LUX	0114	-19.00	6.08	49.80	0.60	0.60	
MAU	0242	29.00	59.83	-18.95	1.62	1.24	55.00
MAU	0243	29.00	56.81	-13.95	1.56	1.38	65.00
MCO	0116	-37.00	7.42	43.73	0.60	0.60	
MDG	0236	29.00	46.62	-18.80	2.72	1.14	65.00
MLA	0227	86.00	102.10	4.13	1.62	0.82	135.00
MLA	0228	86.00	114.20	3.93	2.34	1.12	45.00
MLD	0306	44.00	73.11	6.00	0.96	0.60	90.00
MLI	0327	-37.00	-2.04	19.09	2.66	1.26	127.00
MLI	0328	-37.00	-7.63	13.25	1.74	1.24	171.00
MLT	0147	-13.00	14.37	35.95	0.60	0.60	
MNG	0248	74.00	102.25	46.64	3.60	1.13	169.05
MOZ	0307	-1.00	34.00	-18.00	3.57	1.38	55.69
MRA	0332	122.00	145.91	16.95	1.20	0.60	76.55
MRC	0209	-25.00	-9.08	29.24	2.72	1.38	43.00
MRL	0333	146.00	166.78	7.95	1.50	1.50	177.51
MTN	0223	-37.00	-12.27	18.50	2.62	1.87	150.97
MTN	0288	-37.00	-7.83	23.42	1.63	1.10	141.89
MWI	0308	-1.00	34.15	-13.03	1.54	0.60	87.00
MYT	0098	29.00	45.10	-12.83	0.60	0.60	
NCL	0100	140.00	166.00	-21.00	1.14	0.72	146.00
NGR	0115	-25.00	8.30	16.84	2.54	2.08	44.00
NHB	0128	140.00	168.05	-16.45	1.52	0.68	87.78
NIG	0119	-19.00	7.83	9.46	2.16	2.02	45.00
NIU	0054	158.00	-169.90	-19.00	0.60	0.60	

1		2	4		5a	5b	6
NMB	0025	-19.00	17.59	-21.61	2.66	1.90	48.00
NOR	0120	5.00	13.15	64.11	1.84	0.88	10.00
NOR	0121	5.00	17.00	61.50	2.00	1.00	10.00
NPL	0122	50.00	83.75	28.30	1.72	0.60	163.00
NRU	0309	134.00	167.05	-0.55	0.60	0.60	
NZL	0055	158.00	172.30	-39.71	2.88	1.56	47.00
NZL	0287	128.00	170.00	-40.00	3.30	1.28	48.00
OCE	0101	-160.00	-145.01	-16.36	4.34	3.54	4.00
OMA	0123	17.00	55.64	21.05	1.88	1.02	100.00
PAK	0127	38.00	69.67	29.53	2.30	2.16	14.00
PAK	0210	38.00	72.19	30.90	1.16	0.72	90.00
PAK	0281	38.00	65.25	27.96	1.52	1.42	28.00
PAK	0282	38.00	68.55	25.84	1.32	0.62	133.00
PAK	0283	38.00	72.39	34.42	1.86	1.02	162.00
PHL	0285	98.00	121.40	11.17	3.46	1.76	99.00
PLM	0337	170.00	198.60	7.00	0.60	0.60	
PNG	0131	110.00	147.74	-6.38	2.50	2.18	169.00
PNG	0271	128.00	149.75	-4.60	2.88	2.36	135.90
POL	0132	-1.00	19.31	51.88	1.46	0.64	162.00
POR	0133	-31.00	-8.01	39.60	0.92	0.60	112.00
QAT	0247	17.00	51.19	25.33	0.60	0.60	
REU	0097	29.00	55.69	-19.26	1.56	0.78	96.00
RHS	0135	-1.00	29.65	-18.82	1.46	1.36	37.00
ROU	0136	-1.00	25.00	45.74	1.38	0.66	155.00
RRW	0310	11.00	30.03	-2.10	0.66	0.60	42.43
S	0138	5.00	16.29	61.08	1.04	0.98	14.00
S	0139	5.00	17.00	61.50	2.00	1.00	10.00
SDN	0230	-7.00	29.27	7.50	2.34	1.12	148.00
SDN	0231	-7.00	28.94	12.74	2.26	1.96	159.00
SDN	0232	-7.00	30.46	19.01	2.44	1.52	176.00
SEN	0222	-37.00	-14.45	13.80	1.46	1.04	139.15
SMA	0335	170.00	-170.17	-14.29	0.60	0.60	
SMO	0057	158.00	-172.35	-13.75	0.60	0.60	

1		2	4		5a	5b	6
SMR	0311	-37.00	12.65	43.75	0.60	0.60	
SNG	0151	74.00	103.81	1.34	0.60	0.60	
SOM	0312	23.00	45.08	6.43	3.26	1.54	71.00
SRL	0259	-31.00	-11.84	8.60	0.78	0.68	114.00
STP	0241	-13.00	7.01	0.85	0.60	0.60	
SUI	0140	-19.00	8.21	46.63	0.98	0.70	99.00
SWZ	0313	-1.00	31.52	-26.55	0.62	0.60	66.00
SYR	0229	11.00	38.32	34.96	1.04	0.90	7.00
SYR	0339	11.00	37.64	34.29	1.32	0.88	74.00
TCD	0143	-13.00	18.10	15.50	3.40	1.72	107.96
TCH	0144	-1.00	17.30	49.30	1.47	0.60	170.64
TGK	0225	11.00	34.66	-6.25	2.41	1.72	129.00
TGO	0226	-25.00	0.89	8.68	1.52	0.60	105.00
THA	0142	74.00	100.74	13.26	2.82	1.54	106.00
TKL	0058	158.00	-171.84	-8.95	0.70	0.60	35.00
TON	0215	170.00	-174.75	-18.00	1.41	0.68	85.53
TUN	0150	-25.00	9.58	33.54	1.88	0.72	114.00
TUN	0272	-25.00	2.50	32.00	3.59	1.75	175.27
TUR	0145	5.00	34.42	38.93	2.68	1.04	168.00
UAE	0274	17.00	53.64	24.26	0.98	0.80	162.00
UGA	0051	11.00	32.36	1.29	1.46	1.12	60.00
UKR	0063	23.00	31.27	48.46	2.32	0.96	172.00
URS	0059	23.00	33.57	48.58	5.57	1.43	165.00
URS	0060	23.00	41.53	57.43	3.08	1.56	153.00
URS	0061	23.00	24.75	56.70	0.88	0.64	12.00
URS	0064	23.00	45.70	40.88	2.16	0.60	163.00
URS	0065	23.00	32.49	63.15	1.18	0.60	175.00
URS	0066	44.00	64.31	44.65	4.56	2.48	169.42
URS	0067	44.00	62.43	58.50	3.20	1.52	169.00
URS	0068	44.00	59.07	38.88	2.24	1.00	3.00
URS	0069	44.00	70.86	38.58	1.36	0.74	161.00
URS	0070	44.00	73.93	41.03	1.34	0.84	5.00
URS	0071	44.00	63.17	42.03	2.64	0.84	170.00

1		2	4		5a	5b	6
URS	0072	44.00	70.19	61.56	2.38	0.66	173.00
URS	0073	44.00	54.35	63.56	1.58	0.66	3.00
URS	0074	74.00	88.90	57.65	3.08	1.68	162.00
URS	0075	74.00	94.03	51.77	1.52	0.60	172.89
URS	0076	74.00	97.98	63.25	1.84	0.69	170.12
URS	0077	110.00	112.72	57.30	2.67	1.75	2.12
URS	0078	110.00	108.23	53.46	2.16	0.78	10.00
URS	0079	140.00	138.01	53.67	3.16	2.12	62.00
URS	0080	140.00	155.33	55.49	2.90	2.36	35.00
URS	0081	140.00	168.57	65.53	1.96	0.60	107.00
VTN	0325	86.00	105.30	16.20	3.03	1.40	162.00
WAK	0334	140.00	166.58	19.29	0.60	0.60	
WAL	0102	140.00	-176.86	-14.03	0.74	0.60	29.00
YEM	0266	11.00	44.30	15.16	1.14	0.70	109.00
YMS	0267	11.00	48.80	15.26	1.76	1.54	176.00
YUG	0148	-7.00	18.43	43.75	1.68	0.66	154.00
YUG	0149	-7.00	18.43	43.75	1.68	0.66	154.00
ZAI	0322	-19.00	22.43	1.21	2.16	1.88	48.00
ZAI	0323	-19.00	21.37	-6.90	2.80	1.52	149.00
ZMB	0314	-1.00	27.59	-13.11	2.38	1.48	39.00

PLENARY MEETING

B.7

7th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.6	221	Coordination, notification and recording in the Master International Frequency Register of frequency assignments to terrestrial stations affecting broadcasting- satellite stations in the bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1)

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 8 pages



ARTICLE [...]

COORDINATION, NOTIFICATION AND RECORDING IN THE
MASTER INTERNATIONAL FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS
TO TERRESTRIAL STATIONS AFFECTING BROADCASTING-SATELLITE STATIONS
IN THE BANDS

11.7 - 12.2 GHz (IN REGIONS 2 AND 3) AND 11.7 - 12.5 GHz (IN REGION 1)¹⁾²⁾

Section I. Coordination procedure to be applied

1.1 Before an administration notifies to the Board a frequency assignment to a terrestrial transmitting station, it shall initiate coordination with any other administration for which an assignment to a broadcasting-satellite station appears in the Plan if

- the occupied bandwidths of the two transmissions overlap or are separated by less than 7 MHz and
- the power flux density which would be produced by the proposed terrestrial transmitting station exceeds the value derived in accordance with Appendix [see B.6] at one or more points on the edge of the service area which is within the coverage area of the broadcasting-satellite station of that administration.

1.2 For the purpose of effecting coordination, the administration responsible for the terrestrial station shall send to the administrations concerned, 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 data of the proposed frequency assignment and the approximate date on which it is planned to bring the station into use.

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- 1) These procedures do not involve any dispensation from the procedures prescribed for terrestrial stations in Article 9 of the Radio Regulations where stations other than those of the broadcasting-satellite service are involved.
 - 2) The procedures for coordination, notification and recording of assignments to terrestrial stations affecting broadcasting-satellite stations in Region 2 are contained in Article 9 of the Radio Regulations, except that the coordination area referred to in No. 492A of the Radio Regulations is replaced by the power flux density limits provided for in [Appendix].

1.3 An administration with which coordination is sought shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within fifteen 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. Upon receipt of the coordination data an administration shall promptly examine the matter with regard to interference¹⁾ with which coordination is sought which would be caused to its assignments in accordance with the Plan and shall, within an overall period of sixty days 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.

1.4 No coordination is required when an administration proposes to change the characteristics of an existing assignment in such a way as not to increase the level of interference to the service to be rendered by the broadcasting-satellite stations of other administrations, in accordance with the Plan.

1.5 An administration seeking coordination may request the Board to endeavour to effect coordination where :

- a) an administration with which coordination is sought fails to acknowledge receipt under paragraph 1.3 within thirty days of dispatch of the coordination data;
- b) an administration which has acknowledged receipt under paragraph 1.3 fails to give a decision within ninety days of dispatch of the coordination data;
- c) the administration seeking coordination and an administration with which coordination is sought disagree on the acceptable level of interference; or
- d) coordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

1.6 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request any additional information which they may require to assess the level of interference to the services concerned.

1.7 Where the Board receives a request under paragraph 1.5 a), it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

1.8 Where the Board receives an acknowledgement following its action under paragraph 1.7 or where the Board receives a request under paragraph 1.5 b), it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

1) The criteria to be employed in evaluating interference levels shall be based on the relevant CCIR Recommendations or, in the absence of such Recommendations, shall be agreed between the administrations concerned.

1.9 Where the Board receives a request under paragraph 1.5 d), it shall endeavour to effect coordination in accordance with the provisions of paragraph 1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 1.3, it shall act in accordance with paragraph 1.7.

1.10 Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under paragraph 1.7 requesting an acknowledgement or fails to give a decision on the matter within sixty days of dispatch of the Board's telegram of request sent under paragraph 1.8, the administration with which coordination was sought shall be considered to have 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 or to be rendered by its satellite-broadcasting station.

1.11 Where necessary, as part of the procedure under paragraph 1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

1.12 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section II. Notification procedure for frequency assignments

2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the International Frequency Registration Board if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency.¹⁾

2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Section A of Appendix 1 to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Appendix, together with such further data as it may consider appropriate.

2.3 Whenever practicable, each notice should reach the Board before the date on which the assignment is brought into use. The notice made in accordance with paragraph 2.2 must reach the Board not earlier than three years and not later than ninety days before the date on which the assignment is to be brought into use.

2.4 Any frequency assignment, the notice of which reaches the Board less than ninety days before it is brought into use, shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with paragraph 2.3.

1) The attention of administrations is specifically drawn to the provisions of Section I above.

Section III. Procedure for the examination of notices and the
recording of frequency assignments in the master register

- 3.1 Whatever the means of communication, including telegraph, by which a notice is transmitted to the Board, it shall be considered complete if it contains at least the appropriate basic characteristics specified in Section A of Appendix 1 to the Radio Regulations.
- 3.2 Complete notices shall be considered by the Board in the order of their receipt.
- 3.3 Any notice which is incomplete shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.
- 3.4 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular; this circular shall contain the particulars of all such notices received since publication of the previous circular.
- 3.5 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.
- 3.6 Complete notices shall be considered by the Board in the order specified in paragraph 3.2. The Board cannot postpone the formulation of a 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.
- 3.7 The Board shall examine each notice :
- 3.8 a) with respect to its conformity with the Convention the relevant provisions of the Radio Regulations and the provisions of the Final Acts (with the exception of those relating to the coordination procedure and the probability of harmful interference);
- 3.9 b) with respect to its conformity with the provisions of paragraph 1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;
- 3.10 c) where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station existing in the Plan.
- 3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 3.8, 3.9 and 3.10, further action shall be as follows :

3.12 Finding unfavourable with respect to paragraph 3.8

3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be examined immediately with respect to paragraphs 3.9 and 3.10.

3.14 If the finding is favourable with respect to paragraph 3.9 or 3.10, 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.

3.15 If the finding is unfavourable with respect to paragraph 3.9 or 3.10, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition specified in paragraph 3.14 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

3.16 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. 115 of the Radio Regulations, it 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 the satisfactory solution of the problem.

3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 3.16.

3.18 If the notifying administration resubmits the notice with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 3.13 and 3.14 or 3.15, as appropriate.

3.19 If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 3.8, the notice shall be treated under the provisions of paragraphs 3.20 to 3.32. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

3.20 Finding favourable with respect to paragraph 3.8

3.21 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has been successfully completed with all administrations whose broadcasting-satellite services 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.

3.22 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall

be treated in accordance with paragraph 3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 3.10.

3.23 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has not been applied and 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 and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 3.9 has been successfully completed with all administrations whose broadcasting-satellite services 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.

3.25 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination, it shall be treated in accordance with the provisions of paragraph 3.22. 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.

3.26 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, it shall be examined by the Board with respect to the provisions of paragraph 3.10. 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.

3.27 Finding favourable with respect to paragraphs 3.6 and 3.10

3.28 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.

3.29 Finding favourable with respect to paragraph 3.8 but unfavourable with respect to paragraph 3.10

3.30 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 the satisfactory solution of the problem.

3.31 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 3.10, 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.

3.32 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 paragraph 3.31 to be applied and should that administration insist upon reconsideration of the notice but the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 3.30. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 3.31 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the frequency assignment for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the assignment is valid only for the specified period. The notifying Administration using the frequency assignment during a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration or the administrations concerned.

3.33 Change in the basic Characteristics of Assignments already recorded in the Master Register

3.34 A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 to the Radio Regulations (except those entered in Columns 3 and 4a of the Master Register), shall be examined by the Board in accordance with paragraphs 3.8 and 3.9 and, where appropriate, paragraph 3.10 and paragraphs 3.12 to 3.32 inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

3.35 However, in the case of a change in the basic characteristics of an assignment which is in conformity with paragraph 3.8, should the Board reach a favourable finding with respect to paragraph 3.9 and, if applicable, paragraph 3.10, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

3.36 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.

3.37 Recording of frequency assignments notified before being brought into use

3.38 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraphs 3.8 and 3.9, and, where appropriate, 3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

3.39 If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of bringing into use, the special symbol shall be deleted from the

Remarks Column. If, in the light of a request from the notifying administration received before the end of the thirty-day period, the Board finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

3.40 If use by a terrestrial station of an assignment which is not in conformity with the foregoing causes harmful interference to the reception of emissions from a space station in the broadcasting-satellite service using an assignment in conformity with the Plan, the administration having jurisdiction over the terrestrial station shall, on being advised, take immediate measures to eliminate the interference.

PLENARY MEETING

B.8

8th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.6	221	Preliminary procedures, notification and recording in the Master International Frequency Register of frequency assignments to stations in the fixed-satellite service in the frequency band 11.7 - 12.2 GHz (in Region 2) when broadcasting-satellite stations in the Plan are involved

Miss M. HUET

Chairman of the
Editorial CommitteeAnnex : 12 pages

ARTICLE [7]

PRELIMINARY PROCEDURES, NOTIFICATION AND RECORDING IN THE MASTER
INTERNATIONAL FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS TO STATIONS IN
THE FIXED-SATELLITE SERVICE IN THE FREQUENCY BAND 11.7 - 12.2 GHz (IN REGION 2)
WHEN BROADCASTING-SATELLITE STATIONS IN THE PLAN ARE INVOLVED¹⁾

Section I. Procedure for the advance publication of information
on planned fixed satellite systems

1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 2.1 where applicable, send to the International Frequency Registration Board, not earlier than five years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 1B to the Radio Regulations [2]7

1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 1.1 shall also be sent to the Board as soon as they become available.

1.3 The Board shall publish the information sent under paragraphs 1.1 and 1.2 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.

1.4 If, after studying the information published under paragraph 1.3, any administration is of the opinion that interference, which may be unacceptable, may be caused to its frequency assignments contained in the Broadcasting-Satellite Plan, it shall within ninety days after the date of the weekly circular publishing the information listed in Appendix 1B to the Radio Regulations, 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 fixed-satellite network(s) of that system of which details have been published.

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- 1) These provisions do not replace the procedures prescribed in Article 9A of the Radio Regulations when stations other than those of the broadcasting-satellite service contained in the Plan are involved.

[2) Committee 4 to advise if any additional information is needed.]

1.5 An administration receiving comments sent in accordance with paragraph 1.4 shall endeavour to resolve any difficulties that may arise without considering the possibility of adjustment to broadcasting-satellite stations of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned in order to solve these difficulties, provided that any modifications which may result to the Plan are in accordance with Article 4 (Document B.4).

1.6 In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board.

1.7 In complying with the provisions of paragraphs 1.5 and 1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 2.1 or, where this is not applicable, the sending of its notices to the Board until one hundred and fifty days after the date of the weekly circular containing the information listed in Appendix 1B to the Radio Regulations 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 one hundred and fifty days mentioned above.

1.8 An administration, on behalf of which details of planned fixed-satellite networks in its system have been published in accordance with the provisions of paragraphs 1.1 to 1.3, shall periodically inform the Board whether or not comments have been received and of the progress made with other administrations in resolving any difficulties. 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.

Section II. Coordination procedures to be applied
in appropriate cases

2.1 Before an administration notifies to the Board or brings into use any [new or modified]** frequency assignment to a space station in the fixed-satellite service, it shall seek the agreement of any other administration having an assignment to a broadcasting-satellite station appearing in the Plan, if

- any portion of the occupied bandwidth proposed for the space station in the fixed-satellite service falls within the occupied bandwidth associated with the assignment to the broadcasting-satellite station, and
- the power flux density which would be produced by the proposed fixed-satellite assignment exceeds the value specified in Appendix 4*.

4* to be provided by Committee 4

** Note by Editorial Committee : These three words might be deleted if a definition of frequency assignment similar to that contained in the Radio Regulations (at the beginning of Articles 9 and 9A) were included in the Final Acts.

For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix 1A to the Radio Regulations ⁽¹⁾.

2.2 No additional agreement is necessary when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of the broadcasting-satellite service of another administration, meet the requirements of paragraph 2.1 above, or when this assignment has previously been the subject of an agreement and when the change will not cause any increase in the interference potential specified in that agreement.

2.3 An administration seeking coordination under paragraph 2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix 1A to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Board shall determine on the basis of Appendix ⁽¹⁾ which frequency assignments in the Plan are considered to be affected. The Board shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system 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.

2.4 An administration believing that it should have been included in the procedure under paragraph 2.1 shall have the right to request that it be brought into the procedure.

2.5 An administration whose agreement is sought under paragraph 2.1 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 paragraph 2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of thirty days. Upon receipt of the coordination data, an administration shall, having regard to the proposed date of bringing into use of the assignment for which agreement was requested, promptly examine the matter with regard to interference²⁾ which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 2.1, and shall, within ninety days from the date of the relevant weekly circular, notify its agreement to the requesting administration. If 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, and make such suggestions as it may be 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.

⁽¹⁾ Committee 4 to advise if any additional information is needed.

2) The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in ⁽¹⁾the Final Acts⁽¹⁾ or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.

2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where :

- a) an administration whose agreement is sought under paragraph 2.1 fails to acknowledge receipt, under paragraph 2.5, within sixty days after the date of the weekly circular publishing the information relating to the request for coordination;
- b) an administration has acknowledged receipt under paragraph 2.5, but fails to give a decision within ninety days from the date of the relevant weekly circular;
- c) there is disagreement between the administration seeking coordination and an administration whose agreement is sought as to the acceptable level of interference;
- d) agreement between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

2.7 Either the administration seeking coordination or an administration whose agreement is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

2.8 Where the Board receives a request under paragraph 2.6 a), it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

2.9 Where the Board receives an acknowledgement following its action under paragraph 2.8, or where the Board receives a request under paragraph 2.6 b), it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision in the matter.

2.10 Where the Board receives a request under paragraph 2.6 d), it shall endeavour to effect coordination in accordance with the provisions of paragraph 2.1. The Board shall also, where appropriate, act in accordance with paragraph 2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 2.5, it shall act in accordance with paragraph 2.8.

2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 2.9, it shall be deemed that the administration whose agreement was sought has undertaken :

- a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its broadcasting-satellite stations by the use of the assignment for which coordination was requested;
- b) that its broadcasting-satellite stations will not cause harmful interference to the use of the assignment for which coordination was requested.

2.12 Where necessary, as part of the procedure under paragraph 2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one whose agreement has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after one hundred and fifty days from the date of the request for coordination, taking into consideration the provisions of paragraph 3.4, send its notice concerning the proposed assignment to the Board. In those circumstances the notifying administration shall undertake not to bring the frequency assignment into use until the condition in paragraph 4.11.2 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section III. Notification of frequency assignments

3.1 Any frequency assignment to a space station in the fixed-satellite service shall be notified to the Board :

- a) if the use of the frequency concerned is capable of causing harmful interference to an assignment for a broadcasting-satellite station entered in the Plan ¹⁾ on behalf of another administration; or
- b) if it is desired to obtain international recognition of the use of the frequency.

3.2 Similar notice shall be given for any frequency to be used for reception by an earth station where one or more of the conditions specified in paragraph 3.1 are applicable.

3.3 For any notification under paragraph 3.1 or 3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate. [*]

3.4 Each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than ninety days²⁾ before this date.

1) The attention of administrations is specifically drawn to the application of paragraph 2.1 above.

[*] Committee 4 to advise if any additional information is needed.]

2) The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 3.4.

Section IV. Procedure for the examination of notices
and the recording of frequency assignments in the Master Register

4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 1A to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

4.2 Upon receipt of a complete notice, the Board shall include the particulars thereof, 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.

4.3 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

4.4 Complete notices shall be considered by the Board in the order of their receipt. 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.

4.5 The Board shall examine each notice :

4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of the / Final Acts / (with the exception of those relating to the coordination procedures and the probability of harmful interference);

4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 2.1, relating to the coordination of the use of the frequency assignment with the other administrations concerned having an assignment to a broadcasting-satellite station appearing in the Plan ;

4.5.3 where appropriate, with respect to the probability of harmful interference to the service rendered or to be rendered by a broadcasting-satellite station existing in the Plan.

4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 4.5.1, 4.5.2 and 4.5.3, as appropriate, further action shall be as follows :

4.7 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are not applicable

- 4.7.1 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.
- 4.8 Finding unfavourable with respect to paragraph 4.5.1
- 4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is favourable with respect to paragraphs 4.5.2 and 4.5.3, 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.
- 4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is unfavourable with respect to paragraph 4.5.2 or 4.5.3, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 4.8.1 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.
- 4.8.3 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. 115 of the Radio Regulations, it 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 the satisfactory solution of the problem.
- 4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 4.8.1 or 4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 4.5.1, it shall be treated as a new notice.

4.9 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are applicable

- 4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose assignments to broadcasting-satellite stations appearing in the Plan 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.
- 4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take appropriate action and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with paragraph 4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3.
- 4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and 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 and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.
- 4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose assignments to broadcasting-satellite stations appearing in the Plan 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.
- 4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 2.1, it shall be treated in accordance with the provisions of paragraph 4.9.2. 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.
- 4.9.6 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, the Board shall inform the administrations concerned thereof. The notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3. 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.
- 4.10 Finding favourable with respect to paragraphs 4.5.1 and 4.5.3
- 4.10.1 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.

4.11 Finding favourable with respect to paragraph 4.5.1, but unfavourable with respect to paragraph 4.5.3

- 4.11.1 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 the satisfactory solution of the problem.
- 4.11.2 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 4.5.3, 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.
- 4.11.3 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 paragraph 4.11.2 to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 4.11.2 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note in the Remarks Column indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

4.12 Change in the basic characteristics of assignments already recorded in the Master Register.

- 4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix 1A to the Radio Regulations (except the name of the station or the name of the locality in which it is situated), shall be examined by the Board according to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and the provisions of paragraphs 4.7 to 4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

- 4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 4.5.1, should the Board reach a favourable finding with respect to paragraphs 4.5.2 and 4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to assignments to broadcasting-satellite stations appearing in the Plan, 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.
- 4.12.3 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.

4.13 Recording of frequency assignments in the fixed-satellite service notified before being brought into use

- 4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.
- 4.13.2 If, within thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.
- 4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 4.13.2, the entry concerned shall be cancelled. The Board shall advise the administration concerned before taking such action.

Section V. Recording of findings in the Master Register

5. 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 Column 13a. In addition, a remark indicating the reasons for any unfavourable finding shall be inserted in the Remarks Column.

Section VI. Categories of frequency assignments

- 6.1 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment appears in the Plan , by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of paragraph 4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

6.3 If harmful interference to the reception of any broadcasting-satellite station whose assignment is in accordance with the Plan , is actually caused by the use of a frequency assignment which is not in conformity with paragraph 4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of findings

7.1 The review of a finding by the Board may be undertaken :

- at the request of the notifying administration;
- at the request of any other administration interested in the question, but only on the grounds of actual harmful interference;
- on the initiative of the Board itself when it considers this is justified.

7.2 The Board, in the light of all the data at its disposal shall review the matter, taking into account paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.3 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.

7.4 If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

Section VIII. Modification, cancellation and review of entries in the Master Register

8.1 Where the use of a recorded assignment to a station in the fixed-satellite service 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.

8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 8.1, that a recorded assignment to a space station in the fixed-satellite service has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.

8.3 If no reply is received within six months of action by the Board under paragraph 8.2, or if the reply does not confirm that the assignment to a space station in the fixed-satellite service is to be brought back into regular use within this six-month limit, a symbol should be entered against the entry in the Master Register.

8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within ninety days of such discontinuance, whereupon the entry shall be removed from the Master Register.

8.5 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 the entry.

8.6 If, in connection with an inquiry by the Board under paragraph 8.5 the notifying administration has failed to supply the Board within forty-five days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

Section IX. Studies and Recommendations

9.1 If it is requested by any administration, and if the circumstances appear to warrant, 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.

9.2 The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.

9.3 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 ninety days, 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.

Section X. Miscellaneous provisions

10.1 If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance :

- a) computation necessary in the application of Appendix [];
- b) any other assistance of a technical nature for completion of the procedures in this Article.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 236-E

5 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the State of Comoros :

The delegation of the State of Comoros has noted with disappointment the publication of requirements for the Island of Mayotte, which is within the absolute territory of the State of Comoros, in Documents Nos. 16, 103 and 135.

This annexation of a part of the Comoros by France is against the UNO Declaration of Human Rights and against resolutions by :

1. OAU in July, 1975 in Kampala
2. UNO in November, 1975 in New York
3. Arab League in March, 1976 in Cairo
4. Islamic Conference in May, 1976 in Istanbul
5. Non-Aligned countries in August, 1976 in Colombo.

The delegation of the State of Comoros objects strongly to this interference by a Member country of the ITU and insists that this Conference will not accept any proposals, take decisions or adopt resolutions that would go against the independent rights of its country.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 237-E

7 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Indonesia :

The Delegation of the Republic of Indonesia hereby reserves the right of its Government to take any action and preservation to safeguard its Telecommunication Services, should the Final Act and the Plan attached thereto drawn up in this Conference be in contravention with the Constitution, Laws and Rights of the Republic of Indonesia which exist and may exist resulting from the principles laid down in the Bogotá Declaration of 3 December 1976 between Equatorial Countries and also from other International Law Principles.

In taking action and preservation, the Republic of Indonesia will recognize the legitimate interests of other countries to enhance international cooperation based on equality for all countries in the peaceful uses of space for the benefit of all mankind.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 238-E

7 February 1977

Original : English

Iran

ISLAMIC PROGRAMME COVERAGE

The Administration of Iran sincerely appreciates the proposal of the Administration of the Kingdom of Saudi Arabia, to which it extends its sympathy, and supports in principle the concept of Islamic religious broadcasting.

Formal agreement to allow broadcast coverage of Iran from outside broadcasting authorities constitutes the sole prerogative of the Iranian parliament acting through the Iranian Government Legislative and constitutional reasons have thus made the delegation of Iran unable to include its name amongst those of the countries granting their prior agreement to the proposal.

The Delegation of Iran believes that all efforts should be made to accommodate these requirements whenever possible and in accordance with the procedures adopted by the Conference.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 239-E

7 February 1977

Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 5

(PLANNING)

Friday, 28 January 1977, at 1415 hrs

Chairman : Mr. A. PETTI (Italy)

Subjects discussed :

Document No.

- | | |
|--|-------------------|
| 1. Approval of the summary records of the first and second meetings of Committee 5 | 136 + Corr.1, 137 |
| 2. Progress report by Chairman of Working Group 5A | |
| 3. Progress report by Chairman of Working Group 5B | |
| 4. Progress report by Chairman of Working Group 5C | |
| 5. Intentional extended service area | 124 |

-
1. Approval of the summary records of the first and second meetings of Committee 5 (Document No. 136 + Corr.1, 137)

The delegate of Australia proposed the following amendment to his delegation's statement at the foot of page 4 of Document No. 136 :

"The delegate of Australia pointed out that he had already expressed opposition to the idea that the plan should be based entirely on the principle of individual reception. Administrations wishing to establish community reception services should be given the opportunity to include those services in the plan after the requirements for individual reception had been met."



Subject to that amendment, the summary record of the first meeting of Committee 5 (Document No. 136 + Corr.1) was approved.

The delegate of the USSR proposed the following amendment to his delegation's statement at the top of page 2 of Document No. 137 :

"The delegate of the USSR introduced Document No. 14 and described basic planning principles proposed in Section 2 of Document No. 14 (USSR).".

The delegate of Mexico proposed the following amendments to his delegation's statement at the foot of page 2 of Document No. 137 :

Line 2 : replace "realization" by "idea" and delete "although".

Line 4 : insert full stop after the word "Plan" and insert the words "He deplored the fact that ...".

Line 5 : replace "a number of" by "many".

Amend last sentence as follows : "... the Mexican delegation was prepared to examine any proposal which would guarantee equitable access to the Broadcasting-Satellite Service, although it hoped that a definitive Plan would be produced".

The delegate of France proposed the following amendment to his delegation's statement at the foot of page 3 of Document No. 137 :

After "channels" add the words "in bands I, III, IV and V, so as to make possible the eventual retransmission of space programmes after standard conversion."

Subject to those amendments, the summary record of the second meeting of Committee 5 (Document No. 137) was approved.

2. Progress report by Chairman of Working Group 5A

The delegate of the United Kingdom, speaking as Chairman of Working Group 5A, said that since he had last reported progress, Sub-Working Group 5A1 had been inspecting from a technical viewpoint the coverage beams used for planning. It had found a number of errors in the information and had established a correction procedure so that a bank of correct geographical data would be available when the final study of the Plan was begun. Sub-Working Group 5A1 had also been asked to calculate the amount of satellite power which would be required for the various beam sizes submitted by countries, particularly geographically very large countries, and had been asked to provide advice on how such countries could best be sub-divided into a beam configuration, so that they could decide for themselves the preferred configuration for their national coverage.

Sub-Working Group 5A2 had been given the task of making a plan which met fully the requirements submitted by countries. Some flexibility had been given with regard to orbital positions and guidelines to orbital positions had

been annexed to the summary record of Committee 5's last meeting. On the basis of those guidelines, Sub-Working Group 5A2 had submitted to Working Group 5A a proposed orbit disposition plan and many comments had been received from delegations on the proposed initial positions. Sub-Working Group 5A2 had constructed a first example of a Regions 1 and 3 plan, which it was hoped would be available on Saturday, 29 January 1977.

Sub-Working Group 5A3 was also making a Regions 1 and 3 plan but from a different approach based on minimum base-line requirements. A first example of that plan had also been completed and the results should be distributed on Saturday, 29 January 1977.

Sub-Working Group 5A5 was studying the proposals submitted by the New Zealand Administration in order to see what general planning tools could be derived from them. It had also been asked to study what parameters should be listed in the plan and how they should be specified so as to make the plan work from the viewpoint of interferences.

Finally, he pointed out that the Sub-Working Groups responsible for producing plans had experienced difficulties as a result of Administrations continuing to introduce small changes in their beams or other requirements for sharing orbit positions. It would be helpful if the Committee could fix a deadline for definitive inputs.

The delegate of Pakistan said that some concern had been caused to his delegation by certain official maps made available to the Conference by the IFRB. He had raised the matter in Working Group 5A and had pointed out that any map circulated by a United Nations Agency should respect the decisions taken by the United Nations. It was most unfortunate that some of the maps in the question did not do so. In particular, the map as seen from a satellite at 40° East clearly showed the territory of Jammu and Kashmir, which was recognized by United Nations decisions as disputed territory, as forming part of a certain State. It was not his intention to start a controversy on an essentially political item in that technical forum but he wished to place on record his disappointment at the ITU's action in circulating such maps.

The Secretary-General invited the delegate of Pakistan to see him at the end of the meeting. The Union would naturally wish to comply with all United Nations decisions.

The delegate of India said that his delegation did not wish to enter into a political controversy in that technical Conference, but having heard what the delegation of Pakistan had just said and what they had said a few days previously, he wished to place on record that Jammu and Kashmir were integral parts of India and were being administered by the Administration of India.

In reply to the delegate of Mauritania, the Chairman of Working Group 5A explained that the changes for which he wished Committee 5 to set a deadline were not changes of requirements, for which a deadline had already been set by the plenary, but referred to the following cases :

- 1) options where alternative solutions had been mentioned in the same requirements;

- 2) minor beam adjustments; or
- 3) restrictions with regard to groupings in orbital positions.

The delegate of Mauritania said that his delegation would endeavour to make a choice between the options it had submitted, but it would have been more satisfactory if it could have been helped in its decision by the incorporation of all the options in the plan which was to be produced the following day.

It was agreed that Monday 31 January, at 1800 hours should be the deadline for the submission of changes as outlined by the Chairman of Working Group 5A.

3. Progress report by the Chairman of Working Group 5B

The delegate of Canada, speaking as Chairman of Working Group 5B, reported that Working Group 5B had made significant progress and had obtained substantial agreement on the type of plan to be adopted for Region 2. While some delegations had reserved their final positions and there had been some opposition, a majority had supported, in a spirit of compromise, the adoption of a phased plan for the Region. The elements of the plan were as follows :

1) a portion of the orbit of interest to Region 2 would be divided into two segments which would be used primarily for the Fixed-Satellite Service and two other segments which would be used primarily for the Broadcasting-Satellite Service. The purpose of segmentation was to ensure a measure of compatibility and equitability within Region 2 between the two space services to which the 12 GHz band was allocated on an equal primary basis, until a detailed plan could be drawn up for the Region;

2) the second main element of the plan would be the convening of a Regional Conference to carry out further detailed planning for both services. A future Regional Conference would be in a position to take advantage of further technological developments, a more realistic reappraisal of requirements, the requirements of countries not represented at the Conference, additional study by the CCIR, and possibly changes to Article 5 of the Radio Regulations which might be made at the 1979 Conference. In addition, it would overcome the difficulty caused by the fact that the present Conference was not competent to deal with the Fixed-Satellite Service..

In the interim, a number of guarantees governing the introduction of satellites would be implemented, including, for example, that the Broadcasting-Satellite Service should operate in accordance with the technical characteristics and sharing criteria developed by Committee 4, that the introduction of a Fixed-Satellite Service should be in accordance with the Radio Regulations, that the greatest advantage should be taken of available techniques to optimize the use of the geostationary orbit and frequency spectrum, that systems existing or planned prior to the adoption of a more detailed plan should not cause interference to any systems operating in accordance with the plan, and that until the plan was adopted, the provisions of Resolution No. Spa2 - 3 should continue to apply for Region 2.

He pointed out that while the principle of the phased plan had been generally agreed, there were still some important details to be worked out. He hoped to be able to submit a document on the subject by the middle of the following week.

In reply to a question by the Chairman, he explained that the majority of delegations were not in favour of an a priori plan at present. There was a proposal before Working Group 5B, which had not yet been approved, that requirements submitted by Administrations should be kept on file by the IFRB and that amendments should be published in the weekly circular.

The delegate of Cuba said that his delegation had expressed its opposition, in Working Group 5B, to the type of phased planning proposed. Delegations had not met in order to divide the orbit between the Fixed and Broadcasting-Satellite Services and to make arrangements for the subsequent planning of the Broadcasting-Satellite Service at a Regional Conference. The object of the present Conference was to establish a plan of orbital positions and frequency allocations which would guarantee access to the Broadcasting-Satellite Service to all countries in the Region and he did not believe that there was any impediment to the establishment of such a plan.

So far as orbital limits were concerned, he thought the Conference should continue its efforts to establish a more concrete relationship between orbital possibilities and the requirements submitted by Administrations.

The delegate of Algeria said that the comments just made by the Cuban delegate confirmed the fact that Working Group 5B had not reached consensus. Since planning in Region 2 would undoubtedly have repercussions on planning for Regions 1 and 3, Committee 5 must try to expedite matters by solving the problems which were hindering progress in Working Group 5B.

The delegate of Canada said that many delegates were not in favour of an a priori plan and he had already listed a number of reasons why such a plan could better be established by a Regional Conference. It would be for the Administrative Council to decide the Agenda for such a Conference but he hoped it would include the Fixed-Satellite Service.

The delegate of the USSR suggested that for those countries in Region 2 which had submitted requirements and which desired a plan, a plan should be prepared for Region 2, which could be subsequently adapted to take account of the plan prepared for Regions 1 and 3.

The delegate of the United States of America said that when Committee 5 had first met there had been general agreement that the planning for Regions 1 and 3 would be of the same kind, but that there were many differences in the case of Region 2 which might warrant a different approach.

Working Group 5B had worked very hard in an effort to achieve a consensus on the type of planning which would be best for Region 2, and the conclusion reached that morning, although accepted with reservations by some delegations, had been supported by the majority. He urged Committee 5 to accept it as the majority view of what was best for Region 2.

The Chairman suggested, as a compromise solution, that having decided to divide the orbit in Region 2 between Fixed-Satellite Services and Broadcasting-Satellite Services, provisional allocations should be made for those countries which had already submitted requirements, subject to ratification by a Regional Conference, and that that provisional list of requirements should be annexed to the Plan.

The delegate of Brazil, pointing out that the present Conference was not competent to deal with the Fixed-Satellite Service, asked what position in the band was being planned for the Broadcasting-Satellite Service for Regions 1 and 3.

The delegate of the United Kingdom said that the question could not be answered at present but Working Group 5A hoped to examine shortly some draft plans being prepared by the technical experts.

The Chairman observed that the Brazilian delegate's question might be referred to Working Group 5C.

The delegate of Colombia reiterated his delegation's reservation concerning orbital sharing for the Fixed Service since that matter was outside the competence of the Conference.

He had no objection to the course suggested by the Chairman but indicated that his delegation would be changing the form in which its requirements would be submitted before 31 January 1977.

The delegate of Cuba supported the Chairman's suggestion for annexing a provisional plan of requirements in Region 2 to the draft Report of Working Group 5B despite the fact that it would be impossible to solve all the problems that had arisen during the discussions. The important thing was not to attempt an arbitrary splitting up of the orbit.

The Chairman explained that he had in mind an annex containing a list of requirements in simplified form for Region 2 that would not give as much data as would appear for Regions 1 and 3.

The delegate of the USSR said that the Chairman's compromise in such a form might be acceptable.

The delegate of Canada, speaking as Chairman of Working Group 5B, said that as the Chairman's constructive suggestion for a compromise had gained some support, it could be examined at the Working Group's next meeting and the outcome of the discussion could then be submitted to the Committee the following week.

The delegate of Chile said that the Chairman's idea was a good one and consequently his delegation would not insist on a detailed, definitive plan which, for the time being, was in any case not feasible where Region 2 was concerned. Nevertheless some kind of tentative plan, however provisional, was needed for the Region 2 regional conference because any kind of plan must be based on requirements in orbit sharing and channel allocation and clearly further agreements on such fundamental matters would be needed as time went on.

The delegate of the USSR feared that as the Conference had only another two weeks to run and Working Group 5C would need to discuss the compatibility of solutions agreed for Regions 1 and 3 with those agreed for Region 2, there might not be enough time to prepare decisions for consideration by the Plenary meeting.

The delegate of Canada speaking as Chairman of Working Group 5B, said that progress would depend on the extent to which delegations were ready to compromise. Working Group 5B had already been operating under considerable pressure but would do its utmost to prepare a draft report by the middle of the following week following the course suggested by the Chairman.

It was so agreed.

4. Progress Report by the Chairman of Working Group 5C

The delegate of India, speaking as Chairman of Working Group 5C, said that in accordance with its terms of reference (Document No. DT/7), the Working Group had to await progress in the other Working Groups which had to identify and refer to it interregional problems. At its first meeting some scepticism had been voiced at the outset about its task but subsequently the far-ranging discussion had revealed the existence of some important problems, for example those that might arise on the Atlantic and Pacific coasts.

The problem of equal rights for regions sharing the usable geostationary orbit (Document No. 110) had been referred to the Working Group but at the suggestion of the USSR delegate the discussion had been postponed pending a decision on certain technical matters by Committee 4.

The Chairman said that a draft plan for Regions 1 and 3 should be ready by Saturday, 29 January and some documents on orbital sharing should be coming from Committee 4 in the following week which would provide material for Working Group 5C to work on, particularly in respect of questions connected with the area off the west coast of Africa and possibly the Pacific zone.

5. Intentional extended service area (Document No. 124)

The Technical Secretary introduced Document No. 124 and in accordance with the time-limit of 28 January 1977 set by Committee 5 for confirming agreement on the intentional extended service area, listed certain errors in and modifications to the Annex. In addition he indicated that a third column entitled "Does not give its agreement;" should be added to the table.

The Chairman, noting that the Administration of the German Democratic Republic had not given its agreement, said that surely it had not been envisaged as coming within the area contemplated. The question then arose as to how No. 428A of the Radio Regulations should be interpreted.

The delegate of the German Democratic Republic said that his Administration had written to say that it could not agree to the idea of an extended service area in any form for the following reasons. According to the definition of a "service area" as "The area on the surface of the Earth in

which the Administration responsible for the service..." established by Committee 4 (Document No. 159, Annex, point 1), in his view an administration could only be responsible for a service area within the limits of its own territory.

If such an area were larger than the confines of an administration's territory then his delegation's agreement must be made conditional on certain coordination procedures as between the terrestrial and the Broadcasting-Satellite Service. The agreement required under Document No. 124 would have certain consequences for his Administration because it would demand coordination not only of any transmitter station in the coordination area with the channel of a neighbouring administration, but also with other service areas as for example from Switzerland or Austria. His Administration could not agree to a coordination procedure for the protection of service areas of countries that did not have a common frontier with the German Democratic Republic. Furthermore, Document No. 124 revealed that some proposed beams would cover parts of his Administration's territory and that they could not be regarded as unavoidable spillovers. Consequently, the proposals conflicted with No. 428A of the Radio Regulations.

The delegates of Tunisia, Papua and New Guinea, and Luxembourg gave some corrections to the Annex in Document No. 124.

The Chairman observed that the question arose whether changes in the table should be inserted as modifications or be regarded as new requests.

The delegate of Norway drew attention to point 5 in the Chairman's note (Document No. 123) which Working Group 5A had adopted as a starting point for planning. The decision to take into account the three types of beams listed in point 5 was, in his view, consonant with No. 428A of the Radio Regulations.

The delegate of Switzerland, referring to country symbol and serial No. CVA 0085 in the Annex to Document No. 124, said that his Administration had not yet decided about the request from the Vatican City which had only recently been received. However, it would be given favourable consideration since almost all neighbouring countries had agreed to it as the spillover would be of a technical nature.

He had been surprised by the comments of one administration concerning beam 140 which, according to the information provided, seemed to be the minimum feasible : he doubted whether it could be reduced further.

The delegate of the USSR said that before examining Document No. 124 in detail, the Committee should take a decision of substance as to whether or not an "intentional extended service area" was acceptable. It was essential first to examine what ellipses the proposals involved in order to determine the extent to which the territories of other countries would be affected and whether or not the concept would conflict with the provisions of No. 428A of the Radio Regulations.

The delegate of the Democratic People's Republic of Korea said that when preparing the Broadcasting-Satellite Service plan, the question of whether to select an extended service area or not was not a mere technical issue but an important political one touching upon each country's sovereignty. Accordingly, all Member States should choose the minimum size of ellipse covering their own territories in accordance with the principles set out in No. 428A, section 1A of the new Article 28 as proposed by the Group of Experts on the re-arrangement of the Radio Regulations.

However, some Member States were encroaching upon the sovereignty of others by defining their own service area in such a manner as to ignore the interests of others and to take account only of their own. Her delegation therefore insisted that the Broadcasting-Satellite Service area be chosen in accordance with the principle of mutual respect and equality in conformity with the ideals of the Union.

The delegate of India shared the doubts of the USSR delegate about the way the Committee was handling Document No. 124. It was difficult to assess the effect of certain requests without precise maps showing the intended coverage over another territory and whether any spillover would be intentional or technical.

The Chairman pointed out that the proposed ellipses were being verified by Working Group 5A1 and they could be reduced in accordance with the conciliation procedure established.

The Technical Secretary confirmed that a complete set of the projected maps were available for examination by Working Group 5A1.

The representative of the IFRB said that he had informed Working Group 5A that the ellipses of neighbouring countries were available for consultation. Apparently some proposed had been too large and possibly the conciliation procedure had been used to reach agreement on disputed requirements.

The delegate of the Federal Republic of Germany, also referring to the Note from the Chairman of Committee 5 (Document No. 123), said that according to the decision of the Committee and the definition by Committee 4 of service area the meeting had to proceed on the assumption that agreed extended service areas also had to be protected. The question of the extent to which the principle had to be applied in all cases was not yet solved. Consideration had to be given to whether a distinction should be made between the part of a common beam covering the area of the notifying Administration and that part covering the area of the Administration with which agreement had been reached; a definite decision on that subject would no doubt be made by Committee 6, following the discussions which had already taken place in Working Group 6B.

It was not the objective of countries which had reached an agreement on a common beam to produce more spillover than necessary and the ellipse embracing the service area was therefore the smallest possible in conformity with the Radio Regulations. Finally, he understood that the third column, introduced into Document No. 124 by the Technical Secretary, did not deal with definition of the service area but listed the countries concerned by spillover.

The delegate of Sweden said that Sweden had also extended its service area which covered neighbouring Nordic countries, as provided for in No. 428A of the Radio Regulations. The smallest possible ellipse to cover those neighbouring countries which wanted such coverage had been prepared and the same action had been taken by the other countries concerned. There would of course be some unintentional technical spillover but an attempt had been made to reduce it to a minimum; if there were suggestions from sub-groups under Working Group 5A which produced a better ellipse and thus less unintentional coverage, Sweden was quite prepared to accept it.

The delegate of Finland associated himself with that statement.

The delegate of Czechoslovakia referred to the statement by the delegation of the German Democratic Republic which raised some substantive points with regard to Document No. 124. It was seen from that document that the question of radiation over the territory of other countries was only partially governed by agreement concluded with other countries. Also, according to No. 428A of the Radio Regulations, there was the question of radiation over the territory of other countries in cases where no prior agreement had been reached and various technical measures had to be taken to minimize such radiation as far as possible; unfortunately it was not clear how that aspect of No. 428A was to be implemented. In his view, a further document was required showing whether or not that provision of the Regulations was being met. He therefore supported the USSR proposal to examine Document No. 124 in conjunction with the ellipses showing which countries were covered.

He added that if there were an additional column in Document No. 124 the entry regarding his country's opposition should be added alongside AUT 0017, CVA 0085, D 0088 and SUI 0141. Possibly other notes concerning Czechoslovakia would need to be added later.

The delegate of Luxembourg explained that as the negotiations with Belgium and the Federal Republic of Germany had not led to an agreement Luxembourg had decided to modify its requirements which now contained no test point in those two countries; Document No. 124 would therefore have to be modified accordingly.

The delegate of the German Democratic Republic said he had not been speaking only of spillover. He drew attention to the fact that the German Democratic Republic, and all other Administrations which wanted to bring into operation a terrestrial station, had to protect the service area of any other Administration which had notified a service area reaching the boundaries of the German Democratic Republic. In other words, it had to protect not only five channels of the Federal Republic of Germany but also a Swiss channel, an Austrian channel, etc.

The delegate of the United Kingdom fully supported the proposal by the USSR that ellipses should be produced for the beams listed in the document. The requirements had been altered so many times it was no longer clear whether or not Administrations were affected.

The Chairman suggested that discussion be continued at the Committee's following meeting when the first planning results were known and after consultation with the Chairman of Working Group 5A on the results of the following day's meeting (Saturday, 29 January 1977).

It was so agreed.

The meeting rose at 1725 hours.

The Secretary :

D. KANE

The Chairman :

A. PETTI

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 240-E

8 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For France

The French delegation, referring to the declaration contained in Document No. 236, informs the Conference that it cannot but maintain the requirement for five channels with minimum coverage which it has submitted on behalf of Mayotte.

The Island of Mayotte comes under French sovereignty. The French delegation reminds the Conference that France exercises those sovereign rights neither through force nor through arbitrary action. The fact that Mayotte belongs to the French Republic results from the democratic choice of the island's population.

During the consultation on 23 October 1974, a large majority of the population voted for the island's continuing to form part of the French Republic, whereas the other three islands in the Comoro Archipelago voted in favour of independence. Drawing the consequences from this twofold choice, the French Parliament organized the successive stages whereby Anjouan, Grand Comoro and Moheli have acceded to sovereignty, and reserved the possibility for the population of Mayotte to join them in a State which would guarantee the political and administrative status of each of the islands.

This procedure was rejected by the autonomous Government of Moroni, which proclaimed its independence.

By the Act of 31 December 1975, the French Parliament, competent in the matter under French constitutional law, noted that Anjouan, Grand Comoro and Moheli had ceased to form part of the French Republic and it made arrangements for the population of Mayotte to vote once again on its future. On 8 February 1976, the population voted, by a very large majority, for Mayotte to continue to belong to the French Republic.

The Island of Mayotte therefore forms part of the French Republic and it is proper, in these conditions, for the French Delegation to state its requirements in the matter of the assignment of frequencies and orbital position in the Document it has submitted to the Conference.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 241-E

7 February 1977

Original : French

PLENARY MEETING

REPORT OF COMMITTEE 2

(CREDENTIALS)

1. Terms of reference

The Committee's terms of reference are defined in Document No. 47.

2. Meetings held

The Committee held the following meetings :

- on 12 January 1977 : during this meeting, a Working Group was set up to examine in detail the credentials presented and report on them to the Committee. Under the chairmanship of Mr. A.M. DIONE (Republic of the Senegal), Chairman of the Committee, the Group met four times. Meetings were attended by Mr. A.W. Gamal (Democratic Republic of the Sudan), Vice-Chairman of the Committee, and delegates from the following countries : Federal Republic of Germany, Australia, Federative Republic of Brazil and Hungarian Peoples' Republic;

- on 7 January 1977 : the conclusions of the Working Group were adopted (see Documents Nos. 151 and 213).

3. The Committee adopted the conclusions set forth in the Annex to this report and recommends their adoption at the plenary meeting.

4. Concluding remark

The Committee also recommends that the Chairman and Vice-Chairman of the Committee should be authorized to examine the credentials deposited after the preparation of this report and before the end of the last plenary meeting of the Conference and to report on that subject direct to the plenary meeting.

A. DIONE
Chairman of Committee 2

Annex : 1



A N N E X

1. Delegations whose credentials have been deposited.

1.1 Delegations of the countries which have ratified the Convention or have acceded to it.

1.1.1 Delegations whose credentials have been found to be in order.

AFGHANISTAN (Republic of)	ETHIOPIA
ALGERIA (Algerian Democratic and Popular Republic)	FINLAND
GERMANY (Federal Republic of)	FRANCE
SAUDI ARABIA (Kingdom of)	GHANA
AUSTRALIA	GREECE
BAHREIN (State of)	GUINEA (Republic of)
BANGLADESH (People's Republic of)	HAITI (Republic of)
BYELORUSSIAN SOVIET SOCIALIST REPUBLIC	HUNGARIAN PEOPLE'S REPUBLIC
BRAZIL (Federative Republic of)	INDIA (Republic of)
BULGARIA (People's Republic of)	INDONESIA (Republic of)
BURUNDI (Republic of)	IRAN
CANADA	IRELAND
CHILE	ICELAND
CHINA (People's Republic of)	JAPAN
CYPRUS (Republic of)	KUWAIT (State of)
VATICAN CITY STATE	LAO PEOPLE'S DEMOCRATIC REPUBLIC
COLOMBIA (Republic of)	LIECHTENSTEIN (Principality of)
COMOROS (State of the)	LUXEMBOURG
KOREA (Republic of)	MADAGASCAR (Democratic Republic of)
CUBA	MALAYSIA
DENMARK	MALI (Republic of)
EGYPT (Arab Republic of)	MALTA (Republic of)
UNITED ARAB EMIRATES	MOROCCO (Kingdom of)
ECUADOR	MAURITIUS
SPAIN	MAURITANIA (Islamic Republic of)
UNITED STATES OF AMERICA	MEXICO
	MONACO

NIGERIA (Federal Republic of)	UNITED KINGDOM of Great Britain and Northern Ireland
NORWAY	SENEGAL (Republic of the)
NEW ZEALAND	SINGAPORE (Republic of)
PAPUA NEW GUINEA	SWEDEN
PARAGUAY (Republic of)	SWITZERLAND (Confederation of)
NETHERLANDS (Kingdom of the)	TANZANIA (United Republic of)
PHILIPPINES (Republic of the)	CZECHOSLOVAK SOCIALIST REPUBLIC
POLAND (People's Republic of)	THAILAND
PORTUGAL	TUNISIA
GERMAN DEMOCRATIC REPUBLIC	UNION OF SOVIET SOCIALIST REPUBLICS
DEMOCRATIC PEOPLE'S REPUBLIC OF KOREA	VENEZUELA (Republic of)
UKRAINIAN SOVIET SOCIALIST REPUBLIC	YUGOSLAVIA (Socialist Federal Republic of)
	ZAIRE (Republic of)

Conclusion:

These delegations are entitled to exercise the right to vote; they may sign the Final Acts of the Conference (No. 367 of the Convention).

- 1.1.2 Delegations for which provisional credentials have been deposited. These provisional credentials have been found in order.

/ none for the time being /

Conclusion:

These delegations are entitled to exercise the right to vote; they are not entitled to sign the Final Acts of the Conference (No. 362 of the Convention).

- 1.2 Delegations of countries which have not ratified the Convention or have not acceded to it or which are in arrears in their payments to the Union (see Document No. 28 and Corrigenda Nos. 1, 2 and 3).

- 1.2.1 Delegations whose credentials have been found to be in order.

AUSTRIA	IVORY COAST (Republic of the)
BELGIUM	GABON REPUBLIC
BENIN (People's Republic of)	GUATEMALA
BOLIVIA (Republic of)	UPPER VOLTA (Republic of)

ITALY

KENYA (Republic of)

LEBANON

LIBYAN ARAB REPUBLIC

NICARAGUA

OMAN (Sultanate of)

UGANDA (Republic of)

PAKISTAN

PANAMA (Republic of)

ROUMANIA (Socialist Republic of)

SUDAN (Democratic Republic of the)

CHAD (Republic of the)

TOGOLESE REPUBLIC

TURKEY

URUGUAY (Oriental Republic of)

YEMEN ARAB REPUBLIC

YEMEN (People's Democratic Republic of)

Conclusion:

These delegations are not entitled to exercise the right to vote; they are entitled to sign the Final Acts of the Conference.

- 1.2.2 Delegations whose provisional credentials have been found to be in order.

SOMALI DEMOCRATIC REPUBLIC

Conclusion:

These delegations are not entitled to exercise the right to vote; they are not entitled to sign the Final Acts of the Conference.

2. Delegations for which no credentials have been deposited.

ARGENTINE REPUBLIC

CENTRAL AFRICAN EMPIRE

CONGO (People's Republic of)

JORDAN (Hashemite Kingdom of)

MONGOLIA (People's Republic of)

NIGER (Republic of the)

QATAR (State of)

ZAMBIA (Republic of)

Conclusion:

These delegations are not entitled to exercise the right to vote; they are not entitled to sign the Final Acts of the Conference (No. 359 of the Convention).

PLENARY MEETING

B.9

9th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.4	197(Rev.1)	Recommendations AA - FF

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 7 pages.



RECOMMENDATION No. AA

To the CCIR relating to spurious emissions
in the broadcasting-satellite service

The / World Broadcasting-Satellite Administrative Radio Conference_7,
Geneva, 1977,

considering

a) that space stations in the broadcasting-satellite service operating at high power levels are likely to cause interference to services in adjacent and in harmonically related frequency bands due to spurious emissions;

b) that, in the planning of the broadcasting-satellite service, account must be taken of the need to reduce interference to services operating in adjacent bands to acceptable levels at the lower and upper edges of the bands 11.7 - 12.2 GHz in Regions 2 and 3 and 11.7 - 12.5 GHz in Region 1, and to the radio astronomy service which has an exclusive allocation at 23.6 - 24 GHz in all three Regions;

c) the technical data required to enable the World Administrative Radio Conference, Geneva, 1979, to revise the Radio Regulations;

d) the studies being pursued by the CCIR under the appropriate Study Programme;

invites the CCIR

to continue, as a matter of urgency, the study of the technical and operational aspects of spurious emissions from space stations in the broadcasting-satellites service to enable the Special Joint Meeting of CCIR Study Groups to draw up a report for the 1979 World Administrative Radio Conference.

RECOMMENDATION No. BB

To the CCIR relating to transmitting antennae
for the broadcasting-satellite service

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) the need for more ample information on transmitting antennae for
the planning of the broadcasting-satellite service;

b) the technical data required to enable the World Administrative
Radio Conference, Geneva, 1979, to revise the Radio Regulations;

c) the studies being pursued by the CCIR under the appropriate
Questions and Study Programmes;

invites the CCIR

1. to continue the study of reference patterns for the co-polar
and cross-polar components of transmitting antennae for the broadcasting-
satellite service for both individual and community reception, and in particular
the practicable means of achieving various degrees of improved side-lobe
suppression and the economic implication thereof;

2. to initiate the study of the technical characteristics designed
to achieve a pointing accuracy for transmitting antenna such that :

- the diviation of the antenna beam from its nominal direction of
pointing shall not exceed 0.1° ;
- the angle of rotation of the transmitting beam about its axis
shall not exceed $\pm 2^{\circ}$;

3. to submit as much information as possible on these problems to
the 1979 World Administrative Radio Conference.

RECOMMENDATION No. CC

To the CCIR relating to studies of propagation at 12 GHz
for the broadcasting-satellite service

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) the need for more ample information on the various propagation factors required for the planning of the broadcasting-satellite service;

b) the technical data required to enable the World Administrative Radio Conference, Geneva, 1979, to revise the Radio Regulations;

c) the studies being pursued by the CCIR under the appropriate Study Programmes;

invites the CCIR

1. to continue the study of the effects of precipitation attenuation at low angles of incidence in all climatic zones;
2. to initiate the study of the effects of sand and dust storms;
3. to examine the relationship between the propagation characteristics for 99 % of the worst month and those for 99 % of the year;
4. to examine, for emissions using circular polarization, the level of the depolarized component relative to the polarized component;
5. to submit as much information as possible on these problems to the 1979 World Administrative Radio Conference.

RECOMMENDATION No. DD

To the CCIR relating to up-links for the
broadcasting-satellite service

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

- a) the need for more ample information on the characteristics of up-links for planning the broadcasting-satellite service;
- b) the technical data required to enable the World Administrative Radio Conference, Geneva, 1979, to revise the Radio Regulations;
- c) the studies being pursued by the CCIR under the appropriate Study Programme;
- d) that the protection ratios in the up-links to broadcasting satellites need to be approximately one order of magnitude greater than those in the down-links;
- e) that, as regards up-link interference between broadcasting satellites at different orbital positions, adequate up-link protection ratios (approximately 10 dB greater than those in the down-link) would appear to be readily achievable by antenna pattern discrimination in earth station transmitting antennae which would clearly have to be larger in diameter than the receiving antennae used in the down-links;
- f) that, where planning is based on isolation parameters such as radiation patterns for space station transmitting antennae, carrier inter-leaving, and/or polarization discrimination in meeting the down-link carrier-to-interference requirements between service areas served from a single orbital position, the increased carrier-to-interference requirements in the up-links serving the satellite(s) at that same orbital position will have to use the same isolation parameters provided that this produces an improvement of about 10 dB in net isolation. The characteristics of the transmitting earth station will clearly not affect this isolation, apart from the precision of their on-beam polarization;
- g) that in the implementation of broadcasting-satellite systems, consideration must be given to all aspects of associated space operation service functions (tracking, telemetry, telecommand and ranging) in connection with the operation of broadcasting satellites;

invites the CCIR

1. to continue the study of those radiation characteristics of receiving antennae of space stations in the broadcasting-satellite service which, singly or in combination with other means of discrimination, would give the necessary protection ratios for the up-links of systems in the broadcasting-satellite service for (a) satellite(s) occupying a given position in the geostationary satellite orbit;
2. to continue the study of those polarization characteristics of receiving antennae of space stations in the broadcasting-satellite service which, singly or in combination with other means of discrimination, would give the necessary protection ratios for the up-links of systems in the broadcasting-satellite service for (a) satellite(s) occupying a given position in the geostationary satellite orbit;
3. to continue the study of the technical up-link characteristics required to implement the plan for this service;
4. to study the technical and design characteristics and requirements which affect the provision of "space operation service functions" of space stations in the broadcasting-satellite service;
5. to study the requirements for adjacent-channel isolation in up-links for (a) satellite(s) in the broadcasting-satellite service occupying a given position in the geostationary satellite orbit;
6. to draw up a report at the Special Joint Meeting of CCIR Study Groups to be held for the preparation of technical data for the 1979 World Administrative Radio Conference.

RECOMMENDATION No. EE

Relating to up-links for the broadcasting-satellite service

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that, according to the definition given in No. 84AG of the
Radio Regulations, the fixed-satellite service includes earth-to-space links
for the broadcasting-satellite service;

b) that there is an imbalance between the width of the bands
allocated to earth-to-space links and those allocated to space-to-earth links
in the fixed-satellite and broadcasting-satellite services between 10 and 15 GHz;

c) that, in consequence, the earth-to-space capacity may be
insufficient to meet future demands for space-to-earth links for the broadcasting-
satellite and fixed-satellite services;

d) that, due to interference considerations, space stations in both
services may be subject to severe up-link constraints;

e) that Recommendation No. DD invites the CCIR to continue the
studies on up-links for the broadcasting-satellite service;

invites administrations

to estimate their future requirements for such links for the purpose of the
studies mentioned in e) above, and to forward them to the appropriate CCIR
Study Groups and to the Special Joint Meeting of CCIR Study Groups to be held
in preparation for the 1979 World Administrative Radio Conference.

RECOMMENDATION No. FF

To the CCIR relating to the interdependence of
receiver design, channel grouping and sharing criteria

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) that receiver design, channel grouping and sharing criteria are interrelated and have a considerable influence on the development of a plan for the broadcasting-satellite service;

b) that, so far, insufficient attention may have been given to these factors and to their influence on the implementation of such a plan;

invites the CCIR

to study the problem of the interdependence of receiver design, channel grouping and sharing criteria, together with the effects of these factors on the operation of the broadcasting-satellite service.

**CONFERENCE DE RADIODIFFUSION
PAR SATELLITE**

(Genève, 1977)

Corrigendum N° 3 au ✓
Document N° 243-F/E/S
10 février 1977

COMMISSIONS 5 ET 6
SEANCE PLENIERE

CINQUIEME RAPPORT DE LA COMMISSION 4

Page 3, paragraphe 2.2 :

La dernière phrase de la colonne de droite doit se lire :

"Pour les territoires des administrations de la Région 1
et pour les systèmes MRF/FM dans le service fixe dans la
Région 3".

COMISIONES 5 Y 6
SESIÓN PLENARIA

QUINTO INFORME DE LA COMISIÓN 4

Página 3, párrafo 2.2:

Sustitúyase la última frase de la columna a la derecha por la
siguiente:

"Para los territorios de las administraciones de la Región 1
y para los sistemas MDF/FM en la Región 3".

This Corrigendum concerns the French and Spanish texts only.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 2 to
Document No. 243-E
9 February 1977
Original : English

COMMITTEES 5 AND 6
PLENARY MEETING

FIFTH REPORT BY COMMITTEE 4

Page 5

A : Co-polar component

third formula should read :

$$-\left[17.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right) \right] \text{ for } 3.16 \phi_0 < \phi$$

B : Cross-polar component

second formula should read :

$$- 33 \text{ for } 0.33 \phi_0 < \phi \leq 1.67 \phi_0$$



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to
Document No. 243-E
8 February 1977
Original : English

COMMITTEES 5 AND 6
PLENARY MEETING

FIFTH REPORT BY COMMITTEE 4

Page 5

A : Co-polar component

third formula shall read :

$$-[-12.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right)] \text{ for } 3.16\phi_0 < \phi$$

Page 6

On the end of this paragraph add the following :

"This limit may be exceeded with the agreement of the Administration concerned, that is in those territories where the PFD would be exceeded".



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 243-E

8 February 1977

Original : French/English

COMMITTEES 5 AND 6
PLENARY MEETING

FIFTH REPORT BY COMMITTEE 4
(Technical parameters for planning)

Subjects : Interregional sharing criteria

Following the data furnished in Documents Nos. 108(Rev.1) + Corrigenda 1 and 2, 122, 159 and 177 + Corrigenda 1 and 2, Committee 4 presents herewith for use in Committees 5 and 6 its fifth report on technical parameters for planning, which are given in the Annex.

Attention of Committee 5 is drawn to paragraph 2.3 of the Annex which remains in square brackets until the data in the table has been furnished by the planning groups.

Attention of Committees 5 and 6 is drawn to paragraph 3 of Document No. 188(Rev.2), which read as follows :

"3. In addition it is recommended that :

3.1 No broadcasting satellite serving an area in Region 1 using a frequency in the range 11.7-12.2 GHz should occupy a nominal orbit position further west than /37°W/ or further east than /140°E/.

3.2 The modification procedure in the Agreement should prevent any satellite from changing its nominal orbit position in a westerly direction. A change of up to 1° in an easterly direction should be permitted provided that it is taken together with the 8 dB reduction in e.i.r.p. corresponding to broadcasting satellites intended for community reception. This restriction would only need to apply to broadcasting satellites serving Region 1 with nominal orbit positions west of 10° E."

(Source Document No. 188(Rev.2))

Committee 4 takes note of this paragraph, but considers that the final decision on this matter should be taken by Committees 5 and 6.

The attention of the Plenary Assembly is drawn to the necessity of amending Figure 1 on page 2 of Document No. 177 according to the proposals presented hereby in the Annex.

F. KRÁLIK
Chairman of Committee 4

Annex : 1



A N N E X29. INTERREGIONAL SHARING CRITERIA2.1 To protect the Broadcasting-Satellite Service in Regions 1 and 3

A power flux-density limit on a single interference entry from the space services of Region 2 onto the service areas of Regions 1 and 3 broadcasting-satellite assignments in the Plan, should be adopted as the value above which coordination with affected Regions 1 and 3 administrations would be initiated.

This limit would be :

- | | | |
|---|---|-----------------------------|
| - | $147 \text{ dBW/m}^2/27 \text{ MHz}$ | for $0 \leq \theta < 0.44$ |
| - | $138 + 25 \log \theta \text{ dBW/m}^2/27 \text{ MHz}$ | " $0.44 \leq \theta < 19.1$ |
| - | $106 \text{ dBW/m}^2/27 \text{ MHz}$ | $\theta > 19.1$ |

where θ is the topocentric separation angle in degrees between the broadcasting satellite serving Region 1 and the interfering space station in the Fixed-Satellite Service of Region 2.

The primary criteria to be applied in the coordination is a co-channel carrier-to-interference power ratio (C/I) not less than 36 dB for channels assigned to the affected administrations in the Plan. For cases in which there exists a carrier-frequency offset, the reduction of the required C/I as indicated in [Document No. 111(Rev.3)] shall apply.

The level of interference shall be determined at the input of a receiver of the reference receiving earth station located at each of the test points associated with a given service area of the Plan. The level of interference so determined shall meet the relevant primary interference criteria as laid down in [Document No. 111(Rev.3)] for each service area of the Plan.

2.2 To protect Regions 1 and 3 Terrestrial Services

There should be a pfd limit on the Broadcasting-Satellite Service serving Region 2 to protect the Terrestrial Services of Regions 1 and 3. This limit may be exceeded with the agreement of the administrations concerned, that is, those in whose territory the pfd would be exceeded. The limits would be :

- $132 \text{ dBW/m}^2/5 \text{ MHz}$
for angles of arrival $< 10^\circ$

For territories of administrations in the western part of Region 1 (west of longitude 30°E) and for the broadcasting and the mobile (except aeronautical mobile) services and systems in the fixed services in Region 3

- $111 \text{ dBW/m}^2/5 \text{ MHz}$
for angles of arrival $> 15^\circ$
with linear interpolation
between 10° and 15°

- $125 \text{ dBW/m}^2/4 \text{ kHz}$
for circular polarization
all angles of arrival

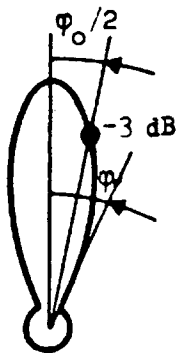
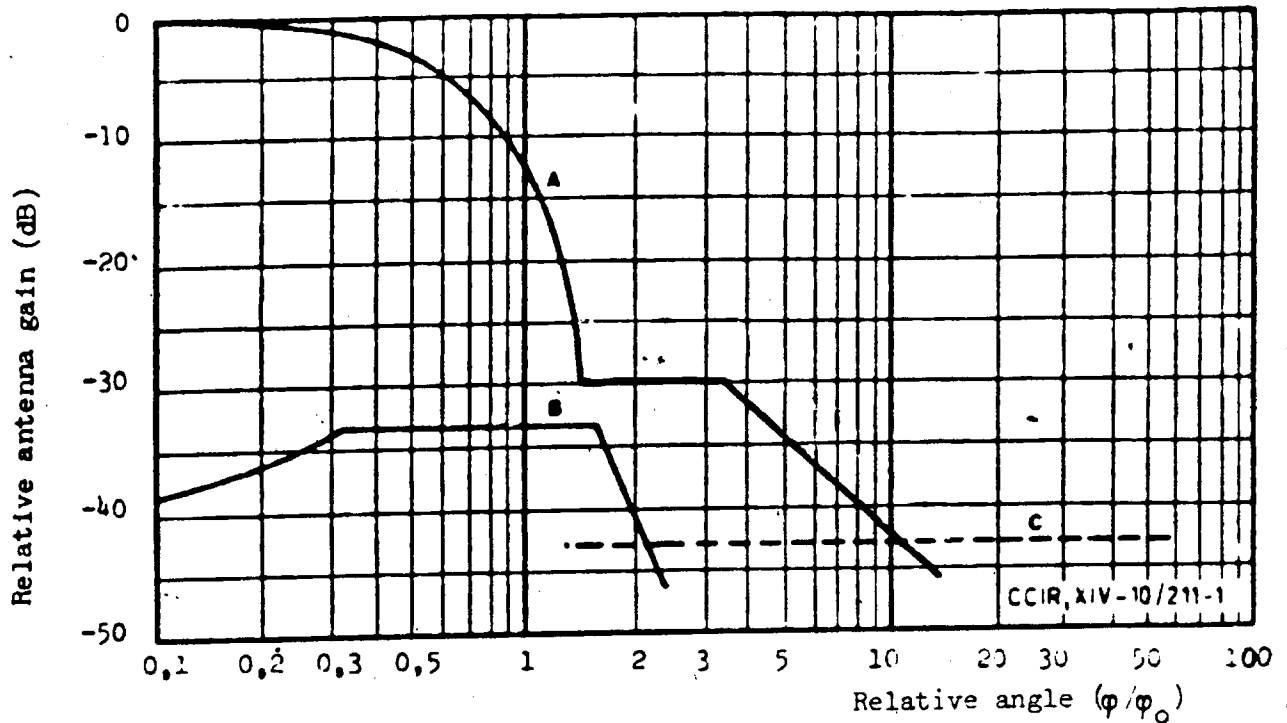
For territories of administrations in Region 1 and for FDM/FM systems in the fixed service in Region 3.

- $128 \text{ dBW/m}^2/4 \text{ kHz}$
for linear polarization and
all angles of arrival

2.3 To protect space services in Region 2 except Greenland

The Broadcasting-Satellite Service of Regions 1 and 3 shall employ satellite antennae whose side lobe characteristics fall within the new reference antenna pattern given in Figure 1 and the power flux-density falling on the territory of any administration of Region 2 in the band 11.7 - 12.2 GHz shall not exceed, under all conditions and methods of modulation, the following :

Country	Assignment in the Plan	Maximum PFD over Region 2
	<u>Note 1 - Assignment refers to orbit position channel, polarization, beam major axis, minor axis, azimuth, sub-satellite point, satellite e.i.r.p. etc.</u>	<u>Note 2 - The values of maximum PFD over Region 2 would be these values resulting from The Plan</u>



Relative antenna gain (dB)

A : Co-polar component

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \text{ for } 0 \leq \varphi \leq 1.581\varphi_0$$

$$-30 \text{ for } 1.581\varphi_0 < \varphi \leq 3.16\varphi_0$$

$$-\sqrt{12.7 + 25 \log_{10}\left(\frac{\varphi}{\varphi_0}\right)} \text{ for } 3.16\varphi_0 < \varphi$$

after intersection with curve C : as curve C

B : Cross-polar component

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 0 \leq \varphi \leq 0.33\varphi_0$$

$$-33 \text{ for } 0.33\varphi_0 < \varphi \leq 1.67\varphi_0$$

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 1.67\varphi_0 < \varphi$$

after intersection with curve C : as curve C

C : Minus the on-axis gain

Figure 1 - Reference patterns for co-polar and cross-polar components for satellite transmitting antenna

2.4 To protect terrestrial services in Region 2

A power flux-density limit should be adopted to protect terrestrial services in Region 2 from the Broadcasting-Satellite Service in Regions 1 and 3. This limit should be :

- 125 dB W/m²/4 kHz
for circular polarization
and all angles of arrival
 - 128 dB W/m²/4 kHz
for linear polarization
and all angles of arrival
- For FDM/FM systems in the fixed service

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to
Document No. 244-E
11 February 1977
Original : English

COMMITTEE 6

SUMMARY RECORD
OF THE
SIXTH MEETING OF COMMITTEE 6

Page 3

At the beginning of the intervention by the delegate of Sweden,
read :

"The delegate of Sweden considered that, as pointed out earlier
by the delegate of the Federal Republic of Germany, the present definition
was very clear"



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 244-E

8 February 1977

Original : English

COMMITTEE 6

SUMMARY RECORD
OF THE
SIXTH MEETING OF COMMITTEE 6
(PROCEDURES)

Tuesday, 1 February 1977, at 1940 hrs

Chairman : Mr. R.J. BUNDLE (New Zealand)

Subjects discussed :

Documents Nos.

- | | |
|---|-----------------|
| 1. Approval of agenda | |
| 2. Approval of the summary record of
the second meeting of Committee 6 | 114 and Corr. 1 |
| 3. Allocation of documents to the Committee | 156, 159 |
| 4. First Report from Working Group 6A | 187 |



1. Approval of agenda (Document No. C6-6)

The delegate of the USSR proposed that Documents Nos. 121 and Corr.1 and 181 be deleted from item 2 of the agenda. They concerned matters which did not relate only to procedures and it would not be compatible with the terms of reference of Committee 6 for it to discuss them, although they might conceivably be referred to the Plenary.

The delegates of Japan, the United Kingdom and Australia supported the USSR proposal for deletion of the documents from Committee 6's agenda.

The delegate of Colombia stated his view that it was the right of a delegation to submit documents for consideration, and that if a delegation had done so, those documents must be considered. He did not mind whether they were considered by Committee 6 or by the Plenary, but the documents concerned dealt with matters of great importance and relevance to the Conference, and must not be ignored.

The Chairman said that he could not transmit the documents to the Plenary unless so instructed by the Committee, but he would bring the matter to the attention of the Chairman of the Conference, in the light of the discussion which had just taken place. In the meantime, Documents Nos. 121 and Corr.1 and 181 would be deleted from the agenda of Committee 6.

It was so agreed.

2. Approval of the summary record of the second meeting of Committee 6
(Document No. 114 + Corr.1)

Approved, with the incorporation of the following amendment to the 8th and 9th lines of the statement by the Chairman of the IFRB (Document No. 114, page 8) :

"... no mention of the need for terrestrial stations ... served by the Broadcasting-Satellite Service to coordinate with the stations of that service."

3. Allocation of documents to the Committee (Documents Nos. 156, 159)

Document No. 156

The Chairman proposed that Document No. 156 be referred to Working Group 6A for further action.

It was so agreed.

Document No. 159

The Chairman indicated that the items of particular interest to Committee 6 in Document No. 519 were the definitions of 1. Service Area, 2. Coverage Area and 3. Beam Area. He suggested that as they had already been approved by Committee 4, Committee 6 should note them, and use them in its work.

1. Service area

In order to clarify the definition of service area, the delegate of the German Democratic Republic proposed the insertion, between the Definition and the Note, of the following : "Note 1 : The service area is the territory of the country of the notifying administration only."

The delegate of Australia requested clarification of the last sentence in the Note in Document No. 159, and the delegate of France, supported by the delegate of Japan, said the definition was not very precise from the technical point of view and it might be desirable to refer it to Working Group 6A for consideration.

The delegate of Italy said that the definition became quite clear if read in conjunction with the Note appearing after the definition. He agreed that the last sentence in the Note might be deleted.

The delegate of the United Kingdom said that it was the word "definition" in the last sentence which was causing confusion. What it really meant was that the agreed protection ratio would have to be specified.

The Chairman suggested, in view of the difficulties arising, that he should discuss the matter with the Chairman of Committee 4 and then refer it to Working Group 6A.

The delegate of the USSR supported that procedure and also endorsed the amendment proposed by the delegate of the German Democratic Republic.

The delegate of the United Kingdom pointed out, in connection with the German Democratic Republic delegate's amendment that the service area could be smaller than the territory of the country of the notifying administration. If there were a number of beams within a very large country, then the service area which was being protected was the service area contained within the coverage area concerned. The situation must not be allowed to arise where a country was being protected at the frontier when the service area was 1,000 miles away.

He supported the procedure proposed by the Chairman, but thought that if the matter was clarified by Committee 4 it would not be necessary to refer it to Working Group 6A.

The delegate of Sweden said the present definition was very clear and he saw no need for the amendment proposed by the delegate of the German Democratic Republic.

The Chairman said he would obtain clarification of the definition from the Chairman of Committee 4, and then submit it to Committee 6 for further discussion, at which time the amendment proposed by the delegate of the German Democratic Republic would be taken up.

It was so agreed.

Definition 2. Coverage area and Definition 3. Beam area

Noted.

4. First Report from Working Group 6A (Document No. 187)

The delegate of Australia, speaking as Chairman of Working Group 6A, introduced Document No. 187, indicating that / Appendices A and B / mentioned in / Article 4 / and / Appendix 1A / mentioned in / Article 5 / had not yet been drafted, and drawing attention to the draft Article on Execution of the / Final Acts / (Document No. DT/40, page 4) produced by Ad Hoc Group 6D3.

There were various matters of substance which Working Group 6A had not been able to resolve, and many delegations had expressed reservations about Sections 5.3, 5.4, 5.5, 5.6 and the miscellaneous provisions.

The Chairman said that the time had now come for Committee 6 to make a number of decisions regarding terminology. In his view the square brackets round the word / Article / were of an editorial nature, and need not be discussed. Those round the word / Plan / should be retained meanwhile, since the Committee was not in a position to decide categorically that there would be only one Plan.

The delegate of the United Kingdom, speaking on behalf of the small Ad Hoc Group mentioned in paragraph 3.6 of the Report, proposed that the word "administration" in paragraph 4.3.17 of the Annex should appear in the plural and should be placed before the word "affected" instead of after it; the word "article" should begin with a capital letter and should be placed in square brackets for the time being; and that the order of paragraphs 4.3.17 and 4.3.16 should be reversed. With regard to the last sentence of paragraph 5.2.5 he proposed the following changes : the word "affected" to appear after the word "administrations"; the words "Article 4" to be placed in square brackets; the sentence to end after the words "specified period", and the following sentence to be added at the end of the paragraph :

"In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified."

It was so decided.

The Chairman invited the Committee to consider the Annex paragraph by paragraph, starting with the title. He asked whether there was any objection to removing the square brackets from the words "Article 4".

The delegate of Japan said that his delegation would consider such a step to be premature. If the Final Acts of the Conference did not take the form of an agreement, it might be incorrect to refer to the various sections as "articles".

The Chairman remarked that the term "article" would be appropriate even if there were no agreement.

The delegate of the United Kingdom agreed, and urged the Committee to concentrate on the substance of the matter before it.

The delegate of the USSR said that since the document under consideration would go to the Plenary Meeting once it had been approved by the Committee, its form should be as definitive as possible. He recalled that, after discussion, one of the Committee's Working Groups had arrived at a conclusion that the Conference should adopt Final Acts rather than an agreement, the General Secretariat having explained that the Final Acts would contain certain obligations as regards implementation and implementation procedures, which Members of the Union would undertake. It had also been agreed that the term "Members" should be used in matters of a general nature and the term "administrations" in those of a procedural nature. Consequently, the words "Contracting Member" in paragraph 4.1 might be deleted.

The Deputy Secretary-General drew attention to Document No. DT/39, prepared for the benefit of Working Group 6D, which contained extracts from the Final Acts of four Administrative Conferences of the ITU. As the USSR delegate had pointed out, it was not essential to use the term "Contracting Member". As for the use of the term "Article", the delegate of Japan was right to the extent that the term was in some ways historically connected with the notion of an agreement; however, it also appeared in appendices to the Radio Regulations (in particular, Appendices 26 and 27). He saw no objection to its use in the present context.

The delegate of Japan said that, in the light of the foregoing remarks, he was prepared to withdraw his objection.

It was decided to remove the square brackets from the words "Article 4".

Paragraph 4.1

The Chairman, noting that the words "Contracting Member" were deleted, invited the Committee to choose between the terms "Member" and "administration".

The delegate of Algeria expressed himself in favour of retaining the term "administration".

The delegate of the United States of America said that Working Group 6D should be given a further opportunity to discuss the issue before the Committee was called upon to reach a decision.

The Chairman of Working Group 6D said that the question was a matter of substance and, as such, merited discussion by the full Committee or even by the Plenary. The question as to the binding force of whatever document emerged from the Conference had until now been skirted. It would be helpful if the Deputy Secretary-General could explain the precise difference between Final Acts and agreements.

The delegate of the USSR said that, in his delegation's view, the instrument adopted at the conclusion of the Broadcasting-Satellite Conference should be at least as binding on Maritime and Aeronautical Conferences held in the past, and should therefore be adopted by Members of the Union.

The delegate of the United Kingdom said that, according to legal advice received by his delegation, the Conference could prepare Final Acts which would then be signed by delegations having the power to sign them. Those Final Acts would, after subsequent approval by the Members of the Union, be transformed ipso facto into an agreement within the meaning of Resolution Spa2 - 2.

The Deputy Secretary-General said that some of the Final Acts adopted by previous Conferences had taken the form of revisions of the Radio Regulations, while others had taken the form of an agreement or some other instrument of an obligatory nature. Some of the resolutions and recommendations adopted might not require the formal approval of Members because they merely indicated a course of action; in that case, it would perhaps be considered unnecessary to include them among the obligatory provisions of the Final Acts.

The Chairman suggested that the Committee might decide later in the meeting to extend the terms of reference of Working Group 6D so as to enable it to give further consideration to the question of the precise nomenclature to be employed. For the time being, he invited the Committee to concentrate its attention on matters of substance, ignoring the square brackets where they occurred.

Subject to that reservation, paragraph 4.1 was approved.

Paragraphs 4.2 and 4.3

Those paragraphs were approved without comment.

Paragraph 4.3.1

The delegate of the United States of America proposed that the third sub-paragraph should be deleted and that the fourth sub-paragraph should be placed in square brackets.

The delegate of the United Kingdom supported that proposal.

The delegate of the USSR drew attention to the need to coordinate the text of the fourth sub-paragraph with the text submitted by Working Group 6B1 in Document No. DT/42.

After a discussion in which the delegate of Japan, the United Kingdom, Italy, the United States of America, the Chairman of Working Group 6B1 and the representative of the IFRB took part, it was decided to adopt the proposals made by the delegate of the United States of America and also to insert a reference to paragraph 2.1 of the Annex to Document No. DT/42.

Paragraph 4.3.2

The delegate of the United States of America, supported by the delegate of the United Kingdom, proposed the deletion of the square brackets in the middle of the paragraph.

The delegate of Italy agreed, but proposed that the words "three years" should be replaced by "five years" so as to bring the provision into line with that governing the Fixed-Satellite Service.

The delegates of India and the USSR supported that proposal.

The delegate of the United States of America said that his delegation would greatly prefer the three-year period, as being perfectly adequate to allow for planning, technical details, construction, etc.

After a brief discussion, it was decided to replace the words "three years" by "five years" and to delete the square brackets in the middle of the paragraph.

Paragraphs 4.3.2.1, 4.3.2.2, 4.3.3 and 4.3.4

Approved

Paragraph 4.3.5

The delegate of India, supported by the delegate of Japan, proposed that the paragraph should be aligned with No. 639AM of the Radio Regulations, since the decision to request to be included in the coordination process rested with the administration concerned, not with the Board.

The delegate of Italy said he agreed with that proposal, but suggested that the words "giving the technical basis for so doing" should be retained in paragraph 4.3.5, since Article 9A of the Radio Regulations applied to services for which no Plan existed, whereas the very purpose of the Conference was to provide a Plan for the Broadcasting-Satellite Service.

