Documents of the Regional Administrative Conference for the planning of the Broadcasting-Satellite Service in Region 2 (RARC SAT-83) (Geneva, 1983)

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- This PDF includes Document No. 101 - 200.
- The complete set of conference documents includes Document No. 1 - 324, DL No. 1 - 52, DT No. 1 - 59.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 101-E
29 June 1983
Original : English

WORKING GROUP 6A

First Report of Sub-Working Group 6A-1
to Working Group 6A

FINAL ACTS

of the Regional Administrative Radio Conference for the planning, in Region 2, of the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz and associated feeder links in the fixed-satellite service (Earth-to-space) in the frequency band /17.3 - 17.8/ GHz

SECTION I

Provisions and Associated Plan for the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz in Region 2

ARTICLE 1

General Definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below:

Union:	The International Telecommunication Union;
Secretary-General:	The Secretary-General of the Union;
IFRB (Board):	The International Frequency Registration Board;
CCIR:	The International Radio Consultative Committee;
Convention:	The International Telecommunication Convention ~~(Malaga-Torremolinos, 1973);~~ in force;
Radio Regulations:	The Radio Regulations ~~(1976 edition)~~ annexed to the Convention;
Regions 1, 2 and 3:	The geographical areas defined in Nos. ~~126~~ 393 to ~~132~~ 399 of the Radio Regulations;
Master Register:	The Master International Frequency Register;
IFRB weekly circular:	The publication referred to in No. ~~497~~ 1235 of the Radio Regulations;
Administration:	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.

WARC : World Administrative Radio Conference;

Geneva 1983 Conference : Regional Administrative Radio Conference (RARC) for the planning in Region 2 of the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz and associated feeder links in the frequency band /17.3 - 17.8/ GHz;

Regions 1 & 3 Plan : 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 contained in Appendix 30 to the Radio Regulations, together with any modifications resulting from the successful application of the procedures contained in the said Appendix.

Region 2 Plan : The Plan for the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz in Region 2 contained in this section of the Final Acts, together with any modifications resulting from the successful application of the procedures contained in this section.

Frequency assignment in conformity with the Region 2 Plan : Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this section has been successfully applied.

ARTICLE 2

Frequency Band

2.1 The provisions of this section apply to the broadcasting-satellite service in the frequency band 12.2 - 12.7 GHz in Region 2 and to the other services to which this band is allocated in any of these Regions, insofar as their relationship to the broadcasting-satellite service in this band in Region 2 is concerned.

ARTICLE 3

Execution of the Provisions and Associated Plan

3.1 The Members of the Union in Region 2 shall adopt, for their broadcasting-satellite space stations[3] operating in the frequency bands referred to in this Appendix, the characteristics specified in the Plan for that Region.

3.2 Administrations shall not bring into use assignments to broadcasting-satellite stations which are not in conformity with the Region 2 Plan or for which the procedure of Article 4 has not been applied with success, except in those cases referred to in Article 4A as interim systems and those cases covered by paragraph /5.2./.

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[3] Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with RR 846.

ARTICLE 4A

Interim Systems

4A.1 An administration[1] may use its assignments in the Region 2 Plan with characteristics different from those appearing in the Plan, other than those listed in paragraph /5.2.—7, as an interim system for a maximum specified period of /12 7 years without applying the procedure of modification prescribed in Article 4; it shall apply, to this effect, the procedure contained in this Article.

[1] The use of the word "administration" in this Appendix does not preclude the application of these provisions to the case where more than one administration agrees to undertake a project jointly.

4A.2 **When an administration proposes to use an assignment in accordance with paragraph 4A.1, it shall communicate to the Board the information listed in** /Annex 2/. The administration shall also indicate :

a) in the case where no administration is affected, the maximum specified period during which the modified assignment is intended to remain in use;

b) **the assignment(s) in the Plan the use of which will remain suspended for the duration of the use of the interim assignment;**

c) **the names of the administrations with which an agreement for the use of the interim assignment has been reached** together with the period of use so agreed and the names of administrations with which an agreement could not be reached.

4A.3 An administration is considered to be affected if :

a) any /total protection margin/ of one of its assignments in the Region 2 Plan /or in the Interim List/, calculated in accordance with Annex /6/ including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 4A.2b)), becomes negative or a former negative value is made more negative;

b) **it has an assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of RR 1060, or those of paragraph 7.2.1 of this Section** and the appropriate limits of /Annex 1/ are exceeded;

[b) the administration is in Region 1, the assignment is in the band 12.5 - 12.7 GHz and the limits of /Annex 1/ concerning the protection of fixed-satellite service are exceeded;

the administration is in Region 3, the assignment is in the band 12.2 - 12.7 GHz and the limits of /Annex 1/ concerning the protection of the fixed-satellite service are exceeded;]

[b) any administration of Region 1 or 3, on the territory of which the PFD limit specified in /Annex 1/, paragraph _____ (protection of the FSS) is exceeded and which considers that its FSS systems in the band 12.5 - 12.7 GHz in Region 1 or 12.2 - 12.7 GHz in Region 3 which are planned to be brought into use during the maximum specified period of use of the interim system may be affected, shall so inform the Board within a period of _____. The Board shall calculate the interference to the planned FSS system and if required shall include the name of this administration in the special section;]

c) having no frequency assignment in the broadcasting-satellite service in the channel concerned, it nevertheless would receive on its territory the power flux-density value which exceeds the prescribed limits as given in /Annex 1/ as a result of the proposed interim assignment;

d) in countries of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in accordance with the Plan contained in Appendix 30 or in respect of which modifications have been published by the Board in accordance with the provisions of that Appendix and the appropriate limits of /Annex 1/ are exceeded;

e) having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 to 12.7 GHz in Region 3 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which

- is recorded in the Master Register; or
- has been coordinated or is being coordinated under the provisions of Resolution No. 33; or
- appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference

and the appropriate limits of /Annex 1/ are exceeded.

4A.4 The Board shall publish in a special section of its weekly circular the information received under paragraph 4A.2, together with the names of the administrations it has identified in application of paragraph 4A.3.

[4A.4A When the Board finds that the suspended assignment of an administration having an interim system is not affected, it shall examine the projected interim system with respect to the interim system of that administration.]

4A.4B **The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.**

4A.5 Any administration not listed in the special section which considers that its planned assignment may be affected shall so inform the administration responsible for the interim system and the two administrations shall endeavour to resolve the difficulty before the proposed date of bringing the interim assignment into use.

4A.5A An administration referred to in paragraph 4A.3 which has not notified its comments either to the administration seeking agreement or to the Board within a period of /----7 following the date of the weekly circular referred to in paragraph 4A.4 shall be understood to have agreed to the proposed modification.

4A.6 At the expiry of / 7 months, /following the date of publication of 7 /referred to in paragraph 4A.5A7, the Board shall review the matter and, according to the results obtained, inform the administration proposing the interim assignment that :

a) **it may notify its proposed use in accordance with Article 5 if no agreement is required or the required agreement was obtained from the administrations concerned. In this case the Board shall update the Interim List;**

b) it may not bring into use its interim system before having obtained the agreement of the administrations concerned, either directly or by applying the procedure of Article 4 without modifying the Plan.

4A.7 Six months prior to the expiry of the interim period, the Board shall draw the attention of the administration concerned to this fact.

4A.8 If an administration wishes to extend the maximum specified period, it shall apply again the provisions of this Article.

4A.9 Except in cases where the interim use is extended as a sucessful result of the application of paragraph 4A.8 the Board shall, at the termination of the use of the interim assignment, delete it from the Interim List. The corresponding assignment in the Plan, suspended earlier, may then be brought into use.

4A.10 For the purposes of the application of the provisions of RR 844, the assignments in the Interim List shall be treated as if they were part of the Plan.

4A.11 **The Board shall include all the interim assignments in an Interim List and shall update it in accordance with this article. The Interim List shall be published together with the** Plan. It does not constitute part of the Plan except in cases **referred to in paragraph 4A.10.**

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 102-E
30 June 1983
Original : English

Source : Document No. DT/27(Rev.1)

COMMITTEE 4

PARAGRAPH 3.3

OF ANNEX 8 OF APPENDIX 30

Working Group 4B proposes the following :

MOD 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.

In Regions 1 and 3, the

/~~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.** In Region 2, as a guidance for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB for 99% of the worst month, but the feeder link and down-link Plans are evaluated on the overall carrier-to-noise ratio of 14 dB for the combined down-link and feeder-link contributions.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 103-E
30 June 1983
Original : Spanish

COMMITTEE 6

Venezuela

DRAFT RECOMMENDATION ( )

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

considering

that a number of difficulties have been encountered in interpreting Nos. 18 and 19 of Article 1 of the Radio Regulations, concerning the terms "allotment" and "assignment", respectively, with regard to their application to plans produced by regional or world conferences;

recommends

that the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit, 1985, should interpret the terms "allotment" and "assignment" clearly and unequivocally so as to ensure that they are applied correctly in future.

S.E. AGUERREVERE
Deputy-Head of Delegation

Note : See Documents Nos. 17, 38 and 97 of SAT-R2.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 104(Rev.1)-E
1 July 1983
Original : English

COMMITTEE 6

Note for information by the Secretary-General

1. Committee 6, at its third meeting on Monday, 27 June 1983, requested the Secretary-General and the IFRB to present information on the nature of the Final Acts of the present Conference and on the procedures to be applied before the entry into force of the Final Acts of the 1985 Orbit Conference.

2. In addition to Document No. 96 containing the IFRB's reply to the second part of the afore-mentioned request, I have the honour to transmit to the Conference in the Annex to the present Note for Information a "preliminary first draft" of the "preamble" of the Final Acts of the present Conference, which is invited to consider this draft as the Secretary-General's response to the first part of the request referred to above and might wish to take the text contained therein as a working basis for its further consideration of, and work on, the subject.

R.E. BUTLER
Secretary-General

Annex : 1

ANNEX

Preliminary first draft

Final Acts

of the

SAT-R2

Preamble

1. Background (starting from the 1977 Conference and giving the history of convening the present conference, its agenda etc. up to Resolution No. 1 of the Nairobi Conference).

/ still to be drafted /

2. The delegates of the following Members of the International Telecommunication Union having participated in the present Regional Administrative Radio Conference for the Planning of the Broadcasting Satellite Service in Region 2,

/ 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;

taken from the Preamble of the 1977 Final Acts and amended.

- taking into account the equal rights of all countries of Region 2, large and small, even those countries which are not represented at the present Conference;
- guided by the provisions of the Radio Regulations, Geneva, 1979, and of Appendix 30 thereto;
- mindful of the pertinent Resolutions and Recommendations of the World Administrative Radio Conference, Geneva, 1979, in particular of Resolutions 33, 504, 507 and 700 of that Conference;

concerning the dates and the agenda of the '85 Orbit Conference.

- considering paragraph 2.3 of Resolution 1. of the Plenipotentiary Conference of the International Telecommunication Union (Nairobi, 1982) and paragraphs 6, 6.1 and 6.2 of Resolution No. 895 of the Union's Administrative Council;

./.

a) have adopted :

taken with small amendments from Document No. 74 (instead of "Section" it appears preferable to speak of "Part" I, II or III)

(i) provisions and associated Plan for the broadcasting-satellite service in the frequency band [12.2-12.7] GHz in Region 2 (Part I);

(ii) provisions and associated Plan for the feeder links for the broadcasting-satellite service ([12.2-12.7]) in the frequency band [17.3-17.8] GHz (Part II);

(iii) recommendations for consequential modifications to certain articles of the Radio Regulations and to Appendix 30 thereto (Part III);

b) have decided, in accordance with paragraph 2.3 of Resolution 1 of the Plenipotentiary Conference (Nairobi, 1982) and paragraphs 6, 6.1 and 6.2 of Resolution No. 895 of the Union's Administrative Council, to transmit the provisions and associated Plans as well as the recommendations for consequential modifications referred to under (i) to (iii) in sub-paragraph a) above to the First Session (1985) of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (ORB (1)) for the latter's consideration with the objective of their being incorporated in the Radio Regulations, as appropriate, by revising the Radio Regulations only for these purposes as necessary;

taken from "Section IV" of Document No. 74.

Resolution(s) appear(s) more appropriate than a "Section" or "Part".

c) have decided further that, notwithstanding the interim procedure to be applied in the period between [the signature of the present Final Acts] and the date of entry into force of the final acts of the WARC-85 and notwithstanding the related instructions given by the present Conference to the IFRB - contained in [Resolution(s)] of the present Final Acts -, the provisions and associated Plans as well as the recommendations for consequential modifications adopted by the present Conference (see sub-paragraph a), (i) to (iii) above) shall enter into force only after their incorporation in the Radio Regulations by the First Session (1985) of the ORB (1), which shall, to achieve this objective, adopt appropriate final acts (see paragraph 6.2 of Resolution No. 895 of the Union's Administrative Council), in which the date of their entry into force will be fixed and which will be subject to the approval by the

Members of the Union of that revision of the Radio Regulations, in accordance with the relevant provisions of the International Telecommunication Convention then in force.

d) have also adopted the interim procedure and instructions contained in /Resolution(s) / of the present Final Acts to be applied in the period between /the signature of the present Final Acts/ and the date of the entry into force of the relevant provisions of the Final Acts of the ORB (1) incorporating the provisions and associated Plans as well as the recommendations for consequential modifications adopted by the present Conference (see sub-paragraph a), (i) to (iii) above) in the Radio Regulations by revising the Radio Regulations for these purposes as necessary.

IN WITNESS WHEREOF, the delegates of the Members of the Union mentioned above have, on behalf of their respective competent authorities, signed the present Final Acts in a single copy in the English, French and Spanish languages, of 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.

In view of the contents above and the 1985 WARC, it is thought that a copy should be sent to all Members of the Union and not only to the Members of Region 2.

Done at Geneva, ... July 1983

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 104-E
30 June 1983
Original: English

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R.E. BUTLER
Secretary-General

Annex : 1

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Final Acts

of the

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Preamble

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/ still to be drafted /

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/ 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;
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- mindful of the pertinent Resolutions and Recommendations of the World Administrative Radio Conference, Geneva, 1979, in particular of Resolutions 33, 504, 507 and 700 of that Conference;
- considering paragraph 2.3 of Resolution 1. of the Plenipotentiary Conference of the International Telecommunication Union (Nairobi, 1982) and paragraphs 6, 6.1 and 6.2 of Resolution No. 895 of the Union's Administrative Council;

a) have adopted :

(i) provisions and associated Plan for the broadcasting-satellite service in the frequency band /12.2-12.7/ GHz in Region 2 (Part I);

(ii) provisions and associated Plan for the feeder links for the broadcasting-satellite service (/12.2-12.7/) in the frequency band /17.3-17.8/ GHz (Part II);

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c) have decided further that, notwithstanding the interim procedure to be applied in the period between /the signature of the present Final Acts/ and the date of entry into force of the final acts of the WARC-85 and notwithstanding the related instructions given by the present Conference to the IFRB - contained in /Resolution(s) / of the present Final Acts -, the provisions and associated Plans as well as the recommendations for consequential modifications adopted by the present Conference (see sub-paragraph a), (i) to (iii) above) shall enter into force only after their incorporation in the Radio Regulations by the First Session (1985) of the ORB (1), which shall, to achieve this objective, adopt appropriate final acts (see paragraph 6.2 of Resolution No. 895 of the Union's Administrative Council), in which the date of their entry into force will be fixed and which will be subject to the approval by the

Members of the Union of that revision of the Radio Regulations, in accordance with the relevant provisions of the International Telecommunication Convention then in force.

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Done at Geneva, ... July 1983

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 105-E
30 June 1983
Original : English

COMMITTEE 4

INTER- AND INTRA-REGIONAL SHARING

Working Group 4C has considered the sharing situation of interference from the BSS into Region 2 terrestrial services and has concluded the following :

1. Intra-regional sharing (Region 2 BSS interfering into Region 2 terrestrial services)

The opinion of Working Group 4C is that, in accordance with RR 844, protection should not be afforded to the terrestrial services in Region 2 from the Region 2 BSS.

2. Inter-regional sharing (Regions 1 and 3 BSS interfering into Region 2 terrestrial services)

Document No. 74 has proposed inclusion of an Annex 5 in Section I of the Final Acts to protect the terrestrial services in Region 2 from the BSS in Regions 1 and 3. However, taking into account the view expressed in 1 above, and the fact that protection is already afforded against modifications to the Regions 1 and 3 Plan by the provisions of paragraph 3 of Annex 1 of Appendix 30 to the Radio Regulations, Working Group 4C is of the opinion that it is not necessary to include this Annex in the Final Acts of RARC-83.

J.M. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 106(Rev.1)-E
1 July 1983
Original : English

Source : Document No. DT/38

COMMITTEE 4

PROPOSED REVISION TO THE RADIO REGULATIONS

3.12 *Elevation angle of receiving antennae*

NOC 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°. Attention is also directed to paragraph 2.2.

MOD 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 at least 40° has been considered for service areas subject to high precipitation (e.g., in Regions 1 and 3, rain climatic zone 1; in Region 2, zones M, N, and P.), but exceptions were taken in some cases in Region 2.

NOC 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.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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MOD 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 at least 40° has been considered for service areas subject to high precipitation (e.g., rain-climatic zone 1), but exceptions were taken in some cases in Region 2.

NOC 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.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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Original : English

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COMMITTEE 4

OUTLINE

ANNEX 3

TECHNICAL DATA USED IN ESTABLISHING THE PROVISIONS AND ASSOCIATED PLAN AND WHICH SHOULD BE USED FOR THEIR APPLICATION

1. Definitions

2. Radio Propagation factors

   2.1 Atmospheric absorption
   2.2 Rain attenuation
   2.3 Rain attenuation limit
   2.4 Depolarization

3. Basic technical characteristics

   3.1 Translation frequency
   3.2 Carrier-to-noise ratio
   3.3 Protection ratio
   3.4 Transmitting antenna

      3.4.1 Antenna diameters
      3.4.2 Reference patterns
      3.4.3 Antenna efficiency
      3.4.4 Pointing accuracy

   3.5 Transmitted power
   3.6 Receiving antenna

      3.6.1 Cross-section of receive beam
      3.6.2 Minimum beamwidth
      3.6.3 Reference patterns
      3.6.4 Pointing accuracy

   3.7 System noise temperature
   3.8 Polarization
   3.9 Automatic gain control
   3.10 Power control
   3.11 Site diversity
   3.12 Depolarization compensation
   3.13 Minimum separation between satellites

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 108-E
1 July 1983
Original : English

Source : Document No. DT/37

COMMITTEES 4 AND 5

Please replace the first page by the following :

INFORMATION DOCUMENT

FROM COMMITTEE 4 TO COMMITTEE 5

SATELLITE TRANSMIT ANTENNA PATTERNS

Committee 4 has discussed and agreed that the following three antenna patterns can be used for planning :

1. The pattern shown in Figure 1, derived from an antenna producing an elliptical beam with a Gaussian main lobe, is generally preferred for reasons of simplicity of implementation.

2. The pattern shown in Figure 2, derived from an antenna producing an elliptical beam with fast roll-off in the main lobe, is suggested when necessary to improve or reduce intra-service interference.

3. The patterns shown in Figure 3 (co-polar) and Figure 1 (cross-polar) may be used to improve some special cases of interregional sharing.

Committee 4 recommends that Committee 5 evaluate the relative merits of the patterns in Figures 1 and 2, bearing in mind that the pattern shown in Figure 1 is generally preferred for reasons of simplicity of implementation. The specific text for 3.13.3 of the Final Acts (Radio Regulations) will be prepared after Committee 5 has completed this evaluation.

S.E. AGUERREVERE
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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E.F. MILLER
Chairman of Working Group 4B

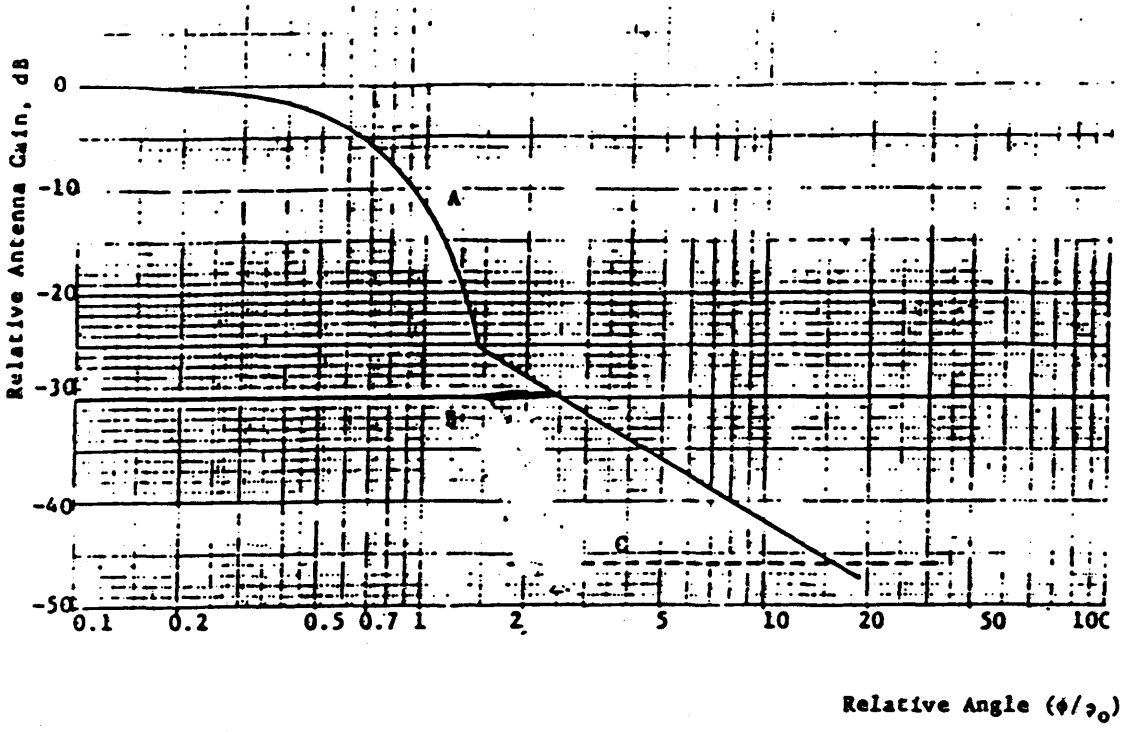

Figure 1 - Reference patterns for co-polar and cross-polar components for satellite transmitting antenna in Region 2

Figure 1 :

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\phi/\phi_o)^2$ for $0 \leq (\phi/\phi_o) \leq 1.45$
$-(22 + 20 \log (\phi/\phi_o)$ for $1.45 < (\phi/\phi_o)$

after intersection with curve C : as curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leq (\phi/\phi_o) \leq 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C: minus the non-axis gain

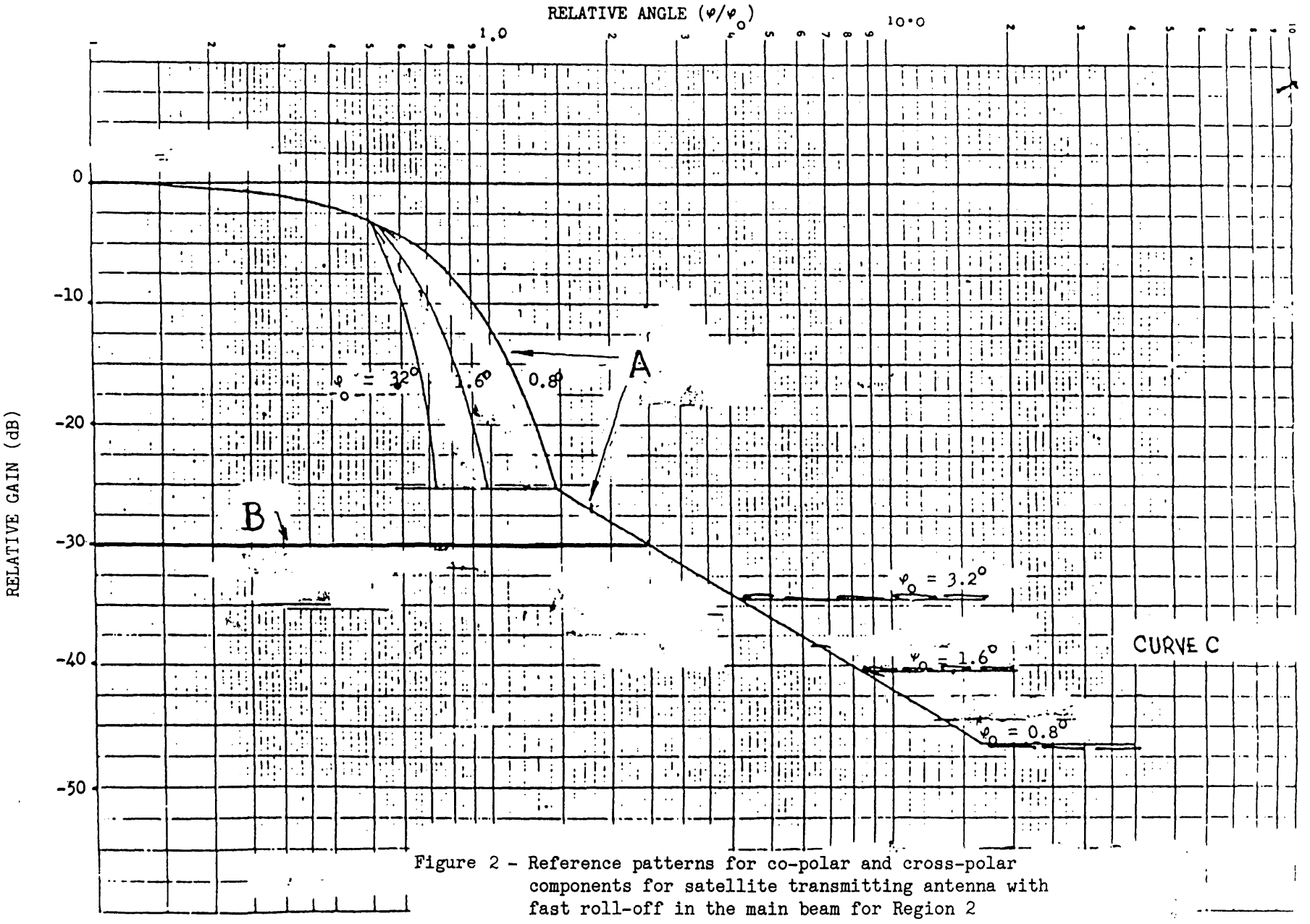

Figure 2 - Reference patterns for co-polar and cross-polar components for satellite transmitting antenna with fast roll-off in the main beam for Region 2

Figure 2 (continued)

Curve A - Co-Polar component

$-12(\varphi/\varphi_o)^2$ for $0 \leq \varphi/\varphi_o \leq 0.5$

$-18.75\ \varphi_o^2 [\varphi/\varphi_o - x]^2$ for $0.5 < \varphi/\varphi_o \leq \frac{1.16}{\varphi_o} + x$

-25.23 for $\frac{1.16}{\varphi_o} + x < \varphi/\varphi_o < 1.45$

$-[22 + 20 \log \varphi/\varphi_o]$ for $1.45 < \varphi/\varphi_o$

after intersection with Curve C : as Curve C

Curve B - Cross-polar component

-30 for $0 \leq \varphi/\varphi_o < 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C - Minus the on-axis gain

where :

φ = off-axis angle (degrees)

φ_o = dimension of the minimum ellipse fitted around the down-link service area in the direction of interest

$x = 0.5 [1 - \frac{0.8}{\varphi_o}]$

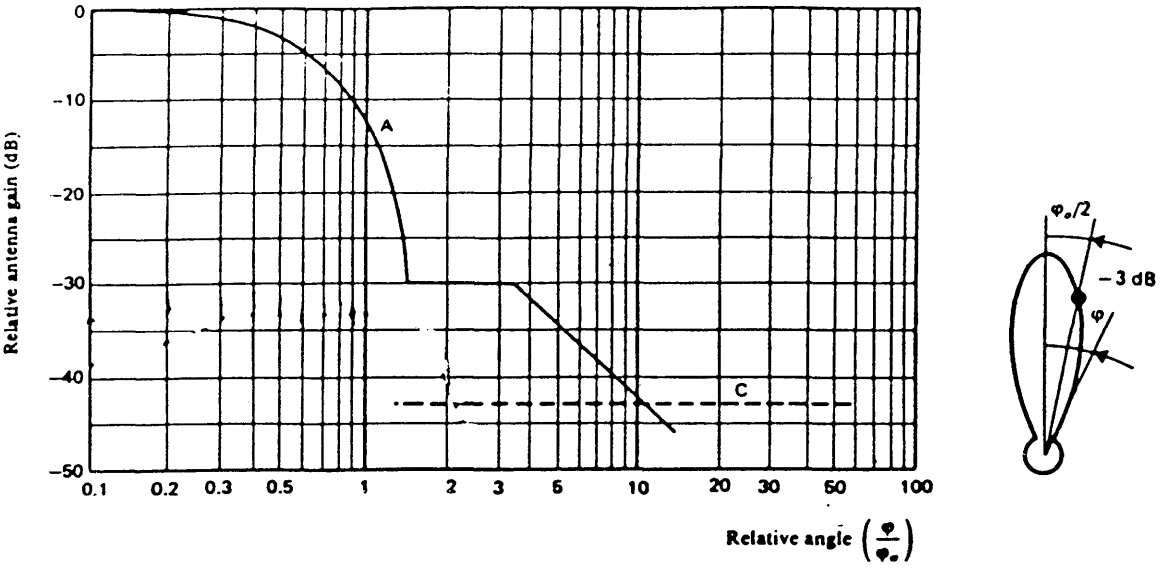

Figure 3 - Reference patterns for co-polar component for satellite transmitting antennas

Curve A: Co-polar component

$-12\left(\frac{\varphi}{\varphi_o}\right)^2$ for $0 < \varphi < 1.58\,\varphi_o$

-30 for $1.58\,\varphi_o < \varphi < 3.16\,\varphi_o$

$-\left[17.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $3.16\,\varphi_o < \varphi$

after intersection with Curve C: as Curve C

Curve C: Minus the on-axis gain.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 109-E
30 June 1983
Original : English

COMMITTEES 4, 5 AND 7

Note from the Chairman of Committee 6

1. At its third meeting, Committee 6 considered Document No. 74 containing the proposed layout of the Final Acts of the Conference and adopted this document with the following modifications :

a) The title "Approval of the Final Acts" has been changed to read as :

"Approval of the /Final Acts/";

b) The title "Entry into force of the Final Acts" has been changed to read as :

"Entry into force of the /Final Acts/";

c) The Note at the end of the document has been amended to read as :

"If time is available, a consolidated version of Appendix 30, containing the provisions and the plans for broadcasting-satellite service for the three Regions, will be annexed to one of these Recommendations."

2. It was noted that the title of some Articles/Annexes may need to be adjusted after the final texts of these Articles and the Annexes have been developed. It was also noted that Committee 4 might find it unnecessary to include certain annexes and/or wish to add annexes not shown in the layout.

3. Finally, note should be taken that an additional Article to be included in Section I (Article 4A - Interim Systems) is presently being developed by Working Group 6A (see Document No. 101).

J.A. ZAVATTIERO
Chairman of Committee 6

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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PLENARY MEETING

First Report of Committee 6 to the Plenary Meeting

At its third meeting, Committee 6 considered the report of its ad hoc Group 1 as contained in Document No. 46 and adopted it unanimously without modification.

J.A. ZAVATTIERO
Chairman of the Committee 6

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 111(Rev.1)-E
5 July 1983
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COMMITTEE 4

DEFINITIONS TO BE ADDED TO
SECTION 1 OF ANNEX 8 OF APPENDIX 30
(for use in Region 2 only)

Replace definition 1.10 and the associated footnote with the following :

1.10 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio is the ratio of the wanted carrier power to the sum of all interfering RF powers in a given channel including both feeder links and down-links. The overall carrier-to-interference ratio due to interference from the given channel is calculated as the reciprocal of the sum of the reciprocals of the feeder link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively.[1]

[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels.

E. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 111(Rev.1)-E
1 July 1983
Original : English

Source : Document No. DL/14(Rev.3)

COMMITTEE 4

DEFINITIONS TO BE ADDED TO

[SECTION 1 OF ANNEX 8 OF APPENDIX 30]
(for use in Region 2 only)

1.5 Feeder link

In the Region 2 BSS Plan, the term Feeder Link, as defined in RR109, is further qualified to indicate a Fixed Satellite Service link in the [17.3 to 17.8 GHz] allocation from any earth station within the feeder-link service area to the associated space station in the Broadcasting-Satellite Service.

1.6 Feeder-link service area

The area on the surface of the Earth in which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

1.7 Feeder-link beam area

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

1.8 Adjacent channel

The RF channel in the Broadcasting-Satellite Service frequency plan, or in the associated feeder-link frequency plan, which is situated immediately higher or lower in frequency with respect to the reference channel.

1.9 Second adjacent channel

The RF channel in the Broadcasting-Satellite Service frequency plan, or in the associated feeder-link frequency plan, which is situated immediately beyond either of the adjacent channels.

1.10 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio in a given channel is the ratio of the wanted carrier power to the sum of all interfering RF powers, including both feeder links and down-links. The overall carrier-to-interference ratio for a given interfering channel is calculated as the reciprocal of the sum of the reciprocals of the feeder-link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively.[1]

[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels.

1.11 Overall co-channel protection margin

The overall co-channel protection margin in a given channel is the difference in dB between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

1.12 Overall adjacent channel protection margins

The overall adjacent channel protection margin is the difference, in dB, between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

1.13 Overall second adjacent channel protection margin

The overall second adjacent channel protection margin is the difference, in dB, between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

1.14 Overall equivalent protection margin

The overall equivalent protection margin M is given in dB by the expression :

$$M = -10 \text{ Log} \left(\sum_{i=1}^{5} 10^{(-M_i/10)} \right) \quad \text{in dB}$$

where,

M_1 = overall co-channel protection margin, in dB (as defined in 1.11)

M_2, M_3 = overall adjacent channel protection margins for the upper and lower adjacent channels respectively, in dB (as defined in 1.12)

M_4, M_5 = overall second adjacent channel protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in 1.13)

The adjective "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent channels as well as co-channel interference sources have been included.

E. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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COMMITTEE 4

DEFINITIONS TO BE ADDED TO [SECTION 1 OF ANNEX 8 OF APPENDIX 30] (for use in Region 2 only)

1.5 Feeder link

In the Region 2 BSS Plan, the term Feeder Link, as defined in RR109, is further qualified to indicate a Fixed Satellite Service link in the /17.3 to 17.8 GHz/ allocation from any earth station within the feeder-link service area to the associated space station in the Broadcasting-Satellite Service.

1.6 Feeder-link service area

The area on the surface of the Earth in which the administration responsible for the service has the right to locate transmitting earth stations for the purpose of providing feeder links to broadcasting-satellite space stations.

1.7 Feeder-link beam area

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

Note : Definitions 1.8 and 1.9 were approved as shown below. The brackets are intended to point out that there were suggestions that these definitions are not necessary and may be deleted.

[1.8 Adjacent channel

The RF channel in the Broadcasting-Satellite Service frequency plan, or in the associated feeder-link frequency plan, which is situated immediately higher or lower with respect to the frequency of the reference channel.

1.9 Second adjacent channel

The RF channel in the Broadcasting-Satellite Service frequency plan, or in the associated feeder-link frequency plan, which is situated immediately beyond either of the adjacent channels.]

1.10 Overall carrier-to-interference ratio

The overall carrier-to-interference ratio in a given channel is the ratio of the wanted carrier power to the sum of all interfering RF powers, including both feeder links and down-links. The overall carrier-to-interference ratio is calculated as the reciprocal of the sum of the reciprocals of the feeder-link carrier-to-interference ratio and the down-link carrier-to-interference ratio referred to the satellite receiver input and earth station receiver input, respectively.[1]

[1] There are a total of five overall carrier-to-interference ratios used in the analysis of the Plan, namely, co-channel, upper and lower adjacent channels, and upper and lower second adjacent channels.

1.11 Overall co-channel protection margin

The overall co-channel protection margin in a given channel is the difference in dB between the overall co-channel carrier-to-interference ratio and the co-channel protection ratio.

1.12 Overall adjacent channel protection margins

The overall adjacent channel protection margin is the difference, in dB, between the overall adjacent channel carrier-to-interference ratio and the adjacent channel protection ratio.

1.13 Overall second adjacent protection margin

The overall second adjacent channel protection margin is the difference, in dB, between the overall second adjacent channel carrier-to-interference ratio and the second adjacent channel protection ratio.

1.14 Overall equivalent protection margin

The overall equivalent protection margin M is given in dB by the expression :

$$M = -10 \text{ Log} \left(\sum_{i=1}^{5} 10^{(-M_i/10)} \right) \quad \text{in dB}$$

where,

M_1 = overall co-channel protection margin, in dB (as defined in 1.11)

M_2, M_3 = overall protection margins for the upper and lower adjacent channels respectively, in dB (as defined in 1.12)

M_4, M_5 = overall protection margins for the upper and lower second adjacent channels respectively, in dB (as defined in 1.13)

The adjacent "equivalent" indicates that the protection margins for all interference sources from the adjacent and second adjacent channels as well as co-channel interference sources have been included.

E. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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30 June 1983
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COMMITTEE 4

FIGURE OF MERIT (G/T) AND PFD

Considerable discussions have taken place on the values of G/T and PFD used for planning the broadcasting-satellite service in Region 2 with the common understanding of the relationship that ties these parameters together.

There were three sets of values for these parameters that were proposed.

The three proposals were :

- G/T = 10 dB/K and

  PFD = -107 dB(W/m^2)

  made by Brazil and supported by France, Peru, Colombia, Cuba, Ecuador and Canada;

- G/T = 8 dB/K and

  PFD = -105 dB(W/m^2)

  made by the United States;

- G/T = 9 dB/K

  PFD ≐ -106 dB(W/m^2)

  made in the spirit of compromise by the United Kingdom and supported by the United States.

The set of values that received the support of the largest number of administrations is given below in the proposed modifications for paragraphs 3.6 and 3.16 of Annex 8 of Appendix 30 with the understanding that a single set of values is desirable for planning purposes.

The Sub-Working Group noted that there is a flow and iteration of planning parameters between Committees 4 and 5, in both directions, as draft plans are prepared.

The proposed change in § 3.16 below for Region 2 has been agreed under the following condition : the Administration of the United States of America reserves the right to reconsider the proposed modification of § 3.16 following the analysis of the first draft plan.

PROPOSED MODIFICATIONS TO PARAGRAPHS 3.6 AND 3.16
OF ANNEX 8 OF APPENDIX 30

MOD 3.6 ***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:

for Regions 1 and 3 :

6 dB/K for individual reception;
14 dB/K for community reception, and

for Region 2 :

10 dB/K for individual 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;

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 1).