The delegate of the United Kingdom suggested that the Indian delegate's point might be met simply by deleting the words "where appropriate" from the second sentence of paragraph 4.3.5. In his opinion, the paragraph contained some valuable provisions and should be changed as little as possible.

The representative of the IFRB said that that deletion would make application of the provision very difficult. In the first place, under No. 639AM any administration could ask to be brought into coordination, but that request could be met only if other administrations were prepared to coordinate with it; with the deletion of the words "where appropriate" that prerogative would be transferred from administrations to the Board. Secondly, all administrations making such requests would be included in the list for which agreement had to be obtained, irrespective of whether the Board's findings were favourable or unfavourable.

The delegate of Italy, supported by the delegates of France and the United Kingdom, said he agreed with that view and proposed that the first sentence of the paragraph should remain unchanged, but that the second sentence should be amended to read : "The Board shall study this request on the basis of / Appendix A / and send a copy of the request with an appropriate recommendation to the administration proposing the modification to the / Plan /."

It was so decided.

Paragraph 4.3.5, as amended, was approved.

Paragraphs 4.3.6 to 4.3.11

Approved, subject to editorial changes.

Paragraph 4.3.12

At the proposal of the delegate of the USSR, supported by the delegates of the United Kingdom and Italy, it was decided to remove the square brackets round the paragraph.

Paragraphs 4.3.13 to 4.3.15

Approved.

Paragraph 4.3.16 (formerly 4.3.17)

The representative of the IFRB said it was not clear from the provision whether the assignment in question would be included in the Plan on a provisional basis.

The Chairman of the Ad Hoc group of Working Group 6A, supported by the delegate of Italy, said that the provision should be read in conjunction with paragraph 5.2.5, which gave more details of a procedure whereby an administration not intending to use its assignment for some time could allow another administration to use it for a limited period, such as, for instance, the life span of a satellite. Paragraph 4.3.16 therefore related to provisional modification of the Plan.

The delegate of Canada added that the wording of paragraph 5.2.5 represented a compromise with regard to the insistence procedure originally proposed. Although that provision met the needs of the Conference in some respects, it should not constitute a precedent for the ultimate removal of the insistence procedure from the Radio Regulations, where it served a useful purpose.

The representative of the IFRB said that, since paragraph 4.3.16 related to provisional modifications of the Plan, it should appear among the paragraphs concerned with such modification.

The delegate of Italy, supported by the delegate of the United Kingdom, proposed that paragraph 4.3.16 should become paragraph 4.3.12.

It was so decided.

Paragraphs 4.3.17 (formerly 4.3.16) and 4.3.18

Approved.

Paragraph 4.4

The delegate of India, noting that paragraph 4.4 did not provide any instructions to the IFRB for cancellation from the Master Register of assignments released by modification of the Plan, proposed the addition of the following phrase at the end of the paragraph : "... and take appropriate action for deletion of the assignment from the Master Register."

The delegate of Italy said that there was no reason for such an addition, since the relevant cancellations were dealt with in paragraph 5.6.

The Chairman observed that there was no support for the Indian proposal.

Paragraph 4.4. was approved.

Paragraphs 4.5 and 4.5.1

Approved.

Paragraph 4.5.2

At the proposal of the delegate of the USSR, supported by the delegates of the United Kingdom and Australia, it was decided, to delete the phrase " / and in any case every three years / " at the end of the paragraph.

Paragraph 4.5.2, as amended, was approved.

The Chairman suggested that Working Group 6D should be invited to examine the terminological points assigned to it within the scope of Document No. 101 and to report thereon to Committee 6.

It was so decided.

The meeting rose at 2245 hours.

The Secretary :

R. PLUSS

The Chairman :

R.J. BUNDLE

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 245-E

8 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For France

In Document No. 172 the Delegation of Mauritius has indicated the need to provide facilities for individual reception for the Island of Tromelin.

In so far as this implies that the Port Louis Government considers itself entitled to exercise rights of sovereignty over the territory of Tromelin, the French Delegation is obliged to enter a formal reservation.

France has exercised sovereignty over the Island of Tromelin since 1722 by right of geographical discovery.

Its sovereignty was not acquired at the expense of any other State or of any local population since the island was uninhabited.

It was exercised without interruption until conquest by the United Kingdom in 1810. It has again been exercised, under the same conditions, since the Paris Treaty of 30 May 1814.

This sovereignty has been constantly re-asserted by various legal measures relating to the administration of the island and by various practical measures (construction of a landing strip, a lighthouse for shipping, a weather station), measures which meet the requirements of present-day international law with regard to effective exercise.



PLENARY MEETING

B.10

10th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.6	227	Preamble Articles 1 - 3 Articles 8 - 10 Resolutions A and B
C.6	DT/40	Article "Interferences"
	Add. to 227	Resolution C
	DL/x	Resolution D
	DL/56	Resolution E
	DL/53	Resolution F

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 14 pages



**FINAL ACTS OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE
FOR THE PLANNING OF THE BROADCASTING-SATELLITE SERVICE
IN FREQUENCY BANDS 11.7 – 12.2 GHz (IN REGIONS 2 AND 3) AND
11.7 – 12.5 GHz (IN REGION 1), GENEVA, 1977**

Preamble

The World Administrative Radio Conference for the planning of the broadcasting-satellite service in frequency bands 11.7 – 12.2 GHz (12.5 GHz in Region 1), having been convened at Geneva on 10 January 1977, under Article 54 of the International Telecommunication Convention, Resolution No. 27 of the Plenipotentiary Conference, Malaga-Torremolinos, 1973, and Resolution No. Spa2 – 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971):

- to establish the sharing criteria for the bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1) between the broadcasting-satellite service and the other services to which these bands are allocated;
- to plan for the broadcasting-satellite service in the above-mentioned bands;
- to establish procedures to govern the use of these bands by the broadcasting-satellite service and by the other services to which these bands are allocated;
- to consider the results of the work of the Group of Experts on the possible re-arrangement of the Radio Regulations and the Additional Radio Regulations.

The delegates of the following Members of the International Telecommunication Union,

(list of countries)

- bearing in mind the importance of making the best possible use of the radio-frequency spectrum and the geostationary-satellite orbit as well as the need for an orderly development of the services to which these bands are allocated;
- taking into account the equal rights of all countries, large and small, even those countries which are not represented at the Conference;

have adopted, subject to the approval of their respective competent authorities, the following provisions and associated Plan [relating to the broadcasting-satellite service in the above-mentioned bands (Part I) and the decisions relating to the re-arrangement of the Radio Regulations and the Additional Radio Regulations (Part II)]:

IN WITNESS WHEREOF, the Delegates of the Members of the Union mentioned above have, on behalf of their respective competent authorities, signed these Final Acts in a single copy in the Chinese, English, French, Russian and Spanish languages, in which, in case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the International Telecommunication Union.

Done at Geneva, February 1977

(Signatures)

B.10-3

ARTICLE [1]

General definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below:

<u>Union:</u>	The International Telecommunication Union;
<u>Secretary-General:</u>	The Secretary-General of the Union;
<u>WARC:</u>	World Administrative Radio Conference;
<u>Conference:</u>	World Administrative Radio Conference for the planning of the broadcasting-satellite service in frequency bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1), called in short [World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977];
<u>IFRB (Board):</u>	The International Frequency Registration Board;
<u>CCIR:</u>	The International Radio Consultative Committee;
<u>Convention:</u>	The International Telecommunication Convention;
<u>Radio Regulations:</u>	The Radio Regulations (edition 1976) annexed to the Convention;
<u>Regions 1, 2 and 3:</u>	The geographical areas defined in Nos. 126 to 132 of the Radio Regulations;
<u>Master Register:</u>	The Master International Frequency Register;
<u>IFRB weekly circular:</u>	The publication referred to in No. 497 of the Radio Regulations;
<u>Plan:</u>	The Plan for Regions 1 and 3 and its appendices forming Annex [...] to these Final Acts;
<u>Administration:</u>	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.
<u>Frequency assignment in accordance with the Plan:</u>	Any frequency assignment which appears in the Plan or for which the procedure of Article [4] of the Final Acts has been successfully applied.

B.10-4

ARTICLE [2]

Frequency bands

The provisions of these Final Acts apply to the broadcasting-satellite service in the frequency bands between 11.7 and 12.5 GHz in Region 1 and between 11.7 and 12.2 GHz in Regions 2 and 3 and to the other services to which these bands are allocated, so far as their relationship to the broadcasting-satellite service in these bands is concerned.

ARTICLE [3]

Execution of the Final Acts

1. The Members of the Union in Regions 1 and 3 shall adopt, for their broadcasting-satellite space stations operating in the frequency bands referred to in the Final Acts, the characteristics specified in the Plan for those Regions.
2. The Members of the Union in Region 2 shall apply the interim provisions contained in Annex [...] to the Final Acts. These provisions will govern the broadcasting-satellite service in Region 2 until detailed plans for Region 2, drawn up by a future Regional Administrative Radio Conference, have entered into force.
3. The Members of the Union shall not change the characteristics specified in the Plan, or establish new broadcasting-satellite space stations or stations in the other services to which these frequency bands are allocated, except as provided for in the Radio Regulations and the appropriate Articles of these Final Acts.

B. 10-5

ARTICLE [8]

Approval of the Final Acts

Members shall, as promptly as possible, notify the Secretary-General of their approval of these Final Acts. He shall immediately inform the other Members of the Union. The act of approval shall constitute the agreement of Members to comply with the decisions jointly reached at the [World Broadcasting-Satellite Administrative Radio Conference], Geneva, 1977. These Final Acts shall be regarded as including a World Agreement and associated Plan for Regions 1 and 3 in accordance with resolves 1 of Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, which requires the stations in the broadcasting-satellite service to be established and operated in accordance with such agreements and associated plans.

ARTICLE [9]

Entry into force of the Final Acts

These Final Acts shall enter into force on [1 January 1979] at 0001 hours GMT.

ARTICLE [10]

Period of validity of the provisions and associated Plan

1. The provisions and associated Plan have been prepared in order to meet the requirements of the broadcasting-satellite service in the bands concerned for a period of at least ... years from the date of the entry into force of the Final Acts.
2. In any event, the Final Acts 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.

B. 10-6

RESOLUTION No. [A]

Relating to the annexing to the Radio Regulations of the provisions and associated Plan contained in the Final Acts of the Conference

The [World Broadcasting-Satellite Administrative Radio Conference], Geneva, 1977,

noting

a) that the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, adopted Resolution No. Spa2 - 2 envisaging that stations in the broadcasting-satellite service shall be established and operated in accordance with agreements and associated plans adopted by World or Regional Administrative Radio Conferences;

b) that the present Conference has adopted provisions for all Regions and an associated Plan for Regions 1 and 3;

considering

a) the wish expressed at the Conference to annex the provisions and associated Plan to the Radio Regulations;

b) that this Conference is not competent to amend the Radio Regulations;

resolves

that the 1979 World Administrative Radio Conference be requested to annex the provisions and associated Plan to the Radio Regulations as an integral part thereof, in the form (and to the extent) it deems most appropriate without thereby affecting their content or integrity;

requests

the Administrative Council to include the request referred to in the above paragraph in the agenda of the 1979 World Administrative Radio Conference.

B.10-7

RESOLUTION No. [B]

**Relating to the period between the entry into force of the
Final Acts of the Conference and the date on which the
provisions and associated Plan are annexed to the Radio Regulations**

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that its Final Acts will come into force on
[1 January 1979];

b) that, in its Resolution No. [], it has requested the
1979 World Administrative Radio Conference to annex to the Radio Regulations
the provisions and associated Plan established by the Conference;

c) that there will be an interim period between the date of
entry into force of these Final Acts and the date on which the provisions and
associated Plan are annexed to the Radio Regulations;

further considering

that these Final Acts shall be regarded as including a World agreement
and associated Plan in accordance with Resolution No. Spa2 - 2 of the World
Administrative Radio Conference for Space Telecommunications, Geneva, 1971;

resolves

1. that both during this interim period and after the date on
which they have been annexed to the Radio Regulations, the provisions and the
associated Plan shall retain their integrity as a legal instrument;

2. that during this period the IFRB and the other appropriate
organs of the Union shall be guided by the provisions of these Final Acts and
the Radio Regulations.

B. 10-8

ARTICLE []

Interference

The Members of the Union shall study in common the action required to avoid harmful interference which might result from the application of these Final Acts.

B. 10-9

RESOLUTION No. C

**Relating to the updating of the Master International Frequency
Register for Regions 1 and 3 on the date of entry
into force of the Final Acts**

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) that the Final Acts of this Conference will take effect before the entry into force of the revised Radio Regulations adopted by the 1979 World Administrative Radio Conference, and that meanwhile the relevant provisions of the current Radio Regulations and Resolutions Nos. Spa2 - 2 and Spa2 - 3 remain valid;

b) that No. 405BA of the Radio Regulations provides that in the band 11.7 - 12.2 GHz in Region 3 and in the band 11.7 - 12.5 GHz in Region 1, existing and future fixed, mobile and broadcasting services shall not cause harmful interference to broadcasting-satellite stations operating in accordance with the decisions of the present Conference;

c) that the [subsequent] coordination procedures described in Resolution No. Spa2 - 3 are to be applied only until the entry into force of Plans pursuant to Resolution No. Spa2 - 2;

resolves

1. that all the administrations using or intending to use frequency assignments to terrestrial stations in the bands covered by the broadcasting-satellite Plan shall decide as soon as possible, whether or not these assignments will affect broadcasting-satellite stations provided for in the Plan (if necessary, with the assistance of the IFRB);

2. that, if it is found that broadcasting-satellite stations may be subject to interferences, the administrations shall inform the IFRB of the measures they intend to take to ensure the protection of the broadcasting-satellite stations concerned before the date of entry into force of these Final Acts;

B.10-10

3. that administrations may continue to use frequency assignments are not in conformity with the broadcasting-satellite Plan, provided that agreement is reached with the administrations whose broadcasting-satellite stations are affected;

4. that the administrations seeking agreement shall inform the IFRB of the terms of the agreement reached;

5. that, upon receipt of such information, the IFRB shall insert a symbol in the Remarks column of the Master Register indicating the duration specified in the agreement. The duration specified shall also be published in a special section of the weekly circular;

6. that, on the date of entry into force of the Final Acts, the frequency assignments in the Plan will be recorded in the Master Register. The date of signature of these Final Acts will be entered together with an appropriate symbol, in Column 13c opposite these assignments;

invites the IFRB

to assist administrations in implementing the provisions of this Resolution.

B. 10-11

RESOLUTION No. D

**Relating to the coordination, notification and recording
in the Master International Frequency Register of assignments to
stations in the fixed-satellite service with respect to stations in the
broadcasting-satellite service in Region 2**

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

that the Radio Regulations contain no provisions governing the
coordination, notification or recording in the Master International Frequency
Register of frequency assignments to stations in the fixed-satellite service in
the band 11.7 — 12.2 GHz with respect to stations in the broadcasting-satellite
service in Region 2;

resolves

that the provisions of Article 9A of the Radio Regulations shall be
applied in such cases until the matter is considered by a competent
conference.

B. 10-12

RESOLUTION No. E

**Relating to the coordination, notification and recording
in the Master International Frequency Register of assignments
to stations in the broadcasting-satellite service in Region 2**

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) that a plan will be established for the
broadcasting-satellite service in Region 2 in accordance with Resolution [from
GT 5B];

b) that in Region 2 the broadcasting-satellite service should be
operated on the basis of the principles expounded in [Document No. 204];

c) that some of the provisions adopted by this Conference
concerning broadcasting-satellite service in Regions 1 and 3 may also be
applied in Region 2 prior to the entry into force of the plan for that Region
to be established pursuant to Resolution [];

d) that, in the interim period, the procedures described in
Resolution No. Spa2 — 3 will continue to apply in Region 2;

resolves

1. that an administration intending to bring into use a space
station in the broadcasting-satellite service in Region 2 shall, for the
purpose of coordination with space systems of other administrations, apply the
relevant provisions of Article 9A of the Radio Regulations Nos. 639AA to 639AI
inclusive;

2. that the relevant provisions of Resolution No. Spa2 — 3 shall
apply to the coordination, notification and recording of stations in the
broadcasting-satellite service in Region 2, wherever a station in the
broadcasting-satellite service or the fixed-satellite service in Region 2 is
involved;

[2.1] that an administration notifying a frequency assignment to
a space station in the broadcasting-satellite service in Region 2 under
paragraph 4.1 of Resolution No. Spa2 — 3 shall also notify a typical receiving
earth station;

B.10-13

3. that the coordination, notification and recording procedures for stations in the fixed-satellite service specified in [Document No. 221] shall also apply to stations in the broadcasting-satellite service in Region 2 with respect to stations in the broadcasting-satellite service for which a frequency assignment appears in the Plan whenever

- any portion of the occupied bandwidth of the proposed assignment in Region 2 falls within the occupied bandwidth of an assignment in Region 1 or Region 3, and
- the power flux density which would be produced by the proposed broadcasting-satellite assignment in Region 2 exceeds the value specified in Appendix [*]

4. that Appendix B of the Final Acts shall be used in supplying the information referred to in Section B of Resolution No. Spa2 — 3 and Section II of [Document No. 221];

5. that an individual notice for each frequency shall be drawn up as prescribed in Appendix [B] for any frequency notified under paragraph 4.1 of Resolution No. Spa2 — 3 or paragraph [2.1] of this Resolution or Section III of [Document No. 221].

[*] to be provided by Committee 4.

[RESOLUTION No. F]

[Relating to the restriction of space radio services
to the use of the geostationary orbit in the
[Relating to the use, by space stations operating in the frequency
bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz
(in Region 1), of the geostationary orbit and no other]]

The [World Broadcasting-Satellite Administrative Radio Conference],
Geneva, 1977,

considering

a) that a Plan designating frequency assignments in the
above-mentioned frequency bands and positions in the geostationary orbit has
been adopted by the Conference for Regions 1 and 3;

b) that a similar Plan for Region 2 is expected to result from a
Regional Administrative Radio Conference in 1982;

c) that the operation of space radiocommunication services in
the frequency bands concerned in orbits other than the geostationary orbit
would be incompatible with the Plans referred to in a) and b) above;

resolves

that administrations shall ensure that their space radiocommunication
services in these frequency bands are operated in the geostationary orbit and
no other.

B.10-15

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 247-E

8 February 1977

Original : English

PLENARY MEETING

Contribution by the United Kingdom

PROTECTION OF TERRESTRIAL SERVICES IN REGIONS 1 AND 3

The terms of reference of the Conference do not include the establishment of sharing criteria between the Fixed-Satellite Service and terrestrial services. The Conference has, however, agreed parameters for the protection of terrestrial services in Regions 1 and 3 from broadcasting-satellite stations serving Region 2. As the requirements for protection of terrestrial services from the Fixed-Satellite Service are the same as those for protection from the Broadcasting-Satellite Service, it would be appropriate to cover the protection of Regions 1 and 3 terrestrial services from Region 2 Fixed-Satellite Services by means of a Resolution incorporating these agreed requirements.

A draft Resolution is given in the Annex for consideration by the Conference.

Annex : 1



A N N E X

DRAFT RESOLUTION

Relating to the protection of terrestrial services operating
in the 12 GHz band in Regions 1 and 3

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977

considering

- a) that there is a need for the protection of terrestrial services operating in the frequency range 11.7 - 12.2 GHz in territories in Regions 1 and 3 from the emissions of space stations in the Fixed-Satellite Service serving territories in Region 2;
- b) that power flux density limits have been adopted by the Conference for the protection of these terrestrial services from the emissions of space stations in the Broadcasting-Satellite Service serving territories in Region 2;
- c) that these power flux density limits would also be appropriate for the protection of terrestrial services from the emissions of space stations in the Fixed-Satellite Service serving territories in Region 2,

resolves that

1. in the frequency range 11.7 - 12.2 GHz there shall be limits on the power flux density produced in territories in Regions 1 and 3 from space stations in the Fixed-Satellite Service serving territories in Region 2;

2. these limits shall be as follows :

for territories of administrations in Region 1 and Region 3 :

-125 dBW/m²/4 kHz for fixed-satellite stations using circular
polarization

-128 dBW/m²/4 kHz for fixed-satellite stations using linear polarization

for all angles of arrival;

and for territories of administrations in Region 1, west of longitude 30°E and in Region 3 :

$$-132 \text{ dBW/m}^2/5 \text{ MHz} \quad \text{for } \theta < 10$$

$$-174 + 4.2\theta \quad \text{for } 10 \leq \theta \leq 15$$

$$-111 \text{ dBW/m}^2/5 \text{ MHz} \quad \text{for } 15 < \theta$$

where θ is the angle of arrival in degrees.

3. the above limits may be exceeded with the agreement of the administrations concerned, that is, those in whose territories the power flux density limits would be exceeded.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 248-E

8 February 1977

Original : Spanish

PLENARY MEETING

Republic of Panama

STATEMENT CONCERNING FREQUENCY REGISTRATIONS FOR THE
BROADCASTING-SATELLITE SERVICE IN ITS TERRITORY, INCLUDING
THE PANAMANIAN TERRITORY KNOWN AS THE CANAL ZONE

The Republic of Panama, having in mind the progress made and agreements reached by this Broadcasting-Satellite Conference, specifically in the preparation of a plan for sharing the 11.7 - 12.2 GHz frequency band in Region 2, wishes to notify the Plenary Conference that as a Member country belonging to Region 2 it alone is responsible for frequency registrations for the whole of the territory of the Republic of Panama, including the Panamanian territory known as the Canal Zone, and that all registrations must be made by the Republic of Panama under its country symbol PNR.

Accordingly, it wishes to inform the Conference that any registration with the IFRB (International Frequency Registration Board) of frequencies in the Canal Zone by any other State belonging to Region 2 will be regarded by the Government of the Republic of Panama as an impermissible and illegal act constituting a flagrant violation of its territorial integrity and the sovereignty it exercises over the whole of its territory, since Panama has never at any time ceded its sovereign rights over any part of its territory to any other country.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 249-E

8 February 1977

Original : English

Indonesia

REFLECTIONS ON STATE SOVEREIGNTY IN SPACE

While creating international and national broadcasting by satellites, we are met by so many contrasting matters which have to be tackled instantly. Most of these issues are in fact connected closely with the principle of States' sovereignty and the sovereign rights of each State. When we speak of States' sovereignty, then we notice States' territories, in which each State is absolutely sovereign. With regard to States' territory, KELSEN, a distinguished scholar, stated that the territory of a State is not a plain, but a space of three dimensions, which is an inverted cone. The vertex of this cone is in the centre of the Earth. What traditional theory defines as territory of the State, that portion of the Earth's surface delimited by the boundaries of the State, is only a visible plain formed by a transverse section of the State's conic space. The space above and below this plain belongs legally to the State as far as its coercive power extends. Of course, this theory is somewhat old, but later COOPER, a famous American scholar, maintained that national territory is three dimensional. Also a distinguished scholar from the Soviet Union, VERESHCHETIN, stated in this sovereignty context, that having introduced into the international law a new principle of the freedom of outer space, Space Law at the same time regulates all relations among the States in connection with their space activities and takes due regard to the principle of State sovereignty.

All the aforementioned distinguished scholars, directly or indirectly, are in unanimity that in the uses of space, we must take into account subjacent States' sovereignty, which is three dimensional. Furthermore, State's sovereignty in space could be compared with State's sovereignty at its waters regulated by the Law of the Sea. If we speak of States' sovereignty in its waters, we cannot separate it from the works of two great international law scholars, i.e. GROTIUS from the Netherlands and JOHN SELDEN from Great Britain. GROTIUS maintained that the sea is free and coastal States have only that authority on a certain surface of water bordering their land territory with the width of a gun. His great scientific work is entitled "Mare Liberum". GROTIUS' theory was objected to by JOHN SELDEN in his great scientific work entitled "Mare Clausum". He said that the sea is not free and that Britannia rules the waves.

The principles brought forward by GROTIUS and JOHN SELDEN found their application today. Let us look into these. Firstly, we have the three miles limit of territorial waters; later it became six and finally 12 miles and some with inland waters. And there are varieties, such as the contiguous zone, continental shelves and the economic zones, etc. Development of States' sovereignty in space takes place analogued with the Law of the Sea. The famous French scholar, FAUCHILLE, maintained that space is free. And again, this



opinion was objected to by the British scholar, WESTLAKE and LYCKLAMA à NIJEHOLT, who said that space is not free. They brought forward the maxim "Yus coelum", meaning that if you are the owner of a piece of land, then you are also owner of what is in the ground and in space ad infinitum.

Finally, in the Paris Convention of 1919, the aforementioned disputes were settled, at least for the time being, because in this Convention, Article 1 said that States have complete and exclusive sovereignty in the airspace above their territory; but it is limited by the right of innocent passage by foreign States' aircraft. The Chicago Convention of 1944 took over Article 1 of the Paris Convention of 1919 excluding the right of innocent passage. The Convention never defined what is airspace and neither the height of subjacent national space. It seems that the height of it is left over to those concerned. Even the Space Treaty of 1967 kept silent on this matter. But we can draw the conclusion that the delimitation of space, according to history, depends largely on the development of space technology. And we are aware that the aforementioned agreements are followed by additional agreements, depending on developments taking place in the field of space technology. Progress and development made by space technology greatly influenced the future space regulations. However, space technology cannot neglect these regulations and, moreover, space technology will be influenced by the developments taking place in the regulations issued by international bodies and national entities which actually reflect the opinions and requirements of States in general and subjacent States in particular. The rate of development in space regulations and space technology are of course different, but the relationship of interdependence between the two sciences has been producing many existing international conventions and treaties, and national regulations in the field of space regulations.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 250-E
8 February 1977
Original : English

COMMITTEE 5

Australia

Draft

RECOMMENDATION No. BS ...

To the CCIR relating to the use of the 12.2-12.5 GHz band

The World Administrative Broadcasting-Satellite Conference,
Geneva, 1977,

considering

a) that the band 11.7-12.2 GHz is allocated to the Fixed, Mobile (except Aeronautical Mobile), broadcasting-satellite services in all Regions (in Region 2, this band is also allocated to the fixed-satellite service);

b) that the allocation to the broadcasting-satellite service in Region 1 is extended to 12.5 GHz;

c) that there may be advantages to all services if a uniform allocation was made to the broadcasting-satellite service in all Regions;

d) that Administrations may need to make an objective decision on the use by the broadcasting-satellite service of the band 12.2-12.5 GHz in Regions 2 and 3;

invites the CCIR

1. to study the technical and operational factors affecting the use of the 11.7-12.5 GHz band by appropriate services;

2. to complete the studies with a view to preparing a report by the Special Joint Meeting of CCIR Study Groups in preparation for the World Administrative Radio Conference (RR) 1979.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to
Document No. 251-E
10 February 1977
Original : English

PLENARY MEETING

MINUTES
OF THE
FIFTH PLENARY MEETING

Replace the intervention by the delegate of Afghanistan on page 10
by the following :

"The delegate of Afghanistan, referring to the requirement of
Saudi Arabia (Document No. 206), made the statement reproduced in Annex 3"
and add the attached annex.

Annex : 3



A N N E X 3

STATEMENT BY THE DELEGATE OF AFGHANISTAN

Afghanistan being an Islamic country has always fully supported the ideas and proposals put forward in different international or regional gatherings in order to recover brotherhood and close good relations for the interest and desire of the Islamic world, which is a manifest of Islam.

With regard to the proposal of Saudi Arabia for beams from the required satellites to cover a number of Islamic countries in order to prepare a special service which will be entirely and purely a religious programme containing religious events such as Haj and Qoran recitals, etc., the delegation of the Republic of Afghanistan has considered and paid special attention to the matter and its delegation strongly and with sympathy supports the above proposal in principle. However, due to certain technical questions which are foreseen, our delegation is not at the moment in the position to give a definite view on the matter. Of course, in the near future we shall inform the concerned brother Islamic countries, particularly the respective authority of Saudi Arabia.

I would further like to mention that until the above questions have been clarified, the delegation of the Republic of Afghanistan is of the opinion that we are ready to discuss the matter for such a programme by bilateral agreement.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 251-E

8 February 1977

Original : English

PLENARY MEETING

MINUTES

OF THE

FIFTH PLENARY MEETING

Wednesday, 2 February 1977, at 1600 hrs
and Thursday, 3 February 1977, at 0915 hrs

Chairman : Mr. Ib LØNBERG (Denmark)

Documents Nos.

- | | |
|--|--------------------------|
| 1. Approval of the minutes of the Third Plenary Meeting | 167 |
| 2. First and second series of texts submitted by the Editorial Committee | B1, B2 |
| 3. Documents submitted by Committee 4 | 159, 177(+ Corr.1 and 2) |
| 4. Coordination between Regions 1 and 3 and Region 2 | |
| 5. Sovereignty over the geostationary orbit | |
| 6. Proposal by the Chairman for continuation of the planning work | 206, 207 |
| 7. Validity of the Plan | |



1. Approval of the minutes of the Third Plenary Meeting (Document No. 167)

The delegate of Colombia requested that page 4 be amended as follows :

Replace the end of his intervention and the footnote referring to Document No. 121 as follows :

"... the equatorial countries have decided to submit the following working document for consideration by the Conference.

Colombia, Congo, Ecuador, Gabon, Kenya, Uganda and Zaire.

With reference to the contents of Document No. 103 submitted to Committee 5, we note that some administrations have requested orbital positions for their satellites that are located within the geographical coordinates corresponding to the territorial boundaries of the equatorial countries.

We wish to inform those administrations and the Conference that the positioning of any such geostationary satellite is subject to the prior consent of the equatorial country concerned and to its national legislation.

In the event of such consent not being sought or obtained, the equatorial countries will be obliged to enforce the relevant national laws, with all the consequences that this might entail, resorting to any technical or other means at their disposal."

The minutes were approved, with that amendment.

2. Texts submitted by the Editorial Committee

First series (B.1)

The Chairman of Committee 8 indicated that the French and Spanish versions of Document No. 133(Rev.1) had been aligned on the English, in conformity with the decision taken at the preceding Plenary Meeting, that the title was to be left in abeyance, as was the correct abbreviation in French and Spanish, pending a decision by Committee 6, that the Editorial Committee had considered the words "in plenary session" at the end of sub-paragraph b) to be redundant, and that a decision was required on the dates "by September 1977" and "around September 1977".

The Chairman of Committee 7 said that the date on page B.1 - 2 should be aligned to that in the Resolution, the discrepancy having arisen because Committee 7 had passed the first text to the Editorial Committee without waiting for the results of the discussions on the Resolution.

It was therefore agreed that the date in sub-paragraph a) should read : "shall be published by September 1977" and that the phrase referring to the Resolution be deleted.

The first series of texts submitted by the Editorial Committee, as amended, were approved at first reading.

Second series (B.2)

Following a suggestion by the Chairman of Committee 4, in agreement with the CCIR, it was agreed to defer consideration of Document (B.2) (Recommendation No. AA) and to examine all texts containing Recommendations to the CCIR at the same time.

The Chairman pointed out that the work of the Conference was already behind schedule and urged all Committees and Working Groups to do their utmost to speed up the forwarding of texts to the Editorial Committee.

3. Documents submitted by Committee 4

Third Report of Committee 4 (Document No. 159)

The Chairman invited delegations to approve the technical bases for planning and not to dwell on editorial points which would be corrected systematically.

The Chairman of Working Group 4A said that the penultimate sentence of point 3 on page 6 should be corrected as follows :

"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".

The Chairman of Committee 5 asked for the sentence immediately following the heading of the Annex to be left in abeyance as planning results might make the figure unrealistic.

The Chairman of Committee 6 said that discussions in his Committee might lead to a new definition of service area and he therefore requested that that definition be considered at a later meeting.

Document No. 159 was approved, as amended, subject to re-consideration of the two above-mentioned points.

Fourth Report of Committee 4 (Document No. 177 + Corr.1 and 2)

The Secretary of Committee 4 pointed out a minor correction to the diagram in the English version (page 10) and said that the following sentence should be added to the French and Spanish texts (bottom of page 8 and page 9 respectively) to align it to the English : "La valeur correspondante pour un brouillage simple est 18 dB."

It was agreed that the two paragraphs on page 6 referring to the CCIR should be deleted and be incorporated into the single presentation of Recommendations to the CCIR.

Document No. 177 + Corr.1 and 2 were approved, as amended.

4. Coordination between Regions 1 and 3 and Region 2

The delegate of Brazil recalled that the 1971 Space Conference had agreed that the 11.7 - 12.2 GHz band could be used by Administrations in Region 2 for Fixed-Satellite Services but it appeared clear that when the planning work was completed some countries in Region 2 would not be able to use those services. His Administration, for instance, wished to use the band in question for both Fixed and Broadcasting-Satellite Services and he proposed that either a limit be fixed (25⁰W) for the Broadcasting-Satellite Services in Regions 1 and 3 or a limit be fixed for satellites and for the power flux-density radiated in Regions 1 and 3. He preferred the latter solution, but a plan that did not contain one or the other would be unacceptable to his delegation.

The Chairman of Committee 5 suggested that Working Group 5C would be the appropriate body to deal with such a question, particularly as it was due to meet the following day.

The delegate of Argentina considered those arguments clear and convincing; he intended to participate actively in the Working Group mentioned in an attempt to reach a satisfactory solution.

The delegate of Senegal said that coordination between Regions 1 and 2 was of great concern to African countries which had based their requirements on the constraints imposed by the eclipse and the desire to form a group, for obvious and valid reasons. He was aware that those requirements raised problems for Region 2 but an over-hasty modification would have most serious consequences on the plan.

The delegate of Algeria shared the concern of Senegal. Coordination should not be to the detriment of West Africa and he urged delegations to take an overall view of the plan.

The delegate of Canada was also concerned at the impact that Region 1 planning might have on the implementation of Region 2 Fixed and Broadcasting-Satellite Systems but he hoped that, with recourse to technology, the Conference would be able to find a solution. He pointed out that discussions on interregional sharing had originated in Working Group 4B.

The delegate of the United States of America, supporting the views of Brazil and Argentina, added that progress was being made in Working Group 4B and its drafting groups.

At the Chairman's suggestion, it was decided to hold a joint meeting of Working Groups 4B and 5C, attended also by the Chairman of Working Group 5B.

5. Sovereignty over the geostationary orbit

The delegate of Colombia made the statement reproduced in Annex 1.

The delegate of the United Kingdom said that the Conference was to decide upon frequency assignments and beams in the geostationary orbit and was not concerned with locating any physical objects in space, that being left to the Administrations concerned. His delegation agreed with the comments made in the Australian document that questions of sovereignty were being discussed in the United Nations and were thus not within the competence of the current Conference.

The delegate of Japan also considered that the Conference was not competent to deal with the question.

The delegate of the United States of America made the statement reproduced in Annex 2, in support of the views expressed by the delegations of Australia and the United Kingdom.

6. Proposal by the Chairman for continuation of the planning work

The Chairman informed the meeting that he had held discussions with the delegation of Saudi Arabia with a view to finding a solution for a special requirement for an Islamic programme, submitted on behalf of several countries. He expressed his appreciation of the way in which the Saudi Arabian delegation had put forward the request and said that he had deep sympathy for the reasons for it.

He thought it had been understood that only minor corrections were to be made, and in particular reductions in requirements; however, Document No. 103(Rev.2) contained - in addition to a number of reductions and others which were expected - certain supplementary requirements in excess of five channels. He wondered, therefore, whether the planning work could not be carried out on two bases in parallel; firstly, the contents of the above-

mentioned document minus such additional requirements, and secondly the full contents of that document plus the special requirement submitted by Saudi Arabia. The second option would demonstrate the consequences of consideration of excessive requirements.

The delegate of the USSR saw little value in such a course of action as Sub-Group 5A2 had already prepared a plan of the first type mentioned by the Chairman and even in that the protection ratios were not met. It was unfortunate that Document No. 103(Rev.2) did not represent the scale of reductions hoped for by the Chairman of Committee 5 and the meeting was not in a position to take a decision on how the planning should proceed.

He suggested, therefore, that the Chairman of the Conference, together with the Chairmen of Committee 5 and Working Group 5A be given time to work out proposals for submission to the Plenary in the form of a document.

The delegate of the United Kingdom supported that suggestion. He pointed out that further reductions were still awaited and he was doubtful about the effect of adding the extra requirement of one group of countries only, when certain other countries had put in increased requirements and then withdrawn them.

The Chairman of Committee 5 said that misunderstanding may have been caused by the fact that certain reductions that had been made were not easily apparent in the document, nor were the Notes from a number of delegations which were not in a form suitable for printing by the computer. It was unfortunate that some countries in Regions 1 and 3 had seen fit to submit requirements for extended beams; as he understood the situation, the basis for planning was Document No. 103(Rev.2) minus the increased requirements.

The Technical Secretary confirmed that many reductions which had in fact been notified did not appear as such in the document. For practical reasons it had not been possible to reproduce all the texts which were the outcome of negotiations but all the changes had been notified promptly to the Chairmen of Committee 5 and Working Group 5A.

The Chairman proposed that the meeting be suspended to allow discussion and the drafting of a document to be submitted to the Plenary the following morning.

That proposal was supported by the delegate of the USSR and by the delegate of Saudi Arabia who wished to thank the Chairman for his handling of the question of a requirement for a special Islamic programme.

The meeting was adjourned at 1810 hours and resumed at 0915 hours on Thursday, 3 February.

The Chairman introduced his note (Document No. 207) setting out his proposal for the planning procedure to be followed by the Conference in the light of the discussion the previous day and the consultations that had been held after the adjournment. The latter had clarified the position and, contrary to what had at first been reported to him, it appeared that Document No. 103(Rev.2) contained virtually no new requirements additional to those in Document No. 103(Rev.1) and its Addenda. Thus the purport of the first paragraph in his note ought to be clear. The purpose of the procedure he now proposed as stated in the second paragraph was to try and find a way of satisfying, at least to some extent and within the technical limits of the plan, the requirements of the Saudi Arabian delegation which had adopted a most cooperative attitude during the consultations.

The delegate of the Sudan drew attention to Document No. 206 on the Islamic programme coverage, submitted by twenty-three delegations in support of the proposal by the Administration of Saudi Arabia. He was surprised that their requirements which had been submitted within the time-limits specified had not been included in Document No. 103(Rev.1) or taken into account in the planning work of the Conference. They were now being treated as additional requirements and it was being implied that they might also cause interference problems although they were for only about twenty channels, distributed over seven orbital positions. The requirements were not for super beams and would coincide with beams already servicing the countries in question. Thus, no interference would be caused so the Saudi Arabian proposal should be considered and any difficulties resolved by negotiation and conciliation.

The Chairman observed that technical issues were not really for discussion in the Plenary. Any data on the feasibility of including the Saudi Arabian requirements was passed on immediately to the appropriate planning group.

The delegates of Egypt, Kuwait, Mauritania, Senegal, Oman, Indonesia, Jordan and Yemen endorsed the observations by the delegate of the Sudan and urged the Conference to make every effort to meet the Saudi Arabian requirements.

The delegate of Pakistan asked what would be the status of a feasibility study : presumably the requirements were regarded as valid and if so, should be incorporated in Document No. 103(Rev.2).

The Chairman explained that for lack of time there could be no question of a feasibility study. Hence, his proposal to have recourse to the normal planning procedure to see how many of the channels requested could be accommodated in the plan.

The delegate of Saudi Arabia emphasized that the requirements referred to in Document No. 206 were neither new nor additional and had been submitted on 20 January as a super-beam coverage after being prepared with the help of IFRB experts. As a sign of its wish to cooperate his delegation had submitted proposals for individual small beams so as to minimize any expected interference with other channels and had submitted those requirements on 27 January. To his regret the Saudi Arabia requirements had not been included in any of the documents so far issued to the Conference and not even in Document No. 103 or its Corrigenda and therefore he had been constrained to ask for those important requirements to be included in the planning work.

The delegate of Malaysia, supporting the previous speaker, expressed concern at the omission of requirements submitted in the prescribed manner from Document No. 103 and its revisions. Double standards must not be applied to requirements for geographical reasons.

The Chairman said, all participants in the Conference knew that if a draft plan were to be prepared in the time left, the technical experts must work on a basis that was realistic and likely to give generally acceptable results. Everyone was aware of the outcome of the studies and exercises based on the two lines of approach adopted by Committee 5, which had revealed what was and was not feasible. Within the group of Islamic countries concerned, there were some which, for the time being, had submitted requirements far in excess of what was technically possible if they wished neighbouring countries to be treated on an equitable footing. For that reason it seemed worth continuing consultations with certain countries to ascertain whether or not they were interested in achieving a workable plan by showing a willingness to reduce what might be termed "excessive" requirements so that other countries in the same area could be brought up to the so-called "base line". The experts had made it clear to him that unless a practical starting point were taken, the ensuing negotiations whether bilateral or otherwise would not produce a draft plan before the end of the Conference. Therefore, he appealed for confidence in him as Chairman and support for the proposal which at that juncture seemed to offer the only constructive way of proceeding.

The Chairman of Working Group 5A, commenting on the technical aspects from the planning angle of the evidence presented by the working groups, said that Working Group 5A2 had been given the task of preparing a plan that met all the requirements submitted to the Conference. Whatever the reason, the requirements of Saudi Arabia had not been included. The outcome had been a plan with such high levels of harmful interferences that it was completely unworkable for countries wishing to operate successful Broadcasting-Satellite Services. A second study had been undertaken by Working Group 5A2 giving countries a minimum or "base line" requirement, i.e., five channels in a national coverage beam or no more than asked for if less than five. That had given an average of four channels in Region 3. The results of that study which had been presented to the Conference for examination had clearly shown greatly reduced interference levels, which indicated beyond doubt that if the Conference wanted a plan with modest levels of harmful interferences then an average of five channels in Region 1 and of four in Region 3 was the maximum requirement that could be accommodated.

At the present stage, it was also important to remember that the studies had taken eight working days to complete.

Referring to the Islamic countries' requirements, he said that in some cases the averages would be consistent with a successful plan but in a larger number the requirements would bring the averages up to six channels in the coverage zone and that would produce much harmful interference not only between countries of that group but also between many other countries in Africa, Europe and Asia.

The Islamic countries' requirements could be added to the plan of Working Group 5A2 but the exercise would be futile because the consequential high levels of interference would be unacceptable to the majority of delegations. Alternatively, they could be added to the plan of Working Group 5A3 but that would be artificial because many countries had reduced their needed requirements only in order to contribute to a plan that would be successful and free of interferences. If further requirements were added, the Conference would be back to the position of having to add them all.

Accordingly, the Chairman's formula had been worked out in consultation with representatives of certain countries in an attempt to see where concessions could be made. There was no time to speculate on or to try out various combinations and the Conference must work on one final and definitive basis because in his estimation the experts would need five clear working days to produce a plan that would give all countries at least the average requirements and more important still, good quality channels.

The delegate of Italy, speaking as Chairman of Committee 5, agreed with the previous speaker. The allocation of six channels to some countries would require a greater number of orbital positions thus raising serious problems.

The delegate of the United Kingdom emphasized that his delegation could not support the Chairman's proposal to add the Saudi Arabian requirements to Document No. 103(Rev.2) because unless the Conference produced a plan for Regions 1 and 3 it would lose prestige on the international level. It was important for the Union to maintain its position as the specialized agency of the United Nations for the regulation of the frequency spectrum for space radio communications and show itself capable of drawing up a viable plan. Vital days would be lost and failure inevitable if the Conference tried to accommodate a demand for six channels per country when others had accepted five or even four. The Plenary must not postpone the decision on such a crucial issue and possibly a secret ballot would have to be taken on Document No. 207.

The Chairman explained that the purpose of his proposal was for work to start immediately on investigating the possibilities of achieving a more balanced distribution of channels in a certain area. There was no real conflict between the United Kingdom view and his own on the need to proceed without delay.

The delegate of Saudi Arabia regretted that he could not agree with the United Kingdom delegate : the principle of equitable channel distribution had not been observed in Document No. 103(Rev.2).

The delegate of Senegal said that too much prominence had been given to possible difficulties over the Saudi Arabian delegation's proposal which were only a matter of planning. There were others connected with harmful interference notably in the European area. There was no reason why it should be impossible

to determine for each region where requirements were too high and by means of consultation to achieve concessions and so to arrive at a valid plan.

The delegate of Mauritania said he could not accept the United Kingdom delegate's contention that Document No. 103(Rev.2) provided a balanced and equitable basis for planning. In fact it needed considerable modification and improvement. For example, some pages had been included for South Africa although the last administrative conference had categorically rejected that Administration's requirements.

There were cases where mere territorial size did not justify the allocation of several orbital positions and then the average number of channels could be reduced. On the other hand, there were also special cases when multilingual needs required coverage and such requirements must be met. The Saudi Arabian proposal closely concerned a whole group of Islamic countries for important religious, cultural and social reasons, which could not be ignored and to satisfy which a single channel could not suffice. The wishes of African countries whose aim was to achieve unity through religious and economic ties must be taken into account. If the Saudi Arabian proposal as such could not be incorporated in the plan some countries, particularly those with up to seven channels, might be asked to reduce their requirements. All the relevant facts would have to be reviewed.

The delegate of the Sudan said that the fears of congestion in certain areas had been exaggerated.

The delegate of Afghanistan said that as an Islamic country, Afghanistan consistently supported proposals in international or regional bodies that promoted the interests of the Islamic world. Accordingly, he strongly endorsed in principle the Saudi Arabian proposal which concerned a purely religious programme. However, because of certain technical problems he could not express a final opinion yet. Once they were resolved his Administration would be ready to discuss the proposed programme on a bilateral basis and the Administrations of Saudi Arabia and other Islamic countries would be informed of the position shortly.

The Chairman said that he had hoped for a measure of consensus on the compromise outlined in his proposal, which would enable the experts to determine what was feasible in the time available.

The planning groups could report orally or in writing on progress as they went along and those reports could immediately be transmitted to the conciliation group or himself for action.

The delegate of the United Kingdom said that if the Chairman's intention was to try and secure a more balanced distribution of channels in certain geographical areas the planning work could proceed provided the outcome of the consultations was not an increase in the total number of channels. He gave a warning that it would take five working days to demonstrate whether or not the allocation of a sixth channel to a large number of countries could be successful.

His comments had been directed purely to technical and engineering difficulties and not to the content of the programme envisaged by the Islamic group of countries. If some administrations were willing to reduce requirements perhaps some adjustments could be made that were consistent with a good plan and on that understanding the Conference could proceed on the lines outlined on the Chairman's proposal (Document No. 207).

It was so decided.

7. Validity of the Plan

The delegate of India raised the question of the validity of the plan. Rapid technological change argued for a short life and economic considerations for the longest life possible, so it was clear that some compromise would have to be sought.

The Chairman said that he was not sure whether that point should be handled first by Committee 5 or by Committee 6 so he would ask the advice of the Steering Committee.

The meeting rose at 1025 hours.

The Secretary-General :

M. MILI

The Chairman :

Ib LØNBERG

Annexes : 2

A N N E X 1

STATEMENT BY THE DELEGATION OF COLOMBIA

In view of the statements made in Document No. 181, from Australia, the delegation of Colombia considers it necessary to state :

1. The Bogotá Declaration, which refers to the provisions of the Treaty on the Peaceful Uses of Outer Space, was submitted to the Conference solely for information purposes and not with a view to "seeking recognition of national sovereignty in relation to the use of the geostationary satellite orbit" as is stated in Document No. 181.

It is, however, true to say - and the delegations of the equatorial countries have already made the point - that this subject goes beyond the competence of this Conference.

We should like, nevertheless, to draw attention to the fact that the present trend of the Conference's work is for orbital segments to be assigned on a permanent basis, i.e. in perpetuity, in Regions 1 and 3.

Despite all the statements made and the principles invoked during the discussions concerning the provisional nature and the future revision of the assignments, the same thing is happening in Region 2.

The fact is that the establishment of a whole broadcasting-satellite system on the basis of the plans which may emerge from this Conference inevitably involves enormous investments on the part of the administrations and/or recognized private operating agencies which would only be justified if there were some guarantee that the system would have a certain durability.

Moreover, the technical structure based on the plans which this Conference may propose cannot be changed from one day to the next, so that there can be no question of the system being flexible. In reality, therefore, orbital assignments are permanent and not provisional, as some people claim.

If, as the Australian document seems to imply, the geostationary orbit belongs to "outer space" any permanent orbital assignment would constitute a flagrant and manifest violation of Article 2 of the 1967 Outer Space Treaty on the part of the States which ratified it.

If this Conference makes assignments of orbital segments, this must imply that the geostationary orbit is not considered as forming part of outer space and that, therefore, the provisions of Article 2 of the 1967 Treaty are not applicable.

2. With regard to the second point in the Australian document concerning the use of the geostationary orbit for the Broadcasting-Satellite Service or for any other service provided by geostationary satellites, we consider that Article 33, paragraph 131, quoted by the Australian delegation, provides that the use of frequency bands and of the geostationary orbit must be "in conformity

with the provisions of the Radio Regulations". The decisions adopted by this Conference must in every case be in line with the provisions of the Convention (Article 7).

This means that individual articles or paragraphs of the Regulations or of the Convention can in no case be invoked, applied or interpreted in isolation, as some seem to be attempting to do.

The delegation of Colombia wishes to put on record its concern at the fact that the 1977 World Administrative Broadcasting-Satellite Conference, responsible for planning the service in question, has chosen to divide up the overall study of the location of geostationary satellites, incorporating it sectorially into the study of specifically regional subjects included in the agenda, so that it is now broken down between two sub-committees of Committee 5, one for Region 2 and the other for Regions 1 and 3. This has been done in disregard of the provisions of Articles 31 and 32 of the Convention insofar as these apply to the generality of Members since the arrangements arrived at may be clearly discriminatory, or even counter-productive in the case of Members affected by the durability of such assignments, as is the case with those of Regions 1 and 3. This applies in particular to a certain "harmful interference" which may characterize such services if they are established without the full consent of other Members and in violation of the provisions of the Convention and the Regulations.

At the same time, No. 962 of the Regulations stipulates that "The operation of a broadcasting service by mobile stations at sea or over the sea is prohibited"; while No. 422 prohibits broadcasting from objects "outside national territories".

The delegation of Colombia accordingly considers that any decisions of worldwide application adopted by the Conference on the planning of direct satellite broadcasting should be clearly and explicitly based on the conventional and traditional definitions enshrined in successive Conventions and Regulations, whose "terms ... shall have the meanings assigned to them", as Article 51 of the Convention states.

Terrestrial radiocommunications throughout the universe are governed by the International Telecommunication Convention and the Radio Regulations. There can therefore be no doubt that direct broadcasting from satellites is clearly authorized, but only from fixed radiocommunication stations, i.e., as the term implies, from stationary ones, but not from mobile stations.

The Colombian delegation therefore takes the view that there is no alternative but to state formally the undeniable fact that geostationary satellites necessarily constitute fixed radiocommunication stations within the meaning of the relevant definitions, whether intended for television, communications or any other purpose involving the use of transmitters, receivers, telemetry equipment, etc. The fact that they turn with the Earth does not make them "mobile", since they "turn" synchronously with all the other fixed stations situated on the Earth's surface, both sets of stations being virtually identical from that standpoint.

The delegation of Colombia would lastly point out that it drew attention at the 1963 Space Conference in Geneva to the future implications of these matters which are now becoming topical and urgent after having been comprehensively analyzed and specified in the Bogotá Declaration, signed by all the equatorial countries.

It also wishes to state that the Government of Colombia is not claiming sovereign rights in space since there can be no doubt about the sovereignty it has always exercised within its national space defined as the vertical projection of its territory, which includes the equator between the longitudes of 70°04'33" and 75°45'15" West of Greenwich. Fixed radio-communication stations, i.e. for the purpose in question, geostationary satellites, located in the corresponding segment of the geostationary orbit between the said geographical longitudes, may only be positioned in this space subject to compliance with the legal requirements laid down in its national regulations, which permit any administration, following previous agreement, to obtain the technological facilities it may require to provide services. Thus, the Colombian Government is fully complying with the requirements of equity in the acquiring of access to the communication and broadcasting services which may in future be provided by geostationary satellites located within its territory.

A N N E X 2

STATEMENT BY THE UNITED STATES OF AMERICA

Claims have been advanced at the present Conference that those portions of geosynchronous orbital positions lying over land should be considered as within the airspace or otherwise within the national jurisdiction of the subjacent State.

The United States shares the view that this matter is outside the competence of the present Conference. The question of sovereignty over the geostationary orbit is not included in the agenda for this Conference and it should not therefore be discussed.

Regarding the substance of the claims, the United States delegation would like to bring to the attention of the Conference the view of its Government that geosynchronous as well as other orbits of artificial earth satellites lie in outer space beyond national sovereignty, and, in the words of Article II of the 1967 Outer Space Treaty, are therefore "not subject to national appropriation by claim of sovereignty, by means of use or occupation, or by any other means".

Article I of that Treaty specifically states that "Outer space including the Moon and other celestial bodies, shall be free for exploration and use by all States without discrimination of any kind, on a basis of equality and in accordance with international law ...". In the view of the United States Government, both the codification of and practice under international law, including the 1967 Treaty, clearly established that the area where geosynchronous satellites may be positioned is beyond any national territory or sovereign jurisdiction.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 252-E

8 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For the Republic of the Ivory Coast

In signing the Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service (Geneva, 1977), the Delegation of the Republic of the Ivory Coast reserves its Government's right to take any measures it may deem necessary to safeguard its interests if one or more Members of the Union should formulate reservations liable to infringe upon the sovereign rights of the Republic of the Ivory Coast.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 253-E

9 February 1977

Original : English

COMMITTEE 5

United Kingdom

DRAFT RESOLUTION

1. In order to provide for experimental broadcasting-satellite systems to be set up as a cooperative measure by two or more administrations there is a need to designate two spare frequency channels in the Plan for this purpose.
2. A draft Resolution to this effect is associated for approval by the Plenary.

Annex : 1



DRAFT RESOLUTION

Relating to the use of experimental broadcasting satellites
by administrations in Regions 1 and 3

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that Resolution No. Spa2 - 2 provides that stations in the
Broadcasting-Satellite Service shall be established and operated in accordance
with agreements and associated Plans adopted by a World or Regional
Administrative Conference;

b) that such an agreement and associated Plan has been adopted
for the Broadcasting-Satellite Service for Regions 1 and 3;

recognizing

a) that the Broadcasting-Satellite Service is a new service and
that administrations have little, if any, experience of the operational use
of satellites for broadcasting purposes;

b) that in order to reduce the cost of using broadcasting satellites
for experimental purposes to gain experience before establishing an operational
system, several administrations may wish to group together and set up an
experimental system serving, in turn, each administration within the group;

c) that such operation would not be in strict accordance with the
Plan and that special provision needs to be made to enable groups of
administrations to carry out such experimental work;

d) that a period of ten years from the coming into force of the
Final Acts of the Conference would be adequate to provide experience of the
use of satellites for broadcasting purposes;

resolves

1. that two frequency channels in the Plan channel Nos. 1 7
shall be designated for use where two, or more, administrations wish to
establish an experimental broadcasting-satellite system;

2. that the channels shall be used on a geostationary orbital
position allocated in the Plan to one of the administrations concerned;

3. that the proposed use of one or both of these channels shall be
notified to the IFRB for publication in its weekly circular;

4. that all arrangements entered into for the use of these channels
for experimental satellite broadcasting shall cease on 31 December 1988.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 254(Rev.1)-E
10 February 1977
Original : English/Spanish

COMMITTEE 5

Third report of Working Group 5B to Committee 5

(Planning)

PLANNING EXERCISES FOR REGION 2

Introduction

As part of its work at the Conference, Working Group 5B set up a Sub-Group to carry out, with the help of the IFRB, some planning exercises for Region 2 based on proposals by the delegations of Cuba and Venezuela and some preliminary work undertaken by the delegation of Canada. The purpose of these planning exercises was to verify estimates of the capacity of the geostationary orbit and 11.7 to 12.2 GHz frequency band, to assist Region 2 countries in their understanding of the flexibility of the phased approach adopted by consensus in Working Group 5B (and forming part of the Final Acts of the Conference), and to provide information that might be useful to Region 2 delegations in their preparations for the future Regional Conference.

In carrying out these exercises, a great number of assumptions had to be made by the IFRB in regard to services to territories of Administrations, whether or not they were represented at the Conference and whether or not they had submitted detailed requirements. No attempt was made to obtain the specific approval of delegations nor their Administrations for these assumptions, nor for the adherence of the planning exercises to No. 428A of the Radio Regulations. The present document presents the results of one of the planning exercises and is submitted for the information of delegations at the Conference.

Description

The planning exercise for Region 2 consists in assigning orbital positions, frequency channels and types of polarization and in defining service areas for the various Administrations in the Region.

So far as possible, the exercise is based on the decisions adopted by the Conference.

Three types of Administration were considered :



- 1) those which have submitted their requirements to the IFRB;
- 2) those which have not submitted requirements to the IFRB and are not represented at the Conference; and
- 3) those which have not submitted requirements to the IFRB, but are represented at the Conference.

- Although the orbital arc allocated to the Broadcasting-Satellite Service has two segments - that between 75° W and 100° W and that between 140° W and 170° W - only the eastern portion was considered because insufficient data are available for the western segment. Mexico has been regarded as falling within the eastern segment although, if the western segment had been considered, that country would have used it. The case of Greenland has not been considered in the planning exercise.

The principles agreed by the Sub-Group as a basis for the planning exercise are set forth in Annex 1 to this document.

The results obtained are set forth in Annex 2.

B.C. BLEVIS
Chairman of Working Group 5B

Annexes : 2

A N N E X 1

PLANNING PRINCIPLES

1. Guard bands

Two guard bands are proposed to protect services operating in adjacent frequency bands against spurious radiations, as shown in the table :

Guard band at lower end of the band (11.7 GHz)	Guard band at upper end of the band (12.2 GHz)
12 MHz	9 MHz

These values are based on a maximum value of the e.i.r.p. in the beam centre of 63 dBW (individual reception) and a filter attenuation coefficient of 2 dB/MHz.

2. Channel spacing

A spacing of 20 MHz between channels has been adopted.

3. Total number of channels

In view of the preceding points, there would be 24 channels in the total bandwidth of 500 MHz.

4. Channels per beam and channel families

Four channels are assigned to a beam. Thus the total number of 24 channels is divided into 6 families of 4 channels each.

5. Spacing between channels serving a common antenna in a single beam

This is at least 40 MHz. To achieve this, the channels in each family are assigned alternately; the 6 families shown in the table below are identified by the number of the first channel :

FAMILY	CHANNELS
1	1,3,5,7
2	2,4,6,8
9	9,11,13,15
10	10,12,14,16
17	17,19,21,23
18	18,20,22,24

6. Protection ratios for the same channel and for the adjacent channel

The protection ratio is calculated from Figure 1, which shows the total protection ratio. Although the protection ratio shown is that required in cases where the interfering and protected signals are both FM, for the purpose of the exercise this curve has been adopted for all cases.

7. Type of reception

The exercise is based on individual reception.

8. Reference pattern of receiving antennae

Figure 2 shows the co-polar and cross-polar reference patterns for receiving antennae for individual reception used in this exercise with a ϕ_0 of 1.8° (half power beamwidth which corresponds to the minimum diameter of the antenna).

9. Reference pattern of transmitting antennae

Figure 3 shows the co-polar and cross-polar reference patterns for transmitting antennae. The value of ϕ_0 is determined by the diagonal of the ellipse in the direction in question.

10. Minimum beamwidth of a transmitting antenna

0.6° between the half power points.

11. Orbital arcs

Space stations in the Broadcasting-Satellite Service are considered as being in the following parts of the orbit :

- 75° to 100° W longitude (however, for service to Canada, the United States of America and Mexico, the relevant portion is only between 75° and 95° W longitude);
- 140° to 170° W longitude.

For the purposes of this exercise, only the eastern orbital arc was taken into consideration.

12. Orbital distribution

This is irregular, so as to obtain a configuration giving minimum interference. To achieve this, a regular separation of 4 degrees between orbital positions was taken as a first approximation; the orbital positions were then modified wherever this would lead to a reduction of interference.

13. Definition of the ellipses

These were divided into three categories, according to the three types of administrations :

13.1 In the case of countries which had submitted requirements to the IFRB, the geographical extent and number of service areas mentioned in the requirements were respected. Where various options had been suggested by the administrations, the one giving the most favourable result from the standpoint of interference was adopted. The orbital positions requested were modified with a view to obtaining a more optimum configuration. Ellipses were redefined only in so far as they were altered by the change in orbital position. Four (4) channels were assigned to a beam.

13.2 Countries which had not submitted requirements to the IFRB and were not represented at the Conference were regarded, so far as the reduction of interference permitted, as a service area to be covered by a single 4-channel beam,

13.3 Two administrations which had not submitted requirements to the IFRB but which were represented at the Conference were considered as follows :

- a) Canada, which was considered in accordance with note A032 of Document No. 172 : i.e., as consisting of two zones. For this exercise, it was assumed by the IFRB that each zone be divided into four service areas. It was also assumed that the eastern zone would use the orbital arc 75° to 95° W and the other zone, the arc 140° to 170° W.
- b) the United States of America. Since data concerning this country's requirements were not available, it was divided into 12 service areas - a figure roughly equal to that requested by Brazil since, viewed from a geostationary satellite, the area of the United States is slightly smaller than that of Brazil. Of these 12 areas, it was assumed that four would use the orbital arc 75° to 95° W.

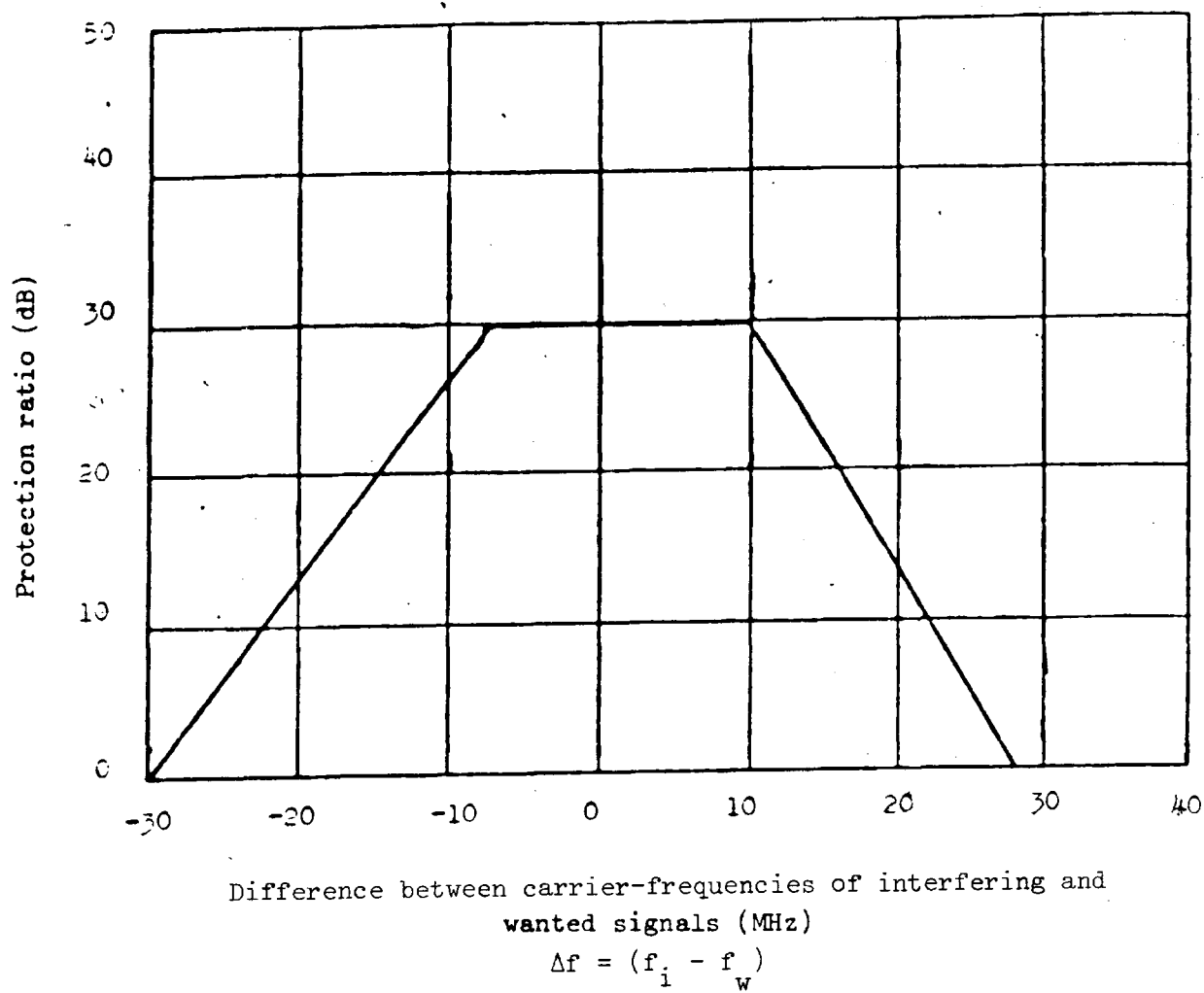


FIGURE 1

Protection ratio between two FM television signals

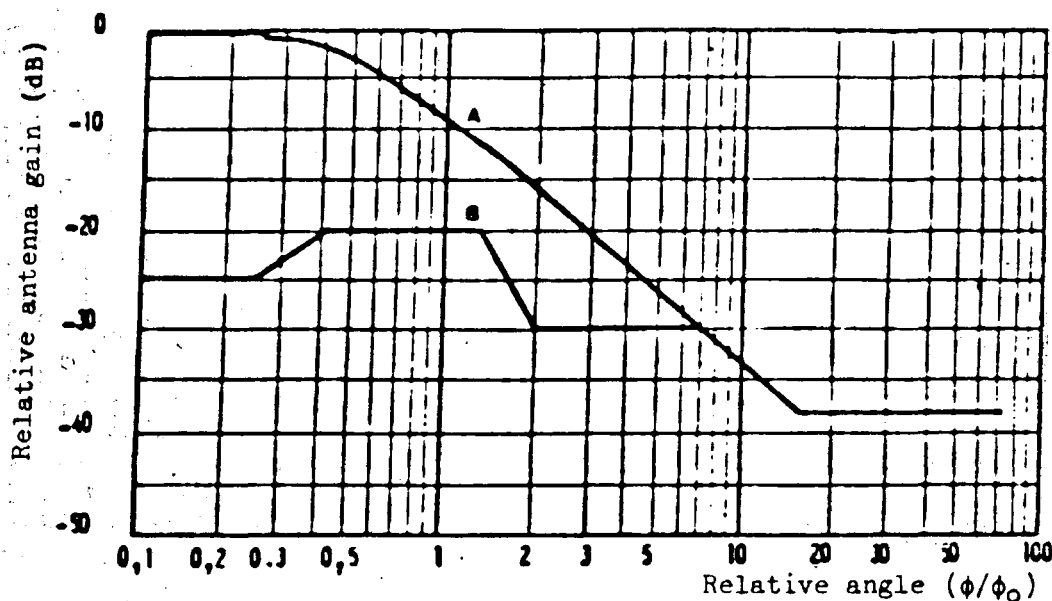


FIGURE 2

Reference patterns for co-polar and cross-polar components
for receiving antennae for individual reception in Region 2

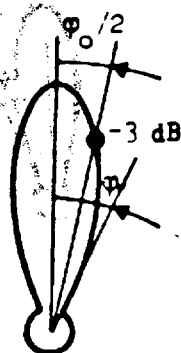
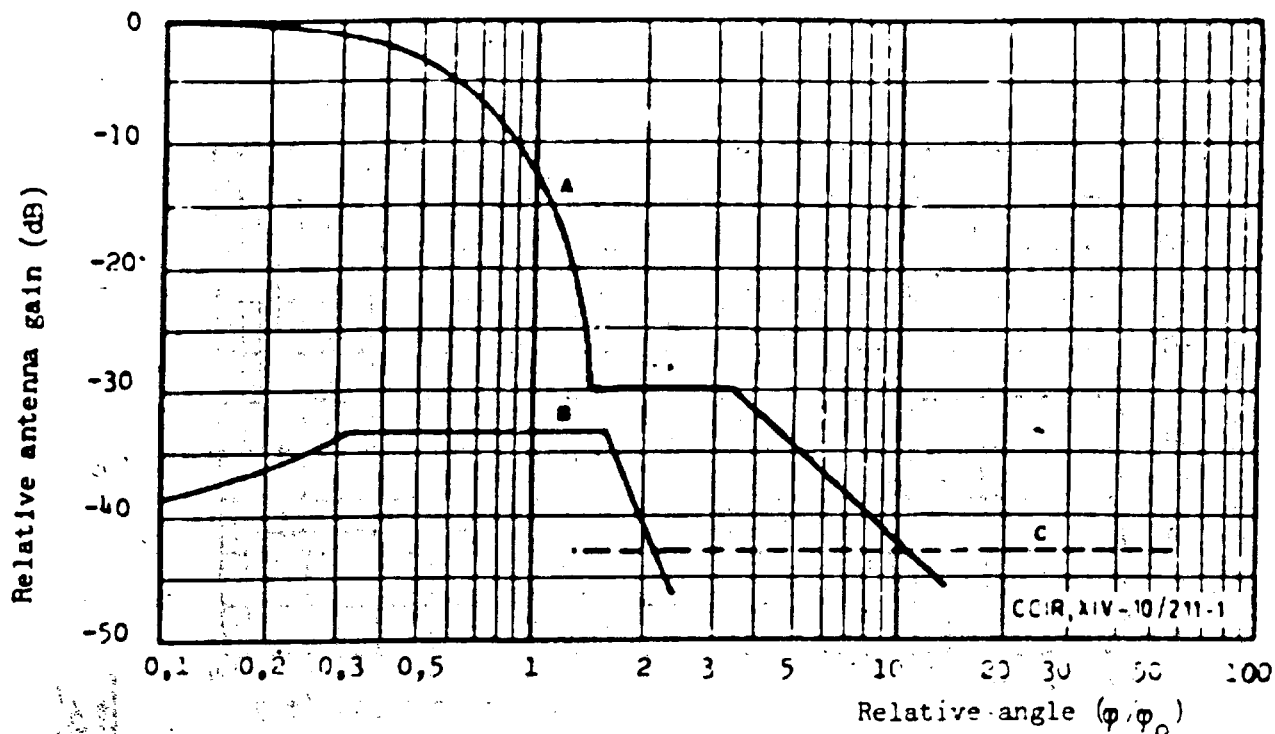


Curve A : Co-polar component without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-12 \left(\frac{\phi}{\phi_0} \right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\
 &-\left[9.0 + 20 \log_{10} \left(\frac{\phi}{\phi_0} \right) \right] && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\
 &-\left[8.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right) \right] && \text{for } 1.26 \phi_0 < \phi \leq 15.14 \phi_0 \\
 &-38 \text{ dB} && \text{for } \phi > 15.14 \phi_0
 \end{aligned}$$

Curve B : Cross-polar component

$$\begin{aligned}
 &-25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-(30 + 40 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\
 &-20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\
 &-(30 + 25 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0 \\
 &-30 && \text{until intersection with co-polar component curve; then as for} \\
 &&& \text{co-polar component}
 \end{aligned}$$



Relative antenna gain (dB)

A : Co-polar component

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \text{ for } 0 \leq \varphi \leq 1.581\varphi_0$$

$$-30 \text{ for } 1.581\varphi_0 < \varphi \leq 3.16\varphi_0$$

$$-17.5 + 25 \log_{10}\left(\frac{\varphi}{\varphi_0}\right) \text{ for } 3.16\varphi_0 < \varphi$$

after the intersection with curve C : as for curve C

B : Cross-polar component

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 0 \leq \varphi \leq 0.33\varphi_0$$

$$-33 \text{ for } 0.33\varphi_0 < \varphi \leq 1.67\varphi_0$$

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 1.67\varphi_0 < \varphi$$

after the intersection of curve C : as for curve C

C : Minus the on-axis gain

FIGURE 3

Reference patterns for co-polar and cross-polar components
of the satellite transmitting antenna

A N N E X 2RESULTS OF THE PLANNING EXERCISE FOR THE ORBITAL SEGMENT75°-100°W LONGITUDE IN REGION 2, ON THE BASIS OF THECONSIDERATIONS IN ANNEX 11. Orbital positions

Figure 1 shows the orbital positions corresponding to the various service areas.

2. Coverage of the service areas viewed from the respective orbital positions

Figures 2 to 7 show the ellipses corresponding to the service areas on maps representing the earth's surface as seen from a satellite. Since the only maps available were those corresponding to orbital positions every 5°, the various service areas were grouped together on the map closest to them. Within each service area, an identification number and the orbital position from which it is illuminated are shown.

3. Frequency channels, type of polarization, e.i.r.p. and equivalent protection margins

Figures 9 to 14 show the results of the exercise, as obtained in final form with the IFRB programme. The meaning of the columns is given in Figure 8.

<u>Orbital position</u>	<u>Country</u>	<u>No. of beam</u>
75°W	SPM	0254
	B	0202
	B	0203
	B	0204
	GDL	0095
	GUF	0096
	GUB	0360
77°W	B	0200
	B	0205
	B	0206
79°W	B	0198
	B	0199
	B	0201
	SUR	0214
	URG	0340
	ATN	0234
	ATN	0268
83°W	B	0196
	B	0197
	CAN	0349
	CAN	0350
	TRD	0342
	PRG	0257
84°W	B	0194
	B	0195
87,5°W	CLM	0289
	CLM	0324
	USA	0355
	USA	0358
	VEN	0217
89°W	PRU	0359
90°W	BOL	0019
	BOL	0273
92°W	CAN	0348
	CAN	0351
	USA	0356
	USA	0357
	MEX	0190
	MEX	0191

<u>Orbital position</u>	<u>Country</u>	<u>No. of beam</u>
92°W	HND	0347
95°W	CUB	0218
	PNR	0352
96°W	EQA	0277
	EQA	0278
	ARG	0001
	ARG	0002
	GTM	0290
98°W	BRB	0346
	DOM	0344
100°W	SLV	0221
	JMC	0341
	HNB	0343
	NCG	0353
	HTI	0354
	CTR	0345
	CHL	0208
	CHL	0263
	CHL	0264
	CHL	0265

Figure 1 - Orbital positions corresponding to service area

ELLIPSES CORRESPONDANT AUX ZONES
DE SERVICE CONSIDEREES POUR
L'EXERCICE DE PLANIFICATION

ELLIPSES CORRESPONDING TO SERVICE AREAS
CONSIDERED FOR THE PLANNING EXERCISE

ELIPSES CORRESPONDIENTES A LAS ÁREAS
DE SERVICIO CONSIDERADAS PARA EL
EJERCICIO DE PLANIFICACIÓN

(Figures 2 à 7 - voir pages suivantes)

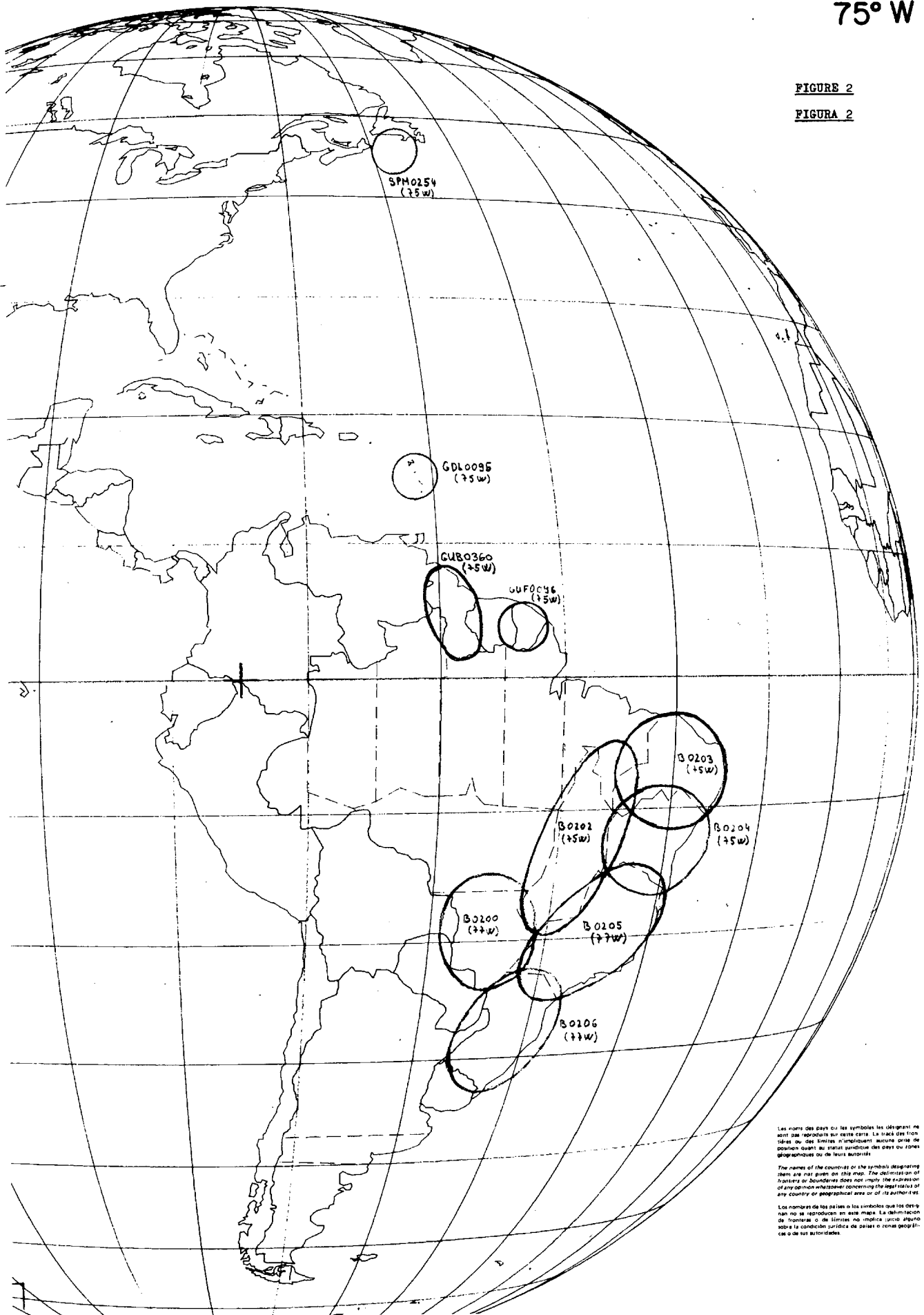
(Figures 2 to 7 below)

(Figuras 2 a 7 - a continuación)

75° W

FIGURE 2

FIGURA 2



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

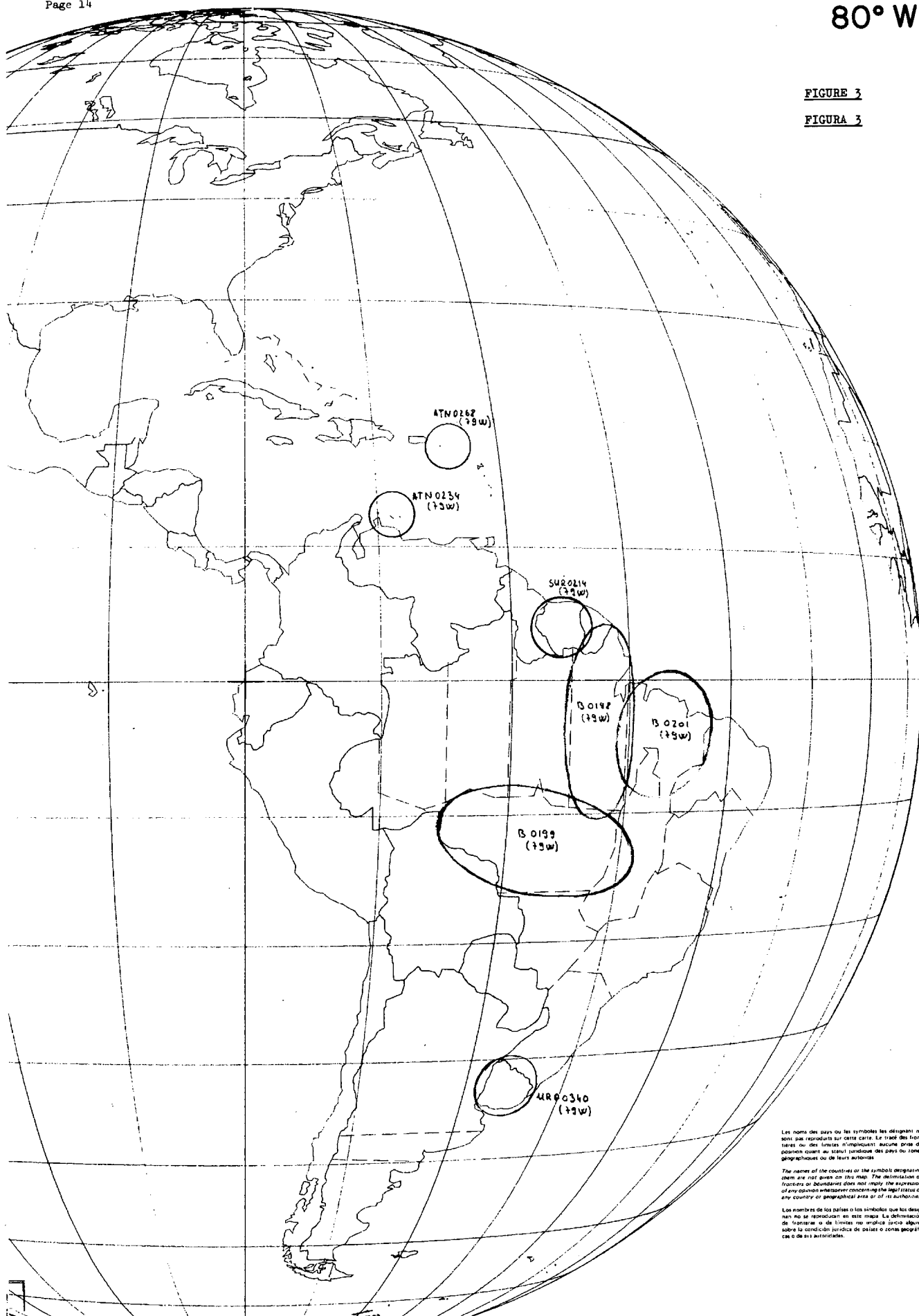
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en esta mapa. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

80° W

FIGURE 3

FIGURA 3



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

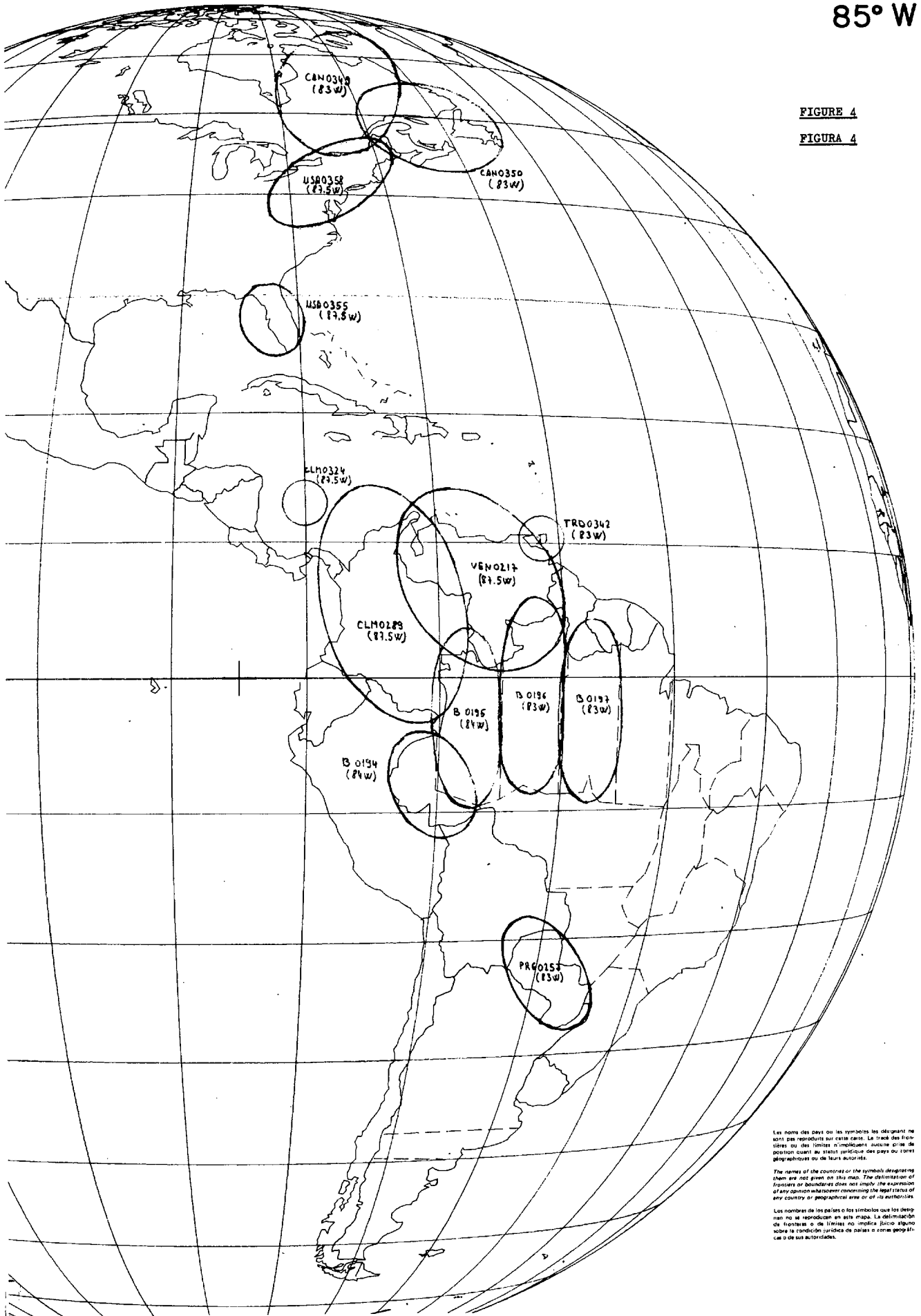
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica (ni da) alguna sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

85° W

FIGURE 4

FIGURA 4



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de líneas no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

90° W

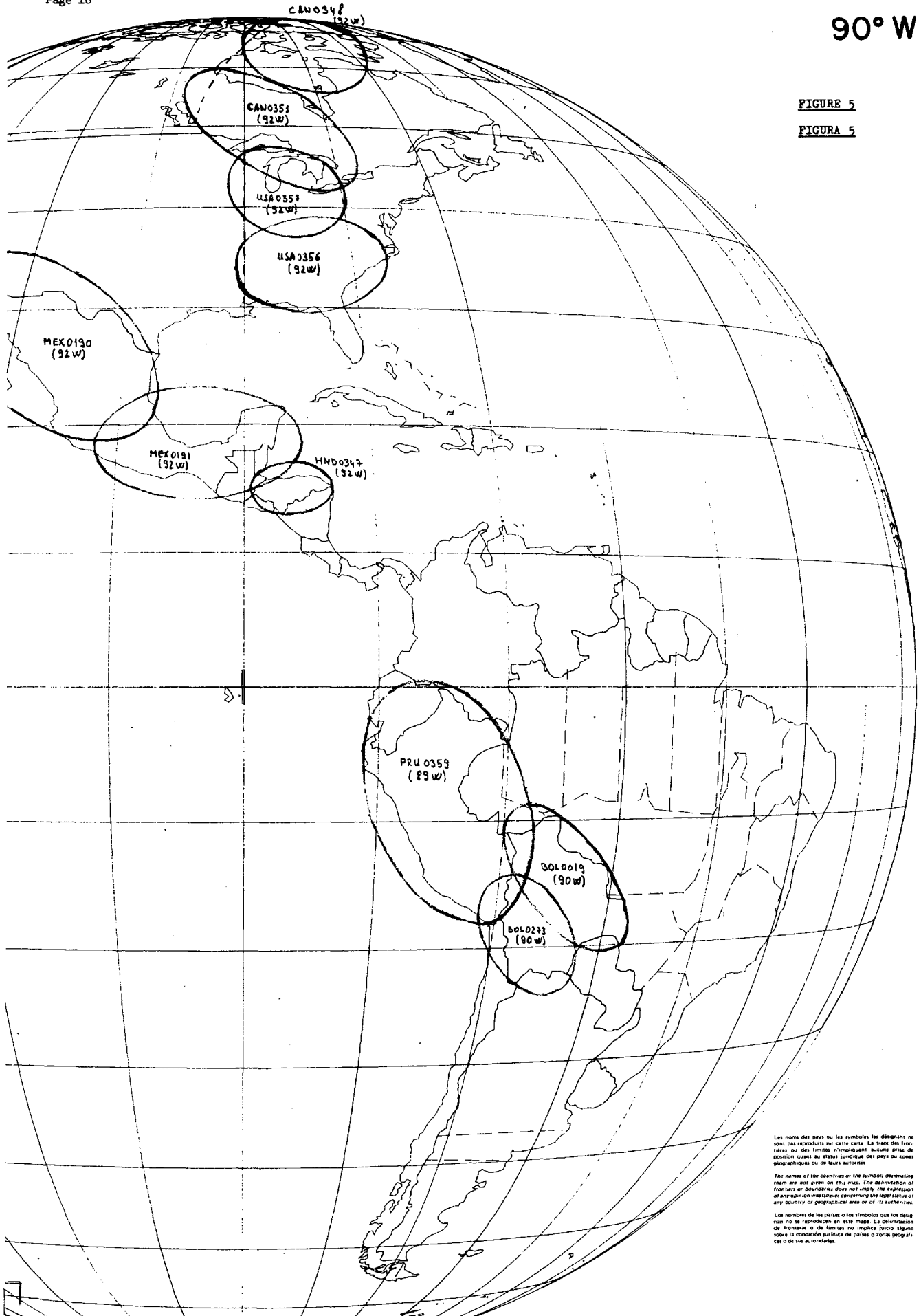


FIGURE 5

FIGURA 5

Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs activités.