MOD 3.16 *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 dB(W/m^2) for individual reception in Regions 1 and 3;
-107
~~–105~~ dB(W/m^2) for individual reception in Region 2; and

– 111 dB(W/m^2) for community reception in ~~all~~ Regions 1 and 3.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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COMMITTEE 4

PROPOSED CHANGES TO THE RADIO REGULATIONS

AP30-120

3. BASIC TECHNICAL CHARACTERISTICS

3.1 *Type of modulation*

MOD

In Regions 1 and 3, planning

~~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 Fig. 3 (from CCIR Recommendation 405).

ADD

In Region 2, planning is based on the use of a frequency-modulated composite-coded colour television signal with two sound sub-carriers. However, recognizing the need to provide for the use of new, enhanced television coding and modulation formats (e.g. time-compressed, multiplexed analogue video component signals and digitally-coded sound and data signals), values of the important technical characteristics have been chosen to take into consideration the implementation of these new formats within the provisions of the Plan.

MOD

Nevertheless, this

~~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.s

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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COMMITTEE 4

PROPOSED AMENDMENT TO

APPENDIX 30, ANNEX 8

3.7.1 *Minimum diameter of receiving antennae*

For planning the broadcasting-satellite service the minimum diameter of receiving antennae considered is such that the half-power beamwidth φ_o is:

MOD

a) **for individual reception: 2° in Regions 1 and 3, 1.7° in Region 2;**

b) **for community reception: 1° in ~~all~~ Regions 1 and 3.**

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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30 June 1983
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COMMITTEES 5 AND 6

Note from Committee 4 to Committees 5 and 6 on orbital separation between nominally co-located satellites

Committee 4 wishes to bring to the attention of Committees 5 and 6 the necessity of providing a 0.4 degrees orbital separation between nominally co-located satellites having cross-polarized assignments on adjacent channels.

The 0.4 degrees orbital separation is needed to guard against an adjacent channel interference problem which would otherwise exist. The value of 0.4 degrees is based on a feeder link transmit antenna diameter of 5 metres used for planning purposes.

Committee 4 brings to the attention of Committee 5 that a corresponding change to the analysis software may be required to incorporate the 0.4 degrees separation into the planning process.

Committee 4 also considers it necessary to provide in the Radio Regulations the flexibility of locating the satellites at any location within the small orbital arc of + 0.2 degrees centred on the nominal orbital location. This flexibility is intended to allow the use of other techniques which are not considered in the analysis of the Plan, such as site diversity, to minimize the effect of rain attenuation on the degradation of the carrier-to-noise and the carrier-to-interference ratios of feeder links. Additionally, the space station keeping tolerances of + 0.1 degrees indicated in section 3.11 of Annex 8 of Appendix 30 need to be applied to the space station location.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 116(Rev.1)-E
1 July 1983
Original : English

COMMITTEES 4 AND 5

Note from Committee 4 to Committee 5 on the orbital separation between space stations of different administrations

Committee 4 wishes to bring to the attention of Committee 5 that the spacing between the nominal orbital positions of space stations assigned to different administrations needs to be larger than 0.8 degrees unless the space stations of the administrations are specifically intended to be co-located. The value of 0.8 degrees is the minimum orbital separation to provide flexibility in the implementation of feeder links.

S.E. AGUERREVERE
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 116-E
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COMMITTEE 5

Note from Committee 4 to Committee 5 on the orbital separation between space stations of different administrations

Committee 4 wishes to bring to the attention of Committee 5 that the spacing between the nominal orbital positions of space stations assigned to different administrations needs to be larger than 0.8 degrees unless the space stations of the administrations are specifically intended to be co-located. The value of 0.8 degrees is the minimum orbital separation to provide flexibility in the implementation of feeder links. For values less than 0.8 degrees, coordination would be required for feeder link e.i.r.p. exceeding the planned value.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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COMMITTEES 4 AND 5

United States of America

UNITED STATES POSITION ON THE PLANNING VALUES FOR PFD AND G/T

(Background information document)

1. Introduction

Committee 4 has made its initial recommendations regarding the technical parameters to be used for planning (see Document No. 51(Rev.1)). Most of these recommendations were arrived at by consensus. In order to make this possible, the United States, in a spirit of compromise, accepted values different from those it had initially proposed. In particular, the compromises introduced by the United States formed the basis for the Committee's recommendations on :

- the home receiving antenna reference pattern;
- the channel spacing;
- the co-channel and adjacent channel protection ratios.

However, there was no consensus on the initial Committee 4 recommendation for power flux-density (PFD) and "figure-of-merit" (G/T). These are the parameters that respectively determine the power of the satellite transmitter and the size and sensitivity of the home receiving equipment. The United States accepted Brazil's proposal to use PFD = -107 dBW/m^2 and G/T = 10 dB/K for initial planning on the condition that these two values would be revisited and reconsidered after the first draft Plan becomes available.

In this present document, we indicate the disadvantages for Region 2 planning of a PFD figure of -107 dBW/m^2 and a G/T figure of 10 dB/K. We go on to cite the reasons why we believe a plan based on a PFD of -105 dBW/m^2 and a G/T of 8 dB/K will better serve the interests of all Region 2 Administrations.

2. Impact of PFD and G/T on the implementation of DBS systems

The merit of a plan is sometimes measured in terms of the total number of channels it provides to administrations. Equally important, however, is the flexibility the Plan allows; flexibility for administrations to implement systems with satellites they can afford to build and receivers that people can afford to buy, subject only to the interference constraints of the Plan. Without this kind of flexibility, the Plan is a barrier to the creation of the broadcasting-satellite service, instead of a framework for its orderly and equitable development.

The PFD and G/T figures used for planning have little or no effect on the capacity of the Plan. But they can have a profound effect on the flexibility with which administrations can implement their systems. The PFD figure sets an absolute ceiling on the satellite powers that can be used. The associated G/T figure sets a floor on the size and cost of home receivers able to provide the picture quality on which the Plan is based. If the PFD and G/T values are unnecessarily restrictive, many Region 2 countries would only be able to implement systems that are uneconomic for their combination of population, geographic size, and rain climate. This will be true whether they elect to implement systems during the 1980s or later on. We believe that the PFD and G/T values of -107 dBW/m^2 and 10 dB/K, recommended by Committee 4 for initial planning, are unduly and unnecessarily restrictive. As such, they would prevent many administrations, including the United States, from putting up the type of systems best suited to their countries and their citizens.

3. Why planning based on PFD -105 dBW/m^2 and G/T 8 dB/K is preferable

Here are the reasons why we believe that values of PFD -105 dBW/m^2 and G/T 8 dB/K would better serve the needs of most of the administrations in Region 2. This choice will :

- Provide the additional flexibility needed to implement conventional NTSC systems with significantly less expensive receiving antennas. This can lower the cost of systems by tens to hundreds of millions of dollars in countries with large populations. It can also result in substantial savings to quite small countries.

- Ease the introduction of new transmission systems which provide improved signal quality and improved definition, and provide the flexibility to accommodate other new services.

- Allow countries who wish to implement systems with PFDs of -107 dBW/m^2 or less (such as for community reception systems) to do so without any penalty in signal quality or interference protection.

These considerations are discussed in detail in the following sections.

4. Greater flexibility for implementation of conventional NTSC systems

A -107/10 plan requires the use of receiving terminals at the edge of coverage with antenna diameters of about 1 m to achieve the NTSC C/N objective of 14 dB for 99% of the worst month. It is expected that in practice, antennas of nearly this size will also be needed throughout the service area. The reason is that, for all but the smallest service areas, satellite costs will probably be minimized by using a multiple-feed transmitting antenna that produces a nearly constant PFD at the 99% level throughout the service area.

In the corresponding -105/8 plan, the receiving antenna diameters will be about 20% smaller at any given location within the service area, i.e., about 0.8 m. The consequences of this reduction in antenna size are explained in the Annex :

- A reduction by nearly half in the weight of the antenna e.g., from 17 to 9 kg in weight (Figure 1 of the Annex).

- A reduction by half in the wind load torque (Figure 2 of the Annex).

- A 0.6 dB reduction in the loss of signal due to antenna misalignment and pointing errors in both calm and windy weather (Figure 3 of the Annex).

- An estimated $ 80 reduction in the cost of the installed home terminal outdoor unit including antenna reflector, electronics and mounting assembly (from about $ 360 to $ 280). These figures are estimated for 1985 and are expected to be higher for later implementation dates as shown in Figure 4 of the Annex).

The smaller size and weight makes the receiving antennas less expensive to ship and to store, and easier to install. The reduction in weight and wind loading allows the use of smaller and lighter mounting structures, and makes possible a greater variety of mounting methods on chimneys and rooftops without the need for reinforcement and load spreading devices. The smaller mispointing and misalignment losses make the effective G/T of the 0.8 m antenna higher in relation to that for the 1 m antenna than would be expected from their size difference.

The reduction in the cost of the receiving terminal is especially significant. In the United States, for example, the potential TV viewing population is estimated at between 3 and 20 million homes. The savings in total ground segment cost would thus range from 240 million to 1.6 billion dollars. Even at the low end of the range, the savings in the ground segment would offset many times over the added cost of the 2 dB increase in satellite power needed to raise the PFD from -107 to -105 dBW/m^2.

For countries with smaller potential viewing populations, the reduction in total ground segment cost will not be so dramatic. Indeed, if the viewing population is small and the service area is large, the ground segment savings may not offset the cost of increasing the satellite power. In such a case, however, the administration would be free to use -107 dBW/m^2 and 10 dB/K, or any other PFD less than -105 dBW/m^2 and the corresponding G/T, with no loss in signal quality or interference protection compared with -105 dBW/m^2 systems. It is this fact that makes possible the implementation of community reception systems in a plan based on individual reception.

For a country with a small service area, the satellite power will usually be small enough that the cost of a 2 dB increase in PFD would be quite low. Even a country with a small service area and a small viewing population could save money by using lower G/T receiving stations.

5. Flexibility for introduction of new services

The Plan to be developed for Region 2 will provide the framework for broadcasting-satellite system development over the next ten to fifteen years. The Plan must have the flexibility to accommodate a range of both foreseen and unforeseen new service possibilities. Otherwise it will become a barrier to the development of those new services.

One important new service is the multiplexed analogue component (MAC) transmission system described in a number of documents at this Conference. The MAC system not only eliminates a number of the inherent picture quality defects of the NTSC system, but provides the capability for extended or enhanced picture resolution. As demonstrated in Document No. 55 and Addendum No. 1 to Document No. 55, however, the MAC system requires a higher baseband bandwidth to accommodate its time-compressed luminance and chrominance signals and to extend resolution for future large screen

displays and possibly higher aspect-ratio pictures. This has the effect of decreasing the frequency deviation possible in a 24 MHz channel bandwidth and reducing the output signal-to-noise ratio relative to NTSC by as much as 7 dB (compare Figures 1 and 3 of Document No. 55).

Although the elimination of NTSC picture defects may reduce the signal-to-noise ratio required for a given subjective picture quality by 3 or 4 dB, compared with NTSC, a carrier-to-noise ratio of the order of 4 dB higher than 14 dB is likely to be required for certain MAC-type systems. In a -107/10 plan, antenna diameter of the order of 1.4 m would be required for such systems in combination with a 3 dB noise figure LNA. These sizes are entirely too large and expensive for individual reception and could prove to be a major barrier to the introduction of MAC service in Region 2. Only with a plan based on PFD of -105 dBW/m^2 would Region 2 be assured of being able to accommodate this and other desirable new types of service using affordable home receiving installations.

6. Flexibility for implementation of systems with PFDs less than -105 dBW/m^2

As previously noted, the use of -105 dBW/m^2 for planning sets a ceiling on the PFDs that can be used for implementation. However, it imposes no restriction on the use of systems designed for lower PFD satellites provided only that such systems use G/Ts high enough to provide the same C/N ratio as was used for planning. This ensures that noise will not degrade picture quality below that of systems that use -105 dBW/m^2 satellites. Assuming the use of receivers with the same noise figure, it also ensures that picture quality will not be degraded by interference below that of -105 dBW/m^2 systems.

The reason is straightforward and forms the basis for operating community reception systems in a plan based on individual reception. The increase in G/T required to maintain noise performance leads to larger antennas which inherently provide the additional angular discrimination needed to off-set the PFD advantage of neighbouring systems, in addition to providing the increased gain needed to maintain C/N. Thus a country wishing for any reason to use PFDs lower than -105 dBW/m^2 need have no fear of increased interference to or from other countries in a plan based on -105 dBW/m^2.

7. Conclusions

The use of PFD = -105 dBW/m^2 and G/T = 8 dB/K rather than -107 dBW/m^2 and 10 dB/K for planning gives all Region 2 countries critically needed additional flexibility for system implementation. It leads to major savings in the size, weight, cost, and ease of installation of home receiving installations. These savings will be extremely beneficial not only to countries with large service areas and large viewing populations, but also to countries with small service areas, independent of their population. Use of -105 dBW/m^2 for planning is also crucial to the future introduction of new services, including signal formats that provide the dramatic improvements in picture quality and resolution that will be needed for the large screen and wide screen TV sets of the future.

Although the added implementation flexibility of a plan based on -105 dBW/m^2 can benefit all Region 2 countries, it imposes no penalty on those countries who prefer to implement lower power systems including community reception systems. Such systems will not suffer greater interference from their neighbours, provided only that they are designed for the planning value of C/N.

For all of these reasons, the United States urges Region 2 Administrations to support the use of -105 dBW/m^2 and 8 dB/K rather than the initial values of -107 dBW/m^2 and 10 dB/K, in preparing the Plan to be adopted at this Conference.

Annex : 1

ANNEX

EFFECT OF THE CHOICE OF PFD AND G/T ON THE COST AND PRACTICALITY OF BROADCASTING SATELLITE SYSTEMS

1. Introduction

The PFD and G/T values chosen for a broadcasting satellite system together determine the cost of the system. In general, the particular combination of PFD and G/T values which lead to minimum system cost will be different for each nation. As discussed in Document No. 55, either a PFD of -105 dBW/m^2 and a degraded G/T of 8 dB/K or a PFD of -107 dBW/m^2 and a degraded G/T of 10 dB/K will yield a down-link carrier-to-noise ratio of 14.5 dB, and hence the same signal quality. Thus the practical aspects of BSS systems should be analyzed separately from the signal quality and implementation aspects.

Two conclusions may be drawn from this analysis. First, the size and cost of the 1 m diameter antenna needed to achieve a G/T of 10 dB/K is at the upper limit of reasonableness, making the broadcasting-satellite service unduly expensive and difficult to implement for all but the smallest nations. Since the corresponding PFD of -107 dBW/m^2 cannot be exceeded, nations cannot hope to implement systems with cheaper, more practical antennas and compensate for the reduced G/T by using higher values of PFD.

Second, multiplexed component signal formats require a down-link C/N which is several dB higher than the 14.5 dB adopted for the Plan, regardless of the particular combination of PFD and G/T adopted. In order to achieve this higher C/N, a G/T substantially higher than that adopted for the Plan must be used for implementation. If an antenna diameter of 1 m is adopted for the Plan, a diameter of the order of 1.4 m or higher and an LNA noise figure of 3 dB will be needed for these systems. Such values are truly impractical for most home terminals.

2. Cost and practicality of home terminals

In order to provide broadcasting-satellite service to the general public at reasonable cost, the home terminal should include an antenna which is economical, easy to install and maintain, and capable of satisfactory performance under heavy wind conditions.

2.1 Antenna weight and windload effects

Figures 1 and 2 give some basic data on receive antenna weight, windload torque, and peak signal loss as a function of antenna diameter. Based on these data, the following observations may be made :

a) Smaller antennas of the order of 0.6 m to 0.7 m diameter have relatively low weight and windload torque, and therefore can be installed easily on rooftops, chimneys, etc.

b) An antenna of the order of 1 m diameter has relatively high weight, windload torque, and peak signal loss. The result is that these antennas are subject to wind buffeting damage in heavy wind when installed on chimneys or rooftops. Also, they cannot be installed on wooden roof structures without expensive load spreading steel plates to prevent eventual pulling of installation bolts through the roof.

c) The 1 m diameter antenna will also be nearly 5 times more susceptible to movement on its mount than a 0.6 or 0.7 m diameter antenna because of windload torque effects, and overall about 8 times more susceptible to mispointing under wind effects, due to both increased windload torque and smaller beamwidth. This can be clearly seen in Figure 3, based on experimental data, where peak signal loss due to pointing error is plotted for various antenna sizes, in clear weather and under both calm and maximum wind conditions.

The above practical considerations indicate that broadcasting satellite systems should be designed to use smaller diameter antennas, still allowing the freedom to implement larger antennas yielding higher G/T values when significant performance improvements (S/N or C/N) are required. An antenna diameter between 0.7 and 0.9 m is the practical maximum, yielding a degraded G/T of approximately 8 dB/K under calm wind conditions using a 4 dB noise figure receiver.

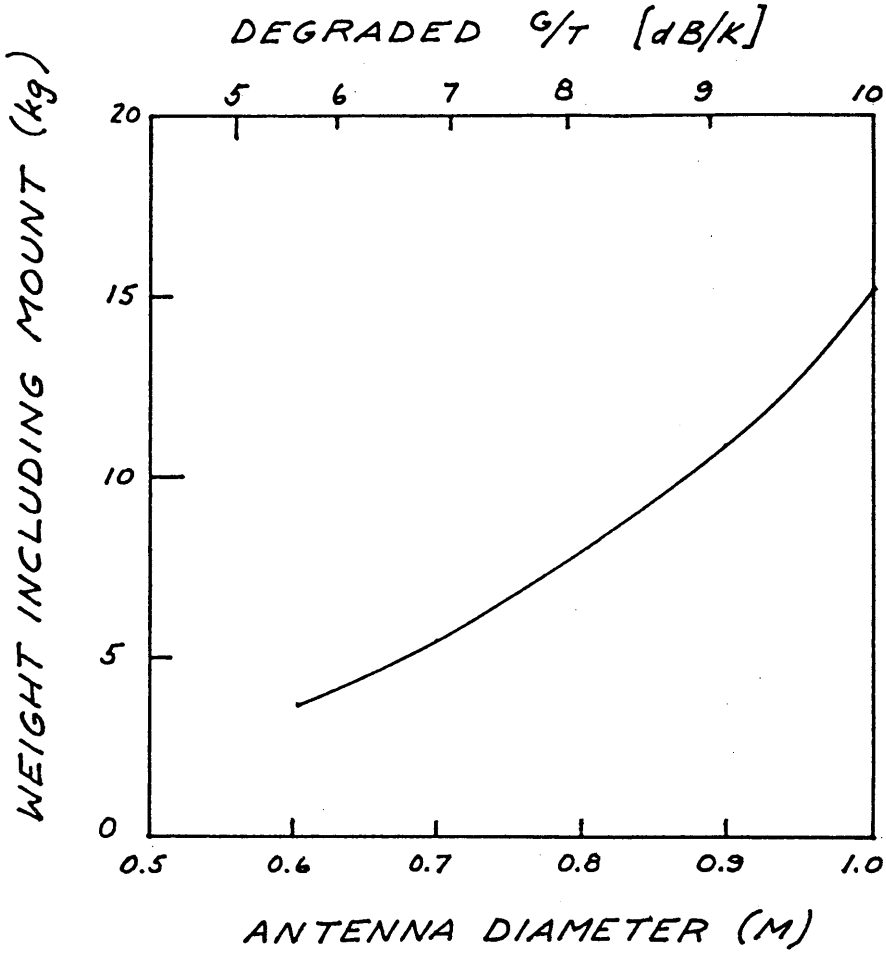
2.2 Home terminal cost

The receiving terminal cost is shown in Figure 4 as a function of antenna diameter, for the years 1985, 1987 and 1990. Case a) represents the cost of the reflector and the outdoor electronics only; case b) represents the total cost, including the reflector and braces, outdoor electronics, mounting assembly and installation. These are wholesale costs, based on large volume production and on historical trends in the cost of raw material (for example, aluminium and steel). An inflation rate of the order of 10% is used to project hardware and installation costs. The cost of outdoor electronics is assumed to decrease at the rate of 5% per year. As shown in Figure 4, the cost difference between a 1 m antenna and a 0.6 m - 0.7 m antenna increases substantially by 1990. This does not include the additional costs needed to make the 1 m diameter antenna secure with the use of load spreading plates, reinforced mounting assemblies, etc.