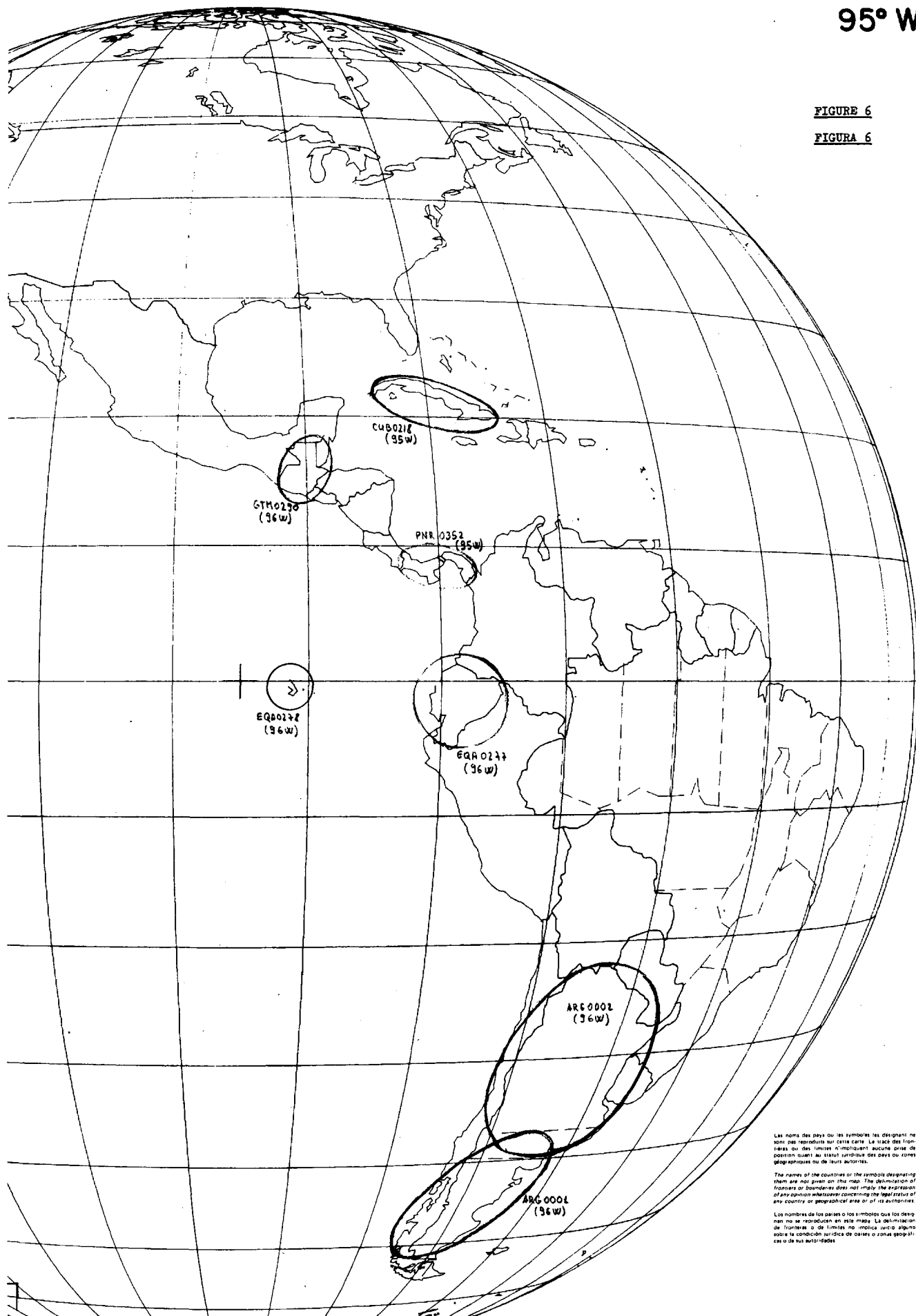
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en esta mapa. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

95° W

FIGURE 6

FIGURA 6



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. Le tracé des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica ningún alegato sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

100° W

FIGURE 7

FIGURA 7



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica en ningún caso la aprobación jurídica de países o zonas geográficas o de sus autoridades.

Explication des colonnes

Les numéros des colonnes entre parenthèses carrées correspondent aux numéros des colonnes dans la Liste des demandes.

Col.

- 1 - Symbole désignant le pays et numéro de référence de l'I.F.R.B. [Col. 3, 1]
- 2 - Longitude nominale [Col. 7]
- 3 - Numéro du canal
- 4 - Coordonnées géographiques du point de visée [Col. 8] mais en degrés et dixièmes de degrés
- 5 - Ouverture du faisceau d'antenne. Dans le cas d'une antenne elliptique, la colonne comporte deux valeurs représentant respectivement le grand axe et le petit axe de l'ellipse [Col. 10, 11]
- 6 - Orientation de l'ellipse (conformément à la définition donnée dans la lettre-circulaire de l'I.F.R.B. N° 358) [Col. 12]
- 7 - Gain maximal
- 8 - Polarisation
- 9 - 9a Puissance en watt
9b P.i.r.e. en dBW
- 10 - Coordonnées géographiques du point de contrôle critique pour lequel est indiquée la valeur de la marge de protection
- 11 - Marge équivalente de protection
- { 12 - Indications relatives aux trois principaux brouilleurs. Chaque colonne contient l'indication du brouilleur (symbole désignant le pays et numéro de série) et la marge de protection qui lui correspond en dB.
- 13
- 14

Explanation of the Columns

Column numbers shown between square brackets are those of the corresponding columns in the List of Requirements

Col.

- 1 - Country symbol and I.F.R.B. Serial Number [Cols. 3, 1]
- 2 - Nominal longitude [Col. 7]
- 3 - Channel number
- 4 - Boresight geographical coordinates [Col. 8] but in degrees and tenths
- 5 - Antenna aperture. For an elliptical antenna this column contains two figures corresponding respectively to the major axis and the minor axis [Cols. 10, 11]
- 6 - Orientation of the ellipse, as defined in I.F.R.B. Circular-letter No. 358 [Col. 12]
- 7 - Maximal gain
- 8 - Polarisation
- 9 - 9a Power in watts
9b E.i.r.p. in dBW
- 10 - Geographical coordinates of the critical test point for which the protection margin is indicated
- 11 - Equivalent protection margin
- { 12 - Indication of the three main inter-
- 13 ferers; each of these three columns
- 14 indicates the designation of the interferer (country symbol and serial number) and the corresponding protection margin in dB.

Figure 8 - Figura 8

Explicación de las columnas

Los números de las columnas entre corchetes corresponden a los números de las columnas en la Lista de solicitudes.

Col.

- 1 - Símbolo de país y número de referencia de la I.F.R.B. [Col. 3, 1]
- 2 - Longitud nominal [Col. 7]
- 3 - Número del canal
- 4 - Coordenadas geográficas del centro de puntería [Col. 8] pero en grados y décimas
- 5 - Abertura del haz de antena. Si se trata de una antena elíptica se indican en la columna dos valores que representan los ejes mayor y menor, respectivamente de la elipse [Col. 10, 11]
- 6 - Orientación de la elipse (véase la carta circular N.° 358 de la I.F.R.B.) [Col. 12]
- 7 - Ganancia máxima
- 8 - Polarización
- 9 - 9a Potencia en vatios
9b P.i.r.e. en dBW
- 10 - Coordenadas geográficas del punto de prueba crítico para el que se indica el valor del margen de protección
- 11 - Margen de protección equivalente
- { 12 - Indicaciones relativas a las tres
- 13 fuentes principales de interferencia.
- 14 En cada columna se indica la fuente de interferencia (símbolo de país y número de referencia) y el margen de protección que le corresponde en dB.

DATE 07/02/77

SUMMARY RESULTS -

**** PLANNING EXERCISE- EGSAT - REGION 2 - CH. 1 2/2/77 ****

PAGE A

* A N T E N N A P A R A M E T E R S *													* I N T E R F E R I N G C A R R I E R S *												
CARRIER		* SAT.	* CH.	* HALF- * ANGLE * ON- * POL.		* FOWER		* COORDS.		* EQUIV.		* PROT.		* WORST		* SECOND		* THIRD		* PROT.		* PROT.		* PROT.	
IDENTITY		* GEOS.	* ORBIT	* LOSIGHT	* PWR.LW	* FROM.	* AXIS	* IN-	* RF	* EIPP	* CRITICAL	* LOCATION	* MARG.	* NAME	* MARG.	* NAME	* MARG.	* NAME	* MARG.	* NAME	* MARG.	* NAME	* MARG.	* NAME	* MARG.
NO.	NAME	* LONG	* LAT	* (DEG)	* (DEG)	* (DB)			(W)	(DEW)	LONG	LAT	(DB)		(DB)		(DB)		(DB)		(DB)		(DB)		(DB)

1	B 0195	-84.0	1 -68.0	-3.0	2.3	0.8	86.	41.6	2	79.	60.6	-67.0	-9.6	4.	*BOL0273	4.	*CLM0289	20.	*B	0205	20.				
2	B 0198	-79.0	1 -52.0	-3.0	2.3	0.8	86.	41.6	1	84.	60.8	-49.8	-4.0	12.	*B 0205	13.	*B 0203	24.	*B	0195	25.				
3	B 0205	-77.0	1 -45.0	-20.0	2.2	1.0	50.	40.8	2	107.	61.1	-51.5	-20.0	1.	*B 0198	1.	*B 0195	17.	*URG0340	18.					
4	BOL0273	-90.0	1 -67.0	-18.0	1.6	1.2	110.	41.4	1	88.	60.8	-69.0	-14.0	3.	*B 0195	5.	*CLM0289	9.	*CAN0351	16.					
5	CAN0351	-92.0	1 -86.0	50.0	2.3	1.1	150.	40.2	2	134.	61.5	-83.0	42.0	5.	*USA0357	6.	*HND0347	12.	*BOL0273	15.					
6	CHL0263	-100.0	1 -73.0	-37.0	1.7	0.6	70.	44.2	1	52.	61.3	-72.0	-32.0	20.	*BOL0273	24.	*B 0205	29.	*B 0195	29.					
7	HND0347	-92.0	1 -86.0	15.0	1.0	0.6	2.	46.5	1	26.	60.6	-87.5	14.0	4.	*CAN0351	6.	*BOL0273	9.	*USA0357	13.					
8	SPH0254	-75.0	1 -56.2	47.0	0.6	0.6	0.	48.7	1	20.	61.6	-56.2	47.0	13.	*CAN0350	17.	*B 0205	20.	*B 0198	21.					
9	B 0203	-75.0	2 -40.5	-7.0	1.3	1.3	0.	42.0	2	81.	61.1														
10	BRO0346	-98.0	2 -63.0	17.0	0.6	0.6	0.	48.7	2	18.	61.2														
11	CAN0350	-83.0	2 -61.0	49.0	2.0	1.0	160.	41.2	2	119.	62.0														
12	CLM0289	-87.5	2 -74.0	5.0	3.2	1.8	107.	36.6	1	251.	60.6														
13	CTR0345	-100.0	2 -84.0	9.0	0.7	0.6	130.	48.0	2	18.	60.7														
14	BDL0095	-75.0	2 -61.7	16.1	0.6	0.6	0.	48.7	1	16.	60.7														
15	GTM0290	-96.0	2 -90.5	16.0	0.8	0.6	75.	47.4	2	21.	60.6														
16	SUR0214	-79.0	2 -56.0	4.0	0.7	0.7	0.	47.3	2	22.	60.8														
17	URG0340	-79.0	2 -56.5	-32.5	0.7	0.6	40.	48.0	2	21.	61.2														
18	USA0357	-92.0	2 -87.0	42.0	1.5	1.2	162.	41.7	1	92.	61.4														

Figure 9 - Figura 9

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH. 2 2/2/77 ****

PAGE A

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*****
*               *
*  A N T E N N A   P A R A M E T E R S  *
*               *
* CARRIER * SAT. * * HALF- * ANGLE * ON- * POL. * * POWER * COORDS. * EQUIV. *
* IDENTITY * GEOS. * CH. * ELEVATION * FROM * AXIS * IN- * RF EIRP * OF * PROT. *
* * ORBIT * NO. * * PAJ MIN * PAR. * GAIN * DEX * * * CRITICAL * MARG. *
NO. NAME * LONG * * LONG LAT * (DEG) * (DEG) * (DE) * * (W) (DLW) * LONG LAT * (DB) *
*               *
*****
1 P 0195 -84.0 1 -68.0 -3.0 2.3 0.8 86. 41.6 2 79. 60.6
2 B 0198 -79.0 1 -52.0 -3.0 2.3 0.8 86. 41.6 1 84. 60.8
3 B 0205 -77.0 1 -45.0 -20.0 2.2 1.0 50. 40.8 2 107. 61.1
4 BCL0273 -90.0 1 -67.0 -18.0 1.6 1.2 110. 41.4 1 88. 60.8
5 CAN0351 -92.0 1 -86.0 50.0 2.3 1.1 150. 40.2 2 134. 61.5
6 CHL0263 -100.0 1 -73.0 -37.0 1.7 0.6 70. 44.2 1 52. 61.3
7 HND0347 -92.0 1 -86.0 15.0 1.0 0.6 2. 46.5 1 26. 60.6
8 SPM0254 -75.0 1 -56.2 47.0 0.6 0.6 0. 48.7 1 20. 61.6

9 B 0203 -75.0 2 -40.5 -7.0 1.3 1.3 0. 42.0 2 81. 61.1 -44.0 -10.0 1. *B 0205 2. *GDL0095 14. *SUR0214 16.

10 BRB0346 -98.0 2 -63.0 17.0 0.6 0.6 0. 48.7 2 18. 61.2 -63.0 17.0 3. *GDL0095 4. *CTR0345 15. *CLM0289 17.

11 CAN0350 -83.0 2 -61.0 49.0 2.0 1.0 160. 41.2 2 119. 62.0 -70.5 50.0 11. *USAG357 14. *CAN0351 18. *B 0195 18.

12 CLM0289 -87.5 2 -74.0 5.0 3.2 1.8 107. 36.6 1 251. 60.6 -70.0 -2.7 13. *B 0195 14. *USAG357 22. *BCL0273 25.

13 CTR0345 -100.0 2 -84.0 9.0 0.7 0.6 130. 48.0 2 18. 60.7 -83.5 10.0 5. *CLM0289 6. *BRB0346 12. *GTM0290 16.

14 GDL0095 -75.0 2 -61.7 16.1 0.6 0.6 0. 48.7 1 16. 60.7 -61.0 16.1 2. *BRB0346 3. *B 0203 10. *CLM0289 20.

15 GTM0290 -96.0 2 -90.5 16.0 0.8 0.6 75. 47.4 2 21. 60.6 -90.1 13.9 8. *BRB0346 13. *CTR0345 13. *HND0347 17.

16 SUR0214 -79.0 2 -56.0 4.0 0.7 0.7 0. 47.3 2 22. 60.8 -55.0 6.0 4. *URG0340 6. *B 0198 11. *B 0203 12.

17 URG0340 -79.0 2 -56.5 -32.5 0.7 0.6 40. 48.0 2 21. 61.2 -54.0 -34.0 3. *SUR0214 6. *B 0205 8. *B 0203 14.

18 USAG357 -92.0 2 -87.0 42.0 1.5 1.2 162. 41.7 1 92. 61.4 -80.0 42.5 6. *CAN0351 7. *CLM0289 14. *CAN0350 16.

```

Figure 10 - Figura 10

DATE 07/02/77

SUMMARY RESULTS -

***** PLANNING EXERCISE - BCSAT - REGION 2 - CH. 9 2/2/77 *****

PAGE A

* ANTENNA PARAMETERS *										* INTERFERING CARRIERS *								
CARRIER	SAT.	CH.	LOCUSIGHT	HALF- PWR.	ANGLE FROM	ON- AXIS	POL.	IN-	RF	COORDS. OF	EQUIV. PROT.	WORST PROT.	SECOND PROT.	THIRD PROT.				
IDENTITY	GEOS.	ORBIT	NO.	PAJ	MIN	PAR.	GAIN	DEX	RF	CRITICAL LOCATION	MARG.	NAME	MARG.	NAME	MARG.	NAME	MARG.	NAME
NO.	NAME	LONG	LONG	LAT	(DEG)	(DEG)	(DE)		(W)	(DBW)	LONG	LAT	(DB)	(DE)	(DB)	(DB)	(DB)	(DB)

0	GUB0360	-75.0	9	-59.0	5.0	1.2	0.6	96.	45.7	2	32.	60.8	-58.0	3.0	5.	*B 0200	6.	*B 0202
1	B 0197	-83.0	9	-57.5	-3.0	2.3	0.8	86.	41.6	2	85.	60.9	-59.0	-8.7	1.	*PRU0359	1.	*B 0200
2	B 0200	-77.0	9	-56.0	-19.0	1.5	1.2	86.	41.7	2	86.	61.0	-50.5	-20.0	-3.	*B 0202	-3.	*B 0197
3	ATN0234	-79.0	9	-69.0	12.0	0.6	0.6	0.	48.7	2	16.	60.7	-69.0	12.0	9.	*B 0200	12.	*VENC217
4	CHL0208	-100.0	9	-70.0	-25.0	2.2	0.6	80.	40.0	1	66.	61.2	-70.0	-18.5	0.	*PRU0359	0.	*NCG0353
5	CUB0218	-95.0	9	-79.0	21.0	1.6	0.6	161.	44.4	2	45.	60.9	-82.4	23.0	5.	*MEX0191	7.	*MEX0190
6	EG0278	-96.0	9	-91.0	-1.0	0.6	0.6	0.	48.7	1	16.	60.6	-90.1	-0.5	9.	*PRU0359	13.	*CUB0218
7	MEX0190	-92.0	9	-107.0	27.0	3.2	1.8	150.	36.6	1	282.	61.1	-100.0	22.0	9.	*MEX0191	11.	*PRU0359
8	PRU0359	-89.0	9	-74.0	-8.0	3.3	2.0	115.	36.1	2	193.	60.7	-71.0	-17.2	1.	*CHL0208	1.	*USA0358
9	USA0358	-87.5	9	-75.0	42.0	1.7	0.9	30.	42.4	1	84.	61.6	-77.0	37.3	6.	*PRU0359	7.	*VENC217
10	ARG0001	-96.0	10	-68.0	-43.0	2.2	0.8	50.	41.8	2	107.	62.1			*		*	
11	B 0194	-84.0	10	-70.5	-7.5	1.3	1.1	110.	42.7	2	64.	60.7			*		*	
12	B 0201	-79.0	10	-47.0	-4.5	1.6	1.0	81.	42.2	1	77.	61.1			*		*	
13	B 0202	-75.0	10	-49.0	-13.0	2.3	0.8	76.	41.6	2	87.	61.0			*		*	
14	PTI0354	-100.0	10	-70.0	18.0	0.6	0.6	0.	48.7	2	18.	61.1			*		*	
15	MEX0191	-92.0	10	-94.0	18.0	2.6	1.4	1.	38.6	2	164.	60.8			*		*	
16	NCG0353	-100.0	10	-85.0	13.0	0.8	0.8	0.	46.2	1	29.	60.8			*		*	
17	PNR0352	-95.0	10	-80.0	8.0	1.0	0.6	175.	46.5	2	27.	60.8			*		*	
18	PRG0257	-83.0	10	-59.0	-22.8	1.6	0.9	106.	42.7	1	69.	61.1			*		*	
19	VENC217	-87.5	10	-60.0	7.0	2.5	1.6	125.	38.2	1	186.	60.9			*		*	

Figure 11 - Figura 11

SUMMARY RESULTS -

**** PLANNING EXERCISE- EGSAT - REGION 2 - Ch.10 2/2/77 ****

PAGE A

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*****
*
* ANTENNA PARAMETERS *
*
* CARRIER * SAT. * * HALF- * ANGLE * ON- * POL. * * POWER * COORDS. * EQUIV. *
* IDENTITY * GEOS. * CH. * EUPESIGHT * PWR.BW * FROM * AXIS * IN- * RF EIRP * CRITICAL * MARG. *
* * ORBIT * NO. * * PAJ MIN * PAR. * GAIN * DEX * * * LOCATION * * NAME MARG. *
NO. NAME * LONG * * LONG LAT * (DEG) * (DEG) * (DE) * * (W) (DEW) * LONG LAT * (DB) *
*
*****
0 GUBO360 -75.0 9 -59.0 5.0 1.2 0.6 96 45.7 2 32 60.8
1 B 0197 -83.0 9 -57.5 -3.0 2.3 0.8 86. 41.6 2 85. 60.9
2 B 0200 -77.0 9 -56.0 -19.0 1.5 1.2 86. 41.7 2 86. 61.0
3 ATN0234 -79.0 9 -69.0 12.0 0.6 0.6 0. 48.7 2 16. 60.7
4 CHLO208 -100.0 9 -70.0 -25.0 2.2 0.6 80. 43.0 1 66. 61.2
5 CUB0218 -95.0 9 -79.2 21.2 1.6 0.6 161. 44.4 2 45. 60.9
6 EQAO278 -96.0 9 -91.0 -1.0 0.6 0.6 0. 48.7 1 16. 60.6
7 MEX0190 -92.0 9 -107.0 27.0 3.2 1.8 150. 36.6 1 282. 61.1
8 PRUC359 -89.0 9 -74.0 -8.0 3.3 2.0 115. 36.1 2 293. 60.7
9 USA0358 -87.5 9 -75.0 42.0 1.7 0.9 30. 42.4 1 84. 61.6
10 ARG0001 -96.0 10 -66.0 -43.0 2.2 0.8 50. 41.8 2 107. 62.1 -62.0 -40.0 11. *PNR0352 13. *MEX0191 21. *CHLO208 23.
11 B 0194 -84.0 10 -70.5 -7.5 1.3 1.1 110. 42.7 2 64. 60.7 -68.6 -10.3 0. *PRG0257 2. *PRUC359 6. *VEN0217 16.
12 B 0201 -79.0 10 -47.0 -4.5 1.6 1.0 81. 42.2 1 77. 61.1 -45.3 -8.5 0. *B 0202 0. *PRG0257 14. *VEN0217 20.
13 B 0202 -75.0 10 -45.0 -13.0 2.3 0.8 76. 41.6 2 87. 61.0 -50.0 -18.3 1. *B 0200 1. *B 0201 17. *PRG0257 24.
14 HTI0354 -100.0 10 -70.0 18.0 0.6 0.6 0. 48.7 2 16. 61.1 -72.0 18.1 2. *VEN0217 5. *CUB0218 9. *NCG0353 11.
15 MEX0191 -92.0 10 -94.0 18.0 2.6 1.4 1. 38.6 2 164. 60.8 -88.0 20.5 7. *CUB0218 12. *PNR0352 13. *MEX0190 14.
16 NCG0353 -100.0 10 -85.0 13.0 0.8 0.8 0. 46.2 1 29. 60.8 -84.0 15.0 1. *MEX0191 2. *HTI0354 13. *CHLO208 18.
17 PNR0352 -95.0 10 -80.0 8.0 1.0 0.6 175. 46.5 2 27. 60.8 -82.8 8.0 0. *MEX0191 3. *ARG0001 7. *NCG0353 9.
18 PRG0257 -83.0 10 -59.0 -22.8 1.6 0.9 106. 42.7 1 69. 61.1 -62.0 -20.0 4. *B 0194 5. *B 0201 15. *VEN0217 17.
19 VEN0217 -87.5 10 -66.0 7.0 2.5 1.6 125. 38.2 1 186. 60.9 -73.5 9.2 4. *PNR0352 6. *PRUC359 13. *PRG0257 15.

```

Figure 12 - Figura 12

DATE 07/02/77

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH.17 2/2/77 ****

PAGE A

* A N T E N N A P A R A M E T E R S *														
CARRIER	SAT.	CH.	BORSIGHT	*HPL*	*ANGLE*	*ON*	*POL*	POWER	COORDS.	*EQUIV.*	*PROT.*	WORST	*SECOND*	*THIRD*
IDENTITY	*GPOS*	*CH.*	*BORSIGHT*	*PWP.LW*	*FROM.*	*AXIS*	*IN*	RF	EIRP	*CRITICAL*	*MARG.*	NAME	PROT.	NAME
NO.	NAME	LONG	NO.	*FAJ MIN*	PAR.	*GAIN*	DEX	(W)	(DBW)	LOCATION	(DB)	(DB)	(DB)	(DB)

1	ATN0268	-79.0	17	-63.0	18.0	0.6	0.6	0.	48.7	2	17.	61.0	-63.0	18.0
2	B 0199	-79.0	17	-57.0	-13.0	2.3	1.3	160.	39.5	1	140.	61.0	-64.0	-10.0
3	B 0206	-77.0	17	-52.0	-28.0	1.9	1.0	57.	41.5	2	97.	61.3	-49.0	-25.0
4	BOL0019	-90.0	17	-64.0	-14.0	2.2	1.2	130.	40.0	1	129.	61.2	-61.0	-13.5
5	CAN0349	-83.0	17	-72.0	54.0	1.6	1.6	0.	40.2	2	150.	61.9	-70.0	46.0
6	CHL0264	-100.0	17	-70.0	-55.0	2.2	0.6	70.	43.0	1	80.	62.1	-73.0	-43.0
7	CLM0324	-87.5	17	-80.0	13.0	0.6	0.6	0.	48.7	2	16.	60.8	-80.0	13.0
8	DOM0344	-98.0	17	-73.0	18.0	0.6	0.6	0.	48.7	1	18.	61.1	-73.8	19.0
9	GUF0096	-75.0	17	-53.4	3.8	0.6	0.6	0.	48.7	1	17.	61.0	-53.0	3.5
10	HNB0343	-100.0	17	-86.0	17.0	0.6	0.6	0.	48.7	2	17.	60.9	-88.0	16.5
11	TRD0342	-83.0	17	-62.0	10.0	0.6	0.6	0.	48.7	1	17.	61.0	-63.0	10.0
12	USA0356	-92.0	17	-84.0	35.0	2.0	1.2	13.	40.4	1	123.	61.4	-76.5	36.0
13	ARG0002	-96.0	18	-65.0	-30.0	2.8	1.6	60.	37.6	2	258.	61.7		
14	B 0196	-83.0	18	-62.0	-1.5	2.3	0.8	86.	41.6	2	80.	60.9		
15	B 0204	-75.0	18	-41.5	-12.5	1.5	1.2	68.	41.7	2	93.	61.4		
16	CAN0348	-92.0	18	-75.0	65.0	1.6	0.8	165.	43.2	2	88.	62.6		
17	CHL0265	-100.0	18	-110.0	-27.0	0.6	0.6	0.	48.7	1	18.	61.1		
18	EQA0277	-96.0	18	-78.0	-2.0	1.1	1.1	0.	43.4	1	56.	60.9		
19	JMC0341	-100.0	18	-77.5	18.5	0.6	0.6	0.	48.7	2	18.	61.1		
20	SLV0221	-100.0	18	-89.0	14.0	0.6	0.6	0.	48.7	1	17.	60.9		
21	USA0355	-87.5	18	-83.0	27.0	1.0	0.8	95.	45.2	1	39.	61.1		

Figure 13 - Figura 13

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH.18 2/2/77 ****

PAGE A

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*****
*           *
*   A N T E N N A   P A R A M E T E R S   *
*           *
CAPRIK * SAT. * * * * * HALF- * ANGLE * ON- * POL. *
IDENTITY * GEOS. * CH. * EGRESS * PWR. * FROM * AXIS * IN- * RF * EIRP * CRITICAL * MARG. *
* ORBIT * NO. * * * * * MAJ MIN * PAR. * GAIN * DEX * * * * *
NO. NAME * LONG * * LONG LAT * (DEG) * (DEG) * (DE) * * (W) (DBW) * LONG LAT * (DB) *
*           *
*****
1 ATN0268 -79.0 17 -63.0 18.0 0.6 0.6 0. 48.7 2 17. 61.0
2 I 0199 -79.0 17 -57.0 -13.0 2.3 1.3 160. 39.5 1 140. 61.0
3 I 0206 -77.0 17 -53.0 -28.0 1.9 1.0 57. 41.5 2 97. 61.3
4 EOL0019 -90.0 17 -64.0 -14.0 2.2 1.2 130. 40.0 1 129. 61.2
5 CAN0349 -83.0 17 -72.0 54.0 1.6 1.6 0. 40.2 2 150. 61.9
6 CHL0264 -100.0 17 -70.0 -55.0 2.2 0.6 70. 43.0 1 80. 62.1
7 CLM0324 -87.5 17 -80.0 13.0 0.6 0.6 0. 48.7 2 16. 60.8
8 DOM0344 -98.0 17 -72.0 18.0 0.6 0.6 0. 48.7 1 18. 61.1
9 GUF0096 -75.0 17 -53.4 3.8 0.6 0.6 0. 48.7 1 17. 61.0
10 HNB0343 -100.0 17 -88.0 17.0 0.6 0.6 0. 48.7 2 17. 60.9
11 TRD0342 -83.0 17 -62.0 10.0 0.6 0.6 0. 48.7 1 17. 61.0
12 USA0356 -92.0 17 -84.0 35.0 2.0 1.2 13. 40.4 1 123. 61.4
*
13 ARG0002 -96.0 18 -65.0 -30.0 2.8 1.6 60. 37.6 2 258. 61.7 -62.5 -22.5 10. *EQA0277 11. *EOL0019 22. *I 0196 25.
*
14 I 0196 -83.0 18 -62.0 -1.5 2.3 0.8 86. 41.6 2 86. 60.9 -65.0 -5.0 11. *CAN0349 15. *I 0204 19. *I 0199 20.
*
15 B 0204 -75.0 18 -41.5 -12.5 1.5 1.2 68. 41.7 2 93. 61.4 -40.0 -16.5 17. *I 0206 22. *B 0196 24. *I 0199 24.
*
16 CAN0348 -92.0 18 -75.0 65.0 1.6 0.8 165. 43.2 2 88. 62.6 -77.0 57.0 9. *CAN0349 10. *USA0356 16. *ARG0002 20.
*
17 CHL0265 -100.0 18 -110.0 -27.0 0.6 0.6 0. 48.7 1 18. 61.1 -110.0 -27.0 12. *SLV0221 15. *JMC0341 18. *ARG0002 24.
*
18 EQA0277 -96.0 18 -78.0 -2.0 1.1 1.1 0. 43.4 1 56. 60.9 -79.0 -5.0 2. *ARG0002 2. *SLV0221 21. *CAN0348 25.
*
19 JMC0341 -100.0 18 -77.5 18.5 0.6 0.6 0. 48.7 2 18. 61.1 -77.2 17.0 6. *DOM0344 11. *HNB0343 13. *SLV0221 14.
*
20 SLV0221 -100.0 18 -89.0 14.0 0.6 0.6 0. 48.7 1 17. 60.9 -88.0 14.0 7. *HNB0343 12. *CHL0265 13. *JMC0341 15.
*
21 USA0355 -87.5 18 -83.0 27.0 1.0 0.8 95. 45.2 1 39. 61.1 -82.0 31.0 2. *USA0356 2. *CAN0348 22. *B 0196 24.
*

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Figure 14 - Figura 14

4. Minimum elevation angle and time of eclipse during equinox

The Conference has considered the following minimum values for the elevation angle as a guide :

- 40° for tropical zones
- 30° for mountainous zones
- 20° for other zones

For zones of high latitudes a compromise value would be adopted.

For the calculation of the time of the eclipse, the following formula might be used :

$$HL = 23.28 - \frac{1}{15} (\lambda_s - H)$$

where : λ_s is the nominal longitude of the satellite, in degrees, in relation to the Greenwich meridian (+ : East ; - : West)

H is the longitude of the hourly meridian corresponding to the service area in degrees in relation to the Greenwich meridian

HL is the local time corresponding to the beginning of the eclipse at equinox.

Below is shown a procedure for calculating, both graphically and analytically, the elevation angle at which a geostationary satellite is seen.

As is known, the geographical coordinates $\Delta\lambda$ (relative geographical longitude, taking the sub-satellite point as reference) and ϕ (the geographical latitude) and the elevation angle ϵ for a given point (for the geostationary satellite) are linked by the following relations :

$$\cos \gamma = \cos \Delta\lambda \cos \phi \quad (1)$$

$$\operatorname{tg} \epsilon = (\cos \gamma - 0,15127) / \sin \gamma \quad (2)$$

$$\gamma = 2 \arctan [0,8686 (\sqrt{0,977 + \operatorname{tg}^2 \epsilon} - \operatorname{tg} \epsilon)] \quad (3)$$

For a given ϵ , it is possible from (3) and (1), for a point defined by ϕ , to find the $\Delta\lambda$, namely the maximum relative longitude or the relative position on the geostationary orbit which enables the satellite to be just seen at angle ϵ . Using $\Delta\lambda$ and λ , we can find the exact position of the satellite λ_s on the orbit.

For rapid calculation, and for elevation angles of 10° , 15° and 20° , curves have been plotted (see the annex to this document) for determining the limit position, i.e., the extreme position of the satellite for any point. It is sufficient to insert on the graph paper (ordinates : geographical latitude, $1^\circ = 2 \text{ mm}$; abscissae : geographical longitude, $1^\circ = 2 \text{ mm}$) the geographical coordinates of the point in question and place on this point the curves for ϵ . The part $\Delta\lambda$ on the axis of the abscissae gives the relative longitude for the sub-satellite point, i.e. the position of satellite (Figure 1). The absolute position of the satellite is given by λ_s , i.e. the difference between $\Delta\lambda$ and λ .

For a value of ϵ other than 10° , 15° and 20° , we can find ψ on the curve in Figure 2 from (1) :

$$\cos \Delta\lambda = \cos \psi / \cos \varphi$$

and

$$\Delta\lambda = \arccos \frac{\cos \psi}{\cos \varphi}$$

Example : The point for which an elevation angle of at least 24° must be ensured is found at $\phi = 42^\circ$. The maximum permitted $\Delta\lambda$ is sought.

Using Figure 2, for $\epsilon = 24^\circ$, $\psi = 58.2^\circ$, the satellite position is given by :

$$\cos \Delta\lambda = \cos 58.2^\circ / \cos 42^\circ$$

$$\Delta\lambda = 44.84^\circ$$

$$\lambda_s = \Delta\lambda - \lambda$$

The λ represents the geographical longitude of the point in question.

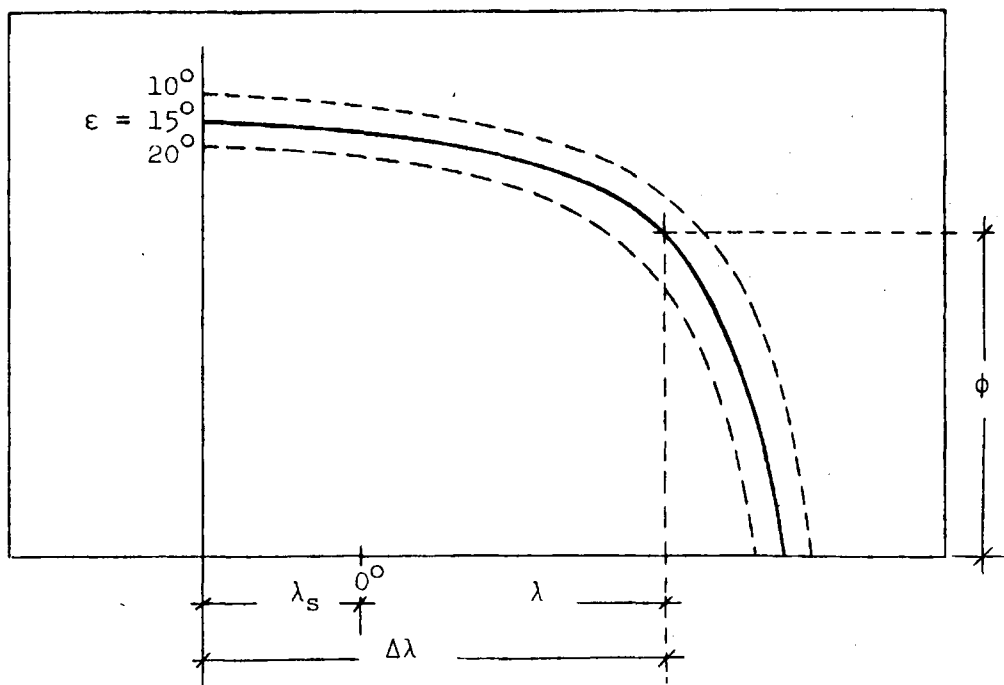


Figure 1 - Figura 1

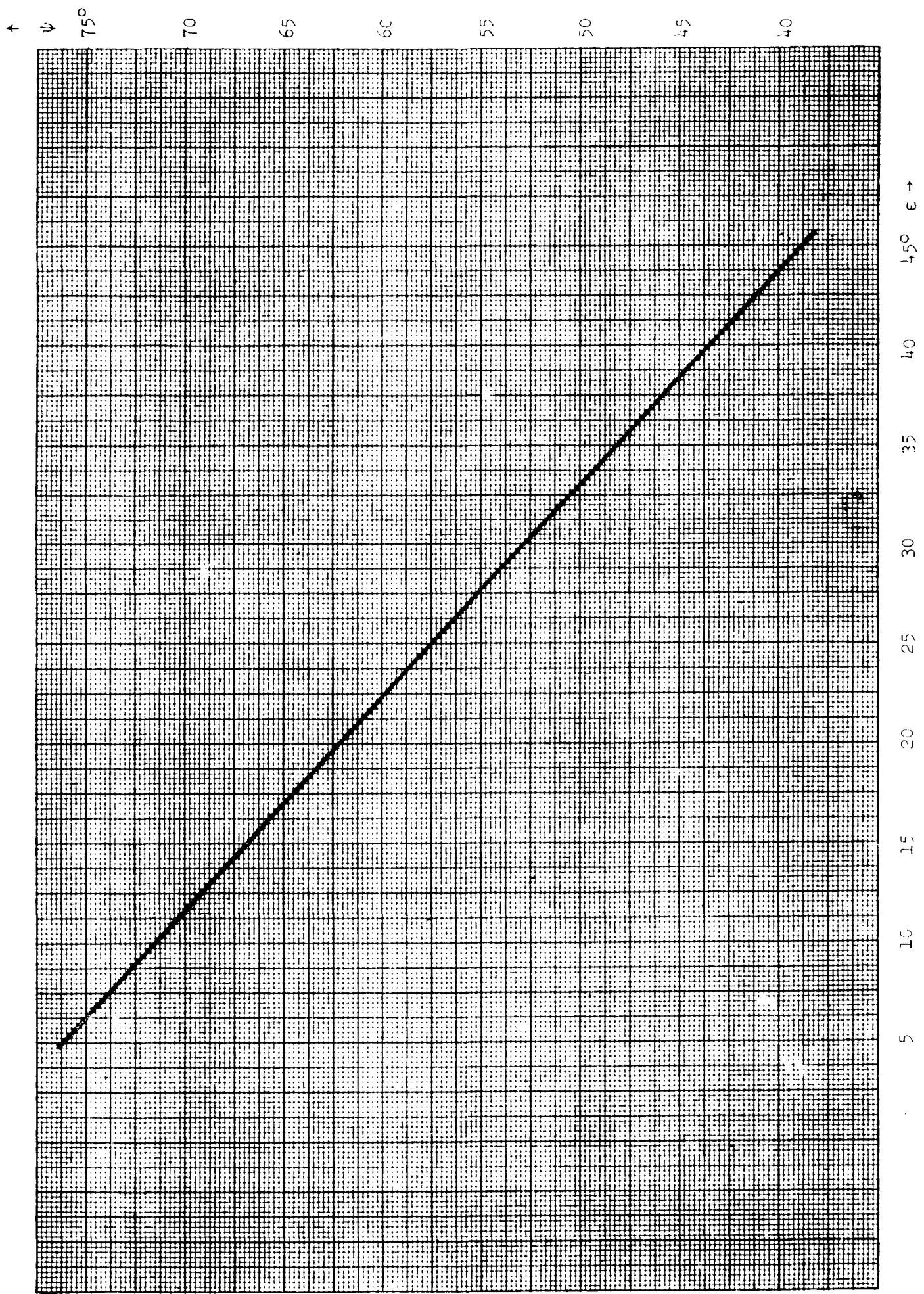
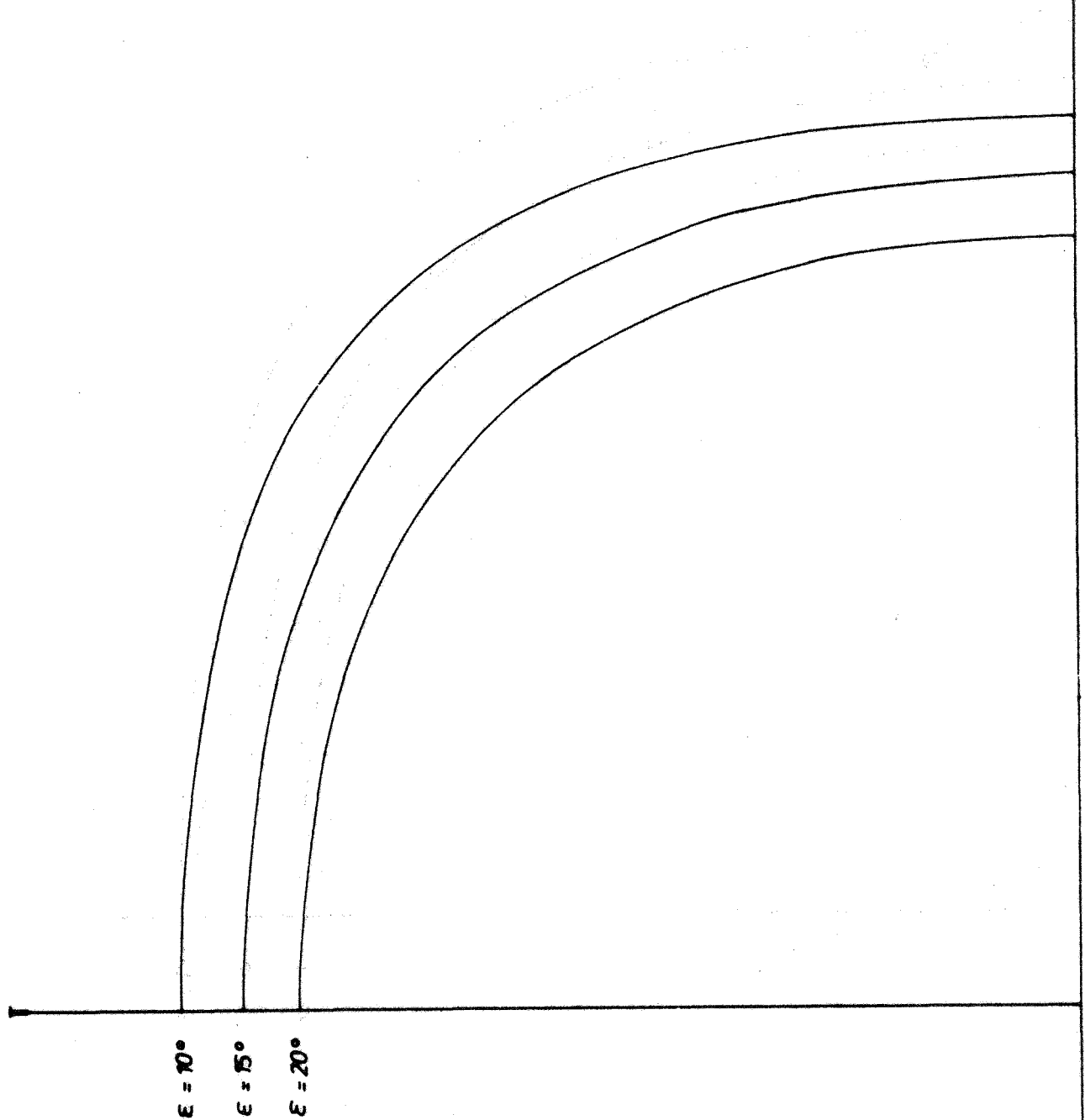


Figure 2 - Figura 2

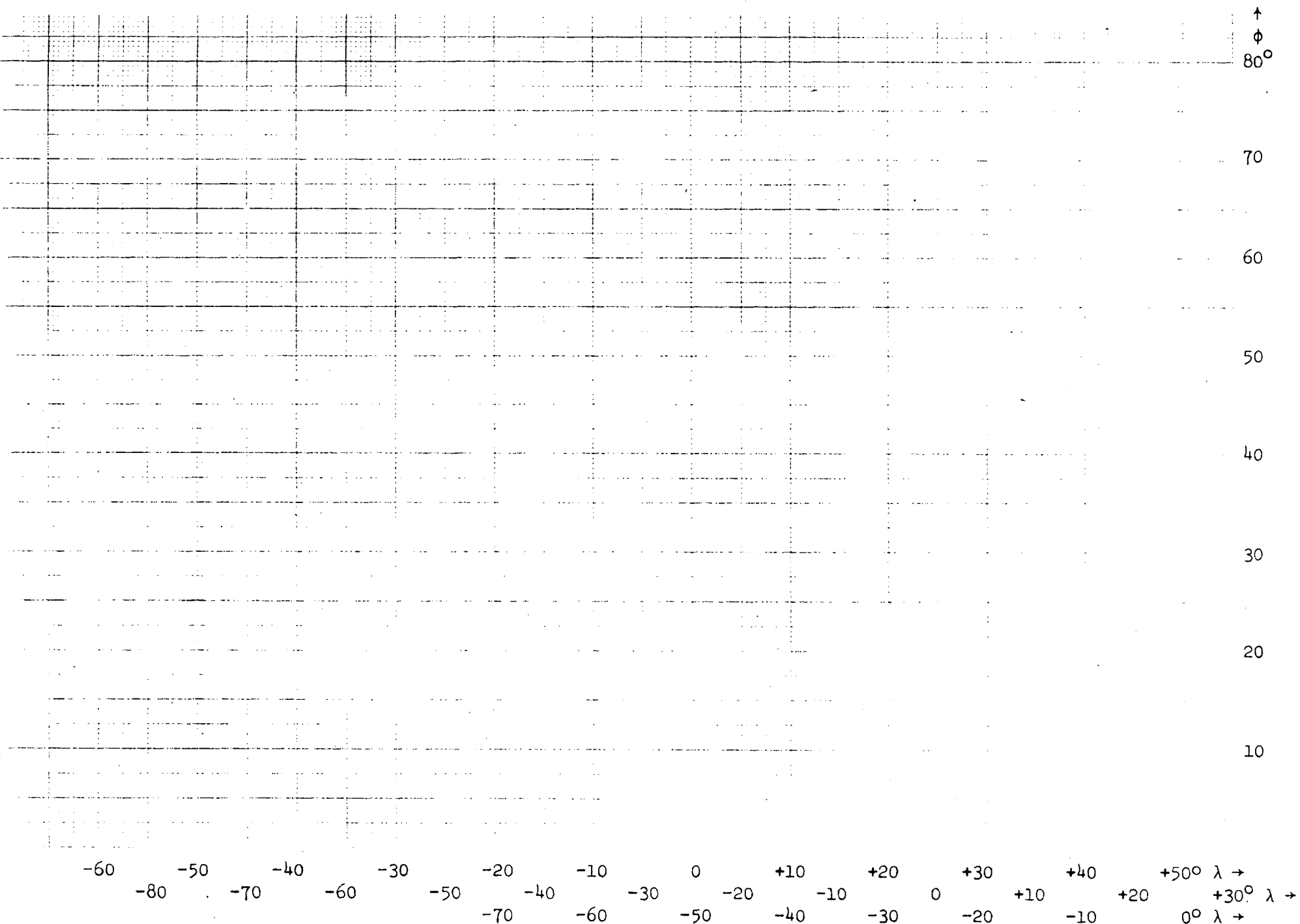
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BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 254-E

8 February 1977

Original : English/Spanish

COMMITTEE 5

Third report of Working Group 5B to Committee 5

(Planning)

PLANNING EXERCISES FOR REGION 2

Introduction

As part of its work at the Conference, Working Group 5B set up a Sub-Group to carry out, with the help of the IFRB, some planning exercises for Region 2 based on proposals by the delegations of Cuba and Venezuela and some preliminary work undertaken by the delegation of Canada. The purpose of these planning exercises was to verify estimates of the capacity of the geostationary orbit and 11.7 to 12.2 GHz frequency band, to assist Region 2 countries in their understanding of the flexibility of the phased approach adopted by consensus in Working Group 5B (and forming part of the Final Acts of the Conference), and to provide information that might be useful to Region 2 delegations in their preparations for the future Regional Conference.

In carrying out these exercises, a great number of assumptions had to be made by the IFRB in regard to services to territories of Administrations, whether or not they were represented at the Conference and whether or not they had submitted detailed requirements. No attempt was made to obtain the specific approval of delegations nor their Administrations for these assumptions, nor for the adherence of the planning exercises to No. 428A of the Radio Regulations. These exercises were not intended to prejudice in any way the development of a detailed plan for Region 2 in the future according to Resolution No. BS ... [Annex A to Document No. 226] of this Conference. The present document presents the results of one of the planning exercises and is submitted for the information of delegations at the Conference.

Description

The planning exercise for Region 2 consists in assigning orbital positions, frequency channels and types of polarization and in defining service areas for the various Administrations in the Region.

So far as possible, the exercise is based on the decisions adopted by the Conference.

Three types of Administration were considered :



- 1) those which have submitted their requirements to the IFRB;
- 2) those which have not submitted requirements to the IFRB and are not represented at the Conference; and
- 3) those which have not submitted requirements to the IFRB, but are represented at the Conference.

Although the orbital arc allocated to the Broadcasting-Satellite Service has two segments - that between 75° W and 100° W and that between 140° W and 170° W - only the eastern portion was considered because insufficient data are available for the western segment. Mexico has been regarded as falling within the eastern segment although, if the western segment had been considered, that country would have used it. The case of Greenland has not been considered in the planning exercise.

The principles agreed by the Sub-Group as a basis for the planning exercise are set forth in Annex 1 to this document.

The results obtained are set forth in Annex 2.

B.C. BLEVIS
Chairman of Working Group 5B

Annexes : 2

A N N E X 1PLANNING PRINCIPLES1. Guard bands

Two guard bands are proposed to protect services operating in adjacent frequency bands against spurious radiations, as shown in the table :

Guard band at lower end of the band (11.7 GHz)	Guard band at upper end of the band (12.2 GHz)
12 MHz	9 MHz

These values are based on a maximum value of the e.i.r.p. in the beam centre of 63 dBW (individual reception) and a filter attenuation coefficient of 2 dB/MHz.

2. Channel spacing

A spacing of 20 MHz between channels has been adopted.

3. Total number of channels

In view of the preceding points, there would be 24 channels in the total bandwidth of 500 MHz.

4. Channels per beam and channel families

Four channels are assigned to a beam. Thus the total number of 24 channels is divided into 6 families of 4 channels each.

5. Spacing between channels serving a common antenna in a single beam

This is at least 40 MHz. To achieve this, the channels in each family are assigned alternately; the 6 families shown in the table below are identified by the number of the first channel :

FAMILY	CHANNELS
1	1,3,5,7
2	2,4,6,8
9	9,11,13,15
10	10,12,14,16
17	17,19,21,23
18	18,20,22,24

6. Protection ratios for the same channel and for the adjacent channel

The protection ratio is calculated from Figure 1, which shows the total protection ratio. Although the protection ratio shown is that required in cases where the interfering and protected signals are both FM, for the purpose of the exercise this curve has been adopted for all cases.

7. Type of reception

The exercise is based on individual reception.

8. Reference pattern of receiving antennae

Figure 2 shows the co-polar and cross-polar reference patterns for receiving antennae for individual reception used in this exercise with a ϕ_0 of 1.8° (mean power beamwidth which corresponds to the minimum diameter of the antenna).

9. Reference pattern of transmitting antennae

Figure 3 shows the co-polar and cross-polar reference patterns for transmitting antennae. The value of ϕ_0 will be determined by the diagonal of the ellipse in the direction in question.

10. Minimum beamwidth of a transmitting antenna

0.6° between the half power points.

11. Orbital arcs

Space stations in the Broadcasting-Satellite Service are considered as being in the following parts of the orbit :

- 75° to 100° W longitude (however, for service to Canada, the United States of America and Mexico, the relevant portion is only between 75° and 95° W longitude);
- 140° to 170° W longitude.

For the purposes of this exercise, only the eastern orbital arc was taken into consideration.

12. Orbital distribution

This is irregular, so as to obtain a configuration giving minimum interference. To achieve this, a regular separation of 4 degrees between orbital positions was taken as a first approximation; the orbital positions were then modified wherever this would lead to a reduction of interference.

13. Definition of the ellipses

These were divided into three categories, according to the three types of administrations :

13.1 In the case of countries which had submitted requirements to the IFRB, the geographical extent and number of service areas mentioned in the requirements were respected. Where various options had been suggested by the administrations, the one giving the most favourable result from the standpoint of interference was adopted. The orbital positions requested were modified with a view to obtaining a more optimum configuration. Ellipses were redefined only in so far as they were altered by the change in orbital position. Four (4) channels were assigned to a beam.

13.2 Countries which had not submitted requirements to the IFRB and were not represented at the Conference were regarded, so far as the reduction of interference permitted, as a service area to be covered by a single 4-channel beam.

13.3 Two administrations which had not submitted requirements to the IFRB but which were represented at the Conference were considered as follows :

- a) Canada, which was considered in accordance with note A032 of Document No. 172 : i.e., as consisting of two zones. For this exercise, it was assumed by the IFRB that each zone be divided into four service areas. It was also assumed that the eastern zone would use the orbital arc 75° to 95° W and the other zone, the arc 140° to 170° W.
- b) the United States of America. Since data concerning this country's requirements were not available, it was divided into 12 service areas - a figure roughly equal to that requested by Brazil since, viewed from a geostationary satellite, the area of the United States is slightly smaller than that of Brazil. Of these 12 areas, it was assumed that four would use the orbital arc 75° to 95° W.

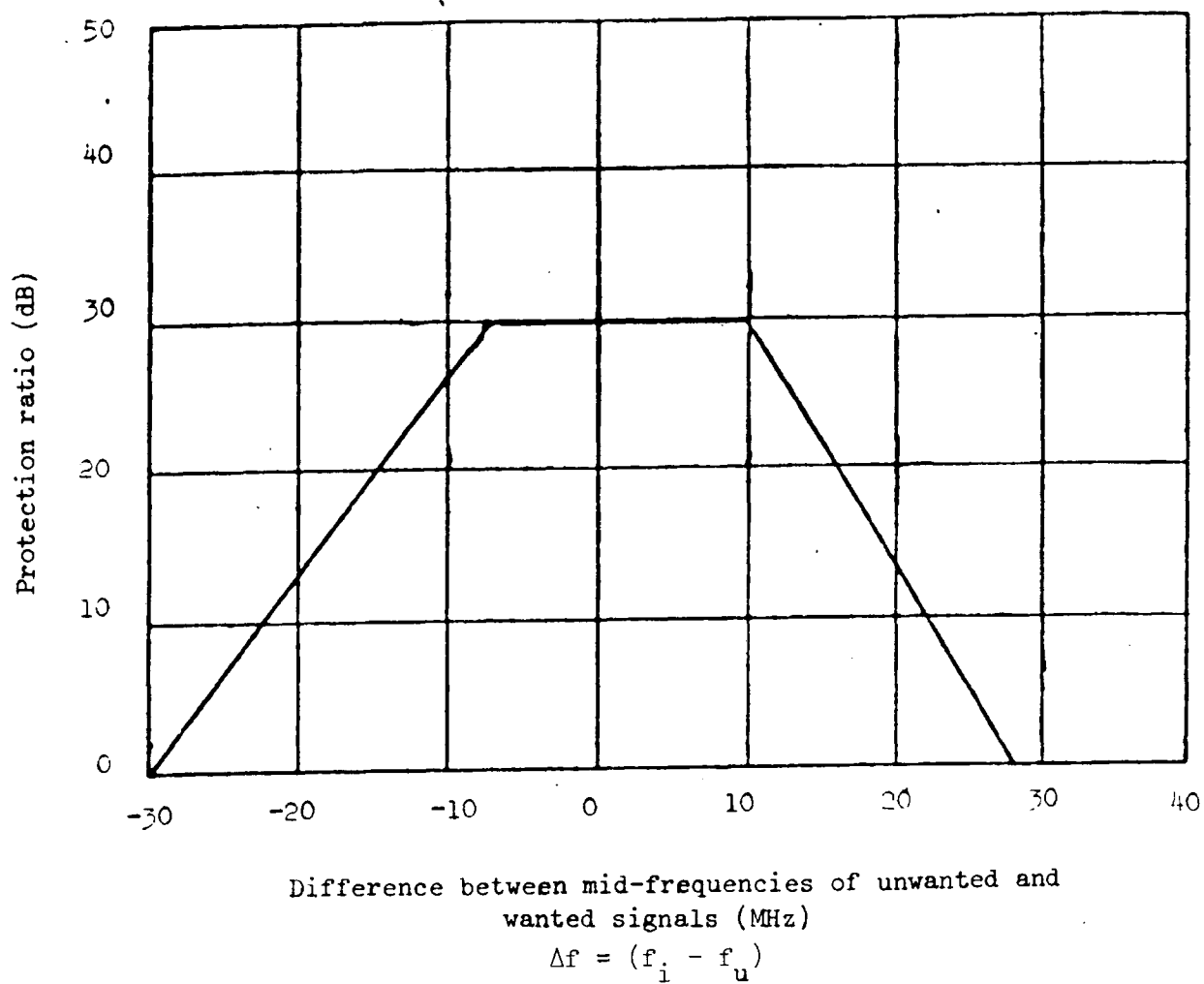


FIGURE 1

Protection ratio between two FM television signals

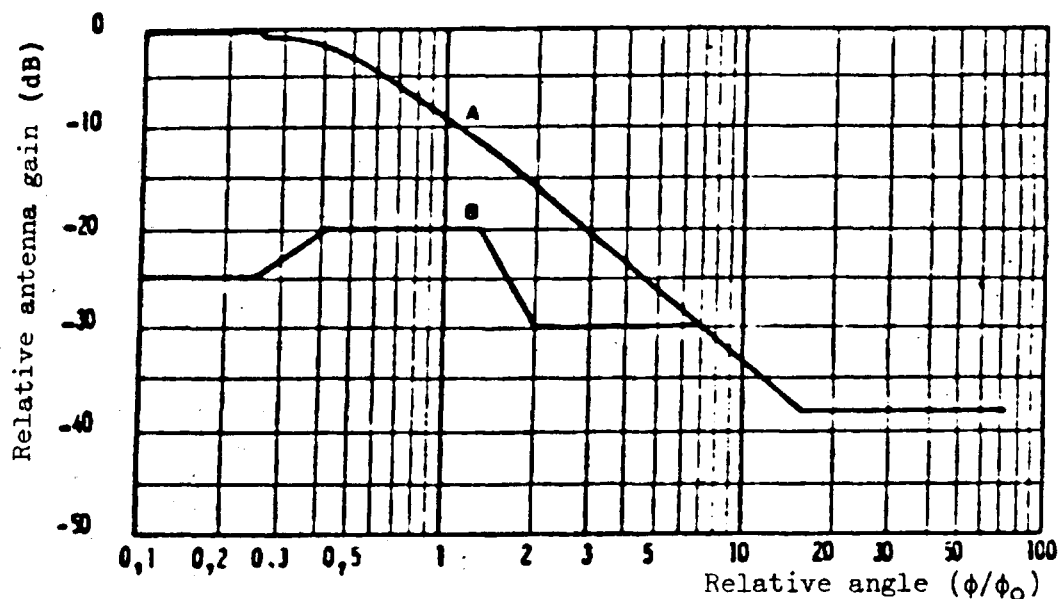


FIGURE 2

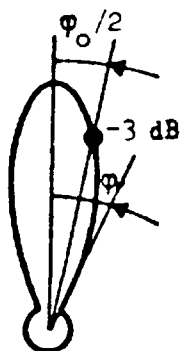
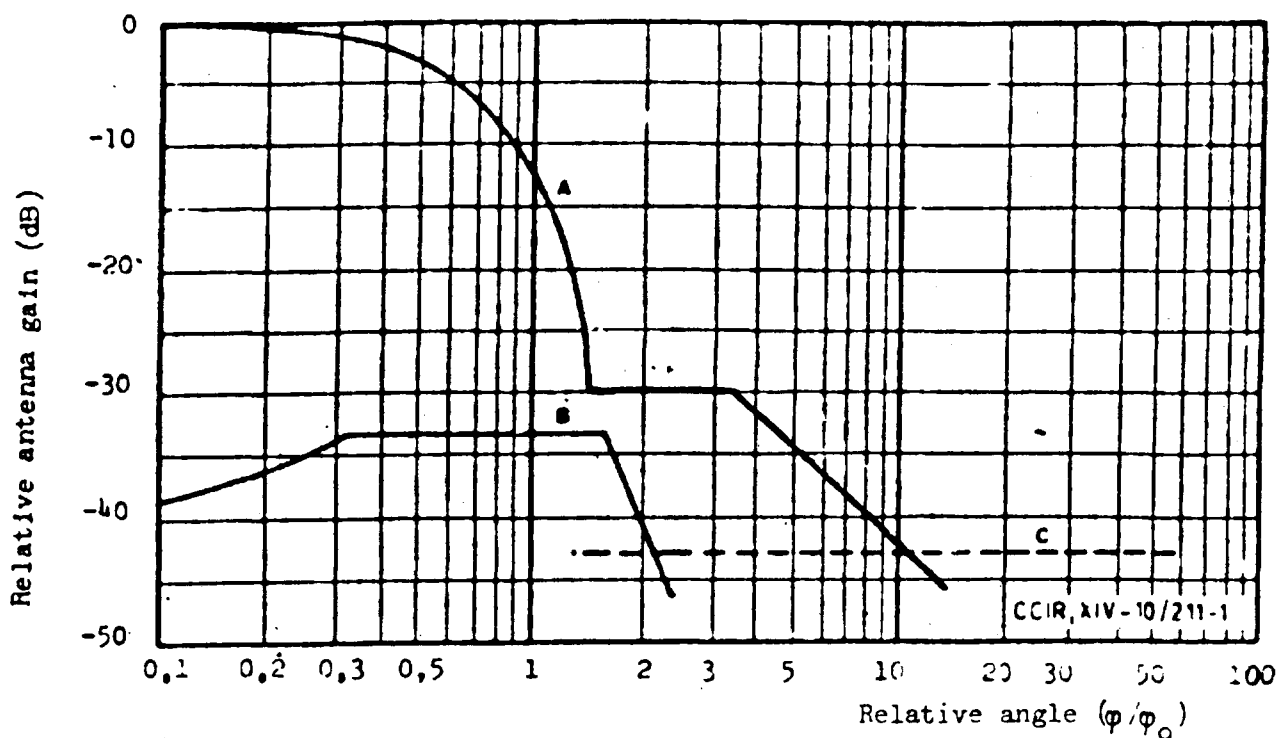
Reference patterns for co-polar and cross-polar components
for receiving antennae for individual reception in Region 2

Curve A : Co-polar component without sidelobe suppression

$$\begin{aligned}
 &0 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-12 \left(\frac{\phi}{\phi_0} \right)^2 && \text{for } 0.25 \phi_0 < \phi \leq 0.707 \phi_0 \\
 &-\left[9.0 + 20 \log_{10} \left(\frac{\phi}{\phi_0} \right) \right] && \text{for } 0.707 \phi_0 < \phi \leq 1.26 \phi_0 \\
 &-\left[8.5 + 25 \log_{10} \left(\frac{\phi}{\phi_0} \right) \right] && \text{for } 1.26 \phi_0 < \phi \leq 15.14 \phi_0 \\
 &-38 \text{ dB} && \text{for } \phi > 15.14 \phi_0
 \end{aligned}$$

Curve B : Cross-polar component

$$\begin{aligned}
 &-25 && \text{for } 0 \leq \phi \leq 0.25 \phi_0 \\
 &-(30 + 40 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 0.25 \phi_0 < \phi \leq 0.44 \phi_0 \\
 &-20 && \text{for } 0.44 \phi_0 < \phi \leq 1.4 \phi_0 \\
 &-(30 + 25 \log_{10} \left| \frac{\phi}{\phi_0} - 1 \right|) && \text{for } 1.4 \phi_0 < \phi \leq 2 \phi_0 \\
 &-30 && \text{until intersection with co-polar component curve; then as for} \\
 &&& \text{co-polar component}
 \end{aligned}$$



Relative antenna gain (dB)

A : Co-polar component

$$-12\left(\frac{\varphi}{\varphi_0}\right)^2 \text{ for } 0 \leq \varphi \leq 1.581\varphi_0$$

$$-30 \text{ for } 1.581\varphi_0 < \varphi \leq 3.16\varphi_0$$

$$-17.5 + 25 \log_{10}\left(\frac{\varphi}{\varphi_0}\right) \text{ for } 3.16\varphi_0 < \varphi$$

after the intersection with curve C : as for curve C

B : Cross-polar component

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 0 \leq \varphi \leq 0.33\varphi_0$$

$$-33 \text{ for } 0.33\varphi_0 < \varphi \leq 1.67\varphi_0$$

$$-(40 + 40 \log_{10}\left|\frac{\varphi}{\varphi_0} - 1\right|) \text{ for } 1.67\varphi_0 < \varphi$$

after the intersection of curve C : as for curve C

C : Minus the on-axis gain

FIGURE 3

Reference patterns for co-polar and cross-polar components
of the satellite transmitting antenna

A N N E X 2

RESULTS OF THE PLANNING EXERCISE FOR THE ORBITAL SEGMENT
75°-100°W LONGITUDE IN REGION 2, ON THE BASIS OF THE
CONSIDERATIONS IN ANNEX 1

1. Orbital positions

Figure 1 shows the orbital positions corresponding to the various service areas.

2. Coverage of the service areas viewed from the respective orbital positions

Figures 2 to 7 show the ellipses corresponding to the service areas on maps representing the earth's surface as seen from a satellite. Since the only maps available were those corresponding to orbital positions every 5°, the various service areas were grouped together on the map closest to them. Within each service area, an identification number and the orbital position from which it is illuminated are shown.

3. Frequency channels, type of polarization, e.i.r.p. and equivalent protection margins

Figures 9 to 14 show the results of the exercise, as obtained in final form with the IFRB programme. The meaning of the columns is given in Figure 8.

<u>Orbital position</u>	<u>Country</u>	<u>No. of beam</u>
75°W	SPM	0254
	B	0202
	B	0203
	B	0204
	GDL	0095
	GUF	0096
77°W	B	0200
	B	0205
	B	0206
79°W	B	0198
	B	0199
	B	0201
	SUR	0214
	URG	0340
	ATN	0234
	ATN	0268
83°W	B	0196
	B	0197
	CAN	0349
	CAN	0350
	TRD	0342
	PRG	0257
84°W	B	0194
	B	0195
87,5°W	CLM	0289
	CLM	0324
	USA	0355
	USA	0358
	VEN	0217
89°W	PRU	0359
90°W	BOL	0019
	BOL	0273
92°W	CAN	0348
	CAN	0351
	USA	0356
	USA	0357
	MEX	0190
	MEX	0191

<u>Orbital position</u>	<u>Country</u>	<u>No. of beam</u>
92°W	HND	0347
95°W	CUB	0218
	PNR	0352
96°W	EQA	0277
	EQA	0278
	ARG	0001
	ARG	0002
	GTM	0290
98°W	BRB	0346
	DOM	0344
100°W	SLV	0221
	JMC	0341
	HNB	0343
	NCG	0353
	HTI	0354
	CTR	0345
	CHL	0208
	CHL	0263
	CHL	0264
	CHL	0265

Figure 1 - Orbital positions corresponding to service area

ELLIPSES CORRESPONDANT AUX ZONES
DE SERVICE CONSIDEREES POUR
L'EXERCICE DE PLANIFICATION

ELLIPSES CORRESPONDING TO SERVICE AREAS
CONSIDERED FOR THE PLANNING EXERCISE

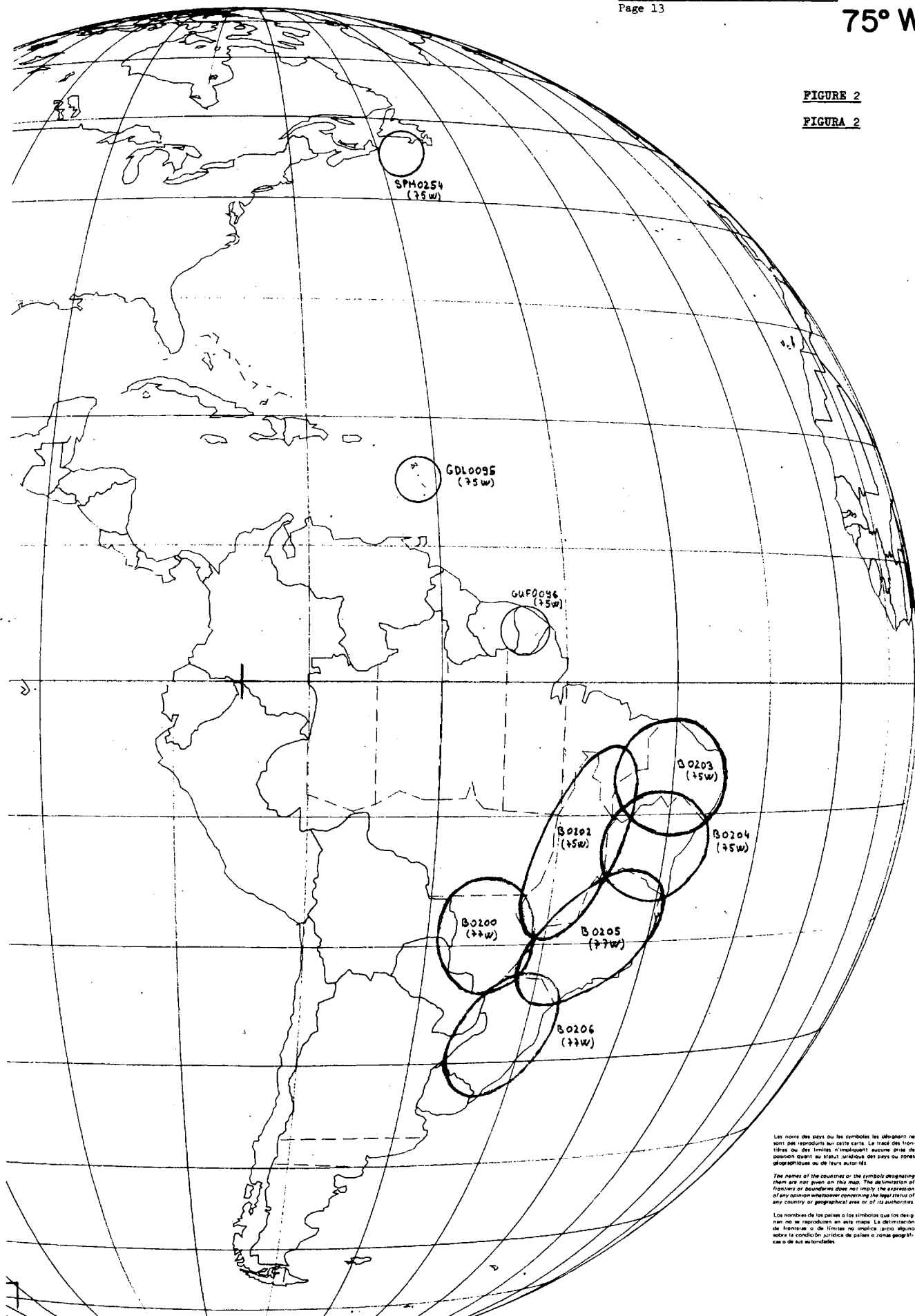
ELIPSES CORRESPONDIENTES A LAS ÁREAS
DE SERVICIO CONSIDERADAS PARA EL
EJERCICIO DE PLANIFICACIÓN

(Figures 2 à 7 -- voir pages suivantes)
(Figures 2 to 7 below)
(Figuras 2 a 7 - a continuación)

75° W

FIGURE 2

FIGURA 2



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

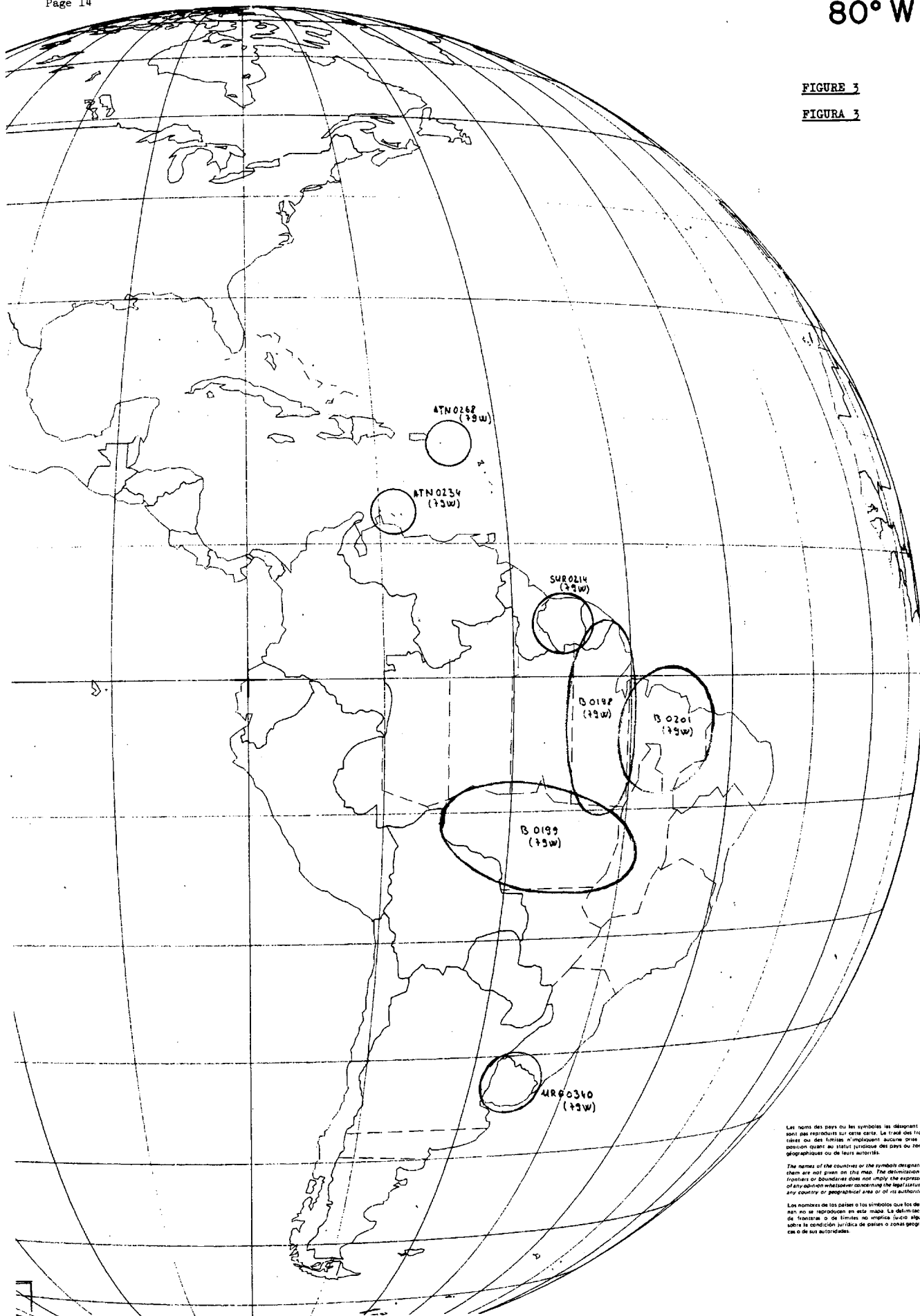
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica, por lo tanto, alguna posición sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

80° W

FIGURE 3

FIGURA 3



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

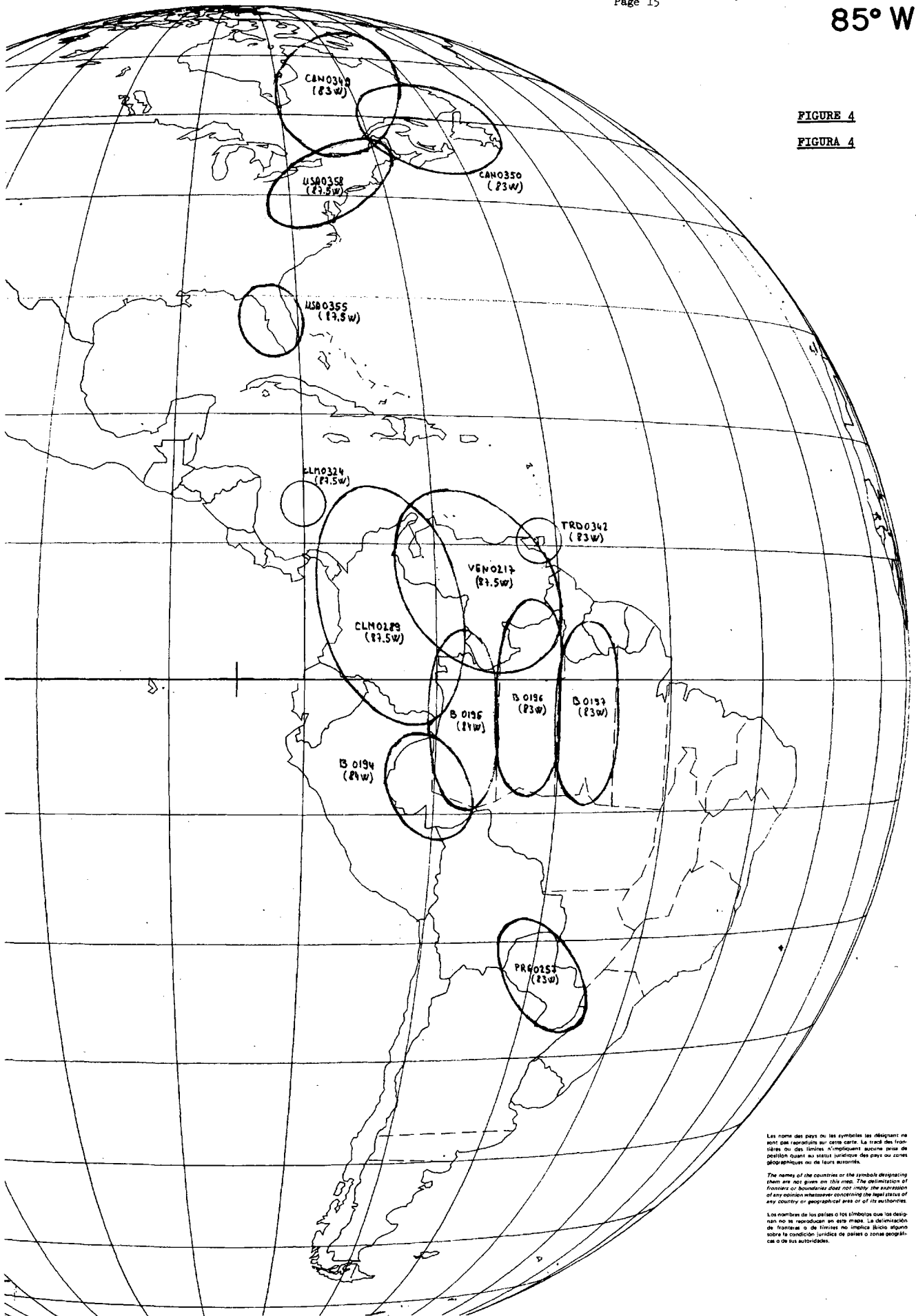
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en esta mapa. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

85° W

FIGURE 4

FIGURA 4



Les noms des pays ou les symboles les désignant ne sont pas repris sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

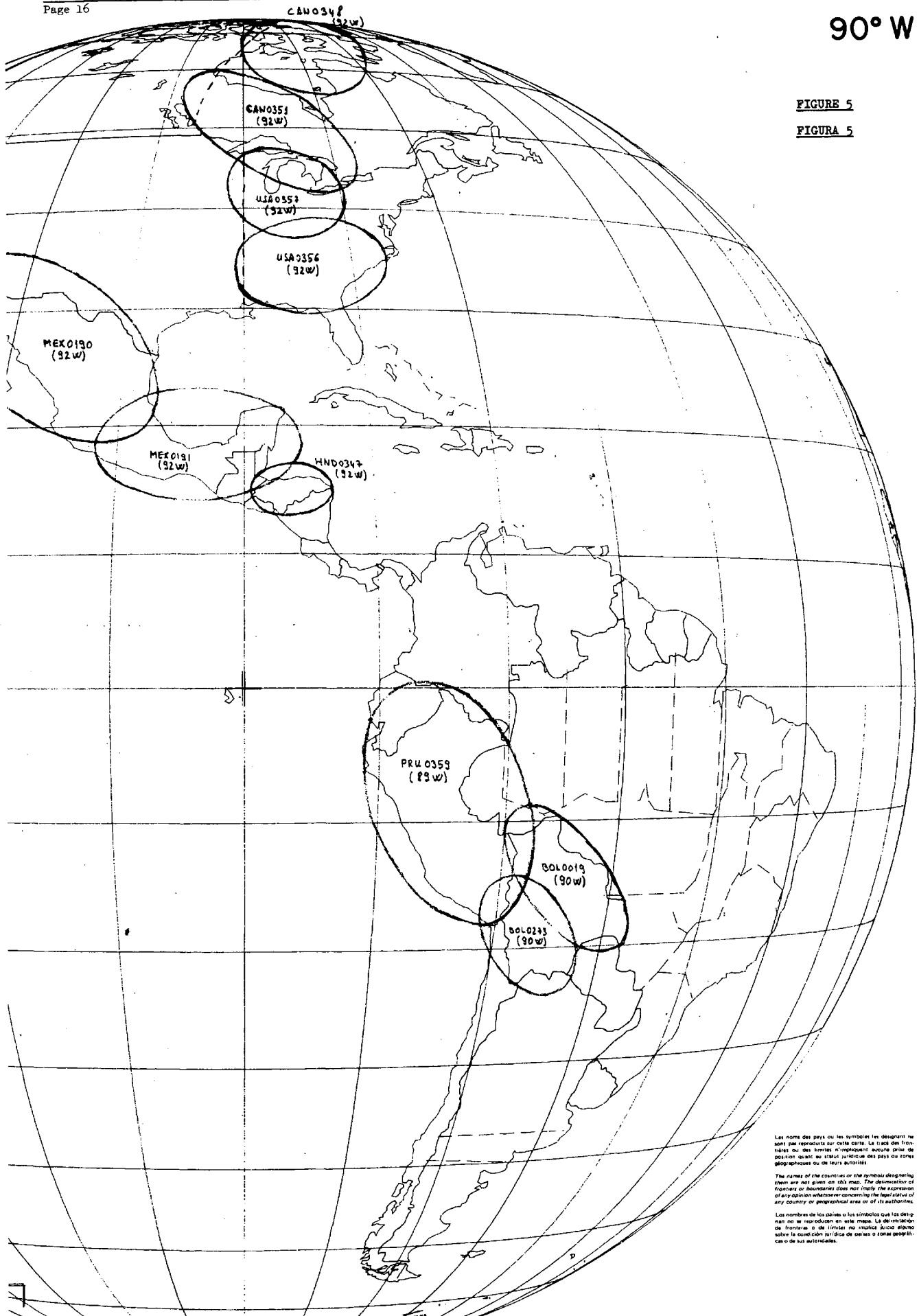
The names of the countries or the symbols designating them are not given on this map. The delimitation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en esta carta. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

90° W

FIGURE 5

FIGURA 5



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

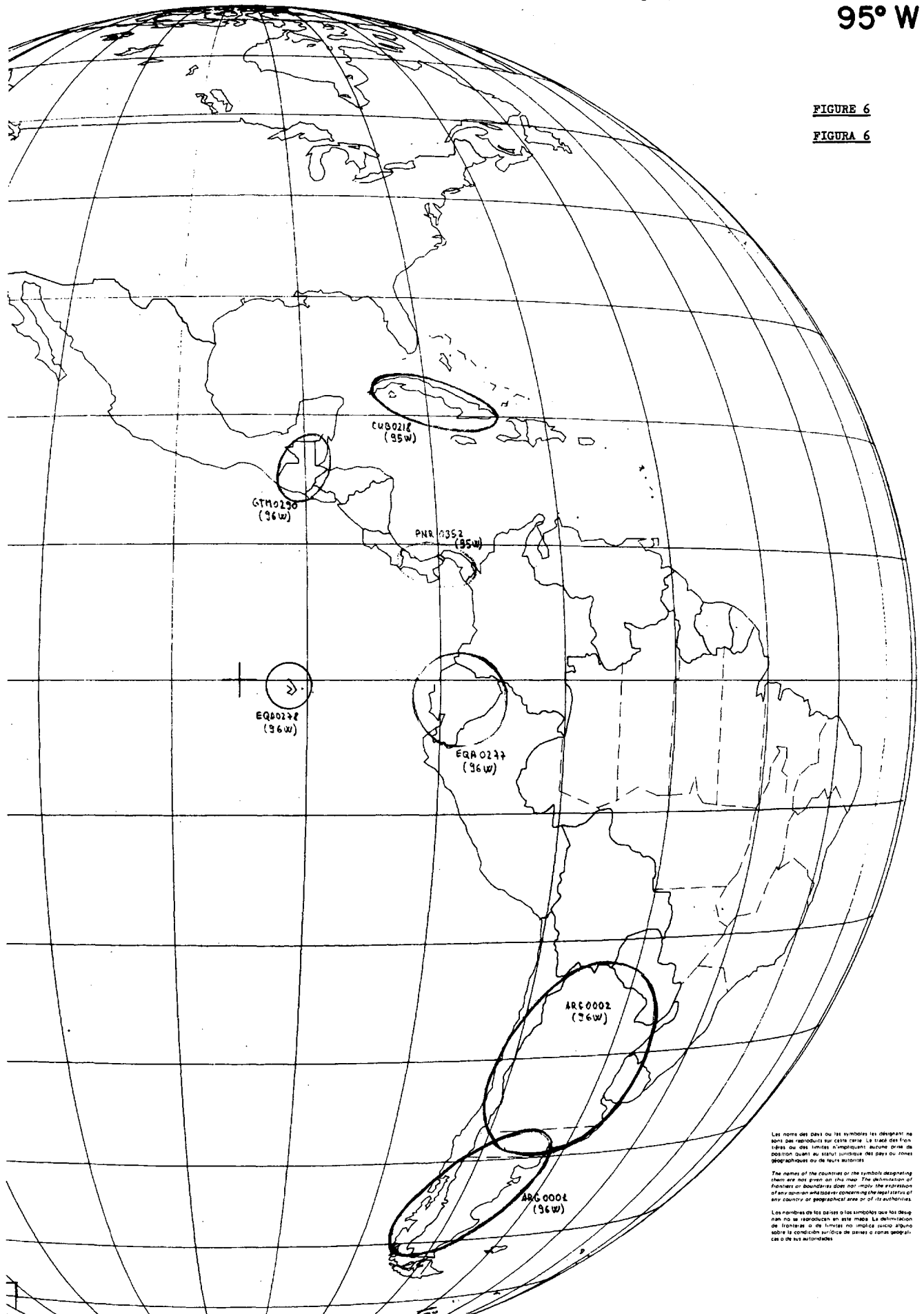
The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

95° W

FIGURE 6

FIGURA 6



Les noms des pays ou les symboles les désignant ne sont pas reproduits sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant au statut juridique des pays ou zones géographiques ou de leurs autorités.