3. Effect of the choice of PFD and G/T on multiplexed component video systems

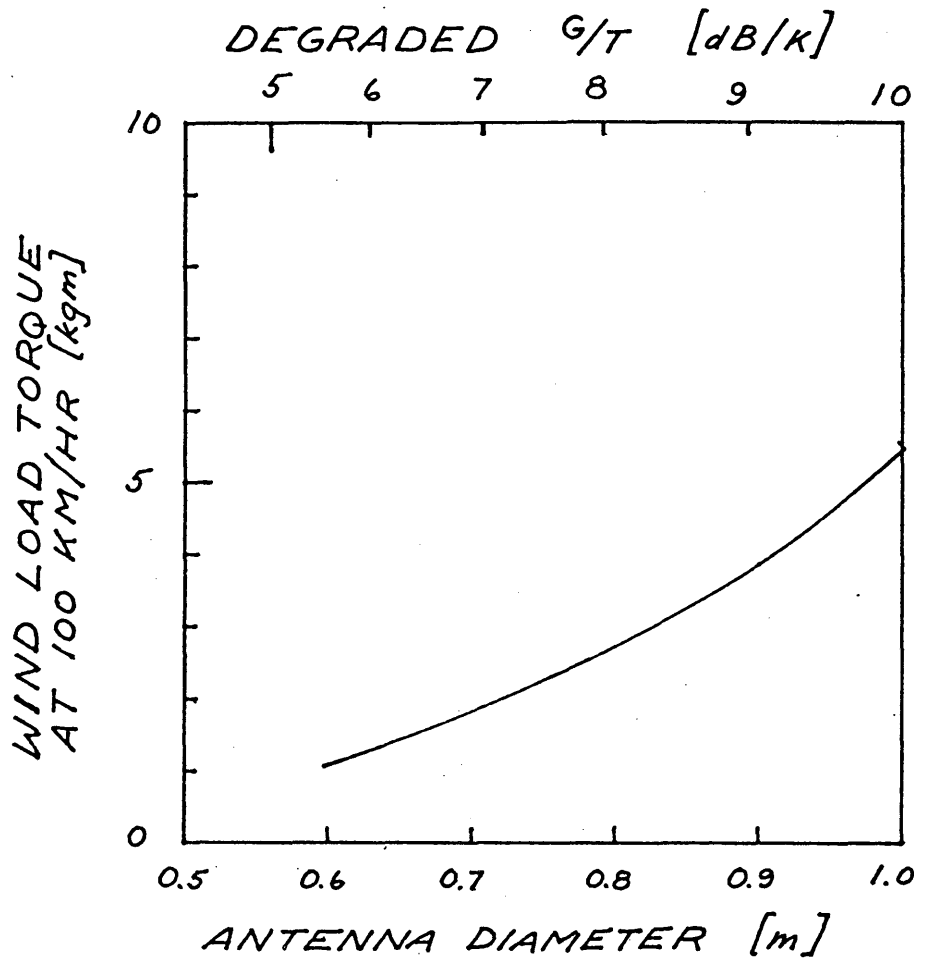
As discussed in Document No. 55, a PFD of -105 dBW/m^2 and a degraded G/T of 8 dB/K yield an achievable weighted S/N of the order of 39 dB with a down-link C/N of 14.5 dB, in a 24 MHz bandwidth. By utilizing a 1 m diameter receive antenna and employing increased deviation, a further improvement of the order of 3.5 dB is possible. Note that the decrease in signal level due to windload conditions for increased antenna diameter (see Figure 3) is not accounted for here. If it is taken into account, the net increase in required G/T is significantly smaller. Since the S/N performance objective is of the order of 46 dB, there is still a shortfall of 3.5 dB.

If the PFD is reduced to -107 dBW/m^2, the shortfall is increased to 5.5 dB. This shortfall is simply too large to make multiplexed component video systems possible with the BSS, using inexpensive and practical home terminals. Even a 1.4 m diameter antenna and a 3 dB noise figure LNA would still yield a S/N approximately 2 dB short of the performance objective.



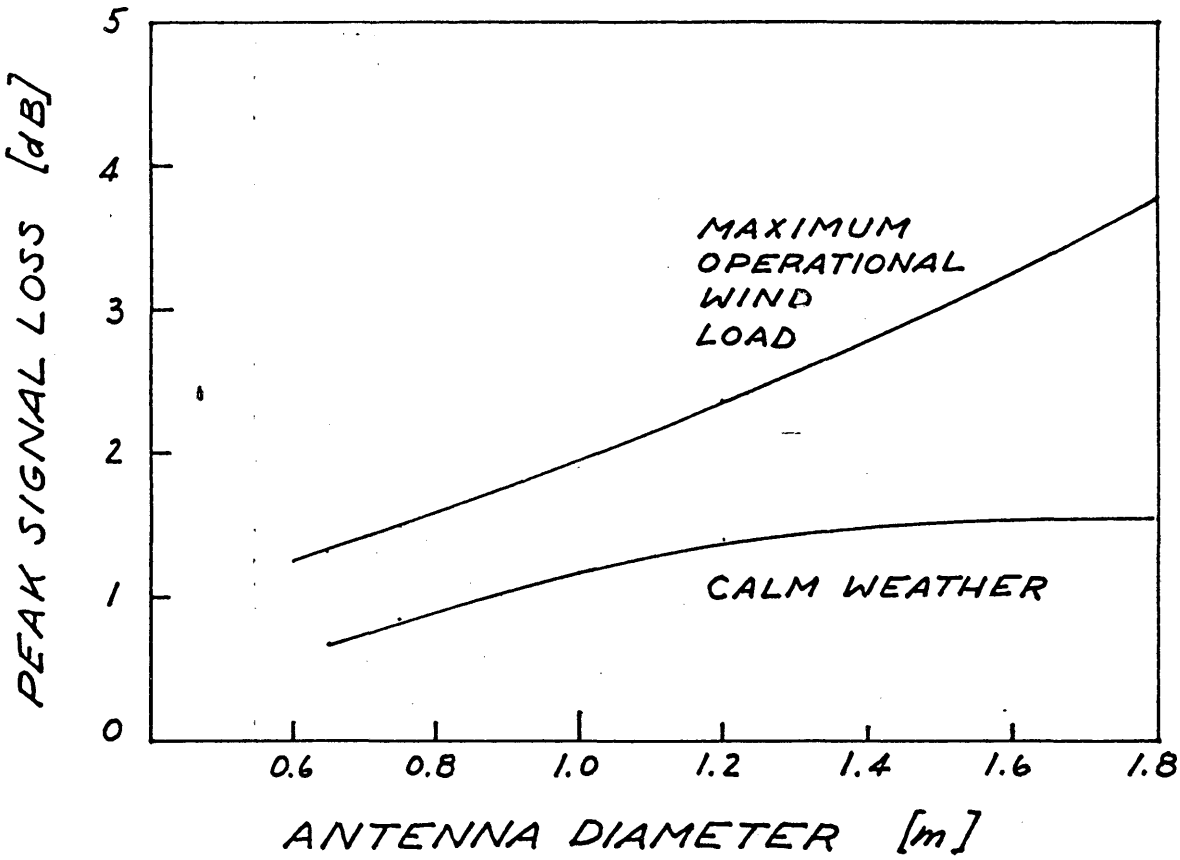
HOME TERMINAL ANTENNA
WEIGHT VS. DIAMETER

FIGURE 1.



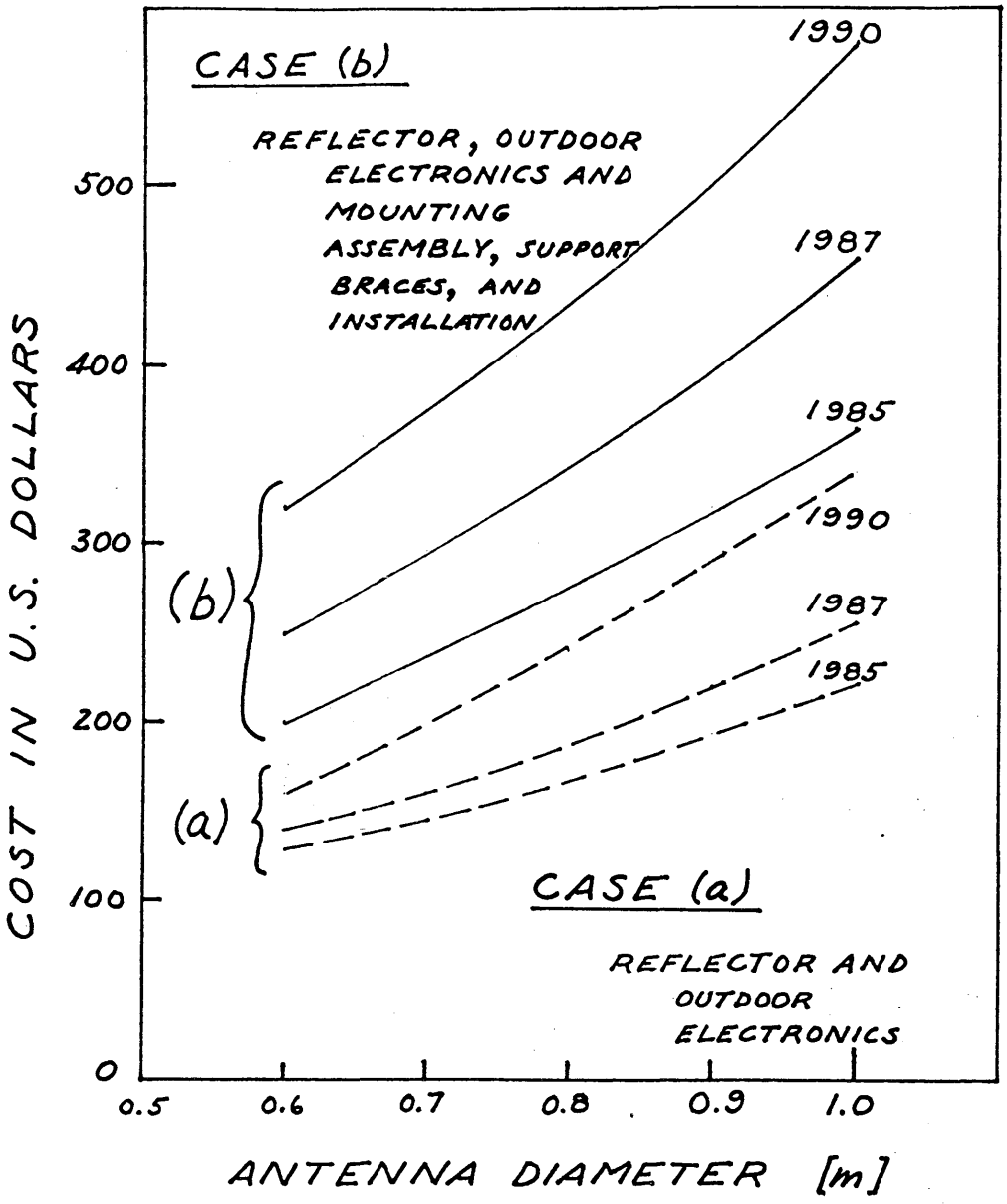
HOME TERMINAL ANTENNA
WIND LOAD TORQUE VS. DIAMETER

FIGURE 2.



HOME TERMINAL ANTENNA
SIGNAL LOSS DUE TO
MISALIGNMENT AND POINTING ERRORS

FIGURE 3.



HOME TERMINAL

COST VS. DIAMETER

FIGURE 4.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 118-E
1 July 1983
Original : English

WORKING GROUP 4B

PROGRESS REPORT ON THE WORK OF SUB-WORKING GROUP 4B-1

Sub-Working Group 4B-1 has met a total of five times in preparing definitions of the terms identified in Document No. 60 as the terms of reference for that Group. Responsibility for defining the term transportable earth stations was transferred to Working Group 4C.

In addition to the members of the Sub-Working Group on definitions, several delegates from Sub-Working Group 4B-3 participated in developing the required definitions. During the process of developing a definition for overall equivalent protection margin it became necessary to develop definitions for overall carrier-to-interference ratio, overall co-channel protection margin, and overall adjacent channel protection margins.

The results of the work of Sub-Working Group 4B-1 are presented in Document No. DL/14(Rev.3) dated 28 June 1983.

P.G. ACKERMAN
Chairman of Sub-Working Group 4B-1

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 119-E
1 July 1983
Original : English

Source : Document No. DL/30

COMMITTEE 4

TEXT FOR ANNEX 3 OF SECTION 2 OF THE FINAL ACTS

3.4.4 Pointing tolerance

The plan has been developed to accommodate a loss in gain due to earth station antenna mis-pointing of 1 dB. Under no circumstances shall the plan allow for a mis-pointing angle greater than 0.1°.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 120-E
1 July 1983
Original : French

COMMITTEE 6

Note from the Chairman of Committee 5 to the Chairman of Committee 6

Subject : Interregional interference

At its sixth meeting on Wednesday, 29 June, Committee 5 examined Document No. 53 on interregional interference submitted by the IFRB. Committee 5 took note of the document and asked the IFRB to submit a document explaining what would be done in this field, during the Conference, specifying the regulations to be used as a basis for the calculations.

Committee 6 is asked to examine Document No. 53, especially the last paragraph in which it is said that the IFRB would welcome guidance from the Conference on possible action to be taken after the Conference, in the event that the analysis of the effect of the Plan for Region 2 on the Plan for Regions 1 and 3 were to reveal instances in which the protection afforded to frequency assignments listed in the Plan was reduced below the limits specified in Appendix 30.

P.D. Cross
Chairman of Committee 5

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CONFÉRENCE DE RADIODIFFUSION PAR SATELLITE (RÉGION 2)

GENÈVE, 1983

Document N° 121-F/E/S
1er juillet 1983
Original : français
anglais
espagnol

COMMISSION 5
COMMITTEE 5
COMISIÓN 5

RESULTATS DU PREMIER PROJET DE PLAN

RESULT FROM THE FIRST DRAFT PLAN

RESULTADOS DEL PRIMER PROYECTO DE PLAN

H.G. SAAVEDRA

Président du sous-Groupe de travail 5A-1

Chairman of Sub-Working Group 5A-1

Presidente del Subgrupo de Trabajo 5A-1

RAPPORT SUR LA MARGE TOTALE/TOTAL MARGIN REPORT/INFORME DEL MARGEN TOTAL

Col.	Description / Description / Descripción
1	Numéro de référence de l'IFRB de la zone de service qui subit un brouillage. IFRB reference number of service area subject to interference. Número de referencia de la IFRB de la zona de servicio sometida a interferencia.
2	Administration / Administration / Administración.
3	Position sur l'orbite / Orbital position / Posición orbital.
4	Identification du faisceau de la liaison descendante (zone de service). Downlink beam identification (service area). Identificación del haz del enlace descendente (zona de servicio).
5	Puissance aux bornes d'entrée de l'antenne du satellite (W). Satellite Antenna Input Power (W). Potencia de entrada de la antena de satélite (W).
6	Angle de site minimal dans la zone de service de la liaison descendante. Minimal elevation angle in downlink service area. Ángulo de elevación mínimo en la zona de servicio del enlace descendente.
7[1)]	Instant initial de l'éclipse solaire (en minutes à partir de minuit). Earliest onset of solar eclipse (in minutes from midnight). Primera aparición del eclipse solar (en minutos a partir de medianoche).
8[2)]	Famille de canaux de la liaison descendante/Groupe de blocs. Downlink channel family/Blocking Group. Familia de canales del enlace descendente/Grupo de bloques.
9[3)]	Marge composite totale pour chaque point de mesure de la liaison descendante (dB) (9.1 à 9.10) Total aggregate margin for each downlink test point (dB)(9.1 to 9.10). Margen agregado total para cada punto de prueba del enlace descendente (dB)(9.1 y a 9.10).
10	P = points sur polygone / Polygon Points / Puntos de polígono T = points de mesure / Punto de polígono / Puntos de prueba

1) > o après minuit / after midnight / después de medianoche.
< o avant minuit / before midnight/ antes de medianoche.

2)

Famille / Family / Familia																	
01	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
02	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32

3) Marge composite totale - Différence entre C/I et le rapport de protection.
Total aggregate margin - Difference between C/I and the protection ratio.
Margen compuesto total - Diferencia entre C/I y sobre la relación de protección.