The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en este mapa. La delimitación de fronteras o de límites no implica juicio alguno sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

100° W

FIGURE 7

FIGURA 7



Les noms des pays ou les symboles les désignant ne sont pas indiqués sur cette carte. La trace des frontières ou des limites n'impliquent aucune prise de position quant à l'état juridique des pays ou zones géographiques ou de leurs autorités.

The names of the countries or the symbols designating them are not given on this map. The delineation of frontiers or boundaries does not imply the expression of any opinion whatsoever concerning the legal status of any country or geographical area or of its authorities.

Los nombres de los países o los símbolos que los designan no se reproducen en esta carta. La delimitación de fronteras o de límites no implica ningún juicio sobre la condición jurídica de países o zonas geográficas o de sus autoridades.

Explication des colonnes

Les numéros des colonnes entre parenthèses carrées correspondent aux numéros des colonnes dans la Liste des demandes.

Col.

- 1 - Symbole désignant le pays et numéro de référence de l'I.F.R.B. [Col. 3, 1]
- 2 - Longitude nominale [Col. 7]
- 3 - Numéro du canal
- 4 - Coordonnées géographiques du point de visée [Col. 8] mais en degrés et dixièmes de degrés
- 5 - Ouverture du faisceau d'antenne. Dans le cas d'une antenne elliptique, la colonne comporte deux valeurs représentant respectivement le grand axe et le petit axe de l'ellipse [Col. 10, 11]
- 6 - Orientation de l'ellipse (conformément à la définition donnée dans la lettre-circulaire de l'I.F.R.B. N° 358) [Col. 12]
- 7 - Gain maximal
- 8 - Polarisation
- 9 - 9a Puissance en watt
9b P.i.r.e. en dBW
- 10 - Coordonnées géographiques du point de contrôle critique pour lequel est indiquée la valeur de la marge de protection
- 11 - Marge équivalente de protection
- 12 - Indications relatives aux trois principaux brouilleurs. Chaque colonne contient l'indication du brouilleur (symbole désignant le pays et numéro de série) et la marge de protection qui lui correspond en dB.

Explanation of the Columns

Column numbers shown between square brackets are those of the corresponding columns in the List of Requirements

Col.

- 1 - Country symbol and I.F.R.B. Serial Number [Cols. 3, 1]
- 2 - Nominal longitude [Col. 7]
- 3 - Channel number
- 4 - Boresight geographical coordinates [Col. 8] but in degrees and tenths
- 5 - Antenna aperture. For an elliptical antenna this column contains two figures corresponding respectively to the major axis and the minor axis [Cols. 10, 11]
- 6 - Orientation of the ellipse, as defined in I.F.R.B. Circular-letter No. 358 [Col. 12]
- 7 - Maximal gain
- 8 - Polarisation
- 9 - 9a Power in watts
9b E.i.r.p. in dBW
- 10 - Geographical coordinates of the critical test point for which the protection margin is indicated
- 11 - Equivalent protection margin
- 12 - Indication of the three main interferers; each of these three columns indicates the designation of the interferer (country symbol and serial number) and the corresponding protection margin in dB.

Figure 8 - Figura 8

Explicación de las columnas

Los números de las columnas entre corchetes corresponden a los números de las columnas en la Lista de solicitudes.

Col.

- 1 - Símbolo de país y número de referencia de la I.F.R.B. [Col. 3, 1]
- 2 - Longitud nominal [Col. 7]
- 3 - Número del canal
- 4 - Coordenadas geográficas del centro de puntería [Col. 8] pero en grados y décimas
- 5 - Abertura del haz de antena. Si se trata de una antena elíptica se indican en la columna dos valores que representan los ejes mayor y menor, respectivamente de la elipse [Col. 10, 11]
- 6 - Orientación de la elipse (véase la carta circular N.º 358 de la I.F.R.B.) [Col. 12]
- 7 - Ganancia máxima
- 8 - Polarización
- 9 - 9a Potencia en vatios
9b P.i.r.e. en dBW
- 10 - Coordenadas geográficas del punto de prueba crítico para el que se indica el valor del margen de protección
- 11 - Margen de protección equivalente
- 12 - Indicaciones relativas a las tres fuentes principales de interferencia. En cada columna se indica la fuente de interferencia (símbolo de país y número de referencia) y el margen de protección que le corresponde en dB.

SUMMARY RESULTS -															DATE 07/02/77														
***** PLANNING EXERCISE- BCSAT - REGION 2 - CH. 1 2/2/77 *****															PAGE A														
*****															*****														
* ANTENNA PARAMETERS *															* INTERFERING CARRIERS *														
CARRIER	SAT.	CH.	LORESIGHT	* HALF- * PWR.LW	ANGLE* FROM.*	ON-* AXIS	POL.* IN-	* FOWER	* COORDS.	*EQUIV.* * PROT.*	WORST	SECOND	THIRD																
IDENTITY	GEOS.	ORBIT	NO.	* PAJ MIN*	PAR.	*GAIN*	DEX	* (W) (DBW)*	* LONG	* LAT*	* (DB)	NAME	NAME	NAME	PROT.	PROT.	PROT.	PROT.	PROT.										
NO.	NAME	LONG	LONG	LAT	(DEG)	(DEG)	(DB)	(W)	(DBW)	LONG	LAT	(DB)	(DB)	(DB)	(DB)	(DB)	(DB)	(DB)	(DB)										
*****															*****														
1 B	U195	-84.0	1	-68.0	-3.0	2.3	0.8	86.	41.6	2	79.	60.6	-67.0	-9.6	4.	*BOL0273	4.	*CLM0269	20.	*B 0205 20.									
2 B	0198	-79.0	1	-52.0	-3.0	2.3	0.8	86.	41.6	1	84.	60.8	-49.8	-4.0	12.	*B 0205	13.	*B 0203	24.	*B 0195 25.									
3 B	0205	-77.0	1	-45.0	-20.0	2.2	1.0	50.	40.8	2	107.	61.1	-51.5	-20.0	1.	*B 0198	1.	*B 0195	17.	*URG0340 18.									
4 BOL0273	-90.0	1	-67.0	-18.0	1.6	1.2	110.	41.4	1	88.	60.8	-69.0	-14.0		3.	*B 0195	5.	*CLM0289	9.	*CAN0351 16.									
5 CAN0351	-92.0	1	-86.0	50.0	2.3	1.1	150.	40.2	2	134.	61.5	-83.0	42.0		5.	*USA0357	6.	*HND0347	12.	*BOL0273 15.									
6 CLM0263	-100.0	1	-73.0	-37.0	1.7	0.6	70.	44.2	1	52.	61.3	-72.0	-32.0		20.	*BOL0273	24.	*B 0205	29.	*B 0195 29.									
7 HND0347	-92.0	1	-86.0	15.0	1.0	0.6	2.	46.5	1	26.	60.6	-87.5	14.0		4.	*CAN0351	6.	*BOL0273	9.	*USA0357 13.									
8 SPM0254	-75.0	1	-56.2	47.0	0.6	0.6	0.	48.7	1	20.	61.6	-56.2	47.0		13.	*CAN0350	17.	*B 0205	20.	*B 0198 21.									
9 B	0203	-75.0	2	-40.5	-7.0	1.3	1.3	0.	42.0	2	81.	61.1			*														
10 BRH0346	-98.0	2	-63.0	17.0	0.6	0.6	0.	48.7	2	18.	61.2				*														
11 CAN0350	-83.0	2	-61.0	49.0	2.0	1.0	160.	41.2	2	119.	62.0				*														
12 CLM0289	-87.5	2	-74.0	5.0	3.2	1.8	107.	36.6	1	251.	60.6				*														
13 CTR0345	-100.0	2	-84.0	9.0	0.7	0.6	130.	48.0	2	18.	60.7				*														
14 BOL0095	-75.0	2	-61.7	16.1	0.6	0.6	0.	48.7	1	16.	60.7				*														
15 GTM0290	-96.0	2	-90.5	16.0	0.8	0.6	75.	47.4	2	21.	60.6				*														
16 SUR0214	-79.0	2	-56.0	4.0	0.7	0.7	0.	47.3	2	22.	60.8				*														
17 URG0340	-79.0	2	-56.5	-32.5	0.7	0.6	40.	48.0	2	21.	61.2				*														
18 USA0357	-92.0	2	-87.0	42.0	1.5	1.2	162.	41.7	1	92.	61.4				*														

Figure 9 - Figura 9

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH. 2 2/2/77 ****

PAGE A

* ANTENNA PARAMETERS *												* INTERFERING CARRIERS *												
CARRIER	SAT.	CH.	BORESIGHT	HALF-ANGLE	ON-AXIS	POL.	RF	EIRP	COORDS.	EQUIV.	WORST	SECOND	THIRD											
IDENTITY	GEOS.	ORBIT NO.		FW	PAR.	GAIN	IN-		OF	PROT.	NAME	PROT.	NAME	PROT.	NAME	PROT.								
NO.	NAME	LONG	LONG LAT	(DEG)	(DEG)	(DB)	(W)	(DEW)	LONG LAT	(DB)		(DB)		(DB)		(DB)								

1	B	0195	-84.0	1	-68.0	-3.0	2.3	0.8	86.	41.6	2	79.	60.6											
2	B	0198	-79.0	1	-52.0	-3.0	2.3	0.8	86.	41.6	1	84.	60.8											
3	B	0205	-77.0	1	-45.0	-20.0	2.2	1.0	50.	40.8	2	107.	61.1											
4	BCL0273	-90.0	1	-67.0	-18.0	1.6	1.2	110.	41.4	1	88.	60.8												
5	CAN0351	-92.0	1	-86.0	50.0	2.3	1.1	150.	40.2	2	134.	61.5												
6	CHL0263	-100.0	1	-73.0	-37.0	1.7	0.6	70.	44.2	1	52.	61.3												
7	HND0347	-92.0	1	-86.0	15.0	1.0	0.6	2.	46.5	1	26.	60.6												
8	SPM0254	-75.0	1	-56.2	47.0	0.6	0.6	0.	48.7	1	20.	61.6												

9	B	0203	-75.0	2	-40.5	-7.0	1.3	1.3	0.	42.0	2	81.	61.1	-44.0	-10.0	1.	B	0205	2.	GDL0095	14.	SUR0214	16.	

10	BRB0346	-98.0	2	-63.0	17.0	0.6	0.6	0.	48.7	2	18.	61.2	-63.0	17.0	3.	GDL0095	4.	CTR0345	15.	CLM0289	17.			

11	CAN0350	-83.0	2	-61.0	49.0	2.0	1.0	160.	41.2	2	119.	62.0	-70.5	50.0	11.	USA0357	14.	CAN0351	18.	B	0195	18.		

12	CLM0289	-87.5	2	-74.0	5.0	3.2	1.8	107.	36.6	1	251.	60.6	-70.0	-2.7	13.	B	0195	14.	USA0357	22.	BOL0273	25.		

13	CTR0345	-100.0	2	-84.0	9.0	0.7	0.6	130.	48.0	2	18.	60.7	-83.5	10.0	5.	CLM0289	6.	BRB0346	12.	GTN0290	16.			

14	GDL0095	-75.0	2	-61.7	16.1	0.6	0.6	0.	48.7	1	16.	60.7	-61.0	16.1	2.	BRB0346	3.	B	0203	10.	CLM0289	20.		

15	GTN0290	-96.0	2	-90.5	16.0	0.8	0.6	75.	47.4	2	21.	60.6	-90.1	13.9	8.	BRB0346	13.	CTR0345	13.	HND0347	17.			

16	SUR0214	-79.0	2	-56.0	4.0	0.7	0.7	0.	47.3	2	22.	60.8	-55.0	6.0	4.	URG0340	6.	B	0198	11.	B	0203	12.	

17	URG0340	-79.0	2	-56.5	-32.5	0.7	0.6	40.	48.0	2	21.	61.2	-54.0	-34.0	3.	SUR0214	6.	B	0205	8.	B	0203	14.	

18	USA0357	-92.0	2	-87.0	42.0	1.5	1.2	162.	41.7	1	92.	61.4	-80.0	42.5	6.	CAN0351	7.	CLM0289	14.	CAN0350	16.			

Figure 10 - Figura 10

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH.10 2/2/77 ****

PAGE A

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*****
*          * ANTENNA PARAMETERS *          *          * INTERFERING CARRIERS *
*          *          *          *          *          *          *          *
* CARRIER * SAT. * CH. * EPORESIGHT * FWRD * FROM * AXIS * IN- * RF EIRP * CRITICAL * MARG. *          *          *          *          *
* IDENTITY * GLOS * ORBIT * NO. * * MAJ MIN * PAR. * GAIN * DEX * * LOCATION * * NAME * PROT. * SECOND * THIRD * PROT. *
* NO. NAME * LONG * * LONG LAT * (DEG) * (DEG) * (DE) * * (W) (DBW) * LONG LAT * (DB) * * NAME * (DB) * * NAME * (DB) * * NAME * (DB) *
*          *          *          *          *          *          *          *
1 H 0197 -85.0 9 -57.5 -3.0 2.3 0.8 86. 41.6 2 85. 60.9 * * *
2 L 0200 -77.0 9 -56.0 -19.0 1.5 1.2 86. 41.7 2 86. 61.0 * * *
3 HT0234 -79.0 9 -69.0 12.0 0.6 0.6 0. 48.7 2 16. 60.7 * * *
4 CHL0208 -100.0 9 -70.0 -25.0 2.2 0.6 80. 43.0 1 66. 61.2 * * *
5 CUB0218 -95.0 9 -79.2 21.2 1.6 0.6 161. 44.4 2 45. 60.9 * * *
6 ECU0278 -96.0 9 -91.0 -1.0 0.6 0.6 0. 48.7 1 16. 60.6 * * *
7 MEX0190 -92.0 9 -107.0 27.0 3.2 1.8 150. 36.6 1 282. 61.1 * * *
8 PRU0359 -89.0 9 -74.0 -8.0 3.3 2.0 115. 36.1 2 293. 60.7 * * *
9 USA0358 -87.5 9 -75.0 42.0 1.7 0.9 30. 42.4 1 84. 61.6 * * *
10 ARG0001 -96.0 10 -66.0 -43.0 2.2 0.8 50. 41.8 2 107. 62.1 -62.0 -40.0 11. *PNR0352 13. *MEX0191 21. *CHL0208 23.
11 H 0194 -84.0 10 -70.5 -7.5 1.3 1.1 110. 42.7 2 64. 60.7 -68.6 -10.3 0. *PRG0257 2. *PRU0359 6. *VEN0217 16.
12 L 0201 -79.0 10 -47.0 -4.5 1.6 1.0 81. 42.2 1 77. 61.1 -45.3 -8.5 0. *L 0202 0. *PRG0257 14. *VEN0217 20.
13 B 0202 -75.0 10 -46.0 -13.0 2.3 0.8 76. 41.6 2 87. 61.0 -50.0 -16.3 1. *L 0200 1. *B 0201 17. *PRG0257 24.
14 HT10354 -100.0 10 -70.0 18.0 0.6 0.6 0. 48.7 2 18. 61.1 -72.0 18.1 2. *VEN0217 5. *CUB0218 9. *NCG0353 11.
15 MEX0191 -92.0 10 -94.0 18.0 2.6 1.4 1. 38.6 2 164. 60.8 -88.0 20.5 7. *CUB0218 12. *PNR0352 13. *MEX0190 14.
16 NCG0353 -100.0 10 -85.0 13.0 0.8 0.8 0. 46.2 1 29. 60.8 -84.0 15.0 1. *MEX0191 2. *HT10354 13. *CHL0208 18.
17 PNR0352 -95.0 10 -80.0 8.0 1.0 0.6 175. 46.5 2 27. 60.8 -82.8 8.0 0. *MEX0191 3. *ARG0001 7. *NCG0353 9.
18 PRG0257 -83.0 10 -59.0 -22.8 1.6 0.9 106. 42.7 1 69. 61.1 -62.0 -20.0 4. *B 0194 5. *B 0201 15. *VEN0217 17.
19 VEN0217 -87.5 10 -66.0 7.0 2.5 1.6 125. 38.2 1 186. 60.9 -73.5 9.2 4. *PNR0352 6. *PRU0359 13. *PRG0257 15.
*****

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Figure 12 - Figura 12

Figure 13 - Figura 13

DATE 07/02/77

SUMMARY RESULTS -

**** PLANNING EXERCISE- PCSAT - REGION 2 - CH.18 2/2/77 ****

PAGE A

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*****
* ANTENNA PARAMETERS *
* CAPRILR * SAT. * * * * * POWER * COORDS. * EQUIV. *
* IDENTITY * GEOS. * CH. * FORESIGHT * PWR.LW * FROM.*AXIS* IN- * RF EIRP * CRITICAL * MARG.*
* * ORBIT * NO. * * MAJ MIN * PAR. * GAIN * DEX * * LOCATION * *
NO. NAME * LONG * * LONG LAT * (DEG) * (DEG)*(DE)* * (W) (DBW)* LONG LAT* (DB) *
*****
1 ATN0268 -79.0 17 -63.0 18.0 0.6 0.6 0. 48.7 2 17. 61.0
2 I 0199 -79.0 17 -57.0 -13.0 2.3 1.3 160. 39.5 1 140. 61.0
3 I 0206 -77.0 17 -53.0 -28.0 1.9 1.0 57. 41.5 2 97. 61.3
4 L0L0U19 -90.0 17 -64.0 -14.0 2.2 1.2 130. 40.0 1 129. 61.2
5 CAN0349 -83.0 17 -72.0 54.0 1.6 1.6 0. 40.2 2 150. 61.9
6 CHL0264 -100.0 17 -70.0 -55.0 2.2 0.6 70. 43.0 1 80. 62.1
7 CLM0324 -87.5 17 -80.0 13.0 0.6 0.6 0. 48.7 2 16. 60.8
8 DOM0344 -98.0 17 -73.0 18.0 0.6 0.6 0. 48.7 1 18. 61.1
9 GUF0096 -75.0 17 -52.4 3.8 0.6 0.6 0. 48.7 1 17. 61.0
10 HNB0343 -100.0 17 -88.0 17.0 0.6 0.6 0. 48.7 2 17. 60.9
11 TRD0342 -83.0 17 -62.0 10.0 0.6 0.6 0. 48.7 1 17. 61.0
12 USA0356 -92.0 17 -84.0 35.0 2.0 1.2 13. 40.4 1 123. 61.4
*****
13 ARG0002 -96.0 18 -65.0 -30.0 2.8 1.6 60. 37.6 2 258. 61.7 -62.5 -22.5 10. *EQA0277 11. *L0L0U19 22. *I 0196 25.
*****
14 I 0196 -83.0 18 -62.0 -1.5 2.3 0.8 86. 41.6 2 86. 60.9 -65.0 -5.0 11. *CAN0349 15. *I 0204 19. *I 0199 20.
*****
15 B 0204 -75.0 18 -41.5 -12.5 1.5 1.2 68. 41.7 2 93. 61.4 -40.0 -16.5 17. *I 0206 22. *B 0196 24. *I 0199 24.
*****
16 CAN0348 -92.0 18 -75.0 65.0 1.6 0.8 165. 43.2 2 88. 62.6 -77.0 57.0 9. *CAN0349 10. *USA0356 16. *ARG0002 20.
*****
17 CHL0265 -100.0 18 -110.0 -27.0 0.6 0.6 0. 48.7 1 18. 61.1 -110.0 -27.0 12. *SLV0221 15. *JMC0341 18. *ARG0002 24.
*****
18 EQA0277 -96.0 18 -78.0 -2.0 1.1 1.1 0. 43.4 1 56. 60.9 -79.0 -5.0 2. *ARG0002 2. *SLV0221 21. *CAN0348 25.
*****
19 JMC0341 -100.0 18 -77.5 18.5 0.6 0.6 0. 48.7 2 18. 61.1 -77.2 17.0 6. *DOM0344 11. *HNB0343 13. *SLV0221 14.
*****
20 SLV0221 -100.0 18 -89.0 14.0 0.6 0.6 0. 48.7 1 17. 60.9 -88.0 14.0 7. *HNB0343 12. *CHL0265 13. *JMC0341 15.
*****
21 USA0355 -87.5 18 -83.0 27.0 1.0 0.8 95. 45.2 1 39. 61.1 -82.0 31.0 2. *USA0356 2. *CAN0348 22. *B 0196 24.
*****

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Figure 14 - Figura 14

4. Minimum elevation angle and time of eclipse during equinox

The Conference has considered the following minimum values for the elevation angle as a guide :

40° for tropical zones
30° for mountainous zones
20° for other zones

For zones of high latitudes a compromise value would be adopted.

For the calculation of the time of the eclipse, the following formula might be used :

$$HL = 23.28 + \frac{1}{15} (\lambda - H)$$

where : λ is the nominal longitude of the satellite, in degrees, in relation to the Greenwich meridian

H is the longitude of the hourly meridian corresponding to the service area in degrees in relation to the Greenwich meridian

HL is the local time corresponding to the eclipse during equinox.

Below is shown a procedure for calculating, both graphically and analytically, the elevation angle at which a geostationary satellite is seen.

As is known, the geographical coordinates $\Delta\lambda$ (relative geographical length, taking the sub-satellite point as reference) and ϕ (the geographical latitude) and the elevation angle ϵ for a given point (for the geostationary satellite) are linked by the following relations :

$$\cos \psi = \cos \Delta\lambda \cos \phi \quad (1)$$

$$\operatorname{tg} \epsilon = (\cos \psi - 0,15127) / \sin \psi \quad (2)$$

$$\psi = 2 \arctg [0,8686 (\sqrt{0,977 + \operatorname{tg}^2 \epsilon} - \operatorname{tg} \epsilon)] \quad (3)$$

For a given ϵ , it is possible from (3) and (1), for a point defined by ϕ , to find the $\Delta\lambda$, namely the maximum relative length or the relative position on the geostationary orbit which enables the satellite to be just seen at angle ϵ . Using $\Delta\lambda$ and λ , we can find the exact position of the satellite λ_s on the orbit.

For rapid calculation, and for elevation angles of 10° , 15° and 20° , curves have been plotted (see the annex to this document) for determining the limit position, i.e., the extreme position of the satellite for any point. It is sufficient to insert on the graph paper (ordinates : geographical width, $1^\circ = 2 \text{ mm}$; abscissae : geographical length, $1^\circ = 2 \text{ mm}$) the geographical coordinates of the point in question and place on this point the curves for ϵ . The part $\Delta\lambda$ on the axis of the abscissae gives the relative length for the sub-satellite point, i.e. the position of satellite (Figure 1). The absolute position of the satellite is given by λ_s , i.e. the difference between $\Delta\lambda$ and λ .

For a value of ϵ other than 10° , 15° and 20° , we can find ψ on the curve in Figure 2 from (1) :

$$\cos \Delta\lambda = \cos \psi / \cos \varphi$$

and

$$\Delta\lambda = \arccos \frac{\cos \psi}{\cos \varphi}$$

Example : The point for which an elevation angle of at least 24° must be ensured is found at $\phi = 42^\circ$. The maximum permitted $\Delta\lambda$ is sought.

Using Figure 2, for $\epsilon = 24^\circ$, $\psi = 58.2^\circ$, the satellite position is given by :

$$\cos \Delta\lambda = \cos 58.2^\circ / \cos 42^\circ$$

$$\Delta\lambda = 44.84^\circ$$

$$\lambda_s = \Delta\lambda - \lambda$$

The λ represents the geographical length of the point in question.

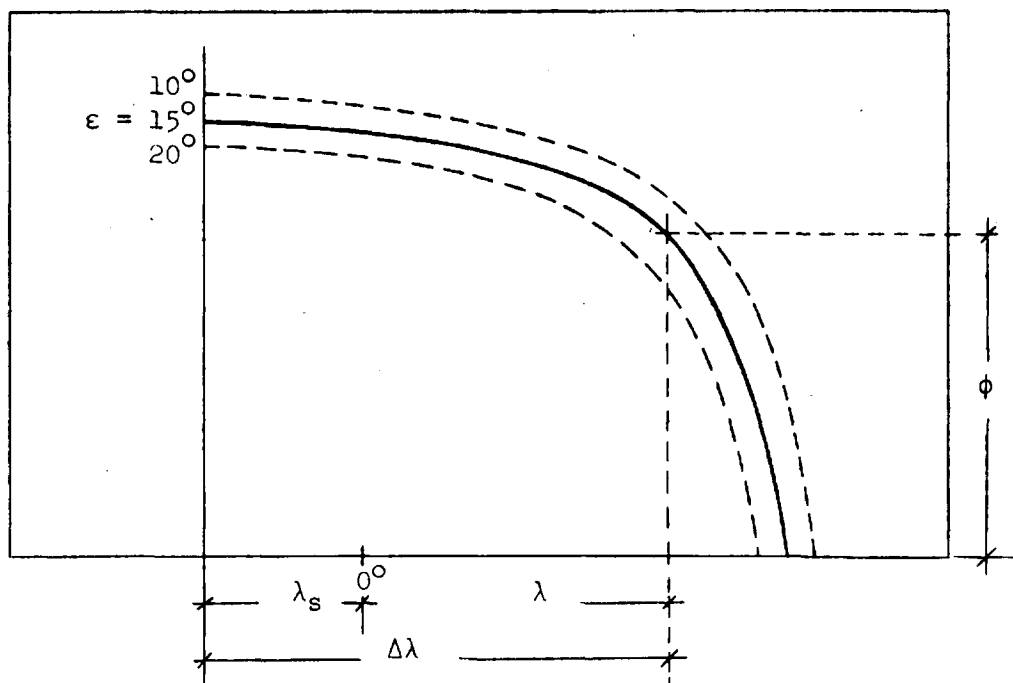


Figure 1 - Figura 1

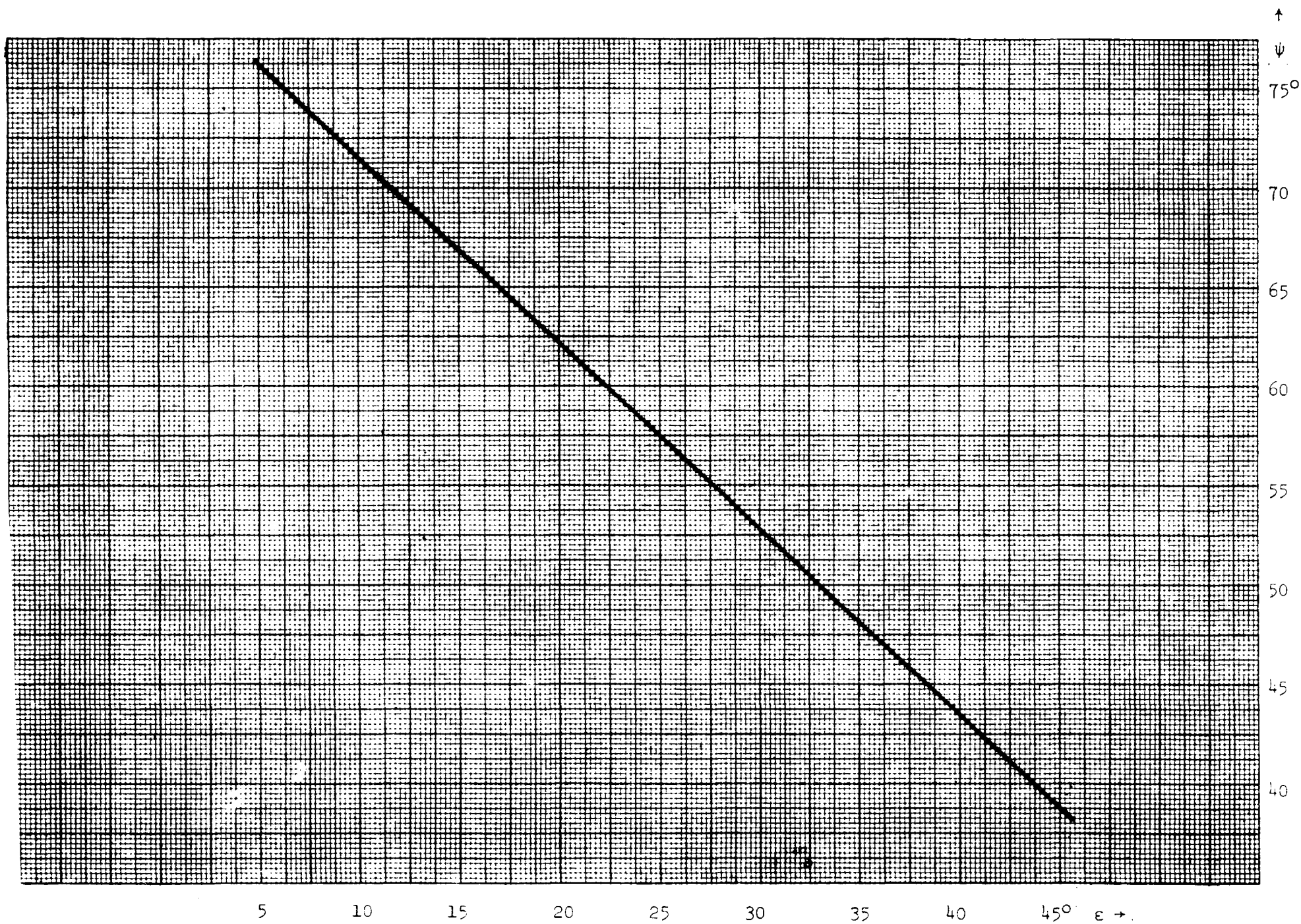
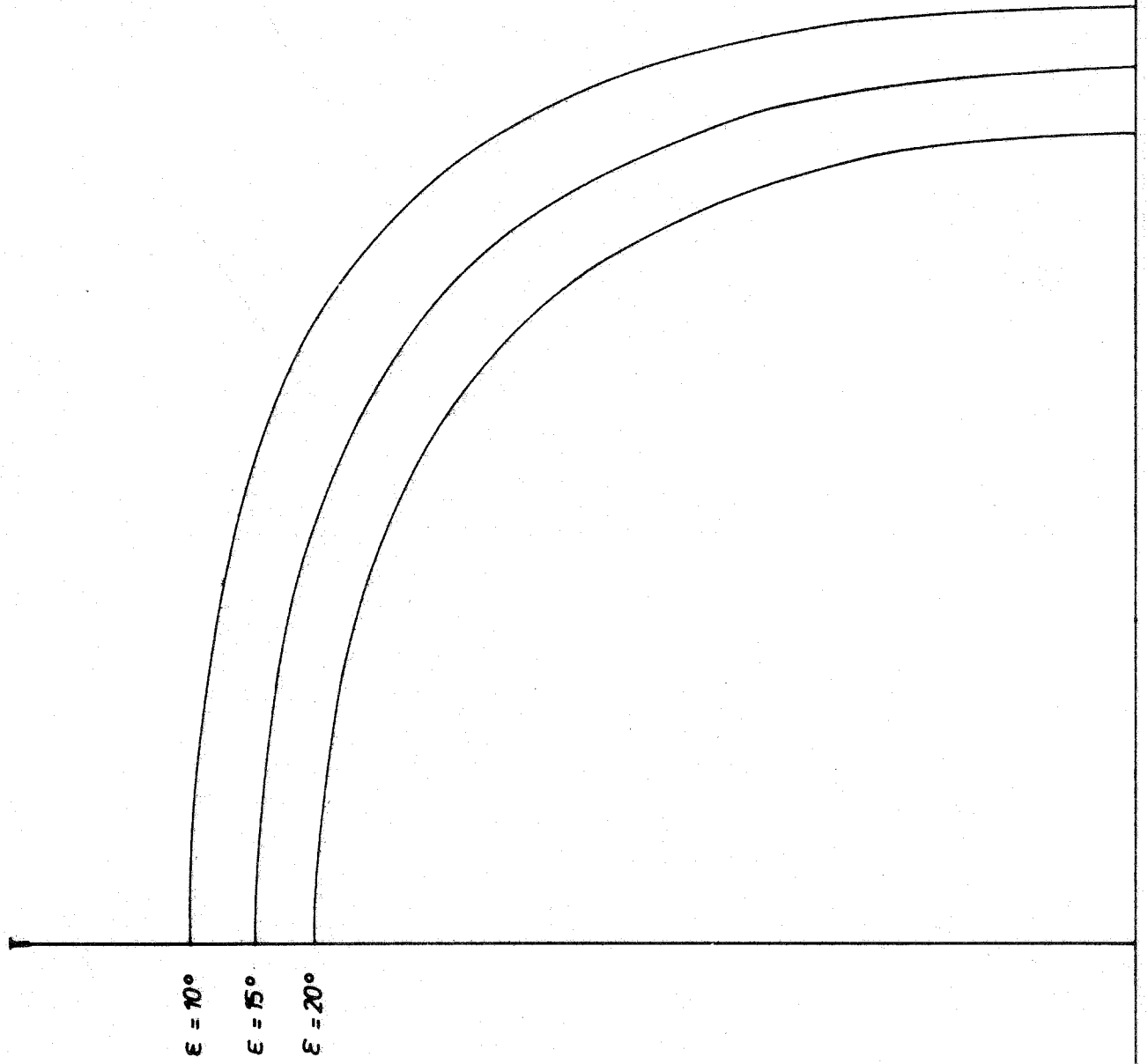


Figure 2 - Figura 2

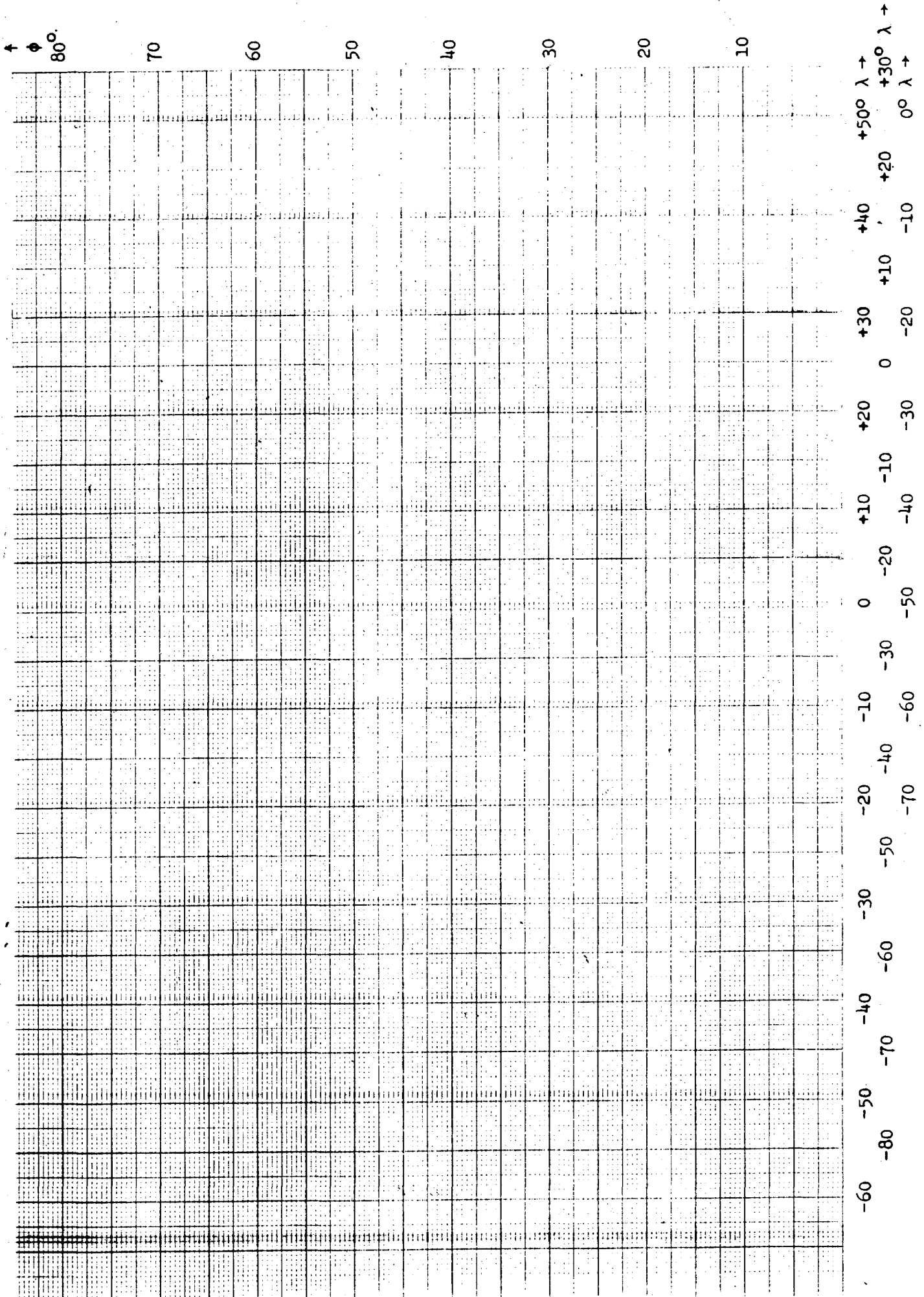
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BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 255-E

9 February 1977

Original : French

PLENARY MEETING

First Report by Committee 5

1. At its meeting on 7 February 1977, Committee 5, having considered Documents Nos. 204(Rev.1), 226, DT/47 and DT/48, approved the following texts :

- a) Provisions which will govern the Broadcasting-Satellite Service in Region 2 until a detailed plan has been drawn up;
- b) Recommendation No. BS ... concerning the convening of a regional administrative radio conference for carrying out detailed planning for the space services in the frequency band 11.7 to 12.2 GHz in Region 2;
- c) Resolution No. BS ... relating to the preparation for a regional administrative radio conference for the planning of the space radio services in the frequency band 11.7 to 12.2 GHz in Region 2;
- d) Resolution No. BS ... relating to the submission of requirements for the Broadcasting-Satellite Service in Region 2;
- e) Paragraphs 3.7 (Channel spacing) and 3.8.1 (Spacing in orbit) of the Annex to the Final Acts concerning the data used for drawing up the plan;
- f) Technical characteristics given in the Plan.

These texts have been referred directly to the Editorial Committee.

2. As regards the Recommendation referred to in paragraph 1 b) above, Committee 5 did not adopt a proposal by Algeria to amend paragraph a) of the Recommendation to read as follows :

"a) That a Regional Administrative Radio Conference shall be held not later than 1982 for the purpose of carrying out detailed planning for the Broadcasting-Satellite and Fixed-Satellite Services in Region 2, in accordance with No. 47 of the Convention (Malaga-Torremolinos 1973) and with b), c), d) and e) below;"

A. PETTI
Chairman of Committee 5



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum to
Document No. 256
11 February 1977
Original : English

COMMITTEE 5

Report of Sub-Working Group 5A2/3

Page 4 (Middle East area)

Islamic programme requirements :

2. replace to read :

"One new beam of 1 channel intended for BHR has been broadened to cover KWT, QAT and part of OMA. The coverage also includes part of ARS, and by agreement with BHR and the countries concerned, the channel has been assigned to ARS."

4. add after the word "requirements" :

"It was also found possible to provide an additional channel for IRQ with a view to meeting these requirements."



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 256-E

9 February 1977

Original : English

COMMITTEE 5

Report of Sub-Working Group 5A2/3

The Sub-Working Group 5A2/3 was formed on 1 February 1977 as a result of amalgamating the two previous Sub-Working Groups 5A2 and 5A3. The terms of reference were to construct a frequency/orbit positions Plan for Regions 1 and 3 as contained in Document No. DL/44 of 1 February 1977.

Mr. Charles AMIRA (Kenya) was elected Chairman of the combined group.

Messrs. H. HAAGENSEN (Australia) and RYVOLA (Czechoslovakia) were elected Vice-Chairmen.

The late afternoon of 1 February and the following morning, the Group 5A2/3 discussed the organization of work Plan and collection of relevant inputs to the Work Plan.

For purposes of executing its work efficiently, the Working Group was split up into three functional groupings :

- two Planning Sub-Groups for Regions 1 and 3 respectively,
- one Sub-Group for Computer/Conference Interface Work - for the inputs/outputs to and from the Planning Sub-Groups.

A. For Region 1

- | | |
|-------------------|-------------------|
| 1. United Kingdom | Dr. Philips |
| 2. Sweden | Mr. P. Pettersson |
| 3. Italy | Mr. Tomati |
| 4. Yugoslavia | Mr. Brajan |
| 5. Sudan | Dr. Idris Ahmed |
| 6. Ivory Coast | Mr. Bron |

B. For Region 3

- | | |
|-------------------|--|
| 7. Japan | Mr. Matsushita |
| 8. Germany (F.R.) | Mr. Mägele |
| 9. China (P.R.) | Mr. Pan Chen-chung |
| 10. India | Mr. Krishnamurthy |
| 11. Nigeria | Mr. Akinwumi |
| 12. Iran | |
| 13. Norway | Mr. Tom Heggelund assisted both Planning Sub-Groups. |



C. Computer/Conference Interface Team

- | | |
|-----------------|------------------|
| 14. Hungary | Mr. Villányi |
| 15. Netherlands | Mr. Dito |
| 16. Morocco | Mr. Hamam |
| 17. Malaysia | Mr. Tan Soon Hie |

The Sub-Working Group was to base its work on requirements given in Document No. 103(Rev.2) from IFRB. The document was not received until 1030 hrs on 2 February 1977. A number of mistakes was noticed in Document No. 103(Rev.2) :

- some administrations had not indicated preferred orbital arcs,
- some administrations had, in fact, put in big beams, and some administrations were still going on through the Conciliation Committee to change their requirements.

These problems, together with the requirements of preferred position groupings delayed planning process and at times made it difficult.

The Working Group however embarked on actual planning of orbital positions in the evening of 2 February 1977.

Since then the two Planning Sub-Groups have each had to do and re-do the Plan for more than six times. This was because of difficulties in placing the super beams and/or many beams by some countries or sometimes due to changes to requirements through the Conciliation Committee. Each Planning Sub-Group has made more than five computer runs, making some changes within the guidelines in order to construct a good Plan.

After many hours of hard work and many late nights, Working Group 5A2/3 has managed to construct an orbit position of the Plan which has shown fairly good results.

The final results of the Plan could have been improved even more if some administrations had accepted the orbit positions as had been given by the Planners.

In general, the most difficult areas which took the Working Group most of the time were :

- West and North African areas
- West European area
- The Middle East area
- The area around India, Bangladesh and China
- The Australian area.

West and North Africa

1. The results of a number of attempted solutions to the Tunisian super beam intended to cover neighbouring countries showed serious interferences to several countries in Africa and Europe.

Some of the solutions were :

- a) Put two beams from -43° orbit position on channels 35 and 39. E (Spain) was affected seriously and CVA and the Vatican beam were very seriously affected.
- b) Put the beam from -25° orbit position on the top of TUN Channel 38 and MTN (Mauritania), CTI (Ivory Coast) and GRC (Greece) were affected seriously.
- c) Tried again on position -37° Channel 1 and results not successful and also the possibilities of SMR accepting only 4 channels were not unclear.

This super beam is a very difficult one to accommodate without serious effects to the Plan.

Possible solutions to this problem are :

- i) remove the supra-national beam completely and use five channels on the beam with national coverage;
- ii) drop one channel from the national beam and reduce the power of the supra-national beam.

Western European area

1. CVA supra-national beam causes serious interference to E (Spain) and YUG (Yugoslavia). In addition, the CVA beam suffers some interference from MTN (Mauritania).

Possible solution :

CVA reduce drastically the supra-national beam (at least 3 dB) in order to reduce interference to other countries.

2. There are very high negative margins for E (Spain), CNR (Canary Islands), POR (Portugal) and AZR (Azores). This is because of co-channel interferences.

Reason :

The Administrations concerned want to be on the same channel and in the same orbit position.

Possible solution :

This is a matter to be sorted out between the Administrations concerned.

Middle East area

Attempts have been made to accommodate as much as possible the Islamic requirements :

1. We have increased the number of channels of the following countries from 4 to 5 channels : QAT, BHR and UAE.

2. One new beam of one channel for BHR has been broadened to cover KWT, QAT and part of OMA.
3. One channel of SYS (Syria) has been expanded to cover JOR, LBN and SYS.
4. Two additional channels have been given to MLA 1 and INS 9 for Islamic requirements.

It is not possible to give additional channels to PAK, BGD and MLA 2 and INS 1, 3, 5 and 8 because this could spoil the Plan by causing severe interference to other countries.

Region 3

1. Area around IND, BGD and CHN

The most difficult problem around this area has been the interference of one of India's beams to one channel of BGD (Bangladesh). A number of changes have been tried but the very best negative margin that has been achieved is around -4 dB.

2. Area around Australia

The Sub-Group has had a lot of difficulties with the Australian requirements. A number of attempts have been made to accommodate the Australian requirements without success.

The Australian Administration had asked for 6 beams of 6 channels per beam in two orbit positions (3 beams of 6 channels each for orbit position 105°E and 3 beams of 6 channels each for orbit position 135°E) plus 3 beams of 3 channels each in another orbit position 130°E.

In all, the Australian requirements were for 9 beams with a total of 45 channels.

There have been a lot of interferences caused by these requirements :

- a) mutual interference within the Australian own coverage area,
- b) serious interference to PNG and NZL.

The Sub-Working Group has had a number of consultations with the Australian Delegation with a view to getting a decision as to which beams and channels should be used in the Plan.

The Australian Administration has not given us a decision on this.

Possible solution :

The Australian Administration to decide which beams and channels to be applied in the Plan without causing interferences to neighbouring countries of PNG and NZL.

In order to improve the quality of the Plan, it was found necessary, with the consultations of the relevant administrations to move some countries outside their preferred orbital arcs.

LIST OF ASSIGNED ORBIT POSITIONS OUTSIDE INDICATED ARC			
Country	Arc indicated	Position assigned	Remarks
URS-1,2,9,10,11 } UKR, BLR }	10 to 20°E	23°E	
GRC CYP	18 to 11°W } 16 to 11°W }	5°E	to be with the Nordic countries
NOR, S, DNK, } FNL, ISL-2 }	0 to 4°E	5°E	nearest to preferred position
E	26 to 11°W }		to satisfy grouping preference (POR, E, G, IRL)
G } IRL }	30 to 15°W }	31°W	
MLI	34 to 16°W	37°W	best position to reduce negative margins
TUN	23 to 15°W	25°W	to satisfy grouping preference (LBY, ALG, MRC)
KWT			a) not same polarization as BHR, but in same 400 MHz band b) 5 channels only possible for national coverage
YMS			5 channels only on beam for total national coverage

I would like on behalf of my Planning Group to thank all the administrations in general and in particular to the above administrations for the understanding and cooperation given in order to achieve a fairly good plan. I wish also to thank both the IFRB and TDF for all the assistance they gave to the Planning Group.

My deepest thanks to the extremely hard working and friendly team of people I worked with in the Planning Group 5A2/3. I have never before seen such a determined, tireless team of workers.

And lastly to Mr. S. TEMPLE of the United Kingdom for the good guidance and inspiration.

Charles AMIRA
Chairman of Planning Group 5A2/3

PLENARY MEETING

R.1

1st SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for second
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
B.1	133(Rev.1)	Texts relating to the Re-arrangement of the RR and the AR

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 3 pages



PART II**Re-arrangement of the Radio Regulations and the
Additional Radio Regulations**

The World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, acting within its terms of reference relating to the re-arrangement of the Radio Regulations and the Additional Radio Regulations, decided:

a) Publication of the "Re-arrangement of the Radio Regulations"

to instruct the Secretary-General to draw up and distribute the final text of the "Re-arrangement of the Radio Regulations" as endorsed in principle by this Conference. This edition shall be published by September 1977 and its main aim will be to serve as a basis for Administrations in submitting their proposals to the World Administrative Radio Conference in 1979 (see the following Resolution);

b) Presentation of the new edition

the presentation of the new edition should conform to the following pattern:

Title:

**Re-arrangement
of the
Radio Regulations**

Contents:

- Table of contents (blue pages)
- Resolution adopted by the Conference
- Preface explaining how to use the publication
- Text of the Re-arrangement
- Appendices, Resolutions and Recommendations
- Separate booklet containing the references whose inclusion was approved by the Conference.

In preparing this new edition, the Secretary-General shall take into account the Report by Committee 7 entitled "Re-arrangement of the Radio Regulations" as approved by the Conference;

c) to instruct the Secretary-General to bring the following Resolution to the notice of Administrations and the appropriate organs of the Union.

RESOLUTION

**Relating to the Possible Re-arrangement of
the Radio Regulations and
the Additional Radio Regulations**

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) the Report "Possible Re-arrangement of the Radio Regulations and the Additional Radio Regulations" of the Group of Experts set up by the Administrative Council at its 30th Session in June 1975;

b) item 2.6 of the agenda of the 1979 World Administrative Radio Conference (1979 WARC) contained in Resolution No. 783 of the Administrative Council (31st Session, June 1976) which provides for the consideration of the recommendations of this Conference on the re-arrangement of the Radio Regulations and the Additional Radio Regulations and to make such consequential changes as may be necessary to harmonize revisions of the Radio Regulations since 1959;

recognizing

a) that such harmonization can include the further refinement of the re-arrangement of the Radio Regulations, and any deletion, which the Group of Experts was unable to make, of superfluous or redundant provisions;

b) that Member countries may submit proposals for harmonization under item 2.6 of the agenda for 1979 WARC as well as proposals relating to other items of the agenda;

c) that 1979 WARC will make the final decision on the re-arrangement of the Radio Regulations and the Additional Radio Regulations, including harmonization under item 2.6 of its agenda;

endorses in principle

the re-arrangement proposed in the Report of the Group of Experts;

resolves

1. that the re-arrangement of the Radio Regulations proposed by the Group of Experts, as endorsed by this Conference, which includes two new Appendices, B and C, established by the Group of Experts and the re-arrangement, by titles only, of other Appendices, Resolutions and Recommendations shall be published by the Secretary-General by September 1977;

2. that the Additional Radio Regulations and the texts of Appendices, Resolutions and Recommendations contained in the 1976 loose-leaf edition should not be so published;

urges the CCITT

to complete as soon as possible the studies being carried out in accordance with Resolutions No. Mar2 - 22 and No. Mar2 - 23 and Recommendation No. Mar2 - 18 and to distribute the results to Administrations to enable them to prepare their proposals on this basis for 1979 WARC under agenda item 2.8 of that Conference;

urges Member countries

to use the re-arranged form of the Radio Regulations in resolves 1 and the present form of the Additional Radio Regulations as a basis for submitting proposals to the 1979 WARC for the revision of the Radio Regulations and the Additional Radio Regulations in accordance with its agenda, including any proposals relating specifically to harmonization under item 2.6 of its agenda (Resolution No. 783 of the Administrative Council);

requests the 1979 WARC

to agree that the documents in resolves 1 and 2 above should be used as the basic reference documents by delegates to that conference in discussing proposals.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 258-E

9 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Zaire

The delegation of the Republic of Zaire, in signing the Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service, draws the attention of the Conference to its country's right, by virtue of its sovereignty and respect for its national laws, to take whatever measures may be necessary to safeguard its interests.

Furthermore, the delegation of the Republic of Zaire recalls that its country will always encourage international cooperation based on the equal rights of all countries, large and small, concerning the peaceful use both of the atmosphere and of outer space for the advancement and the dignity of all mankind.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 259-E

9 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For Iran

In signing the Final Act of the World Broadcasting-Satellite Administrative Radio Conference, Geneva 1977, the delegation of Iran declares that its Administration reserves the right to take any action required to safeguard its interests should the reservations entered by other delegations on behalf of their Administrations or failure to respect the Final Act and its Annexes and the Protocol attached to it prove prejudicial to the proper functioning of its satellite broadcasting and terrestrial services.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 260-E

9 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Afghanistan

The delegation of the Republic of Afghanistan to the World Administrative Broadcasting-Satellite Conference, Geneva, 1977, reserves its Government's right to take any measures it may deem necessary to protect its interests if other countries fail to observe the provisions adopted by the Conference according to its terms of reference.



PLENARY MEETING

B.11

11th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
Chairman of Committee 4	-	Recommendation GG (See Note from Editorial Committee, page 21 of Document No. 224(Rev.1) under 3.19)

Miss M. HUET

Chairman of the
Editorial Committee

Annex : 1 page



RECOMMENDATION No. GG

**relating to the radiation of harmonics of the Fundamental Frequency
[by broadcasting-satellite stations]**

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that the frequency band 23.6-24 GHz is allocated to the radio
astronomy service on a primary basis;

b) that the second harmonic of the Fundamental Frequency of
broadcasting-satellite stations operating within the band 11.8-12.0 GHz may
seriously disturb radio astronomy observations in the band 23.6-24.0 GHz if
effective steps are not taken to reduce the radiation level produced by this
harmonic;

in view of

the provisions of No. 673 of the Radio Regulations;

recommends

that, when defining the characteristics of their space stations
operating in the broadcasting-satellite service, particularly within the
band 11.8-12.0 GHz, administrations take all necessary steps to reduce the
radiation level of the second harmonic below the values indicated in the
relevant CCIR Recommendations.

R.11-2

PLENARY MEETING

R.2

2nd SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for second
reading :

<u>Source</u>	<u>Title</u>
B.10, B.4,) B.7, B.8,) B.12)	Preamble; Art. 1-15

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 34 pages



**FINAL ACTS OF THE WORLD ADMINISTRATIVE RADIO CONFERENCE
FOR THE PLANNING OF THE BROADCASTING-SATELLITE SERVICE
IN FREQUENCY BANDS 11.7 – 12.2 GHz (IN REGIONS 2 AND 3) AND
11.7 – 12.5 GHz (IN REGION 1), GENEVA, 1977**

Preamble

The World Administrative Radio Conference for the planning of the broadcasting-satellite service in frequency bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1) having been convened at Geneva on 10 January 1977, under Article 54 of the International Telecommunication Convention and in accordance with Resolution No. 27 of the Plenipotentiary Conference, Malaga-Torremolinos, 1973, and Resolution No. Spa2 – 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971 has been charged:

- to establish the sharing criteria for the bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1) between the broadcasting-satellite service and the other services to which these bands are allocated;
- to plan for the broadcasting-satellite service in the above-mentioned bands;
- to establish procedures to govern the use of these bands by the broadcasting-satellite service and by the other services to which these bands are allocated;
- to consider the results of the work of the Group of Experts on the possible re-arrangement of the Radio Regulations and the Additional Radio Regulations.

The delegates of the following Members of the International Telecommunication Union,

(list of countries)

- bearing in mind the importance of making the best possible use of the radio-frequency spectrum and the geostationary-satellite orbit as well as the need for an orderly development of the services to which these bands are allocated;
- taking into account the equal rights of all countries, large and small, even those countries which are not represented at the Conference;

have adopted, subject to the approval of the competent authorities of their respective countries, the following provisions and associated Plan (Part I) and the decisions relating to the re-arrangement of the Radio Regulations and the Additional Radio Regulations (Part II):

IN WITNESS WHEREOF, the Delegates of the Members of the Union mentioned above have, on behalf of their respective competent authorities, signed these Final Acts in a single copy in the Chinese, English, French, Russian and Spanish languages, in which, in case of dispute, the French text shall prevail. This copy shall remain deposited in the archives of the Union. The Secretary-General shall forward one certified true copy to each Member of the International Telecommunication Union.

Done at Geneva, February 1977

(Signatures)

PART I

Provisions and associated plan

ARTICLE 1

General definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below:

<u>Union:</u>	The International Telecommunication Union;
<u>Secretary-General:</u>	The Secretary-General of the Union;
<u>WARC:</u>	World Administrative Radio Conference;
<u>Conference:</u>	World Administrative Radio Conference for the planning of the broadcasting-satellite service in frequency bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1), called in short World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977;
<u>IFRB (Board):</u>	The International Frequency Registration Board;
<u>CCIR:</u>	The International Radio Consultative Committee;
<u>Convention:</u>	The International Telecommunication Convention (Malaga-Torremolinos, 1973);
<u>Radio Regulations:</u>	The Radio Regulations (1976 edition) annexed to the Convention;
<u>Regions 1, 2 and 3:</u>	The geographical areas defined in Nos. 126 to 132 of the Radio Regulations;
<u>Master Register:</u>	The Master International Frequency Register;
<u>IFRB weekly circular:</u>	The publication referred to in No. 497 of the Radio Regulations;
<u>Plan:</u>	The Plan for Regions 1 and 3 and its annexes;
<u>Administration:</u>	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.
<u>Frequency assignment in accordance with the Plan:</u>	Any frequency assignment which appears in the Plan or for which the procedure of Article 4 of the Final Acts has been successfully applied.

ARTICLE 2

Frequency bands

The provisions of these Final Acts apply to the broadcasting-satellite service in the frequency bands between 11.7 and 12.5 GHz in Region 1 and between 11.7 and 12.2 GHz in Regions 2 and 3 and to the other services to which these bands are allocated, so far as their relationship to the broadcasting-satellite service in these bands is concerned.

ARTICLE 3

Execution of the Final Acts

1. The Members of the Union in Regions 1 and 3 shall adopt, for their broadcasting-satellite space stations operating in the frequency bands referred to in the Final Acts, the characteristics specified in the Plan for those Regions.
2. The Members of the Union in Region 2 shall apply the interim provisions contained in Annex [...] to the Final Acts. These provisions will govern the broadcasting-satellite service in Region 2 until detailed plans for Region 2, drawn up by a future Regional Administrative Radio Conference, have entered into force.
3. The Members of the Union shall not change the characteristics specified in the Plan, or establish new broadcasting-satellite space stations or stations in 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 these Final Acts.

ARTICLE 4

Procedure for modifications to the Plan

4.1 When an administration intends to make a modification to the Plan, i.e. either

- to modify the characteristics of any of its frequency assignments to a space station¹⁾ in the broadcasting-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
- to include in the Plan a new frequency assignment to a space station in the broadcasting-satellite service, or
- to cancel a frequency assignment to a space station in the broadcasting-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 these Final Acts).

4.2 The term "frequency assignment in accordance with the Plan" used in this and the following articles is defined in Article 1.

4.3 Proposed modifications to a frequency assignment in accordance with the Plan or the inclusion in the Plan of a new frequency assignment

4.3.1 An administration proposing a modification to the characteristics of a frequency assignment in accordance with the Plan or the inclusion of a new frequency assignment in the Plan shall seek the agreement of those administrations:

4.3.1.1 having a frequency assignment to a space station in the broadcasting-satellite service in the same channel or an adjacent channel, which is in accordance with the Plan or in respect of which modifications to the Plan have been published by the Board in accordance with the provision of this Article; or

1) The expression "frequency assignment to a space station", wherever it appears in this Article, shall be understood to refer to a frequency assignment associated with a given orbital position.

4.3.1.2 having a frequency assignment to a space station in the broadcasting-satellite service in Region 2 with necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which is recorded in the Master Register: or

- which has been coordinated or is being coordinated under the provisions of Resolution No. Spa2 - 3; or
- which appears in a Region 2 plan¹⁾ to be adopted at a future Regional Administrative Radio Conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference; or

1) The Region 2 plan adopted at a future Regional Administrative Radio Conference shall not degrade the protection afforded to the frequency assignments in the Plan below the limits specified in these Final Acts.

4.3.1.3 having no frequency assignment in the broadcasting-satellite service in the channel concerned but in whose territory the power flux density value exceeds the prescribed limit as a result of the proposed modification; or

4.3.1.4 having a frequency assignment in the band 11.7 – 12.2 GHz to a space station 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. 639AJ of the Radio Regulations; or those of paragraph 2.1 of Article 7

which are considered to be affected.

A frequency assignment is considered to be affected when the limits shown in Annex 1 are exceeded.

4.3.2 An administration intending to modify characteristics in the Plan shall send to the Board, not earlier than five years but not later than 18 months before the date on which the assignment is to be brought into use, the relevant information listed in Annex 2. If the assignment is not brought into use by that date, the modification shall lapse.

4.3.2.1 Where as a result of the intended modification the limits defined in Annex 1 are not exceeded, this fact shall be indicated when submitting to the Board the information required by 4.3.2. The Board shall then publish this information in a special section of its weekly circular.

4.3.2.2 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 4.3.1 as well as of those with which agreement has already been reached.

4.3.3 The Board shall determine on the basis of Annex 1 the administrations whose frequency assignments are considered to be affected within the meaning of 4.3.1. The Board shall include the names of those administrations with the information received under 4.3.2.2 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.

4.3.4 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 also send them the results of its calculations.

4.3.5 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 and shall send a copy of the request with an appropriate recommendation to the administration proposing the modification to the Plan.

4.3.6 Any modification to a frequency assignment which is in accordance 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 shall be subject to the agreement of all affected administrations.

4.3.7 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.

4.3.8 Comments from administrations on the information published pursuant to 4.3.3 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.

4.3.9 An administration which has not notified its comments either to the administration seeking agreement or to the Board within a period of 120 days following the date of the weekly circular referred to in 4.3.2.1 or 4.3.3 shall be understood to have agreed to the proposed modification. This time limit may be extended by 80 days for an administration which has requested additional information under 4.3.7 or for an administration which has requested the assistance of the Board under 4.3.17. In the latter case the Board shall inform the administrations concerned of this request.

4.3.10 If, in seeking agreement, an administration modifies its initial proposal, it shall again apply the provisions of 4.3.2 and the consequent procedure with respect to any other administration whose services might be affected as a result of modifications to the initial proposal.

4.3.11 If no comments have been received on the expiry of the periods specified in 4.3.9, 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 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.

4.3.12 The agreement of the administrations affected may also be obtained in accordance with this Article, for a specified period.

4.3.13 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.

4.3.14 The Board shall publish in a special section of its weekly circular the information received under 4.3.11 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 accordance with the Plan.

4.3.15 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.

4.3.16 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 it may be able to offer for the solution of the problem.

4.3.17 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.

4.3.18 The relevant provisions of Article 5 of these Final Acts shall be applied when frequency assignments are notified to the Board.

4.4 Cancellation of frequency assignments

When a frequency assignment in accordance with the Plan is released, 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.

4.5 Master copy of the Plan

4.5.1 The Board shall maintain an up-to-date master copy of the Plan taking account of the application of the procedure specified in 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.

4.5.2 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.

ARTICLE 5

**Notification, examination and recording in the Master Register
of frequency assignments to space stations
in the broadcasting-satellite service [in Regions 1 and 3]**

5.1 Notification

5.1.1 Whenever an administration intends to bring into use a frequency assignment to a space station in the broadcasting-satellite service, it shall notify this frequency assignment to the Board. 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, 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 ninety days before that date¹⁾.

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 shall be returned by the Board immediately by airmail to the notifying administration with the relevant reasons.

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.

1) Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan in sufficient time to ensure that this limit is observed.

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.

5.2 Examination and recording

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 and [Annex 1] (with the exception of those relating to conformity with the Plan);
- b) with respect to its conformity with the Plan.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1, the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt by the Board of the notice 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.

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, 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 5.2.1, the notice shall be treated as in 5.2.2.

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. The agreement of the administrations affected can also be obtained in accordance with Article 4 for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified.

The notifying administration using the frequency assignment over a specified period shall not subsequently invoke this fact to justify the continued use of the frequency beyond the period specified unless it obtains the agreement of the administration(s) concerned.

5.2.7 If a frequency assignment notified in advance of bringing into use has received in conformity with 5.1.3 a favourable finding by the Board with respect to the provisions of paragraph 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.

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 6 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 ninety days, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Coordination, notification and recording in the master international frequency register of frequency assignments to terrestrial stations affecting broadcasting-satellite frequency assignments in the bands 11.7 – 12.2 GHz (in Regions 2 and 3) and 11.7 – 12.5 GHz (in Region 1)¹⁾²⁾

Section I. Coordination procedure to be applied

1.1 Before an administration notifies to the Board a frequency assignment to a terrestrial transmitting station, it shall initiate coordination with any other administration having a frequency assignment to a broadcasting-satellite station in conformity with the Plan if

- the necessary bandwidths of the two transmission overlap and
- the power flux density which would be produced by the proposed terrestrial transmitting station exceeds the value derived in accordance with Annex 3 at one or more points on the edge of the service area which is within the coverage area of the broadcasting-satellite station of that administration.

1.2 For the purpose of effecting coordination, the administration responsible for the terrestrial station shall send to the administrations concerned, 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 data of the proposed frequency assignment and the approximate date on which it is planned to bring the station into use.

1) These procedures do not involve any dispensation from the procedures prescribed for terrestrial stations in Article 9 of the Radio Regulations where stations other than those of the broadcasting-satellite service are involved.

2) The procedures for coordination, notification and recording of assignments to terrestrial stations affecting broadcasting-satellite stations in Region 2 are contained in Article 9 of the Radio Regulations, except that the need for the coordination referred to in No. 492A of the Radio Regulations shall be determined on the basis of Annex 3.

1.3 An administration with which coordination is sought shall acknowledge receipt of the coordination data immediately by telegram. If no acknowledgement is received within fifteen 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. Upon receipt of the coordination data an administration with which coordination is sought shall promptly examine the matter with regard to interference ¹⁾ which would be caused to its frequency assignments in conformity with the Plan and shall, within an overall period of sixty days 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.

1.4 No coordination is required when an administration proposes to change the characteristics of an existing assignment in such a way as not to increase the level of interference to the service to be rendered by the broadcasting-satellite stations of other administrations, in conformity with the Plan.

1.5 An administration seeking coordination may request the Board to endeavour to effect coordination where:

- a) an administration with which coordination is sought fails to acknowledge receipt under paragraph 1.3 within thirty days of dispatch of the coordination data;
- b) an administration which has acknowledged receipt under paragraph 1.3 fails to give a decision within ninety days of dispatch of the coordination data;
- c) the administration seeking coordination and an administration with which coordination is sought disagree on the acceptable level of interference; or
- d) coordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

1) The criteria to be employed in evaluating interference levels shall be based on the relevant CCIR Recommendations or, in the absence of such Recommendations, shall be agreed between the administrations concerned.

1.6 Either the administration seeking coordination or an administration with which coordination is sought, or the Board, may request any additional information which they may require to assess the level of interference to the services concerned.

1.7 Where the Board receives a request under paragraph 1.5 a), it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

1.8 Where the Board receives an acknowledgement following its action under paragraph 1.7 or where the Board receives a request under paragraph 1.5 b), it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

1.9 Where the Board receives a request under paragraph 1.5 d), it shall endeavour to effect coordination in accordance with the provisions of paragraph 1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 1.3, it shall act in accordance with paragraph 1.7.

1.10 Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under paragraph 1.7 requesting an acknowledgement or fails to give a decision on the matter within sixty days of dispatch of the Board's telegram of request sent under paragraph 1.8, the administration with which coordination was sought shall be considered to have 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 or to be rendered by its satellite-broadcasting station.

1.11 Where necessary, as part of the procedure under paragraph 1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

1.12 In the event of continuing disagreement between one administration seeking to effect coordination and one with which coordination has been sought, the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section II. Notification procedure for frequency assignments

2.1 Any frequency assignment to a fixed, land or broadcasting station shall be notified to the International Frequency Registration Board if the use of the frequency concerned is capable of causing harmful interference to the service rendered or to be rendered by a broadcasting-satellite station of any other administration, or if it is desired to obtain international recognition of the use of the frequency.¹⁾

1) The attention of administrations is specifically drawn to the provisions of Section I of this Article.

2.2 For this notification, an individual notice for each frequency assignment shall be drawn up as prescribed in Section A of Appendix 1 to the Radio Regulations, which specifies the basic characteristics to be furnished as required. It is recommended that the notifying administration should also supply the additional data called for in that Appendix, together with such further data as it may consider appropriate.

2.3 Whenever practicable, each notice should reach the Board before the date on which the assignment is brought into use. The notice made in accordance with paragraph 2.2 must reach the Board not earlier than three years and not later than ninety days before the date on which the assignment is to be brought into use.

2.4 Any frequency assignment, the notice of which reaches the Board less than ninety days before it is brought into use, shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with paragraph 2.3.

Section III. Procedure for the examination of notices and the recording of frequency assignments in the master register

3.1 Whatever the means of communication, including telegraph, by which a notice is transmitted to the Board, it shall be considered complete if it contains at least the appropriate basic characteristics specified in Section A of Appendix 1 to the Radio Regulations.

3.2 Complete notices shall be considered by the Board in the order of their receipt.

3.3 Any notice which is incomplete shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

3.4 Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in its weekly circular; this circular shall contain the particulars of all such notices received since publication of the previous circular.

3.5 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

3.6 Complete notices shall be considered by the Board in the order specified in paragraph 3.2. The Board cannot postpone the formulation of a 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.

3.7 The Board shall examine each notice:

- 3.8 a) with respect to its conformity with the Convention the relevant provisions of the Radio Regulations and the provisions of the Final Acts (with the exception of those relating to the coordination procedure and the probability of harmful interference);
- 3.9 b) with respect to its conformity with the provisions of paragraph 1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;
- 3.10 c) where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station whose frequency assignment is in conformity with the Plan.

3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 3.8, 3.9 and 3.10, further action shall be as follows:

3.12 Finding unfavourable with respect to paragraph 3.8

3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be examined immediately with respect to paragraphs 3.9 and 3.10.

3.14 If the finding is favourable with respect to paragraph 3.9 or 3.10, 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.

3.15 If the finding is unfavourable with respect to paragraph 3.9 or 3.10, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition specified in paragraph 3.14 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

3.16 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. 115 of the Radio Regulations, it 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 the satisfactory solution of the problem.

3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 3.16.

3.18 If the notifying administration resubmits the notice with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 3.13 and 3.14 or 3.15, as appropriate.

3.19 If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 3.8, the notice shall be treated under the provisions of paragraphs 3.20 to 3.32. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

3.20 Finding favourable with respect to paragraph 3.8

3.21 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has been successfully completed with all administrations whose broadcasting-satellite services 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.

3.22 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with paragraph 3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 3.10.

3.23 Where the Board finds that the coordination procedure mentioned in paragraph 3.9 has not been applied and 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 and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 3.9 has been successfully completed with all administrations whose broadcasting-satellite services 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.

3.25 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination, it shall be treated in accordance with the provisions of paragraph 3.22. 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.

3.26 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, it shall be examined by the Board with respect to the provisions of paragraph 3.10. 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.

3.27 Finding favourable with respect to paragraphs 3.8 and 3.10

3.28 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.

3.29 Finding favourable with respect to paragraph 3.8 but unfavourable with respect to paragraph 3.10

3.30 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 the satisfactory solution of the problem.

3.31 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 3.10, 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.

3.32 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 paragraph 3.31 to be applied and should that administration insist upon reconsideration of the notice but the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 3.30. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 3.31 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the frequency assignment for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment during a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration or the administrations concerned.

3.33 Change in the basic Characteristics of Assignments already recorded in the Master Register

3.34 A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 to the Radio Regulations (except those entered in Columns 3 and 4a of the Master Register), shall be examined by the Board in accordance with paragraphs 3.8 and 3.9 and, where appropriate, paragraph 3.10 and paragraphs 3.12 to 3.32 inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

3.35 However, in the case of a change in the basic characteristics of an assignment which is in conformity with paragraph 3.8, should the Board reach a favourable finding with respect to paragraph 3.9 and, if applicable, paragraph 3.10, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

3.36 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.

3.37 Recording of frequency assignments notified before being brought into use

3.38 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraphs 3.8 and 3.9, and, where appropriate, 3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

3.39 If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of bringing into use, the special symbol shall be deleted from the Remarks Column. If, in the light of a request from the notifying administration received before the end of the thirty-day period, the Board finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

3.40 If use by a terrestrial station of an assignment which is not in conformity with the foregoing causes harmful interference to the reception of emissions from a space station in the broadcasting-satellite service using an assignment in conformity with the Plan, the administration having jurisdiction over the terrestrial station shall, on being advised, take immediate measures to eliminate the interference.

ARTICLE 7

Preliminary procedures, notification and recording in the master international frequency register of frequency assignments to stations in the fixed-satellite service in the frequency band 11.7 – 12.2 GHz (in Region 2) when frequency assignments to broadcasting-satellite stations in conformity with the Plan are involved¹⁾

Section I. Procedure for the advance publication of information on planned fixed satellite systems

1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 2.1 where applicable, send to the International Frequency Registration Board, not earlier than five years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 1B to the Radio Regulations.

1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 1.1 shall also be sent to the Board as soon as they become available.

1.3 The Board shall publish the information sent under paragraphs 1.1 and 1.2 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.

1.4 If, after studying the information published under paragraph 1.3, any administration is of the opinion that interference, which may be unacceptable, may be caused to its frequency assignments in conformity with the Plan, it shall within ninety days after the date of the weekly circular publishing the information listed in Appendix 1B to the Radio Regulations, 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 fixed-satellite network(s) of that system of which details have been published.

1) These provisions do not replace the procedures prescribed in Article 9A of the Radio Regulations when stations other than those of the broadcasting-satellite service having frequency assignments in conformity with the Plan are involved.

1.5 An administration receiving comments sent in accordance with paragraph 1.4 shall endeavour to resolve any difficulties that may arise without considering the possibility of adjustment to broadcasting-satellite stations of other administrations. If no such means can be found, the administration concerned is then free to apply to other administrations concerned in order to solve these difficulties, provided that any modifications which may result to the Plan are in accordance with Article 4.

1.6 In their attempts to resolve the difficulties mentioned above, administrations may seek the assistance of the Board.

1.7 In complying with the provisions of paragraphs 1.5 and 1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 2.1 or, where this is not applicable, the sending of its notices to the Board until one hundred and fifty days after the date of the weekly circular containing the information listed in Appendix 1B to the Radio Regulations 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 one hundred and fifty days mentioned above.

1.8 An administration, on behalf of which details of planned fixed-satellite networks in its system have been published in accordance with the provisions of paragraphs 1.1 to 1.3, shall periodically inform the Board whether or not comments have been received and of the progress made with other administrations in resolving any difficulties. 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.

Section II. Coordination procedures to be applied in appropriate cases

2.1 Before an administration notifies to the Board or brings into use any frequency assignment to a space station in the fixed-satellite service, it shall seek the agreement of any other administration having a frequency assignment in conformity with the Plan, if

- any portion of the necessary bandwidth proposed for the space station in the fixed-satellite service falls within the necessary bandwidth associated with the frequency assignment to the broadcasting-satellite station, and
- the power flux density which would be produced by the proposed fixed-satellite assignment exceeds the value specified in Annex 4.

For this purpose, the administration seeking agreement shall send to any other such administration the information listed in Appendix 1A to the Radio Regulations [1)].

2.2 No additional agreement is necessary when an administration proposes to change the characteristics of an existing assignment in such a way as will, in respect of the broadcasting-satellite service of another administration, meet the requirements of paragraph 2.1 above, or when this assignment has previously been the subject of an agreement and when the change will not cause any increase in the interference potential specified in that agreement.

2.3 An administration seeking coordination under paragraph 2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix 1A to the Radio Regulations and the name(s) of the administration(s) whose agreement is sought. The Board shall determine on the basis of Annex 4 which frequency assignments in conformity with the Plan are considered to be affected. The Board shall include the names of those administrations with the information received from the administration seeking coordination and shall publish this information in a special section of its weekly circular, together with a reference to the weekly circular in which details of the satellite system 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.

2.4 An administration believing that it should have been included in the procedure under paragraph 2.1 shall have the right to request that it be brought into the procedure.

2.5 An administration whose agreement is sought under paragraph 2.1 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 paragraph 2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of thirty days. Upon receipt of the coordination data, an administration shall, having regard to the proposed date of bringing into use of the assignment for which agreement was requested, promptly examine the matter with regard to interference²⁾ which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 2.1, and shall, within ninety days from the date of the relevant weekly circular, notify its agreement to the requesting administration. If 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, and make such suggestions as it may be 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.

[1) Committee 4 to advise if any additional information is needed]

2) The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in the Final Acts or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.

2.6 An administration seeking coordination may request the Board to endeavour to effect coordination in those cases where:

- a) an administration whose agreement is sought under paragraph 2.1 fails to acknowledge receipt, under paragraph 2.5, within sixty days after the date of the weekly circular publishing the information relating to the request for coordination;
- b) an administration has acknowledged receipt under paragraph 2.5, but fails to give a decision within ninety days from the date of the relevant weekly circular;
- c) there is disagreement between the administration seeking coordination and an administration whose agreement is sought as to the acceptable level of interference;
- d) agreement between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to endeavour to effect such coordination.

2.7 Either the administration seeking coordination or an administration whose agreement is sought, or the Board, may request additional information which they may require to assess the level of interference to the services concerned.

2.8 Where the Board receives a request under paragraph 2.6 a), it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

2.9 Where the Board receives an acknowledgement following its action under paragraph 2.8, or where the Board receives a request under paragraph 2.6 b), it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision in the matter.

2.10 Where the Board receives a request under paragraph 2.6 d), it shall endeavour to effect coordination in accordance with the provisions of paragraph 2.1. The Board shall also, where appropriate, act in accordance with paragraph 2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 2.5, it shall act in accordance with paragraph 2.8.

2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 2.9, it shall be deemed that the administration whose agreement was sought has undertaken:

- a) that no complaint will be made in respect of any harmful interference which may be caused to the services rendered by its broadcasting-satellite stations by the use of the assignment for which coordination was requested;
- b) that its broadcasting-satellite stations will not cause harmful interference to the use of the assignment for which coordination was requested.

2.12 Where necessary, as part of the procedure under paragraph 2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

2.13 In the event of continuing disagreement between one administration seeking to effect coordination and one whose agreement has been sought, provided that the assistance of the Board has been requested, the administration seeking coordination may, after one hundred and fifty days from the date of the request for coordination, taking into consideration the provisions of paragraph 3.4, send its notice concerning the proposed assignment to the Board. In those circumstances the notifying administration shall undertake not to bring the frequency assignment into use until the condition in paragraph 4.11.2 can be fulfilled. But the administrations concerned may explore the possibility of reaching an agreement on the use of the proposed frequency assignment for a specified period.

Section III. Notification of frequency assignments

3.1 Any frequency assignment to a space station in the fixed-satellite service shall be notified to the Board:

- a) if the use of the frequency concerned is capable of causing harmful interference to a frequency assignment of another administration which is in conformity with the Plan¹⁾;
- b) if it is desired to obtain international recognition of the use of the frequency.

3.2 Similar notice shall be given for any frequency to be used for reception by an earth station where one or more of the conditions specified in paragraph 3.1 are applicable.

3.3 For any notification under paragraph 3.1 or 3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A to the Radio Regulations, the various Sections of which specify the basic characteristics to be furnished according to the case. The notifying administration shall furnish such further data as it considers appropriate. [*]

3.4 Each notice must reach the Board not earlier than three years before the date on which the assignment is to be brought into use. The notice must reach the Board in any case not later than ninety days²⁾ before this date.

1) The attention of administrations is specifically drawn to the application of paragraph 2.1 above.

[* Committee 4 to advise if any additional information is needed]

2) The notifying administration shall take this limit into account when deciding, where appropriate, to initiate the coordination procedure(s).

3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 3.4.

Section IV. Procedure for the examination of notices and the recording of frequency assignments in the Master Register

4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 1A to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

4.2 Upon receipt of a complete notice, the Board shall include the particulars thereof, 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.

4.3 The circular shall constitute the acknowledgement to the notifying administration of the receipt of a complete notice.

4.4 Complete notices shall be considered by the Board in the order of their receipt. 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.

4.5 The Board shall examine each notice:

4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of the Final Acts (with the exception of those relating to the coordination procedures and the probability of harmful interference);

4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 2.1, relating to the coordination of the use of the frequency assignment with the other administrations concerned having a frequency assignment in conformity with the Plan;

4.5.3 where appropriate, with respect to the probability of harmful interference to the service rendered or to be rendered by a broadcasting-satellite station whose frequency assignment is in conformity with the Plan.

4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 4.5.1, 4.5.2 and 4.5.3, as appropriate, further action shall be as follows:

4.7 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are not applicable

4.7.1 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.

4.8 Finding unfavourable with respect to paragraph 4.5.1

4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is favourable with respect to paragraphs 4.5.2 and 4.5.3, 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.

4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations and the finding is unfavourable with respect to paragraph 4.5.2 or 4.5.3, as appropriate, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding. In those circumstances the notifying administration shall undertake not to bring into use the frequency assignment until the condition in paragraph 4.8.1 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note indicating that the frequency assignment is valid only for the period specified. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

4.8.3 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. 115 of the Radio Regulations, it 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 the satisfactory solution of the problem.

4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 4.8.1 or 4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 4.5.1, it shall be treated as a new notice.

4.9 Finding favourable with respect to paragraph 4.5.1 in cases where the provisions of paragraph 4.5.2 are applicable

4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose frequency assignments in conformity with the Plan may be affected, the frequency assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and the notifying administration requests the Board to effect the required coordination, the Board shall take appropriate action and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with paragraph 4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3.

4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 4.5.2 has not been applied, and 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 and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 4.5.2 have been successfully completed with all administrations whose frequency assignments in conformity with the Plan may be affected, the frequency 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.

4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 2.1, it shall be treated in accordance with the provisions of paragraph 4.9.2. 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.

4.9.6 Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the coordination, the Board shall inform the administrations concerned thereof. The notice shall be examined by the Board with respect to the provisions of paragraph 4.5.3. 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.

4.10 Finding favourable with respect to paragraphs 4.5.1 and 4.5.3

4.10.1 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.

4.11 Finding favourable with respect to paragraph 4.5.1, but unfavourable with respect to paragraph 4.5.3

4.11.1 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 the satisfactory solution of the problem.

4.11.2 Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to paragraph 4.5.3, 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.

4.11.3 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 paragraph 4.11.2 to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the notification shall again be returned to the notifying administration in accordance with paragraph 4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 4.11.2 can be fulfilled. The agreement of the administrations affected can also be obtained in accordance with this Article for a specified period. In that event the Board shall be notified of the agreement and the frequency assignment shall be recorded in the Master Register with a note in the Remarks Column indicating that the assignment is valid only for the specified period. The notifying administration using the frequency assignment over a specified period shall not subsequently use this circumstance to justify continued use of the frequency beyond the period specified if it does not obtain the agreement of the administration(s) concerned. The date of receipt by the Board of the original notice shall be entered in Column 2d.

4.12 Change in the basic characteristics of assignments already recorded in the Master Register

4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix 1A to the Radio Regulations (except the name of the station or the name of the locality in which it is situated), shall be examined by the Board according to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and the provisions of paragraphs 4.7 to 4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 4.5.1, should the Board reach a favourable finding with respect to paragraphs 4.5.2 and 4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to frequency assignments in conformity with the Plan, 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.

4.12.3 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.

4.13 Recording of frequency assignments in the fixed-satellite service notified before being brought into use

4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

4.13.2 If, within thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 4.13.2, the entry concerned shall be cancelled. The Board shall advise the administration concerned before taking such action.

Section V. Recording of findings in the Master Register

5. 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 Column 13a. In addition, a remark indicating the reasons for any unfavourable finding shall be inserted in the Remarks Column.

Section VI. Categories of frequency assignments

6.1 The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment is in conformity with the Plan, by the use of a frequency assignment to a space radiocommunication station subsequently recorded in the Master Register in accordance with the provisions of paragraph 4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

6.3 If harmful interference to the reception of any broadcasting-satellite station whose frequency assignment is in conformity with the Plan, is actually caused by the use of a frequency assignment which is not in conformity with paragraph 4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of findings

7.1 The review of a finding by the Board may be undertaken:

- at the request of the notifying administration;
- at the request of any other administration interested in the question, but only on the grounds of actual harmful interference;
- on the initiative of the Board itself when it considers this is justified.

7.2 The Board, in the light of all the data at its disposal shall review the matter, taking into account paragraph 4.5.1 and, where appropriate, paragraphs 4.5.2 and 4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.3 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.

7.4 If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

Section VIII. Modification, cancellation and review of entries in the Master Register

8.1 Where the use of a recorded assignment to a station in the fixed-satellite service 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.

8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 8.1, that a recorded assignment to a space station in the fixed-satellite service has not been in regular use for more than eighteen months, the Board shall inquire of the notifying administration as to when the assignment is to be brought back into regular use.

8.3 If no reply is received within six months of action by the Board under paragraph 8.2, or if the reply does not confirm that the assignment to a space station in the fixed-satellite service is to be brought back into regular use within this six-month limit, a symbol should be entered against the entry in the Master Register.

8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within ninety days of such discontinuance, whereupon the entry shall be removed from the Master Register.

8.5 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 the entry.

8.6 If, in connection with an inquiry by the Board under paragraph 8.5 the notifying administration has failed to supply the Board within forty-five days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

ARTICLE 8

Miscellaneous provisions relating to the procedures

1. If it is requested by any administration, and if the circumstances appear to warrant, 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.
2. The Board shall thereupon prepare and forward to the administration concerned a report containing its findings and recommendations for the solution of the problem.
3. 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 ninety days, 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.
4. If it is requested by any administration, particularly by an administration of a country in need of special assistance, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall render the following assistance:
 - a) computation necessary in the application of Annexes 1, 3 and 4;
 - b) any other assistance of a technical nature for completion of the procedures in these Final Acts.

ARTICLE 9

**Power flux-density limits between 11.7 and 12.2 GHz
to protect terrestrial services in Regions 1 and 3 from
interference from Region 2 broadcasting-satellite space stations**

ARTICLE 10

**The Plan for the broadcasting-satellite service in the
frequency bands 11.7-12.2 GHz in Region 3
and 11.7-12.5 GHz in Region 1**

ARTICLE 11

**Provisions governing the broadcasting satellite service
in Region 2 pending the establishment of a detailed plan**

ARTICLE 12

Approval of the Final Acts

1. Members shall notify their approval of these Final Acts, as promptly as possible, to the Secretary-General, who shall at once inform the other members of the Union. The act of approval shall constitute the agreement of Members to comply with the decisions jointly reached at the [World Broadcasting-Satellite Administrative Radio Conference], Geneva, 1977.
2. These Final Acts shall be regarded as including a World Agreement and associated Plan for Regions 1 and 3 in accordance with resolves 1 of Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, which requires the stations in the broadcasting-satellite service to be established and operated in accordance with such agreements and associated plans.