ESCENARIO/ SCENARIO: DPLAN1 SAT-R2 TOTAL MARGIN 830703 0001
MARGEN TOTAL
MARGE TOTALE

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
73	USA	-161.9	ALS00002	164.7	10.3	124.6	02	-5.3	-1.1	-1.3	-1.9	-1.3	-0.9	-0.9				P
73	USA	-162.1	ALS00002	162.0	10.3	125.4	01	-5.5	-1.6	-1.9	-2.5	-1.8	-1.4	-1.6				P
74	USA	-167.9	ALS00003	162.2	9.4	148.6	02	-5.6	-3.5	-4.0	-4.7	-4.2	-3.6	-3.4				P
74	USA	-168.1	ALS00003	159.0	9.4	149.4	01	-5.7	-4.0	-4.4	-5.1	-4.4	-3.9	-4.1				P
261	ARG	-82.1	ARGINSU2	21.2	10.2	45.4	01	-6.8	-7.0	-7.0								P
261	ARG	-81.9	ARGINSU2	21.5	10.2	44.6	02	-1.4	-2.2	-2.2								P
262	ARG	-82.1	ARGNORT2	944.7	25.4	45.4	01	-7.3	-6.9	-7.0	-7.6	-7.9	-7.5	-7.7	-7.8			P
262	ARG	-81.9	ARGNORT2	935.0	25.4	44.6	02	-10.6	-8.5	-8.4	-8.5	-8.6	-8.6	-9.2	-9.7			P
263	ARG	-82.1	ARGSUR02	214.1	25.4	45.4	01	-8.4	-7.9	-7.4	-7.4	-7.4	-7.4					P
263	ARG	-81.9	ARGSUR02	224.3	25.4	44.6	02	-11.7	-4.5	-3.6	-3.7	-3.6	-3.5					P
264	ATG	-92.0	ATGSJN01	18.3	50.0	85.0	01	-19.7	-19.7	-19.7	-19.7	-19.7						P
264	ATG	-92.0	ATGSJN01	18.4	50.0	85.0	02	-20.9	-20.9	-20.9	-20.9	-20.9						P
283	ATN	-50.0	ATNBEAM1	69.8	62.2	-83.0	02	-2.2	-2.2	-2.1	-1.6	-1.6	-1.5	-1.4				P
115	BAH	-113.0	BAHIFRB1	94.8	37.6	109.0	02	-15.7	-14.8	-15.7	-16.2	-16.2	-16.0	-15.9				P
18	G	-93.1	BERBERMU	11.2	41.4	89.4	01	-9.4	-9.4	-9.4	-9.3	-9.4	-9.4	-9.4				P
244	G	-31.0	BERBER02	11.5	37.7	-159.0	01	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	-1.5				P
97	BLZ	-113.0	BLZ00001	18.2	54.3	49.0	02	-17.4	-16.6	-18.2	-18.0	-17.2	-16.5					P
219	BOL	-106.0	BOLAND01	607.0	32.0	141.0	01	-18.4	-18.5	-18.4	-19.4	-22.9	-18.3					P
252	BOL	-111.9	BOLIFRB2	699.4	25.8	164.6	02	-12.1	-12.7	-12.3	-11.9	-12.1	-11.5					P
63	BRB	-102.0	BRB00001	22.1	39.0	125.0	02	-7.8	-7.9	-7.9	-8.0	-8.0	-8.0	-7.9				P
228	B	-90.1	BOOCE311	386.0	24.5	137.4	01	-7.6	-7.5	-7.5	-8.0	-8.1	-7.6	-7.6				P
228	B	-89.9	BOOCE311	374.1	24.5	136.6	02	-6.4	-6.2	-6.2	-6.9	-7.1	-6.3	-6.2				P
235	B	-48.1	BOOCE312	341.0	71.3	-30.6	01	-3.0	-2.5	-2.6	-3.9	-4.7	-2.8	-2.6				P
235	B	-47.9	BOOCE312	337.9	71.3	-31.4	02	-2.8	-2.3	-2.4	-3.3	-4.1	-2.7	-2.4				P
229	B	-90.1	BOOCE411	324.2	36.1	137.4	01	-7.1	-7.3	-7.5	-6.8	-6.6	-6.9					P
229	B	-89.9	BOOCE411	355.1	36.1	136.6	02	-6.9	-7.0	-6.9	-6.8	-6.4	-6.7					P
236	B	-48.1	BOOCE412	376.6	61.5	-30.6	01	-4.9	-4.8	-4.9	-5.0	-4.9	-4.7					P
236	B	-47.9	BOOCE412	386.4	61.5	-31.4	02	-5.1	-5.0	-5.1	-5.1	-4.9	-4.8					P
230	B	-90.1	BOOCE511	446.0	41.6	137.4	01	-8.1	-8.1	-8.3	-8.0	-8.2	-8.1					P
230	B	-89.9	BOOCE511	440.0	41.6	136.6	02	-7.7	-7.7	-8.0	-7.8	-7.8	-7.7					P
237	B	-63.1	BOOCE512	396.5	72.5	29.4	01	-4.9	-5.2	-5.5	-5.3	-4.9	-5.2					P
237	B	-62.9	BOOCE512	395.5	72.5	28.6	02	-4.6	-5.1	-5.3	-4.6	-4.5	-5.0					P
231	B	-100.1	BOON0611	412.3	33.9	177.4	01	-10.7	-10.5	-10.4	-10.3	-10.6	-10.2					P
231	B	-99.9	BOON0611	393.1	33.9	176.6	02	-9.2	-9.0	-9.1	-9.0	-9.0	-8.7					P
240	B	-63.1	BOON0612	354.8	70.4	29.4	01	-5.1	-4.3	-4.5	-4.5	-4.3	-4.2					P
240	B	-62.9	BOON0612	360.3	70.4	28.6	02	-5.1	-4.4	-4.6	-4.6	-4.4	-4.2					P
232	B	-100.1	BOON0711	430.3	36.4	177.4	01	-10.1	-9.9	-10.0	-9.8	-10.1	-10.0					P
232	B	-99.9	BOON0711	457.0	36.4	176.6	02	-9.3	-9.1	-8.6	-8.5	-8.8	-9.4					P
241	B	-63.1	BOON0712	468.0	75.1	29.4	01	-4.6	-4.8	-5.2	-4.7	-5.0	-4.6					P
241	B	-62.9	BOON0712	472.3	75.1	28.6	02	-4.5	-4.8	-5.1	-4.6	-4.7	-4.6					P
233	B	-100.1	BOON0811	303.3	48.7	117.4	01	-8.7	-8.8	-8.6	-8.7	-9.1	-8.8	-8.9				P
233	B	-99.9	BOON0811	298.8	48.7	116.6	02	-8.1	-8.2	-8.1	-8.2	-8.0	-8.1	-8.0				P

ESCENARIO/ SCENARIO: DPLAN1 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE

830703 0002

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10	
242	B	-63.1	B00N0812	282.3	74.6	-30.6	01	-4.6	-4.7	-4.6	-4.7	-4.7	-4.6	-4.7					P
242	B	-62.9	B00N0812	279.4	74.6	-31.4	02	-4.6	-4.7	-4.6	-4.7	-4.7	-4.6	-4.6					P
239	B	-107.1	B00SE911	324.1	13.2	205.4	01	-19.4	-19.8	-16.8	-15.6	-18.1	-20.0						P
239	B	-106.9	B00SE911	286.4	13.2	204.6	02	-11.1	-10.8	-11.3	-11.1	-10.7	-10.9						P
226	B	-71.1	B00SU111	213.6	47.5	61.4	01	-4.7	-4.8	-4.9	-4.4	-4.5	-5.0						P
226	B	-70.9	B00SU111	219.7	47.5	60.6	02	-4.9	-5.0	-4.9	-4.4	-4.5	-5.0						P
234	B	-48.1	B00SU112	233.8	51.8	-30.6	01	-3.3	-3.7	-4.5	-3.5	-3.2	-4.4						P
234	B	-47.9	B00SU112	229.4	51.8	-31.4	02	-3.4	-3.8	-4.5	-3.5	-3.2	-4.3						P
227	B	-71.1	B00SU211	301.6	47.9	61.4	01	-5.0	-4.1	-3.8	-3.5	-3.6	-4.3	-4.0					P
227	B	-70.9	B00SU211	304.4	47.9	60.6	02	-4.7	-3.9	-3.5	-3.2	-3.4	-4.0	-3.7					P
238	B	-48.1	B00SU212	321.8	62.3	-30.6	01	-4.4	-3.0	-2.8	-3.0	-3.8	-4.0	-2.8					P
238	B	-47.9	B00SU212	316.0	62.3	-31.4	02	-4.2	-2.7	-2.5	-2.7	-3.5	-3.8	-2.5					P
284	CAN	-141.9	CAN00101	138.3	-8.3	-15.4	02	-11.1	-14.4	-14.5	-15.1	-19.4	-16.6	-15.6	-13.7	-11.3			P
284	CAN	-142.1	CAN00101	139.2	-8.3	-14.6	01	-11.0	-15.0	-14.9	-15.2	-19.6	-16.5	-15.6	-13.7	-11.1			P
285	CAN	-127.0	CAN00102	159.4	0.5	-75.0	02	-8.9	-10.2	-9.8	-10.0	-12.3	-10.5	-10.0	-9.3	-8.8			P
285	CAN	-127.0	CAN00102	158.9	0.5	-75.0	01	-9.3	-10.7	-10.3	-10.4	-12.8	-10.8	-10.3	-9.6	-9.2			P
286	CAN	-141.9	CAN00201	107.0	-8.3	104.6	02	-14.2	-14.4	-18.5	-21.1	-19.6	-19.0	-16.9					P
286	CAN	-142.1	CAN00201	109.4	-8.3	105.4	01	-14.1	-14.4	-19.6	-21.8	-20.1	-19.5	-17.2					P
287	CAN	-127.0	CAN00202	118.3	0.5	45.0	02	-10.2	-10.4	-12.4	-14.2	-12.7	-12.2	-10.9					P
287	CAN	-127.0	CAN00202	118.0	0.5	45.0	01	-10.7	-11.0	-13.1	-14.8	-13.3	-12.7	-11.3					P
288	CAN	-111.9	CAN00203	121.4	4.7	-15.4	02	-9.7	-10.2	-12.0	-13.3	-11.7	-11.4	-10.2					P
288	CAN	-112.1	CAN00203	126.4	4.7	-14.6	01	-10.8	-11.2	-12.8	-13.6	-12.4	-12.3	-11.3					P
289	CAN	-127.0	CAN00302	120.7	0.5	45.0	02	-10.4	-11.2	-13.2	-12.4	-13.7	-13.7	-10.8					P
289	CAN	-127.0	CAN00302	120.4	0.5	45.0	01	-10.9	-11.8	-13.8	-13.0	-14.3	-14.3	-11.4					P
290	CAN	-111.9	CAN00303	125.2	4.7	-15.4	02	-9.9	-10.9	-12.7	-11.4	-13.0	-12.9	-9.6					P
290	CAN	-112.1	CAN00303	127.2	4.7	-14.6	01	-10.8	-12.0	-13.3	-12.2	-13.4	-13.6	-11.0					P
291	CAN	-99.9	CAN00304	121.8	6.3	-63.4	02	-7.1	-8.2	-9.1	-7.4	-8.2	-7.9	-6.5					P
291	CAN	-100.1	CAN00304	128.9	6.3	-62.6	01	-6.8	-8.4	-9.0	-7.2	-7.9	-7.9	-6.4					P
292	CAN	-111.9	CAN00403	237.3	4.7	104.6	02	-10.0	-10.3	-11.5	-12.8	-12.7	-13.2	-11.9	-12.5	-10.9	-9.8		P
292	CAN	-112.1	CAN00403	2161.6	4.7	105.4	01	-10.3	-11.3	-11.9	-12.0	-12.0	-12.7	-12.0	-13.6	-12.0	-11.2		P
293	CAN	-99.9	CAN00404	252.4	6.3	56.6	02	-7.5	-7.9	-7.7	-9.0	-8.6	-8.7	-7.9	-7.9	-7.3	-6.8		P
293	CAN	-100.1	CAN00404	238.7	6.3	57.4	01	-7.4	-8.1	-7.8	-9.1	-8.7	-8.8	-7.9	-8.1	-7.3	-6.8		P
294	CAN	-92.9	CAN00405	261.7	4.6	28.6	02	-5.5	-6.0	-5.5	-6.5	-5.7	-5.4	-5.3	-5.3	-5.2	-5.1		P
294	CAN	-93.1	CAN00405	248.0	4.6	29.4	01	-8.4	-8.8	-8.5	-9.1	-8.6	-8.5	-8.4	-8.4	-8.3	-8.2		P
295	CAN	-99.9	CAN00504	216.6	6.3	56.6	02	-9.1	-8.8	-8.6	-8.3	-8.3	-8.2	-8.4	-8.9	-9.2	-9.0		P
295	CAN	-100.1	CAN00504	218.7	6.3	57.4	01	-8.6	-8.6	-8.7	-8.5	-8.5	-8.1	-8.3	-8.9	-9.3	-9.0		P
296	CAN	-92.9	CAN00505	227.6	4.6	28.6	02	-22.2	-19.6	-17.5	-15.1	-15.2	-15.1	-16.7	-17.8	-18.9	-18.8		P
296	CAN	-93.1	CAN00505	233.3	4.6	29.4	01	-21.8	-19.8	-18.1	-15.5	-15.5	-15.2	-16.6	-17.7	-19.0	-18.9		P
297	CAN	-74.9	CAN00506	238.2	-0.7	-43.4	02	-16.9	-14.7	-12.7	-9.5	-9.4	-9.1	-9.2	-9.7	-10.6	-11.0		P
297	CAN	-75.1	CAN00506	249.9	-0.7	-42.6	01	-16.9	-15.1	-13.4	-10.0	-9.9	-9.4	-9.8	-10.5	-11.3	-11.6		P
298	CAN	-92.9	CAN00605	9558.3	4.6	116.6	02	-3.0	-5.3	-5.6	-5.6	-5.4	-4.2	-3.2	-3.0				P
298	CAN	-93.1	CAN00605	9035.5	4.6	117.4	01	-7.3	-8.5	-8.7	-8.7	-8.5	-7.7	-7.3	-7.2				P

ESCENARIO/ SCENARIO: DPLAN1 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE

. 830703 0003

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10	
299	CAN	-74.9	CAN00606	4853.1	-0.7	44.6	02	-1.9	-2.1	-3.1	-3.2	-2.8	-2.7	-2.2	-2.0				P
299	CAN	-75.1	CAN00606	3726.9	-0.7	45.4	01	-1.6	-1.8	-2.8	-3.0	-2.6	-2.6	-2.0	-1.6				P
210	CHL	-93.1	CHLCONT4	49.7	48.1	89.4	01	-7.9	-7.7	-5.8	-5.8	-6.3	-7.5						P
210	CHL	-92.9	CHLCONT4	53.3	48.1	88.6	02	-5.7	-5.5	-5.1	-5.1	-5.5	-6.3						P
211	CHL	-93.1	CHLCONT5	59.8	35.7	89.4	01	-5.6	-3.5	-3.9	-4.2	-4.4	-6.1						P
211	CHL	-92.9	CHLCONT5	61.8	35.7	88.6	02	-4.7	-3.0	-3.5	-3.5	-4.1	-5.6						P
212	CHL	-93.1	CHLCONT6	184.2	7.4	89.4	01	-4.8	-4.4	-4.3	-4.1	-4.9	-4.2	-4.1	-4.7	-4.9			P
212	CHL	-92.9	CHLCONT6	167.7	7.4	88.6	02	-4.1	-3.6	-3.9	-3.2	-3.9	-3.3	-3.2	-4.1	-4.4			P
200	CHL	-93.1	CHLPAC02	31.4	48.1	89.4	01	-4.0	-4.2	-4.1	-3.6	-4.2	-4.2						P
200	CHL	-92.9	CHLPAC02	32.4	48.1	88.6	02	-3.7	-3.7	-3.5	-3.2	-3.5	-3.5						P
220	CLM	-106.0	CLMAND01	675.0	32.0	81.0	01	-10.3	-10.3	-10.4	-10.3	-10.6	-10.8	-11.3	-10.8	-10.5	-10.2		P
11	CLM	-110.1	CLM00001	708.5	43.6	97.4	01	-8.7	-8.8	-10.5	-10.0	-11.2	-10.4	-9.2	-8.7	-8.3	-8.5		P
11	CLM	-109.9	CLM00001	700.2	43.6	96.6	02	-26.6	-26.8	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5	-26.5		P
251	JMC	-115.1	CRBBER01	13.2	24.8	117.4	01	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3	-19.3					P
251	JMC	-114.9	CRBBER01	13.2	24.8	116.6	02	-18.8	-18.8	-18.8	-18.8	-18.3	-18.8	-18.8					P
249	JMC	-115.1	CRBNW001	352.3	35.1	117.4	01	-16.2	-15.7	-16.2	-16.6	-17.1	-16.3	-18.5	-15.1				P
249	JMC	-114.9	CRBNW001	348.8	35.1	116.6	02	-16.2	-15.5	-17.0	-17.3	-17.7	-17.1	-19.0	-16.5				P
250	JMC	-115.1	CRBSE001	618.5	21.5	117.4	01	-31.2	-31.1	-31.1	-31.2	-31.2	-31.1	-31.1	-31.1				P
250	JMC	-114.9	CRBSE001	548.4	21.5	116.6	02	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1	-29.1				P
257	CTR	-120.1	CTR00201	68.8	45.3	137.4	01	-14.6	-13.6	-13.5	-12.6	-12.7							P
12	CUB	-113.0	CUB00001	88.4	40.1	109.0	02	-16.7	-16.9	-17.0	-16.9	-16.8	-16.7	-16.3	-16.4	-16.7	-16.3		P
118	DMA	-92.0	DMAIFRB1	18.5	50.2	85.0	01	-19.1	-19.3	-19.1	-19.3								P
118	DMA	-92.0	DMAIFRB1	18.6	50.2	85.0	02	-20.4	-20.5	-20.4	-20.5								P
259	DOM	-112.1	DOMIFRB2	41.3	35.9	105.4	01	-14.2	-12.1	-13.0	-14.1	-12.6							P
221	EQA	-106.0	EQACAND1	125.2	32.0	81.0	01	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9		P
98	EQA	-95.1	EQAC0001	125.0	67.1	37.4	01	-6.6	-6.7	-7.2	-7.4	-7.0	-6.7	-6.6	-6.4	-6.5	-6.6		P
98	EQA	-94.9	EQAC0001	127.4	67.1	36.6	02	-6.0	-6.2	-6.7	-6.8	-6.4	-6.0	-5.9	-5.9	-5.9	-6.0		P
222	EQA	-106.0	EQAGAND1	37.3	32.0	21.0	01	-30.9	-30.9	-30.9	-30.9	-30.9	-30.9						P
99	EQA	-95.1	EQAG0001	38.1	67.1	-22.6	01	-6.2	-6.3	-6.2	-6.3	-6.2	-6.3						P
99	EQA	-94.9	EQAG0001	38.9	67.1	-23.4	02	-5.8	-5.8	-5.8	-5.8	-5.8	-5.8						P
243	G	-57.0	FLKANT01	90.4	13.6	-55.0	01	1.4	1.4	0.8	1.1	1.4	0.8	1.4					P
19	G	-31.0	FLKFALKS	15.2	24.2	-159.0	01	0.5	0.6	0.4	0.5	0.4	0.3						P
58	GRD	-42.0	GRD00002	17.8	63.1	-115.0	02	-2.1	-2.0	-2.0	-2.2								P
59	GRD	-92.0	GRD00003	19.2	51.9	85.0	01	-18.4	-18.6	-18.3	-18.2								P
59	GRD	-92.0	GRD00003	19.3	51.9	85.0	02	-19.7	-19.9	-19.7	-19.5								P
272	GRD	-65.0	GRD00059	17.0	74.5	-23.0	02	-6.8	-6.6	-6.7	-7.7								P
13	DNK	-60.0	GRLDNK01	76.6	3.3	17.0	01	-11.6	-11.4	-11.2	-0.7	-0.3	-0.2	-0.2	0.0	0.6	0.8		P
255	GTM	-133.0	GTMIFRB2	50.4	36.4	129.0	01	-11.2	-11.0	-8.9	-8.4	-8.0							P
16	F	-54.0	GUFMGG01	250.1	66.3	-7.0	01	-7.1	-7.1	-7.0	-7.0	-7.0	-7.0	-7.0	-7.1	-7.2			P
267	GUY	-80.0	GUY00201	101.7	62.4	65.0	01	-5.0	-5.1	-5.2	-5.4	-4.9	-5.1						P
268	GUY	-80.0	GUY00202	101.7	62.4	65.0	01	-4.9	-5.0	-5.1	-5.4	-4.8	-5.0						P
274	GUY	-38.0	GUY00302	101.1	62.0	-163.0	01	-4.7	-4.6	-4.5	-4.6	-4.4	-4.7						P

ESCENARIO/ SCENARIO: DPLAN1 SAT-R2 TOTAL MARGIN 830703 0004
MARGEN TOTAL
MARGE TOTALE

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
253	HND	-133.0	HNDIFRB2	98.8	31.1	129.0	01	-9.5	-8.7	-8.2	-8.4							P
258	HTI	-112.1	HTI00002	31.2	38.9	105.4	01	-15.7	-14.9	-14.8	-14.1	-14.3	-14.4	-14.5				P
75	USA	-161.9	HWA00002	93.7	-15.6	4.6	02	-3.2	-3.2	-3.2	-3.1	-3.1	-2.9	-3.4				P
75	USA	-162.1	HWA00002	91.7	-15.6	5.4	01	-3.3	-3.3	-3.3	-3.2	-3.3	-3.1	-3.4				P
76	USA	-167.9	HWA00003	94.8	-21.1	28.6	02	-3.3	-3.3	-3.3	-3.2	-3.2	-3.0	-3.4				P
76	USA	-168.1	HWA00003	92.7	-21.1	29.4	01	-3.5	-3.6	-3.6	-3.5	-3.5	-3.2	-3.6				P
21	G	-92.0	IOBBVIRG	17.9	51.6	85.0	01	-20.1	-20.1	-20.0	-20.0	-20.0	-20.1					P
21	G	-92.0	IOBBVIRG	17.9	51.6	85.0	02	-21.4	-21.4	-21.3	-21.3	-21.3	-21.4					P
22	G	-131.0	IOBCAYMA	28.9	28.4	181.0	02	-9.7	-9.7	-9.9	-9.5	-9.4	-9.5					P
245	G	-92.0	IOBKN001	18.1	50.6	85.0	01	-19.8	-19.8	-19.7	-19.7							P
245	G	-92.0	IOBKN001	18.2	50.6	85.0	02	-21.0	-21.1	-21.0	-21.0							P
24	G	-92.0	IOBMONTE	19.2	49.8	85.0	01	-19.5	-19.5	-19.4	-19.5	-19.6	-19.5					P
24	G	-92.0	IOBMONTE	19.3	49.8	85.0	02	-20.8	-20.8	-20.6	-20.8	-20.8	-20.8					P
26	G	-131.0	IOBTURCA	42.7	19.7	181.0	02	-7.7	-7.7	-7.7	-7.6	-7.6	-7.5	-7.6	-7.5			P
246	JMC	-109.9	JMC00002	25.2	46.1	96.6	02	-29.9	-29.9	-29.9	-29.1	-30.1	-29.3	-30.1	-30.1			P
273	JMC	-38.0	JMC00005	26.0	39.4	-191.0	01	-3.1	-3.2	-3.0	-3.0	-2.9	-3.0	-3.2	-3.0			P
117	LCA	-92.0	LCAIFRB1	18.8	50.7	85.0	01	-18.7	-18.8	-18.8	-18.8							P
117	LCA	-92.0	LCAIFRB1	18.9	50.7	85.0	02	-20.0	-20.1	-20.1	-20.1							P
215	MEX	-129.9	MEX01NTE	297.1	35.6	56.6	02	-7.9	-8.3	-10.1	-11.1	-11.0	-8.0	-7.5	-7.1			P
215	MEX	-130.1	MEX01NTE	307.1	35.6	57.4	01	-8.9	-9.2	-10.8	-11.9	-11.8	-9.0	-8.6	-8.3			P
216	MEX	-119.9	MEX01SUR	402.6	45.0	16.6	02	-7.0	-7.8	-9.3	-10.5	-10.1	-7.3	-6.9				P
216	MEX	-120.1	MEX01SUR	415.8	45.0	17.4	01	-12.1	-12.4	-13.0	-13.5	-13.1	-11.9	-11.8				P
217	MEX	-154.9	MEX02NTE	287.8	11.6	156.6	02	-12.9	-12.9	-13.1	-13.3	-13.2	-12.6	-12.4	-12.5			P
217	MEX	-155.1	MEX02NTE	315.0	11.6	157.4	01	-16.5	-16.5	-16.5	-16.7	-16.7	-16.3	-16.3	-16.3			P
218	MEX	-144.9	MEX02SUR	461.9	21.1	116.6	02	-35.5	-35.5	-35.5	-35.5	-35.5	-35.5	-35.5				P
218	MEX	-145.1	MEX02SUR	494.5	21.1	117.4	01	-35.4	-35.4	-35.4	-35.4	-35.4	-35.4	-35.4				P
256	NCG	-133.0	NCG00003	117.1	31.2	129.0	01	-8.7	-8.6	-8.7	-8.8	-9.3	-8.5	-8.5	-8.3			P
204	CHL	-93.1	PAQPAC01	9.9	52.9	89.4	01	-1.4	-1.3	-1.3	-1.4							P
254	PNR	-120.1	PNRIFRB2	89.3	40.0	137.4	01	-11.6	-10.8	-10.0	-10.0	-10.1	-10.7					P
265	PRG	-117.0	PRG00002	58.6	16.3	185.0	01	-3.9	-4.5	-4.7	-4.9	-5.6	-5.6	-6.1	-5.1	-4.6	-4.4	P
223	PRU	-106.0	PRUAND01	594.0	32.0	81.0	01	-9.8	-10.1	-10.1	-9.7	-11.7	-10.9	-9.5	-9.4	-9.2	-9.2	P
225	PRU	-86.0	PRU00002	660.7	62.0	1.0	01	-6.8	-5.4	-5.0	-4.7	-5.4	-5.4	-5.2	-5.1	-4.9	-4.8	P
77	USA	-124.1	PTRVIR01	44.6	7.3	153.4	01	-39.3	-39.3	-39.3	-39.3	-39.3	-39.3	-39.3	-39.3			P
260	SLV	-133.0	SLVIFRB2	52.1	36.3	129.0	01	-8.4	-8.1	-7.9	-8.0							P
206	F	-54.0	SPMFRAN3	102.4	30.3	-67.0	01	-5.0	-5.6	-7.4	-9.3	-9.8	-6.6					P
61	SUR	-80.0	SURINAME	61.1	59.0	57.0	01	-5.4	-5.4	-5.8	-5.3	-5.3	-5.6	-5.4	-5.4			P
78	TRD	-102.0	TRD00001	24.7	41.5	125.0	02	-11.7	-11.3	-10.8	-10.6	-10.6	-10.2	-10.0	-10.0	-10.9	-10.0	P
32	URG	-84.0	URG00001	31.8	38.8	113.0	02	-17.1	-17.0	-16.7	-16.8	-16.6	-18.0	-18.4	-17.3	-18.2	-18.0	P
279	USA	-114.9	USAEH001	1205.2	5.5	56.6	02	-18.3	-18.3	-18.3	-22.4	-18.5	-18.3	-18.1	-18.1	-18.1	-18.4	P
279	USA	-115.1	USAEH001	1136.6	5.5	57.4	01	-19.6	-19.6	-19.7	-22.6	-19.6	-19.4	-19.3	-19.3	-19.3	-19.5	P
280	USA	-123.9	USAEH002	1198.1	7.3	92.6	02	-6.9	-6.7	-6.5	-8.3	-6.7	-8.4	-7.8	-7.7	-8.6	-8.6	P
280	USA	-124.1	USAEH002	1115.6	7.3	93.4	01	-38.1	-38.1	-38.1	-38.1	-38.1	-38.1	-38.1	-38.1	-38.1	-38.1	P

ESCENARIO/ SCENARIO: DPLAN1 SAT-R2 TOTAL MARGIN 830703 0005
MARGEN TOTAL
MARGE TOTALE

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	1101
281	USA	-134.9	USAEH003	1290.4	6.6	136.6	02	-9.0	-9.0	-8.8	-9.2	-8.8	-9.2	-9.5	-9.6	-9.3	-8.9	P
281	USA	-135.1	USAEH003	1231.5	6.6	137.4	01	-11.1	-11.1	-11.0	-11.0	-10.7	-11.1	-11.3	-11.5	-11.1	-10.8	P
282	USA	-139.9	USAEH004	1340.4	3.1	156.6	02	-40.7	-40.7	-40.7	-40.7	-40.7	-40.7	-40.8	-40.8	-40.8	-40.7	P
282	USA	-140.1	USAEH004	1564.2	3.1	157.4	01	-47.5	-47.5	-47.5	-47.5	-47.5	-47.5	-47.5	-47.5	-47.5	-47.5	P
275	USA	-139.9	USAWH001	656.2	3.1	36.6	02	-52.0	-52.0	-52.0	-52.0	-52.0	-52.0	-52.0	-52.0			P
275	USA	-140.1	USAWH001	648.8	3.1	37.4	01	-59.9	-59.9	-59.9	-59.9	-59.9	-59.9	-59.9	-59.9			P
276	USA	-149.9	USAWH002	648.6	-4.5	76.6	02	-3.5	-6.3	-6.2	-9.9	-6.6	-6.2	-3.9	-3.6			P
276	USA	-150.1	USAWH002	620.9	-4.5	77.4	01	-3.4	-6.9	-7.1	-10.3	-6.8	-6.5	-4.0	-3.5			P
277	USA	-161.9	USAWH003	690.6	-15.6	124.6	02	-5.0	-6.4	-6.3	-7.3	-6.0	-5.9	-5.4	-5.0			P
277	USA	-162.1	USAWH003	655.1	-15.6	125.4	01	-5.4	-7.2	-7.3	-7.4	-6.2	-6.4	-6.1	-5.3			P
278	USA	-167.9	USAWH004	802.5	-21.1	148.6	02	-3.5	-6.7	-7.0	-7.6	-5.3	-3.7	-3.7	-3.4			P
278	USA	-168.1	USAWH004	895.3	-21.1	149.4	01	-2.8	-7.0	-7.6	-6.3	-4.1	-2.8	-2.9	-2.7			P
271	VCT	-92.0	VCT00001	18.3	51.2	85.0	01	-18.8	-18.7	-18.7	-18.7	-18.7	-18.8					P
271	VCT	-92.0	VCT00001	18.4	51.2	85.0	02	-20.1	-20.0	-20.0	-20.0	-20.0	-20.1					P
269	VEN	-106.0	VENAND02	671.8	36.4	109.0	01	-9.2	-9.0	-9.3	-9.8	-9.3	-10.0	-8.9	-8.9	-8.9	-10.2	P
57	VEN	-84.0	VEN02VEN	18.5	59.6	21.0	02	-4.7	-4.6	-4.6	-4.6	-4.5	-4.6					P
270	VEN	-84.0	VEN11VEN	482.0	60.3	21.0	02	-7.9	-7.9	-8.2	-8.2	-8.3	-8.1	-8.2	-7.9	-8.0	-7.9	P

SCENARIO: DOWNLINK PLAN LAYOUT 07/03/83 ~~001~~ 6
SCENARIO: CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO: ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

(IN) /EXEC ¤I01DARKW.PRO.R2BCS24D

(IN) /SYSFILE SYSLST=(PRIMARY)

(OUT) ENTER SCENARIO KEY (UPPER-CASE LETTERS ONLY)

(OUT) (MSG) % % E560 ¤I01DARKW.PRO.R2BCS24D

(OUT) % P500 R2BCS24D/000/83-06-15 LOADED

073	ALS00002	-162.1	01	58.55,-149.27	3.841, 1.260	172.23	-	C	14.5
073	ALS00002	-161.9	02	58.55,-149.27	3.841, 1.260	172.23	+	C	14.5
074	ALS00003	-168.1	01	58.33,-149.91	3.741, 1.224	169.01	-	C	14.5
074	ALS00003	-167.9	02	58.33,-149.91	3.741, 1.224	169.01	+	C	14.5
261	ARGINSU2	-82.1	01	-65.16, -65.08	0.858, 0.681	17.11	+	C	14.5
261	ARGINSU2	-81.9	02	-65.16, -65.08	0.858, 0.681	17.11	-	C	14.5
262	ARGNORT2	-82.1	01	-29.92, -63.53	3.793, 2.335	45.61	+	C	14.5
262	ARGNORT2	-81.9	02	-29.92, -63.53	3.793, 2.335	45.61	-	C	14.5
263	ARGSUR02	-82.1	01	-42.83, -64.77	3.169, 1.777	41.50	+	C	14.5
263	ARGSUR02	-81.9	02	-42.83, -64.77	3.169, 1.777	41.50	-	C	14.5
264	ATGSJN01	-92.0	01	17.08, -61.79	0.239, 0.231	8.35	+	C	14.5
264	ATGSJN01	-92.0	02	17.08, -61.79	0.239, 0.231	8.35	-	C	14.5
283	ATNBEAM1	-50.0	02	14.87, -66.42	1.819, 0.681	39.80	+	C	14.5
228	B CE311	-90.1	01	-6.13, -41.30	1.966, 1.868	99.64	+	C	14.5
228	B CE311	-89.9	02	-6.13, -41.30	1.966, 1.868	99.64	-	C	14.5
235	B CE312	-48.1	01	-6.07, -40.30	3.422, 2.086	173.98	+	C	14.5
235	B CE312	-47.9	02	-6.07, -40.30	3.422, 2.086	173.98	-	C	14.5
229	B CE411	-90.1	01	-15.42, -51.51	3.618, 1.012	53.67	+	C	14.5
229	B CE411	-89.9	02	-15.42, -51.51	3.618, 1.012	53.67	-	C	14.5
236	B CE412	-48.1	01	-15.30, -50.77	3.644, 1.538	50.69	+	C	14.5
236	B CE412	-47.9	02	-15.30, -50.77	3.644, 1.538	50.69	-	C	14.5
230	B CE511	-90.1	01	-2.97, -53.34	2.324, 1.629	92.46	+	C	14.5
230	B CE511	-89.9	02	-2.97, -53.34	2.324, 1.629	92.46	-	C	14.5

SCENARIO: DPLAN1 DOWNLINK PLAN LAYOUT 07/03/83 ~~002~~ 7
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
237	B	CE512	-63.1	01	-2.89, -53.11	2.444, 2.130	103.87	+	C	14.5
237	B	CE512	-62.9	02	-2.95, -53.08	2.434, 2.156	108.16	-	C	14.5
231	B	NO611	-100.1	01	-11.61, -60.00	2.031, 1.629	151.28	+	C	14.5
231	B	NO611	-99.9	02	-11.61, -60.00	2.031, 1.629	151.28	-	C	14.5
240	B	NO612	-63.1	01	-11.64, -59.47	3.003, 1.691	165.07	+	C	14.5
240	B	NO612	-62.9	02	-11.54, -59.65	2.976, 1.715	168.34	-	C	14.5
232	B	NO711	-100.1	01	-1.71, -61.07	3.086, 1.403	113.10	+	C	14.5
232	B	NO711	-99.9	02	-1.71, -61.07	3.086, 1.403	113.10	-	C	14.5
241	B	NO712	-63.1	01	-1.87, -60.48	3.581, 1.843	128.48	+	C	14.5
241	B	NO712	-62.9	02	-1.88, -60.46	3.592, 1.844	128.58	-	C	14.5
233	B	NO811	-100.1	01	-4.72, -68.96	2.315, 1.341	75.38	+	C	14.5
233	B	NO811	-99.9	02	-4.72, -68.96	2.315, 1.341	75.38	-	C	14.5
242	B	NO812	-63.1	01	-4.78, -68.71	2.411, 1.625	73.82	+	C	14.5
242	B	NO812	-62.9	02	-4.77, -68.73	2.349, 1.651	76.67	-	C	14.5
239	B	SE911	-107.1	01	-19.44, -46.37	2.049, 0.681	64.32	+	C	14.5
239	B	SE911	-106.9	02	-19.20, -46.19	2.149, 0.681	63.72	-	C	14.5
226	B	SU111	-71.1	01	-25.59, -50.97	2.778, 1.179	49.47	+	C	14.5
226	B	SU111	-70.9	02	-25.57, -50.98	2.797, 1.196	49.37	-	C	14.5
234	B	SU112	-48.1	01	-25.57, -50.76	2.560, 1.429	54.31	+	C	14.5
234	B	SU112	-47.9	02	-25.57, -50.76	2.560, 1.429	54.31	-	C	14.5
227	B	SU211	-71.1	01	-16.88, -44.34	3.244, 1.584	57.97	+	C	14.5
227	B	SU211	-70.9	02	-16.98, -44.33	3.316, 1.596	57.53	-	C	14.5
238	B	SU212	-48.1	01	-16.90, -44.01	3.249, 1.923	57.62	+	C	14.5
238	B	SU212	-47.9	02	-16.90, -44.01	3.249, 1.923	57.62	-	C	14.5
115	BAHIFRB1	-113.0	02	24.19, -75.92	1.650, 0.681	131.46	-	C	14.5
018	BERBERMU	-93.1	01	32.32, -64.77	0.226, 0.226	90.00	+	C	14.5
244	BERBER02	-31.0	01	32.32, -64.77	0.234, 0.234	90.00	+	C	14.5
097	BLZ00001	-113.0	02	17.27, -88.68	0.625, 0.625	90.00	-	C	14.5

SCENARIO: DPLAN1 DOWNLINK PLAN LAYOUT 07/03/83 ~~003~~ 8
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
219	BOLAND01	-106.0	01	-16.75, -64.85	2.516, 1.601	77.06	+	C	14.5
252	BOLIFRB2	-111.9	02	-16.74, -64.99	2.492, 1.390	75.94	-	C	14.5
063	BRB00001	-102.0	02	13.19, -59.54	0.279, 0.279	90.00	-	C	14.5
284	CAN00101	-142.1	01	57.31,-126.15	3.591, 1.170	155.51	-	C	14.5
284	CAN00101	-141.9	02	57.31,-126.15	3.591, 1.170	155.51	+	C	14.5
285	CAN00102	-127.0	01	57.24,-124.79	3.126, 1.492	159.04	-	C	14.5
285	CAN00102	-127.0	02	57.24,-124.79	3.126, 1.492	159.04	+	C	14.5
286	CAN00201	-142.1	01	56.08,-112.29	3.426, 0.901	151.23	-	C	14.5
286	CAN00201	-141.9	02	56.08,-112.29	3.426, 0.901	151.23	+	C	14.5
287	CAN00202	-127.0	01	55.56,-111.40	3.046, 1.167	151.48	-	C	14.5
287	CAN00202	-127.0	02	55.56,-111.40	3.046, 1.167	151.48	+	C	14.5
288	CAN00203	-112.1	01	55.61,-110.99	2.618, 1.471	154.19	-	C	14.5
288	CAN00203	-111.9	02	55.61,-110.99	2.618, 1.471	154.19	+	C	14.5
289	CAN00302	-127.0	01	57.16,-102.40	3.478, 0.941	154.08	-	C	14.5
289	CAN00302	-127.0	02	57.16,-102.40	3.478, 0.941	154.08	+	C	14.5
290	CAN00303	-112.1	01	57.24,-100.71	2.857, 1.274	152.45	-	C	14.5
290	CAN00303	-111.9	02	57.24,-100.71	2.857, 1.274	152.45	+	C	14.5
291	CAN00304	-100.1	01	57.24, -99.67	2.318, 1.555	153.03	-	C	14.5
291	CAN00304	-99.9	02	57.24, -99.67	2.318, 1.555	153.03	+	C	14.5
292	CAN00403	-112.1	01	52.35, -86.99	3.994, 1.298	147.90	-	C	14.5
292	CAN00403	-111.9	02	52.35, -86.99	3.994, 1.298	147.90	+	C	14.5
293	CAN00404	-100.1	01	52.42, -85.64	3.475, 1.724	148.55	-	C	14.5
293	CAN00404	-99.9	02	52.42, -85.64	3.475, 1.724	148.55	+	C	14.5
294	CAN00405	-93.1	01	52.41, -85.09	3.224, 1.945	150.18	-	C	14.5
294	CAN00405	-92.9	02	52.40, -84.89	3.135, 2.020	151.55	+	C	14.5
295	CAN00504	-100.1	01	53.72, -73.71	3.836, 1.421	153.62	-	C	14.5
295	CAN00504	-99.9	02	53.72, -73.71	3.836, 1.421	153.62	+	C	14.5
296	CAN00505	-93.1	01	53.72, -72.94	3.660, 1.587	155.05	-	C	14.5