ARTICLE 13

Interference

The Members of the Union 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.

ARTICLE 14

Entry into force of the Final Acts

These Final Acts shall enter into force on 1 January 1979 at 0001 hours GMT.

ARTICLE 15

Period of validity of the provisions and associated Plan

1. The provisions and associated Plan have been prepared in order to meet the requirements of the broadcasting-satellite service in the bands concerned for a period of at least 15 years from the date of the entry into force of the Final Acts.
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.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 263-E

9 February 1977

Original : English

COMMITTEE 3

SUMMARY RECORD

OF THE

THIRD AND LAST MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Thursday, 3 February 1977, at 1100 hrs

Chairman : Mr. V.A.D. RAYALU (India)

Subjects discussed :

Document No.

- | | |
|--|-------|
| 1. Approval of the summary record of the second meeting of Committee 3 | 193 |
| 2. Draft final report of the Budget Control Committee to the Plenary Meeting | DT/41 |
| 3. Completion of the Committee's work | |

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1. Approval of the summary record of the second meeting of Committee 3
(Document No. 193)

Approved.

2. Draft final report of the Budget Control Committee to the Plenary Meeting (Document No. DT/41)

Introductory paragraph and paragraph 1

Approved.

Paragraph 2

The Deputy Secretary-General said that, although the General Secretariat appreciated the statement in the last phrase of sub-paragraph 2.a) he suggested it be deleted from the final report.

Paragraph 2, as amended, was approved.

Paragraph 3

The Secretary of the Committee pointed out that the figure in the third line of the last sub-paragraph should read "150,000 Swiss francs".

The Chairman read out the revised figures for expenditure at 31 January 1977 - representing amendments to columns 8 to 12 of the Annex to Document No. 126, and constituting Annex 1 to the final report - which showed a total of 1,530,000 Swiss francs, or 64,000 Swiss francs less than the budget for the Conference.

Sub-head I

Approved.

Sub-head II

In reply to a question by the delegate of Mexico, the Secretary of the Committee explained that the amount shown in column 10 against item 11.115 was provided for the cost of posting copies of the Final Acts to administrations in the event that only a limited number of copies could be given to delegates before the end of the Conference.

Sub-head II was approved.

Sub-head III

Approved.

In reply to questions by the delegate of Afghanistan, the Secretary of the Committee said that the Administrative Council transferred savings on conference budgets to the ITU Reserve Account. The Secretary-General was competent to effect transfers within the same sub-head, but transfers from one sub-head to another could only be made by the Budget Control Committee.

The Deputy Secretary-General added that savings returned to the Reserve Account could only be used by decision of the Administrative Council, but were in fact part of the funds available when the Council drew up the budget for the following year.

The delegate of the USSR said that, while it was gratifying to note that savings had been made, some strong doubts had recently been expressed concerning the possibility of concluding the Conference on the scheduled date. He asked what the financial situation would be if the Conference had to be prolonged.

The Secretary of the Committee said that it was difficult at that stage to estimate the additional expenditure that might be incurred. If only one team of interpreters was to be kept on, the figure of 10,048 Swiss francs under column 10 of item 11.101 might suffice for one or even two extra days. Moreover, it was not certain whether the lease of the CICG could be extended.

Paragraph 3 was approved.

Paragraph 4

The Deputy Secretary-General suggested that the words "more than" in the fourth line be replaced by "about" and that the following phrase be inserted after the word "that" in the first line of the second sub-paragraph : ", if it is not possible within the time schedule to issue one copy per delegate of the Final Acts, then ...".

The delegate of the USSR said that he could agree to the second suggestion only on the understanding that every possible effort would be made to issue the necessary number of copies of the Final Acts.

The Deputy Secretary-General said that he fully endorsed that interpretation of his amendment. It should be borne in mind that there were two unknown factors, the date when the Conference would end and the number of pages of the Final Acts. The number of pages could not be accurately determined at that point, since Committees 5 and 6 still had a considerable amount of work to do.

In reply to a question by the Chairman, the Secretary of the Committee said that delegations would be asked before leaving Geneva to indicate the number of copies they required.

Paragraph 4, as amended, was approved.

Paragraph 5

Approved.

Annex 2

The delegate of the USSR suggested that the organizations mentioned in Annex 2 should be listed in alphabetical order.

It was so agreed.

Annex 2 was approved.

Document No. DT/41, as amended, was approved.

3. Completion of the Committee's work

The delegate of Mexico thanked Committee 3 for showing savings in the budget of such a large international conference.

After the customary exchange of courtesies, the Chairman then announced that Committee 3 had completed its work.

The meeting rose at 1205 hours.

The Secretary :

J. SCHUWEY

The Chairman :

V.A.D. RAYALU

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 264-E

9 February 1977

Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 5

(PLANNING)

Thursday, 3 February 1977, at 1425 hrs

Chairman : Mr. A. PETTI (Italy)

Subjects discussed :

Document No.

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| 1. Approval of the summary record of the third meeting | 183 |
| 2. Progress made by Working Group 5A | |
| 3. Progress made by Working Group 5B | |
| 4. Progress made by Working Group 5C | |
| 5. Intentional extended service area | 208 |

1. Approval of the summary record of the third meeting (Document No. 183)

The delegate of Belgium said that the last two lines of the statement by the delegate of Luxembourg (Document No. 183, page 5) should read "... the requirements of the Government concerned ..." and not "of both the Governments".

The delegate of China said that the words "The 1975 LF/MF Broadcasting Agreement had clearly shown that" should be deleted from the final sentence on page 3.

The summary record of the third meeting (Document No. 183), as amended, was approved.

2. Progress made by Working Group 5A

The delegate of the United Kingdom, speaking as Chairman of



Working Group 5A, said that having overcome substantial difficulties Working Group 5A was now making satisfactory progress in its work. The original intention had been that Sub-Working Group 5A2 should make a plan based on all the requirements in Document No. 103 and Rev.1 and Addenda, and Sub-Working Group 5A3 a plan based on minimum requirements. The 5A3 plan had resulted in interfering levels averaging 2-3 dBs whereas that of 5A2 had shown interfering levels of 10-12 dBs, which were obviously unacceptable. Delegations had therefore been asked to reduce their requirements and the reduced requirements were shown in Document No. 103(Rev.2) and others. He gave a limited illustrative list of some of the requirements which had been reduced, which showed that many Administrations had made sacrifices to further the progress of the Conference, and he expressed the hope that others would follow suit.

In order to benefit to the utmost from the experience of all the experts, Working Group 5A had decided to amalgamate Sub-Working Group 5A2 and Sub-Working Group 5A3 into a new Sub-Working Group 5A2/3 with the following terms of reference :

- To construct a frequency assignment/orbit positions plan for Regions 1 and 3. The plan shall meet the requirements of Administrations given in Document No. 103(Rev.2) (the requirements represent reduction from those on which the Sub-Group 5A2 produced its planning studies). For orbit positions the guidelines given in Document No. 123 plus addendum shall be followed taking into account the requirements for preferred groupings, common polarization and restricted tuning range.

- Only changes in requirements asked for by the Sub-Group to the Conciliation Group and approved by the delegations concerned on the blue forms shall be taken into account by the Sub-Group. When a service area given in Document No. 103(Rev.2) intentionally includes the territory (in whole or in part) of more than one Administration, it should only be taken into account by the Sub-Group if the Administrations, to which the service is intended, indicated their agreement to such a common or extended service area to the IFRB by the deadline of 28 January 1977.

- The Sub-Group 5A2/3 shall endeavour, for the relevant requirements given in Document No. 103(Rev.2) to improve the general level of protection ratio values indicated in the planning example produced by the Sub-Working Group 5A3 so as to meet a level acceptable for all countries.

The new Sub-Working Group would require five clear working days to produce a plan.

Certain problems had arisen in Working Group 5A because Administrations had been asked to submit to the Conference not the coverage areas but the beams they proposed to use. That had led to :

1. pure errors;
2. confusion as to whether or not the pointing error was included in the derivation of coverage beams; and
3. a continuous trickle of new beams being fed into the planning process as a result of bilateral negotiations.

It had therefore been proposed that Administrations should specify the service area desired by a number of polygon points at the extremity of the service area, from which it was possible to calculate the minimum circular or elliptical beam necessary to guarantee to each Administration that it would receive the agreed power flux-density at all points in its service area.

That procedure had been agreed in Working Group 5A and a printout of all polygon points from the computer had been submitted to delegations for confirmation that it represented their required service areas. The procedure would enable Working Group 5A to move satisfactorily between orbit positions and to compute at each stage the new and precise ellipse that would be so formed, without encountering the difficulties experienced the previous week. He therefore asked Committee 5 to endorse the new approach.

Working Group 5A would then list out for the provisional orbit positions assumed in planning the necessary coverage beams; that would be up-dated as the planning process proceeded and the dimensions of the beams would be available for the purpose of establishing a plan. So far as overspill problems were concerned, delegations would then be assured that in every case the minimum elliptical or circular beam had been used to cover the service area in a perfectly fair and general way.

When the plan had been made, there would be some slight differences in the values which Administrations had submitted to the IFRB but that would not in any way affect service to their countries.

The delegate of Belgium said that his delegation was one of those which had submitted the minimum demand of five channels with a service area strictly limited to the national territory. He noted with pleasure the reductions mentioned by the Chairman of Working Group 5A; they should facilitate the production of a plan satisfactory to all since they were directed towards a plan based on five channels per country in Region 1 and an average of four channels per country in Region 3. The plan in Document DT/36 produced by Sub-Working Group 5A3 suggested that a satisfactory plan could be produced on that basis. His delegation hoped that further reductions by all countries would bring that objective even closer. It would be regrettable if the quality of the plan were to be prejudiced, particularly in the case of those countries which had made only minimum demands.

The Chairman expressed the hope that all countries which might still make reductions would do so as soon as possible.

The delegate of Australia said that his Administration would prefer the beams it had specified to be used rather than polygon points. Australia had a number of fairly large service areas and it had tried to specify beams of the minimum size.

In reply to comments by the Chairman on the difficulties which might arise in the publication of a document giving polygon points, the Chairman of Working Group 5A said that on the list shown him by the IFRB very few polygons were not complete.

If the Australian delegation wished special consideration, it might be possible to meet its wishes, but planning for the majority of countries should be based on polygon points.

The Technical Secretary, commenting on the polygon document, said that in the printouts delegates would find different characteristics given in columns 10, 11 and 12. Those changes were inevitable. He hoped that the reasons for them were fully understood and that they would not give rise to a wave of protests. He further drew attention to the possibilities of error arising from the fact that 22 pages of polygons had to be hand-transcribed and hand-punched for computer use.

The Chairman of Working Group 5A said that the difficulties in either direction had to be balanced against each other. He hoped that accurate results would be achieved in the final computer file before the plan was analysed.

The delegate of Sweden said that a beam rather than a polygon should be used in at least some cases, for example, where an Administration had requested a smaller or slightly off-set beam to reduce interference to neighbouring countries.

The Chairman of Working Group 5A said that the Swedish delegation had submitted beam data from a certain orbital position but the experts had already found it necessary to move Sweden's orbital position to reduce interferences so the beam data submitted was no longer relevant for interference calculation purposes. Situations in which Administrations felt they had special needs should be brought to the attention of Working Group 5A, but he hoped that there would not be too many of them.

In reply to the Chairman, he said that Sub-Group 5A5 had completed a draft appendix to the plan, which would be available the following morning in Document No. 212.

3. Progress made by Working Group 5B

The delegate of Canada, speaking as Chairman of Working Group 5B, introduced Document No. 204 which outlined a phased plan for Region 2. With the exception of the reservation by the United States delegation, it represented a consensus of all the Region 2 countries.

The delegate of the United States of America said that several portions of DL/22-186 were inconsistent with the principle of equal rights of the Broadcasting-Satellite Service and Fixed-Satellite Service and were therefore unacceptable to the United States. In particular, the Fixed-Satellite Service was effectively reduced to secondary status even in that portion of the orbit which was assigned to it, and no recognition was given to Fixed-Satellite Services that might be in existence or in planning at the time of the Regional Conference in 1982.

The United States believed that there must be an adequate portion of the arc where the Fixed-Satellite Service had full protection, and that the Regional Conference in 1982 must recognize systems brought into service or planned prior to the Conference that had been implemented within the system parameters, sharing criteria, and orbital arc locations as defined at the present Conference.

The Chairman drew attention to the need for a draft recommendation regarding the convening of the proposed Regional Conference.

The Deputy Secretary-General said that the final decision regarding the agenda and convening of the Conference would be for the Administrative Council in accordance with Article 54, of the Torremolinos Convention.

The delegate of Venezuela said that it might also be necessary to draft recommendations to the CCIR and the IFRB regarding preparations for the Conference.

4. Progress made by Working Group 5C

The Chairman of Working Group 5C reported that the Working Group had held a meeting on 1 February at which participants had been informed of progress made by various other groups on the subject of sharing criteria. A joint meeting with Working Group 4B had been held in the morning of 3 February to discuss the contents of Document No. 188(Rev.3), and it had been agreed that the Document should first be approved by Working Group 4B and then come before Working Group 5C at its next meeting, to be held on 4 February.

5. Intentional extended service area (Document No. 208)

The Chairman drew attention to Document No. 208, which represented an attempt to sum up the situation as regards agreements reached concerning intentional extended service areas, including agreements concluded by the deadline of 28 January and changes resulting from requirement modifications and from negotiations successfully conducted during the past few days.

The representative of the IFRB said that the fifth line of the table (FNL 0103S) should be deleted and a new line reading "LUX 0114F" should be inserted between the lines reading "ISL 0050DNK" and "MCO 0117 ...F".

These corrections were noted.

Following a statement by the delegate of the Federal Republic of Germany, the Chairman said that an interrogation mark should provisionally be placed against the line reading "D 0087 SUI".

The delegate of Saudi Arabia said that Document No. 208 included many beams for which agreements under No. 428A of the Radio Regulations had been obtained while, at the same time, his delegation's request, supported by 23 nations with their prior written agreement, had not been taken into consideration in the planning process. In his delegation's view, that contradicted the principle of equality and fairness to all nations. His delegation was not against the document nor the aspirations of countries involving intentional coverage of the territories of other countries provided the same treatment was given to the requirements of the 23 nations referred to in the Saudi Arabian requirement.

The delegate of Italy remarked that Document No. 208 showed that agreement had been reached between Monaco and France; however, Monaco's coverage also extended over part of Italian territory. The Italian delegation, whose consent in the matter had been neither sought nor granted, felt that Monaco should reduce its service area in the direction of Italy to the technically necessary minimum, and the delegation of Monaco had already given its consent to so so.

The delegate of Monaco confirmed the statement just made by the delegate of Italy.

The meeting rose at 1535 hours.

The Secretary :

D. KANE

The Chairman :

A. PETTI

UNION INTERNATIONALE DES TELECOMMUNICATIONS
CONFERENCE DE RADIODIFFUSION
PAR SATELLITE
(Genève, 1977)

Document N° 265-F/E/S
9 février 1977

GROUPE DE TRAVAIL 5A
COMMISSION 5

Note du Président du Groupe de travail 5A-2/3

PROJET DE PLAN POUR LES REGIONS 1 ET 3

	<u>Page</u>
Note en français	2
Explication des colonnes	5
Projet de Plan d'assignation de fréquence/position orbitale pour les Régions 1 et 3 (par ordre de canal).	6 - 51

WORKING GROUP 5A
COMMITTEE 5

Note by the Chairman of Working Group 5A-2/3

DRAFT PLAN FOR REGIONS 1 AND 3

	<u>Page</u>
Note in English	3
Explanation of Column headings	5
Draft Frequency Assignment/Orbital position Plan for Regions 1 and 3 (in channel order).	6 - 51

GRUPO DE TRABAJO 5A
COMISION 5

Nota del Presidente del Grupo de trabajo 5A-2/3

PROYECTO DE PLAN PARA LAS REGIONES 1 y 3

	<u>Página</u>
Nota en español	4
Explicación de los títulos de las columnas	5
Proyecto de Plan de asignaciones de frecuencia/posiciones orbitales para las Regiones 1 y 3 (por orden de canal)	6 - 51



GROUPE DE TRAVAIL 5A
COMMISSION 5

Note du Président du Groupe de travail 5A-2/3

ANALYSE DU PROJET DE PLAN PREPARE PAR LE GROUPE DE TRAVAIL 5A-2/3

Le Groupe de travail 5A-2/3 présente en annexe l'analyse résumée que l'I.F.R.B. a faite du projet de Plan préparé par le Group de travail 5A-2/3, aux fins d'examen par le Groupe de travail 5A.

Nous proposons que les colonnes 1 à 9b, inclusivement, de cette analyse soient considérées comme le projet de Plan pour les Régions 1 et 3. Pour faciliter la correspondance entre les colonnes de l'analyse et celles du projet de Plan, nous reproduisons ci-après les titres des colonnes du projet de Plan :

1. Symbole désignant le pays et numéro de référence de l'I.F.R.B.
2. Position nominale sur l'orbite, en degrés
3. Numéro du canal
4. Coordonnées géographiques du point de visée (degrés et dixièmes de degré)
5. Ouverture du faisceau d'antenne. La colonne comporte deux valeurs représentant respectivement le grand axe et le petit axe de la section transversale du faisceau elliptique entre les points à demi-puissance
6. Orientation de l'ellipse
7. Polarisation (1 = directe, 2 = indirecte) (Rapport 321 du C.C.I.R.)
8. P.i.r.e. dans la direction du rayonnement maximal, en dBW
9. Observations

Dans l'explication relative aux colonnes du présent document (voir page 5), le numéro se rapportant à la colonne correspondante du projet de Plan est indiqué entre crochets.

C. AMIRA
Président
du Groupe de travail 5A-2/3

WORKING GROUP 5A

COMMITTEE 5

Note by the Chairman of Working Group 5A-2/3

ANALYSIS OF THE DRAFT PLAN PREPARED BY WORKING GROUP 5A-2/3

Working Group 5A-2/3 submits the attached summary analysis by the I.F.R.B. of the draft Plan prepared by Working Group 5A-2/3 for the consideration of Working Group 5A.

It is proposed that Columns 1 to 9b inclusive of this analysis be considered as the draft Plan for Regions 1 and 3. To assist in correlating the columns of the analysis with those of the draft Plan, the Column headings of the draft Plan are reproduced hereunder:

1. Country symbol and I.F.R.B. Serial Number
2. Nominal orbital position in degrees
3. Channel number
4. Boresight geographical coordinates (in degrees and tenths)
5. Antenna aperture. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half power beam
6. Orientation of the ellipse
7. Polarization (1 = direct, 2 = indirect) (C.C.I.R. Report 321)
8. E.i.r.p. in the maximum direction in dBW
9. Remarks

In the explanation of the columns in the present document which follows on page 5, the related column number in the draft Plan is shown in square brackets.

C. AMIRA
Chairman
Working Group 5A-2/3

GRUPO DE TRABAJO 5A
COMISION 5

Nota del Presidente del Subgrupo de trabajo 5A-2/3

ANÁLISIS DEL PROYECTO DE PLAN PREPARADO POR EL SUBGRUPO DE TRABAJO 5A-2/3

El Subgrupo de trabajo 5A-2/3 presenta a la consideración del Grupo de trabajo 5A el análisis resumido, que adjunto se acompaña, elaborado por la I.F.R.B., del proyecto de Plan preparado por el Subgrupo.

Se propone que las columnas 1 a 9b inclusive de este análisis se consideren como el proyecto de Plan para las Regiones 1 y 3. A fin de ayudar en la correlación de las columnas del análisis con las del proyecto de Plan, se reproducen a continuación los encabezamientos de las columnas del proyecto de Plan:

1. Símbolo del país y número de orden de la I.F.R.B.
2. Posición orbital nominal en grados
3. Número del canal
4. Coordenadas geográficas del eje de puntería (en grados y décimas de grados)
5. Abertura de la antena. Esta columna contiene dos valores que representan los ejes mayor y menor, respectivamente, de la sección transversal elíptica del haz a potencia mitad
6. Orientación de la elipse
7. Polarización (1 = directa, 2 = indirecta) (Informe 321 del C.C.I.R.)
8. P.i.r.e en la dirección de máxima radiación, en dBW
9. Observaciones.

En la explicación de las columnas que se da más adelante (página 5) en el presente documento, el número de columna correspondiente en el proyecto del Plan se indica entre corchetes.

Presidente del Subgrupo de trabajo 5A2/3
C. AMIRA

Explication des colonnes
dans le présent document

Les numéros des colonnes entre parenthèses carrées correspondent aux numéros des colonnes dans le projet de Plan.

Col.

- 1 - Symbole désignant le pays et numéro de référence de l'I.F.R.B. [Col. 1]
- 2 - Position nominale sur l'orbite, en degrés [Col. 2]
- 3 - Numéro du canal [Col. 3]
- 4 - Coordonnées géographiques du point de visée [Col. 4] mais en degrés et dixièmes de degrés
- 5 - Ouverture du faisceau d'antenne. Dans le cas d'une antenne elliptique, la colonne comporte deux valeurs représentant respectivement le grand axe et le petit axe de l'ellipse [Col. 5]
- 6 - Orientation de l'ellipse (conformément à la définition donnée dans la lettre-circulaire de l'I.F.R.B. N° 358) [Col. 6]
- 7 - Gain maximal
- 8 - Polarisation [Col. 7]
- 9 - 9a Puissance en watt
9b P.i.r.e. en dBW [Col. 8]
- 10 - Coordonnées géographiques du point de contrôle critique pour lequel est indiquée la valeur de la marge de protection
- 11 - Marge équivalente de protection
- 12 - Indications relatives aux trois principaux brouilleurs. Chaque colonne contient l'indication du brouilleur (symbole désignant le pays et numéro de série) et la marge de protection qui lui correspond en dB.

Explanation of the Columns
in the present document

Column numbers shown between square brackets are those of the corresponding columns in the draft Plan.

Col.

- 1 - Country symbol and I.F.R.B. Serial Number [Col. 1]
- 2 - Nominal orbital position in degrees [Col. 2]
- 3 - Channel number [Col. 3]
- 4 - Boresight geographical coordinates [Col. 4] but in degrees and tenths
- 5 - Antenna aperture. For an elliptical antenna this column contains two figures corresponding respectively to the major axis and the minor axis [Col. 5]
- 6 - Orientation of the ellipse, as defined in I.F.R.B. Circular-letter No. 358 [Col. 6]
- 7 - Maximal gain
- 8 - Polarisation [Col. 7]
- 9 - 9a Power in watts
9b E.i.r.p. in dBW [Col. 8]
- 10 - Geographical coordinates of the critical test point for which the protection margin is indicated
- 11 - Equivalent protection margin
- 12 - Indication of the three main interferers; each of these three columns indicates the designation of the interferer (country symbol and serial number) and the corresponding protection margin in dB.

Explicación de las columnas
en este documento

Los números de las columnas entre corchetes corresponden a los números de las columnas en el proyecto de Plan.

Col.

- 1 - Símbolo de país y número de referencia de la I.F.R.B. [Col. 1]
- 2 - Posición orbital Nominal en grados [Col. 2]
- 3 - Número del canal [Col. 3]
- 4 - Coordenadas geográficas del centro de puntería [Col. 4] pero en grados y décimas
- 5 - Abertura del haz de antena. Si se trata de una antena elíptica se indican en la columna dos valores que representan los ejes mayor y menor, respectivamente de la elipse [Col. 5]
- 6 - Orientación de la elipse (véase la carta circular N.º 358 de la I.F.R.B.) [Col. 6]
- 7 - Ganancia máxima [Col. 7]
- 8 - Polarización
- 9 - 9a Potencia en vatios
9b P.i.r.e. en dBW [Col. 8]
- 10 - Coordenadas geográficas del punto de prueba crítico para el que se indica el valor del margen de protección
- 11 - Margen de protección equivalente
- 12 - Indicaciones relativas a las tres fuentes principales de interferencia. En cada columna se indica la fuente de interferencia (símbolo de país y número de referencia) y el margen de protección que le corresponde en dB.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
1	GUI0192A	-37.0	1	-11.0 10.2	1.6 1.0	147.	42.1	2	136.	63.4	-14.5 11.5	4.	*GNP0304A	5.	*MLI0327A 15.	*SMR0311A 16
2	SMR0311A	-37.0	1	12.6 43.7	0.6 0.6	0.	48.7	1	24.	62.4	12.0 43.0	0.	*F 0093A	2.	*GUI0192A 9.	*TUR0145A 12
3	LBY0280A	-25.0	1	21.4 26.0	2.5 1.0	119.	40.1	2	218.	63.5	22.0 33.0	4.	*TUR0145A	8.	*ALG0251A 10.	*F 0093A 15
4	F 0093A	-19.0	1	2.6 45.9	2.5 1.0	160.	40.4	1	220.	63.8	9.5 41.2	-1.	*SMR0311A	1.	*ALG0251A 7.	*D 0087A 9
5	CME0300A	-13.0	1	12.7 6.2	2.5 1.7	87.	37.9	1	352.	63.4	14.2 13.2	4.	*TCD0143A	5.	*LBY0280A 12.	*F 0093A 19
6	POL0132A	-1.0	1	19.3 51.8	1.5 0.6	162.	44.5	2	91.	64.1	22.9 49.0	-0.	*SMR0311A	5.	*TUR0145A 7.	*ROU0136A 7
7	SWZ0313A	-1.0	1	31.5 -26.5	0.6 0.6	66.	48.5	1	27.	62.8	30.8 -26.6	7.	*BOT0297A	9.	*POL0132A 11.	*CME0300A 26
8	TUR0145A	5.0	1	34.4 38.9	2.7 1.0	168.	39.8	1	246.	63.7	42.7 41.5	-2.	*URS0064A	-1.	*LBY0280A 11.	*URS0067A 12
9	YMS0267A	11.0	1	48.8 15.2	1.8 1.5	176.	39.9	2	195.	62.8	43.2 12.4	4.	*YEM0266A	7.	*ARS0003A 9.	*LBY0280A 18
10	QAT0247A	17.0	1	51.1 25.3	0.6 0.6	0.	48.7	1	20.	61.8	52.3 24.8	3.	*YMS0267A	5.	*ARS0003A 9.	*LBY0280A 15
11	URS0064A	23.0	1	45.6 40.8	2.2 0.6	163.	43.1	2	119.	63.9	40.0 43.4	1.	*TUR0145A	2.	*URS0067A 12.	*LBY0280A 12
12	MDG0236A	29.0	1	46.6 -18.8	2.7 1.1	65.	39.3	2	250.	63.3	49.0 -12.3	13.	*MAU0242A	15.	*ZAI0323A 22.	*URS0067A 29
13	URS0067A	44.0	1	62.4 58.5	3.2 1.5	169.	37.4	1	877.	66.8	61.5 50.8	14.	*TUR0145A	18.	*AFG0246A 18.	*CHN0155A 27
14	AFG0246A	50.0	1	64.5 33.1	1.4 1.4	21.	41.2	1	140.	62.7	67.7 37.3	-2.	*URS0067A	1.	*CHN0155A 5.	*TUR0145A 11
15	IND0039A	56.0	1	72.7 11.2	1.3 0.6	107.	45.5	1	58.	63.1	71.9 12.3	9.	*IND0045A	12.	*IND0044A 18.	*YMS0267A 19
16	CHN0155A	62.0	1	88.3 31.5	3.4 1.4	162.	37.3	2	356.	62.9	92.4 26.9	1.	*IND0037A	3.	*THA0142A 7.	*IND0044A 10
17	IND0044A	68.0	1	79.5 22.3	2.2 1.4	146.	39.3	1	253.	63.3	78.2 26.9	1.	*CHN0155A	2.	*CHN0154A 12.	*IND0045A 18
18	THA0142A	74.0	1	100.7 13.2	2.8 1.5	106.	37.9	2	374.	63.6	103.7 18.6	1.	*CHN0162A	4.	*LAO0284A 5.	*CHN0155A 11
19	CHN0163A	80.0	1	116.0 39.2	1.2 0.8	132.	44.4	1	100.	64.4	115.4 36.1	4.	*CHN0162A	6.	*CHN0155A 11.	*CHN0161A 13
20	CHN0162A	92.0	1	115.9 21.0	2.7 2.4	23.	36.0	2	612.	63.9	107.6 20.0	3.	*THA0142A	5.	*CHN0161A 13.	*CHN0155A 14
21	AUS0005A	98.0	1	133.0 -18.8	3.6 1.7	66.	36.4	2	612.	64.2	130.8 -12.5	2.	*INS0035A	3.	*AUS0006A 16.	*CHN0162A 18
22	INS0035A	104.0	1	124.3 -3.2	3.3 1.9	82.	36.1	1	508.	63.2	123.6 -10.2	5.	*AUS0005A	5.	*CHN0162A 25.	*THA0142A 29
23	CARG338A	122.0	1	149.5 8.0	5.4 0.8	178.	38.1	1	275.	62.5	134.6 7.5	6.	*INS0035A	6.	*AUS0005A 18.	*CHN0162A 20
24	WAK0334A	140.0	1	166.5 19.2	0.6 0.6	0.	48.7	1	31.	63.6	166.5 19.2	19.	*MRL0333A	24.	*NCL0100A 25.	*WAL0102A 26
25	FJI0193A	152.0	1	179.4 -17.9	1.0 1.0	67.	44.2	1	89.	63.7	-178.5 -19.9	4.	*NZL0055A	4.	*INS0035A 30.	*PNG0131A 31
26	NZL0055A	158.0	1	172.3 -39.7	2.9 1.6	47.	37.7	1	364.	63.3	166.3 -45.5	15.	*AUS0005A	18.	*FJI0193A 21.	*AUS0006A 25

Canal 1 suite - Channel 1 cont. - Canal 1 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
27	PLM0337A	170.0	1-161.4	7.0	0.6 0.6	0.	48.7	1	23.	62.4	-162.4	6.1	6. *CAR0338A	7. *SMA0335A	16. *NZL0055A	23
													*	*	*	
28	SMA0335A	170.0	1-170.1	-14.2	0.6 0.6	0.	48.7	2	18.	61.1	-171.0	-11.0	1. *PLM0337A	2. *NZL0055A	12. *WAL0102A	13

Canal 2 - Channel 2 - Canal 2

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
29	MLI0327A	-37.0	2	-2.0 19.0	2.7 1.3	127.	39.0	1	330.	64.2	-2.5 23.3	6.	*ALG0251A	7.	*SMR0311A 18.	*LIE0253A 20	
30	GNP0304A	-31.0	2	-15.0 12.0	0.9 0.6	172.	46.9	2	42.	63.1	-14.2 12.3	2.	*GMB0302A	6.	*GUI0192A	7.	*IRL0211A 14
31	IRL0211A	-31.0	2	-8.2 53.2	0.8 0.6	162.	47.2	1	50.	64.2	-6.2 52.2	6.	*ALG0251A	12.	*D 0087A	13.	*GNP0304A 15
32	ALG0251A	-25.0	2	5.1 33.6	2.7 1.5	172.	38.1	1	336.	63.4	9.5 30.0	1.	*TCD0143A	5.	*LBY0321A	7.	*TGO0226A 9
33	TGO0226A	-25.0	2	0.8 8.6	1.5 0.6	105.	44.6	2	75.	63.4	-0.2 11.1	-2.	*MLI0327A	-0.	*ALG0251A	5.	*DAH0233A 7
34	D 0087A	-19.0	2	9.4 49.5	1.6 0.7	147.	43.6	2	118.	64.3	10.0 54.8	-1.	*ZAI0323A	3.	*FNL0103A	4.	*LUX0114A 9
35	ZAI0323A	-19.0	2	21.3 -6.8	2.8 1.5	149.	38.0	1	465.	64.6	16.3 -1.0	1.	*TCD0143A	5.	*GAB0260A	7.	*CME0300A 8
36	TCD0143A	-13.0	2	18.1 15.5	3.4 1.7	107.	36.6	2	547.	64.0	16.5 8.2	5.	*CME0300A	7.	*MLI0327A	14.	*GAB0260A 15
37	BOT0297A	-1.0	2	23.3 -22.2	2.1 1.5	36.	39.2	2	285.	63.7	25.3 -17.8	4.	*ZMB0314A	6.	*ZAI0323A	10.	*ROU0136A 11
38	ROUG136A	-1.0	2	25.0 45.7	1.4 0.7	155.	44.7	1	82.	63.8	20.2 46.1	-2.	*BOT0297A	5.	*D 0087A	6.	*TCH0144A 7
39	FNL0103A	5.0	2	22.5 64.5	1.4 0.8	171.	44.0	2	234.	67.7	19.2 60.0	7.	*D 0087A	10.	*POL0132A	13.	*TUR0145A 20
40	YEM0266A	11.0	2	44.3 15.1	1.1 0.7	109.	45.2	1	55.	62.6	42.0 17.5	-5.	*ARS0003A	-5.	*YMS0267A	6.	*UGA0051A 10
41	ARS0003A	17.0	2	41.1 23.8	3.5 1.7	134.	36.5	2	403.	62.6	42.5 16.5	-4.	*YEM0266A	-3.	*YMS0267A	6.	*SOM0312A 19
42	MAU0242A	29.0	2	59.8 -18.9	1.6 1.2	55.	41.2	1	188.	64.0	60.0 -14.0	5.	*ZAI0323A	6.	*MDG0236A	14.	*PAK0127A 21
43	PAK0127A	38.0	2	69.6 29.5	2.3 2.2	14.	37.3	1	461.	63.9	74.5 35.7	2.	*CHN0154A	2.	*AFG0245A	14.	*AFG0246A 21
44	CLN0219A	50.0	2	80.6 7.7	1.2 0.6	106.	45.7	1	61.	63.6	80.0 10.0	3.	*IND0043A	5.	*IND0045A	10.	*AFG0246A 14
45	IND0045A	56.0	2	76.2 19.5	1.6 1.6	21.	40.3	2	210.	63.5	74.4 22.0	3.	*PAK0127A	5.	*CHN0154A	14.	*IND0044A 15
46	CHN0154A	62.0	2	83.9 40.5	2.8 2.0	177.	36.7	1	443.	63.2	79.0 34.3	-0.	*PAK0127A	1.	*CHN0155A	8.	*CHN0157A 14
47	IND0037A	68.0	2	93.0 25.5	1.5 1.1	71.	42.1	2	153.	63.9	97.1 27.1	-1.	*CHN0157A	3.	*LAO0284A	4.	*CHN0155A 7
48	LAO0284A	74.0	2	103.7 18.1	2.2 0.8	133.	42.0	1	150.	63.8	101.0 17.6	4.	*THA0142A	5.	*VTN0325A	13.	*CHN0157A 16
49	INS0028A	80.0	2	101.7 -1.6	3.5 1.4	131.	37.3	2	399.	63.3	104.4 0.9	-0.	*MLA0228A	3.	*SNG0151A	4.	*THA0142A 11

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
50	MLA0228A	86.0	2	114.1 3.9	2.3 1.1	45.	40.1	1	224.	63.6	109.0 2.4	3.	*INS0028A	4.	*VTN0325A 15.	*CHN0161A 17
51	CHN0161A	92.0	2	118.1 31.1	2.5 1.7	117.	38.0	1	436.	64.4	122.6 37.4	1.	*KOR0112A	3.	*CHN0160A 7.	*CHN0162A 13
52	AUS0006A	98.0	2	135.8 -30.3	2.5 1.9	46.	37.5	1	377.	63.2	140.8 -27.7	0.	*AUS0008A	1.	*AUS0005A 9.	*AUS0004A 12
53	KOR0112A	110.0	2	127.5 36.0	1.2 1.0	168.	43.2	2	108.	63.6	124.6 37.9	-2.	*CHN0161A	1.	*PNG0131A 2.	*CHN0160A 16
54	PNG0131A	110.0	2	147.7 -6.3	2.5 2.2	169.	36.9	1	562.	64.4	141.0 -9.2	0.	*AUS0008A	3.	*INS0036A 7.	*KOR0112A 10
55	GUM0331A	122.0	2	144.5 13.1	0.6 0.6	0.	48.7	2	29.	63.3	144.7 13.4	7.	*MRA0332A	9.	*CAR0338A 17.	*AUS0008A 19
56	AUS0008A	128.0	2	143.3 -20.5	3.8 2.7	112.	34.2	2	889.	63.7	142.2 -10.6	0.	*PNG0131A	1.	*INS0036A 19.	*AUS0005A 19
57	NCL0100A	140.0	2	166.0 -21.0	1.1 0.7	146.	45.1	1	72.	63.7	167.5 -23.0	-4.	*WAL0102A	-3.	*AUS0008A 10.	*NH80128A 11
58	WAL0102A	140.0	2	176.8 -14.0	0.7 0.6	29.	47.8	1	46.	64.4	-178.1 -14.2	-2.	*NCL0100A	-2.	*PNG0131A 13.	*FJI0193A 18
59	MRL0333A	146.0	2	166.7 7.9	1.5 1.5	177.	40.7	1	180.	63.3	162.1 11.5	13.	*PNG0131A	19.	*CAR0338A 19.	*NCL0100A 22
60	CKH0052A	158.0	2	160.0 -19.8	1.0 0.6	132.	46.1	2	71.	64.6	-163.5 -17.5	14.	*SMD0057A	18.	*NZL0055A 18.	*WAL0102A 27

Canal 3 - Channel 3 - Canal 3

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
33	GMB0302A	-37.0	3	-15.1 13.4	0.8 0.6	4.	47.5	2	38.	63.3	-14.2 13.3	3.	*GNP0304A	7.	*MLI0328A 9.	*LBR0244A 12
34	LIE0253A	-37.0	3	9.5 47.1	0.6 0.6	0.	48.7	1	24.	62.4	9.5 47.2	0.	*TCH0144A	4.	*LUX0114A 8.	*G 0027A 12
35	AZR0134A	-31.0	3	-23.4 36.1	2.6 0.7	158.	41.7	2	135.	63.0	-16.9 32.5	-5.	*POR0133A	-4.	*LBR0244A 9.	*G 0027A 13
36	LBR0244A	-31.0	3	-9.3 6.6	1.2 0.7	133.	44.9	1	68.	63.2	-10.2 8.5	3.	*MLI0328A	9.	*AZR0134A 9.	*POR0133A 12
37	POR0133A	-31.0	3	-8.0 39.6	0.9 0.6	112.	46.8	2	45.	63.4	-7.5 37.2	-15.	*AZR0134A	-15.	*LBR0244A 11.	*G 0027A 11
38	LBY0321A	-25.0	3	13.1 27.2	2.4 1.1	129.	40.0	2	200.	63.0	11.4 33.5	2.	*ALG0251A	6.	*ALG0252A 9.	*TGO0226A 12
39	DAH0233A	-19.0	3	2.2 9.5	1.4 0.7	97.	44.3	2	78.	63.3	2.2 6.2	3.	*TGO0226A	5.	*ZAI0323A 14.	*ZAI0322A 14
40	LUX0114A	-19.0	3	6.0 49.8	0.6 0.6	0.	48.7	1	26.	62.9	7.0 48.5	-4.	*LIE0253A	1.	*TCH0144A 4.	*D 0087A 4
41	GAB0260A	-13.0	3	11.8 -0.6	1.4 1.1	64.	42.2	1	130.	63.3	11.0 -4.0	3.	*ZAI0323A	5.	*ZAI0322A 9.	*TCD0143A 14
42	TCH0144A	-1.0	3	17.3 49.3	1.5 0.6	170.	44.8	2	80.	63.8	12.1 50.3	-2.	*LIE0253A	3.	*ZMB0314A 5.	*LUX0114A 6

suite - cont.

Canal 3 suite - Channel 3 cont. - Canal 3 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
43	ZMB0314A	-1.0	3	27.5 -13.1	2.4 1.5	39.	38.8	1	312.	63.7	33.0 -13.8	3.	*MQZ0307A	5.	*TCH0144A 11. *BCT0297A 13
44	GRC0105A	5.0	3	24.1 38.1	1.8 1.0	138.	41.8	1	140.	63.3	26.6 41.5	1.	*BUL0020A	4.	*ROU0136A 5. *IRN0109A 13
45	LBN0279A	11.0	3	35.8 33.9	0.6 0.6	0.	48.7	2	20.	61.6	36.8 34.5	0.	*IRN0109A	6.	*ARS0003A 7. *UGA0051A 7
46	UGA0051A	11.0	3	32.3 1.2	1.5 1.1	60.	42.1	1	129.	63.2	29.8 -1.3	2.	*RRW0310A	5.	*ZMB0314A 8. *YEM0266A 16
47	SOM0312A	23.0	3	45.0 6.4	3.3 1.5	71.	37.2	1	323.	62.3	43.2 11.2	5.	*URS0060A	8.	*URS0061A 10. *YEM0266A 15
48	URS0061A	23.0	3	24.7 56.6	0.9 0.6	12.	46.7	2	67.	65.0	25.8 54.1	-0.	*TCH0144A	6.	*SOM0312A 6. *URS0060A 6
49	COM0207A	29.0	3	44.1 -12.1	0.8 0.6	149.	47.7	2	35.	63.1	43.1 -11.3	5.	*SQM0312A	9.	*ZMB0314A 10. *IRN0109A 13
50	IRN0109A	32.0	3	54.2 32.4	3.8 1.8	149.	35.8	2	502.	62.8	61.5 31.0	7.	*AFG0245A	9.	*PAK0127A 15. *SOM0312A 16
51	URS0073A	44.0	3	54.3 63.5	1.6 0.7	3.	44.1	1	192.	66.9	49.5 59.3	10.	*IRN0109A	13.	*URS0060A 16. *AFG0245A 21
52	AFG0245A	50.0	3	70.2 35.5	1.3 1.1	53.	42.5	1	108.	62.8	68.0 31.6	1.	*IRN0109A	2.	*PAK0127A 11. *PAK0283A 12
53	IND0043A	56.0	3	77.8 11.1	1.4 1.3	172.	41.8	1	141.	63.3	79.5 9.1	4.	*CLN0219A	5.	*IND0045A 15. *IND0040A 19
54	CHN0157A	62.0	3	102.3 27.8	2.6 1.6	127.	38.2	2	487.	65.1	101.7 21.3	2.	*VTN0325A	3.	*LA00284B 14. *LA00284A 14
55	IND0047A	68.0	3	93.3 11.1	1.9 0.6	96.	43.6	1	96.	63.4	93.8 14.8	3.	*VTN0325A	6.	*CHN0157A 8. *IND0037A 15
56	SNG0151A	74.0	3	103.8 1.3	0.6 0.6	0.	48.7	2	31.	63.5	102.4 0.4	0.	*INS0028B	3.	*INS0028A 4. *CHN0157A 22
57	VTN0325A	86.0	3	105.3 16.1	3.0 1.4	162.	38.0	2	351.	63.4	102.0 22.8	-5.	*CHN0157A	-5.	*LA00284B 10. *LA00284A 10.
58	CHN0160A	92.0	3	123.8 45.8	2.4 1.6	153.	38.3	2	477.	65.1	122.5 38.3	2.	*CHN0157A	7.	*CHN0161B 7. *CHN0161A 7
59	AUS0004A	98.0	3	122.3 -23.8	4.3 2.6	49.	33.7	2	843.	63.0	126.6 -31.0	7.	*AUS0096A	9.	*AUS0009A 16. *INS0036A 23
60	INS0036A	104.0	3	135.2 -3.8	2.5 2.0	147.	37.3	1	439.	63.8	128.0 -10.0	-4.	*AUS0004A	-4.	*PNG0131A 15. *AUS0008A 19
61	MRA0332A	122.0	3	145.9 16.9	1.2 0.6	76.	45.7	1	60.	63.5	146.9 15.1	7.	*GUM0331A	7.	*PNG0271A 21. *AUS0009A 22
62	AUS0009A	128.0	3	143.6 -33.0	2.2 1.2	15.	40.1	1	250.	64.0	153.0 -30.0	1.	*AUS0008A	4.	*PNG0271A 8. *AUS0004A 9
63	NRU0309A	134.0	3	167.0 -0.5	0.6 0.6	0.	48.7	2	24.	62.5	166.0 -2.0	9.	*NHB0128A	14.	*INS0036A 17. *PNG0271A 19
64	NHB0128A	140.0	3	168.0 -16.4	1.5 0.7	87.	44.1	2	75.	62.8	169.8 -20.0	7.	*NCL0100A	8.	*AUS0004A 18. *NRU0309A 23
65	SMO0057A	158.0	3	172.3 -13.7	0.6 0.6	0.	48.7	1	31.	63.6	-171.0 -14.1	8.	*CKN0053A	11.	*CKH0052A 14. *WAL0102A 20

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
34	OCE0101A	-160.0	4	-145.0	-16.3	4.3	3.5	4.	32.4	2	1301.	63.5	-154.7	-15.7	18. *CKN0053A 19. *PNG0271A 30. *TON0215A 33
35	AND0238A	-37.0	4	1.3	42.6	0.6	0.6	0.	48.7	2	20.	61.6	4.3	43.3	-4. *G 0027A 2. *AUT0016A 3. *ALG0252A 4
36	MLI0328A	-37.0	4	-7.6	13.2	1.7	1.2	171.	40.9	1	191.	63.7	-12.0	15.0	3. *GMB0302A 8. *GUI0192B 8. *ALG0252A 9
37	CPV0301A	-31.0	4	-24.0	16.0	0.9	0.7	144.	46.5	2	37.	62.2	-24.3	14.4	1. *G 0027A 2. *AZR0134A 14. *MLI0328A 16
38	G 0027A	-31.0	4	-3.5	53.8	1.8	1.7	142.	39.2	1	377.	65.0	-2.0	49.1	3. *ALG0252A 5. *F 0093B 14. *AUT0016A 16
39	ALG0252A	-25.0	4	1.6	25.5	3.6	2.2	152.	35.3	1	561.	62.8	9.5	30.0	4. *LBV0321A 7. *LBV0280B 12. *MLT0147A 15
40	AUT0016A	-19.0	4	12.1	47.5	1.1	0.6	166.	45.7	2	70.	64.1	15.0	49.0	-1. *ZAI0322A 5. *S 0138A 6. *G 0027A 8
41	ZAI0322A	-19.0	4	22.4	1.2	2.2	1.9	48.	38.2	1	451.	64.7	16.0	-2.0	4. *GAB0260A 8. *CME0300B 9. *AUT0016A 12
42	MLT0147A	-13.0	4	14.3	35.9	0.6	0.6	0.	48.7	1	17.	61.0	14.3	35.9	0. *ALG0252A 2. *EGY0026A 11. *CME0300B 12
43	STP0241A	-13.0	4	7.0	0.8	0.6	0.6	0.	48.7	2	19.	61.4	5.0	2.0	-2. *CME0300B 2. *ZAI0322A 3. *GAB0260A 6
44	EGY0026A	-7.0	4	29.7	26.8	2.3	1.7	136.	38.2	2	307.	63.1	34.5	31.7	3. *ARS0275A 5. *ALG0252A 12. *LBN0279A 18
45	BUL0020A	-1.0	4	24.0	42.7	1.0	0.6	165.	46.3	1	54.	63.6	28.7	43.8	-4. *MOZ0307A 1. *URS0060A 3. *TUR0145B 4
46	MOZ0307A	-1.0	4	34.0	-18.0	3.6	1.4	55.	37.3	2	486.	64.2	32.5	-26.8	5. *SWZ0313B 6. *BUL0020A 13. *ZMB0314A 15
47	S 0138A	5.0	4	16.2	61.0	1.0	1.0	14.	44.2	2	195.	67.1	20.1	69.1	0. *G 0027A 3. *URS0060A 3. *GRC0105A 20
48	RRW0310A	11.0	4	30.0	-2.1	0.7	0.6	42.	48.3	2	31.	63.1	29.8	-4.5	-5. *ZAI0322A -3. *MOZ0307A 4. *UGA0051A 4
49	ARS0275A	17.0	4	48.3	24.6	3.8	1.4	138.	36.9	2	388.	62.8	37.0	30.0	-3. *EGY0026A -2. *ALG0252A 10. *LBN0279A 12.
50	URS0060A	23.0	4	41.5	57.4	3.1	1.6	153.	37.4	1	854.	66.7	28.3	68.9	-2. *S 0138A 0. *G 0027A 3. *URS0061A 13.
51	MAU0243A	29.0	4	56.8	-13.9	1.6	1.4	65.	40.9	1	190.	63.7	53.0	-15.0	6. *MDG0236B 9. *MOZ0307A 11. *CCM0207A 18.
52	PAK0283A	38.0	4	72.3	34.4	1.9	1.0	162.	41.5	1	190.	64.2	79.1	32.7	2. *IND0040A 4. *CHN0156A 10. *IND0048A 13.
53	IND0040A	56.0	4	73.0	25.0	1.8	1.5	58.	39.9	2	234.	63.6	73.5	30.0	0. *PAK0283A 1. *CHN0155B 10. *CHN0156A 16.
54	CHN0156A	62.0	4	97.8	36.3	2.6	1.6	157.	38.2	1	338.	63.5	108.5	35.4	1. *CHN0161B 4. *CHN0157A 6. *CHN0155B 11.
55	IND0048A	68.0	4	86.2	25.0	1.6	0.9	120.	42.8	2	122.	63.7	89.8	26.7	-3. *CHN0156A 1. *CHN0155B 3. *CHN0157A 6
56	LA00284B	74.0	4	103.7	18.1	2.2	0.8	133.	42.0	1	151.	63.8	102.0	22.5	3. *THA0142B 7. *CHN0156A 8. *CHN0157A 12.
57	INS0028B	80.0	4	101.7	-1.6	3.5	1.4	131.	37.3	2	402.	63.3	104.4	0.9	-0. *MLA0228B 3. *SNG0151A 4. *THA0142B 11
58	MLA0228B	86.0	4	114.1	3.9	2.3	1.1	45.	40.1	1	226.	63.6	109.0	2.4	3. *INS0028B 4. *VTN0325A 15. *CHN0161B 17
59	CHN0161B	92.0	4	118.1	31.1	2.5	1.7	117.	38.0	1	439.	64.4	122.6	37.4	0. *KOR0112B 3. *CHN0160A 7. *CHN0156A 7

Canal 4 suite - Channel 4 cont. - Canal 4 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
60	KOR0112B	110.0	4	127.5 36.0	1.2 1.0	168.	43.2	2	109.	63.6	124.6 37.9	-1.	*CHN0161B	1.	*CHN0156A	6.	*CHN0160A	16
													*	*	*	*	*	*
61	AUS0007A	128.0	4	146.5 -39.1	1.8 1.4	134.	40.2	2	206.	63.3	139.9 -36.8	-0.	*PNG0271A	1.	*AUS0009A	6.	*AUS0005B	21
													*	*	*	*	*	*
62	PNG0271A	128.0	4	149.7 -4.6	2.9 2.4	135.	35.9	1	558.	63.4	141.0 -9.2	1.	*AUS0007A	2.	*AUS0009A	8.	*INS0036A	14
													*	*	*	*	*	*
63	CKN0053A	158.0	4	-163.0 -11.2	1.8 0.7	49.	43.2	2	128.	64.3	-158.0 -9.0	2.	*OCE0101A	2.	*NZL0055B	17.	*TON0215A	27
													*	*	*	*	*	*
64	TON0215A	170.0	4	-174.7 -18.0	1.4 0.7	85.	44.4	1	77.	63.3	-173.7 -15.9	7.	*CKN0053A	11.	*OCE0101A	13.	*SMA0335B	15
													*	*	*	*	*	*

Canal 5 - Channel 5 - Canal 5

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
32	GUI0192B	-37.0	5	-11.0 10.2	1.6 1.0	147.	42.1	2	138.	63.5	-14.5 11.5	3.	*GNP0304B *	5.	*MLI0328A *	8.	*MLI0327B 15
33	SMR0311B	-37.0	5	12.6 43.7	0.6 0.6	0.	48.7	1	24.	62.5	12.0 43.0	-0.	*F 0093B *	2.	*GUI0192B *	9.	*TUR0145B 12
34	LBY0280B	-25.0	5	21.4 26.0	2.5 1.0	119.	40.1	2	221.	63.5	22.0 33.0	4.	*TUR0145B *	8.	*ALG0251B *	10.	*ALG0252A 12
35	F 0093B	-19.0	5	2.6 45.9	2.5 1.0	160.	40.4	1	223.	63.8	9.5 41.2	-2.	*SMR0311B *	1.	*ALG0251B *	7.	*D 0087B 9
36	CME0300B	-13.0	5	12.7 6.2	2.5 1.7	87.	37.9	1	357.	63.5	16.2 1.4	1.	*ZAI0322A *	4.	*ZAI0323B *	8.	*TCD0143B 9
37	POL0132B	-1.0	5	19.3 51.8	1.5 0.6	162.	44.5	2	92.	64.2	14.4 53.9	-1.	*S 0138A *	3.	*F 0093B *	6.	*FNL0103B 7
38	SWZ0313B	-1.0	5	31.5 -26.5	0.6 0.6	66.	48.5	1	27.	62.8	31.1 -25.9	4.	*MOZ0307A *	7.	*BOT0297B *	9.	*POL0132B 11
39	TUR0145B	5.0	5	34.4 38.9	2.7 1.0	168.	39.8	1	249.	63.8	42.7 41.5	-2.	*URSC064B *	-1.	*LBY0280B *	11.	*URS0067B 12
40	YMS0267B	11.0	5	48.8 15.2	1.8 1.5	176.	39.9	2	197.	62.9	49.5 18.4	3.	*ARS0275A *	6.	*ARS0003B *	7.	*YEM0266B 13
41	QAT0247B	17.0	5	51.1 25.3	0.6 0.6	0.	48.7	1	21.	61.8	52.3 24.8	1.	*YMS0267B *	5.	*ARS0275A *	6.	*ARS0003B 9
42	URS0064B	23.0	5	45.6 40.8	2.2 0.6	163.	43.1	2	121.	63.9	40.0 43.4	-1.	*TUR0145B *	2.	*URS0060A *	6.	*URS0067B 12
43	MDG0236B	29.0	5	46.6 -18.8	2.7 1.1	65.	39.3	2	253.	63.4	49.0 -12.3	8.	*MAU0243A *	10.	*MAU0242B *	15.	*ZAI0323B 22
44	URS0067B	44.0	5	62.4 58.5	3.2 1.5	169.	37.4	1	888.	66.9	50.9 51.9	12.	*URS0060A *	17.	*TUR0145B *	17.	*AFG0246B 21
45	AFG0246B	50.0	5	64.5 33.1	1.4 1.4	21.	41.2	1	142.	62.7	67.7 37.3	-2.	*URS0067B *	1.	*CHN0155B *	5.	*TUR0145B 11
46	IND0039B	56.0	5	72.7 11.2	1.3 0.6	107.	45.5	1	59.	63.1	71.9 12.3	8.	*IND0045B *	12.	*IND0040A *	16.	*IND0044B 18
47	CHN0155B	62.0	5	88.3 31.5	3.4 1.4	162.	37.3	2	360.	62.9	86.0 28.0	-0.	*IND0044B *	3.	*IND0048A *	5.	*CHN0156A 12
48	IND0044B	68.0	5	79.5 22.3	2.2 1.4	146.	39.3	1	256.	63.4	78.2 26.9	0.	*CHN0155B *	2.	*CHN0154B *	12.	*IND0048A 14

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
49	THA0142B	74.0	5	100.7 13.2	2.8 1.5	106.	37.9	2	379.	63.7	103.7 18.6	-1.	*CHN0162B *	4.	*LA00284C *	5.	*LA00284B *	5
50	CHN0164A	80.0	5	112.2 37.4	1.1 0.8	111.	45.2	1	79.	64.2	110.3 34.5	3.	*CHNC162B *	6.	*CHN0155B *	8.	*THA0142B *	14
51	CHN0162B	92.0	5	115.9 21.0	2.7 2.4	23.	36.0	2	620.	64.0	118.4 28.3	1.	*CHN0161C *	5.	*CHN0161B *	5.	*CHN0155B *	11
52	AUS0005B	98.0	5	133.0 -18.8	3.6 1.7	66.	36.4	2	620.	64.3	130.8 -12.5	2.	*INS0035B *	3.	*AUS0006B *	16.	*CHN0162B *	18
53	INS0035B	104.0	5	124.3 -3.2	3.3 1.9	82.	36.1	1	514.	63.2	123.6 -10.2	5.	*AUS0005B *	5.	*CHN0162B *	25.	*THA0142B *	29
54	CAR0338B	122.0	5	149.5 8.0	5.4 0.8	178.	38.1	1	278.	62.5	134.6 7.5	5.	*INS0035B *	6.	*PNG0271A *	18.	*AUS0005B *	18
55	WAK0334B	140.0	5	166.5 19.2	0.6 0.6	0.	48.7	1	31.	63.6	166.5 19.2	19.	*MRL0333B *	24.	*NCL0100B *	25.	*WAL0102B *	26
56	FJI0193B	152.0	5	179.4 -17.9	1.0 1.0	67.	44.2	1	90.	63.7	-178.5 -19.9	4.	*NZL0055B *	4.	*TON0215A *	23.	*INS0035B *	30
57	NZL0055B	158.0	5	172.3 -39.7	2.9 1.6	47.	37.7	1	369.	63.4	166.3 -45.5	14.	*AUS0005B *	18.	*FJI0193B *	21.	*CKN0053A *	21
58	PLM0337B	170.0	5	-161.4 7.0	0.6 0.6	0.	48.7	1	24.	62.4	-162.4 6.1	5.	*CAR0338B *	7.	*TON0215A *	14.	*SMA0335B *	16
59	SMA0335B	170.0	5	-170.1 -14.2	0.6 0.6	0.	48.7	2	18.	61.2	-171.0 -11.0	-2.	*TON0215A	1.	*PLM0337B	2.	*CKN0053A	10

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
29	MLI0327B	-37.0	6	-2.0 19.0	2.7 1.3	127.	39.0	1	335.	64.2	-2.5 23.3	7.	*ALG0251B	8.	*SMR0311B 18.	*LIE0253B 20
30	GNP0304B	-31.0	6	-15.0 12.0	0.9 0.6	172.	46.9	2	42.	63.2	-14.2 12.3	2.	*GMB0302B	6.	*GUI0192B 7.	*IRL0211B 14
31	IRL0211B	-31.0	6	-8.2 53.2	0.8 0.6	162.	47.2	1	51.	64.3	-6.2 52.2	6.	*ALG0251B	12.	*D 0087B 13.	*GNP0304B 15
32	ALG0251B	-25.0	6	5.1 33.6	2.7 1.5	172.	38.1	1	340.	63.5	9.5 30.0	1.	*TCD0143B	5.	*LBY0321B 7.	*TGO0226B 9
33	TGO0226B	-25.0	6	0.8 8.6	1.5 0.6	105.	44.6	2	76.	63.4	-0.2 11.1	-2.	*MLI0327B	-0.	*ALG0251B 5.	*DAH0233B 7
34	D 0087B	-19.0	6	9.4 49.5	1.6 0.7	147.	43.6	2	120.	64.4	10.0 54.8	-1.	*ZAI0323B	3.	*FNL0103B 4.	*LUX0114B 9
35	ZAI0323B	-19.0	6	21.3 -6.8	2.8 1.5	149.	38.0	1	471.	64.7	16.3 -1.0	1.	*TCD0143B	5.	*GAB0260B 7.	*CME0300B 8
36	TCD0143B	-13.0	6	18.1 15.5	3.4 1.7	107.	36.6	2	554.	64.0	16.5 8.2	5.	*CME0300B	7.	*MLI0327B 14.	*GAB0260B 15
37	BOT0297B	-1.0	6	23.3 -22.2	2.1 1.5	36.	39.2	2	288.	63.8	25.3 -17.8	4.	*ZMB0314B	6.	*ZAI0323B 10.	*RQU0136B 11
38	ROU0136B	-1.0	6	25.0 45.7	1.4 0.7	155.	44.7	1	83.	63.9	20.2 46.1	-2.	*BOT0297B	5.	*D 0087B 6.	*TCH0144B 7
39	FNL0103B	5.0	6	22.5 64.5	1.4 0.8	171.	44.0	2	237.	67.8	19.2 60.0	7.	*D 0087B	10.	*POL0132B 13.	*TUR0145B 20
40	YEM0266B	11.0	6	44.3 15.1	1.1 0.7	109.	45.2	1	56.	62.7	42.0 17.5	-5.	*ARS0003B	-5.	*YMS0267B 6.	*UGA0051B 10

Canal 6 suite - Channel 6 cont. - Canal 6 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
41 ARS0003B	17.0	6	41.1	23.8	3.5 1.7	134.	36.5	2	408.	62.6	42.5 16.5	-4. *YEM0266B	-3. *YMS0267B	6. *SOM0312B	19
42 MAU0242B	29.0	6	59.8	-18.9	1.6 1.2	55.	41.2	1	190.	64.0	60.0 -14.0	5. *ZAI0323B	6. *MDG0236B	14. *PAK0127B	21
43 PAK0127B	38.0	6	69.6	29.5	2.3 2.2	14.	37.3	1	468.	64.0	74.5 35.7	2. *CHN0154B	2. *AFG0245B	15. *AFG0246B	21
44 CLN0219B	50.0	6	80.6	7.7	1.2 0.6	106.	45.7	1	62.	63.6	80.0 10.0	3. *IND0043B	5. *IND0045B	10. *AFG0246B	14
45 IND0045B	56.0	6	76.2	19.5	1.6 1.6	21.	40.3	2	213.	63.6	74.4 22.0	3. *PAK0127B	5. *CHN0154B	14. *IND0044B	15
46 CHN0154B	62.0	6	83.9	40.5	2.8 2.0	177.	36.7	1	449.	63.3	79.0 34.3	-0. *PAK0127B	1. *CHN0155B	8. *CHN0157B	14
47 IND0037B	68.0	6	93.0	25.5	1.5 1.1	71.	42.1	2	155.	64.0	97.1 27.1	-1. *CHN0157B	3. *LAO0284C	4. *CHN0155B	7
48 LAO0284C	74.0	6	103.7	18.1	2.2 0.8	133.	42.0	1	152.	63.8	101.0 17.6	4. *THA0142B	5. *VTN0325B	13. *CHN0157B	16
49 INS0028C	80.0	6	101.7	-1.6	3.5 1.4	131.	37.3	2	405.	63.3	104.4 0.9	-0. *MLA0228C	3. *SNG0151B	4. *THA0142B	11
50 MLA0228C	86.0	6	114.1	3.9	2.3 1.1	45.	40.1	1	227.	63.6	109.0 2.4	3. *INS0028C	4. *VTN0325B	15. *CHN0161C	17
51 CHN0161C	92.0	6	118.1	31.1	2.5 1.7	117.	38.0	1	442.	64.5	122.6 37.4	1. *KOR0112C	3. *CHN0160B	7. *CHN0162B	13
52 AUS0006B	98.0	6	135.8	-30.3	2.5 1.9	46.	37.5	1	381.	63.3	140.8 -27.7	0. *AUS0008B	1. *AUS0005B	9. *AUS0004B	12
53 KOR0112C	110.0	6	127.5	36.0	1.2 1.0	168.	43.2	2	110.	63.6	124.6 37.9	-2. *CHN0161C	1. *PNG0131B	2. *CHN0160B	16
54 PNG0131B	110.0	6	147.7	-6.3	2.5 2.2	169.	36.9	1	570.	64.4	141.0 -9.2	0. *AUS0008B	3. *INS0036B	7. *KOR0112C	10
55 GUM0331B	122.0	6	144.5	13.1	0.6 0.6	0.	48.7	2	29.	63.4	144.7 13.4	7. *MRA0332B	9. *CAR0338B	17. *AUS0008B	19
56 AUS0008B	128.0	6	143.3	-20.5	3.8 2.7	112.	34.2	2	900.	63.7	142.2 -10.6	0. *PNG0131B	1. *INS0036B	19. *AUS0005B	19
57 NCL0100B	140.0	6	166.0	-21.0	1.1 0.7	146.	45.1	1	73.	63.8	167.5 -23.0	-4. *WAL0102B	-3. *AUS0008B	10. *NHBO128B	11
58 WAL0102B	140.0	6	176.8	-14.0	0.7 0.6	29.	47.8	1	46.	64.4	-178.1 -14.2	-2. *NCL0100B	-2. *PNG0131B	13. *FJIO193B	18
59 MRL0333B	146.0	6	166.7	7.9	1.5 1.5	177.	40.7	1	183.	63.3	162.1 11.5	13. *PNG0131B	19. *CAR0338B	19. *NCLG100B	22
60 CKH0052B	158.0	6	160.0	-19.8	1.0 0.6	132.	46.1	2	72.	64.7	-163.5 -17.5	14. *SMO0057B	18. *NZL0055B	18. *WAL0102B	27

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
33 GM80302B	-37.0	7	-15.1	13.4	0.8 0.6	4.	47.5	2	39.	63.4	-14.2	13.3	3. *GNP0304B	7. *MLI0328B	9. *LBR0244B	12.
34 LIE0253B	-37.0	7	9.5	47.1	0.6 0.6	0.	48.7	1	24.	62.5	9.5	47.2	0. *TCH0144B	4. *LUX0114B	8. *G 0027B	12.
35 AZR0134B	-31.0	7	-23.4	36.1	2.6 0.7	158.	41.7	2	136.	63.1	-16.9	32.5	-5. *POR0133B	-4. *LBR0244B	9. *G 0027B	13.
36 LBR0244B	-31.0	7	-9.3	6.6	1.2 0.7	133.	44.9	1	68.	63.3	-10.2	8.5	3. *MLI0328B	9. *AZR0134B	9. *POR0133B	12.
37 POR0133B	-31.0	7	-8.0	39.6	0.9 0.6	112.	46.8	2	46.	63.4	-7.5	37.2	-15. *AZR0134B	-15. *LBR0244B	11. *G 0027B	11.
38 LBY0321B	-25.0	7	13.1	27.2	2.4 1.1	129.	40.0	2	202.	63.1	11.4	33.5	2. *ALG0251B	6. *ALG0252B	9. *TGO0226B	12.
39 DAH0233B	-19.0	7	2.2	9.5	1.4 0.7	97.	44.3	2	79.	63.3	2.2	6.2	3. *TGO0226B	5. *ZAI0323B	14. *ZAI0322B	14.
40 LUX0114B	-19.0	7	6.0	49.8	0.6 0.6	0.	48.7	1	27.	63.0	7.0	48.5	-3. *LIE0253B	1. *TCH0144B	4. *D 0087B	4.
41 GAB0260B	-13.0	7	11.8	-0.6	1.4 1.1	64.	42.2	1	131.	63.4	11.0	-4.0	3. *ZAI0323B	5. *ZAI0322B	9. *TCD0143B	14.
42 TCH0144B	-1.0	7	17.3	49.3	1.5 0.6	170.	44.8	2	81.	63.9	12.1	50.3	-2. *LIE0253B	3. *ZMB0314B	5. *LUX0114B	6.
43 ZMB0314B	-1.0	7	27.5	-13.1	2.4 1.5	39.	38.8	1	316.	63.8	33.0	-13.8	3. *MOZ0307B	5. *TCH0144B	11. *BOT0297B	13.
44 GRC0105B	5.0	7	24.1	38.1	1.8 1.0	138.	41.8	1	142.	63.3	26.6	41.5	1. *BUL0020B	4. *ROU0136B	5. *IRN0109B	13.
45 LBN0279B	11.0	7	35.8	33.9	0.6 0.6	0.	48.7	2	20.	61.7	36.8	34.5	0. *IRN0109B	6. *ARS0003B	7. *UGA0051B	7.
46 UGA0051B	11.0	7	32.3	1.2	1.5 1.1	60.	42.1	1	130.	63.3	29.8	-1.3	2. *RRW0310B	5. *ZMB0314B	8. *YEM0266B	16.
47 SOM0312B	23.0	7	45.0	6.4	3.3 1.5	71.	37.2	1	327.	62.4	43.2	11.2	5. *URS0060B	8. *URS0061B	10. *YEM0266B	15.
48 URS0061B	23.0	7	24.7	56.6	0.9 0.6	12.	46.7	2	68.	65.1	25.8	54.1	-0. *TCH0144B	6. *SOM0312B	6. *URS0060B	6.
49 COM0207B	29.0	7	44.1	-12.1	0.8 0.6	149.	47.7	2	35.	63.1	43.1	-11.3	5. *SOM0312B	9. *ZMB0314B	10. *IRN0109B	13.
50 IRN0109B	32.0	7	54.2	32.4	3.8 1.8	149.	35.8	2	509.	62.9	61.5	31.0	7. *AFG0245B	9. *PAK0127B	15. *SOM0312B	16.
51 URS0072A	44.0	7	70.1	61.5	2.4 0.7	173.	42.3	1	300.	67.1	63.1	66.2	13. *URS0060B	18. *IRN0109B	18. *AFG0245B	21.
52 AFG0245B	50.0	7	70.2	35.5	1.3 1.1	53.	42.5	1	109.	62.9	68.0	31.6	1. *IRN0109B	2. *PAK0127B	11. *PAK0283B	12.
53 IND0043B	56.0	7	77.8	11.1	1.4 1.3	172.	41.8	1	143.	63.4	79.5	9.1	4. *CLN0219B	5. *IND0045B	15. *IND0040B	19.
54 CHN0157B	62.0	7	102.3	27.8	2.6 1.6	127.	38.2	2	493.	65.1	101.7	21.3	2. *VTN0325B	3. *LAO0284D	14. *LAO0284C	14.
55 IND0047B	68.0	7	93.3	11.1	1.9 0.6	96.	43.6	1	97.	63.5	93.8	14.8	3. *VTN0325B	6. *CHN0157B	8. *IND0037B	15.
56 SNG0151B	74.0	7	103.8	1.3	0.6 0.6	0.	48.7	2	31.	63.6	102.4	0.4	0. *INS0028D	4. *INS0028C	4. *CHN0157B	22.
57 VTN0325B	86.0	7	105.3	16.1	3.0 1.4	162.	38.0	2	356.	63.5	102.0	22.8	-5. *CHN0157B	-5. *LAO0284D	10. *LAO0284C	10.
58 CHN0160B	92.0	7	123.8	45.8	2.4 1.6	153.	38.3	2	484.	65.1	122.5	38.3	3. *CHN0157B	7. *CHN0161C	7. *CHN0173A	16.

Canal 7 suite - Channel 7 cont. - Canal 7 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
59	AUS0004B	98.0	7	122.3 -23.8	4.3 2.6	49.	33.7	2	854.	63.1	126.6 -31.0	7.	*AUS0006B	9.	*INS0036B 23
60	INS0036B	104.0	7	135.2 -3.8	2.5 2.0	147.	37.3	1	445.	63.8	128.0 -10.0	-4.	*AUS0004B	-4.	*AUS0008B 19
61	MRA0332B	122.0	7	145.9 16.9	1.2 0.6	76.	45.7	1	61.	63.5	146.9 15.1	7.	*GUM0331B	7.	*AUS0009B 23
62	AUS0009B	128.0	7	143.6 -33.0	2.2 1.2	15.	40.1	1	254.	64.1	153.0 -30.0	1.	*AUS0008B	4.	*AUS0004B 9
63	NRU0309B	134.0	7	167.0 -0.5	0.6 0.6	0.	48.7	2	25.	62.6	166.0 -2.0	9.	*NHBC128B	14.	*PNG0271B 19
64	NHBC128B	140.0	7	168.0 -16.4	1.5 0.7	87.	44.1	2	76.	62.9	169.8 -20.0	7.	*NCL0100B	8.	*NRU0309B 23
65	SM00057B	158.0	7	172.3 -13.7	0.6 0.6	0.	48.7	1	32.	63.7	-171.0 -14.1	8.	*CKN0053B	11.	*WAL0102B 20

Canal 8 - Channel 8 - Canal 8

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
34	OCE0101B	-160.0	8	145.0 -16.3	4.3 3.5	4.	32.4	2	1318.	63.6	-154.7 -15.7	18.	*CKN0053B	19.	*TON0215B 33
35	AND0238B	-37.0	8	1.3 42.6	0.6 0.6	0.	48.7	2	20.	61.7	4.3 43.3	-4.	*G 0027B	2.	*ALG0252B 4
36	MLI0328B	-37.0	8	-7.6 13.2	1.7 1.2	171.	40.9	1	193.	63.8	-12.0 15.0	3.	*GMB0302B	8.	*ALG0252B 9
37	CPV0301B	-31.0	8	-24.0 16.0	0.9 0.7	144.	46.5	2	38.	62.2	-24.3 14.4	1.	*G 0027B	2.	*MLI0328B 16
38	G 0027B	-31.0	8	-3.5 53.8	1.8 1.7	142.	39.2	1	382.	65.1	-2.0 49.1	3.	*ALG0252B	5.	*AUT0016B 16
39	ALG0252B	-25.0	8	1.6 25.5	3.6 2.2	152.	35.3	1	569.	62.8	9.5 30.0	4.	*LBY0321B	7.	*MLT0147B 15
40	AUT0016B	-19.0	8	12.1 47.5	1.1 0.6	166.	45.7	2	71.	64.2	15.0 49.0	-1.	*ZAI0322B	5.	*G 0027B 8
41	ZAI0322B	-19.0	8	22.4 1.2	2.2 1.9	48.	38.2	1	457.	64.8	16.0 -2.0	4.	*GAB0260B	8.	*AUT0016B 12
42	MLT0147B	-13.0	8	14.3 35.9	0.6 0.6	0.	48.7	1	17.	61.0	14.3 35.9	0.	*ALG0252B	2.	*CME0300C 12
43	STP0241B	-13.0	8	7.0 0.8	0.6 0.6	0.	48.7	2	19.	61.5	5.0 2.0	-2.	*CME0300C	2.	*GAB0260B 6
44	EGY0026B	-7.0	8	29.7 26.8	2.3 1.7	136.	38.2	2	311.	63.2	34.5 31.7	3.	*ARS0275B	5.	*LBN0279B 18
45	BUL0020B	-1.0	8	24.0 42.7	1.0 0.6	165.	46.3	1	55.	63.7	28.7 43.8	-4.	*MOZ0307B	1.	*TUR0145C 4
46	MOZ0307B	-1.0	8	34.0 -18.0	3.6 1.4	55.	37.3	2	493.	64.2	32.5 -26.8	5.	*SWZ0313C	6.	*ZMB0314B 15
47	S 0138B	5.0	8	16.2 61.0	1.0 1.0	14.	44.2	2	198.	67.1	20.1 69.1	0.	*G 0027B	3.	*GRC0105B 20
48	RRW0310B	11.0	8	30.0 -2.1	0.7 0.6	42.	48.3	2	31.	63.2	29.8 -4.5	-5.	*ZAI0322B	-3.	*UGA0051B 4

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
49 ARS0275B	17.0	8	48.3	24.6	3.8 1.4	138.	36.9	2	393.	62.9	37.0 30.0	-2.	*EGY0026B	-2.	*ALG0252B 10. *LBN0279B 12
50 URS0060B	23.0	8	41.5	57.4	3.1 1.6	153.	37.4	1	865.	66.8	28.3 68.9	-2.	*S 0138B	1.	*G 0027B 3. *URS0061B 13
51 MAU0243B	29.0	8	56.8	-13.9	1.6 1.4	65.	40.9	1	192.	63.8	53.0 -15.0	6.	*MDG0236C	9.	*MOZ0307B 11. *CGM0207B 18
52 PAK0283B	38.0	8	72.3	34.4	1.9 1.0	162.	41.5	1	192.	64.3	79.1 32.7	2.	*IND0040B	4.	*CHN0156B 10. *IND0048B 13
53 IND0040B	56.0	8	73.0	25.0	1.8 1.5	58.	39.9	2	237.	63.7	73.5 30.0	0.	*PAK0283B	1.	*CHN0155C 10. *CHN0156B 16
54 CHN0156B	62.0	8	97.8	36.3	2.6 1.6	157.	38.2	1	342.	63.5	95.9 31.7	3.	*CHN0157B	7.	*CHN0155C 8. *LA00284D 13
55 IND0048B	68.0	8	86.2	25.0	1.6 0.9	120.	42.8	2	124.	63.7	89.8 26.7	-3.	*CHN0156B	1.	*CHN0155C 3. *CHN0157B 6
56 LA00284D	74.0	8	103.7	18.1	2.2 0.8	133.	42.0	1	153.	63.8	102.0 22.5	3.	*THA0142C	7.	*CHN0156B 9. *CHN0157B 12
57 INS0028D	80.0	8	101.7	-1.6	3.5 1.4	131.	37.3	2	407.	63.4	104.4 0.9	-0.	*MLA0228D	3.	*SNG0151B 4. *THA0142C 11
58 MLA0228D	86.0	8	114.1	3.9	2.3 1.1	45.	40.1	1	229.	63.7	109.0 2.4	3.	*INS0028D	4.	*VTN0325B 15. *CHN0173A 19
59 CHN0173A	92.0	8	115.7	27.4	1.1 0.9	99.	43.9	1	100.	64.0	113.9 29.0	4.	*CHN0162C	8.	*CHN0156B 9. *CHN0160B 13
60 KOR0112D	110.0	8	127.5	36.0	1.2 1.0	168.	43.2	2	110.	63.7	124.6 37.9	3.	*CHN0156B	6.	*J 0111A 7. *CHN0160B 16
61 AUS0007B	128.0	8	146.5	-39.1	1.8 1.4	134.	40.2	2	209.	63.4	139.9 -36.8	-0.	*PNG0271B	1.	*AUS0009B 6. *AUS0005C 21
62 PNG0271B	128.0	8	149.7	-4.6	2.9 2.4	135.	35.9	1	565.	63.4	141.0 -9.2	1.	*AUS0007B	2.	*AUS0009B 8. *INS0036B 14
63 CKN0053B	158.0	8	-163.0	-11.2	1.8 0.7	49.	43.2	2	130.	64.3	-158.0 -9.0	2.	*OCE0101B	2.	*NZL0055C 17. *TON0215B 27
64 TON0215B	170.0	8	-174.7	-18.0	1.4 0.7	85.	44.4	1	78.	63.3	-173.7 -15.9	7.	*CKN0053B	11.	*GCE0101B 13. *SMA0335C 15

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
32 GUI0192C	-37.0	9	-11.0	10.2	1.6 1.0	147.	42.1	2	140.	63.5	-14.5 11.5	3.	*GNP0304C	5.	*MLI0328B 8. *MLI0327C 15
33 SMR0311C	-37.0	9	12.6	43.7	0.6 0.6	0.	48.7	1	24.	62.5	12.0 43.0	-0.	*F 0093C	2.	*GUI0192C 9. *TUR0145C 12
34 LBY0280C	-25.0	9	21.4	26.0	2.5 1.0	119.	40.1	2	224.	63.6	22.0 33.0	4.	*TUR0145C	8.	*ALG0251C 10. *ALG0252B 12
35 F 0093C	-19.0	9	2.6	45.9	2.5 1.0	160.	40.4	1	226.	63.9	9.5 41.2	-2.	*SMR0311C	1.	*ALG0251C 7. *D 0087C 9
36 CME0300C	-13.0	9	12.7	6.2	2.5 1.7	87.	37.9	1	361.	63.5	16.2 1.4	1.	*ZAI0322B	4.	*ZAI0323C 8. *TCD0143C 9
37 POL0132C	-1.0	9	19.3	51.8	1.5 0.6	162.	44.5	2	93.	64.2	14.4 53.9	-1.	*S 0138B	3.	*F 0093C 6. *FNL0103C 7

Canal 9 suite - Channel 9 cont. - Canal 9 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
38	SWZ0313C	-1.0	9	31.5 -26.5	0.6 0.6	66.	48.5	1	27.	62.9	31.1 -25.9	4.	*MOZ0307B	7.	*BOT0297C 9. *PCL0132C 11
39	TUR0145C	5.0	9	34.4 38.9	2.7 1.0	168.	39.8	1	252.	63.8	42.7 41.5	-2.	*URS0064C	-1.	*LBY0280C 11. *URS0067C 12
40	YMS0267C	11.0	9	48.8 15.2	1.8 1.5	176.	39.9	2	200.	62.9	49.5 18.4	3.	*ARS0275B	6.	*ARS0003C 7. *YEM0266C 13
41	QAT0247C	17.0	9	51.1 25.3	0.6 0.6	0.	48.7	1	21.	61.9	52.3 24.8	1.	*YMS0267C	5.	*ARS0275B 6. *ARS0003C 9
42	URS0064C	23.0	9	45.6 40.8	2.2 0.6	163.	43.1	2	122.	64.0	40.0 43.4	-1.	*TUR0145C	2.	*URS0060B 6. *URS0067C 12
43	MDG0236C	29.0	9	46.6 -18.8	2.7 1.1	65.	39.3	2	257.	63.4	49.0 -12.3	8.	*MAU0243B	10.	*MAU0242C 15. *ZAI0323C 22
44	URS0067C	44.0	9	62.4 58.5	3.2 1.5	169.	37.4	1	900.	66.9	50.9 51.9	12.	*URS0060B	17.	*TUR0145C 17. *AFG0246C 21
45	AFG0246C	50.0	9	64.5 33.1	1.4 1.4	21.	41.2	1	144.	62.8	67.7 37.3	-2.	*URS0067C	1.	*CHN0155C 5. *TUR0145C 11
46	IND0039C	56.0	9	72.7 11.2	1.3 0.6	107.	45.5	1	59.	63.2	71.9 12.3	8.	*IND0045C	12.	*IND0040B 16. *IND0044C 18
47	CHN0155C	62.0	9	88.3 31.5	3.4 1.4	162.	37.3	2	365.	63.0	86.0 28.0	-0.	*IND0044C	3.	*IND0048B 5. *CHN0156B 12
48	IND0044C	68.0	9	79.5 22.3	2.2 1.4	146.	39.3	1	259.	63.5	78.2 26.9	0.	*CHN0155C	2.	*CHN0154C 13. *IND0048B 14
49	THA0142C	74.0	9	100.7 13.2	2.8 1.5	106.	37.9	2	384.	63.7	103.7 18.6	-1.	*CHN0162C	4.	*LAD0284E 5. *LAD0284D 5
50	CHN0165A	80.0	9	111.4 41.8	1.6 1.2	15.	41.5	1	163.	63.6	107.6 37.8	4.	*CHN0155C	8.	*CHN0162C 12. *J 0111A 14
51	CHN0162C	92.0	9	115.9 21.0	2.7 2.4	23.	36.0	2	628.	64.0	125.0 25.9	-0.	*J 0111A	0.	*CHN0171A 15. *CHN0173A 15
52	AUS0005C	98.0	9	133.0 -18.8	3.6 1.7	66.	36.4	2	628.	64.4	130.8 -12.5	2.	*INS0035C	3.	*AUS0006C 16. *CHN0162C 19
53	INS0035C	104.0	9	124.3 -3.2	3.3 1.9	82.	36.1	1	521.	63.3	123.6 -10.2	5.	*AUS0005C	5.	*J 0111A 18. *CHN0162C 25
54	J 0111A	110.0	9	134.5 31.5	3.5 3.3	68.	33.6	1	1168.	64.3	123.7 24.3	-0.	*CHN0162C	1.	*PNG0131C 12. *INS0035C 13
55	CAR0338C	122.0	9	149.5 8.0	5.4 0.8	178.	38.1	1	282.	62.6	134.6 7.5	3.	*INS0035C	6.	*J 0111A 7. *PNG0271B 18
56	WAK0334C	140.0	9	166.5 19.2	0.6 0.6	0.	48.7	1	32.	63.7	166.5 19.2	17.	*J 0111A	22.	*MRL0333C 24. *NCL0100C 25
57	FJI0193C	152.0	9	179.4 -17.9	1.0 1.0	67.	44.2	1	91.	63.8	-178.5 -19.9	4.	*NZL0055C	4.	*TON0215B 23. *J 0111A 28
58	NZL0055C	158.0	9	172.3 -39.7	2.9 1.6	47.	37.7	1	374.	63.4	166.3 -45.5	13.	*AUS0005C	18.	*FJI0193C 21. *CKN0053B 21
59	PLM0337C	170.0	9	161.4 7.0	0.6 0.6	0.	48.7	1	24.	62.5	-162.4 6.1	5.	*CAR0338C	7.	*TON0215B 14. *SMA0335C 16
60	SMA0335C	170.0	9	170.1 -14.2	0.6 0.6	0.	48.7	2	18.	61.3	-171.0 -11.0	-2.	*TON0215B	1.	*PLM0337C 2. *CKN0053B 10

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
30	MLI0327C	-37.0	10	-2.0 19.0	2.7 1.3	127.	39.0	1	339.	64.3	-2.5 23.3	7.	*ALG0251C	8.	*SMR0511C 18.	*LIE0253C 20	
31	GNP0304C	-31.0	10	-15.0 12.0	0.9 0.6	172.	46.9	2	43.	63.2	-14.2 12.3	3.	*GMB0302C	7.	*GUI0192C	7.	*IRL0211C 14
32	IRL0211C	-31.0	10	-8.2 53.2	0.8 0.6	162.	47.2	1	52.	64.4	-6.2 52.2	6.	*ALG0251C	13.	*D 0087C	13.	*GNP0304C 15
33	ALG0251C	-25.0	10	5.1 33.6	2.7 1.5	172.	38.1	1	345.	63.5	9.5 30.0	1.	*TCD0143C	5.	*LBY0321C	7.	*TGO0226C 9
34	TGO0226C	-25.0	10	0.8 8.6	1.5 0.6	105.	44.6	2	77.	63.5	-0.2 11.1	-2.	*MLI0327C	-0.	*ALG0251C	5.	*DAH0233C 8
35	D 0087C	-19.0	10	9.4 49.5	1.6 0.7	147.	43.6	2	121.	64.4	10.0 54.8	-1.	*ZAI0323C	3.	*FNL0103C	4.	*LUX0114C 9
36	ZAI0323C	-19.0	10	21.3 -6.8	2.8 1.5	149.	38.0	1	477.	64.7	16.3 -1.0	1.	*TCD0143C	5.	*GAB0260C	7.	*CME0300C 8
37	TCD0143C	-13.0	10	18.1 15.5	3.4 1.7	107.	36.6	2	561.	64.1	16.5 8.2	5.	*CME0300C	7.	*MLI0327C	14.	*GAB0260C 15
38	BOT0297C	-1.0	10	23.3 -22.2	2.1 1.5	36.	39.2	2	292.	63.9	25.3 -17.8	4.	*ZMB0314C	6.	*ZAI0323C	10.	*ROU0136C 11
39	ROU0136C	-1.0	10	25.0 45.7	1.4 0.7	155.	44.7	1	84.	63.9	20.2 46.1	-2.	*BOT0297C	5.	*D 0087C	6.	*TCH0144C 7
40	FNL0103C	5.0	10	22.5 64.5	1.4 0.8	171.	44.0	2	241.	67.9	19.2 60.0	7.	*D 0087C	10.	*POL0132C	13.	*TUR0145C 20
41	YEM0266C	11.0	10	44.3 15.1	1.1 0.7	109.	45.2	1	56.	62.7	42.0 17.5	-5.	*ARS0003C	-5.	*YMS0267C	6.	*UGA0051C 10
42	ARS0003C	17.0	10	41.1 23.8	3.5 1.7	134.	36.5	2	413.	62.7	42.5 16.5	-4.	*YEM0266C	-3.	*YMS0267C	6.	*SOM0312C 19
43	MAU0242C	29.0	10	59.8 -18.9	1.6 1.2	55.	41.2	1	193.	64.1	60.0 -14.0	5.	*ZAI0323C	6.	*MDG0236C	14.	*PAK0127C 21
44	PAK0127C	38.0	10	69.6 29.5	2.3 2.2	14.	37.3	1	474.	64.0	74.5 35.7	2.	*CHN0154C	2.	*AFG0245C	15.	*AFG0246C 21
45	CLN0219C	50.0	10	80.6 7.7	1.2 0.6	106.	45.7	1	62.	63.7	80.0 10.0	3.	*IND0043C	6.	*IND0045C	10.	*AFG0246C 14
46	IND0045C	56.0	10	76.2 19.5	1.6 1.6	21.	40.3	2	216.	63.6	74.4 22.0	3.	*PAK0127C	5.	*CHN0154C	14.	*IND0044C 15
47	CHN0154C	62.0	10	83.9 40.5	2.8 2.0	177.	36.7	1	455.	63.3	79.0 34.3	-0.	*PAK0127C	1.	*CHN0155C	8.	*CHN0157C 14.
48	IND0037C	68.0	10	93.0 25.5	1.5 1.1	71.	42.1	2	157.	64.0	97.1 27.1	-1.	*CHN0157C	3.	*LA00284E	4.	*CHN0155C 7
49	LA00284E	74.0	10	103.7 18.1	2.2 0.8	133.	42.0	1	154.	63.9	102.0 22.5	-1.	*CHN0187A	1.	*THA0142C	7.	*IND0037C 10.
50	CHN0187A	80.0	10	106.6 26.7	1.1 0.9	179.	43.9	2	102.	64.0	104.7 24.6	1.	*LA00284E	3.	*THA0142C	10.	*VTN0325C 13
51	CHN0171A	92.0	10	117.2 32.0	1.2 0.7	126.	44.8	1	88.	64.2	116.1 29.8	3.	*CHN0187A	6.	*CHN0162C	8.	*CHN0160C 13
52	AUS0006C	98.0	10	135.8 -30.3	2.5 1.9	46.	37.5	1	386.	63.3	140.8 -27.7	0.	*AUS0008C	1.	*AUS0005C	9.	*AUS0004C 12
53	KOR0112E	110.0	10	127.5 36.0	1.2 1.0	168.	43.2	2	111.	63.7	126.2 33.0	-1.	*PNG0131C	2.	*J 0111B	5.	*J 0111A 6
54	PNG0131C	110.0	10	147.7 -6.3	2.5 2.2	169.	36.9	1	577.	64.5	141.0 -9.2	-0.	*AUS0008C	3.	*INS0036C	7.	*KOR0112E 10

suite - cont.

Canal 10 suite - Channel 10 cont. - Canal 10 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
55	GUM0331C	122.0	10	144.5 13.1	0.6 0.6	0.	48.7	2	30.	63.4	144.7 13.4	7.	*MRA0332C	9.	*CAR0338C 17.	*AUS0008C 19
56	AUS0008C	128.0	10	143.3 -20.5	3.8 2.7	112.	34.2	2	912.	63.8	142.2 -10.6	1.	*PNG0131C	1.	*INS0036C 19.	*AUS0005C 19
57	NCL0100C	140.0	10	166.0 -21.0	1.1 0.7	146.	45.1	1	74.	63.8	167.5 -23.0	-4.	*WAL0102C	-3.	*AUS0008C 10.	*NHB0128C 11
58	WAL0102C	140.0	10	-176.8 -14.0	0.7 0.6	29.	47.8	1	47.	64.5	-178.1 -14.2	-2.	*NCL0100C	-2.	*PNG0131C 13.	*FJI0193C 18
59	MRL0333C	146.0	10	166.7 7.9	1.5 1.5	177.	40.7	1	185.	63.4	162.1 11.5	13.	*PNG0131C	19.	*CAR0338C 19.	*NCL0100C 22
60	CKH0052C	158.0	10	-160.0 -19.8	1.0 0.6	132.	46.1	2	73.	64.7	-163.5 -17.5	14.	*SMO0057C	18.	*NZL0055C 18.	*WAL0102C 27

Canal 11 - Channel 11 - Canal 11

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
32 GMB0302C	-37.0	11	-15.1	13.4	0.8 0.6	4.	47.5	2	39.	63.4	-14.2	13.3	3. *GNP0304C	7. *MLI0328C	9. *LBR0244C 12
33 LIE0253C	-37.0	11	9.5	47.1	0.6 0.6	0.	48.7	1	24.	62.5	9.5	47.2	1. *TCH0144C	4. *LUX0114C	8. *G 0027C 12
34 AZR0134C	-31.0	11	-23.4	36.1	2.6 0.7	158.	41.7	2	138.	63.1	-16.9	32.5	-5. *POR0133C	-4. *LBR0244C	9. *G 0027C 13
35 LBR0244C	-31.0	11	-9.3	6.6	1.2 0.7	133.	44.9	1	69.	63.3	-10.2	8.5	3. *AZR0134C	9. *MLI0328C	9. *POR0133C 12
36 POR0133C	-31.0	11	-8.0	39.6	0.9 0.6	112.	46.8	2	47.	63.5	-7.5	37.2	-15. *AZR0134C	-15. *LBR0244C	11. *G 0027C 11
37 LBY0321C	-25.0	11	13.1	27.2	2.4 1.1	129.	40.0	2	205.	63.1	11.4	33.5	3. *ALG0251C	6. *ALG0252C	9. *TGO0226C 12
38 DAH0233C	-19.0	11	2.2	9.5	1.4 0.7	97.	44.3	2	80.	63.4	2.2	6.2	3. *TGO0226C	5. *ZAI0323C	14. *ZAI0322C 14
39 LUX0114C	-19.0	11	6.0	49.8	0.6 0.6	0.	48.7	1	27.	63.0	7.0	48.5	-3. *LIE0253C	1. *TCH0144C	4. *D 0087C 4
40 GAB0260C	-13.0	11	11.8	-0.6	1.4 1.1	64.	42.2	1	133.	63.4	11.0	-4.0	3. *ZAI0323C	5. *ZAI0322C	10. *TCD0143C 14
41 TCH0144C	-1.0	11	17.3	49.3	1.5 0.6	170.	44.8	2	82.	63.9	12.1	50.3	-2. *LIE0253C	3. *ZMB0314C	5. *LUX0114C 6
42 ZMB0314C	-1.0	11	27.5	-13.1	2.4 1.5	39.	38.8	1	320.	63.8	33.0	-13.8	3. *MOZ0307C	5. *TCH0144C	11. *BOT0297C 13
43 GRC0105C	5.0	11	24.1	38.1	1.8 1.0	138.	41.8	1	144.	63.4 7	26.6	41.5	1. *BUL0020C	4. *RCU0136C	6. *IRN0109C 13
44 LBN0279C	11.0	11	35.8	33.9	0.6 0.6	0.	48.7	2	20.	61.7	36.8	34.5	0. *IRN0109C	6. *UGA0051C	7. *ARS0003C 8
45 UGA0051C	11.0	11	32.3	1.2	1.5 1.1	60.	42.1	1	132.	63.3	29.8	-1.3	2. *RRW0310C	5. *ZMB0314C	8. *YEM0266C 16
46 SOM0312C	23.0	11	45.0	6.4	3.3 1.5	71.	37.2	1	332.	62.4	43.2	11.2	5. *URS0060C	8. *URS0061C	10. *YEM0266C 15
47 URS0061C	23.0	11	24.7	56.6	0.9 0.6	12.	46.7	2	69.	65.1	25.8	54.1	-0. *TCH0144C	6. *SOM0312C	6. *URS0060C 6

suite - cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
48 COM0207C	29.0	11	44.1	-12.1	0.8 0.6	149.	47.7	2	36.	63.2	43.1 -11.3	5. *SOM0312C	9. *ZMB0314C	10. *IRN0109C	13
49 IRN0109C	32.0	11	54.2	32.4	3.8 1.8	149.	35.8	2	515.	62.9	61.5 31.0	7. *AFG0245C	9. *PAK0127C	15. *SOM0312C	16
50 AFG0245C	50.0	11	70.2	35.5	1.3 1.1	53.	42.5	1	110.	62.9	68.0 31.6	1. *IRN0109C	2. *PAK0127C	11. *CLN0219C	14
51 IND0043C	56.0	11	77.8	11.1	1.4 1.3	172.	41.8	1	145.	63.5	79.5 9.1	4. *CLN0219C	5. *IN00045C	15. *IND0040C	19
52 CHN0157C	62.0	11	102.3	27.8	2.6 1.6	127.	38.2	2	500.	65.2	101.7 21.3	2. *VTN0325C	3. *LAD0284E	14. *CHN0156C	16
53 IND0047C	68.0	11	93.3	11.1	1.9 0.6	96.	43.6	1	98.	63.5	93.8 14.8	3. *VTN0325C	6. *CHN0157C	8. *IND0037C	15
54 SNG0151C	74.0	11	103.8	1.3	0.6 0.6	0.	48.7	2	31.	63.7	106.0 1.1	12. *BRU0330A	18. *CHN0157C	20. *LAD0284E	21
55 VTN0325C	86.0	11	105.3	16.1	3.0 1.4	162.	38.0	2	361.	63.5	102.0 22.8	-6. *CHN0157C	-5. *CHN0187A	5. *LAD0284E	10
56 CHN0160C	92.0	11	123.8	45.8	2.4 1.6	153.	38.3	2	490.	65.2	122.5 38.3	1. *J 0111B	4. *CHN0157C	7. *CHN0170A	12
57 AUS0004C	98.0	11	122.3	-23.8	4.3 2.6	49.	33.7	2	865.	63.1	126.6 -31.0	7. *AUS0006C	9. *AUS0009C	16. *INS0036C	23
58 INS0036C	104.0	11	135.2	-3.8	2.5 2.0	147.	37.3	1	451.	63.9	128.0 -10.0	-4. *AUS0004C	-4. *J 0111B	12. *PNG0131C	15
59 J 0111B	110.0	11	134.5	31.5	3.5 3.3	68.	33.6	1	1175.	64.3	129.3 34.7	2. *CHN0160C	7. *KGR0112F	8. *KGR0112E	8
60 MRA0332C	122.0	11	145.9	16.9	1.2 0.6	76.	45.7	1	62.	63.6	145.0 20.0	-4. *J 0111B	-3. *GUM0331C	12. *AUS0009C	21
61 AUS0009C	128.0	11	143.6	-33.0	2.2 1.2	15.	40.1	1	257.	64.2	153.0 -30.0	1. *AUS0008C	4. *PNG0271C	8. *AUS0004C	9
62 NRU0309C	134.0	11	167.0	-0.5	0.6 0.6	0.	48.7	2	25.	62.6	166.0 -2.0	9. *NHB0128C	14. *INS0036C	17. *PNG0271C	19
63 NHB0128C	140.0	11	168.0	-16.4	1.5 0.7	87.	44.1	2	77.	63.0	169.8 -20.0	7. *NCL0100C	8. *AUS0004C	18. *INS0036C	23
64 SMD0057C	158.0	11	172.3	-13.7	0.6 0.6	0.	48.7	1	32.	63.8	-171.0 -14.1	8. *CKN0053C	11. *CKH0052C	14. *WAL0102C	20

Canal 12 - Channel 12 - Canal 12

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14					
34	OCE0101C	-160.0	12	-145.0	-16.3	4.3 3.5	4.	32.4	2	1335.	63.6	-154.7	-15.7	18.	*CKN0053C	19.	*PNG0271C	30.	*TON0215C	33.
35	AND0238C	-37.0	12	1.3	42.6	0.6 0.6	0.	48.7	2	20.	61.7	4.3	43.3	-4.	*G 0027C	2.	*AUT0016C	3.	*ALG0252C	4
36	MLI0328C	-37.0	12	-7.6	13.2	1.7 1.2	171.	40.9	1	196.	63.8	-12.0	15.0	3.	*GMB0302C	8.	*GUI0192D	8.	*ALG0252C	9
37	CPV0301C	-31.0	12	-24.0	16.0	0.9 0.7	144.	46.5	2	38.	62.3	-24.3	14.4	1.	*G 0027C	2.	*AZR0134C	14.	*MLI0328C	16
38	G 0027C	-31.0	12	-3.5	53.8	1.8 1.7	142.	39.2	1	387.	65.1	-2.0	49.1	3.	*ALG0252C	5.	*F 0093D	14.	*AUT0016C	16
39	ALG0252C	-25.0	12	1.6	25.5	3.6 2.2	152.	35.3	1	576.	62.9	9.5	30.0	4.	*LBY0321C	7.	*LBY0280D	12.	*MLT0147C	15
40	AUT0016C	-19.0	12	12.1	47.5	1.1 0.6	166.	45.7	2	72.	64.2	9.4	47.2	0.	*ZAI0322C	5.	*G 0027C	6.	*AND0238C	8
41	ZAI0322C	-19.0	12	22.4	1.2	2.2 1.9	48.	38.2	1	462.	64.8	16.0	-2.0	5.	*GAB0260C	8.	*CME0300D	9.	*AUT0016C	12
42	MLT0147C	-13.0	12	14.3	35.9	0.6 0.6	0.	48.7	1	17.	61.1	14.3	35.9	0.	*ALG0252C	2.	*EGY0026C	11.	*CME0300D	12
43	STP0241C	-13.0	12	7.0	0.8	0.6 0.6	0.	48.7	2	19.	61.5	5.0	2.0	-2.	*CME0300D	2.	*ZAI0322C	3.	*GAB0260C	6
44	EGY0026C	-7.0	12	29.7	26.8	2.3 1.7	136.	38.2	2	315.	63.2	34.5	31.7	3.	*ARS0275C	5.	*ALG0252C	12.	*LBN0279C	18
45	BUL0020C	-1.0	12	24.0	42.7	1.0 0.6	165.	46.3	1	56.	63.7	28.7	43.8	-4.	*MOZ0307C	1.	*URS0060C	3.	*TUR0145D	4
46	MOZ0307C	-1.0	12	34.0	-18.0	3.6 1.4	55.	37.3	2	499.	64.3	32.5	-26.8	5.	*SWZ0313D	6.	*BUL0020C	13.	*ZMB0314C	15
47	ONK0089A	5.0	12	12.3	57.1	1.2 0.6	177.	45.7	2	74.	64.3	10.0	54.5	-1.	*G 0027C	1.	*POL0132D	8.	*AUT0016C	8
48	RRW0310C	11.0	12	30.0	-2.1	0.7 0.6	42.	48.3	2	31.	63.2	29.8	-4.5	-5.	*ZAI0322C	-3.	*MOZ0307C	4.	*UGA0051C	4
49	ARS0275C	17.0	12	48.3	24.6	3.8 1.4	138.	36.9	2	398.	62.9	37.0	30.0	-2.	*EGY0026C	-2.	*ALG0252C	10.	*LBN0279C	12
50	URS0060C	23.0	12	41.5	57.4	3.1 1.6	153.	37.4	1	876.	66.9	28.3	68.9	2.	*G 0027C	3.	*DNK0089A	13.	*URS0061C	13
51	MAU0243C	29.0	12	56.8	-13.9	1.6 1.4	65.	40.9	1	195.	63.8	53.0	-15.0	6.	*MDG0236D	9.	*MOZ0307C	11.	*COM0207C	18
52	PAK0210A	38.0	12	72.1	30.8	1.2 0.7	90.	45.0	1	71.	63.5	72.3	33.7	-2.	*URS0069A	0.	*IND0040C	5.	*AFG0245C	13
53	MLD0306A	44.0	12	73.1	6.0	1.0 0.6	90.	46.6	1	50.	63.7	71.0	7.5	2.	*URS0069A	6.	*URS0067D	8.	*ARS0275C	9
54	URS0069A	44.0	12	70.8	38.5	1.4 0.7	161.	44.2	2	97.	64.1	75.1	37.3	-1.	*PAK0210A	1.	*IND0040C	6.	*MLD0306A	11
55	IND0040C	56.0	12	73.0	25.0	1.8 1.5	58.	39.9	2	241.	63.8	73.5	30.0	-1.	*PAK0210A	-0.	*CHN0155D	10.	*URS0069A	13
56	CHN0156C	62.0	12	97.8	36.3	2.6 1.6	157.	38.2	1	347.	63.6	105.2	32.6	3.	*CHN0157C	5.	*CHN0178A	10.	*CHN0155D	10
57	IND0048C	68.0	12	86.2	25.0	1.6 0.9	120.	42.8	2	126.	63.8	89.8	26.7	-3.	*CHN0156C	1.	*CHN0155D	3.	*CHN0157C	6
58	BRU0330A	74.0	12	114.7	4.4	0.6 0.6	0.	48.7	1	24.	62.5	114.6	4.0	12.	*THA0142D	15.	*CHN0180A	18.	*CHN0178A	25
59	CHN0178A	80.0	12	111.5	27.4	1.2 0.9	130.	44.0	2	107.	64.4	113.6	29.8	3.	*CHN0170A	5.	*CHN0156C	8.	*CHN0157C	18

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
60	CHN0170A	92.0	12	119.5	33.0	1.3	0.6	155.	44.9	1	88.	64.4	118.7	31.2	1. *CHN0178A	3. *CHN0156C	9. *CHN0180A	11
61	KOR0112F	110.0	12	127.5	36.0	1.2	1.0	168.	43.2	2	112.	63.7	126.2	33.0	* *CHN0170A	3. *J 0111C	5. *J 0111B	6
62	AUS0007C	128.0	12	146.5	-39.1	1.8	1.4	134.	40.2	2	211.	63.4	139.9	-36.8	* *PNG0271C	1. *AUS0009C	6. *NZL0287A	18
63	PNG0271C	128.0	12	149.7	-4.6	2.9	2.4	135.	35.9	1	572.	63.5	141.0	-9.2	* *AUS0007C	2. *AUS0009C	8. *NZL0287A	9
64	CKN0053C	158.0	12-163.0	-11.2	1.8	0.7		49.	43.2	2	131.	64.4	-158.0	-9.0	2. *OCE0101C	2. *NZL0055D	17. *TON0215C	27
65	TON0215C	170.0	12-174.7	-18.0	1.4	0.7		85.	44.4	1	79.	63.4	-173.7	-15.9	7. *CKN0053C	11. *OCE0101C	13. *SMA0335D	15

Canal 13 - Channel 13 - Canal 13

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
33 GUI0192D	-37.0	13	-11.0	10.2	1.6 1.0	147.	42.1	2	141.	63.6	-14.5	11.5	3. *GNP0304D	5. *MLI0328C	8. *MLI0327D 15
34 SMR0311D	-37.0	13	12.6	43.7	0.6 0.6	0.	48.7	1	25.	62.6	12.0	43.0	* *	* *	* *
35 LBY0280D	-25.0	13	21.4	26.0	2.5 1.0	119.	40.1	2	226.	63.6	22.0	33.0	-0. *F 0093D	2. *GUI0192D	9. *TUR0145D 12
36 F 0093D	-19.0	13	2.6	45.9	2.5 1.0	160.	40.4	1	229.	64.0	9.5	41.2	* *	* *	* *
37 CME0300D	-13.0	13	12.7	6.2	2.5 1.7	87.	37.9	1	366.	63.6	16.2	1.4	4. *TUR0145D	8. *ALG0251D	10. *ALG0252C 12
38 POL0132D	-1.0	13	19.3	51.8	1.5 0.6	162.	44.5	2	94.	64.3	22.9	49.0	* *	* *	* *
39 SWZ0313D	-1.0	13	31.5	-26.5	0.6 0.6	66.	48.5	1	28.	63.0	31.1	-25.9	-2. *SMR0311D	1. *ALG0251D	7. *D 0087D 9
40 TUR0145D	5.0	13	34.4	38.9	2.7 1.0	168.	39.8	1	255.	63.9	42.7	41.5	* *	* *	* *
41 YMS0267D	11.0	13	48.8	15.2	1.8 1.5	176.	39.9	2	202.	63.0	49.5	18.4	1. *ZAI0322C	4. *ZAI0323D	8. *TC00143D 9
42 QAT0247D	17.0	13	51.1	25.3	0.6 0.6	0.	48.7	1	21.	62.0	52.3	24.8	* *	* *	* *
43 URS0064D	23.0	13	45.6	40.8	2.2 0.6	163.	43.1	2	124.	64.1	40.0	43.4	-0. *SMR0311D	5. *TUR0145D	7. *RQU0136D 7
44 MDG0236D	29.0	13	46.6	-18.8	2.7 1.1	65.	39.3	2	260.	63.5	49.0	-12.3	* *	* *	* *
45 URS0067D	44.0	13	62.4	58.5	3.2 1.5	169.	37.4	1	912.	67.0	50.9	51.9	4. *MOZ0307C	7. *BOT0297D	9. *POL0132D 11
46 AFG0246D	50.0	13	64.5	33.1	1.4 1.4	21.	41.2	1	145.	62.8	67.7	37.3	* *	* *	* *
47 IND0039D	56.0	13	72.7	11.2	1.3 0.6	107.	45.5	1	60.	63.3	73.0	8.3	-2. *URS0064D	-1. *LBY0280D	11. *URS0067D 12
48 CHN0155D	62.0	13	88.3	31.5	3.4 1.4	162.	37.3	2	370.	63.0	86.0	28.0	* *	* *	* *
													3. *ARS0275C	6. *ARS0003D	7. *YEM0266D 13
													* *	* *	* *
													1. *YMS0267D	5. *ARS0275C	6. *ARS0003D 9
													* *	* *	* *
													-1. *TUR0145D	2. *URS0060C	6. *URS0067D 12
													* *	* *	* *
													8. *MAU0243C	10. *MAU0242D	15. *ZAI0323D 22
													* *	* *	* *
													12. *URS0060C	17. *TUR0145D	17. *AFG0246D 21
													* *	* *	* *
													-2. *URS0067D	1. *CHN0155D	5. *TUR0145D 11
													* *	* *	* *
													7. *MLD0306A	13. *IND0045D	14. *IND0040C 15
													* *	* *	* *
													-0. *IND0044D	3. *IND0048C	5. *CHN0156C 12
													* *	* *	* *

Canal 13 suite - Channel 13 cont. - Canal 13 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
49	IND0044D	68.0	13	79.5	22.3	2.2	1.4	146.	39.3	1	263.	63.5	78.2	26.9	1. *CHN0155D 2. *CHN0154D 13. *IND0048C 14
50	THA0142D	74.0	13	100.7	13.2	2.8	1.5	106.	37.9	2	389.	63.8	105.4	14.3	* * *J 0111C 22
51	CHN0180A	92.0	13	113.7	12.9	3.8	2.2	72.	35.1	2	713.	63.6	109.0	17.2	* * *AUS0005D 18
52	AUS0005D	98.0	13	133.0	-18.8	3.6	1.7	66.	36.4	2	636.	64.4	130.8	-12.5	* * *CHN0180A 19
53	INS0035D	104.0	13	124.3	-3.2	3.3	1.9	82.	36.1	1	528.	63.4	125.5	4.0	* * *CAR0338D 15
54	J 0111C	110.0	13	134.5	31.5	3.5	3.3	68.	33.6	1	1183.	64.3	123.7	24.3	* * *PNG0131D 12. *INS0035D 13
55	CAR0338D	122.0	13	149.5	8.0	5.4	0.8	178.	38.1	1	286.	62.6	134.6	7.5	* * *J 0111C 7. *PNG0271C 18
56	NZL0287A	128.0	13	170.0	-40.0	3.3	1.3	48.	38.0	1	470.	64.7	180.0	-40.0	* * *PNG0271C 14. *AUS0008D 15
57	WAK0334D	140.0	13	166.5	19.2	0.6	0.6	0.	48.7	1	32.	63.7	166.5	19.2	17. *J 0111C 22. *MRL0333D 24. *NCL0100D 25
58	NZL0055D	158.0	13	172.3	-39.7	2.9	1.6	47.	37.7	1	379.	63.5	166.3	-45.5	* * *-0. *NZL0287A -0. *AUS0005D 18. *CKN0053C 21
59	PLM0337D	170.0	13	161.4	7.0	0.6	0.6	0.	48.7	1	24.	62.6	-162.4	6.1	* * *CAR0338D 7. *TON0215C 14. *SMA0335D 16
60	SMA0335D	170.0	13	170.1	-14.2	0.6	0.6	0.	48.7	2	18.	61.3	-171.0	-11.0	* * *-2. *TON0215C 1. *PLM0337D 2. *CKN0053C 10

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
29 MLI0327D	-37.0	14	-2.0	19.0	2.7 1.3	127.	39.0	1	344.	64.4	-2.5 23.3	7. *ALG0251D	8. *SMR0311D	18. *LIE0253D	20
30 GNP0304D	-31.0	14	-15.0	12.0	0.9 0.6	172.	46.9	2	43.	63.3	-14.2 12.3	3. *GMB0302D	7. *GUI0192D	7. *IRL0211D	14
31 IRL0211D	-31.0	14	-8.2	53.2	0.8 0.6	162.	47.2	1	52.	64.4	-5.5 54.3	4. *NOR0120A	7. *D 0087D	11. *GNP0304D	15
32 ALG0251D	-25.0	14	5.1	33.6	2.7 1.5	172.	38.1	1	349.	63.6	9.5 30.0	1. *TCD0143D	5. *LBV0321D	7. *TGO0226D	9
33 TGO0226D	-25.0	14	0.8	8.6	1.5 0.6	105.	44.6	2	78.	63.5	-0.2 11.1	-2. *MLI0327D	-0. *ALG0251D	5. *DAH0233D	8
34 D 0087D	-19.0	14	9.4	49.5	1.6 0.7	147.	43.6	2	123.	64.5	10.0 54.8	-3. *NOR0120A	-0. *ZAI0323D	3. *LUX0114D	9
35 ZAI0323D	-19.0	14	21.3	-6.8	2.8 1.5	149.	38.0	1	483.	64.8	16.3 -1.0	1. *TCD0143D	5. *GAB0260D	8. *CME0300D	8
36 TCD0143D	-13.0	14	18.1	15.5	3.4 1.7	107.	36.6	2	568.	64.1	16.5 8.2	5. *CME0300D	7. *MLI0327D	14. *GAB0260D	15
37 BOT0297D	-1.0	14	23.3	-22.2	2.1 1.5	36.	39.2	2	296.	63.9	25.3 -17.8	4. *ZMB0314D	6. *ZAI0323D	10. *ROU0136D	11
38 ROU0136D	-1.0	14	25.0	45.7	1.4 0.7	155.	44.7	1	85.	64.0	20.2 46.1	-2. *BOT0297D	5. *D 0087D	6. *TCH0144D	7
39 NOR0120A	5.0	14	13.1	64.1	1.8 0.9	10.	42.2	2	281.	66.6	7.6 58.0	4. *D 0087D	6. *IRL0211D	15. *POL0132D	15
40 YEM0266D	11.0	14	44.3	15.1	1.1 0.7	109.	45.2	1	57.	62.8	42.0 17.5	-5. *ARS0003D	-5. *YMS0267D	6. *UGA0051D	10
41 ARS0003D	17.0	14	41.1	23.8	3.5 1.7	134.	36.5	2	419.	62.7	42.5 16.5	-4. *YEM0266D	-3. *YMS0267D	6. *SQM0312D	19
42 MAU0242D	29.0	14	59.8	-18.9	1.6 1.2	55.	41.2	1	195.	64.1	60.0 -14.0	5. *ZAI0323D	6. *MDG0236D	14. *ARS0003D	25
43 PAK0210B	38.0	14	72.1	30.8	1.2 0.7	90.	45.0	1	71.	63.6	75.2 32.2	2. *CHN0154D	2. *IND0045D	15. *AFG0245D	17
44 CLN0219D	50.0	14	80.6	7.7	1.2 0.6	106.	45.7	1	63.	63.8	80.0 10.0	3. *IND0043D	6. *IND0045D	10. *AFG0246D	14
45 IND0045D	56.0	14	76.2	19.5	1.6 1.6	21.	40.3	2	218.	63.7	74.0 15.7	6. *IND0043D	10. *IND0039D	10. *CLN0219D	20
46 CHN0154D	62.0	14	83.9	40.5	2.8 2.0	177.	36.7	1	461.	63.4	79.0 34.3	3. *PAK0210B	5. *CHN0155D	8. *IND0045D	15
47 IND0037D	68.0	14	93.0	25.5	1.5 1.1	71.	42.1	2	159.	64.1	89.8 26.0	3. *CHN0155D	7. *CHN0154D	9. *IND0045D	11
48 BRU0330B	74.0	14	114.7	4.4	0.6 0.6	0.	48.7	1	24.	62.6	115.0 4.9	9. *BGD0220A	14. *THA0142D	15. *CHN0180A	18
49 CHN0181A	80.0	14	108.5	23.8	1.4 1.1	153.	42.4	2	148.	64.1	104.5 24.5	5. *THA0142D	10. *CHN0158A	10. *VTN0325D	12
50 CHN0172A	92.0	14	120.4	29.1	1.0 0.8	123.	45.2	1	82.	64.3	118.8 27.5	2. *CHN0174A	6. *CHN0181A	7. *CHN0180A	10
51 AUS0006D	98.0	14	135.8	-30.3	2.5 1.9	46.	37.5	1	391.	63.4	140.8 -27.7	0. *AUS0008D	1. *AUS0005D	9. *AUS0004D	12
52 KREG286A	110.0	14	127.1	40.1	1.1 0.8	31.	45.2	2	76.	64.0	128.4 38.6	-0. *PNG0131D	2. *J 0111D	6. *J 0111C	6
53 PNG0131D	110.0	14	147.7	-6.3	2.5 2.2	169.	36.9	1	585.	64.6	141.0 -9.2	0. *AUS0008D	3. *INS0036D	7. *KREG286A	12
54 GUM0331D	122.0	14	144.5	13.1	0.6 0.6	0.	48.7	2	30.	63.5	144.7 13.4	7. *MRAG332D	9. *CAR0338D	17. *AUS0008D	20

Canal 14 suite - Channel 14 cont. - Canal 14 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
55	AUS0008D	128.0	14	143.3 -20.5	3.8 2.7	112.	34.2	2	924.	63.8	142.2 -10.6	0.	*PNG0131D 1.	*INS0036D 19.	*AUS0005D 19
56	NCL0100D	140.0	14	166.0 -21.0	1.1 0.7	146.	45.1	1	75.	63.9	167.5 -23.0	-4.	*WAL0102D -3.	*AUS0008D 10.	*NHB0128D 11
57	WAL0102D	140.0	14	176.8 -14.0	0.7 0.6	29.	47.8	1	48.	64.6	-178.1 -14.2	-2.	*NCL0100D -2.	*PNG0131D 13.	*MRL0333D 20
58	MRL0333D	146.0	14	166.7 7.9	1.5 1.5	177.	40.7	1	187.	63.5	162.1 11.5	13.	*PNG0131D 19.	*CAR0338D 19.	*NCL0100D 22
59	CKH0052D	158.0	14	160.0 -19.8	1.0 0.6	132.	46.1	2	74.	64.8	-163.5 -17.5	14.	*SMO0057D 18.	*NZL0055D 18.	*WAL0102D 27

Canal 15 - Channel 15 - Canal 15

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
32	GMB0302D	-37.0	15	-15.1 13.4	0.8 0.6	4.	47.5	2	40.	63.5	-14.2 13.3	3.	*GNP0304D 7.	*MLI0328D 9.	*LBR0244D 12
33	LIE0253D	-37.0	15	9.5 47.1	0.6 0.6	0.	48.7	1	24.	62.6	9.5 47.2	1.	*TCH0144D 4.	*LUX0114D 8.	*G 0027D 13
34	AZR0134D	-31.0	15	-23.4 36.1	2.6 0.7	158.	41.7	2	140.	63.2	-16.9 32.5	-5.	*POR0133D -4.	*LBR0244D 9.	*G 0027D 13
35	LBR0244D	-31.0	15	-9.3 6.6	1.2 0.7	133.	44.9	1	70.	63.4	-10.2 8.5	3.	*AZR0134D 9.	*MLI0328D 9.	*POR0133D 12.
36	POR0133D	-31.0	15	-8.0 39.6	0.9 0.6	112.	46.8	2	47.	63.6	-7.5 37.2	-15.	*AZR0134D -15.	*LBR0244D 11.	*G 0027D 11.
37	LBY0321D	-25.0	15	13.1 27.2	2.4 1.1	129.	40.0	2	208.	63.2	11.4 33.5	3.	*ALG0251D 6.	*ALG0252D 9.	*TGO0226D 12.
38	DAH0233D	-19.0	15	2.2 9.5	1.4 0.7	97.	44.3	2	81.	63.4	2.2 6.2	3.	*TGO0226D 5.	*ZAI0323D 14.	*ZAI0322D 14.
39	LUX0114D	-19.0	15	6.0 49.8	0.6 0.6	0.	48.7	1	28.	63.1	7.0 48.5	-3.	*LIE0253D 1.	*TCH0144D 4.	*D 0087D 4.
40	GAB0260D	-13.0	15	11.8 -0.6	1.4 1.1	64.	42.2	1	135.	63.5	11.0 -4.0	3.	*ZAI0323D 5.	*ZAI0322D 10.	*TCD0143D 14.
41	TCH0144D	-1.0	15	17.3 49.3	1.5 0.6	170.	44.8	2	83.	64.0	12.1 50.3	-2.	*LIE0253D 3.	*ZMB0314D 5.	*LUX0114D 6.
42	ZMB0314D	-1.0	15	27.5 -13.1	2.4 1.5	39.	38.8	1	324.	63.9	33.0 -13.8	3.	*MOZ0307D 5.	*TCH0144D 11.	*BOT0297D 13
43	GRC0105D	5.0	15	24.1 38.1	1.8 1.0	138.	41.8	1	145.	63.5	26.6 41.5	1.	*BUL0020D 4.	*ROU0136D 6.	*IRN0109D 13
44	LBN0279D	11.0	15	35.8 33.9	0.6 0.6	0.	48.7	2	20.	61.8	36.8 34.5	0.	*IRN0109D 6.	*UGA0051D 7.	*ARS0003D 8
45	UGA0051D	11.0	15	32.3 1.2	1.5 1.1	60.	42.1	1	134.	63.4	29.8 -1.3	2.	*RRW0310D 5.	*ZMB0314D 8.	*YEM0266D 16
46	SOM0312D	23.0	15	45.0 6.4	3.3 1.5	71.	37.2	1	336.	62.5	43.2 11.2	5.	*URS0060D 8.	*URS0061D 10.	*YEM0266D 15
47	URS0061D	23.0	15	24.7 56.6	0.9 0.6	12.	46.7	2	70.	65.2	25.8 54.1	-0.	*TCH0144D 6.	*SOM0312D 6.	*URS0060D 6
48	COM0207D	29.0	15	44.1 -12.1	0.8 0.6	149.	47.7	2	36.	63.3	43.1 -11.3	5.	*SOM0312D 9.	*ZMB0314D 10.	*IRN0109D 13

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14						
49	IRN0109D	32.0	15	54.2	32.4	3.8	1.8	149.	35.8	2	522.	63.0	61.5	31.0	8.	*AFG0245D	9.	*SOM0312D	16.	*ARS0275D	25
50	AFG0245D	50.0	15	70.2	35.5	1.3	1.1	53.	42.5	1	112.	63.0	68.0	31.6	2.	*IRN0109D	2.	*CLN0219D	14.	*PAK0210B	15
51	IND0043D	56.0	15	77.8	11.1	1.4	1.3	172.	41.8	1	147.	63.5	79.5	9.1	4.	*CLN0219D	5.	*IND0045D	15.	*IND0040D	19
52	IND0047D	68.0	15	93.3	11.1	1.9	0.6	96.	43.6	1	99.	63.6	93.8	14.8	1.	*BGD0220A	3.	*VTN0325D	6.	*IND0037D	15
53	BGD0220A	74.0	15	90.3	23.6	1.5	0.8	135.	43.4	1	107.	63.7	92.5	21.5	-3.	*IND0047D	-2.	*VTN0325D	3.	*IND0037D	14
54	SNG0151D	74.0	15	103.8	1.3	0.6	0.6	0.	48.7	2	32.	63.7	106.0	1.1	3.	*BGD0220A	4.	*MLA0227A	12.	*BRU0330B	18
55	CHN0158A	80.0	15	111.8	38.0	2.6	1.7	124.	37.7	1	520.	64.9	115.3	31.5	3.	*J 0111D	7.	*CHN0174A	8.	*CHN0181A	14
56	VTN0325D	86.0	15	105.3	16.1	3.0	1.4	162.	38.0	2	365.	63.6	108.0	21.6	-2.	*CHN0181A	1.	*CHN0158A	2.	*J 0111D	11
57	CHN0174A	92.0	15	118.1	25.9	1.0	0.8	82.	44.9	2	82.	64.1	117.3	27.8	-2.	*CHN0158A	1.	*J 0111D	4.	*CHN0172A	6
58	AUS0004D	98.0	15	122.3	-23.8	4.3	2.6	49.	33.7	2	877.	63.2	124.5	-15.5	3.	*PHL0285A	3.	*INS0036D	15.	*AUS0006D	15
59	INS0036D	104.0	15	135.2	-3.8	2.5	2.0	147.	37.3	1	457.	63.9	128.0	-10.0	-4.	*AUS0004D	-4.	*J 0111D	12.	*PNG0131D	15
60	J 0111D	110.0	15	134.5	31.5	3.5	3.3	68.	33.6	1	1190.	64.4	123.7	24.3	5.	*CHN0174A	8.	*PNG0131D	12.	*CHN0158A	12
61	MRA0332D	122.0	15	145.9	16.9	1.2	0.6	76.	45.7	1	63.	63.6	145.0	20.0	-4.	*J 0111D	-3.	*GUM0331D	12.	*AUS0009D	21
62	AUS0009D	128.0	15	143.6	-33.0	2.2	1.2	15.	40.1	1	260.	64.2	150.0	-36.5	2.	*AUS0007D	5.	*AUS0008D	7.	*AUS0004D	10
63	NRU0309D	134.0	15	167.0	-0.5	0.6	0.6	0.	48.7	2	25.	62.7	166.0	-2.0	10.	*NHB0128D	14.	*INS0036D	17.	*PNG0131D	19
64	NHB0128D	140.0	15	168.0	-16.4	1.5	0.7	87.	44.1	2	78.	63.0	169.8	-20.0	7.	*NCL0100D	8.	*AUS0004D	18.	*INS0036D	23
65	SMO0057D	158.0	15	172.3	-13.7	0.6	0.6	0.	48.7	1	33.	63.8	-171.0	-14.1	8.	*CKN0053D	11.	*CKH0052D	14.	*WAL0102D	20

Canal 16 - Channel 16 - Canal 16

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
35	OCE0101D	-160.0	16	-145.0	-16.3	4.3	3.5	4.	32.4	2	1352.	63.7	-154.7	-15.7	19. *CKNG053D 19. *TON0215D 33. *AUS0007D 35
36	AND0238D	-37.0	16	1.3	42.6	0.6	0.6	0.	48.7	2	20.	61.8	4.3	43.3	-4. *G 0027D 2. *AUT0016D 3. *ALG0252D 4
37	MLI0328D	-37.0	16	-7.6	13.2	1.7	1.2	171.	40.9	1	198.	63.9	-12.0	15.0	3. *GMB0302D 8. *GUI0192E 8. *ALG0252D 9
38	CPV0301D	-31.0	16	-24.0	16.0	0.9	0.7	144.	46.5	2	39.	62.4	-24.3	14.4	1. *G 0027D 2. *AZR0134D 14. *MLI0328D 16
39	G 0027D	-31.0	16	-3.5	53.8	1.8	1.7	142.	39.2	1	392.	65.2	1.3	51.1	3. *ALG0252D 6. *AUT0016D 11. *DNK0089B 14.
40	ALG0252D	-25.0	16	1.6	25.5	3.6	2.2	152.	35.3	1	583.	63.0	9.5	30.0	4. *LBV0321D 7. *LBV0280E 12. *MLT0147D 15.
41	AUT0016D	-19.0	16	12.1	47.5	1.1	0.6	166.	45.7	2	73.	64.3	9.4	47.2	0. *ZAI0322D 5. *G 0027D 6. *AND0238D 8
42	ZAI0322D	-19.0	16	22.4	1.2	2.2	1.9	48.	38.2	1	468.	64.9	16.0	-2.0	5. *GAB0260D 8. *CME0300E 10. *AUT0016D 12.
43	MLT0147D	-13.0	16	14.3	35.9	0.6	0.6	0.	48.7	1	18.	61.2	14.3	35.9	0. *ALG0252D 2. *EGY0026D 11. *CME0300E 12
44	STP0241D	-13.0	16	7.0	0.8	0.6	0.6	0.	48.7	2	20.	61.6	5.0	2.0	-2. *CME0300E 2. *ZAI0322D 3. *GAB0260D 6
45	EGY0026D	-7.0	16	29.7	26.8	2.3	1.7	136.	38.2	2	319.	63.3	34.5	31.7	3. *ARS0275D 5. *ALG0252D 12. *LBN0279D 18
46	BUL0020D	-1.0	16	24.0	42.7	1.0	0.6	165.	46.3	1	56.	63.8	28.7	43.8	-4. *MOZ0307D 1. *URS0060D 3. *TUR0145E 4
47	MOZ0307D	-1.0	16	34.0	-18.0	3.6	1.4	55.	37.3	2	505.	64.4	32.5	-26.8	5. *SWZ0313E 6. *BUL0020D 13. *ZMB0314D 15
48	DNK0089B	5.0	16	12.3	57.1	1.2	0.6	177.	45.7	2	74.	64.4	10.0	54.5	-1. *G 0027D 1. *POL0132E 8. *AUT0016D 8
49	RRW0310D	11.0	16	30.0	-2.1	0.7	0.6	42.	48.3	2	32.	63.3	29.8	-4.5	-5. *ZAI0322D -3. *MOZ0307D 4. *UGA0051D 4
50	ARS0275D	17.0	16	48.3	24.6	3.8	1.4	138.	36.9	2	403.	63.0	37.0	30.0	-2. *EGY0026D -2. *ALG0252D 10. *LBN0279D 12
51	URS0060D	23.0	16	41.5	57.4	3.1	1.6	153.	37.4	1	887.	66.9	28.3	68.9	2. *G 0027D 3. *DNK0089B 13. *URS0061D 13
52	MAU0243D	29.0	16	56.8	-13.9	1.6	1.4	65.	40.9	1	197.	63.9	53.0	-15.0	6. *MDG0236E 9. *MOZ0307D 11. *COM0207D 18
53	MLD0306B	44.0	16	73.1	6.0	1.0	0.6	90.	46.6	1	51.	63.7	71.0	7.5	4. *URS0069B 6. *ARS0275D 9. *IND0043D 17
54	URS0069B	44.0	16	70.8	38.5	1.4	0.7	161.	44.2	2	98.	64.1	75.1	37.3	4. *IND0040D 6. *MLD0306B 11. *IND0038A 13
55	IND0040D	56.0	16	73.0	25.0	1.8	1.5	58.	39.9	2	244.	63.8	78.2	27.0	2. *NPL0122A 6. *IND0038A 8. *IND0048D 9
56	CHN0186A	62.0	16	102.5	30.2	1.9	1.2	147.	40.5	2	311.	65.5	110.0	31.8	7. *CHN0169A 9. *CHN0158A 17. *CHN0182A 18
57	IND0048D	68.0	16	86.2	25.0	1.6	0.9	120.	42.8	2	127.	63.8	89.8	26.7	-8. *CHN0186A -7. *BRM0298A 7. *IND0046A 8
58	MLA0227A	86.0	16	102.1	4.1	1.6	0.8	135.	43.0	1	105.	63.2	105.4	2.2	8. *SNG0151D 13. *INS0032A 13. *VTN0325D 15
59	CHN0169A	92.0	16	118.5	36.4	1.2	0.8	11.	44.8	1	98.	64.7	122.8	38.4	-1. *KRE0286B 2. *CHN0167A 8. *CHN0186A 8

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
60	PHL0285A	98.0	16	121.3 11.1	3.5 1.8	99.	36.4	2	531.	63.7	126.0 6.0	4.	*AUS0004D	*AUS0005E 11.	*INS0036D 21
61	KRE0286B	110.0	16	127.1 40.1	1.1 0.8	31.	45.2	2	76.	64.0	124.0 39.9	-1.	*CHN0169A	*J 0111E 8.	*J 0111D 8
62	AUS0007D	128.0	16	146.5 -39.1	1.8 1.4	134.	40.2	2	214.	63.5	139.9 -36.8	5.	*AUS0009D	*NZL0287B 18.	*AUS0005E 21
63	CKN0053D	158.0	16	163.0 -11.2	1.8 0.7	49.	43.2	2	133.	64.5	-158.0 -9.0	2.	*OCE0101D	*TON0215D 27.	*SMO0057D 29
64	TON0215D	170.0	16	174.7 -18.0	1.4 0.7	85.	44.4	1	80.	63.5	-173.7 -15.9	7.	*CKN0053D	*OCE0101D 13.	*SMA0335E 15

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
31	GUI0192E	-37.0	17	-11.0	10.2	1.6	1.0	147.	42.1	2	143.	63.7	-14.5	11.5	3. *GNP0304E	5. *MLI0328D	8. *MLI0327E	15.
32	SMR0311E	-37.0	17	12.6	43.7	0.6	0.6	0.	48.7	1	25.	62.7	12.0	43.0	-0. *F 0093E	2. *GUI0192E	9. *TUR0145E	12
33	LBY0280E	-25.0	17	21.4	26.0	2.5	1.0	119.	40.1	2	229.	63.7	22.0	33.0	4. *TUR0145E	8. *ALG0251E	10. *ALG0252D	12
34	F 0093E	-19.0	17	2.6	45.9	2.5	1.0	160.	40.4	1	232.	64.0	9.5	41.2	-2. *SMR0311E	1. *ALG0251E	7. *D 0087E	9
35	CME0300E	-13.0	17	12.7	6.2	2.5	1.7	87.	37.9	1	371.	63.6	16.2	1.4	2. *ZAI0322D	4. *ZAI0323E	8. *TCD0143E	9
36	POL0132E	-1.0	17	19.3	51.8	1.5	0.6	162.	44.5	2	95.	64.3	22.9	49.0	-0. *SMR0311E	5. *TUR0145E	7. *ROU0136E	7
37	SWZ0313E	-1.0	17	31.5	-26.5	0.6	0.6	66.	48.5	1	28.	63.0	31.1	-25.9	4. *MOZ0307D	7. *BOT0297E	9. *POL0132E	11
38	TUR0145E	5.0	17	34.4	38.9	2.7	1.0	168.	39.8	1	259.	63.9	42.7	41.5	-2. *URS0064E	-1. *LBY0280E	11. *URS0060D	18
39	YMS0267E	11.0	17	48.8	15.2	1.8	1.5	176.	39.9	2	205.	63.0	49.5	18.4	3. *ARS0275D	6. *ARS0003E	7. *YEM0266E	13
40	QAT0247E	17.0	17	51.1	25.3	0.6	0.6	0.	48.7	1	22.	62.0	52.3	24.8	1. *YMS0267E	5. *ARS0275D	6. *ARS0003E	9
41	URS0064E	23.0	17	45.6	40.8	2.2	0.6	163.	43.1	2	126.	64.1	40.0	43.4	-0. *TUR0145E	2. *URS0060D	6. *LBY0280E	12
42	MDG0236E	29.0	17	46.6	-18.8	2.7	1.1	65.	39.3	2	263.	63.5	49.0	-12.3	8. *MAU0243D	10. *MAU0242E	15. *ZAI0323E	22
43	NPL0122A	50.0	17	83.7	28.3	1.7	0.6	163.	44.1	2	112.	64.6	80.2	28.8	1. *IND0038A	2. *IND0040D	10. *IND0042A	18
44	IND0038A	56.0	17	75.9	33.4	1.5	1.1	131.	42.1	1	166.	64.3	79.0	31.2	-2. *NPL0122A	-1. *IND0040D	9. *IND0042A	14
45	IND0046A	68.0	17	84.7	20.5	1.6	0.9	30.	42.9	1	118.	63.6	87.5	21.7	1. *BRM0298A	6. *IND0048D	7. *BGD0220B	8
46	BRM0298A	74.0	17	97.1	19.1	3.6	1.5	104.	37.0	2	488.	63.9	92.4	21.4	0. *IND0046A	3. *BGD0220B	6. *IND0048D	12
47	CHN0182A	80.0	17	108.7	35.1	1.4	0.9	109.	43.3	1	122.	64.2	105.7	32.9	-1. *INS0032A	2. *BRM0298A	4. *CHN0159A	7
48	INS0032A	80.0	17	112.3	-0.3	2.7	2.3	109.	36.3	2	587.	64.0	109.1	1.8	4. *BRM0298A	6. *CHN0182A	9. *CHN0159A	14

Canal 17 suite - Channel 17 cont. - Canal 17 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
49	CHN0167A	92.0	17	124.3	43.7	2.0 0.7	156.	42.7	2	159.	64.7	131.0	42.9	1. *J 0111E	2. *CHN0169A	13. *KRE0286C 17.
50	AUS0005E	98.0	17	133.0	-18.8	3.6 1.7	66.	36.4	2	644.	64.5	130.8	-12.5	-1. *PHL0285B	2. *PHL0285A	2. *INS0032A 13.
51	J 0111E	110.0	17	134.5	31.5	3.5 3.3	68.	33.6	1	1198.	64.4	141.9	45.5	6. *CHN0167A	7. *KRE0286C	15. *KRE0286B 15.
52	CAR0338E	122.0	17	149.5	8.0	5.4 0.8	178.	38.1	1	289.	62.7	134.6	7.5	6. *J 0111E	7. *INS0032A	12. *AUS0005E 18.
53	NZL0287B	128.0	17	170.0	-40.0	3.3 1.3	48.	38.0	1	476.	64.8	166.3	-45.5	11. *AUS0008E	15. *AUS0007D	16. *AUS0005E 19.
54	WAK0334E	140.0	17	166.5	19.2	0.6 0.6	0.	48.7	1	32.	63.8	166.5	19.2	19. *J 0111E	22. *MRL0333E	24. *AUS0005E 30.
55	PLM0337E	170.0	17	161.4	7.0	0.6 0.6	0.	48.7	1	25.	62.6	-162.4	6.1	6. *CAR0338E	7. *TON0215D	14. *SMA0335E 16.
56	SMA0335E	170.0	17	170.1	-14.2	0.6 0.6	0.	48.7	2	19.	61.4	-171.0	-11.0	-2. *TON0215D	1. *PLM0337E	2. *CKN0053D 10.

Canal 18 - Channel 18 - Canal 18

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
27	MLI0327E	-37.0	18	-2.0	19.0	2.7 1.3	127.	39.0	1	348.	64.4	-2.5	23.3	7. *ALG0251E	8. *SMR0311E	18. *LIE0253E	20
28	GNP0304E	-31.0	18	-15.0	12.0	0.9 0.6	172.	46.9	2	44.	63.3	-14.2	12.3	3. *GMB0302E	7. *GUI0192E	7. *IRL0211E	14
29	IRL0211E	-31.0	18	-8.2	53.2	0.8 0.6	162.	47.2	1	53.	64.5	-5.5	54.3	4. *NOR0120B	7. *D 0087E	11. *GNP0304E	15
30	ALG0251E	-25.0	18	5.1	33.6	2.7 1.5	172.	38.1	1	354.	63.6	9.5	30.0	1. *TCD0143E	5. *LBY0321E	7. *TGO0226E	9
31	TGO0226E	-25.0	18	0.8	8.6	1.5 0.6	105.	44.6	2	79.	63.6	-0.2	11.1	-2. *MLI0327E	-0. *ALG0251E	5. *DAH0233E	8
32	D 0087E	-19.0	18	9.4	49.5	1.6 0.7	147.	43.6	2	124.	64.5	10.0	54.8	-3. *NOR0120B	-0. *ZAI0323E	3. *LUX0114E	9
33	ZAI0323E	-19.0	18	21.3	-6.8	2.8 1.5	149.	38.0	1	490.	64.9	16.3	-1.0	1. *TCD0143E	5. *GAB0260E	8. *CME0300E	8
34	TCD0143E	-13.0	18	18.1	15.5	3.4 1.7	107.	36.6	2	576.	64.2	16.5	8.2	5. *CME0300E	7. *MLI0327E	14. *GAB0260E	15
35	BOT0297E	-1.0	18	23.3	-22.2	2.1 1.5	36.	39.2	2	300.	64.0	25.3	-17.8	4. *ZMB0314E	6. *ZAI0323E	10. *ROU0136E	11
36	ROU0136E	-1.0	18	25.0	45.7	1.4 0.7	155.	44.7	1	86.	64.0	20.2	46.1	-2. *BOT0297E	5. *D 0087E	6. *TCH0144E	7
37	NOR0120B	5.0	18	13.1	64.1	1.8 0.9	10.	42.2	2	285.	66.7	7.6	58.0	4. *D 0087E	6. *IRL0211E	15. *POL0132E	15
38	YEM0266E	11.0	18	44.3	15.1	1.1 0.7	109.	45.2	1	58.	62.8	42.0	17.5	-5. *ARS0003E	-5. *YMS0267E	6. *UGA0051E	10
39	ARS0003E	17.0	18	41.1	23.8	3.5 1.7	134.	36.5	2	424.	62.8	42.5	16.5	-4. *YEM0266E	-3. *YMS0267E	6. *SOM0312E	19

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
40 MAU0242E	29.0	18	59.8	-18.9	1.6	1.2	55.	41.2	1	198.	64.2	60.0	-14.0	5. *ZAI0323E	6. *MDG0236E	14. *ARS0003E 25
41 PAK0281A	38.0	18	65.2	27.9	1.5	1.4	28.	40.9	1	162.	63.0	69.5	32.2	3. *IND0042A	4. *URS0070A	10. *IRN0109E 16
42 URS0070A	44.0	18	73.9	41.0	1.3	0.8	5.	43.7	2	120.	64.5	73.8	38.4	4. *PAK0281A	7. *IND0042A	9. *IND0038B 15
43 IND0041A	56.0	18	78.4	16.0	2.1	1.4	35.	39.7	2	258.	63.8	84.9	19.0	2. *IND0042A	3. *IND0046B	12. *IND0046A 12
44 CHN0185A	62.0	18	95.7	35.4	2.1	1.1	156.	40.5	1	198.	63.4	101.3	33.1	4. *CHN0159A	5. *BRM0298B	17. *BRM0298A 17
45 CBG0299A	68.0	18	105.0	12.7	1.0	0.9	110.	44.7	1	91.	64.3	103.5	10.5	2. *IND0042A	4. *MLA0227B	13. *IND0046B 14
46 IND0042A	68.0	18	79.3	27.7	2.1	1.2	147.	40.3	2	223.	63.8	84.6	25.8	-2. *BGD0220B	2. *IND0041A	4. *CBG0299A 10
47 BGD0220B	74.0	18	90.3	23.6	1.5	0.8	135.	43.4	1	108.	63.7	88.0	27.0	-2. *IND0042A	1. *CHN0185A	7. *IND0041A 10
48 CHN0159A	80.0	18	109.4	27.3	2.1	1.7	107.	38.6	2	393.	64.5	109.5	33.1	-1. *INS0030A	5. *CHN0158B	6. *CHN0182A 6
49 INS0030A	80.0	18	112.3	-8.1	3.1	1.5	169.	37.6	1	450.	64.2	114.0	-5.8	1. *CHN0159A	4. *INS0032B	7. *INS0032A 7
50 MLA0227B	86.0	18	102.1	4.1	1.6	0.8	135.	43.0	1	106.	63.3	103.8	1.2	-1. *INS0030A	-1. *INS0032B	15. *INS0032A 15
51 AUS0006E	98.0	18	135.8	-30.3	2.5	1.9	46.	37.5	1	396.	63.4	140.8	-27.7	-3. *PHL0285B	1. *AUS0008E	1. *AUS0005E 9
52 PHL0285B	98.0	18	121.3	11.1	3.5	1.8	99.	36.4	2	534.	63.7	126.0	6.0	1. *AUS0006E	4. *AUS0004E	5. *AUS0005E 11
53 KRE0286C	110.0	18	127.1	40.1	1.1	0.8	31.	45.2	2	77.	64.0	128.4	38.6	1. *J 0111F	6. *J 0111E	6. *CHN0159A 9
54 GUM0331E	122.0	18	144.5	13.1	0.6	0.6	0.	48.7	2	31.	63.5	144.7	13.4	7. *MRA0332E	9. *CAR0338E	17. *AUS0008E 20
55 AUS0008E	128.0	18	143.3	-20.5	3.8	2.7	112.	34.2	2	936.	63.9	149.0	-29.0	2. *AUS0006E	4. *AUS0009E	8. *NZL0287B 15
56 MRL0333E	146.0	18	166.7	7.9	1.5	1.5	177.	40.7	1	190.	63.5	162.1	11.5	16. *CAR0338E	19. *AUS0008E	24. *PHL0285B 25

Canal 19 - Channel 19 - Canal 19

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14				
31	GMB0302E	-37.0	19	-15.1	13.4	0.8	0.6	4.	47.5	2	40.	63.5	-14.2	13.3	4. *GNP0304E	7. *MLI0328E	9. *MLI0327E	16	
32	LIE0253E	-37.0	19	9.5	47.1	0.6	0.6	0.	48.7	1	25.	62.6	9.5	47.2	1. *TCH0144E	4. *LUX0114E	8. *G	0027E	13
33	AZR0134E	-31.0	19	-23.4	36.1	2.6	0.7	158.	41.7	2	142.	63.2	-16.9	32.5	-5. *POR0133E	-4. *G	0027E	13. *CPV0301E	14
34	POR0133E	-31.0	19	-8.0	39.6	0.9	0.6	112.	46.8	2	48.	63.6	-7.5	37.2	-15. *AZR0134E	-15. *G	0027E	11. *ALG0251E	17
35	LBY0321E	-25.0	19	13.1	27.2	2.4	1.1	129.	40.0	2	210.	63.3	11.4	33.5	3. *ALG0251E	6. *ALG0252E	9. *TGO0226E	12	
36	DAH0233E	-19.0	19	2.2	9.5	1.4	0.7	97.	44.3	2	82.	63.5	2.2	6.2	3. *TGO0226E	5. *ZAI0323E	14. *ZAI0322E	14	
37	LUX0114E	-19.0	19	6.0	49.8	0.6	0.6	0.	48.7	1	28.	63.1	7.0	48.5	-3. *LIE0253E	1. *TCH0144E	4. *D	0087E	4
38	GAB0260E	-13.0	19	11.8	-0.6	1.4	1.1	64.	42.2	1	136.	63.6	11.0	-4.0	3. *ZAI0323E	6. *ZAI0322E	10. *TCD0143E	14	
39	TCH0144E	-1.0	19	17.3	49.3	1.5	0.6	170.	44.8	2	84.	64.0	12.1	50.3	-2. *LIE0253E	3. *ZMB0314E	5. *LUX0114E	6	
40	ZMB0314E	-1.0	19	27.5	-13.1	2.4	1.5	39.	38.8	1	329.	63.9	33.0	-13.8	3. *MGZ0307E	5. *TCH0144E	11. *BOT0297E	13	
41	GRC0105E	5.0	19	24.1	38.1	1.8	1.0	138.	41.8	1	147.	63.5	26.6	41.5	1. *BUL0020E	4. *ROU0136E	6. *IRN0109E	13	
42	LBN0279E	11.0	19	35.8	33.9	0.6	0.6	0.	48.7	2	21.	61.8	36.8	34.5	0. *IRN0109E	6. *UGA0051E	7. *ARS0003E	8	
43	UGA0051E	11.0	19	32.3	1.2	1.5	1.1	60.	42.1	1	135.	63.4	29.8	-1.3	2. *RRW0310E	5. *ZMB0314E	8. *YEM0266E	16	
44	SOM0312E	23.0	19	45.0	6.4	3.3	1.5	71.	37.2	1	340.	62.6	42.0	-1.0	7. *URS0061E	11. *UGA0051E	13. *ZMB0314E	15	
45	URS0061E	23.0	19	24.7	56.6	0.9	0.6	12.	46.7	2	70.	65.2	25.8	54.1	0. *TCH0144E	6. *SOM0312E	6. *LIE0253E	7	
46	IRN0109E	32.0	19	54.2	32.4	3.8	1.8	149.	35.8	2	529.	63.1	60.2	25.2	7. *SOM0312E	10. *PAK0281A	14. *ARS0275E	19	
47	NPL0122B	50.0	19	83.7	28.3	1.7	0.6	163.	44.1	2	112.	64.6	82.0	30.1	1. *IND0038B	2. *URS0066A	12. *IRN0109E	12	
48	IND0038B	56.0	19	75.9	33.4	1.5	1.1	131.	42.1	1	167.	64.3	79.0	31.2	-2. *NPL0122B	-1. *IRN0109E	10. *IND0042B	14	
49	IND0046B	68.0	19	84.7	20.5	1.6	0.9	30.	42.9	1	119.	63.6	87.5	21.7	1. *BRM0298B	6. *BGD0220C	8. *BGD0220B	8	
50	BRM0298B	74.0	19	97.1	19.1	3.6	1.5	104.	37.0	2	491.	63.9	92.4	21.4	-1. *IND0046B	3. *BGD0220C	6. *BGD0220B	6	
51	CHN0158B	80.0	19	111.8	38.0	2.6	1.7	124.	37.7	1	527.	64.9	115.3	31.5	-2. *INS0032B	3. *CHN0159B	6. *J	0111F	7
52	INS0032B	80.0	19	112.3	-0.3	2.7	2.3	109.	36.3	2	591.	64.1	117.5	3.7	0. *CHN0158B	2. *CHN0159B	12. *CHN0159A	12	
53	CHN0179A	92.0	19	112.2	21.9	1.8	1.2	37.	40.7	2	204.	63.8	117.6	23.2	-0. *J	0111F	4. *CHN0158B	5. *PHL0285C	9
54	AUS0004E	98.0	19	122.3	-23.8	4.3	2.6	49.	33.7	2	888.	63.2	124.5	-15.5	-0. *PHL0285C	3. *PHL0285B	3. *INS0032B	12	
55	INS0036E	104.0	19	135.2	-3.8	2.5	2.0	147.	37.3	1	463.	64.0	128.0	-10.0	-5. *AUS0004E	-4. *INS0032B	3. *J	0111F	12

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
56 J 0111F	110.0	19	134.5	31.5	3.5	3.3	68.	33.6	1	1206.	64.4	123.7	24.3	6. *CHN0179A	8. *CHN0158B	12. *PHL0285C	17. *
57 MRA0332E	122.0	19	145.9	16.9	1.2	0.6	76.	45.7	1	63.	63.7	145.0	20.0	-4. *J 0111F	-3. *GUM0331E	12. *AUS0009E	21. *
58 AUS0009E	128.0	19	143.6	-33.0	2.2	1.2	15.	40.1	1	264.	64.3	150.0	-36.5	2. *AUS0007E	5. *AUS0008E	7. *AUS0004E	10. *
59 NIU0054A	158.0	19-169.8	-19.0	0.6	0.6	0.	48.7	2	34.	64.1	-169.9	-19.0	26. *J 0111F	31. *TKL0058A	31. *AUS0009E	31. *	

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
30	AND0238E	-37.0	20	1.3	42.6	0.6	0.6	0.	48.7	2	21.	61.8	4.3	43.3	-4. *G 0027E	2. *AUT0016E	3. *ALG0252E	4
31	MLI0328E	-37.0	20	-7.6	13.2	1.7	1.2	171.	40.9	1	201.	63.9	-12.0	15.0	2. *SEN0222A	6. *GMB0302E	8. *ALG0252E	9
32	CPV0301E	-31.0	20	-24.0	16.0	0.9	0.7	144.	46.5	2	39.	62.4	-24.3	14.4	1. *G 0027E	2. *AZR0134E	14. *MLI0328E	16
33	G 0027E	-31.0	20	-3.5	53.8	1.8	1.7	142.	39.2	1	397.	65.2	1.3	51.1	3. *ALG0252E	6. *AUT0016E	11. *DNK0089C	14
34	ALG0252E	-25.0	20	1.6	25.5	3.6	2.2	152.	35.3	1	591.	63.0	-9.0	27.5	5. *MRC0209A	6. *G 0027E	15. *ZAI0322E	17
35	AUT0016E	-19.0	20	12.1	47.5	1.1	0.6	166.	45.7	2	73.	64.3	9.4	47.2	0. *ZAI0322E	5. *G 0027E	6. *AND0238E	8
36	ZAI0322E	-19.0	20	22.4	1.2	2.2	1.9	48.	38.2	1	474.	64.9	16.0	-2.0	6. *GAB0260E	8. *AUT0016E	12. *ALG0252E	20
37	STP0241E	-13.0	20	7.0	0.8	0.6	0.6	0.	48.7	2	20.	61.7	5.0	2.0	-0. *ZAI0322E	3. *GAB0260E	6. *DAH0233E	9
38	EGY0026E	-7.0	20	29.7	26.8	2.3	1.7	136.	38.2	2	324.	63.3	34.5	31.7	3. *ARS0275E	5. *ALG0252E	12. *URS0066A	12
39	BUL0020E	-1.0	20	24.0	42.7	1.0	0.6	165.	46.3	1	57.	63.9	28.7	43.8	-3. *MOZ0307E	1. *URS0066A	6. *GRC0105E	6
40	MOZ0307E	-1.0	20	34.0	-18.0	3.6	1.4	55.	37.3	2	512.	64.4	32.5	-26.8	4. *AFS0021A	6. *BUL0020E	13. *ZMB0314E	15
41	DNK0089C	5.0	20	12.3	57.1	1.2	0.6	177.	45.7	2	75.	64.4	10.0	54.5	-2. *G 0027E	1. *DDR0216A	5. *AUT0016E	8
42	RRW0310E	11.0	20	30.0	-2.1	0.7	0.6	42.	48.3	2	32.	63.3	29.8	-4.5	-5. *ZAI0322E	-3. *MCZ0307E	4. *UGA0051E	4
43	ARS0275E	17.0	20	48.3	24.6	3.8	1.4	138.	36.9	2	409.	63.1	37.0	30.0	-3. *EGY0026E	-2. *URS0066A	9. *ALG0252E	10
44	URS0065A	23.0	20	32.4	63.1	1.2	0.6	175.	45.7	1	121.	66.6	29.5	66.6	1. *G 0027E	3. *URS0066A	9. *URS0061E	12
45	PAK0282A	38.0	20	68.5	25.8	1.3	0.6	133.	45.1	1	66.	63.3	68.3	28.7	-1. *URS0066A	-0. *IND0042B	7. *ARS0275E	12
46	URS0066A	44.0	20	64.3	44.6	4.6	2.5	169.	33.7	2	1466.	65.4	53.9	37.3	7. *ARS0275E	10. *EGY0026E	12. *IRN0109E	15
47	IND0041B	56.0	20	78.4	16.0	2.1	1.4	35.	39.7	2	260.	63.8	84.9	19.0	1. *IND0042B	3. *IND0046C	12. *IND0046B	12
48	CHN0184A	62.0	20	101.0	37.9	2.8	0.8	144.	40.7	1	201.	63.7	105.8	32.9	0. *CHNG159B	1. *URS0066A	11. *CHN0158B	16

Canal 20 suite - Channel 20 cont. - Canal 20 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
49	CBG0299B	68.0	20	105.0	12.7	1.0 0.9	110.	44.7	1	92.	64.3	103.5	10.5	2. *IND0042B	4. *MLA0227C	13. *IND0046C	14
50	IND0042B	68.0	20	79.3	27.7	2.1 1.2	147.	40.3	2	224.	63.8	84.6	25.8	-2. *BGD0220C	2. *IND0041B	4. *CBG0299B	10
51	BGD0220C	74.0	20	90.3	23.6	1.5 0.8	135.	43.4	1	109.	63.7	88.0	27.0	-2. *IND0042B	1. *IND0041B	10. *URS0066A	10
52	CHN0159B	80.0	20	109.4	27.3	2.1 1.7	107.	38.6	2	396.	64.6	109.5	33.1	-2. *CHN0184A	3. *INS0030B	5. *CHN0158B	6
53	INS0030B	80.0	20	112.3	-8.1	3.1 1.5	169.	37.6	1	453.	64.2	114.0	-5.8	1. *CHN0159B	4. *INS0032C	7. *INS0032B	7
54	MLA0227C	86.0	20	102.1	4.1	1.6 0.8	135.	43.0	1	107.	63.3	103.8	1.2	-1. *INS0030B	-1. *INS0032C	15. *INS0032B	15
55	PHL0285C	98.0	20	121.3	11.1	3.5 1.8	99.	36.4	2	538.	63.7	122.0	21.0	2. *CHN0175A	5. *CHN0159B	10. *AUS0005F	11
56	KRE0286D	110.0	20	127.1	40.1	1.1 0.8	31.	45.2	2	77.	64.1	130.0	43.0	-3. *URS0079A	-2. *J 0111G	7. *J 0111F	7
57	AUS0007E	128.0	20	146.5	-39.1	1.8 1.4	134.	40.2	2	217.	63.6	139.9	-36.8	5. *AUS0009E	6. *NZL0287C	18. *AUS0005F	21
58	URS0079A	140.0	20	138.0	53.6	3.2 2.1	62.	36.0	2	1497.	67.7	130.6	42.2	3. *KRE0286D	3. *CHN0159B	15. *CHN0184A	20
59	TKL0058A	158.0	20	171.8	-8.9	0.7 0.6	35.	48.0	1	38.	63.8	-171.2	-9.5	25. *NIU0054A	29. *URS0079A	30. *AUS0007E	35.

Canal 21 - Channel 21 - Canal 21

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14		
31	MCD0116A	-37.0	21	7.4	43.7	0.6 0.6	0.	48.7	1	24.	62.4	5.6	46.0	-9. *BEL0018A	-3. *MRC0209A	-2. *YUG0148A	1
32	SEN0222A	-37.0	21	-14.4	13.8	1.5 1.0	139.	42.4	2	133.	63.7	-14.7	17.7	-1. *MRC0209A	2. *MTN0223A	4. *MLI0328E	9
33	HV00107A	-31.0	21	-1.5	12.2	1.4 1.1	29.	42.1	1	155.	64.0	-5.5	12.0	-0. *MLI0328E	5. *SEN0222A	7. *CTI0237A	7
34	ISL0049A	-31.0	21	-19.0	64.9	1.0 0.6	177.	46.5	2	86.	65.8	-13.5	65.1	7. *HV00107A	10. *G 0027E	13. *CTI0237A	19
35	MRC0209A	-25.0	21	-9.0	29.2	2.7 1.4	43.	38.5	2	298.	63.3	-1.2	32.2	6. *ALG0252E	7. *TUN0150A	15. *ISL0049A	22
36	BEL0018A	-19.0	21	4.6	50.6	0.8 0.6	167.	47.3	1	37.	63.0	6.4	50.3	-1. *DDR0216A	4. *YUG0148A	5. *SUI0140A	9
37	YUG0148A	-7.0	21	18.4	43.7	1.7 0.7	154.	43.8	1	139.	65.2	13.4	46.4	-1. *DDR0216A	3. *MCD0116A	3. *HNG0106A	9
38	DDR0216A	-1.0	21	12.6	52.1	0.8 0.6	172.	47.1	2	52.	64.2	11.0	54.0	-3. *FNL0104A	2. *BEL0018A	3. *DNK0089C	4
39	AFS0021A	5.0	21	24.5	-28.0	3.1 1.7	27.	37.0	2	505.	64.1	30.0	-22.1	1. *MOZ0307E	4. *RHS0135A	5. *CYP0086A	15
40	CYP0086A	5.0	21	33.3	35.1	0.6 0.6	0.	48.7	1	31.	63.6	34.5	35.7	2. *AFS0021A	4. *SYR0229A	7. *YUG0148A	17
41	KEN0249A	11.0	21	37.9	1.1	2.3 1.6	94.	38.7	1	317.	63.7	33.9	-1.0	8. *RRW0310E	12. *BDI0270A	14. *ZAI0322E	18

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
42 UAE0274A	17.0	21	53.6	24.2	1.0 0.8	162.	45.3	1	61.	63.2	50.8	24.6	5. *ARS0275E	7. *KWT0113A	15. *KEN0249A	17.
													*	*	*	*
43 AF10099A	23.0	21	42.5	11.6	0.6 0.6	0.	48.7	1	24.	62.5	41.9	10.8	-0. *KEN0249A	2. *ETH0092A	6. *BLR0062A	10.
													*	*	*	*
44 BLR0062A	23.0	21	27.8	52.6	1.1 0.7	1.	45.3	2	89.	64.8	23.4	51.5	3. *YUG0148A	7. *MCO0116A	11. *URS0065A	13.
													*	*	*	*
45 NPL0122C	50.0	21	83.7	28.3	1.7 0.6	163.	44.1	2	113.	64.6	82.0	30.1	1. *IND0038C	2. *URS0066A	12. *IND0042C	18.
													*	*	*	*
46 IND0038C	56.0	21	75.9	33.4	1.5 1.1	131.	42.1	1	168.	64.4	79.0	31.2	-1. *NPL0122C	-1. *IND0042C	14. *IND0042B	14.
													*	*	*	*
47 IND0046C	68.0	21	84.7	20.5	1.6 0.9	30.	42.9	1	120.	63.7	87.5	21.7	1. *BRM0298C	6. *BGD0220D	8. *BGD0220C	8
													*	*	*	*
48 BRM0298C	74.0	21	97.1	19.1	3.6 1.5	104.	37.0	2	494.	63.9	92.4	21.4	-1. *IND0046C	3. *BGD0220D	6. *BGD0220C	6
													*	*	*	*
49 CHN0176A	80.0	21	113.7	33.9	1.2 0.8	141.	44.4	1	97.	64.3	115.2	31.3	-2. *INS0032C	2. *CHN0159C	6. *CHN0159B	6
													*	*	*	*
50 INS0032C	80.0	21	112.3	-0.3	2.7 2.3	109.	36.3	2	595.	64.1	114.7	-4.2	3. *INS0030C	8. *INS0030B	8. *CHN0176A	12
													*	*	*	*
51 CHN0175A	92.0	21	121.4	23.8	1.1 0.8	64.	44.5	2	94.	64.3	124.5	25.8	-1. *J 0111G	1. *PHL0285D	10. *PHL0285C	10.
													*	*	*	*
52 AUS0005F	98.0	21	133.0	-18.8	3.6 1.7	66.	36.4	2	652.	64.5	130.8	-12.5	-1. *PHL0285D	2. *PHL0285C	2. *INS0032C	13.
													*	*	*	*
53 J 0111G	110.0	21	134.5	31.5	3.5 3.3	68.	33.6	1	1213.	64.4	123.7	24.3	-0. *CHN0175A	-0. *PHL0285D	17. *PHL0285C	17.
													*	*	*	*
54 NZL0287C	128.0	21	170.0	-40.0	3.3 1.3	48.	38.0	1	482.	64.8	166.3	-45.5	11. *AUS0008F	15. *AUS0007E	16. *AUS0005F	19.

Canal 22 - Channel 22 - Canal 22

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
25 MTN0223A	-37.0	22	-12.2	18.5	2.6 1.9	150.	37.3	1	375.	63.1	-5.2 15.3	0.	*CTI0237A	3.	*HV00107A 8. *NIG0119A 13
26 CTI0237A	-31.0	22	-5.6	7.5	1.6 1.2	108.	41.3	2	172.	63.7	-3.5 9.8	-1.	*NIG0119A	4.	*MTN0223A 4. *HV00107A 6
27 TUN0150A	-25.0	22	9.5	33.5	1.9 0.7	114.	42.9	1	123.	63.8	7.0 36.0	5.	*MRC0209A	11.	*GHA0108A 12. *SUI0140A 12
28 NIG0119A	-19.0	22	7.8	9.4	2.2 2.0	45.	37.9	1	402.	63.9	3.4 6.4	4.	*CTI0237A	8.	*GHA0108A 9. *SUI0140A 11
29 SUI0140A	-19.0	22	8.2	46.6	1.0 0.7	99.	45.9	2	66.	64.1	10.4 46.9	-0.	*NIG0119A	5.	*TUN0150A 6. *FNL0104A 7
30 COG0235A	-13.0	22	14.6	-0.7	2.0 1.2	59.	40.5	2	214.	63.8	12.6 2.4	-2.	*NIG0119A	0.	*GNE0303A 5. *AGL0295A 10
31 ALB0296A	-7.0	22	19.8	41.3	0.7 0.6	146.	48.1	2	37.	63.8	19.8 42.6	-2.	*HNG0106A	2.	*SDN0231A 5. *YUG0149A 6
32 SDN0231A	-7.0	22	28.9	12.7	2.3 2.0	159.	37.8	1	371.	63.5	34.0 8.5	-2.	*ETH0092A	-0.	*SDN0230A 6. *ALB0296A 13
33 HNG0106A	-1.0	22	19.5	47.2	0.9 0.6	176.	46.8	1	52.	64.0	16.1 46.8	-3.	*YUG0149A	4.	*YUG0148A 4. *FNL0104A 6
34 RHS0135A	-1.0	22	29.6	-18.8	1.5 1.4	37.	41.3	2	195.	64.2	31.2 -22.2	6.	*AFS0021A	7.	*HNG0106A 13. *AGL0295A 20
35 FNL0104A	5.0	22	17.0	61.5	2.0 1.0	10.	41.2	2	470.	68.0	15.0 55.0	4.	*SUI0140A	7.	*DDR0216A 8. *ISL0050A 17
36 BDI0270A	11.0	22	29.9	-3.1	0.7 0.6	80.	48.0	2	35.	63.4	29.1 -2.7	3.	*TGK0225A	7.	*ETH0092A 9. *SYR0229A 11
37 SYR0229A	11.0	22	38.3	34.9	1.0 0.9	7.	44.5	1	74.	63.2	35.9 35.7	2.	*CYP0086A	5.	*JOR0224A 10. *TGK0225A 12
38 KWT0113A	17.0	22	47.6	29.2	0.7 0.6	145.	48.1	2	31.	63.1	46.3 28.3	-0.	*ETH0092A	1.	*ARS0340A 8. *UAE0274A 15
39 ETH0092A	23.0	22	39.7	9.1	3.5 2.5	124.	34.8	2	727.	63.4	39.2 17.5	3.	*SDN0231A	3.	*KWT0113A 19. *BLR0062A 19
40 REU0097A	29.0	22	55.6	-19.2	1.6 0.8	96.	43.4	1	113.	63.9	54.7 -15.7	15.	*ETH0092A	17.	*PAK0281B 29. *INS0030C 29
41 PAK0281B	38.0	22	65.2	27.9	1.5 1.4	28.	40.9	1	164.	63.1	69.5 32.2	3.	*IND0042C	4.	*URS0070B 10. *IND0038D 18
42 URS0070B	44.0	22	73.9	41.0	1.3 0.8	5.	43.7	2	122.	64.6	73.8 38.4	4.	*PAK0281B	7.	*IND0042C 9. *IND0038D 15
43 IND0041C	56.0	22	78.4	16.0	2.1 1.4	35.	39.7	2	262.	63.8	84.9 19.0	2.	*IND0042C	3.	*IND0046D 12. *IND0046C 12
44 CHN0183A	62.0	22	104.8	39.0	1.5 0.6	142.	44.8	1	81.	63.8	106.0 35.4	1.	*CHN0159C	2.	*CHN0158C 14. *CBG0299C 17
45 CBG0299C	68.0	22	105.0	12.7	1.0 0.9	110.	44.7	1	92.	64.3	103.5 10.5	2.	*IND0042C	4.	*MLA0227D 13. *IND0046D 14
46 IND0042C	68.0	22	79.3	27.7	2.1 1.2	147.	40.3	2	226.	63.8	84.6 25.8	-1.	*BGD0220D	2.	*IND0041C 4. *CBG0299C 10
47 BGD0220D	74.0	22	90.3	23.6	1.5 0.8	135.	43.4	1	109.	63.8	89.0 22.0	-1.	*IND0042C	4.	*IND0041C 6. *IND0046D 6
48 CHN0159C	80.0	22	109.4	27.3	2.1 1.7	107.	38.6	2	398.	64.6	109.5 33.1	-1.	*INS0030C	5.	*CHN0158C 6. *CHN0183A 7

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
49	INS0030C	80.0	22	112.3	-8.1	3.1	1.5	169.	37.6	1	456.	64.2	114.0	-5.8	1. *CHN0159C	4. *INS0032D	7. *INS0032C	7
50	MLA0227D	86.0	22	102.1	4.1	1.6	0.8	135.	43.0	1	107.	63.3	103.8	1.2	-1. *INS0030C	-1. *INS0032D	15. *INS0032C	15
51	CHN0168A	92.0	22	124.8	48.1	2.7	0.9	157.	40.3	2	322.	65.4	129.0	43.5	0. *KRE0286E	2. *CHN0159C	9. *PHL0285D	10
52	AUS0006F	98.0	22	135.8	-30.3	2.5	1.9	46.	37.5	1	402.	63.5	140.8	-27.7	-3. *PHL0285D	1. *AUS0008F	1. *AUS0005F	9
53	PHL0285D	98.0	22	121.3	11.1	3.5	1.8	99.	36.4	2	541.	63.7	122.0	21.0	-0. *AUS0006F	4. *CHN0175A	5. *CHN0159C	10
54	KRE0286E	110.0	22	127.1	40.1	1.1	0.8	31.	45.2	2	78.	64.1	130.0	43.0	-2. *CHN0168A	-0. *J 0111H	7. *J 0111G	7
55	AUS0008F	128.0	22	143.3	-20.5	3.8	2.7	112.	34.2	2	948.	63.9	149.0	-29.0	2. *AUS0006F	4. *AUS0009F	8. *NZL0287C	15
56	URS0081A	140.0	22	168.5	65.5	2.0	0.6	107.	43.5	1	286.	68.1	158.1	67.8	-5. *CHN0168A	-4. *AUS0008F	12. *J 0111H	13

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
33 CVA0085A	-37.0	23	10.5	42.0	2.1 0.7	152.	42.9	1	169.	65.2	12.0	47.0	-3. *YUG0149A	-0. *E 0129A	3. *MTN0288A 13
34 CNR0130A	-31.0	23	-15.7	28.4	1.5 0.6	5.	44.6	2	66.	62.8	-13.5	29.2	-13. *E 0129A	-13. *CTI0237A	13. *SRL0259A 13
35 E 0129A	-31.0	23	-3.1	39.9	2.1 1.1	154.	40.5	2	223.	63.9	-2.9	35.3	-8. *CNR0130A	-8. *CTI0237A	13. *CVA0085A 13
36 SRL0259A	-31.0	23	-11.8	8.6	0.8 0.7	114.	47.0	1	44.	63.4	-10.5	8.5	2. *E 0129A	7. *CTI0237A	8. *GHA0108A 9
37 GHA0108A	-25.0	23	-1.2	7.9	1.5 1.1	102.	42.3	1	136.	63.6	0.1	11.0	3. *NGR0115A	7. *NIG0119A	8. *TUN0150A 12
38 GNE0303A	-19.0	23	10.3	1.5	0.7 0.6	10.	48.1	2	37.	63.8	11.3	2.4	0. *AGL0295A	4. *COG0235A	8. *CAF0258A 9
39 HOL0213A	-19.0	23	5.4	52.0	0.8 0.6	171.	47.7	1	48.	64.4	6.2	50.6	-1. *E 0129A	5. *CVA0085A	6. *YUG0149A 7
40 AGL0295A	-13.0	23	16.5	-12.0	3.1 2.3	84.	35.8	1	681.	64.1	12.5	-6.5	7. *CBG0235A	9. *CAF0258A	15. *SDN0230A 24
41 SDN0230A	-7.0	23	29.2	7.5	2.3 1.1	148.	40.1	2	272.	64.4	23.0	11.0	1. *CAF0258A	6. *SDN0231A	7. *YUG0149A 9
42 YUG0149A	-7.0	23	18.4	43.7	1.7 0.7	154.	43.8	1	140.	65.2	20.1	46.3	-2. *CVA0085A	2. *HNG0106A	5. *SDN0230A 6
43 ISL0050A	5.0	23	-15.8	64.2	1.6 0.6	177.	44.4	1	155.	66.3	-6.2	62.3	8. *DNK0090A	11. *FNL0104A	11. *TGK0225A 24
44 JDR0224A	11.0	23	35.8	31.4	0.8 0.8	114.	46.1	2	50.	63.1	35.0	34.0	-2. *TGK0225A	1. *SYR0229A	5. *IRQ0256A 8
45 TGK0225A	11.0	23	34.6	-6.2	2.4 1.7	129.	38.1	1	366.	63.7	30.5	-1.0	3. *BDI0270A	7. *AGL0295A	10. *SDN0230A 10
46 ARS0340A	17.0	23	52.3	24.8	2.7 0.8	143.	40.7	1	177.	63.2	48.0	30.0	2. *IRQ0256A	5. *KWT0113A	6. *OMA0123A 15
47 URS0061F	23.0	23	24.7	56.6	0.9 0.6	12.	46.7	2	71.	65.3	21.3	55.3	-1. *URS0064F	0. *CVA0085A	13. *YUG0149A 14
48 URS0064F	23.0	23	45.6	40.8	2.2 0.6	163.	43.1	1	128.	64.2	46.6	38.8	3. *ARS0340A	4. *URS0061F	12. *ETH0092A 17
49 IND0038D	56.0	23	75.9	33.4	1.5 1.1	131.	42.1	1	169.	64.4	73.9	30.0	8. *IND0042D	14. *IND0042C	14. *IND0041D 16
50 IND0046D	68.0	23	84.7	20.5	1.6 0.9	30.	42.9	1	121.	63.7	87.5	21.7	1. *BRM0298D	6. *BGD0220E	8. *BGD0220D 8
51 BRM0298D	74.0	23	97.1	19.1	3.6 1.5	104.	37.0	2	497.	64.0	92.4	21.4	-1. *IND0046D	3. *BGD0220E	6. *BGD0220D 6
52 CHN0158C	80.0	23	111.8	38.0	2.6 1.7	124.	37.7	1	533.	65.0	115.3	31.5	-1. *INS0032D	3. *CHN0177A	6. *J 0111H 7
53 INS0032D	80.0	23	112.3	-0.3	2.7 2.3	109.	36.3	2	598.	64.1	114.7	-4.2	1. *CHN0158C	3. *INS0030D	8. *INS0030C 8
54 AUS0004F	98.0	23	122.3	-23.8	4.3 2.6	49.	33.7	2	899.	63.3	124.5	-15.5	-0. *PHL0285E	3. *PHL0285D	3. *INS0032D 12
55 J 0111H	110.0	23	134.5	31.5	3.5 3.3	68.	33.6	1	1221.	64.5	141.9	45.5	5. *CHN0158C	9. *URS0077A	12. *URS0079B 13
56 AUS0009F	128.0	23	143.6	-33.0	2.2 1.2	15.	40.1	1	267.	64.3	150.0	-36.5	2. *AUS0007F	5. *AUS0008F	7. *AUS0004F 10
57 NIU0054B	158.0	23	-169.8	-19.0	0.6 0.6	0.	48.7	2	35.	64.1	-169.9	-19.0	26. *J 0111H	31. *TKL0058B	31. *AUS0009F 31

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
26 MTN0288A	-37.0	24	-7.8	23.4	1.6 1.1	141.	41.7	1	142.	63.2	-5.6 20.0	3. *NGR0115A	5. *CVA0085A	13. *SEN0222B	14
27 NGR0115A	-25.0	24	8.3	16.8	2.5 2.1	44.	37.0	2	558.	64.5	13.0 13.0	4. *CAF0258A	6. *MRC0209B	13. *SDN0232A	14
28 I 0082A	-19.0	24	12.3	41.3	2.4 1.0	137.	40.6	2	227.	64.1	12.6 35.4	3. *NGR0115A	4. *NMB0025A	15. *CAF0258A	17
29 CAF0258A	-13.0	24	21.0	6.3	2.3 1.7	31.	38.5	2	379.	64.3	23.2 11.0	1. *SDN0232A	5. *NGR0115A	6. *SDN0230A	6
30 SDN0232A	-7.0	24	30.4	19.0	2.4 1.5	176.	38.6	1	295.	63.3	24.0 15.8	-0. *CAF0258A	3. *NGR0115A	5. *SDN0230A	11
31 MWI0308A	-1.0	24	34.1	-13.0	1.5 0.6	87.	44.6	2	92.	64.2	35.2 -17.2	10. *AFS0021B	12. *TGK0225A	21. *AGL0295A	22
32 DNK0090A	5.0	24	17.0	61.5	2.0 1.0	10.	41.2	2	473.	68.0	12.0 54.6	4. *DDR0216B	8. *I 0082A	8. *ISL0050A	16
33 LSD0305A	5.0	24	27.8	-29.8	0.7 0.6	36.	48.3	1	39.	64.2	29.5 -29.4	1. *DNK0090A	3. *AFS0021B	5. *NMB0025A	19.
34 IRQ0256A	11.0	24	43.6	32.8	1.9 1.0	143.	41.7	1	146.	63.3	44.0 37.3	-0. *URS0066B	1. *KEN0249B	11. *TGK0225A	12.
35 OMA0123A	17.0	24	55.6	21.0	1.9 1.0	100.	41.4	2	153.	63.3	56.0 26.5	-0. *URS0066B	6. *UAE0274B	7. *ARS0340A	7.
36 MYT0098A	29.0	24	45.1	-12.8	0.6 0.6	0.	48.7	1	30.	63.4	45.0 -12.8	18. *TGK0225A	24. *URS0066B	28. *OMA0123A	29.
37 PAK0282B	38.0	24	68.5	25.8	1.3 0.6	133.	45.1	1	67.	63.4	68.3 28.7	-1. *URS0066B	-0. *IND0042D	7. *OMA0123A	10.
38 URS0066B	44.0	24	64.3	44.6	4.6 2.5	169.	33.7	2	1485.	65.4	53.9 37.3	8. *IRQ0256A	9. *NGR0115A	17. *URS0064F	20.
39 IND0041D	56.0	24	78.4	16.0	2.1 1.4	35.	39.7	2	263.	63.9	84.9 19.0	2. *IND0042D	3. *IND0046D	12. *BGD0220E	14
40 CHN0188A	62.0	24	101.5	25.1	1.9 1.1	132.	41.2	2	240.	65.0	97.5 24.0	2. *IND0041D	5. *BGD0220E	7. *IND0042D	12
41 CBG0299D	68.0	24	105.0	12.7	1.0 0.9	110.	44.7	1	93.	64.3	103.5 10.5	2. *IND0042D	4. *MLA0227E	13. *IND0046D	14
42 IND0042D	68.0	24	79.3	27.7	2.1 1.2	147.	40.3	2	227.	63.9	84.6 25.8	-2. *BGD0220E	2. *IND0041D	4. *CBG0299D	10.
43 BGD0220E	74.0	24	90.3	23.6	1.5 0.8	135.	43.4	1	110.	63.8	92.5 25.0	-2. *CHN0188A	0. *BRM0298D	6. *IND0042D	7.
44 CHN0177A	80.0	24	111.8	30.8	1.4 0.8	160.	43.6	2	129.	64.7	109.2 29.1	-1. *CHN0188A	3. *INS0030D	4. *CHN0158C	7.
45 INS0030D	80.0	24	112.3	-8.1	3.1 1.5	169.	37.6	1	459.	64.3	114.0 -5.8	4. *INS0032D	7. *CHN0177A	10. *CHN0158C	13.
46 MLA0227E	86.0	24	102.1	4.1	1.6 0.8	135.	43.0	1	108.	63.4	103.8 1.2	-1. *INS0030D	-1. *INS0032D	15. *BRM0298D	22.
47 CHN0166A	92.0	24	121.1	41.7	1.5 0.8	154.	43.5	2	126.	64.5	119.3 45.2	-2. *URS0077A	1. *URS0079B	5. *URS0066B	6.
48 PHL0285E	98.0	24	121.3	11.1	3.5 1.8	99.	36.4	2	545.	63.8	126.0 6.0	5. *AUS0004F	5. *INS0032D	22. *CHN0166A	23.
49 URS0077A	110.0	24	112.7	57.3	2.7 1.8	2.	37.6	2	912.	67.2	125.0 55.0	1. *URS0079B	1. *J 0111H	15. *CHN0166A	19.