(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
296	CAN00505	-92.9	02	53.77, -72.78	3.600, 1.641	156.06	+	C	14.5
297	CAN00506	-75.1	01	53.80, -71.25	3.153, 2.002	168.55	-	C	14.5
297	CAN00506	-74.9	02	53.77, -71.10	3.115, 2.027	171.14	+	C	14.5
298	CAN00605	-93.1	01	449.62, -62.04	2.893, 1.105	143.23	-	C	14.5
298	CAN00605	-92.9	02	449.62, -61.94	2.851, 1.157	143.20	+	C	14.5
299	CAN00606	-75.1	01	449.55, -61.37	2.515, 1.537	145.10	-	C	14.5
299	CAN00606	-74.9	02	449.55, -61.34	2.471, 1.580	145.88	+	C	14.5
210	CHLCONT4	-93.1	01	-23.00, -69.55	2.179, 0.817	70.26	+	C	14.5
210	CHLCONT4	-92.9	02	-23.08, -69.54	2.175, 0.833	71.63	-	C	14.5
211	CHLCONT5	-93.1	01	-35.61, -72.05	2.563, 0.681	61.35	+	C	14.5
211	CHLCONT5	-92.9	02	-35.61, -72.02	2.556, 0.681	62.65	-	C	14.5
212	CHLCONT6	-93.1	01	-55.58, -71.62	3.032, 1.729	45.61	+	C	14.5
212	CHLCONT6	-92.9	02	-55.62, -71.26	2.947, 1.797	47.82	-	C	14.5
200	CHLPAC02	-93.1	01	-30.06, -79.79	1.378, 0.689	75.14	+	C	14.5
200	CHLPAC02	-92.9	02	-30.03, -79.75	1.382, 0.694	75.82	-	C	14.5
220	CLMAND01	-106.0	01	5.88, -74.54	3.947, 1.895	117.41	+	C	14.5
011	CLM00001	-110.1	01	5.93, -74.61	3.913, 1.780	115.88	+	C	14.5
011	CLM00001	-109.9	02	5.93, -74.61	3.913, 1.780	115.88	-	C	14.5
251	CRBBER01	-115.1	01	32.27, -64.74	0.225, 0.225	90.00	+	C	14.5
251	CRBBER01	-114.9	02	32.26, -64.70	0.279, 0.279	90.00	-	C	14.5
249	CRBNW001	-115.1	01	20.81, -80.97	2.617, 1.795	33.03	+	C	14.5
249	CRBNW001	-114.9	02	20.84, -80.80	2.722, 1.789	32.43	-	C	14.5
250	CRBSE001	-115.1	01	9.30, -61.69	3.398, 0.681	109.55	+	C	14.5
250	CRBSE001	-114.9	02	9.16, -61.41	3.479, 0.681	110.09	-	C	14.5
257	CTR00201	-120.1	01	9.67, -84.31	0.859, 0.681	126.10	+	C	14.5
012	CUB00001	-113.0	02	21.44, -79.77	1.762, 0.681	162.90	-	C	14.5
118	DMAIFRB1	-92.0	01	15.35, -61.30	0.307, 0.307	90.00	+	C	14.5
118	DMAIFRB1	-92.0	02	15.35, -61.30	0.307, 0.307	90.00	-	C	14.5

SCENARIO: DPLAN1 DOWNLINK PLAN LAYOUT 07/03/83 ~~005~~ 10
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
259	DOMIFRB2	-112.1	01	18.99, -70.26	0.783, 0.681	130.39	+	C	14.5
221	EQACAND1	-106.0	01	-1.53, -78.35	1.437, 1.051	69.89	+	C	14.5
098	EQAC0001	-95.1	01	-1.51, -78.33	1.477, 1.142	63.72	+	C	14.5
098	EQAC0001	-94.9	02	-1.52, -78.30	1.485, 1.156	65.16	-	C	14.5
222	EQAGAND1	-106.0	01	-0.58, -90.37	0.931, 0.851	94.82	+	C	14.5
099	EQAG0001	-95.1	01	-0.57, -90.36	0.938, 0.885	99.04	+	C	14.5
099	EQAG0001	-94.9	02	-0.57, -90.36	0.939, 0.888	99.77	-	C	14.5
243	FLKANT01	-57.0	01	-60.20, -44.63	3.535, 0.681	12.41	+	C	14.5
019	FLKFALKS	-31.0	01	-51.50, -59.75	0.594, 0.594	90.00	+	C	14.5
058	GRD00002	-42.0	02	12.29, -61.58	0.373, 0.373	90.00	-	C	14.5
059	GRD00003	-92.0	01	12.39, -61.68	0.358, 0.358	90.00	+	C	14.5
059	GRD00003	-92.0	02	12.39, -61.68	0.358, 0.358	90.00	-	C	14.5
272	GRD00059	-65.0	02	12.29, -61.58	0.373, 0.373	90.00	-	C	14.5
013	GRLDNK01	-60.0	01	66.75, -45.68	2.827, 0.743	169.89	+	C	14.5
255	GTMIFRB2	-133.0	01	15.57, -90.50	0.963, 0.681	102.91	+	C	14.5
016	GUFMGG01	-54.0	01	8.18, -56.35	4.263, 0.842	123.18	+	C	14.5
267	GUY00201	-80.0	01	4.78, -59.18	1.448, 0.886	94.80	+	C	14.5
268	GUY00202	-80.0	01	4.78, -59.18	1.448, 0.886	94.80	+	C	14.5
274	GUY00302	-38.0	01	4.77, -59.09	1.438, 0.887	91.22	+	C	14.5
253	HNDIFRB2	-133.0	01	15.16, -86.27	0.835, 0.752	107.70	+	C	14.5
258	HTI00002	-112.1	01	18.91, -73.29	0.626, 0.626	90.00	+	C	14.5
075	HWA00002	-162.1	01	23.36,-165.60	4.130, 0.681	159.73	-	C	14.5
075	HWA00002	-161.9	02	23.36,-165.60	4.130, 0.681	159.73	+	C	14.5
076	HWA00003	-168.1	01	23.38,-165.81	4.218, 0.681	159.86	-	C	14.5
076	HWA00003	-167.9	02	23.38,-165.81	4.218, 0.681	159.86	+	C	14.5
021	IOBBVIRG	-92.0	01	18.51, -64.40	0.297, 0.297	90.00	+	C	14.5
021	IOBRVIRG	-92.0	02	18.51, -64.40	0.297, 0.297	90.00	-	C	14.5
022	IORCAYMA	-131.0	02	19.36, -80.51	0.348, 0.348	90.00	-	C	14.5

SCENARIO: DPLAN1 DOWNLINK PLAN LAYOUT 07/03/83 006 //
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
245	IOBKN001	-92.0	01	17.42, -62.54	0.285, 0.285	90.00	+	C	14.5
245	IOBKN001	-92.0	02	17.42, -62.54	0.285, 0.285	90.00	-	C	14.5
024	IOBMONTE	-92.0	01	16.75, -61.73	0.335, 0.335	90.00	+	C	14.5
024	IOBMONTE	-92.0	02	16.75, -61.73	0.335, 0.335	90.00	-	C	14.5
026	IOBTURCA	-131.0	02	21.53, -71.79	0.345, 0.345	90.00	-	C	14.5
246	JMC00002	-109.9	02	18.12, -77.31	0.544, 0.544	90.00	-	C	14.5
273	JMC00005	-38.0	01	18.12, -77.27	0.484, 0.484	90.00	+	C	14.5
117	LCAIFRB1	-92.0	01	13.90, -61.15	0.284, 0.284	90.00	+	C	14.5
117	LCAIFRB1	-92.0	02	13.90, -61.15	0.284, 0.284	90.00	-	C	14.5
215	MEX01NTE	-130.1	01	26.22,-107.08	3.931, 1.646	150.74	-	C	14.5
215	MEX01NTE	-129.9	02	26.22,-107.08	3.931, 1.646	150.74	+	C	14.5
216	MEX01SUR	-120.1	01	19.79, -96.14	3.276, 2.027	165.15	-	C	14.5
216	MEX01SUR	-119.9	02	19.79, -96.14	3.276, 2.027	165.15	+	C	14.5
217	MEX02NTE	-155.1	01	26.77,-108.43	3.312, 1.190	137.11	-	C	14.5
217	MEX02NTE	-154.9	02	26.73,-108.20	3.396, 1.226	138.28	+	C	14.5
218	MEX02SUR	-145.1	01	19.82, -97.16	2.547, 1.518	136.21	-	C	14.5
218	MEX02SUR	-144.9	02	19.84, -97.06	2.614, 1.567	139.14	+	C	14.5
256	NCG00003	-133.0	01	12.93, -85.06	0.989, 0.685	105.15	+	C	14.5
204	PAQPAC01	-93.1	01	-27.53,-109.18	0.358, 0.358	90.00	+	C	14.5
254	PNRIFRB2	-120.1	01	8.49, -80.20	1.005, 0.749	168.36	+	C	14.5
265	PRG00002	-117.0	01	-23.21, -59.24	1.436, 0.681	68.74	+	C	14.5
223	PRUAND01	-106.0	01	-8.32, -74.56	3.531, 2.071	99.67	+	C	14.5
225	PRU00002	-86.0	01	-8.52, -74.24	3.685, 2.488	110.84	+	C	14.5
077	PIRVIR01	-124.1	01	18.12, -65.87	0.443, 0.443	90.00	-	C	14.5
260	SLVIFRB2	-133.0	01	13.82, -88.78	0.480, 0.480	90.00	+	C	14.5
206	SPMFRAN3	-54.0	01	47.52, -67.23	3.177, 0.796	6.57	+	C	14.5
061	SURINAME	-80.0	01	4.45, -55.75	1.047, 0.681	79.45	+	C	14.5
078	TRD00001	-102.0	02	10.70, -61.24	0.445, 0.445	90.00	-	C	14.5

SCENARIO: DPLAN1 DOWNLINK PLAN LAYOUT 07/03/83 ~~007~~ /2
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
032	URG00001	-84.0	02	-32.49, -56.19	1.013, 0.799	41.89	-	C	14.5
279	USAEH001	-115.1	01	36.05, -90.77	5.475, 3.340	155.88	-	C	14.5
279	USAEH001	-114.9	02	36.12, -90.64	5.402, 3.478	156.21	+	C	14.5
280	USAEH002	-124.1	01	36.03, -91.79	5.276, 3.024	147.56	-	C	14.5
280	USAEH002	-123.9	02	36.03, -91.79	5.276, 3.024	147.56	+	C	14.5
281	USAEH003	-135.1	01	35.93, -93.78	5.087, 2.337	137.77	-	C	14.5
281	USAEH003	-134.9	02	35.95, -93.35	5.112, 2.468	139.44	+	C	14.5
282	USAEH004	-140.1	01	35.88, -94.59	5.048, 2.079	135.71	-	C	14.5
282	USAEH004	-139.9	02	35.88, -94.59	5.048, 2.079	135.71	+	C	14.5
275	USAWH001	-140.1	01	37.86,-108.47	5.556, 2.280	145.91	-	C	14.5
275	USAWH001	-139.9	02	37.86,-108.47	5.556, 2.280	145.91	+	C	14.5
276	USAWH002	-150.1	01	38.13,-109.72	5.524, 1.870	142.03	-	C	14.5
276	USAWH002	-149.9	02	38.13,-109.72	5.524, 1.870	142.03	+	C	14.5
277	USAWH003	-162.1	01	38.81,-112.32	5.519, 1.304	137.01	-	C	14.5
277	USAWH003	-161.9	02	38.81,-112.32	5.519, 1.304	137.01	+	C	14.5
278	USAWH004	-168.1	01	39.36,-114.15	5.576, 1.010	135.05	-	C	14.5
278	USAWH004	-167.9	02	39.36,-114.15	5.576, 1.010	135.05	+	C	14.5
271	VCT00001	-92.0	01	13.23, -61.21	0.250, 0.207	91.87	+	C	14.5
271	VCT00001	-92.0	02	13.23, -61.21	0.250, 0.207	91.87	-	C	14.5
269	VENAND02	-106.0	01	8.51, -67.11	2.921, 1.777	99.36	+	C	14.5
057	VEN02VEN	-84.0	02	15.51, -63.45	0.372, 0.372	90.00	-	C	14.5
270	VEN11VEN	-84.0	02	6.86, -66.57	2.724, 2.157	143.75	-	C	14.5

1	2	3	4	5	6	7	8	9	10

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(IN)     /EXEC ¤I01DARKW.PRO.R2BCS24U

(IN)     /SYSFILE SYSLST=(PRIMARY)

(OUT)    ENTER SCENARIO KEY (UPPER-CASE LETTERS ONLY)

(OUT)     (MSG) %  %  E560 ¤I01DARKW.PRO.R2BCS24U

(OUT)    %  P500 R2BCS24U/000/83-06-15 LOADED
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073	ALS00002	-162.1	01	58.55,-149.27	3.841, 1.260	172.23	-	P	1000.
073	ALS00002	-161.9	02	32.38,-147.29	13.667, 5.632	159.61	+	P	1000.
074	ALS00003	-168.1	01	58.33,-149.91	3.741, 1.224	169.01	-	P	1000.
074	ALS00003	-167.9	02	32.64,-150.24	12.799, 5.389	157.22	+	P	1000.
261	ARGINSU2	-82.1	01	-33.23, -63.70	5.520, 2.330	59.12	+	P	1000.
261	ARGINSU2	-81.9	02	-65.16, -65.08	0.858, 0.681	17.11	-	P	1000.
262	ARGNORT2	-82.1	01	-33.23, -63.70	5.520, 2.330	59.12	+	P	1000.
262	ARGNORT2	-81.9	02	-29.92, -63.53	3.793, 2.335	45.61	-	P	1000.
263	ARGSUR02	-82.1	01	-33.23, -63.70	5.520, 2.330	59.12	+	P	1000.
263	ARGSUR02	-81.9	02	-42.83, -64.77	3.169, 1.777	41.50	-	P	1000.
264	ATGSJN01	-92.0	01	17.08, -61.79	0.239, 0.231	8.35	+	P	1000.
264	ATGSJN01	-92.0	02	17.08, -61.79	0.239, 0.231	8.35	-	P	1000.
283	ATNBEAM1	-50.0	02	14.87, -66.42	1.819, 0.681	39.80	+	P	1000.
228	B CE311	-90.1	01	-6.13, -41.30	1.966, 1.868	99.64	+	P	1000.
228	B CE311	-89.9	02	-6.13, -41.30	1.966, 1.868	99.64	-	P	1000.
235	B CE312	-48.1	01	-6.07, -40.30	3.422, 2.086	173.98	+	P	1000.
235	B CE312	-47.9	02	-6.07, -40.30	3.422, 2.086	173.98	-	P	1000.
229	B CE411	-90.1	01	-15.42, -51.51	3.618, 1.012	53.67	+	P	1000.
229	B CE411	-89.9	02	-15.42, -51.51	3.618, 1.012	53.67	-	P	1000.
236	B CE412	-48.1	01	-15.30, -50.77	3.644, 1.538	50.69	+	P	1000.
236	B CE412	-47.9	02	-15.30, -50.77	3.644, 1.538	50.69	-	P	1000.
230	B CE511	-90.1	01	-2.97, -53.34	2.324, 1.629	92.46	+	P	1000.
230	B CE511	-89.9	02	-2.97, -53.34	2.324, 1.629	92.46	-	P	1000.

SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
237	B	CE512	-63.1	01	-2.89, -53.11	2.444, 2.130	103.87	+	P	1000.
237	B	CE512	-62.9	02	-2.95, -53.08	2.434, 2.156	108.16	-	P	1000.
231	B	NO611	-100.1	01	-11.61, -60.00	2.031, 1.629	151.28	+	P	1000.
231	B	NO611	-99.9	02	-11.61, -60.00	2.031, 1.629	151.28	-	P	1000.
240	B	NO612	-63.1	01	-11.64, -59.47	3.003, 1.691	165.07	+	P	1000.
240	B	NO612	-62.9	02	-11.54, -59.65	2.976, 1.715	168.34	-	P	1000.
232	B	NO711	-100.1	01	-1.71, -61.07	3.086, 1.403	113.10	+	P	1000.
232	B	NO711	-99.9	02	-1.71, -61.07	3.086, 1.403	113.10	-	P	1000.
241	B	NO712	-63.1	01	-1.87, -60.48	3.581, 1.843	128.48	+	P	1000.
241	B	NO712	-62.9	02	-1.88, -60.46	3.592, 1.844	128.58	-	P	1000.
233	B	NO811	-100.1	01	-4.72, -68.96	2.315, 1.341	75.38	+	P	1000.
233	B	NO811	-99.9	02	-4.72, -68.96	2.315, 1.341	75.38	-	P	1000.
242	B	NO812	-63.1	01	-4.78, -68.71	2.411, 1.625	73.82	+	P	1000.
242	B	NO812	-62.9	02	-4.77, -68.73	2.349, 1.651	76.67	-	P	1000.
239	B	SE911	-107.1	01	-19.44, -46.37	2.049, 0.681	64.32	+	P	1000.
239	B	SE911	-106.9	02	-19.20, -46.19	2.149, 0.681	63.72	-	P	1000.
226	B	SU111	-71.1	01	-25.59, -50.97	2.778, 1.179	49.47	+	P	1000.
226	B	SU111	-70.9	02	-25.57, -50.98	2.797, 1.196	49.37	-	P	1000.
234	B	SU112	-48.1	01	-25.57, -50.76	2.560, 1.429	54.31	+	P	1000.
234	B	SU112	-47.9	02	-25.57, -50.76	2.560, 1.429	54.31	-	P	1000.
227	B	SU211	-71.1	01	-16.88, -44.34	3.244, 1.584	57.97	+	P	1000.
227	B	SU211	-70.9	02	-16.98, -44.33	3.316, 1.596	57.53	-	P	1000.
238	B	SU212	-48.1	01	-16.90, -44.01	3.249, 1.923	57.62	+	P	1000.
238	B	SU212	-47.9	02	-16.90, -44.01	3.249, 1.923	57.62	-	P	1000.
115	BAHIFRB1	-113.0	02	24.19, -75.92	1.650, 0.681	131.46	-	P	1000.
018	BERBERMU	-93.1	01	32.32, -64.77	0.226, 0.226	90.00	+	P	1000.
244	BERBER02	-31.0	01	32.32, -64.77	0.234, 0.234	90.00	+	P	1000.
097	BLZ00001	-113.0	02	17.27, -88.68	0.625, 0.625	90.00	-	P	1000.