Canal 24 suite - Channel 24 cont. - Canal 2 . cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
50	AUS0007F	128.0	24	146.5	-39.1	1.8	1.4	134.	40.2	2	219.	63.6	139.9	-36.8	5. *AUS0009F 6. *AUS0004F 22. *URS0079B 23
51	URS0079B	140.0	24	138.0	53.6	3.2	2.1	62.	36.0	2	1516.	67.8	128.4	73.2	2. *URS0077A 2. *PHL0285E 32. *CHN0166A 32
52	TKL0058B	158.0	24	-171.8	-8.9	0.7	0.6	35.	48.0	1	38.	63.9	-171.2	-9.5	25. *NIU0054B 29. *URS0079B 30. *URS0077A 33

Canal 25 - Channel 25 - Canal 25

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
28	MCO0116B	-37.0	25	7.4	43.7	0.6	0.6	0.	48.7	1	24.	62.5	5.6	46.0	-8. *BEL0018B -3. *MRC0209B -2. *YUG0148B 1.
29	SEN0222B	-37.0	25	-14.4	13.8	1.5	1.0	139.	42.4	2	135.	63.7	-14.7	17.7	-0. *MRC0209B 2. *MTN0223B 4. *MTN0288A 12.
30	HVO0107B	-31.0	25	-1.5	12.2	1.4	1.1	29.	42.1	1	156.	64.0	-5.5	12.0	2. *SEN0222B 7. *CTI0237B 7. *MTN0223B 9.
31	ISL0049B	-31.0	25	-19.0	64.9	1.0	0.6	177.	46.5	2	87.	65.9	-13.5	65.1	9. *HVO0107B 10. *CTI0237B 19. *MRC0209B 20.
32	MRC0209B	-25.0	25	-9.0	29.2	2.7	1.4	43.	38.5	2	302.	63.3	-1.2	32.2	3. *NGR0115A 4. *TUN0150B 15. *NMB0025A 20.
33	BEL0018B	-19.0	25	4.6	50.6	0.8	0.6	167.	47.3	1	38.	63.1	6.4	50.3	-2. *NMB0025A 3. *DDR0216B 4. *YUG0148B 5.
34	NMB0025A	-19.0	25	17.5	-21.6	2.7	1.9	48.	37.2	2	565.	64.7	20.0	-28.4	-0. *AFS0021B -0. *BEL0018B 15. *NIG0119B 21.
35	ISR0110A	-13.0	25	34.9	31.4	0.9	0.6	117.	46.7	2	51.	63.8	35.2	33.2	2. *CYP0086B 3. *CAF0258A 13. *COG0235B 14.
36	YUG0148B	-7.0	25	18.4	43.7	1.7	0.7	154.	43.8	1	140.	65.3	13.4	46.4	-1. *DDR0216B 3. *MCO0116B 3. *HNG0106B 9.
37	DDR0216B	-1.0	25	12.6	52.1	0.8	0.6	172.	47.1	2	53.	64.3	11.0	54.0	-3. *FNL0104B 2. *DNK0090A 2. *BEL0018B 3.
38	AFS0021B	5.0	25	24.5	-28.0	3.1	1.7	27.	37.0	2	511.	64.1	20.0	-25.0	-1. *NMB0025A -0. *CYP0086B 16. *LSO0305A 18.
39	CYP0086B	5.0	25	33.3	35.1	0.6	0.6	0.	48.7	1	31.	63.6	34.5	35.7	-0. *AFS0021B 4. *ISR0110A 5. *SYR0229B 8.
40	KEN0249B	11.0	25	37.9	1.1	2.3	1.6	94.	38.7	1	321.	63.8	41.9	3.9	9. *ETH0092B 13. *IRQ0256A 14. *SYR0229B 19.
41	UAE0274B	17.0	25	53.6	24.2	1.0	0.8	162.	45.3	1	62.	63.2	54.9	22.4	5. *OMA0123A 6. *KEN0249B 17. *AFI0099B 20.
42	AFI0099B	23.0	25	42.5	11.6	0.6	0.6	0.	48.7	1	25.	62.6	41.9	10.8	-0. *KEN0249B 2. *ETH0092B 6. *BLR0062B 10.
43	BLR0062B	23.0	25	27.8	52.6	1.1	0.7	1.	45.3	2	90.	64.9	23.4	51.5	3. *YUG0148B 7. *MCO0116B 11. *ETH0092B 13
44	MNG0248A	74.0	25	102.2	46.6	3.6	1.1	169.	38.2	1	393.	64.1	87.9	48.9	2. *URS0074A 3. *BGD0220E 13. *URS0066B 17

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
18 MTN0223B	-37.0	26	-12.2	18.5	2.6 1.9	150.	37.3	1	389.	63.2	12.0 23.4	-16.	*TUN0150B-14.	*NIG0119B -6.	*CVA0083A -3
19 CTI0237B	-31.0	26	-5.6	7.5	1.6 1.2	108.	41.3	2	174.	63.7	-3.5 9.8	-1.	*MTN0223B 4.	*NIG0119B 4.	*HV00107B 6
20 TUN0150B	-25.0	26	9.5	33.5	1.9 0.7	114.	42.9	1	125.	63.9	9.0 38.0	5.	*SUI0140B 11.	*MRC0209B 13.	*GHA0108B 13
21 NIG0119B	-19.0	26	7.8	9.4	2.2 2.0	45.	37.9	1	407.	63.9	3.4 6.4	4.	*CTI0237B 8.	*GHA0108B 9.	*SUI0140B 11
22 SUI0140B	-19.0	26	8.2	46.6	1.0 0.7	99.	45.9	2	67.	64.1	10.4 46.9	-0.	*NIG0119B 5.	*TUN0150B 6.	*FNL0104B 7
23 COG0235B	-13.0	26	14.6	-0.7	2.0 1.2	59.	40.5	2	217.	63.8	12.6 2.4	-2.	*NIG0119B 0.	*GNE0303B 5.	*AGL0295B 10
24 ALB0296B	-7.0	26	19.8	41.3	0.7 0.6	146.	48.1	2	37.	63.8	19.8 42.6	-2.	*HNG0106B 2.	*SDN0231B 5.	*YUG0149B 6
25 SDN0231B	-7.0	26	28.9	12.7	2.3 2.0	159.	37.8	1	376.	63.5	34.0 8.5	-2.	*ETH0092B -0.	*SDN0230B 6.	*ALB0296B 13
26 HNG0106B	-1.0	26	19.5	47.2	0.9 0.6	176.	46.8	1	53.	64.0	16.1 46.8	-3.	*YUG0149B 4.	*YUG0148B 4.	*FNL0104B 6
27 RHS0135B	-1.0	26	29.6	-18.8	1.5 1.4	37.	41.3	2	197.	64.2	31.2 -22.2	5.	*AFS0021B 7.	*HNG0106B 13.	*NMB0025A 19
28 FNL0104B	5.0	26	17.0	61.5	2.0 1.0	10.	41.2	2	476.	68.0	15.0 55.0	4.	*SUI0140B 7.	*DDR0216B 8.	*ISL0050B 17
29 BDI0270B	11.0	26	29.9	-3.1	0.7 0.6	80.	48.0	2	35.	63.4	29.1 -2.7	3.	*TGK0225B 7.	*ETH0092B 9.	*SYR0229B 11
30 SYR0229B	11.0	26	38.3	34.9	1.0 0.9	7.	44.5	1	75.	63.3	35.9 35.7	2.	*CYP0086B 5.	*JOR0224B 10.	*TGK0225B 12
31 KWT0113B	17.0	26	47.6	29.2	0.7 0.6	145.	48.1	2	32.	63.1	46.3 28.3	0.	*ETH0092B 1.	*UAE0274B 15.	*BHR0255A 17
32 ETH0092B	23.0	26	39.7	9.1	3.5 2.5	124.	34.8	2	736.	63.5	39.2 17.5	2.	*SDN0231B 3.	*URS0059A 11.	*KWT0113B 19
33 REU0097B	29.0	26	55.6	-19.2	1.6 0.8	96.	43.4	1	115.	64.0	54.7 -15.7	16.	*ETH0092B 17.	*RHS0135B 29.	*URS0074A 30
34 URS0068A	44.0	26	59.0	38.8	2.2 1.0	3.	40.7	2	213.	64.0	52.5 41.8	9.	*SYR0229B 13.	*URS0059A 14.	*URS0074A 22
35 URS0074A	74.0	26	88.8	57.6	3.1 1.7	162.	37.1	2	1210.	67.9	97.2 49.7	4.	*URS0078A 5.	*MNG0248A 9.	*URS0068A 25
36 URS0078A	110.0	26	108.2	53.4	2.2 0.8	10.	42.0	2	199.	65.0	98.5 52.2	-3.	*URS0074A -3.	*MNG0248A 18.	*URS0068A 23
37 URS0080A	140.0	26	155.3	55.4	2.9 2.4	35.	35.9	1	1584.	67.9	145.6 63.8	17.	*URS0078A 17.	*MC00116B 89.	*URS0059A 89

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
21 CVA0083A	-37.0	27	12.4	41.8	0.6 0.6	0.	48.7	1	45.	65.2	12.5 43.8	-4.	*YUG0149B -1.	*E 0129B 2.	*URS0059A 4.
22 CNR0130B	-31.0	27	-15.7	28.4	1.5 0.6	5.	44.6	2	67.	62.8	-13.5 29.2	-13.	*E 0129B-13.	*CTI0237B 13.	*SRL0259B 13.
23 E 0129B	-31.0	27	-3.1	39.9	2.1 1.1	154.	40.5	2	226.	64.0	-2.9 35.3	-8.	*CNR0130B -8.	*CTI0237B 13.	*SRL0259B 13.
24 SRL0259B	-31.0	27	-11.8	8.6	0.8 0.7	114.	47.0	1	45.	63.5	-10.5 8.5	2.	*E 0129B 7.	*CTI0237B 8.	*GHA0108B 9.
25 GHA0108B	-25.0	27	-1.2	7.9	1.5 1.1	102.	42.3	1	137.	63.7	0.1 11.0	3.	*NGR0115B 7.	*NIG0119B 8.	*TUN0150B 12.
26 GNE0303B	-19.0	27	10.3	1.5	0.7 0.6	10.	48.1	2	37.	63.8	11.3 2.4	0.	*AGL0295B 4.	*COG0235B 8.	*NIG0119B 9.
27 HOLD213B	-19.0	27	5.4	52.0	0.8 0.6	171.	47.7	1	48.	64.5	6.2 50.6	-1.	*URS0059A 3.	*E 0129B 5.	*YUG0149B 7.
28 AGL0295B	-13.0	27	16.5	-12.0	3.1 2.3	84.	35.8	1	690.	64.2	12.5 -6.5	7.	*COG0235B 9.	*CAF0258B 15.	*SDN0230B 24
29 SDN0230B	-7.0	27	29.2	7.5	2.3 1.1	148.	40.1	2	275.	64.5	23.0 11.0	1.	*CAF0258B 6.	*SDN0231B 7.	*YUG0149B 9
30 YUG0149B	-7.0	27	18.4	43.7	1.7 0.7	154.	43.8	1	141.	65.3	20.1 46.3	-4.	*URS0059A 1.	*CVA0083A 2.	*HNG0106B 5
31 ISL0050B	5.0	27	-15.8	64.2	1.6 0.6	177.	44.4	1	157.	66.4	-6.2 62.3	3.	*URS0059A 5.	*FNL0104B 11.	*NOR0121A 11
32 JOR0224B	11.0	27	35.8	31.4	0.8 0.8	114.	46.1	2	50.	63.1	35.0 34.0	-3.	*TGK0225B 1.	*URS0059A 3.	*SYR0229B 5
33 TGK0225B	11.0	27	34.6	-6.2	2.4 1.7	129.	38.1	1	371.	63.8	30.5 -1.0	3.	*BDI0270B 7.	*AGL0295B 10.	*SDN0230B 10
34 BHR0255A	17.0	27	50.5	26.1	0.6 0.6	0.	48.7	1	16.	60.8	52.3 24.4	-2.	*OMA0123B 0.	*IRQ0256B 7.	*KWT0113B 8
35 URS0059A	23.0	27	33.5	48.5	5.6 1.4	165.	35.2	2	985.	65.2	22.0 48.4	2.	*YUG0149B 4.	*CVA0083A 9.	*ETH0092B 15

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
16 MTN0288B	-37.0	28	-7.8	23.4	1.6 1.1	141.	41.7	1	136.	63.0	-5.6 20.0	3. *NGR0115B	5. *SEN0222C	14. *CVA0083A	14
17 NGR0115B	-25.0	28	8.3	16.8	2.5 2.1	44.	37.0	2	565.	64.5	13.0 13.0	4. *CAF0258B	6. *MRC0209C	13. *SDN0232B	14
18 I 0082B	-19.0	28	12.3	41.3	2.4 1.0	137.	40.6	2	230.	64.2	12.6 35.4	3. *NGR0115B	4. *NMB0025B	15. *CAF0258B	18
19 CAF0258B	-13.0	28	21.0	6.3	2.3 1.7	31.	38.5	2	383.	64.3	23.2 11.0	1. *SDN0232B	5. *NGR0115B	6. *SDN0230B	6
20 SDN0232B	-7.0	28	30.4	19.0	2.4 1.5	176.	38.6	1	298.	63.3	24.0 15.8	-0. *CAF0258B	3. *NGR0115B	5. *SDN0230B	11
21 MWI0308B	-1.0	28	34.1	-13.0	1.5 0.6	87.	44.6	2	94.	64.3	35.2 -17.2	10. *AFS0021C	12. *TGK0225B	21. *AGL0295B	22
22 LS00305B	5.0	28	27.8	-29.8	0.7 0.6	36.	48.3	1	39.	64.2	29.5 -29.4	1. *NGR0121A	3. *AFS0021C	5. *NMB0025B	19
23 NGR0121A	5.0	28	17.0	61.5	2.0 1.0	10.	41.2	2	453.	67.8	15.0 55.0	4. *DDR0216C	8. *I 0082B	8. *URS0066C	15
24 IRQ0256B	11.0	28	43.6	32.8	1.9 1.0	143.	41.7	1	148.	63.4	44.0 37.3	-0. *URS0066C	1. *KEN0249C	11. *TGK0225B	12
25 OMA0123B	17.0	28	55.6	21.0	1.9 1.0	100.	41.4	2	155.	63.3	56.0 26.5	1. *URS0066C	6. *UAE0274C	7. *IRQ0256B	7
26 MYT0098B	29.0	28	45.1	-12.8	0.6 0.6	0.	48.7	1	30.	63.5	45.0 -12.8	19. *TGK0225B	24. *URS0066C	28. *OMA0123B	29
27 URS0066C	44.0	28	64.3	44.6	4.6 2.5	169.	33.7	2	1503.	65.5	53.9 37.3	8. *IRQ0256B	9. *NGR0115B	17. *URS0059A	21
28 URS0076A	74.0	28	98.0	63.2	1.8 0.7	170.	43.2	2	310.	68.1	104.4 58.7	-2. *URS0077B	-0. *URS0066C	5. *MNG0248B	13
29 URS0077B	110.0	28	112.7	57.3	2.7 1.8	2.	37.6	2	923.	67.2	106.2 69.5	-2. *URS0076A	-1. *URS0066C	6. *URS0079C	6
30 URS0079C	140.0	28	138.0	53.6	3.2 2.1	62.	36.0	2	1535.	67.8	128.4 73.2	-2. *URS0076A	1. *URS0077B	2. *MNG0248B	35

Canal 29 - Channel 29 - Canal 29

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14			
16	MCO0116C	-37.0	29	7.4 43.7	0.6 0.6	0.	48.7	1	24.	62.5	5.6 46.0	-8.	*BEL0018C	-3.	*MRC0209C	-2.	*YUG0148C	1
17	SEN0222C	-37.0	29	-14.4 13.8	1.5 1.0	139.	42.4	2	136.	63.8	-14.7 17.7	-0.	*MRC0209C	2.	*MTN0223C	4.	*MTN0288B	12
18	HVO0107C	-31.0	29	-1.5 12.2	1.4 1.1	29.	42.1	1	158.	64.1	-5.5 12.0	2.	*SEN0222C	7.	*CTI0237C	7.	*MTN0223C	9
19	ISL0049C	-31.0	29	-19.0 64.9	1.0 0.6	177.	46.5	2	88.	65.9	-13.5 65.1	9.	*HVO0107C	10.	*CTI0237C	19.	*MRC0209C	20
20	MRC0209C	-25.0	29	-9.0 29.2	2.7 1.4	43.	38.5	2	306.	63.4	-1.2 32.2	3.	*NGR0115B	4.	*TUN0150C	15.	*NMB0025B	20
21	BEL0018C	-19.0	29	4.6 50.6	0.8 0.6	167.	47.3	1	38.	63.1	6.4 50.3	-2.	*NMB0025B	3.	*DDR0216C	4.	*YUG0148C	5
22	NMB0025B	-19.0	29	17.5 -21.6	2.7 1.9	48.	37.2	2	572.	64.8	20.0 -28.4	-0.	*AFS0021C	-0.	*BEL0018C	15.	*NIG0119C	21
23	ISR0110B	-13.0	29	34.9 31.4	0.9 0.6	117.	46.7	2	52.	63.9	35.2 33.2	2.	*CYP0086C	3.	*CAF0258B	13.	*COG0235C	14
24	YUG0148C	-7.0	29	18.4 43.7	1.7 0.7	154.	43.8	1	142.	65.3	13.4 46.4	-2.	*DDR0216C	3.	*MCO0116C	3.	*HNG0106C	9
25	DDR0216C	-1.0	29	12.6 52.1	0.8 0.6	172.	47.1	2	53.	64.3	11.0 54.0	-3.	*S 0139A	2.	*NOR0121A	2.	*BEL0018C	3
26	AFS0021C	5.0	29	24.5 -28.0	3.1 1.7	27.	37.0	2	518.	64.2	20.0 -25.0	-1.	*NMB0025B	-0.	*CYP0086C	16.	*LSO0305B	18
27	CYP0086C	5.0	29	33.3 35.1	0.6 0.6	0.	48.7	1	31.	63.7	34.5 35.7	-0.	*AFS0021C	4.	*ISR0110B	5.	*SYR0229C	8
28	KEN0249C	11.0	29	37.9 1.1	2.3 1.6	94.	38.7	1	325.	63.8	41.9 3.9	9.	*ETH0092C	13.	*IRQ0256B	14.	*SYR0229C	19
29	UAE0274C	17.0	29	53.6 24.2	1.0 0.8	162.	45.3	1	63.	63.3	54.9 22.4	5.	*QMA0123B	6.	*KEN0249C	17.	*AFI0099C	20
30	AFI0099C	23.0	29	42.5 11.6	0.6 0.6	0.	48.7	1	25.	62.6	41.9 10.8	-1.	*KEN0249C	2.	*UKR0063A	6.	*ETH0092C	6
31	UKR0063A	23.0	29	31.2 48.4	2.3 1.0	172.	40.8	2	243.	64.6	22.1 48.4	-0.	*YUG0148C	2.	*MCO0116C	8.	*ETH0092C	13
32	MNG0248B	74.0	29	102.2 46.6	3.6 1.1	169.	38.2	1	398.	64.2	98.8 51.9	2.	*URS0074B	4.	*URS0076A	9.	*URS0077B	16

	1	2	3	4		5		6	7	8	9a	9b	10		11	12		13		14	
18	MTN0223C	-37.0	30	-12.2	18.5	2.6	1.9	150.	37.3	1	360.	62.9	-5.2	15.3	0.	*CTI0237C	2.	*HVO0107C	7.	*NIG0119C	12
19	CTI0237C	-31.0	30	-5.6	7.5	1.6	1.2	108.	41.3	2	176.	63.8	-3.5	9.8	-1.	*NIG0119C	4.	*MTN0223C	4.	*HVO0107C	6
20	TUN0150C	-25.0	30	9.5	33.5	1.9	0.7	114.	42.9	1	126.	63.9	9.0	38.0	6.	*SUI0140C	11.	*MRC0209C	13.	*GHA0108C	13
21	NIG0119C	-19.0	30	7.8	9.4	2.2	2.0	45.	37.9	1	412.	64.0	3.4	6.4	4.	*CTI0237C	8.	*GHA0108C	9.	*SUI0140C	11.
22	SUI0140C	-19.0	30	8.2	46.6	1.0	0.7	99.	45.9	2	68.	64.2	10.4	46.9	-0.	*NIG0119C	5.	*TUN0150C	6.	*S 0139A	7
23	COG0235C	-13.0	30	14.6	-0.7	2.0	1.2	59.	40.5	2	219.	63.9	12.6	2.4	-2.	*NIG0119C	0.	*GNE0303C	5.	*AGL0295C	10
24	ALB0296C	-7.0	30	19.8	41.3	0.7	0.6	146.	48.1	2	38.	63.9	19.8	42.6	-2.	*HNG0106C	2.	*SDN0231C	5.	*YUG0149C	6
25	SDN0231C	-7.0	30	28.9	12.7	2.3	2.0	159.	37.8	1	381.	63.6	34.0	8.5	-2.	*ETH0092C	-0.	*SDN0230C	6.	*ALB0296C	13
26	HNG0106C	-1.0	30	19.5	47.2	0.9	0.6	176.	46.8	1	53.	64.1	16.1	46.8	-3.	*YUG0149C	4.	*YUG0148C	4.	*S 0139A	6
27	RHS0135C	-1.0	30	29.6	-18.8	1.5	1.4	37.	41.3	2	200.	64.3	31.2	-22.2	6.	*AFS0021C	7.	*HNG0106C	13.	*NMB0025B	19
28	S 0139A	5.0	30	17.0	61.5	2.0	1.0	10.	41.2	2	482.	68.1	15.1	55.0	4.	*SUI0140C	7.	*DDR0216C	8.	*ISL0050C	17
29	BDI0270C	11.0	30	29.9	-3.1	0.7	0.6	80.	48.0	2	36.	63.5	29.1	-2.7	3.	*TGK0225C	7.	*ETH0092C	9.	*SYR0229C	11
30	SYR0229C	11.0	30	38.3	34.9	1.0	0.9	7.	44.5	1	76.	63.3	35.9	35.7	2.	*CYP0086C	5.	*JOR0224C	10.	*TGK0225C	12
31	KWT0113C	17.0	30	47.6	29.2	0.7	0.6	145.	48.1	2	32.	63.2	46.3	28.3	0.	*ETH0092C	1.	*UAE0274C	15.	*BHR0255B	17
32	ETH0092C	23.0	30	39.7	9.1	3.5	2.5	124.	34.8	2	745.	63.6	39.2	17.5	2.	*SDN0231C	3.	*URS0059B	11.	*UKR0063A	14
33	REU0097C	29.0	30	55.6	-19.2	1.6	0.8	96.	43.4	1	116.	64.1	54.7	-15.7	16.	*ETH0092C	17.	*RHS0135C	29.	*URS0074B	30
34	URS0068B	44.0	30	59.0	38.8	2.2	1.0	3.	40.7	2	216.	64.1	52.5	41.8	9.	*SYR0229C	13.	*URS0059B	14.	*URS0074B	22
35	URS0074B	74.0	30	88.8	57.6	3.1	1.7	162.	37.1	2	1225.	68.0	97.2	49.7	9.	*MNG0248B	9.	*URS0068B	25.	*URS0059B	27
36	URS0080B	140.0	30	155.3	55.4	2.9	2.4	35.	35.9	1	1604.	67.9	145.4	43.6	25.	*URS0074B	28.	*MNG0248B	28.	*URS0059B	89

Canal 31 - Channel 31 - Canal 31

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
20 CVA0083B	-37.0	31	12.4	41.8	0.6 0.6	0.	48.7	1	45.	65.3	12.5	43.8	-4. *YUG0149C	-1. *E 0129C	2. *URS0059B	4. *
21 CNR0130C	-31.0	31	-15.7	28.4	1.5 0.6	5.	44.6	2	68.	62.9	-13.5	29.2	-13. *E 0129C	-13. *CTI0237C	13. *SRL0259C	13. *
22 E 0129C	-31.0	31	-3.1	39.9	2.1 1.1	154.	40.5	2	228.	64.0	-2.9	35.3	-8. *CNR0130C	-8. *CTI0237C	13. *SRL0259C	13. *
23 SRL0259C	-31.0	31	-11.8	8.6	0.8 0.7	114.	47.0	1	45.	63.6	-10.5	8.5	2. *E 0129C	7. *CTI0237C	8. *GHA0108C	9. *
24 GHA0108C	-25.0	31	-1.2	7.9	1.5 1.1	102.	42.3	1	139.	63.7	0.1	11.0	3. *NGR0115C	7. *NIG0119C	8. *TUN0150C	12. *
25 GNE0303C	-19.0	31	10.3	1.5	0.7 0.6	10.	48.1	2	37.	63.9	11.3	2.4	0. *AGL0295C	4. *COG0235C	8. *NIG0119C	9. *
26 HOL0213C	-19.0	31	5.4	52.0	0.8 0.6	171.	47.7	1	49.	64.6	6.2	50.6	-1. *URS0059B	3. *E 0129C	5. *YUG0149C	7. *
27 AGL0295C	-13.0	31	16.5	-12.0	3.1 2.3	84.	35.8	1	698.	64.2	12.5	-6.5	7. *COG0235C	9. *CAF0258C	15. *SDN0230C	24. *
28 SDN0230C	-7.0	31	29.2	7.5	2.3 1.1	148.	40.1	2	279.	64.5	23.0	11.0	1. *CAF0258C	6. *SDN0231C	7. *YUG0149C	9. *
29 YUG0149C	-7.0	31	18.4	43.7	1.7 0.7	154.	43.8	1	143.	65.4	20.1	46.3	-4. *URS0059B	1. *CVA0083B	2. *HNG0106C	5. *
30 ISL0050C	5.0	31	-15.8	64.2	1.6 0.6	177.	44.4	1	159.	66.4	-6.2	62.3	3. *URS0059B	5. *S 0139A	11. *NOR0121B	11. *
31 JOR0224C	11.0	31	35.8	31.4	0.8 0.8	114.	46.1	2	51.	63.2	35.0	34.0	-2. *TGK0225C	1. *URS0059B	3. *SYR0229C	5. *
32 TGK0225C	11.0	31	34.6	-6.2	2.4 1.7	129.	38.1	1	375.	63.8	30.5	-1.0	3. *BDI0270C	7. *AGL0295C	10. *SDN0230C	10. *
33 BHR0255B	17.0	31	50.5	26.1	0.6 0.6	0.	48.7	1	17.	60.9	52.3	24.4	-2. *OMA0123C	0. *IRQ0256C	7. *KWT0113C	8. *
34 URS0059B	23.0	31	33.5	48.5	5.6 1.4	165.	35.2	2	998.	65.2	22.0	48.4	2. *YUG0149C	4. *CVA0083B	9. *ETH0092C	15. *

Canal 32 - Channel 32 - Canal 32

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
16 MTN0288C	-37.0	32	-7.8	23.4	1.6 1.1	141.	41.7	1	137.	63.1	-5.6 20.0	3. *NGR0115C	5. *SEN0222D	14. *CVA0083B	14 *
17 NGR0115C	-25.0	32	8.3	16.8	2.5 2.1	44.	37.0	2	573.	64.6	13.0 13.0	4. *CAF0258C	6. *MRC0209D	13. *SDN0232C	14 *
18 I 0082C	-19.0	32	12.3	41.3	2.4 1.0	137.	40.6	2	233.	64.2	12.6 35.4	3. *NGR0115C	4. *NMB0025C	15. *CAF0258C	18 *
19 CAF0258C	-13.0	32	21.0	6.3	2.3 1.7	31.	38.5	2	388.	64.4	23.2 11.0	1. *SDN0232C	5. *NGR0115C	6. *SDN0230C	6 *
20 SDN0232C	-7.0	32	30.4	19.0	2.4 1.5	176.	38.6	1	302.	63.4	24.0 15.8	-0. *CAF0258C	3. *NGR0115C	5. *SDN0230C	11 *
21 MWI0308C	-1.0	32	34.1	-13.0	1.5 0.6	87.	44.6	2	95.	64.4	35.2 -17.2	10. *AFS0021D	12. *TGK0225C	21. *AGL0295C	22 *
22 LS00305C	5.0	32	27.8	-29.8	0.7 0.6	36.	48.3	1	40.	64.3	29.5 -29.4	1. *NOR0121B	3. *AFS0021D	5. *NMB0025C	19 *
23 NOR0121B	5.0	32	17.0	61.5	2.0 1.0	10.	41.2	2	459.	67.9	15.0 55.0	4. *DDR0216D	8. *I 0082C	8. *URS0066D	15 *

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
24	IRQ0256C	11.0	32	43.6 32.8	1.9 1.0	143.	41.7	1	149.	63.4	44.0 37.3	-0.	*URS0066D	1. *KEN0249D	11. *TGK0225C 12.
25	OMA0123C	17.0	32	55.6 21.0	1.9 1.0	100.	41.4	2	157.	63.4	56.0 26.5	1.	*URS0066D	6. *UAE0274D	7. *IRQ0256C 7.
26	MYT0098C	29.0	32	45.1 -12.8	0.6 0.6	0.	48.7	1	30.	63.5	45.0 -12.8	19.	*TGK0225C	24. *URS0066D	28. *OMA0123C 29.
27	URS0066D	44.0	32	64.3 44.6	4.6 2.5	169.	33.7	2	1522.	65.5	87.3 49.2	1.	*URS0075A	2. *URS0077C	9. *MNG0248C 19.
28	URS0075A	74.0	32	94.0 51.7	1.5 0.6	172.	44.6	2	111.	65.1	99.0 52.9	-2.	*URS0077C	0. *URS0066D	3. *MNG0248C 8.
29	URS0077C	110.0	32	112.7 57.3	2.7 1.8	2.	37.6	2	935.	67.3	125.0 55.0	1.	*URS0079D	1. *URS0075A	23. *MNG0248C 23.
30	URS0079D	140.0	32	138.0 53.6	3.2 2.1	62.	36.0	2	1554.	67.9	128.4 73.2	2.	*URS0077C	2. *URS0075A	30. *MNG0248C 35.

Canal 33 - Channel 33 - Canal 33

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
16	MCO0116D	-37.0	33	7.4 43.7	0.6 0.6	0.	48.7	1	24.	62.6	5.6 46.0	-8.	*BEL0018D	-3. *MRC0209D	-2. *YUG0148D 1
17	SEN0222D	-37.0	33	-14.4 13.8	1.5 1.0	139.	42.4	2	138.	63.8	-14.7 17.7	-0.	*MRC0209D	2. *MTN0223D	4. *MTN0288C 12
18	HVO0107D	-31.0	33	-1.5 12.2	1.4 1.1	29.	42.1	1	160.	64.1	-5.5 12.0	2.	*SEN0222D	7. *CTI0237D	7. *MTN0223D 9
19	ISL0049D	-31.0	33	-19.0 64.9	1.0 0.6	177.	46.5	2	89.	66.0	-13.5 65.1	9.	*HVO0107D	10. *CTI0237D	19. *MRC0209D 20
20	MRC0209D	-25.0	33	-9.0 29.2	2.7 1.4	43.	38.5	2	310.	63.4	-1.2 32.2	3.	*NGR0115C	4. *TUN0150D	15. *NMB0025C 20
21	BEL0018D	-19.0	33	4.6 50.6	0.8 0.6	167.	47.3	1	39.	63.2	6.4 50.3	-2.	*NMB0025C	3. *DDR0216D	4. *YUG0148D 5
22	NMB0025C	-19.0	33	17.5 -21.6	2.7 1.9	48.	37.2	2	580.	64.8	20.0 -28.4	-0.	*AFS0021D	-0. *BEL0018D	15. *NIG0119D 21
23	ISR0110C	-13.0	33	34.9 31.4	0.9 0.6	117.	46.7	2	53.	63.9	35.2 33.2	2.	*CYP0086D	3. *CAF0258C	13. *COG0235D 14
24	YUG0148D	-7.0	33	18.4 43.7	1.7 0.7	154.	43.8	1	144.	65.4	13.4 46.4	-2.	*DDR0216D	3. *MCO0116D	3. *HNG0106D 9
25	DDR0216D	-1.0	33	12.6 52.1	0.8 0.6	172.	47.1	2	54.	64.4	11.0 54.0	-3.	*NOR0121B	2. *BEL0018D	3. *S 0138C 3
26	AFS0021D	5.0	33	24.5 -28.0	3.1 1.7	27.	37.0	2	524.	64.2	20.0 -25.0	-1.	*NMB0025C	-0. *CYP0086D	16. *LSQ0305C 18
27	CYP0086D	5.0	33	33.3 35.1	0.6 0.6	0.	48.7	1	32.	63.7	34.5 35.7	-0.	*AFS0021D	4. *ISR0110C	5. *SYR0229D 8
28	KEN0249D	11.0	33	37.9 1.1	2.3 1.6	94.	38.7	1	329.	63.9	41.9 3.9	9.	*ETH0092D	13. *IRQ0256C	14. *SYR0229D 19
29	UAE0274D	17.0	33	53.6 24.2	1.0 0.8	162.	45.3	1	64.	63.3	54.9 22.4	5.	*OMA0123C	6. *KEN0249D	17. *AFI0099D 20
30	AFI0099D	23.0	33	42.5 11.6	0.6 0.6	0.	48.7	1	25.	62.7	41.9 10.8	-1.	*KEN0249D	2. *UKR0063B	6. *ETH0092D 6
31	UKR0063B	23.0	33	31.2 48.4	2.3 1.0	172.	40.8	2	246.	64.7	22.1 48.4	-0.	*YUG0148D	2. *MCO0116D	8. *ETH0092D 13
32	MNG0248C	74.0	33	102.2 46.6	3.6 1.1	169.	38.2	1	403.	64.2	98.8 51.9	1.	*URS0074C	4. *URS0075A	6. *URS0077C 16

Canal 34 - Channel 34 - Canal 34

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
18 MTN0223D	-37.0	34	-12.2	18.5	2.6 1.9	150.	37.3	1	364.	63.0	-5.2 15.3	0.	*CTI0237D	2.	*HVO0107D 7.	*NIG0119D 12
19 CTI0237D	-31.0	34	-5.6	7.5	1.6 1.2	108.	41.3	2	178.	63.9	-3.5 9.8	-1.	*NIG0119D	4.	*MTN0223D 4.	*HVO0107D 6
20 TUN0150D	-25.0	34	9.5	33.5	1.9 0.7	114.	42.9	1	128.	64.0	9.0 38.0	6.	*SUI01400	11.	*MRC0209D 13.	*GHA0108D 13
21 NIG0119D	-19.0	34	7.8	9.4	2.2 2.0	45.	37.9	1	417.	64.1	3.4 6.4	4.	*CTI0237D	8.	*GHA0108D 9.	*SUI0140D 11
22 SUI01400	-19.0	34	8.2	46.6	1.0 0.7	99.	45.9	2	69.	64.3	10.4 46.9	0.	*NIG0119D	5.	*TUN0150D 6.	*S 0138C 9
23 COG0235D	-13.0	34	14.6	-0.7	2.0 1.2	59.	40.5	2	222.	63.9	12.6 2.4	-1.	*NIG0119D	0.	*GNE0303D 5.	*AGL0295D 10
24 ALB0296D	-7.0	34	19.8	41.3	0.7 0.6	146.	48.1	2	38.	63.9	19.8 42.6	-2.	*HNG0106D	2.	*SDN0231D 5.	*YUG0149D 6
25 SDN0231D	-7.0	34	28.9	12.7	2.3 2.0	159.	37.8	1	386.	63.6	34.0 8.5	-2.	*ETH0092D	-0.	*SDN0230D 6.	*ALB0296D 13
26 HNG0106D	-1.0	34	19.5	47.2	0.9 0.6	176.	46.8	1	54.	64.1	16.1 46.8	-2.	*YUG0149D	4.	*YUG0148D 4.	*S 0138C 7
27 RHS0135D	-1.0	34	29.6	-18.8	1.5 1.4	37.	41.3	2	202.	64.3	31.2 -22.2	6.	*AFS0021D	7.	*HNG0106D 13.	*NMB0025C 19
28 S 0138C	5.0	34	16.2	61.0	1.0 1.0	14.	44.2	2	215.	67.5	13.3 55.3	4.	*DDR0216D	8.	*SUI0140D 8.	*ISL0050D 16
29 BDI0270D	11.0	34	29.9	-3.1	0.7 0.6	80.	48.0	2	36.	63.5	29.1 -2.7	3.	*TGK0225D	7.	*ETH0092D 9.	*SYR0229D 11
30 SYR0229D	11.0	34	38.3	34.9	1.0 0.9	7.	44.5	1	77.	63.4	35.9 35.7	2.	*CYP0086D	5.	*JOR0224D 10.	*TGK0225D 12
31 KWT0113D	17.0	34	47.6	29.2	0.7 0.6	145.	48.1	2	32.	63.2	46.3 28.3	1.	*ETH0092D	1.	*UAE0274D 15.	*BHR0255C 17
32 ETH0092D	23.0	34	39.7	9.1	3.5 2.5	124.	34.8	2	755.	63.6	39.2 17.5	2.	*SDN0231D	3.	*URS0059C 11.	*UKR0063B 14
33 REU0097D	29.0	34	55.6	-19.2	1.6 0.8	96.	43.4	1	118.	64.1	54.7 -15.7	16.	*ETH0092D	17.	*RHS0135D 29.	*URS0074C 30
34 URS0071A	44.0	34	63.1	42.0	2.6 0.8	170.	40.8	2	230.	64.4	73.1 40.8	9.	*URS0074C	9.	*URS0059C 22.	*URS0080C 25
35 URS0074C	74.0	34	88.8	57.6	3.1 1.7	162.	37.1	2	1241.	68.0	97.2 49.7	9.	*MNG0248C	9.	*URS0071A 22.	*URS0059C 27
36 URS0080C	140.0	34	155.3	55.4	2.9 2.4	35.	35.9	1	1624.	68.0	145.4 43.6	25.	*URS0074C	28.	*MNG0248C 28.	*URS0059C 89

Canal 35

- Channel 35

- Canal 35

- 48 -

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
20 CVA0083C	-37.0	35	12.4	41.8	0.6 0.6	0.	48.7	1	46.	65.3	12.5 43.8	-4.	*YUG0149D -1.	*E 0129D 2.	*URS0059C 4
21 CNR0130D	-31.0	35	-15.7	28.4	1.5 0.6	5.	44.6	2	69.	63.0	-13.5 29.2	-13.	*E 0129D-13.	*CTI0237D 13.	*SRL0259D 13
22 E 0129D	-31.0	35	-3.1	39.9	2.1 1.1	154.	40.5	2	231.	64.1	-2.9 35.3	-8.	*CNR0130D -8.	*CTI0237D 13.	*SRL0259D 13
23 SRL0259D	-31.0	35	-11.8	8.6	0.8 0.7	114.	47.0	1	46.	63.6	-10.5 8.5	2.	*E 0129D 7.	*CTI0237D 8.	*GHA0108D 9
24 GHA0108D	-25.0	35	-1.2	7.9	1.5 1.1	102.	42.3	1	141.	63.8	0.1 11.0	3.	*NGR0115D 7.	*NIG0119D 8.	*TUN0150D 12
25 GNE0303D	-19.0	35	10.3	1.5	0.7 0.6	10.	48.1	2	38.	63.9	11.3 2.4	0.	*AGL0295D 4.	*COG0235D 8.	*NIG0119D 9
26 HOL0213D	-19.0	35	5.4	52.0	0.8 0.6	171.	47.7	1	50.	64.6	6.2 50.6	-1.	*URS0059C 3.	*E 0129D 5.	*YUG0149D 7
27 AGL0295D	-13.0	35	16.5	-12.0	3.1 2.3	84.	35.8	1	707.	64.3	12.5 -6.5	7.	*COG0235D 9.	*CAF0258D 15.	*SDN0230D 24
28 SDN0230D	-7.0	35	29.2	7.5	2.3 1.1	148.	40.1	2	282.	64.6	23.0 11.0	1.	*CAF0258D 6.	*SDN0231D 7.	*YUG0149D 9
29 YUG0149D	-7.0	35	18.4	43.7	1.7 0.7	154.	43.8	1	145.	65.4	20.1 46.3	-4.	*URS0059C 1.	*CVA0083C 2.	*HNG0106D 5
30 ISL0050D	5.0	35	-15.8	64.2	1.6 0.6	177.	44.4	1	161.	66.5	-6.2 62.3	4.	*URS0059C 5.	*DNK0090B 11.	*S 0138C 15
31 JOR0224D	11.0	35	35.8	31.4	0.8 0.8	114.	46.1	2	52.	63.2	35.0 34.0	-2.	*TGK0225D 1.	*URS0059C 3.	*SYR0229D 5
32 TGK0225D	11.0	35	34.6	-6.2	2.4 1.7	129.	38.1	1	380.	63.9	30.5 -1.0	3.	*BDI0270D 7.	*AGL0295D 10.	*SDN0230D 10
33 BHR0255C	17.0	35	50.5	26.1	0.6 0.6	0.	48.7	1	17.	61.0	52.3 24.4	-2.	*OMA0123D 0.	*IRQ0256D 7.	*KWT0113D 8
34 URS0059C	23.0	35	33.5	48.5	5.6 1.4	165.	35.2	2	1010.	65.3	22.0 48.4	2.	*YUG0149D 4.	*CVA0083C 9.	*ETH0092D 15

Canal 36

- Channel 36

- Canal 36

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
16 MTN0288D	-37.0	36	-7.8	23.4	1.6 1.1	141.	41.7	1	139.	63.1	-5.6 20.0	3.	*NGR0115D 5.	*SEN0222E 14.	*CVA0083C 14
17 NGR0115D	-25.0	36	8.3	16.8	2.5 2.1	44.	37.0	2	580.	64.7	13.0 13.0	4.	*CAF0258D 6.	*MRC0209E 13.	*SDN0232D 14
18 I 0082D	-19.0	36	12.3	41.3	2.4 1.0	137.	40.6	2	236.	64.3	12.6 35.4	3.	*NGR0115D 4.	*NMB0025D 15.	*CAF0258D 18
19 CAF0258D	-13.0	36	21.0	6.3	2.3 1.7	31.	38.5	2	393.	64.4	23.2 11.0	1.	*SDN0232D 5.	*NGR0115D 6.	*SDN0230D 6
20 SDN0232D	-7.0	36	30.4	19.0	2.4 1.5	176.	38.6	1	306.	63.4	24.0 15.8	-0.	*CAF0258D 3.	*NGR0115D 5.	*SDN0230D 11.
21 MWI0308D	-1.0	36	34.1	-13.0	1.5 0.6	87.	44.6	2	96.	64.4	35.2 -17.2	10.	*AFS0021E 12.	*TGK0225D 21.	*AGL0295D 22.
22 DNK0090B	5.0	36	17.0	61.5	2.0 1.0	10.	41.2	2	491.	68.2	12.0 54.6	4.	*DDR0216E 8.	*I 0082D 8.	*ISL0050D 16.
23 LSO0305D	5.0	36	27.8	-29.8	0.7 0.6	36.	48.3	1	40.	64.3	29.5 -29.4	1.	*DNK0090B 3.	*AFS0021E 5.	*NMB0025D 19.

Canal 36 suite - Channel 36 cont. - Canal 36 cont.

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
24	IRQ0256D	11.0	36	43.6	32.8	1.9	1.0	143.	41.7	1	151.	63.5	44.0	37.3	-0. *URS0066E 1. *KEN0249E 11. *TGK0225D 12.
25	OMA0123D	17.0	36	55.6	21.0	1.9	1.0	100.	41.4	2	159.	63.4	56.0	26.5	1. *URS0066E 6. *UAE0274E 7. *IRQ0256D 7.
26	MYT0098D	29.0	36	45.1	-12.8	0.6	0.6	0.	48.7	1	31.	63.6	45.0	-12.8	19. *TGK0225D 24. *URS0066E 29. *OMA0123D 29.
27	URS0066E	44.0	36	64.3	44.6	4.6	2.5	169.	33.7	2	1541.	65.6	53.9	37.3	8. *IRQ0256D 9. *NGR0115D 17. *URS0059C 21.
28	URS0077D	110.0	36	112.7	57.3	2.7	1.8	2.	37.6	2	947.	67.3	125.0	55.0	1. *URS0079E 1. *MNG0248D 23. *CVA0083C 89.
29	URS0079E	140.0	36	138.0	53.6	3.2	2.1	62.	36.0	2	1574.	68.0	128.4	73.2	2. *URS0077D 2. *MNG0248D 35. *CVA0083C 89.

Canal 37 - Channel 37 - Canal 37

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
15	MCO0116E	-37.0	37	7.4	43.7	0.6	0.6	0.	48.7	1	25.	62.6	5.6	46.0	-8. *BEL0018E -3. *MRC0209E -2. *YUG0148E 1.
16	SEN0222E	-37.0	37	-14.4	13.8	1.5	1.0	139.	42.4	2	140.	63.9	-14.7	17.7	-0. *MRC0209E 2. *MTN0223E 4. *MTN0288D 12.
17	HVD0107E	-31.0	37	-1.5	12.2	1.4	1.1	29.	42.1	1	162.	64.2	-5.5	12.0	2. *SEN0222E 7. *CTI0237E 7. *MTN0223E 9.
18	ISL0049E	-31.0	37	-19.0	64.9	1.0	0.6	177.	46.5	2	90.	66.0	-13.5	65.1	9. *HVD0107E 10. *CTIG237E 19. *MRC0209E 20.
19	MRC0209E	-25.0	37	-9.0	29.2	2.7	1.4	43.	38.5	2	314.	63.5	-1.2	32.2	2. *NGR0115D 4. *TUN0272A 7. *TUN0150E 15.
20	BEL0018E	-19.0	37	4.6	50.6	0.8	0.6	167.	47.3	1	39.	63.2	6.4	50.3	-2. *NMB0025D 3. *DDR0216E 4. *YUG0148E 5.
21	NMB0025D	-19.0	37	17.5	-21.6	2.7	1.9	48.	37.2	2	587.	64.9	20.0	-28.4	-0. *AFS0021E -0. *BEL0018E 15. *NIG0119E 21.
22	ISR0110D	-13.0	37	34.9	31.4	0.9	0.6	117.	46.7	2	53.	64.0	35.2	33.2	2. *CYP0086E 3. *CAF0258D 13. *COG0235E 14.
23	YUG0148E	-7.0	37	18.4	43.7	1.7	0.7	154.	43.8	1	146.	65.4	13.4	46.4	-2. *DDR0216E 3. *MCO0116E 3. *HNG0106E 9.
24	DDR0216E	-1.0	37	12.6	52.1	0.8	0.6	172.	47.1	2	55.	64.4	11.0	54.0	-3. *DNK0090B 2. *BEL0018E 3. *NOR0120C 6.
25	AFS0021E	5.0	37	24.5	-28.0	3.1	1.7	27.	37.0	2	531.	64.3	20.0	-25.0	-1. *NMB0025D -0. *CYP0086E 16. *LSO0305D 18.
26	CYP0086E	5.0	37	33.3	35.1	0.6	0.6	0.	48.7	1	32.	63.8	34.5	35.7	-0. *AFS0021E 4. *ISR0110D 5. *SYR0339A 8.
27	KEN0249E	11.0	37	37.9	1.1	2.3	1.6	94.	38.7	1	333.	63.9	34.0	4.2	9. *SYR0339A 14. *ETH0092E 15. *IRQ0256D 15.
28	UAE0274E	17.0	37	53.6	24.2	1.0	0.8	162.	45.3	1	64.	63.4	54.9	22.4	5. *OMA0123D 6. *KEN0249E 17. *AFI0099E 20.
29	AFI0099E	23.0	37	42.5	11.6	0.6	0.6	0.	48.7	1	25.	62.7	41.9	10.8	-1. *KEN0249E 2. *UKR0063C 6. *ETH0092E 6.
30	UKR0063C	23.0	37	31.2	48.4	2.3	1.0	172.	40.8	2	249.	64.7	22.1	48.4	-0. *YUG0148E 2. *MCO0116E 8. *ETH0092E 13.
31	MNG0248D	74.0	37	102.2	46.6	3.6	1.1	169.	38.2	1	409.	64.3	87.9	48.9	3. *URS0074D 3. *URS0066E 17. *URS0077D 24.

Canal 38

- Channel 38

- Canal 38

- 50 -

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14	
18 MTN0223E	-37.0	38	-12.2	18.5	2.6 1.9	150.	37.3	1	369.	63.0	-5.2 15.3	0.	*CTI0237E	2.	*HVG00107E 7.	*NIG0119E 12
19 CTI0237E	-31.0	38	-5.6	7.5	1.6 1.2	108.	41.3	2	180.	63.9	-3.5 9.8	-1.	*NIG0119E	4.	*MTN0223E 4.	*HVG00107E 6
20																
21 TUN0272A	-25.0	38	2.5	32.0	3.6 1.8	175.	36.3	1	367.	61.9	-10.0 30.0	-1.	*MTN0223E	2.	*MRC0209E 4.	*GHA0108E 10
22 NIG0119E	-19.0	38	7.8	9.4	2.2 2.0	45.	37.9	1	422.	64.1	3.4 6.4	4.	*CTI0237E	8.	*GHA0108E 10.	*SUI0140E 11
23 SUI0140E	-19.0	38	8.2	46.6	1.0 0.7	99.	45.9	2	69.	64.3	10.4 46.9	-0.	*NIG0119E	5.	*TUN0150E 6.	*TUN0272A 9
24 COG0235E	-13.0	38	14.6	-0.7	2.0 1.2	59.	40.5	2	225.	64.0	12.6 2.4	-1.	*NIG0119E	0.	*GNE0303E 5.	*AGL0295E 10
25 ALB0296E	-7.0	38	19.8	41.3	0.7 0.6	146.	48.1	2	39.	64.0	19.8 42.6	-2.	*HNG0106E	2.	*SDN0231E 5.	*YUG0149E 6
26 SDN0231E	-7.0	38	28.9	12.7	2.3 2.0	159.	37.8	1	390.	63.7	34.0 8.5	-2.	*ETH0092E	-0.	*SDN0230E 6.	*ALB0296E 13
27 HNG0106E	-1.0	38	19.5	47.2	0.9 0.6	176.	46.8	1	55.	64.2	16.1 46.8	-2.	*YUG0149E	4.	*YUG0148E 4.	*RHS0135E 7
28 RHS0135E	-1.0	38	29.6	-18.8	1.5 1.4	37.	41.3	2	205.	64.4	31.2 -22.2	6.	*AFS0021E	7.	*HNG0106E 13.	*NMB0025D 19
29 NOR0120C	5.0	38	13.1	64.1	1.8 0.9	10.	42.2	2	304.	67.0	11.6 59.0	9.	*DDR0216E	13.	*ISL0050E 16.	*SUI0140E 18
30 BDI0270E	11.0	38	29.9	-3.1	0.7 0.6	80.	48.0	2	36.	63.6	29.1 -2.7	3.	*TGK0225E	7.	*SYR0339A 9.	*ETH0092E 10
31 SYR0339A	11.0	38	37.6	34.2	1.3 0.9	74.	43.6	1	96.	63.4	36.0 36.0	0.	*CYP0086E	5.	*TUN0272A 7.	*JOR0224E 10
32 KWT0113E	17.0	38	47.6	29.2	0.7 0.6	145.	48.1	2	33.	63.3	46.3 28.3	0.	*ETH0092E	1.	*TUN0272A 15.	*UAE0274E 15
33 ETH0092E	23.0	38	39.7	9.1	3.5 2.5	124.	34.8	2	764.	63.7	39.2 17.5	2.	*SDN0231E	3.	*URS0059D 11.	*UKR0063C 14
34 REU0097E	29.0	38	55.6	-19.2	1.6 0.8	96.	43.4	1	119.	64.2	54.7 -15.7	16.	*ETH0092E	17.	*RHS0135E 29.	*URS0074D 30
35 URS0071B	44.0	38	63.1	42.0	2.6 0.8	170.	40.8	2	233.	64.5	73.1 40.8	9.	*URS0074D	9.	*URS0059D 22.	*URS0080D 25
36 URS0074D	74.0	38	88.8	57.6	3.1 1.7	162.	37.1	2	1256.	68.1	97.2 49.7	6.	*MNG0248E	9.	*MNG0248D 9.	*URS0071B 22
37 URS0080D	140.0	38	155.3	55.4	2.9 2.4	35.	35.9	1	1644.	68.1	145.4 43.6	23.	*URS0074D	28.	*MNG0248E 28.	*MNG02480 28

Canal 39 - Channel 39 - Canal 39

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
21 CVA0083D	-37.0	39	12.4	41.8	0.6 0.6	0.	48.7	1	47.	65.4	12.5 43.8	-4. *	*YUG0149E	-1. *E 0129E	2. *URS0059D 4
22 CNR0130E	-31.0	39	-15.7	28.4	1.5 0.6	5.	44.6	2	69.	63.0	-13.5 29.2	-13. *	*E 0129E	-13. *CTI0237E	13. *SRL0259E 13
23 E 0129E	-31.0	39	-3.1	39.9	2.1 1.1	154.	40.5	2	234.	64.2	-2.9 35.3	-8. *	*CNR0130E	-8. *CTI0237E	13. *SRL0259E 13
24 SRL0259E	-31.0	39	-11.8	8.6	0.8 0.7	114.	47.0	1	46.	63.7	-10.5 8.5	2. *	*E 0129E	7. *CTI0237E	8. *GHA0108E 9
25 GHA0108E	-25.0	39	-1.2	7.9	1.5 1.1	102.	42.3	1	143.	63.8	0.1 11.0	3. *	*NGR0115E	7. *NIG0119E	8. *TUN0150E 12
26 GNE0303E	-19.0	39	10.3	1.5	0.7 0.6	10.	48.1	2	38.	64.0	11.3 2.4	0. *	*AGL0295E	4. *COG0235E	8. *NIG0119E 9
27 HOL0213E	-19.0	39	5.4	52.0	0.8 0.6	171.	47.7	1	50.	64.7	6.2 50.6	-1. *	*URS0059D	3. *E 0129E	5. *YUG0149E 7
28 AGL0295E	-13.0	39	16.5	-12.0	3.1 2.3	84.	35.8	1	716.	64.4	12.5 -6.5	7. *	*COG0235E	9. *CAF0258E	15. *SDN0230E 24
29 SDN0230E	-7.0	39	29.2	7.5	2.3 1.1	148.	40.1	2	286.	64.6	23.0 11.0	1. *	*CAF0258E	6. *SDN0231E	7. *YUG0149E 9
30 YUG0149E	-7.0	39	18.4	43.7	1.7 0.7	154.	43.8	1	147.	65.5	20.1 46.3	-4. *	*URS0059D	1. *CVA0083D	2. *HNG0106E 5
31 ISL0050E	5.0	39	-15.8	64.2	1.6 0.6	177.	44.4	1	163.	66.6	-6.2 62.3	3. *	*URS0059D	5. *NGR0120C	11. *S 0139B 11
32 JDR0224E	11.0	39	35.8	31.4	0.8 0.8	114.	46.1	2	52.	63.3	35.0 34.0	-2. *	*TGK0225E	1. *URS0059D	3. *SYR0339A 5
33 TGK0225E	11.0	39	34.6	-6.2	2.4 1.7	129.	38.1	1	385.	63.9	30.5 -1.0	3. *	*BDI0270E	7. *AGL0295E	10. *SDN0230E 10
34 BHR0255D	17.0	39	50.5	26.1	0.6 0.6	0.	48.7	1	17.	61.0	52.3 24.4	-2. *	*OMA0123E	0. *IRQ0256E	7. *KWT0113E 8
35 URS0059D	23.0	39	33.5	48.5	5.6 1.4	165.	35.2	2	1023.	65.3	22.0 48.4	2. *	*YUG0149E	4. *CVA0083D	9. *ETH0092E 15
36 MNG0248E	74.0	39	102.2	46.6	3.6 1.1	169.	38.2	1	411.	64.3	87.9 48.9	2. *	*URS0074D	3. *URS0059D	7. *URS0066F 17

	1	2	3	4	5	6	7	8	9a	9b	10	11	12	13	14
17 MTN0288E	-37.0	40	-7.8	23.4	1.6 1.1	141.	41.7	1	141.	63.2	-5.6 20.0	4. *NGR0115E	5. *CVA0083D	14. *URS0066F	25
18 NGR0115E	-25.0	40	8.3	16.8	2.5 2.1	44.	37.0	2	587.	64.7	13.0 13.0	5. *CAF0258E	6. *SDN0232E	14. *I 0082E	18
19 I 0082E	-19.0	40	12.3	41.3	2.4 1.0	137.	40.6	2	238.	64.3	12.6 35.4	4. *NGR0115E	4. *CAF0258E	18. *E 0129E	22
20 CAF0258E	-13.0	40	21.0	6.3	2.3 1.7	31.	38.5	2	398.	64.5	23.2 11.0	1. *SDN0232E	5. *NGR0115E	6. *SDN0230E	6
21 SDN0232E	-7.0	40	30.4	19.0	2.4 1.5	176.	38.6	1	310.	63.5	24.0 15.8	-0. *CAF0258E	3. *NGR0115E	5. *SDN0230E	11
22 MWI0308E	-1.0	40	34.1	-13.0	1.5 0.6	87.	44.6	2	97.	64.5	32.8 -9.3	11. *TGK0225E	13. *AGL0295E	21. *CAF0258E	24
23 LSD0305E	5.0	40	27.8	-29.8	0.7 0.6	36.	48.3	1	41.	64.4	29.5 -29.4	3. *S 0139B	3. *ISL0050E	24. *MWI0308E	24
24 S 0139B	5.0	40	17.0	61.5	2.0 1.0	10.	41.2	2	497.	68.2	15.1 55.0	6. *I 0082E	8. *URS0066F	15. *ISL0050E	17
25 IRQ0256E	11.0	40	43.6	32.8	1.9 1.0	143.	41.7	1	153.	63.5	44.0 37.3	0. *URS0066F	1. *TGK0225E	12. *JOR0224E	14
26 OMA0123E	17.0	40	55.6	21.0	1.9 1.0	100.	41.4	2	161.	63.5	56.0 26.5	2. *URS0066F	6. *IRQ0256E	7. *SDN0232E	9
27 MYT0098E	29.0	40	45.1	-12.8	0.6 0.6	0.	48.7	1	31.	63.6	45.0 -12.8	19. *TGK0225E	24. *URS0066F	29. *OMA0123E	29
28 URS0066F	44.0	40	64.3	44.6	4.6 2.5	169.	33.7	2	1560.	65.6	53.9 37.3	8. *IRQ0256E	9. *NGR0115E	17. *URS0059D	21
29 URS0077E	110.0	40	112.7	57.3	2.7 1.8	2.	37.6	2	958.	67.4	125.0 55.0	1. *URS0079F	1. *MNG0248E	23. *CVA0083D	89
30 URS0079F	140.0	40	138.0	53.6	3.2 2.1	62.	36.0	2	1593.	68.0	128.4 73.2	2. *URS0077E	2. *MNG0248E	35. *CVA0083D	89

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 266(Rev.1)-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Byelorussian Soviet Socialist Republic, People's Republic of Bulgaria, Hungarian People's Republic, Mongolian People's Republic, People's Republic of Poland, German Democratic Republic, Ukrainian Soviet Socialist Republic, Czechoslovak Socialist Republic, Union of Soviet Socialist Republics

In connection with a number of statements issued at this Conference concerning the questions of the use of the geostationary orbit, the above delegations deem it necessary to declare that the decisions of this Conference regarding the assignment of positions on the geostationary orbit for broadcasting satellites are fully in conformity with the generally recognized principles and rules of international law, including the International Telecommunication Convention, 1973, the relevant provisions of the Radio Regulations and other instruments of international law regulating questions of space communications.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 266-E

9 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Byelorussian Soviet Socialist Republic, Union of Soviet Socialist Republics, Ukrainian Soviet Socialist Republic, Czechoslovak Socialist Republic, Hungarian People's Republic, German Democratic Republic, People's Republic of Bulgaria, People's Republic of Poland and Mongolian People's Republic

Inasmuch as a number of statements have been issued at the Conference on questions relating to the use of the geostationary orbit, the above delegations deem it necessary to declare that the decisions of this Conference on the assignment of positions on the geostationary orbit for communication satellites are fully in conformity with the generally recognized principles and rules of international law, including the International Telecommunication Convention, 1973, the relevant provisions of the Radio Regulations and other instruments of international law regulating questions of outer space.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 267-E
8 February 1977
Original : English

COMMITTEE 4

SUMMARY RECORD
OF THE
EIGHTH MEETING OF COMMITTEE 4
(TECHNICAL)

Friday, 28 January 1977, at 1000 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

Subjects discussed :

Document No.

1. Approval of documents 157(Rev.1), 111(Rev.2)
2. Establishment of a joint working group

1. Approval of documents (Documents Nos. 157(Rev.1), 111(Rev.2))

Document No. 157(Rev.1)

The Chairman of Working Group 4A read out the changes in the document agreed upon by the Group at its last meeting. The title should be amended to read "Relation between the antenna beamwidth and the feasible output power from a satellite"; in the second paragraph, the words "is assumed to" should be replaced by "in the near future will"; in note 1), the words "elliptical trace on the surface of the Earth defined by the contour -103 dBW/m^2 " should be replaced by "cross section of the beam" and the word "radius" in the last line by "diameter"; and a sentence should be added to the last paragraph, reading "In this case the values for the maximum beam area will be increased fourfold."

After a brief discussion, the delegate of France agreed that the French version of the second heading in the table should be aligned on the English and should read "Section droite du faisceau maximale".

Document No. 157(Rev.1), as amended, was approved.



The Chairman, noting that Working Group 4A had completed its work, thanked all concerned for their valuable contributions.

Document No. 111(Rev.2)

The Chairman observed that the document had been almost entirely approved at the preceding meeting, with the exception of points relating to the third and sixth lines of the table on page 1.

The delegate of France said that, after discussions with the Canadian delegation concerning the total acceptable protection requirements in the third line, his delegation understood the anxiety of Region 2 countries to obtain very high quality television transmission and could accept the figure of 32 dB.

The Chairman of Working Group 4B said that a small drafting group composed of delegates of India, China and the USSR had decided that the value given in the last column of the sixth line of the table should be changed to "-125 dBW/m²/4 kHz" and that note 6) should be supplemented by two additional points, either incorporated in note 6) or forming separate notes, reading as follows : "For considering polarization discrimination advantage, see Document No. 91, Annex 1. This value may be suitably modified for tropical regions, taking into account the rain attenuation."

With regard to the figure on page 3, it had been decided to limit the protection ratio values to 30 dB instead of 50 dB for two reasons : in the first place, the data for curves B and C only extended to the value of -30 dB and, secondly, the information given in curve A might not be valid for relative protection ratio values below -30 dB. The 20 MHz extension of curve A would therefore be omitted.

Document No. 111(Rev.2), as amended, was approved.

In reply to the delegate of the United Kingdom, the Chairman of Working Group 4B said that, in his opinion, the documents examined should be re-issued in their amended form, but should be forwarded to Committee 5 or to the Plenary meeting without reconsideration in Committee 4.

It was so agreed.

2. Establishment of a joint working group

The Chairman said that the result of his consultation with the Chairman of Committee 5 concerning the possibility of setting up a joint working group on interregional sharing criteria was to recommend close cooperation on the subject between the Chairmen of Working Groups 4B and 5C.

The Chairman of Working Group 4B said that, although he would of course follow that recommendation, the purpose of the USSR proposal in Sub-Working Group 4B2 had been to coordinate work in that area and to avoid duplicate discussions which might lead to different conclusions.

The meeting rose at 1035 hours.

The Secretaries :

J. RUTKOWSKI
M. AHMAD

The Chairman

F. KRALIK

PLENARY MEETING

B.12

12th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.5	204(Rev.1)	Provisions governing the broadcasting-satellite service in Region 2 pending the establishment of a detailed Plan
	226	Recommendation No. HH Resolution G and H
	DT/47	Headings of the Plan columns

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 12 pages



PROVISIONS GOVERNING THE BROADCASTING-SATELLITE SERVICE
IN REGION 2 PENDING THE ESTABLISHMENT OF A DETAILED PLAN

In accordance with the principles set forth in Annex A, the following interim provisions shall apply pending the establishment of a detailed plan for the broadcasting-satellite service for Region 2 in the frequency band 11.7 - 12.2 GHz under the terms of paragraphs 8 - 11 below.

1. Space stations in the broadcasting-satellite service shall be located in the following portions of the orbit :

- 75°W to 100°W longitude; (however, for service to Canada, the USA and Mexico, the relevant portion shall be only between 75°W and 95°W longitude);
- 140°W to 170°W longitude.

1.1 Space stations in the broadcasting-satellite service may also be located in the remaining portions of the orbit, in which case they shall be operated in accordance with the provisions of No. 139 of the Radio Regulations. As an exception, it is accepted that, for Greenland, a position in the geostationary satellite orbit between 55°W and 60°W may be used for the broadcasting-satellite service as a primary service. The administrations concerned should make every effort to allow for the sharing of this portion of the orbital arc by a broadcasting satellite for Greenland and space stations in the fixed-satellite service of other administrations in Region 2.

2. Space stations in the fixed-satellite service shall be located in portions of the orbit other than those referred to in paragraph 1 above. Such space stations may also be located in the portions of the orbit referred to in paragraph 1 above; they shall then be operated in accordance with the provisions of No. 139 of the Radio Regulations.

2.1 Space stations in the broadcasting-satellite service located in the portions of the orbit referred to in paragraph 1 and space stations in the fixed-satellite service located in the remaining portions of the orbit shall be operated in such a way that no unacceptable interference is caused by stations of one service to stations of other services. The level of unacceptable interference shall be determined by agreement between the administrations concerned, taking the latest CCIR Recommendations and Appendix ... of the Final Acts as a guide. Notwithstanding the above, broadcasting-satellite space stations may be located up to the edge of the portion of the orbit referred to in paragraph 1, provided that such stations are operated in accordance with the relevant technical characteristics for Region 2 outlined in Appendix ... of the Final Acts.

3. Prior to the Regional Administrative Radio Conference, referred to in paragraph 8 below, systems in the broadcasting-satellite service shall be regarded as experimental and shall be operated in accordance with the sharing criteria and technical characteristics contained in Appendix ... of the Final Acts.

4. Administrations may implement systems which utilize values for the technical characteristics different from the values in / Appendix ... of the Final Acts /, provided that such action does not result in interference to operational or planned systems of other administrations in excess of that determined in accordance with Appendix / ... of the Final Acts /.
5. Systems in the fixed-satellite service shall be introduced in accordance with the relevant provisions of the Radio Regulations and particularly with those of Article 9A. /
6. Space systems in the frequency band 11.7 - 12.2 GHz shall use, to the maximum extent technically and economically practicable, available techniques in order to make the most efficient use of the geostationary orbit and the frequency spectrum. Examples of such techniques are described in / Annex B /.
7. The provisions of Spa2 - 3 shall continue to apply to the broadcasting-satellite service in the frequency band 11.7 - 12.2 GHz in Region 2 until such time as a detailed plan may be adopted for the broadcasting-satellite service.
8. A Regional Administrative Radio Conference is to be held not later than 1982 for the purpose of carrying out detailed planning for the broadcasting-satellite and fixed-satellite services, in accordance with the following terms.
- 8.1 The said Regional Administrative Radio Conference shall draw up a detailed plan for the orbit/spectrum resource available for the broadcasting-satellite service in the 11.7 - 12.2 GHz band. The plan shall provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the broadcasting-satellite service requirements submitted by the various administrations are met in an equitable manner satisfactory to all the countries concerned. It should be laid down as a matter of principle that each administration in the Region should be guaranteed a minimum number of channels (4) for the operation of the broadcasting-satellite service. Above this minimum, the special characteristics of the countries (size, time zones, language differences, etc.) shall be taken into account.
- 8.2 Planning shall be based on individual reception, but each administration may use the reception system which best meets its requirements, namely, individual or community reception, or both. Account shall also be taken of the decisions of the 1977 and 1979 World Administrative Radio Conferences and of the latest CCIR Recommendations in the case of parameters covered by its studies and research.
- 8.3 When planning the broadcasting-satellite service, it shall be borne in mind that systems should be designed with a view to reducing to a minimum technical differences and incompatibilities with the systems of other Regions.
- 8.4 The Conference shall also take into account the need to make equitable provision for the requirements of the fixed-satellite service to which this frequency band is also allocated in Region 2.

9. All administrations in Region 2 shall submit their broadcasting-satellite service requirements to the IFRB not later than one year before the start of the Regional Administrative Radio Conference responsible for planning this service in Region 2. Each administration may update these requirements as it considers necessary. "Requirements" are understood to include the number and boundaries of service areas and the number of channels requested for each of them. Six months before the deadline for submitting requirements, the IFRB shall remind administrations of the need to submit them by means of a circular-letter and/or telegram.

10. No systems existing or planned prior to the implementation of any detailed plan such as that referred to above shall cause interference to any systems operating in accordance with such a plan.

11. Existing or previously planned broadcasting-satellite systems will not necessarily be taken into account in the establishment of the detailed plan for the broadcasting-satellite service in the 11.7 - 12.2 GHz band in Region 2. Consequently, the installation or planning of such systems by an administration prior to the establishment of the said plan shall not confer upon that system any rights or recognition.

/ Annex A /Planning principles in Region 2

The following principles have been applied in drawing up the provisions governing the introduction of space services in the frequency band 11.7 - 12.2 GHz in Region 2 :

1. Equality for allocated services in Region 2

Under Article 5 of the Radio Regulations, the 11.7 - 12.2 GHz band is allocated to broadcasting-satellite, fixed-satellite and terrestrial services on an equal, primary basis. Each administration in Region 2 has the right to decide for itself which of these services are to be implemented within its own territory.

2. Equal rights for services in the various Regions

In accordance with No. 117 of the Radio Regulations, the principle of equal rights for different services in the same category to operate in all the Regions is recognized, provided that no harmful interference is caused to services in the other Regions.

3. Recognition of national requirements

All administrations in Region 2 shall take into consideration the national requirements which have been presented or will be presented in the future.

4. Equitable rights of access to the geostationary orbit spectrum resource

Subject to the provisions of the Convention, the Radio Regulations and the Resolutions in force, it is recognized that all administrations have the right of access to the geostationary orbit spectrum resource in order to fulfil their requirements.

5. Flexible planning approach*)

The Plan adopted for Region 2 must be sufficiently flexible to allow for future technical developments, the identification of future requirements, changes in existing or stated requirements, requirements by administrations not represented at the Conference, further information on propagation data and various system design approaches. The Plan may be modified only by a competent Administrative Radio Conference.

*) Paragraph 5 does not imply recognition of systems existing prior to the implementation of the Plan

6. Efficient use of the geostationary orbit and the spectrum

The Plan for Region 2 shall use, to the maximum extent technically and economically practicable, the techniques available so as to make the most efficient use of the geostationary orbit and the frequency spectrum to fulfil the requirements both of the Region as a whole and of the individual administrations.

7. Consultations among administrations

Administrations planning to bring into operation systems in the 11.7 - 12.2 GHz band, shall consult all the other administrations affected or concerned.

8. Reception

The Plan for Region 2 shall have as a basis individual reception, although each administration may choose the reception system that it finds most suited to its requirements, namely, individual or community reception, or both.

/ Annex B /

Use of the spectrum/orbit resource

Since the equal sharing of the spectrum/orbit resource between the broadcasting-satellite service and the fixed-satellite service in Region 2 is inherently difficult and may impose some restrictions on both services, it is important that the technical parameters be chosen, and the techniques for efficient use of the spectrum/orbit resource be applied in such a way that both space services will benefit as much as possible.

The following techniques are among those identified as leading to a more efficient use of the spectrum/orbit resource and should therefore be applied to the maximum extent technically and economically practicable consistent with the capability of systems to fulfil the requirements for which they were designed.

1. Clustering

Extensive analyses have shown that orbit utilization is improved when satellites are grouped according to the sensitivity to interference and the potential for generating interference of the system of which they are a part. In most cases, this means that space stations of similar characteristics should be grouped in the same part of the orbit.

2. Cross-polarization

The proper use of cross-polarization can significantly improve the use of the spectrum/orbit resource by providing additional isolation between potentially interfering systems.

3. Crossed-beam geometry

The principle of crossed-beam geometry is that adjacent satellites should not serve adjacent service areas. In that way, discrimination from both the satellite and the earth station antennae can be used to achieve maximum isolation between systems.

4. Paired service areas

The principle of crossed-beam geometry can be extended : if service areas are far enough apart, then the satellite antenna discrimination alone may be sufficient to permit satellites serving these widely separated service areas to be co-located in the orbit, leading to practical doubling of the orbit capacity.

5. Frequency interleaving

The mutual interference between channels in different systems is usually a maximum when the two carrier frequencies coincide. When channelling design is such that frequencies are interleaved, or, more generally, such that coincidence of carrier frequencies is avoided, mutual interference can in many cases be greatly reduced.

6. Minimum space station spacings

It is obvious that, for maximum orbit utilization, space stations should be placed as close to each other as is consistent with keeping the mutual interference to acceptable levels.

7. Space station antenna discrimination

The discrimination in the sidelobes of the space station antenna determines how much isolation exists between beams serving non-overlapping or non-adjacent service areas. To achieve maximum isolation, every effort should be made to improve the discrimination by technological advances in antenna design.

8. Earth station antenna discrimination

The sidelobe discrimination of the earth station antenna determines how much isolation is obtained from satellite spacing. To achieve maximum isolation, every effort should be made to improve the discrimination by taking advantage of technological advances in antenna design.

9. Minimizing e.i.r.p. differences

The interference caused by relatively high-power space stations (space stations in the broadcasting-satellite service or certain types of space stations in the fixed-satellite service) to the earth station receivers of relatively low-power satellite systems is directly proportional to the difference between their e.i.r.p. Sharing among such systems is greatly facilitated if this difference is kept as small as is consistent with the requirements.

10. Realistic quality and reliability objectives

The quality and reliability objectives have a significant effect on the use of the spectrum/orbit resource. If the objectives are set unnecessarily high, the capacity of the orbit is reduced. Quality and reliability objectives should be set no higher than are absolutely necessary.

RECOMMENDATION No. HH

Relating to the convening of a Regional Administrative Radio Conference
for the detailed planning of the space services in the
frequency band 11.7 - 12.2 GHz in Region 2

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

noting

a) that the detailed requirements of all administrations in
Region 2 for the broadcasting-satellite service in the frequency band
11.7 - 12.2 GHz are not yet known;

b) that, in view of the large demands expected for the other services
with which this band is shared, there is a need to ensure that this frequency
band and the geostationary orbit are used as efficiently as possible;

c) that a future Regional Administrative Radio Conference for the
detailed planning of space services in the frequency band 11.7 - 12.2 GHz would
be able to take advantage of experiments now being carried out, of further
technological advances, and of additional studies by the CCIR;

considering

the provisions adopted by this Conference to govern the implementation of
space services in the frequency band, 11.7 - 12.2 GHz pending the establishment
of a detailed plan for Region 2;

recommends

1. that a Regional Administrative Radio Conference be held not
later than 1982 for the purpose of carrying out detailed planning for the
broadcasting-satellite and fixed-satellite services in Region 2, in accordance
with b), c), d) and e) below;

2. that the said Regional Administrative Radio Conference draw up
a detailed plan for the orbit/spectrum resource available for the broadcasting-
satellite services in the 11.7 - 12.2 GHz band. The plan shall provide for the
detailed assignment of the orbital positions and frequency channels available,
ensuring that the broadcasting-satellite service requirements submitted by the
various administrations are met in an equitable manner satisfactory to all the
countries concerned. It should be laid down as a matter of principle that each
administration in the Region should be guaranteed a minimum number of channels
(4) for the operation of the broadcasting-satellite service. Above this minimum,
the special characteristics of the countries (size, time zones, language
differences, etc.) shall be taken into account;

3. that planning be based on individual reception, but each administration may use the reception system which best meets its requirements, namely, individual or community reception, or both. Account shall also be taken of the decisions of the 1977 and 1979 World Administrative Radio Conferences and of the latest CCIR Recommendations in the case of parameters covered by its studies and research;

4. that, when planning the broadcasting-satellite service, it be borne in mind that systems should be designed with a view to reducing to a minimum technical differences and incompatibilities with the systems of other Regions;

5. that the Conference also take into account the need to make equitable provision for the requirements of the fixed-satellite service to which this frequency band is also allocated in Region 2;

6. that in drafting the above-mentioned detailed Plan, account also be taken of the terrestrial radio services sharing the same band;

invites the Administrative Council

to make preparations for convening the said Regional Administrative Radio Conference using the provisions of this Recommendation as a basis for the agenda and the terms of reference of the Conference.

RESOLUTION No. G

Relating to the preparation for an Administrative Radio Conference for the
detailed planning of the space services in the frequency
band 11.7 - 12.2 GHz in Region 2

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that a Regional Administrative Radio Conference is to be held
not later than 1982 for the detailed planning of the space services in the
frequency band 11.7 - 12.2 GHz in Region 2;

b) that the technical criteria and procedures adopted at this
Conference, the 1979 World Administrative Radio Conference and the latest CCIR
Recommendations will be used in the interim period;

c) that a considerable amount of technical information will be
required to ensure the success of this Regional Conference;

invites the CCIR

to carry out such additional studies as are necessary to ensure timely provision
of the technical information likely to be required as a basis for the work of
the Regional Conference.

RESOLUTION No. H

Relating to the submission of requirements
for the broadcasting-satellite service in Region 2

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) the decision taken by the Conference that an Administrative Radio Conference for Region 2 is to be held not later than 1982;

b) that the said Regional Administrative Radio Conference is to draw up a detailed plan for the orbit spectrum resource available for the broadcasting-satellite services in the frequency band 11.7 - 12.2 GHz, taking into account the need to make equitable provision for the requirements of the other services to which this frequency band is also allocated in Region 2;

c) that the plan is to provide for the detailed assignment of the orbital positions and frequency channels available, ensuring that the broadcasting-satellite service requirements of the various administrations are met in an equitable manner satisfactory to all the countries concerned,

invites the IFRB

1. to request all administrations in Region 2 to submit their broadcasting-satellite service requirements to the IFRB not later than one year before the start of the said Regional Administrative Radio Conference. These requirements are understood to include the number and boundaries of service areas and the number of channels requested for each of them. They may be updated as required by each administration;

2. to remind administrations, by means of a circular letter and/or telegram six months before the above deadline for submitting requirements, of the need to submit them;

3. to assemble the information submitted by administrations in a form permitting a comparative study thereof and to communicate it to the Secretary-General for publication and despatch to administrations not later than nine months prior to the said Regional Administrative Radio Conference.

HEADINGS OF THE PLAN COLUMNS

1. Country symbol and IFRB Serial Number(Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List).
2. Nominal orbital position, in degrees.
3. Channel number (see Table showing correspondence between channel numbers and assigned frequencies, page / /).
4. Boresight geographical coordinates, in degrees and tenths of a degree.
5. Antenna aperture : This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam.
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.
7. Polarization (1 = direct, 2 = indirect).¹⁾
8. E.i.r.p. in the maximum direction in dBW.
9. Remarks.

1) CCIR Report 321

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

PLENARY MEETINGNote by the Secretary-General

FINAL PROTOCOL

The documents (deposited before 8 p.m. on 11 February 1977) listed below contain texts to be published in the Final Protocol to the Final Acts of the Conference :

<u>Document No.</u>	<u>Submitted by</u>
236	State of the Comoros
237	Republic of Indonesia
240	France
245	France
252	Republic of the Ivory Coast
258	Republic of Zaire
259	Iran
260	Republic of Afghanistan
266(Rev.1)	Byelorussian Soviet Socialist Republic, People's Republic of Bulgaria, Hungarian People's Republic, Mongolian People's Republic, People's Republic of Poland, German Democratic Republic, Ukrainian Soviet Socialist Republic, Czechoslovak Socialist Republic, Union of Soviet Socialist Republics
274	Republic of Zambia
275	People's Republic of Bangladesh
276	Islamic Republic of Mauritania
278	Republic of India
279	Mauritius
280	Principality of Liechtenstein
281	People's Republic of the Congo
282	Republic of Upper Volta
283	Australia
284	Guatemala
285	Ghana
286	Federal Republic of Nigeria
292	Republic of the Philippines
294	Sultanate of Oman



<u>Document No.</u>	<u>Submitted by</u>
299	Republic of Mali
301	Republic of Kenya
303	People's Republic of Bangladesh
304	Republic of the Senegal
305	People's Republic of Benin
307	Togolese Republic
308	Republic of Guinea
309	Australia, New Zealand, Papua-New Guinea
310	Republic of Bolivia
311	Kingdom of Saudi Arabia, State of Bahrain, Arab Republic of Egypt, United Arab Emirates, State of Kuwait, Kingdom of Morocco, Islamic Republic of Mauritania, Sultanate of Oman, Yemen Arab Republic, People's Democratic Republic of Yemen
312	Algerian Democratic and Popular Republic, Kingdom of Saudi Arabia, State of Kuwait, Kingdom of Morocco, Democratic Republic of the Sudan, Yemen Arab Republic
313	Algerian Democratic and Popular Republic, Kingdom of Saudi Arabia, State of Bahrain, People's Republic of Bangladesh, Arab Republic of Egypt, United Arab Emirates, State of Kuwait, Malaysia, Kingdom of Morocco, Pakistan, Democratic Republic of the Sudan, Yemen Arab Republic, People's Democratic Republic of Yemen
315	United Republic of Tanzania
316	Federative Republic of Brazil
317	Democratic Republic of the Sudan
318	People's Democratic Republic of Yemen
319	Central African Empire
320	State of Bahrain, United Arab Emirates
322	People's Republic of China
323	Lao People's Democratic Republic
324	Kingdom of Saudi Arabia
325	Pakistan

Document No.Submitted by

326	Byelorussian Soviet Socialist Republic, People's Republic of Bulgaria, Hungarian People's Republic, People's Republic of Poland, German Democratic Republic, Ukrainian Soviet Socialist Republic, Czechoslovak Socialist Republic, Union of Soviet Socialist Republics
327	Thailand
328	Republic of Burundi
329	Republic of the Chad
330	Ethiopia
331	Republic of Colombia, People's Republic of the Congo, Ecuador, Gabon Republic, Republic of Kenya, Republic of Uganda, Republic of Zaire
332	Federative Republic of Brazil
333	Algerian Democratic and Popular Republic
334	Republic of Venezuela
336	Oriental Republic of Uruguay
337	People's Republic of Bulgaria
338	Republic of Panama
339	Argentine Republic
340	Republic of Korea
341	Pakistan
342	Republic of India
343	Federative Republic of Brazil
344	Democratic People's Republic of Korea
345	Democratic People's Republic of Korea
346	Tunisia
347	Kingdom of Morocco
348	Turkey
349	United Kingdom of Great Britain and Northern Ireland
350	Mexico

M. MILI

Secretary-General

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 270-E

10 February 1977

Original : French

PLENARY MEETING

Second Report of Committee 5

Committee 5, having examined Documents Nos. DT/50 and DT/51 at its meeting on 9 February 1977, approved the following texts :

- a) Draft resolution concerning publication of the data needed to apply certain provisions of the Final Acts;
- b) Table showing correspondence between channel numbers and assigned frequencies (to be annexed to the Plan).

The above texts have been passed on to the Editorial Committee.

A. PETTI
Chairman of Committee 5



INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Corrigendum No. 1 to

Document No. 271-E

11 February 1977

Original : Russian

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 2

(CREDENTIALS)

On page 3, second paragraph, replace the two first lines by :

"In accordance with the above Agreement, West Berlin is not a constituent part of the Federal Republic of Germany and is not governed by that country."



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 271-E

10 February 1977

Original : English

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 2

(CREDENTIALS)

Monday, 7 February 1977, at 1410 hrs

Chairman : Mr. A. DIONE (Senegal)

Subjects discussed :

Document No.

- | | |
|--|----------|
| 1. Reports of the Working Group | 151, 213 |
| 2. Draft Report to the Plenary meeting | DT/46 |

1. Reports of the Working Group (Documents Nos. 151, 213)

Approved.

2. Draft Report to the Plenary meeting (Document No. DT/46)

In reply to a question by the delegate of the USSR as to whether any delegation representing a country which had ratified or acceded to the Convention had not deposited credentials, the Secretary of the Committee drew attention to page 5 of Document No. DT/46 and indicated that some of the countries listed there had in the meantime deposited their credentials.

Referring to paragraph 1.2.1, the delegate of the USSR said that the delegation of Roumania had asked him to inform the Committee that the Roumanian Government had ratified the Convention on 26 January and an official notification to that effect would soon be received by the Secretary-General.

The delegate of the USSR then made the statement reproduced in Annex 1.

The delegate of the German Democratic Republic made the statement reproduced in Annex 2.



The delegate of the United Kingdom, speaking also on behalf of the delegations of France and the United States of America, deplored the intersection of non-technical matters in a technical conference and reserved the right to reply to what the USSR delegate had said.

The delegate of the Federal Republic of Germany associated himself with those remarks.

The delegate of the United Kingdom asked whether the delegate of the USSR was formally objecting to the credentials of the delegation of the Federal Republic of Germany.

Having been informed by the Secretary of the Committee that the credentials in question were in the form in which only the leaders of the delegation were mentioned by name, the USSR delegate said he did not formally oppose the adoption of the credentials of the delegation of the Federal Republic of Germany but maintained the statement he had made.

The delegates of France, the United States of America, the United Kingdom and the Federal Republic of Germany reserved the right to circulate a statement giving their delegations' views.*)

The Chairman announced that he had just been informed that the delegation of Zaire had been omitted by mistake from Section 1.1.1 of the Annex to Document No. DT/46.

It was agreed that the Chairman and Vice-Chairman should be authorized to examine any further credentials deposited before the end of the last plenary meeting.

The draft Report of Committee 2 (Document No. DT/46) was approved.

The meeting rose at 1445 hours.

The Secretary :

A. WINTER-JENSEN

The Chairman :

A. DIONE

Annexes : 2

*) Note by the Secretariat : See statements contained in Documents Nos. 272 and 273.

A N N E X 1

STATEMENT BY THE DELEGATION OF THE USSR

The USSR delegation draws attention to the fact that the delegation of the Federal Republic of Germany, as shown in the general list of delegations of 10 January 1977, contains among its members persons who occupy official posts in West Berlin. The Soviet delegation, basing itself on the provisions of the Quadripartite Agreement of 3 September 1971, which, it will be remembered, determines the status of West Berlin, deems it necessary to submit the following statement :

In accordance with the above Agreement, West Berlin is not an integral part of the Federal Republic of Germany and is not administered by that country. Persons representing West Berlin may participate in international conferences as part of the delegation of the Federal Republic of Germany only on the basis of the provisions of the Quadripartite Agreement of 3 September 1971, which establishes the permissible framework for such participation.

In the list of members of the delegation of the Federal Republic of Germany it should therefore be noted that persons occupying official posts in West Berlin form part of the delegation of the Federal Republic of Germany exclusively on the basis of and in accordance with the Quadripartite Agreement of 3 September 1971.

A N N E X 2

STATEMENT BY THE DELEGATION OF THE GERMAN DEMOCRATIC REPUBLIC

Mr. Chairman,

Our delegation fully supports the statement just made by the delegation of the USSR.

The delegation of the German Democratic Republic on its part notes in particular that in accordance with the Quadripartite Agreement of 3 September 1971, Berlin (West) is no part of the Federal Republic of Germany and may not be governed by it.

The participation of permanent residents of Berlin (West) in international exchanges jointly with representatives of the Federal Republic of Germany is only possible on the basis of the stipulations of the Quadripartite Agreement which regulates the admissible character and extent of such participation.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 272-E

11 February 1977

Original : French/
English

PLENARY MEETING

United States of America, France,
United Kingdom of Great Britain and Northern Ireland

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 2

(CREDENTIALS)

DOCUMENT No. 271

With reference to Annex 1 of the above-mentioned document, the delegations listed above declare :

a) The Quadripartite Agreement of 3 September 1971, to which the Soviet delegation referred, applies to the whole of Berlin and not only to its western sectors : it did not determine the status of the city.

b) The communication of the Soviet delegation contains an incomplete and consequently misleading reference to the Quadripartite Agreement. The relevant passage of that Agreement provides that the ties between the western sectors of Berlin and the Federal Republic of Germany will be maintained and developed, taking into account that these sectors continue not to be a constituent part of the Federal Republic of Germany and not to be governed by it.

c) The Quadripartite Agreement provides in its Annex IV that, provided matters of security and status are not affected, permanent residents of the western sectors of Berlin may participate jointly with participants from the Federal Republic of Germany in international exchanges and exhibitions. There is therefore no reason why such members of the delegation of the Federal Republic of Germany should be listed differently. It is moreover for the Federal Republic of Germany alone to decide on the listing of its delegation.

Regarding other communications on this subject which have been made, the three delegations wish to point out that states which are not parties to the Quadripartite Agreement are not competent to comment authoritatively on its provisions.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 273-E

11 February 1977

Original : English

PLENARY MEETING

Federal Republic of Germany

SUMMARY RECORD OF THE SECOND MEETING OF
COMMITTEE 2 (CREDENTIALS) - DOCUMENT No. 271

The delegation of the Federal Republic of Germany shares the point of view expressed in Document No. 272 by the delegations of France, the United States of America and the United Kingdom with regard to the Annexes to the above-mentioned Summary Record.

Furthermore, the delegation of the Federal Republic of Germany points out that, according to the International Telecommunication Convention of Malaga-Torremolinos, 1973, "each Member of the Union is free to make up its delegation as it wishes".



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 274-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Zambia

The delegation of the Republic of Zambia to the World Administrative Broadcasting-Satellite Conference, Geneva 1977, reserves its Government's right to take any measures it may deem necessary to protect its interests if other countries fail to observe the provisions adopted by the Conference according to its terms of reference.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 275-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the People's Republic of Bangladesh

In signing the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva 1977, the delegation of the People's Republic of Bangladesh declares that its Administration reserves the right to take any action required to safeguard its interests, should the reservations entered by other delegations on behalf of their Administrations or failure to respect the Final Acts and its Annexes and the Protocol attached to it prove prejudicial to the proper functioning of its Satellite Broadcasting and its Terrestrial Services.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 276-E

10 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For the Islamic Republic of Mauritania

The delegation of the Islamic Republic of Mauritania reserves its Government's right to take any action it may consider necessary to ensure the proper functioning of its broadcasting-satellite service in the event of :

- an Administration in any way failing to abide by the provisions of the Final Acts and the associated Plan, or

- an Administration formulating reservations or taking action liable to infringe upon the sovereign rights of the Islamic Republic of Mauritania.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 277-E

10 February 1977

Original : French

PLENARY MEETING

Algeria

ISLAMIC PROGRAMME COVERAGE

The Administration of the Algerian Democratic and Popular Republic and the Algerian people, who have just voted a new constitution instituting Islam as the State religion and Arabic as the national and official language, wish to express their warm appreciation regarding the proposal of the Administration of the Kingdom of Saudi Arabia to seek the support of the Broadcasting-Satellite Conference in the setting up of a system to provide for regular religious programme broadcasts for the Moslem countries.

The Algerian Administration, which is actively studying the practical implementation of such a plan, fully supports the proposal of Saudi Arabia and expresses the wish that the Conference should satisfy the request of the co-signatory Administrations.

The Algerian Administration will in due course make its own human and technical contribution towards the implementation of the programme planned for the benefit of the Islamic community throughout the world and of the Algerian people in particular.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 278-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of India

1. While signing the Final Acts of the World Administrative Radio Conference for the planning of the Broadcasting-Satellite Service, Geneva 1977, in the frequency bands 11.7 - 12.2 GHz (in Regions 2 and 3) and 11.7 - 12.5 GHz (in Region 1), the delegation of the Republic of India reserves the right of its Government to take such measures as may be necessary to safeguard its interests should any country reserve and/or not accept the provisions of the Final Acts including the Associated Plan.
2. The delegation of the Republic of India wishes to point out that the Plan has frequency assignments to the Pakistan Administration for providing Satellite-Broadcasting Services to include coverage of the state of Jammu and Kashmir, which is an integral part of India. The Indian Administration does not recognize these frequency assignments to the Pakistan Administration for operating such services. The Indian Administration reserves the right of its Government to take appropriate measures to ensure that its territory does not come under intentional coverage by such Pakistan services.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 279-E
10 February 1977
Original : English

PLENARY MEETING

FINAL PROTOCOL

For Mauritius

The delegation of Mauritius is unable to accept the arguments advanced in Document No. 245 by the French delegation in support of the French claim of sovereignty over Tromelin and consequently rejects the reservation recorded therein.

The French claim that France has exercised sovereignty without interruption over Tromelin since the Paris Treaty of 1814 cannot be sustained.

The concept of geographical discovery of L'Isle de Sables, renamed Tromelin in 1776, cannot by itself be invoked at this stage in support of sovereignty.

Tromelin annexed as several other islands to the Isle de France (now Mauritius) during French colonial rule until 1810 was lost to France and retained its status of dependency of Mauritius following British conquest.

The only French possession in the West Indian Ocean which was ceded to France under the Treaty of Paris is Bourbon (now Réunion) which was itself dependent upon French administration based in Isle de France until 1810.

It is stipulated under the Treaty of Paris that "the Isle of France and its Dependencies, especially Rodrigues and Seychelles" are ceded to Great Britain. The term "especially" as well as the French equivalent used in the Treaty "nommément" clearly indicate that the dependencies such as the Chagos Archipelago, the Cargados Carajos archipelago, Agalega and Tromelin are not listed exhaustively (c.f. Littré, Robert, Larousse).

Other dependencies of Mauritius or of Tobago are not specifically cited under the Treaty of Paris but have historically and legally retained their status of dependencies.

A number of dependent islands scattered in the oceans and considered as less important are not always mentioned by name in legal instruments concerning the main islands and this practice is recognized under international law.

The French claim of uninterrupted exercise of sovereignty after 1814 is also not valid as the Mauritius Government has periodically leased its dependency to several companies and individuals during the 20th century.



The Mauritius Government, both under British rule and after independence achieved in 1968, has affirmed its sovereignty over Tromelin by various acts both at national and international level.

In view of the heavy reliance of Mauritius upon weather information, particularly in respect of cyclone detection and movements, the delegate of Mauritius, addressing the Third Congress of the World Meteorological Organization held in Geneva in 1959, while welcoming the erection in Tromelin of a meteorological station following Resolution 9 of the first session of the Regional Association for Africa, held in Tananarive in 1953 which called for examination of the possibility of erecting such a station, reminded the Congress that express authority had not been sought for the construction of the weather station and that Mauritius exercises full sovereignty over Tromelin. This assertion of sovereignty was not challenged by the French delegation.

The erection of the weather station as well as the construction of a landing strip and of a lighthouse for shipping purposes are regarded by the Mauritius Government as having been undertaken for the good of the region within the framework of international cooperation and, therefore, can in no way be construed as a surrender of the legitimate exercise of its sovereignty to the French technical mission operating on the island.

For all the reasons outlined above, the Mauritius Government formally maintains the inclusion of Tromelin in its coverage area, and views with concern the intention of the French Government to ensure broadcasting coverage by satellite of a dependency of Mauritius.

Consequently, the Mauritius delegation urges the Conference not to accept any proposal which would affect the sovereign rights of Mauritius in respect of Tromelin.

Further, the Government of Mauritius reserves the right to take any measures it may think to safeguard its interests if one or more administrations, members or not of the Union, do not adhere to the Decisions recorded in the Final Acts and the Plan.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 280-E

10 February 1977

Original : English

French

PLENARY MEETING

FINAL PROTOCOL

For the Principality of Liechtenstein

In signing the Final Acts of the World Administrative Broadcasting-Satellite Conference, Geneva 1977, the delegation of Liechtenstein reserves the right of its Government to assure that in the case of any modification to the Plan the prior notification of Liechtenstein being situated in a mountainous area is duly taken into consideration.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 281-E

10 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For the People's Republic of the Congo

Bearing in mind :

- the development of space radiocommunication technology and the wide range of its applications, on the one hand, and
- the legitimate statements of the Equatorial countries, on the other hand,

the delegation of the People's Republic of the Congo to this Conference reserves its Government's right to take any decision it may consider necessary to safeguard the interests of national sovereignty.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 283-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For Australia

During discussions in this Conference various proposals and views have been presented concerning planning for and use of the geostationary satellite orbit.

Several countries are seeking recognition of national sovereignty of some portion of Outer Space in relation to the use or intended use of the geostationary satellite orbit. The Australian delegation, which has set down its views in Document No. 181, wishes to declare that the Australian Government considers such claims not to be in accordance with International Law.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 284-E
10 February 1977
Original : Spanish

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Guatemala

In signing the Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service (Geneva, 1977), the Delegation of the Republic of Guatemala reserves its Government's right to take whatever action it may deem necessary to safeguard its interests should any Member of the Union formulate reservations liable to affect the sovereign rights of the Republic of Guatemala over the Guatemalan Department of Belize.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 285-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Ghana

The Ghana delegation, in signing the Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service (Geneva, 1977) reserves for its Government the right to take any measures it considers necessary to protect its interests should the non-compliance and reservations from the said Final Acts by other Members jeopardize its Broadcasting-Satellite Service.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 286-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Federal Republic of Nigeria

In signing the Final Acts of the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service, Geneva, 1977, the delegation of the Federal Republic of Nigeria hereby declares that its Government reserves the right to take any action which it considers necessary to safeguard its interests should any country or countries fail to observe the provisions of the Final Acts and its Annexes or the Protocols attached thereto or should reservations by other countries endanger the satellite broadcasting and telecommunications services of the Federal Republic of Nigeria.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 287-E
10 February 1977
Original : English

COMMITTEE 5

Report of Sub-Working Group 5A5

PART I

Terms of Reference (Document No. DT/18 dated 19 January 1977).

To look into the theoretical possibilities raised in the New Zealand Documents Nos. 13 and 45. To derive from this investigation a general list of planning tools that could provide possible solutions to planning problems that may be encountered in the establishment of a plan for the Broadcasting-Satellite Service for any planning method.

The Working Party met four times on this subject. Its meetings were attended by delegates from Tunisia, Senegal, Malaysia, Yugoslavia, Japan, Australia, Pakistan, the Federal Republic of Germany, New Zealand and an observer from the European Broadcasting Union. The following notes summarize these discussions.

A. Points of clarification concerning Documents Nos. 13 and 45

1. The relationships between the number of programmes and the lattice "N" value (discussed in sections 5.1.1, 5.2.1, 5.4.1 of Document No. 45) refer to maximum values. However practical parameters, such as antenna sizes, may limit the "resolving power" of the total system, and this may well be insufficient to cope with the very smallest countries and their neighbouring areas if too high a number of programmes is attempted.
2. The ability of a system to provide co-polar co-channel service to different coverage areas from the same orbit position (e.g. Figures 29 and 30 of Document No. 45) depends upon the particular transmitting antenna angular separations provided by the lattice for this condition. Comparing the separations of common channels in these particular examples Figure 30 is seen to be more feasible than Figure 29.
3. The co-channel isolation values for column No. 1 (Table H, section 7.1 of Document No. 13) apply to all co-channel areas served from the same orbit position. It will be seen that there are always 11 unacceptable isolation values in all directions. For areas West to East this problem is overcome by serving each area from progressively different orbits. For areas lying in a South-North sequence, entirely different channelling combinations are used over the 11 coverage areas, or alternatively the number of areas in a column served by one section of the available spectrum is restricted.



B. Some planning methods based on Documents Nos. 13 and 45

Noting (a) from the above considerations that the interference areas of large and small areas are incompatible, (b) that orbit positions must keep approximately "in step" with the coverage areas on the earth, (c) that there are some areas of the world where there are more than 30 countries of widely varying size in a longitudinal difference of 20° , it is seen that interference can be minimized and the number of programme services maintained, or increased, if a method can be devised for dealing independently with coverage areas of different sizes.

1. One approach is to use different frequency spectrum sections for different area sizes. This tends to reduce the average programme capacity if all classes of area size have the same number of programmes. However, this method does facilitate a greater use of common orbit positions.

2. A second method is to use separate orbit systems for different classes of coverage area size. This doubles or triples the programme capacity depending on whether two or three classes of area size are allowed for. Although smaller areas are well catered for they would under this approach have less westerly orbit positions and less favourable eclipse performance than larger areas. However, this approach does have the advantage, in principle, that any country could have access to more than one class of coverage if it so wished.

3. The following is an outline of one systematic method of planning based on the above considerations. Some of the separate principles incorporated in it could be adapted to existing methods.

a) Countries are divided into 2 (or 3) categories according to their West-East service area dimensions. (For regular-shaped countries this amounts to a classification according to area.)

b) Planning starts by classifying all countries in a South-North column of the largest appropriate width, at some arbitrary longitudinal position. All countries with a width ≥ 0.5 of the column width are served from one orbit position well displaced to the West.

c) Channels and polarizations are assigned to this first group of countries using column 1 of an appropriate broadcasting-satellite lattice-grid pattern; for example Document No. 45 Figure 28 ($N = 5$ i.e. ABCDE), Figure 23 ($N = 4$ i.e. ABCD). Within the available spectrum, the separation between programme channels assigned to a footprint will be identical, and all will have the same polarization. The number of channels in each footprint will be proportional to the total number of channels available for the class of coverage system considered.

d) This large column is now sub-divided into 2 sub-columns, and all remaining countries are allocated to one or other, depending upon where the major portion of their width lies. (Where this process is continued to a third stage, countries whose width is < 0.25 of the large column are set aside for the third classification process.)

e) Channels and polarizations are assigned (as above) by allocating assignments from column 1 of the lattice to the first sub-column, and from column 2 to the second sub-column.

f) Where this sub-division is taken to a third stage, four sub-columns result. The channels for each of these are drawn from the four corresponding columns of the lattice-grid scheme.

g) The first of the orbits serving the second category of countries is separated by X° from the orbit serving the largest countries. Similarly (where the classification is carried to a third stage), the first of the orbits serving this third category is separated by Y° from the first of the orbits serving the second category. However, the orbit spacing for each particular category is adjusted to conform with an entirely regular overall distribution. (X and Y are approximately equal and are about 8° for "even N" systems and 20° for "odd N" systems.)

h) An adjustment for high-latitude countries (above 60°) is made possible by classifying them in the next category of smaller width. This gives them an orbit closer to "overhead".

i) The method is readily adaptable to computer assignment using the supplied footprint data. (The west-east width of a footprint conforms to the relationship $K(a \cos \theta + b \sin \theta)$ and the lattice-grid plan can be generated readily from the three parameters N, Δ_1 and Δ_2 .)

C. General points

1. When an even lattice N value (such as 4) is used as the basis of the planning method, the adjacent areas in the south-north columns are adjacent channelled and cross-polarized. This results in a method that fully utilizes the cross-polarization discrimination advantage in adjacent areas. This provides for a good programme capacity and also enables very close spacings of the orbit positions to be used.

2. However, noting these points, and recognizing that the advantages of the above system approach were being fully utilized by the Working Parties 5A2, 5A3 and 5A2/3 for the main Regions 1 and 3 planning work of the Conference, some limited work was carried out on two "odd value" N systems. (Namely $N = 5$ $\Delta_1 = 2$ $\Delta_2 = 3$ and $N = 7$ $\Delta_1 = 2$ $\Delta_2 = 5$.) This work had two objectives : (a) to test the systematic method of channelling described above, (b) to establish the necessary parameters of an odd value N system that would be independent of rain depolarization effects near the boundaries of different coverage areas.

It was found that the systematic method of channel allocation was able to handle a limited 4 to 5 programme requirement for some 230 separate coverage areas using only two area sizes of above and below 10° of longitudinal width. A sample test of an $N = 5$ $\Delta_1 = 2$ plan however showed that such a lattice plan approach did not give enough physical separation between adjacent channel areas, which are necessarily co-polar with these parameters. Apart from this the other aspects were reasonably satisfactory. An alternative solution with $N = 7$ is expected to fulfill the design objectives of this planning exercise. In this context it should be noted the 1976 CCIR Joint Working Parties studies of rain depolarization indicate that rain depolarization effects should be of relatively minor significance on the evidence available.

PART 2

(Document No. DL/31 dated 27 January 1977)

Summary of verbal brief.

To consider draft Document No. DL/31 submitted to Working Party 5A by France and the United Kingdom of Great Britain and Northern Ireland and prepare a revised draft document for Working Group 5A.

Some four meetings of Sub-Working Group 5A5 were held to discuss and redraft this paper. These meetings were attended by delegates from France, United Kingdom, the Federal Republic of Germany, USSR, Malaysia, Japan, New Zealand and an observer from the European Broadcasting Union.

The aim of this work was to prepare a draft text that would be suitable as an appendix to the Plan covering the permitted transmission characteristics of assignments in the Broadcasting-Satellite Service in the 11.7 to 12.5 GHz band. The outcome of the Sub-Group's work was incorporated in Document No. 212 dated 3 February, 1977 and was submitted to Working Party 5A.

J.P. CARTER
Chairman of Sub-Group 5A5

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 288-E

10 February 1977

Original : French

COMMITTEE 4

SUMMARY RECORD
OF THE
NINTH MEETING OF COMMITTEE 4
(TECHNICAL)

Monday, 31 January 1977, at 1535 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

<u>Subjects discussed</u> :	<u>Documents Nos.</u>
1. Approval of documents	161, 163, 164(Rev.1), 169(Rev.1), 173, 145, 111(Rev.3)
2. Establishment of a drafting group	168, 168(Rev.1), 180

1. Approval of documents (Documents Nos. 161, 163, 164(Rev.1),
169(Rev.1), 145, 111(Rev.3))

Document No. 161 - Spurious emissions - Power flux-density levels,
planning considerations

The Chairman of Working Group 4B said that when the Group had approved the document it had thought that the information it contained would be used for the planning work of the Conference. Since that was not the case, he suggested that the Committee approve Document No. 161 for information only, the title being amended by inserting the words "Information concerning" before "Spurious emissions ...".

It was so decided.

The delegate of New Zealand, supported by the delegate of Australia, suggested that, since the information in Document No. 161 was of importance for the Final Acts of the Conference, it should be brought to the attention of Committee 6.



It was so decided.

Document No. 161, as amended, was approved for information.

Document No. 163 - Draft Recommendation to administrations and to the CCIR on up-links for the Broadcasting-Satellite Service

The Chairman of Working Group 4B said that the document had been approved by the Group subject to the following amendments :

- Considering c) : to delete "and to match the capacity of";
- Recommends 1 : to replace "examine" by "estimate" and to add at the end ", and forwards these requirements to the appropriate CCIR Study Groups and to the special joint meeting of Study Groups to be held in preparation for the 1979 WARC.";
- Recommends 2 : to delete "the provision of".

The delegate of Iran said he could support the Recommendation in Document No. 163. For the reasons given in Considering a), b), c) and d) of the document and taking into account the future requirements of the Iranian Administration, his delegation would request that steps be taken during the 1979 WARC to try to compensate in advance the insufficiency of the available up-link bandwidth between 10 and 15 GHz.

The Secretary of the Committee said that, since a relatively large number of recommendations had been addressed to the CCIR, the Secretariat of that organ had thought it advisable to use the recommendations formulated by Committee 4 to prepare a series of recommendations for the 1979 WARC. It was therefore suggested that Committee 4 should approve all recommendations in principle and should leave the CCIR Secretariat latitude to submit new versions of those recommendations for its approval before they were forwarded to the Planning Committee.

It was so decided.

Document No. 163 was approved in principle.

Document No. 164(Rev.1) - Draft Recommendations to the CCIR on the implementation and operation of up-links for the Broadcasting-Satellite Service

The draft Recommendation in Document No. 164(Rev.1) was approved in principle.

Document No. 169(Rev.1) - Criteria for sharing between the Broadcasting-Satellite Service and Terrestrial Services

The delegate of the United Kingdom drew attention to an error in the equations given in points 2.4.1 and 2.4.2.

Document No. 169(Rev.1) was approved, on the understanding that a corrigendum would be issued.

Document No. 173 - The interdependence of receiver design, channel grouping and sharing criteria

The delegate of Australia explained that, in submitting the document, his delegation had wished to draw attention to the fact that, for the time being, sharing criteria were determined solely on the basis of IF selectivity. His Administration believed that account should also be taken of the risk of overloading due to unwanted signals resulting from initial broadband amplification of all the channels intended to be received. It would therefore be desirable to ask the CCIR to study the question.

The delegate of India associated himself with that view and said that interference which might be caused by terrestrial systems should also be taken into account.

The delegate of Japan said he agreed that the question should be studied as a matter of urgency. A study had just been undertaken in his country to try to solve intermodulation or saturation problems that might arise at the input of receivers of the Broadcasting-Satellite Service in the bands shared with Terrestrial Services. Early findings showed that a solution might be to separate the group of channels used for the Broadcasting-Satellite Service from those of the Terrestrial Services.

The Chairman proposed that the Committee should approve the document and recommend that the question be added to the list of those to be studied by the CCIR.

It was so decided.

Document No. 145 - Summary record of the third meeting of Committee 4

Document No. 145 was approved.

Document No. 111(Rev.3) - Protection requirements for sharing between services in the 12 GHz band

The Chairman of Working Group 4B said that the curves in Figure 1 should be changed and that a corrigendum would be published to that end. Moreover, the first sentence of note 6) should be deleted and "Doc. 91" should be inserted in the square brackets at the end of the note.

The Secretary of the Committee pointed out that Document No. 91 was an information document and could hardly be used as a reference. It would be better to mention the appendices to Document No. 169 (point 2.5), texts which would be used in the Final Acts of the Conference.

The delegate of China said he would prefer to omit reference to any specific document and to discrimination and polarization. He therefore proposed the deletion of the last sentence of note 6).

At the proposal of the delegate of the USSR, it was decided to delete, in addition to the first sentence of note 6), the words "as indicated in []" at the end of that note.

Document No. 111(Rev.3), as amended, was approved, subject to the issue of a corrigendum for Figure 1.

2. Establishment of a drafting group (Documents Nos. 168, 168(Rev.1), 180)

The Chairman of Working Group 4B said that, after having examined Documents Nos. 168, 168(Rev.1) and 180, his Group had decided to take note of them for information and to ask a small drafting group to use them for the preparation of a draft Recommendation on band sharing criteria for Committee 4 to submit to Committees 5 and 6. That drafting group, presided over by the United Kingdom delegation, had already met twice and would report to the Committee very soon.

The meeting rose at 1645 hours.

The Co-Secretaries :

J. RUTKOWSKI
M. AHMAD

The Chairman :

F. KRÁLÍK

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 289-E

10 February 1977

Original : French

COMMITTEE 4

SUMMARY RECORD

OF THE

TENTH MEETING OF COMMITTEE 4

(TECHNICAL)

Wednesday, 2 February 1977, at 1045 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

Subject discussed :

Document No.

1. Approval of documents

177, Corr. 1, 194

1. Approval of documents (Documents Nos. 177, Corr. 1, 194)

Corrigendum 1 to Document No. 177

The delegate of the Netherlands pointed out that the corrigendum was incomplete because the last sentence of paragraph 4 in Document No. 177 (page 9 in the English version) should have been transferred to paragraph 3.

In reply to a question by the delegate of the United States of America, the Secretary of the Committee said that that part of Document No. 177 was taken from Document No. 111, but with a different numbering.

The delegate of the United States of America thought that the mistake pointed out by the Netherlands delegate was due to the fact that Document No. 111(Rev.2) had been used instead of Document No. 111(Rev.3) in preparing Document No. 177.

The Chairman proposed that Corrigendum No. 1 to Document No. 177 should be approved on the understanding that a second corrigendum would be prepared for the plenary which would bring paragraphs 3 and 4 of Document No. 177 (page 9 in the English version) into line with the corresponding text in Document No. 111(Rev.3).

It was so decided.



Document No. 194 - Note to the Chairman of Committee 4 from the Chairman of Committee 6

Referring to the first paragraph of the document, the Vice-Chairman said that the question to be studied by Committee 4 was whether the values it had already approved for the power flux-density, in respect of both planning the Broadcasting-Satellite Service and sharing criteria, would still apply in the event of changes to the frequency assignments in the Plan.

The delegate of the United Kingdom said that the question had two separate aspects. On the one hand, it was necessary to consider the absolute value of the power flux-density which, if exceeded, would call for coordination between the Administrations concerned. Document No. 169 contained pertinent information with regard to terrestrial services in Regions 1 and 3. On the other hand, Working Group 4B was at the moment engaged in defining the limit values of power flux-density from the standpoint of sharing between Regions. The Committee, however, had not yet tackled the question of an increase in the power flux-density compared with the value in the Plan for the Broadcasting-Satellite Service if a change were made in the Plan. Document No. 44, submitted by the Italian delegation, stated that, in the event of a change to an assignment in the Plan, an Administration could only be regarded as being adversely affected if the interfering power flux-density entailed by the change was more than 2 dB greater than that resulting from application of the Plan. That was the question to be studied by Committee 4 in response to the request formulated by Committee 6 in Document No. 194.

The delegate of Italy shared the views of the United Kingdom delegate.

The Chairman of Working Group 4B said that this Group was quite ready to study the proposals made by the Italian delegation in Document No. 44 with a view to giving a satisfactory answer to Committee 6.

It was so decided.

The representative of the IFRB referred to the request made by Committee 6 in the second paragraph of Document No. 194. The IFRB proposed to prepare a draft document to assist Committee 4.

The meeting rose at 1115 hours.

Co-Secretaries :

J. RUTKOWSKI/M. AHMAD

Chairman :

F. KRÁLÍK

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 290-E
10 February 1977
Original : English,
French

COMMITTEE 4

SUMMARY RECORD
OF THE
ELEVENTH MEETING OF COMMITTEE 4
(TECHNICAL)

Saturday, 5 February 1977, at 0920 hrs

Chairman : Mr. F. KRÁLÍK (Czechoslovakia)

Subjects discussed

Documents Nos.

1. Approval of documents

182, 188(Rev.2),
197(Rev.1), 202, 211

1. Approval of documents (Documents Nos. 182, 188(Rev.2), 197(Rev.1),
202, 211)

Document No. 182 - Summary Record of the Fifth Meeting of Committee 4 (Technical)

Document No. 182 was approved without change.

Document No. 197(Rev.1) - Note by the Chairman of Committee 4

The Chairman proposed that the Committee should consider the draft Recommendations in the document one by one.

Page 2 - Recommendation to the CCIR relating to transmitting antennae for the Broadcasting-Satellite Service

The delegate of the United States of America considered that in connection with the study of reference patterns for transmitting antennae, the CCIR should also be invited to study the practicable means of improving side-lobe suppression and their economic implications. He suggested that a phrase should be added to that effect at the end of operative paragraph 1 of the Recommendation.



The delegate of India supported the previous speaker's suggestion. In his view, it was even more important to study the economic implications than the technical aspects.

The delegate of Senegal agreed with the previous speaker.

The delegate of the USSR thought that the economic aspects were more a matter for Interim Working Party PLEN. 2 than for Study Group 11 of the CCIR, which was concerned more specifically with the technical aspects.

The Director of the CCIR pointed out that the Recommendation was addressed to the CCIR as a whole.

The delegate of Canada proposed that in line with the United States delegate's suggestion, a phrase might be added at the end of operative paragraph 1 of the Recommendation reading as follows : "and in particular the practicable means of achieving various degrees of improved side-lobe suppression and the economic implications thereof".

It was so decided.

The Vice-Chairman, referring to operative paragraph 3, requested that in the English text the word "data" should be replaced by "information".

With that amendment, the Recommendation was approved.

Page 3 - Recommendation to the CCIR relating to propagation at 12 GHz for the Broadcasting-Satellite Service

The delegate of Senegal said he would like the words "in all climatic zones" to be added at the end of operative paragraph 1.

The Vice-Chairman observed that in the English version of operative paragraph 5, the word "data" should be replaced by "information".

With those amendments, the Recommendation was approved.

Page 4 - Recommendation to the CCIR relating to spurious out-of-band emissions in the Broadcasting-Satellite Service

The delegate of Australia, referring to preambular paragraph b), said that in the English text the word "adjacent" should be added before "bands".

With that amendment, the Recommendation was approved.

Pages 5 and 6 - Recommendation to the CCIR relating to the up-link for the Broadcasting-Satellite Service

The delegate of India thought it should be made clear in operative paragraphs 1 and 2 that the reference was to the receiving antennae of space stations.

The delegate of the United States of America proposed that in order to avoid prolonging the debate unnecessarily, it should be left to the Secretariat to make any drafting changes that were necessary in the various draft Recommendations in Document No. 197(Rev.1).

The Secretary of the Committee said that due note would be taken of the point raised by the delegate of India.

Page 7 - Recommendation to the CCIR relating to the interdependence of receiver design, channel grouping and sharing criteria

The Recommendation was approved without change.

Page 8 - Recommendation to administrations relating to up-links for the Broadcasting-Satellite Service

The Vice-Chairman suggested that in the first line of the operative paragraph, after the word "links", the words "for the purpose of the studies mentioned in a) above" should be added.

With that addition, the Recommendation was approved.

Document No. 197(Rev.1), as amended, was approved, subject to drafting changes.

Document No. 202 - Summary Record of the Sixth Meeting of Committee 4 (Technical)

Document No. 202 was approved without change.

Document No. 188(Rev.2)

The Chairman proposed that an ad hoc group, presided over by the Chairman of the Conference, should be set up to examine Document No. 188(Rev.2).

It was so decided.

The delegate of the USSR, supported by the delegates of New Zealand and Senegal, said that the terms of reference of the ad hoc group should be specified, more particularly, whether or not it should deal only with paragraph 2.3 of the document.

The delegate of Algeria, supported by the delegates of Mauritania, Zaire and New Zealand, proposed that the ad hoc group should be instructed to examine only paragraph 2.3 of Document No. 188(Rev.2).

It was so decided.

The meeting rose at 1105 hours.

The Co-Secretaries :
J. RUTKOWSKI/M. AHMAD

The Chairman :
F. KRÁLÍK

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 291-E
10 February 1977
Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Republic of the Philippines

The delegation of the Republic of the Philippines reserves for its Government the right to take action as may be necessary to safeguard its interest should the Final Act and the Plan attached thereto drawn up in this Conference be in contravention with the Constitution and sovereignty of the Republic of the Philippines.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 292-E
10 February 1977
Original : English

COMMITTEE 6

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 6

(PROCEDURES)

Wednesday, 2 February 1977, at 1410 hrs

Chairman : Mr. R.J. BUNDLE (New Zealand)

Subjects discussed

Documents Nos.

- | | |
|--|------------------------------------|
| 1. First Report from Working Group 6A (<u>continued</u>) | 187 |
| 2. Allocation of documents to the Committee | 161(Rev.1),
169(Rev.1) + Corr.1 |
| 3. First Report from Working Group 6B | 185 + Corr.1 |

-
1. First Report from Working Group 6A (Document No. 187) (continued)

The Chairman invited the Committee to continue its consideration of Document No. 187. In reply to a question by the delegate of the United Kingdom concerning the fourth sub-paragraph of paragraph 4.3.1 (page 4), he said it was his understanding that the Committee had agreed at its previous meeting to insert the words "and Section 2, paragraph 2.1" after "No. 639AJ" in the last line.

The delegate of the United Kingdom, supported by the delegate of the United States of America, said that the phrase should read "or Section 2, paragraph 2.1" in order to ensure that the rights in question were extended to Fixed Satellite stations which were coordinated under the provisions of No. 639AJ of the Radio Regulations and did not require to be coordinated under those of Section 2, paragraph 2.1.



The delegate of the USSR said he had some doubts as to the appropriateness of providing a choice between two different coordination procedures.

The Chairman suggested that the delegations of the United Kingdom and the USSR might discuss the question informally with a view to working out a satisfactory solution.

It was so agreed.

The Chairman invited the Committee to consider Article 5.

Heading

It was agreed to remove the square brackets from the heading at the top of page 7.

Title

On a proposal by the delegate of the United Kingdom, supported by the delegate of Italy, it was decided to add "in Regions 1 and 3" at the end of the title of Article 5.

Paragraphs 5.1 to 5.1.7

Approved.

Footnote 5.1.3.1

On a proposal by the delegate of Italy, supported by the delegate of the United Kingdom, it was agreed to replace the words "coordination procedure(s)" by the phrase "procedure for modifications to the Plan".

Footnote 3)

Approved.

Paragraphs 5.1.8 to 5.2.4

Approved.

Paragraph 5.2.5

Replying to a question by the delegate of Indonesia concerning the meaning of the last sentence, the Chairman of Working Group 6A said that if it was known that an orbital position and a frequency assignment was not going to be used for a given period of time by the Administration having that assignment in the Plan, agreement could be reached whereby another Administration might use the assignment or have it recorded in the Master Register for a period of time acceptable to both the Administrations concerned.

The delegate of Indonesia said that his delegation preferred the wording of the second of the two versions of paragraph 5.2.5 given on page 8 of Document No. 174(Rev.1).

The Chairman observed that the text now before the Committee was a compromise between the two versions given in Document No. 174(Rev.1), each of which had been unacceptable to some delegations.

The delegate of the United States of America said that the basic principle underlying Articles 9 and 9A of the Radio Regulations, namely, to provide for coordination and notification in accordance with a carefully defined procedure, had on occasion been referred to as an insistence provision. Whatever name was given to it, that principle was considered by his delegation to be essential to the general coordination and notification procedures laid down in the Regulations. The proposal in paragraph 5.2.5 was, in his view, a departure from that basic principle. However, his delegation recognized that a priori planning for the band in question created a unique situation, and it understood the reasons underlying the provisions of paragraph 5.2.5 as set out in Document No. 187. It was therefore prepared, with some reluctance, to accept the text given in that document.

The delegate of Italy agreed with the previous speaker that the situation was a rather special one. While the insistence procedure was fully justified in cases involving a band for which no plan existed, it could only be relevant very exceptionally when world-wide agreement had been reached among Administrations on a Plan and a procedure for the modification thereof.

Paragraph 5.2.5 was approved.

Paragraphs 5.3 to 5.6.3 and Miscellaneous provisions

The Chairman of Working Group 6A observed that the Working Group had not had time to give detailed consideration to the texts, which had been drafted following the discussions that had taken place in an ad hoc group set up to study the question of additional requirements.

The delegate of the United Kingdom said he could see no need for Section 5.3. Assignments that were in accordance with the Plan were covered under paragraph 5.2.2 and their bringing into use did not require either a favourable finding, or indeed any examination whatsoever, by the Board.

The delegate of Italy endorsed the views expressed by the previous speaker and proposed the deletion of the whole of Section 5.3.

The delegates of the Federal Republic of Germany, Algeria and Singapore supported the proposal.

The delegate of France, supported by the delegate of Japan, considered that Section 5.3 was necessary and should be retained. Frequency assignments for Broadcasting-Satellite stations would be notified and entered in advance in the Master Register, with an approximate date for bringing them into use indicated in Column 2c. The aim of Section 5.3 was to enable that date, which did not in itself grant the right to protection, to be rectified subsequently so that it corresponded to the actual date on which the station was brought into use.

The representative of the IFRB said that the provisions of Section 5.3 were considered by the Board to be essential since they completed, and did not replace, those which the Committee had already approved. One of the basic principles embodied in the Radio Regulations was that only frequency assignments which were actually in use enjoyed the right to international recognition. The Plan, which was a multilateral agreement relating to the future use by Administrations of certain given frequencies, did not substitute for entry of the assignments concerned in the Master Register. Since the Board could act only on the basis of precise instructions, it was essential for the Conference to define the procedure which should govern the recording of the assignments included in the Plan.

If it was decided to include the Plan itself in the Master Register and to consider such inclusion as provisional notification of bringing into use of the assignments concerned, as had been proposed by some delegates, Article 5 would require extensive modification, since only the actual date of bringing into use would then need to be notified. However, the Board would still be faced with the problem of what action to take in the case of a station which was not brought into use on the notified date.

The delegate of the United Kingdom said that that situation was covered by paragraph 5.6.2, with which his delegation had no quarrel.

Following some further discussion, it was decided to refer Sections 5.3 to 5.6 and the miscellaneous provisions (pages 9 and 10) back to Working Group 6A for further consideration.

2. Allocation of documents to the Committee (Documents Nos. 161(Rev.1), 169(Rev.1) + Corr.1)

Document No. 161(Rev.1)

Following a short exchange of views, it was agreed that the Chairman would discuss the document with the Chairman of Committee 4 with a view to determining what action Committee 6 could appropriately take.

Document No. 169(Rev.1) + Corr.1

The delegate of the Federal Republic of Germany said that Working Groups 6B and 4B had collaborated closely in the preparation of the Appendix to the document.

The delegate of Italy, supported by the delegate of the United Kingdom, considered that there was no need for the Appendix, which was purely technical in nature, to be discussed by either Committee 6 or any of its Working Groups.

The Chairman said that if he heard no objection he would take it that the Committee wished the Appendix to Document No. 169(Rev.1), together with its Corrigendum, to be annexed to Document No. 185.

It was so agreed.

3. First Report from Working Group 6B (Document No. 185 + Corr.1)

The Chairman of Working Group 6B introduced the Working Group's Report, drawing particular attention to the texts between square brackets in paragraphs 1.0, 1.11 and 1.12 and to the Corrigendum, which was the result of the discussions held in an ad hoc group set up to consider the question of the insistence procedure.

The delegate of the United Kingdom, referring to the Corrigendum, said that the word "coordination" should be replaced by the word "condition" in the fifth line of paragraph 3.15 and the ninth line of paragraph 3.32. Furthermore, he considered that the phrase "provided that the assistance of the Board has been requested" in paragraph 1.11 should be placed between square brackets.

The delegate of the USSR said that his delegation would, at the appropriate time, propose an amendment to paragraph 1.11 as set out in the Corrigendum.

The Chairman invited the Committee to consider the title of the Annex at the top of page 2.

The delegate of the United Kingdom proposed, in view of the interference which might be caused by terrestrial stations in Region 3 to Broadcasting-Satellite stations in Region 1, that the words "affecting Broadcasting-Satellite stations" should be inserted after the words "terrestrial stations" in the third line.

The delegates of Italy and Switzerland supported the proposal.

The representative of the IFRB observed that if the United Kingdom proposal was adopted, the title might be interpreted to mean that the procedures set out in the Annex applied also to terrestrial stations in the 12.2-12.5 GHz band in Region 3. He asked whether that was the intention of the United Kingdom delegate.

The delegate of the United Kingdom said that terrestrial stations in the 11.7-12.5 GHz band which were within the coordination range of a Broadcasting-Satellite station in Region 1 should be subject to the procedures in the Annex, in order to ensure adequate protection for the latter type of station.

The delegate of Japan considered that no change should be made in the title of the Annex.

Following some further discussion, the Chairman suggested that the delegations concerned should discuss the matter with the representative of the IFRB with a view to working out a compromise solution for submission to the Committee at its next meeting.

It was so agreed.

The meeting rose at 1540 hours.

The Secretary :

R. PLUSS

The Chairman :

R.J. BUNDLE

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 293-E

10 February 1977

Original : French

PLENARY MEETING

MINUTES

OF THE

SIXTH PLENARY MEETING

Monday, 7 February 1977, at 1110 hrs.

Chairman : Mr. Ib LØNBERG (Denmark)

Subjects discussed :

Documents Nos.

- | | |
|--|----------|
| 1. Approval of the minutes of the fourth plenary meeting | 199 |
| 2. Third and fourth series of texts submitted by the Editorial Committee | 224, 225 |

-
1. Approval of the minutes of the fourth plenary meeting (Document No. 199)
Subject to drafting amendment submitted by the delegate of the United Kingdom, Document No. 199 was approved.
 2. Third and fourth series of texts submitted by the Editorial Committee
(Documents Nos. 224 and 225)

Document No. 224

The Chairman of the Editorial Committee said that the texts in Document No. 224 would have to be amplified in the light of certain definitions approved subsequently and relating, for example, to the service area, of amendments made to the texts dealing with energy dispersal and the nominal satellite position and of the most recent decisions adopted by Committee 5. In addition, a number of drafting changes were required.



The delegates of India and of the United States of America drew attention to several errors and inconsistencies in the document.

The delegate of the United Kingdom pointed out that the technical data used when the Plan came to be applied might in some cases differ slightly from those which had served as a basis for the compilation of the Plan. The title of the series of texts should therefore be amended.

The Chairman of Committee 5 proposed that a document should be prepared by himself in collaboration with the Chairmen of Committees 4 and 6 which would contain all changes to be made to Document No. 224, so that the Conference might compare the two texts.

The delegate of the United States supported that proposal. He suggested that an expression corresponding to the English verbal command form "shall" should be employed in respect of all technical characteristics which were mandatory for the application of the Plan.

It was decided to ask the Chairmen of Committees 4, 5 and 6 to prepare, with the assistance of the Editorial Committee, a document containing all the amendments and additions to be made to the series of texts contained in Document No. 224.

Document No. 225

The Chairman of the Editorial Committee, introducing the document, indicated the various points on which delegates were to state their views.

The Chairman of Committee 6 observed that in view of the decisions taken by Committee 6 since the document had been prepared, the references to "/ Contracting Members /" and to "/ Members /" should be deleted, only the term "Administrations" to be retained. Also, the term "Final Acts", which appeared in square brackets in various paragraphs, should, except in a few cases, be replaced by the word "Plan".

It was so decided.

The Chairman invited delegates to examine the document paragraph by paragraph.

Article 4

Point 4.1

The Chairman of Committee 6 said that the expression "these Final Acts" at the end of point 4.1 should be retained, the square brackets being deleted.

The delegate of Colombia, recalling the reservations expressed by his delegation in connection with the assignment of orbital positions, made the statement reproduced in the Annex below.

Point 4.2

In reply to the delegate of Italy, who pointed out that the English text referred to "Final Acts" and the French text to "Plan", the Chairman of the Editorial Committee said that in her view the French version was simpler and more correct.

It was decided to replace "in accordance with the Final Acts" in the English text by "in accordance with the Plan".

Point 4.3.1

The Chairman of Committee 6 said that a sentence relating to the compilation of a future plan for Region 2 would be included subsequently. Also, the reference to Document No. DT/42 would have to be changed.

The delegate of Italy pointed out that Document No. DT/42 had become Document No. 221.

In reply to a question by the delegate of India, the Chairman of Committee 6 said that the provisions of the Radio Regulations referred to in the second sub-paragraph on page 3 were those currently applicable.

Point 4.3.2

The Chairman of Committee 6 said that in the English version the word "the" should be added in the first line before the word "Plan". A new sentence, to be drafted later, would have to be inserted.

Points 4.3.2.1, 4.3.2.2, 4.3.3 and 4.3.4 were approved without change.

Point 4.3.5

Following an observation by the delegate of India, it was decided to replace the word "insert" in the third line of the English version by "include".

Points 4.3.6, 4.3.7, 4.3.8, 4.3.9 and 4.3.10 were approved without change.

Point 4.3.11

The Chairman of Committee 6 proposed that in the fourth and fifth lines the words in square brackets should be deleted.

The delegate of Italy observed that the deletion would make that provision of Article 4 meaningless. He proposed that the words in square brackets should be replaced by "may continue to apply the procedure laid down in Article 5".

The proposal was supported by the Chairman of Committee 6 and by the delegate of the United Kingdom.

Point 4.3.11, as amended, was approved.

Point 4.3.12

It was decided to replace, in the English version, the word "can" by "may".

Points 4.3.13, 4.3.14, 4.3.15, 4.3.16, 4.3.17, 4.3.18, 4.4, 4.5, 4.5.1 and 4.5.2 were approved without change.

Article 5

Points 5.1 and 5.1.1 were approved without change.

Point 5.1.2

At the suggestion of the delegate of Italy, it was decided to replace, in the third line, "Appendix (A³)" in square brackets by "Appendix B", to delete the relevant Note and footnote 3) in square brackets at the bottom of the page, and to delete the words "the additional data ... together with" in the last sentence.

Point 5.1.3

The Chairman of Committee 6 thought that it would be preferable to place the reference at the end of the paragraph after the word "date".

The Chairman of Committee 8 said that in that case the reference "5.1.3.1/" in the first footnote on page 6 should be replaced by "Note :".

It was so decided.

Point 5.1.4 was approved without change.

Point 5.1.5 was approved, subject to the replacement of the words in square brackets by "Appendix B".

Point 5.1.6

On the proposal of the Chairman of Committee 6, it was decided to delete the asterisk and the relevant footnote.

The representative of the IFRB pointed out that the circular referred to was among the definitions approved by the Conference. He therefore proposed that in the second line the word "the" should be replaced by "its" and that the words "referred to ... Regulations*" should be deleted.

It was so decided.

Points 5.1.7 and 5.1.8 were approved without change.

Point 5.2.1

The delegate of Italy said that the Appendix in square brackets was Appendix A, which contained the sharing criteria.

It was therefore decided to add the letter "A" after the word "Appendix" and to delete footnote 1).

The representative of the IFRB remarked that when the final text was drafted, it would have to be remembered that possibly not all of the criteria to be taken into consideration would be contained in a single appendix.

Points 5.2.2, 5.2.3 and 5.2.4 were approved without change.

Point 5.2.5

The Chairman of Committee 6 pointed out that the paragraph would later have to be amplified.

The delegate of Canada recalled that the most recent conclusions formulated by Committee 4 on the criteria for sharing between regions would necessitate certain amendments to the Plan and that paragraph 3 of Document No. 188(Rev.2) would have to be borne in mind.

Document No. 225 was approved subject to the amendments submitted and to the necessary additions.

The meeting rose at 1225 hours.

The Secretary

M. MILI

The Chairman

Ib LØNBERG

Annex : 1

A N N E X

STATEMENT BY THE DELEGATION OF COLOMBIA

All the various concepts of geostationary orbit planning put forward at this Conference entail the assignment of frequencies and orbital positions to Administrations and Regions in perpetuity.

The introduction of the concept of frequency-orbit in the footnote on page 2 of Document No. 225 confirms that the Conference is not only seeking to allocate frequencies, but also to assign geographically fixed points in space.

The task of apportioning the geostationary orbit cannot have been assigned to the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in Frequency Bands 11.7-12.2 GHz (in Regions 2 and 3) and 11.7-12.5 GHz (in Region 1) either by Resolution No. 27 of the Plenipotentiary Conference of Malaga-Torremolinos, 1973, or by Resolution No. Spa2 - 2 of the World Administrative Radio Conference for Space Telecommunications, Geneva, 1971, or by ITU Administrative Council Resolution No. 762. There is no provision in the Convention or in its associated Regulations empowering the Union, its organs or its Administrative Conferences to dispose of physical space in any sense whatever. The purposes of the Union and its organs are fully set out in Article 4 of the Convention. This Conference, therefore, has no legal power to assign segments of the geostationary orbit in perpetuity to fixed communication stations.

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 294-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For Sultanate of Oman

In signing the Final Act of the World Broadcasting-Satellite Administrative Radio Conference, Geneva 1977, the delegation of the Sultanate of Oman declares that its Government reserves the right to take any measures it may deem necessary to safeguard its interests.

However the delegation recalls that its country will encourage cooperation based on equal rights of all participating countries.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 295(Rev.2)-E

11 February 1977

Original : English

PLENARY MEETING

Federal Republic of Germany, Austria, Belgium, Canada, Denmark,
United States of America, Finland, France, Ireland, Italy, Japan,
Luxembourg, Monaco, Norway, New Zealand, Kingdom of the Netherlands,
Portugal, United Kingdom of Great Britain and Northern Ireland, Sweden

THE GEOSTATIONARY ORBIT

The above-mentioned countries wish to record their full support for the views expressed in Document No. 181.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 295 (Rev.)-E

10 February 1977

Original : English

PLENARY MEETING

Federal Republic of Germany, Austria, Belgium, Canada, Denmark, United States of America, France, Ireland, Italy, Japan, Luxembourg, Monaco, Norway, New Zealand, Kingdom of the Netherlands, Portugal, United Kingdom of Great Britain and Northern Ireland

THE GEOSTATIONARY ORBIT

The above-mentioned countries wish to record their full support for the views expressed in Document No. 181.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 295-E

10 February 1977

Original : English

PLENARY MEETING

FINAL PROTOCOL

For the Federal Republic of Germany, Austria, Belgium, Canada, Denmark, United States of America, France, Ireland, Italy, Japan, Luxembourg, Monaco, Norway, New Zealand, Kingdom of the Netherlands, Portugal, United Kingdom of Great Britain and Northern Ireland

THE GEOSTATIONARY ORBIT

The above-mentioned countries wish to record their full support for the views expressed in Document No. 181.



PLENARY MEETING

B.13(Rev.1)

Add the following text :

ARTICLE

POWER FLUX DENSITY LIMITS BETWEEN 11.7 AND 12.2 GHz
TO PROTECT SPACE SERVICES IN REGION 2 FROM INTERFERENCE FROM REGIONS 1 AND 3
BROADCASTING-SATELLITE SPACE STATIONS

The broadcasting-satellite service of Regions 1 and 3 shall employ satellite antennae whose side lobe characteristics fall within the reference antenna pattern given in Figure 5 of Annex 8. Therefore, the power flux density falling on the territory of any administration of Region 2 in the band 11.7 - 12.2 GHz shall not exceed, under all conditions and methods of modulation, the values produced by broadcasting-satellite systems operating in accordance with the Plan and using the technical characteristics specified in the Plan. The pfd values shall be calculated using the method described in Annex (DT/49) .

In particular, the power flux densities at a reference test point (longitude 35°W, latitude 8°S) shall not exceed the values shown in Annex (DT/52) and Addendum 1 .



PLENARY MEETING

B.13(Rev.1)

PARTIAL REVISION OF THE
13th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
Ad Hoc Group 4/6	-	Annex 1 Annex 6

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 3 pages



A N N E X 1

LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION IS CONSIDERED TO BE AFFECTED BY A PROPOSED MODIFICATION TO THE PLAN (ARTICLE 4, PARAGRAPH 4.3.1)¹⁾

1. Limits on the change in the wanted-to-interfering signal ratio with respect to protect frequency assignments in accordance with the Plan

With respect to paragraph 4.3.1.1, an administration shall be considered as being affected if the effect of the proposed modification to the Plan would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in the Plan falling below either 30 dB or the value resulting from the frequency assignments in the Plan at the date of entry into force of the Final Acts, whichever is the lower.

Note : In performing the calculation, the effect at the receiver input of all the co-channel and adjacent channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

2. Limits on change in power flux density to protect the broadcasting-satellite service in the band 11.7 - 12.2 GHz in Region 2

With respect to paragraph 4.3.1.2 an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding the following power flux densities at any point in the service area affected :

$-147 \text{ dBW/m}^2/27 \text{ MHz}$	$0^\circ \leq \theta < 0.48^\circ$
$-139 + 25 \log \theta \text{ dBW/m}^2/27 \text{ MHz}$	$0.48^\circ \leq \theta < 27.25^\circ$
$-103 \text{ dBW/m}^2/27 \text{ MHz}$	$\theta \geq 27.25^\circ$

where θ is the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2.

-
- 1) The limits specified in this Annex relate to the power flux densities which would be obtained assuming free space propagation conditions.

3. Limits on the change in power flux density to protect the terrestrial services of other administrations

With respect to paragraph 4.3.1.3, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification to the Plan is to increase the power flux density arriving on any part of the territory of that administration by more than $\angle 0.25 \text{ dB} \angle$ over that resulting from the frequency assignments in the Plan at the time of entry into force of the Final Acts.

The same administration shall be considered as not being affected if the value of the power flux density anywhere in its territory does not exceed $\angle \quad \quad \angle$.

An administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding a power flux density, for all angles of arrival, at any point on its territories, of $-125 \text{ dBW/m}^2/4 \text{ kHz}$ when the broadcasting-satellite station uses circular polarization and $-128 \text{ dBW/m}^2/4 \text{ kHz}$ when the broadcasting-satellite station uses linear polarization.

4. Limits on the change in power flux density to protect fixed-satellite service in the band 11.7 - 12.2 GHz in Region 2

With respect to paragraph 4.3.1.4, an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in :

- a) an increase in the power flux density on its territory of $\angle 0.25 \text{ dB} \angle$ or more above that resulting from the frequency assignments in the Plan at the time of entry into force of the Final Acts; or
- \angle b) a power flux density exceeding $\angle -138 \text{ dBW/m}^2 \angle$ anywhere on its territory. \angle

5. Conditions relating to the modulating signal

The modulating signal used for planning is defined in paragraph 3.1 of the Annex \angle Technical Data \angle .

This does not preclude the use of other modulating signals having different characteristics (e.g. 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), provided that the use of such characteristics does not cause greater interference than that caused by the system considered in the Plan.

A N N E X 6ORBITAL POSITION LIMITATIONS

In applying the procedure of Article 4 for modifications to the Plan, administrations shall observe the following criteria :

- 1) No broadcasting-satellite serving an area in Region 1 and using a frequency in the range 11.7 - 12.2 GHz shall occupy a nominal orbital position further West than 37° W or further East than 140° E.
- 2) Any new nominal orbital position in the Plan in the range of orbital arc between 37° W and 10° E associated with a new assignment, or resulting from a modification of an assignment in the Plan, shall be coincident with, or within 1° to the East of, a nominal orbital position in the Plan at the date of entry into force of the Final Acts.

In the event of a modification to an assignment in the Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts shall be associated with an 8 dB reduction in the e.i.r.p. compared to that appearing in the Plan for the assignment before modification.

PLENARY MEETING

B.13

13th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first
reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
Ad Hoc Group 4/6	-	Article 9
		Annex 1
		Annex 2
		Annex 4
		Annex 5
		Annex 6

Miss M. HUET

Chairman of the
Editorial CommitteeAnnexes : 8 pages

ARTICLE 9

Power flux density limits between 11.7 and 12.2 GHz
to protect terrestrial services in Regions 1 and 3
from interference from Region 2 broadcasting-satellite space stations

The power flux density at the Earth's surface in Regions 1 and 3, produced by emissions from a space station in the broadcasting-satellite service in Region 2 for all conditions and for all methods of modulation shall not exceed the values given in Annex 5, on the territory of any country unless the administration of that country so agrees.

A N N E X 1

LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION
IS CONSIDERED TO BE AFFECTED BY A PROPOSED MODIFICATION
TO THE PLAN - ARTICLE 4 PARAGRAPH 4.3.1

1. Limits on the change in the wanted-to-interfering signal ratio to protect the broadcasting-satellite service of other administrations' frequency assignments in conformity with the Plan

With respect to paragraph 4.3.1.1, an administration shall be considered as being affected if the effect of the proposed modification to the Plan would result in the wanted-to-interfering signal ratio at any point within the service area associated with any of its frequency assignments in the Plan falling below either 30 dB or below the value resulting from the assignments in conformity with the Plan at the date of entry into force of the Final Acts, whichever is the lower.

Note : In performing the calculation, the effect at the receiver input of all the co-channel and adjacent channel signals is expressed in terms of one equivalent co-channel interfering signal. This value is usually expressed in decibels.

2. Limits on change in power flux density to protect the broadcasting-satellite service in the band 11.7 - 12.2 GHz in Region 2

With respect to paragraph 4.3.1.2 an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding the following power flux densities under assumed free space propagation conditions at any point in the service area affected :

$-147 \text{ dBW/m}^2/27 \text{ MHz}$	$0^\circ \leq \theta < 0.48^\circ$
$-139 + 25 \log \theta \text{ dBW/m}^2/27 \text{ MHz}$	$0.48^\circ \leq \theta < 27.25^\circ$
$-103 \text{ dBW/m}^2/27 \text{ MHz}$	$\theta \geq 27.25^\circ$

where θ is the difference in degrees between the longitudes of the broadcasting-satellite space station in Region 1 or 3 and the broadcasting-satellite space station affected in Region 2.

These limits should be determined when producing a plan for the broadcasting-satellite service in Region 2 (see Resolution E Document No. 246).

3. Limits on the change in power flux density to protect the terrestrial services of other administrations

With respect to paragraph 4.3.1.3, an administration in Region 1 or 3 shall be considered as being affected if the consequence of the proposed modification to the Plan is to increase the power flux density arriving on any part of the territory of that administration by more than $\angle 0.25 \text{ dB} \angle$ over that resulting from the frequency assignments in conformity with the Plan at the time of entry into force of the Final Acts.

The same administration shall be considered as not being affected if the value of the power flux density anywhere in its territory does not exceed $\angle \quad \quad \angle$.

An administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in exceeding a power flux density, for all angles of arrival, at any point on its territories, of $-125 \text{ dBW/m}^2/4 \text{ kHz}$ when the broadcasting-satellite station uses circular polarization and $-128 \text{ dBW/m}^2/4 \text{ kHz}$ when the broadcasting-satellite station uses linear polarization.

4. Limits on the change in power flux density to protect fixed-satellite service in the band 11.7 - 12.2 GHz in Region 2

With respect to paragraph 4.3.1.4, an administration in Region 2 shall be considered as being affected if the proposed modification to the Plan would result in :

- a) an increase in the power flux density on its territory of $\angle 0.25 \text{ dB} \angle$ or more above that resulting from the frequency assignments in conformity with the Plan at the time of entry into force of the Final Acts; or
- \angle b) a power flux density greater than $\angle \quad \quad \angle$, except where the proposed modification does not increase the power flux density on the territory of the country concerned over that resulting from the frequency assignments in the Plan at the time of entry into force of the Final Acts. \angle

Note : The text of this paragraph depends on the decision of the Conference on paragraph 2.3 of Document No. 243 (page 4).

A N N E X 2

BASIC CHARACTERISTICS TO BE FURNISHED IN NOTICES
RELATING TO SPACE STATIONS IN THE BROADCASTING-SATELLITE SERVICE

1. Country and IFRB number
2. Nominal orbit position (in degrees from the Greenwich meridian)
3. Assigned frequency or channel number
4. Date of bringing into use
5. Identity of the space station
6. Service area (if necessary, the service area may be defined by a number of "test points")
7. Geographical coordinates of the intersection of the antenna beam axis with the Earth
8. Rain-climatic zone
9. Class of station
10. Class of emission and necessary bandwidth
11. Power (watts)
 - carrier power supplied to the antenna
12. Antenna characteristics
 - gain of the antenna referred to an isotropic radiator
 - isotropic gain in the direction of the edge-of-coverage area
 - shape of the beam (elliptical or circular)
 - major axis (degrees) at -3 dB points
 - minor axis (degrees) at -3 dB points
 - orientation of the ellipse
 - ΔG (difference between the e.i.r.p. directed towards the edge of the coverage area and the e.i.r.p. in the beam axis)
 - pointing accuracy
 - type of polarization
 - sense of polarization
 - radiation pattern and cross-polar characteristics

13. Station keeping accuracy
14. Modulation characteristics
 - type of modulation
 - pre-emphasis characteristics
 - TV standard
 - sound broadcasting characteristics
 - frequency deviation \angle for reference frequency \angle
 - composition of the baseband
 - type of multiplexing of the video and sound signals
 - energy dispersal characteristics
15. Minimum angle of elevation in the service area
16. Type of reception (individual or community)
17. Hours of operation (GMT)
18. Coordination
19. Agreements
20. Other information
21. Operating administration or company

A N N E X 4

NEED FOR COORDINATION OF A FIXED-SATELLITE SPACE STATION
OR A BROADCASTING-SATELLITE SPACE STATION IN REGION 2
WITH RESPECT TO THE PLAN (ARTICLE [7])

With respect to paragraph 2.1, coordination of a space station in the fixed-satellite service or the broadcasting-satellite service of Region 2 is required when, under assumed free space propagation conditions, the power flux density on the surface of the Earth on the territory of an administration in Region 1 or Region 3 exceeds the value derived from the following expressions :

$$-147 \text{ dBW/m}^2/27 \text{ MHz for } 0 \leq \theta < 0.44^\circ$$

$$-138 + 25 \log \theta \text{ dBW/m}^2/27 \text{ MHz for } 0.44^\circ \leq \theta < 19.1^\circ$$

$$-106 \text{ dBW/m}^2/27 \text{ MHz for } 19.1^\circ \leq \theta$$

[Document No. 243, paragraph 2.1 refers]

θ = the difference in degrees between the longitude of the interfering broadcasting-satellite or fixed-satellite in Region 2 and the longitude of the affected broadcasting-satellite space station in Regions 1 and 3.

A N N E X 5

POWER FLUX DENSITY LIMITS TO PROTECT THE TERRESTRIAL SERVICES IN
REGIONS 1 AND 3 FROM INTERFERENCE FROM REGION 2 BROADCASTING-
SATELLITE SPACE STATIONS IN THE BAND 11.7 - 12.2 GHz (ARTICLE [7])

The power flux density limits are as follows :

- 1) for territories of administrations in Region 3 and those in the western part of Region 1, West of latitude 30°E :

$-132 \text{ dBW/m}^2/5 \text{ MHz}$	for angles of arrival between 0 and 10° above the horizontal plane;
$-132 + 4.2 (\gamma - 10) \text{ dBW/m}^2/5 \text{ MHz}$	for angles of arrival γ (in degrees) between 10° and 15° above the horizontal plane;
[-111] $\text{dBW/m}^2/5 \text{ MHz}$	for angles of arrival between 15° and 90° above the horizontal plane;

- 2) for all the territories of administrations in Regions 1 and 3 :

$-125 \text{ dBW/m}^2/4 \text{ kHz}$	for broadcasting-satellite space stations using circular polarization;
$-128 \text{ dBW/m}^2/4 \text{ kHz}$	for broadcasting-satellite space stations using linear polarization

for all angles of arrival.

A N N E X 6ORBITAL POSITION LIMITATIONS

In applying the procedure of Article 4 for modifications to the Plan, administrations shall observe the following criteria :

- 1) No broadcasting-satellite serving an area in Region 1 and using a frequency in the range 11.7 - 12.2 GHz shall occupy a nominal orbital position further West than $\angle 37^{\circ} \text{ W} \angle$ or further East than $\angle \dots \text{ E} \angle$.
- 2) Any new nominal orbital position in the Plan in the range of orbital arc between $\angle 37^{\circ} \text{ W} \angle$ and 10° E associated with a new assignment, or resulting from a modification of an assignment in the Plan, shall be coincident with, or within 1° to the East of, a nominal orbital position in the Plan at the date of entry into force of the Final Acts.

In the event of a modification to an assignment in the Plan, the use of a new nominal orbital position not coincident with any nominal orbital position in the Plan at the date of entry into force of the Final Acts shall be associated with an 8 dB reduction in the e.i.r.p. compared to that appearing in the Plan for the assignment before modification.

Document No. 297-E
10 February 1977

PLENARY MEETING

B.14

14th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL
COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.5	DT/50	Resolution No. I relating to the preparation and publication of information not contained in the broadcasting-satellite plan for Regions 1 and 3.
	DT/51	Table showing correspondence between channel numbers and assigned frequencies

Miss M. HUET
Chairman of the
Editorial Committee

Annex : 2 pages



Document No. 297-E

Page 2

RESOLUTION No. I

Relating to the preparation and publication of
information not contained in the broadcasting-satellite
plan for Regions 1 and 3

The World Broadcasting-Satellite Administrative Radio Conference,
Geneva, 1977,

considering

a) that the planning work for Regions 1 and 3 has been based on
the calculation of the protection margins at a number of test points;

b) that it would be useful to know the / equivalent / protection
margin at each of these test points for all the assignments in the Plan, in
order to assess any degradation which may result from subsequent amendments to
the Plan;

c) that it would be helpful, in applying the procedure set forth in
/ Appendix ... /, for any administration wishing to bring terrestrial stations
into service to know the elevation angle of the receiving antennae of the
earth stations in the broadcasting-satellite service;

invites the IFRB

to prepare, with a view to its publication by the Secretary-General in 1977,
a document containing the following information :

a) column 1 : country symbol and IFRB serial number for the beam;

b) column 2 : geographical coordinates of the test points as given
in Document / ... /;

c) column 3 : elevation angle of the receiving antenna of the
earth station at each of these test points;

d) column 4 : azimuth in degrees clockwise from True North of the
major beam axis of the earth station's receiving antenna;

e) column 5 : the / equivalent / protection margin* in dB at each
of these test points for all the assignments in the Plan.

* For the definition of / equivalent / protection margin, see
CCIR Report 633(Rev.76)

TABLEAU DE CORRESPONDANCE ENTRE LE NUMERO DU CANAL
ET LA FREQUENCE ASSIGNEE

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS
AND ASSIGNED FREQUENCIES

CUADRO DE CORRESPONDENCIA ENTRE EL NÚMERO DEL CANAL
Y LA FRECUENCIA ASIGNADA

Canal Channel N°	Fréquence assignée Assigned frequency Frecuencia asignada (MHz)	Canal Channel N°	Fréquence assignée Assigned frequency Frecuencia asignada (MHz)
1	11 727,48	21	12 111,08
2	11 746,66	22	12 130,26
3	11 765,84	23	12 149,44
4	11 785,02	24	12 168,62
5	11 804,20	25	12 187,80
6	11 823,38	26	12 206,98
7	11 842,56	27	12 226,16
8	11 861,74	28	12 245,34
9	11 880,92	29	12 264,52
10	11 900,10	30	12 283,70
11	11 919,28	31	12 302,88
12	11 938,46	32	12 322,06
13	11 957,64	33	12 341,24
14	11 976,82	34	12 360,42
15	11 996,00	35	12 379,60
16	12 015,18	36	12 398,78
17	12 034,36	37	12 417,96
18	12 053,54	38	12 437,14
19	12 072,72	39	12 456,32
20	12 091,90	40	12 475,50

Document No. 298-E
10 February 1977

PLENARY MEETING

B.15

15th SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

<u>Source</u>	<u>Document No.</u>	<u>Title</u>
C.8	-	Introductory text to Final Protocol

Miss M. HUET
Chairman of the
Editorial Committee

FINAL PROTOCOL

At the time of signing the Final Acts containing the provisions, the associated Plan and the decisions concerning the Re-arrangement of the Radio Regulations and the Additional Radio Regulations adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, the undersigned delegates take note of the following statements forming part of the Final Acts of this Conference.



BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 299-E

10 February 1977

Original : French

PLENARY MEETING

FINAL PROTOCOL

For the Republic of Mali

The delegation of the Republic of Mali to the World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service, Geneva, 1977, declares that it reserves its Administration's right to take any action it might deem necessary in order to safeguard its interests, should these interests be jeopardized by the failure of another Administration to observe the provisions adopted by this Conference.



INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING SATELLITE CONFERENCE

(Geneva, 1977)

Document No. 300-E

11 February 1977

Original : English

PLENARY MEETING

Note from the Chairman of Committee 6

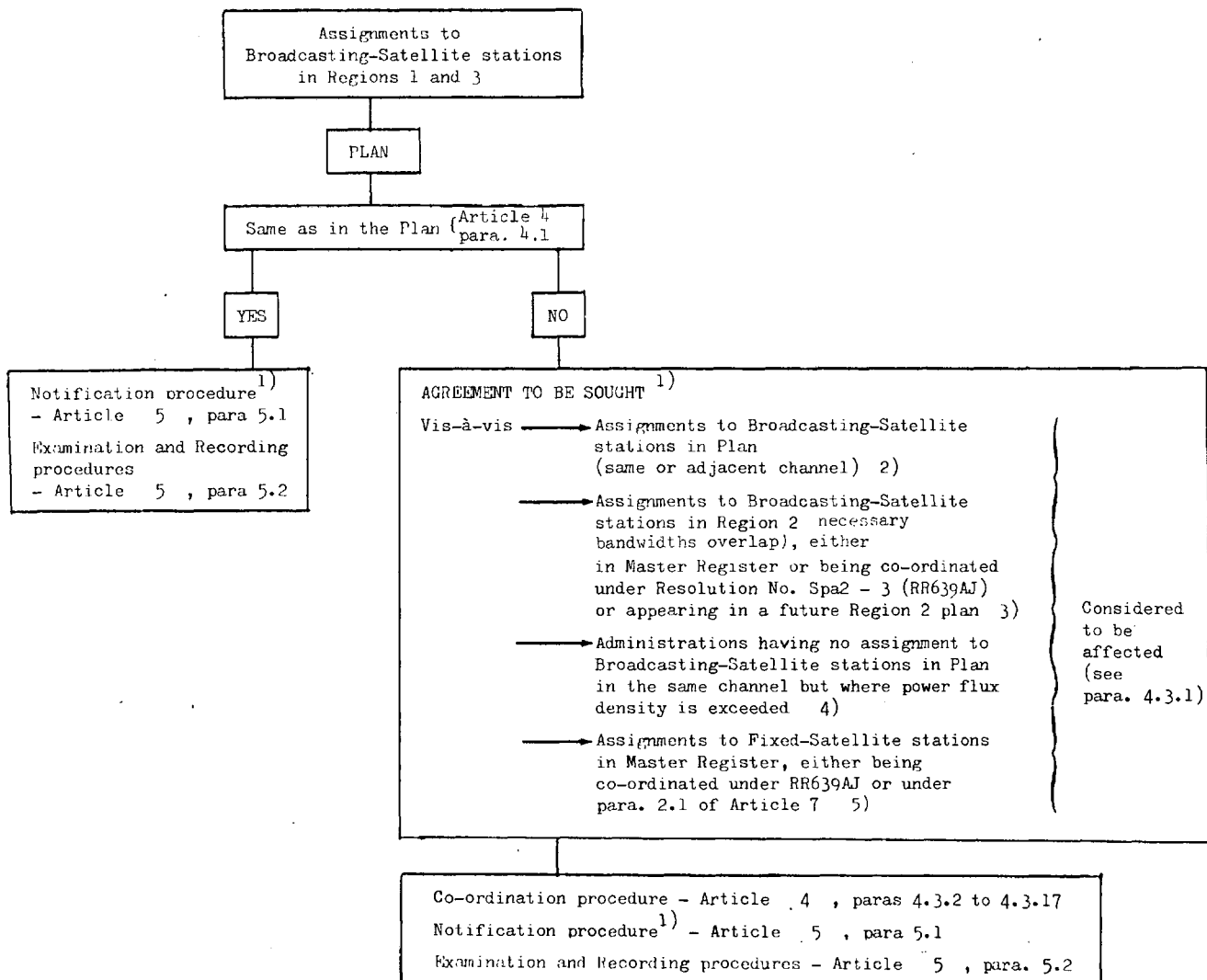
The attached diagrams showing the different procedures adopted by this Conference might be useful to delegates.

R.J. BUNDLE
Chairman of Committee 6

Annexes: 4



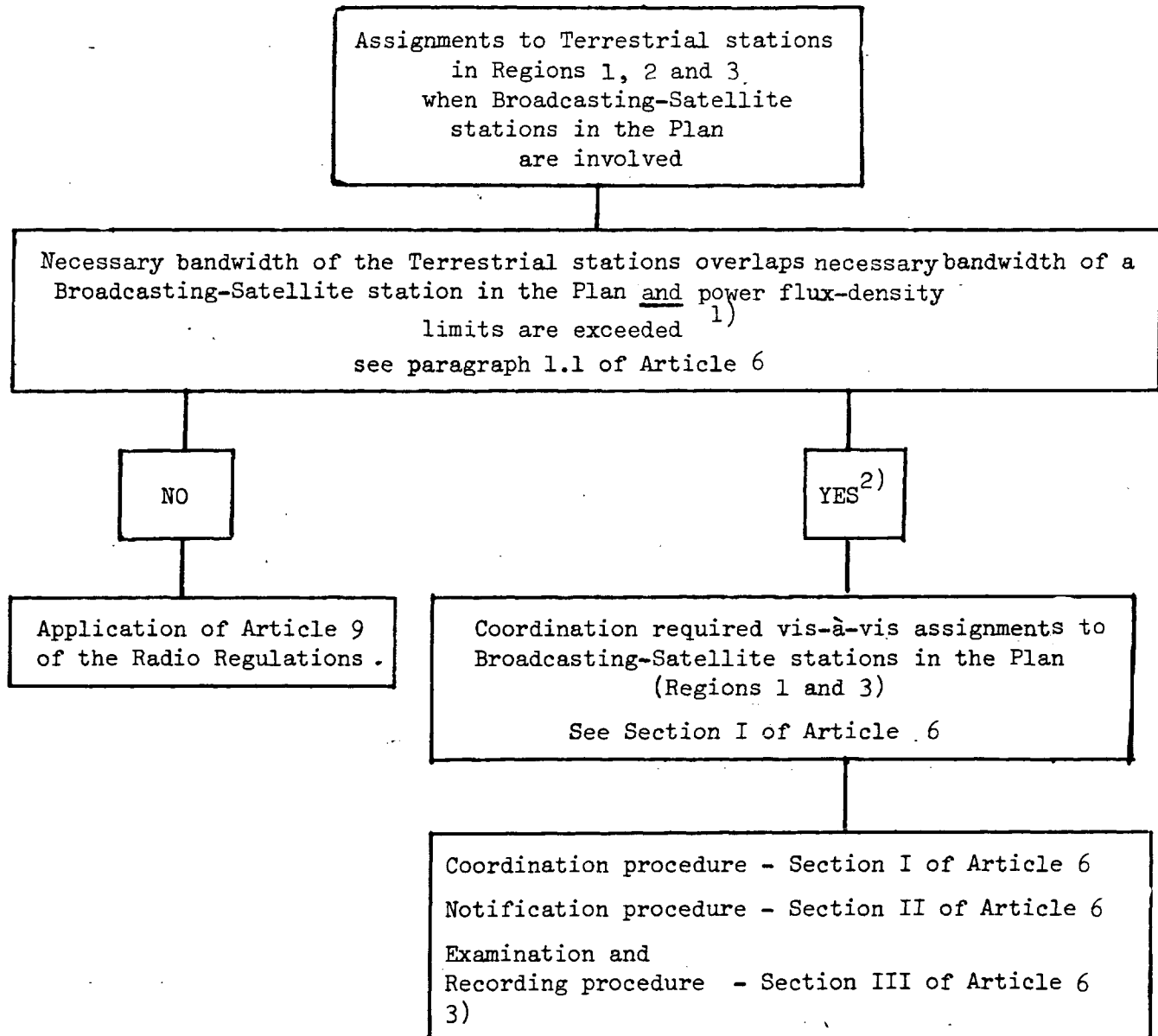
PROCEDURES FOR BROADCASTING-SATELLITE STATIONS
IN REGIONS 1 AND 3
Articles 4 and 5



- 1) Characteristics to be supplied are those of Annex 2 to the Final Acts.
- 2) An assignment is considered to be affected when the prescribed limits given in paragraph 1 of Annex 1 are exceeded.
- 3) An assignment is considered to be affected when the prescribed limits given in paragraph 2 of Annex 1 are exceeded.
- 4) An assignment is considered to be affected when the prescribed limits given in paragraph 3 of Annex 1 are exceeded.
- 5) An assignment is considered to be affected when the prescribed limits given in paragraph 4 of Annex 1 are exceeded.

PROCEDURES FOR TERRESTRIAL STATIONS IN REGIONS 1, 2 AND 3

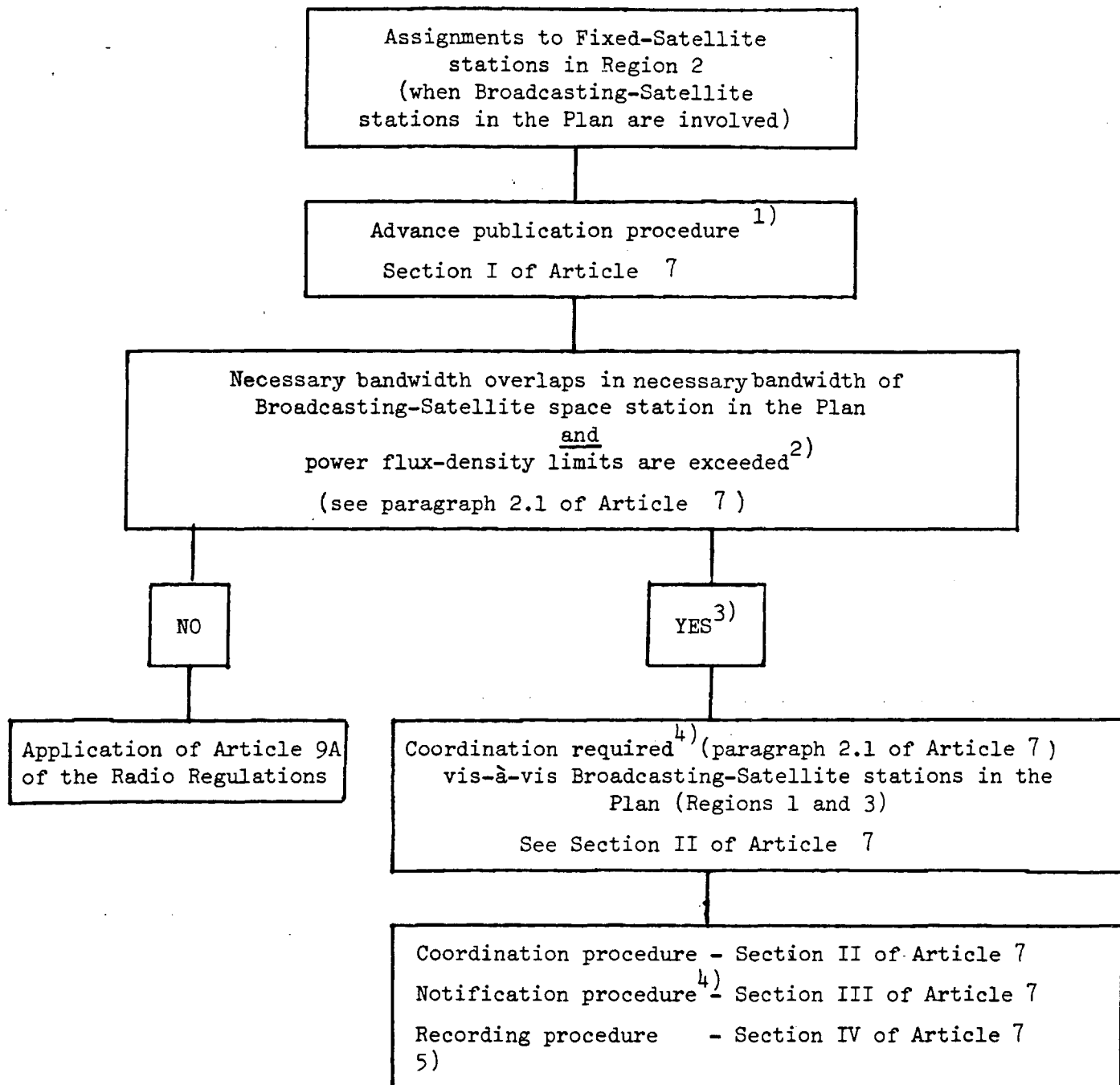
Article 6



- 1) The procedure for determining the limits is given in Annex 3
- 2) If change in characteristics of an existing assignment, see paragraph 1.4 of Article 6
- 3) These procedures do not involve any dispensation from the procedures prescribed for Terrestrial stations in Article 9 of the Radio Regulations where stations other than those of the Broadcasting-Satellite Service are involved

PROCEDURES FOR FIXED-SATELLITE STATIONS IN REGION 2

Article 7



1) Characteristics to be supplied are those of Appendix 1B to the Radio Regulations

2) These limits are given in Annex 4

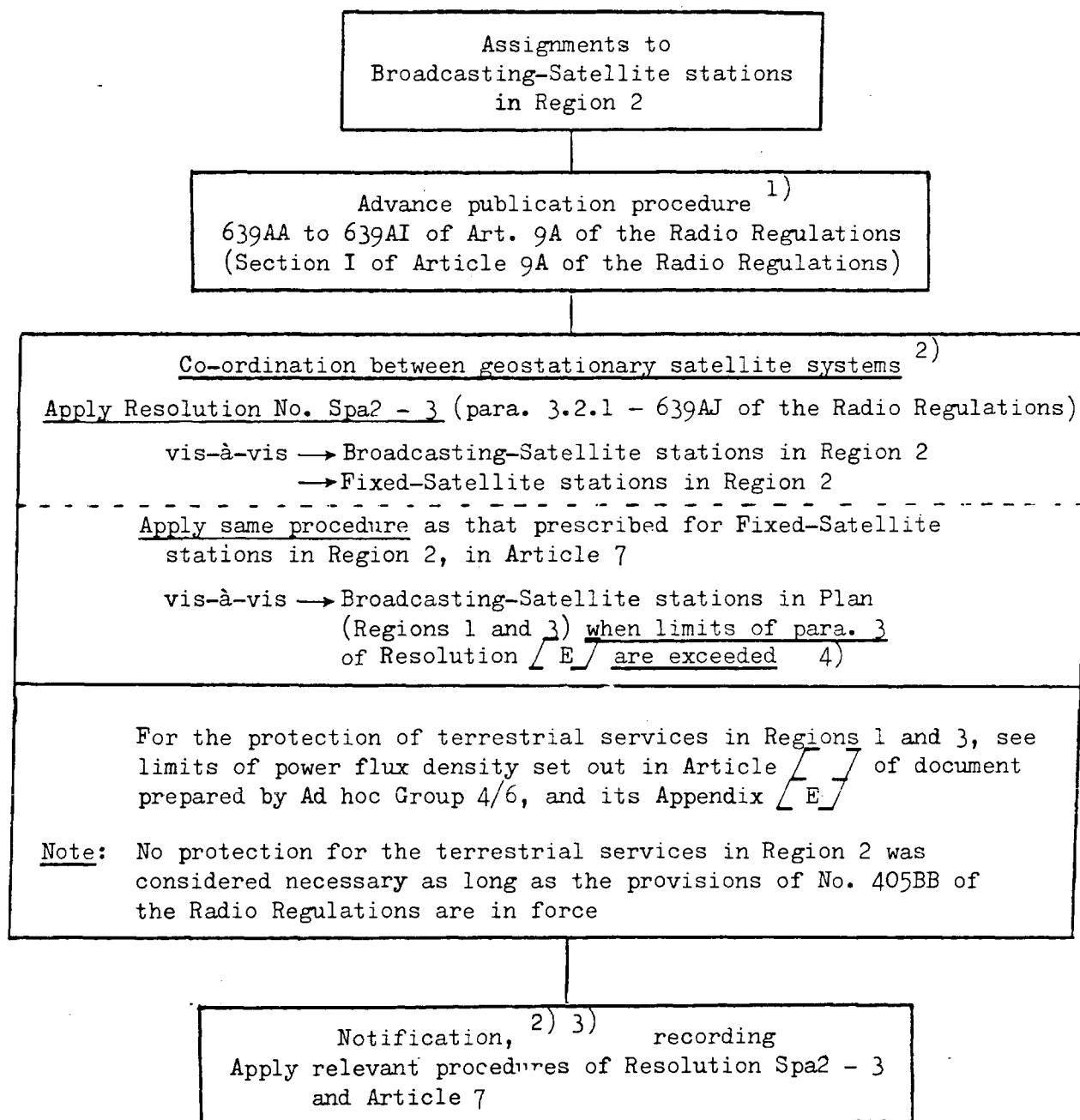
3) If change to the characteristics of an existing assignment, see paragraph 2.2 of Article 7

4) Characteristics to be supplied are those of Appendix 1A to the Radio Regulations

5) These provisions do not replace the procedures prescribed in Article 9A of the Radio Regulations when stations other than those of the Broadcasting-Satellite Service contained in the Plan are involved.

PROCEDURES FOR BROADCASTING-SATELLITE STATIONS IN REGION 2

Resolution No. [E]



- 1) Characteristics to be supplied are those of Appendix 1B to the Radio Regulations.
- 2) Characteristics to be supplied are those of Annex 2 to the Final Acts.
- 3) A notice relating to a typical earth station shall also be notified.
- 4) These limits are given in Annex 4.