SCENARIO: DPLAN1 FEEDERLINK PLAN LAYOUT 07/03/83
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
219	BOLAND01	-106.0	01	-5.88, -70.99	6.299, 3.056	92.60	+	P	1000.
252	BOLIFRB2	-111.9	02	-16.74, -64.99	2.492, 1.390	75.94	-	P	1000.
063	BRB00001	-102.0	02	13.19, -59.54	0.279, 0.279	90.00	-	P	1000.
284	CAN00101	-142.1	01	52.10,-108.19	7.682, 1.586	160.22	-	P	1000.
284	CAN00101	-141.9	02	52.10,-108.19	7.682, 1.586	160.22	+	P	1000.
285	CAN00102	-127.0	01	51.25,-100.56	8.049, 2.021	165.91	-	P	1000.
285	CAN00102	-127.0	02	51.25,-100.56	8.049, 2.021	165.91	+	P	1000.
286	CAN00201	-142.1	01	52.10,-108.19	7.682, 1.586	160.22	-	P	1000.
286	CAN00201	-141.9	02	52.10,-108.19	7.682, 1.586	160.22	+	P	1000.
287	CAN00202	-127.0	01	51.25,-100.56	8.049, 2.021	165.91	-	P	1000.
287	CAN00202	-127.0	02	51.25,-100.56	8.049, 2.021	165.91	+	P	1000.
288	CAN00203	-112.1	01	51.20, -93.80	8.740, 2.292	171.39	-	P	1000.
288	CAN00203	-111.9	02	51.20, -93.80	8.740, 2.292	171.39	+	P	1000.
289	CAN00302	-127.0	01	51.25,-100.56	8.049, 2.021	165.91	-	P	1000.
289	CAN00302	-127.0	02	51.25,-100.56	8.049, 2.021	165.91	+	P	1000.
290	CAN00303	-112.1	01	51.20, -93.80	8.740, 2.292	171.39	-	P	1000.
290	CAN00303	-111.9	02	51.20, -93.80	8.740, 2.292	171.39	+	P	1000.
291	CAN00304	-100.1	01	50.80, -90.26	8.653, 2.489	174.70	-	P	1000.
291	CAN00304	-99.9	02	50.80, -90.26	8.653, 2.489	174.70	+	P	1000.
292	CAN00403	-112.1	01	51.20, -93.80	8.740, 2.292	171.39	-	P	1000.
292	CAN00403	-111.9	02	51.20, -93.80	8.740, 2.292	171.39	+	P	1000.
293	CAN00404	-100.1	01	50.80, -90.26	8.653, 2.489	174.70	-	P	1000.
293	CAN00404	-99.9	02	50.80, -90.26	8.653, 2.489	174.70	+	P	1000.
294	CAN00405	-93.1	01	50.53, -88.64	8.485, 2.576	176.49	-	P	1000.
294	CAN00405	-92.9	02	50.51, -88.02	8.475, 2.584	177.13	+	P	1000.
295	CAN00504	-100.1	01	50.80, -90.26	8.653, 2.489	174.70	-	P	1000.
295	CAN00504	-99.9	02	50.80, -90.26	8.653, 2.489	174.70	+	P	1000.
296	CAN00505	-93.1	01	50.53, -88.64	8.485, 2.576	176.49	-	P	1000.

1	2	3	4	5	6	7	8	9	10
296	CAN00505	-92.9	02	50.51, -88.02	8.475, 2.584	177.13	+	P	1000.
297	CAN00506	-75.1	01	50.35, -82.65	8.156, 2.555	2.92	-	P	1000.
297	CAN00506	-74.9	02	50.37, -81.93	8.108, 2.533	3.65	+	P	1000.
298	CAN00605	-93.1	01	50.53, -88.64	8.485, 2.576	176.49	-	P	1000.
298	CAN00605	-92.9	02	50.51, -88.02	8.475, 2.584	177.13	+	P	1000.
299	CAN00606	-75.1	01	50.35, -82.65	8.156, 2.555	2.92	-	P	1000.
299	CAN00606	-74.9	02	50.37, -81.93	8.108, 2.533	3.65	+	P	1000.
210	CHLCONT4	-93.1	01	-23.00, -69.55	2.179, 0.817	70.26	+	P	1000.
210	CHLCONT4	-92.9	02	-23.08, -69.54	2.175, 0.833	71.63	-	P	1000.
211	CHLCONT5	-93.1	01	-35.61, -72.05	2.563, 0.681	61.35	+	P	1000.
211	CHLCONT5	-92.9	02	-35.61, -72.02	2.556, 0.681	62.65	-	P	1000.
212	CHLCONT6	-93.1	01	-55.58, -71.62	3.032, 1.729	45.61	+	P	1000.
212	CHLCONT6	-92.9	02	-55.62, -71.26	2.947, 1.797	47.82	-	P	1000.
200	CHLPAC02	-93.1	01	-30.06, -79.79	1.378, 0.689	75.14	+	P	1000.
200	CHLPAC02	-92.9	02	-30.03, -79.75	1.382, 0.694	75.82	-	P	1000.
220	CLMAND01	-106.0	01	-4.52, -70.07	6.223, 3.417	87.31	+	P	1000.
011	CLM00001	-110.1	01	5.34, -75.60	3.788, 1.237	117.60	+	P	1000.
011	CLM00001	-109.9	02	5.34, -75.60	3.788, 1.237	117.60	-	P	1000.
251	CRBBER01	-115.1	01	32.27, -64.74	0.225, 0.225	90.00	+	P	1000.
251	CRBBER01	-114.9	02	32.26, -64.70	0.279, 0.279	90.00	-	P	1000.
249	CRBNW001	-115.1	01	20.81, -80.97	2.617, 1.795	33.03	+	P	1000.
249	CRBNW001	-114.9	02	20.84, -80.80	2.722, 1.789	32.43	-	P	1000.
250	CRBSE001	-115.1	01	9.30, -61.69	3.398, 0.681	109.55	+	P	1000.
250	CRBSE001	-114.9	02	9.16, -61.41	3.479, 0.681	110.09	-	P	1000.
257	CTR00201	-120.1	01	9.67, -84.31	0.859, 0.681	126.10	+	P	1000.
012	CUB00001	-113.0	02	21.44, -79.77	1.762, 0.681	162.90	-	P	1000.
118	DMAIFRB1	-92.0	01	15.35, -61.30	0.307, 0.307	90.00	+	P	1000.
118	DMAIFRB1	-92.0	02	15.35, -61.30	0.307, 0.307	90.00	-	P	1000.

SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
259	DOMIFRB2	-112.1	01	18.99, -70.26	0.783, 0.681	130.39	+	P	1000.
221	EQACAND1	-106.0	01	4.52, -70.07	6.223, 3.417	92.69	+	P	1000.
098	EQAC0001	-95.1	01	-1.62, -78.26	1.368, 1.118	72.71	+	P	1000.
098	EQAC0001	-94.9	02	-1.64, -78.24	1.366, 1.137	74.41	-	P	1000.
222	EQAGAND1	-106.0	01	4.52, -70.07	6.223, 3.417	92.69	+	P	1000.
099	EQAG0001	-95.1	01	-1.62, -78.26	1.368, 1.118	72.71	+	P	1000.
099	EQAG0001	-94.9	02	-1.64, -78.24	1.366, 1.137	74.41	-	P	1000.
243	FLKANT01	-57.0	01	-60.20, -44.63	3.535, 0.681	12.41	+	P	1000.
019	FLKFALKS	-31.0	01	-51.50, -59.75	0.594, 0.594	90.00	+	P	1000.
058	GRD00002	-42.0	02	12.25, -61.61	0.298, 0.298	90.00	-	P	1000.
059	GRD00003	-92.0	01	12.25, -61.61	0.284, 0.284	90.00	+	P	1000.
059	GRD00003	-92.0	02	12.25, -61.61	0.284, 0.284	90.00	-	P	1000.
272	GRD00059	-65.0	02	12.29, -61.58	0.373, 0.373	90.00	-	P	1000.
013	GRLDNK01	-60.0	01	66.75, -45.68	2.827, 0.743	169.89	+	P	1000.
255	GTMIFRB2	-133.0	01	15.57, -90.50	0.963, 0.681	102.91	+	P	1000.
016	GUFMGG01	-54.0	01	8.18, -56.35	4.263, 0.842	123.18	+	P	1000.
267	GUY00201	-80.0	01	4.78, -59.18	1.448, 0.886	94.80	+	P	1000.
268	GUY00202	-80.0	01	4.78, -59.18	1.448, 0.886	94.80	+	P	1000.
274	GUY00302	-38.0	01	4.77, -59.09	1.438, 0.887	91.22	+	P	1000.
253	HNDIFRB2	-133.0	01	15.16, -86.27	0.835, 0.752	107.70	+	P	1000.
258	HTI00002	-112.1	01	18.91, -73.29	0.626, 0.626	90.00	+	P	1000.
075	HWA00002	-162.1	01	32.38,-147.29	13.667, 5.632	159.61	-	P	1000.
075	HWA00002	-161.9	02	32.38,-147.29	13.667, 5.632	159.61	+	P	1000.
076	HWA00003	-168.1	01	32.64,-150.24	12.799, 5.389	157.22	-	P	1000.
076	HWA00003	-167.9	02	32.64,-150.24	12.799, 5.389	157.22	+	P	1000.
021	IORBVIRG	-92.0	01	18.51, -64.40	0.297, 0.297	90.00	+	P	1000.
021	IORBVIRG	-92.0	02	18.51, -64.40	0.297, 0.297	90.00	-	P	1000.
022	IORCAYMA	-151.0	02	19.36, -80.51	0.348, 0.348	90.00	-	P	1000.

SCENARIO: DPLAN1 FEEDERLINK PLAN LAYOUT 07/03/83 ~~006~~ 18
SCENARIO; DPLAN1 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
245	IOBKN001	-92.0	01	17.42, -62.54	0.285, 0.285	90.00	+	P	1000.
245	IOBKN001	-92.0	02	17.42, -62.54	0.285, 0.285	90.00	-	P	1000.
024	IOBMONTE	-92.0	01	16.75, -61.73	0.335, 0.335	90.00	+	P	1000.
024	IOBMONTE	-92.0	02	16.75, -61.73	0.335, 0.335	90.00	-	P	1000.
026	IOBTURCA	-131.0	02	21.53, -71.79	0.345, 0.345	90.00	-	P	1000.
246	JMC00002	-109.9	02	18.12, -77.31	0.544, 0.544	90.00	-	P	1000.
273	JMC00005	-38.0	01	18.12, -77.27	0.484, 0.484	90.00	+	P	1000.
117	LCAIFRB1	-92.0	01	13.90, -61.15	0.284, 0.284	90.00	+	P	1000.
117	LCAIFRB1	-92.0	02	13.90, -61.15	0.284, 0.284	90.00	-	P	1000.
215	MEX01NTE	-130.1	01	23.39,-101.75	5.767, 1.619	150.59	-	P	1000.
215	MEX01NTE	-129.9	02	23.39,-101.75	5.767, 1.619	150.59	+	P	1000.
216	MEX01SUR	-120.1	01	23.33,-101.41	5.996, 1.786	153.85	-	P	1000.
216	MEX01SUR	-119.9	02	23.33,-101.41	5.996, 1.786	153.85	+	P	1000.
217	MEX02NTE	-155.1	01	24.71,-104.94	4.917, 1.066	135.80	-	P	1000.
217	MEX02NTE	-154.9	02	24.53,-104.41	5.026, 1.098	137.32	+	P	1000.
218	MEX02SUR	-145.1	01	23.90,-103.12	5.199, 1.300	142.95	-	P	1000.
218	MEX02SUR	-144.9	02	23.83,-102.95	5.252, 1.350	144.11	+	P	1000.
256	NCG00003	-133.0	01	12.93, -85.06	0.989, 0.685	105.15	+	P	1000.
204	PAQPAC01	-93.1	01	-27.53,-109.18	0.358, 0.358	90.00	+	P	1000.
254	PNRIFRB2	-120.1	01	8.49, -80.20	1.005, 0.749	168.36	+	P	1000.
265	PRG00002	-117.0	01	-23.21, -59.24	1.436, 0.681	68.74	+	P	1000.
223	PRUAND01	-106.0	01	-4.52, -70.07	6.223, 3.417	87.31	+	P	1000.
225	PRU00002	-86.0	01	-8.52, -74.24	3.685, 2.488	110.84	+	P	1000.
077	PTRVIR01	-124.1	01	29.97,-123.12	16.154, 6.814	169.41	-	P	1000.
260	SLVIFRB2	-133.0	01	13.82, -88.78	0.480, 0.480	90.00	+	P	1000.
206	SPMFRAN3	-54.0	01	47.52, -67.23	3.177, 0.796	6.57	+	P	1000.
061	SURINAME	-80.0	01	4.53, -55.77	1.066, 0.718	83.09	+	P	1000.
078	TRD00001	-102.0	02	10.37, -61.40	0.285, 0.285	90.00	-	P	1000.

SCENARIO: DPLAN1 FEEDERLINK PLAN LAYOUT 07/03/83 ~~007~~ 19
SCENARIO: DPLAN1 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN1 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
032	URG00001	-84.0	02	-32.49, -56.19	1.013, 0.799	41.89	-	P	1000.
279	USAEH001	-115.1	01	28.77,-117.65	15.607, 7.217	170.82	-	P	1000.
279	USAEH001	-114.9	02	28.72,-116.63	15.591, 7.248	171.32	+	P	1000.
280	USAEH002	-124.1	01	29.97,-123.12	16.154, 6.814	169.41	-	P	1000.
280	USAEH002	-123.9	02	29.97,-123.12	16.154, 6.814	169.41	+	P	1000.
281	USAEH003	-135.1	01	31.79,-132.33	16.707, 6.223	167.25	-	P	1000.
281	USAEH003	-134.9	02	31.53,-130.76	16.676, 6.309	167.68	+	P	1000.
282	USAEH004	-140.1	01	31.90,-134.83	16.421, 6.159	166.40	-	P	1000.
282	USAEH004	-139.9	02	31.90,-134.83	16.421, 6.159	166.40	+	P	1000.
275	USAWH001	-140.1	01	31.90,-134.83	16.421, 6.159	166.40	-	P	1000.
275	USAWH001	-139.9	02	31.90,-134.83	16.421, 6.159	166.40	+	P	1000.
276	USAWH002	-150.1	01	32.01,-140.79	15.277, 5.991	163.65	-	P	1000.
276	USAWH002	-149.9	02	32.01,-140.79	15.277, 5.991	163.65	+	P	1000.
277	USAWH003	-162.1	01	32.38,-147.29	13.667, 5.632	159.61	-	P	1000.
277	USAWH003	-161.9	02	32.38,-147.29	13.667, 5.632	159.61	+	P	1000.
278	USAWH004	-168.1	01	32.64,-150.24	12.799, 5.389	157.22	-	P	1000.
278	USAWH004	-167.9	02	32.64,-150.24	12.799, 5.389	157.22	+	P	1000.
271	VCT00001	-92.0	01	13.23, -61.21	0.250, 0.207	91.87	+	P	1000.
271	VCT00001	-92.0	02	13.23, -61.21	0.250, 0.207	91.87	-	P	1000.
269	VENAND02	-106.0	01	8.51, -67.11	2.921, 1.777	99.36	+	P	1000.
057	VENU2VEN	-84.0	02	15.51, -63.45	0.372, 0.372	90.00	-	P	1000.
270	VEN11VEN	-84.0	02	6.86, -66.57	2.724, 2.157	143.75	-	P	1000.

INFORME NO.1 SOBRE PARAMETROS TECHNICOS
- VALORES SUPLETORIOS.

* CLAVE DE ESCENARIO: DPLAN1 * FECHA 07/03/83

1.1 CARACTERISTICAS NOMINALES DEL TERMINAL EN RECEPCION

CLAVE DE LA ANTENA	AY01	
DESCRIPCION DE LA ANTENA: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DEL RECEPTOR (TEMPERATURA)	10.0	DBK-1
DIAMETRO DE LA ANTENA RECEPTORA	1.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC1	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX1	

1.2 CARACTERISTICAS NOMINALES DE LA ANTENA TRANSMISORA DEL SATELITE

CLAVE DE LA ANTENA	AY02	
DESCRIPCION DE LA ANTENA: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFICACIA	.55	
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC2	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX2	

1.3 CARACTERISTICAS NOMINALES DEL TERMINAL TERRENO EN TRANSMISION

CLAVE DE LA ANTENA	AR05	
DESCRIPCION DE LA ANTENA: CPM FLT		
EFICACIA	.64	
DIAMETRO	5.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC7	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX7	

1.4 CARACTERISTICAS NOMINALES DE LA ANTENA RECEPTORA DEL SATELITE

CLAVE DE LA ANTENA	AP18	
DESCRIPCION DE LA ANTENA: CPM (JUN-JUL 82)		
TEMPERATURA DE RUIDO	1500.	K
PIRE O C/N O DFP O POTENCIA	1000.	W
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC5	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX5	

1.5 CARACTERISTICAS DEL PLAN

RELACION PORTADORA/RUIDO GLOBAL	14.0	DB
RELACION DE PROTECCION TOTAL GENERAL	28.	DB
CLAVE DE PLANTILLA DE LA RELACION DE PROTEC.	PY01	
CLAVE DE DISPOSICION DE CANALES-ENLACE DESC.	CB04	
-ENL.DE CONX.	CB54	
ANCHURA DE BANDA DE CANAL	24.	MHZ
SEPARACION DE CANALES	15.0	MHZ
ENLACE DESC. - BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
ENLACE DE CONX.- BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
FRECUENCIA DEL CANAL NO.1 - ENLACE DESC.	12.222	MHZ
- ENL. DE CONX.	17.522	MHZ
NUMERO TOTAL DE CANALES	36	
POLARIZACION - ENLACE DESCENDENTE	C	
- ENLACE DE CONEXION	C	
MODELO DE LLUVIA	R	

TECHNICAL PARAMETERS REPORT 1
- DEFAULT VALUES.

* SCENARIO KEY: DPLAN1 * DATE 07/03/83

1.1 RECEIVING EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AY01	
ANTENNA DESCRIPTION: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
RECEIVE G/T (MERIT OR TEMPERATURE)	10.0	DBK-1
RECEIVE ANTENNA (DIAMETER OR BEAMWIDTH)	1.0	M
CO-POLAR GAIN PATTERN KEY	GYC1	
CROSS-POLAR GAIN PATTERN KEY	GYX1	

1.2 SATELLITE TRANSMIT ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AY02	
ANTENNA DESCRIPTION: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFFICIENCY	.55	
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GYC2	
CROSS-POLAR GAIN PATTERN KEY	GYX2	

1.3 TRANSMIT EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AR05	
ANTENNA DESCRIPTION: CPM FLT		
EFFICIENCY	.64	
DIAMETER	5.0	M
CO-POLAR PATTERN KEY	GPC7	
CROSS-POLAR GAIN PATTERN KEY	GPX7	

1.4 SATELLITE RECEIVE ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AP18	
ANTENNA DESCRIPTION: CPM (JUN-JUL 82)		
NOISE TEMPERATURE	1500.	K
EIRP OR C/N OR PFD OR POWER	1000.	W
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GPC5	
CROSS-POLAR GAIN PATTERN KEY	GPX5	

1.5 PLAN CHARACTERISTICS

OVERALL C/N	14.0	DB
OVERALL AGGREGATE PROTECTION RATIO	28.	DB
PROTECTION RATIO TEMPLATE KEY	PY01	
DOWNLINK CHANNELIZATION KEY	CB04	
FEEDERLINK CHANNELIZATION KEY	CB54	
CHANNEL BANDWIDTH	24.	MHZ
CHANNEL SPACING	13.0	MHZ
DOWNLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
FEEDERLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
CHANNEL #1 FREQUENCY - DOWNLINK	12.222	MHZ
- FEEDERLINK	17.322	MHZ
TOTAL NUMBER OF CHANNELS	36	
DOWNLINK POLARIZATION	C	
FEEDERLINK POLARIZATION	C	
RAIN-MODEL	R	

PARAMETRES TECHNIQUES RAPPORT 1
- VALEURS PAR DEFAUT.

* CLE DU SCENARIO: DPLAN1 * DATE 07/03/83

1.1 CARECTERISTIQUES NOMINALES DU TERMINAL DE RECEPTION

CLE DE L'ANTENNE	AY01	
DESCRIPTION DE L'ANTENNE: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DU RECEPTEUR (MERIT OU TEMPERATURE)	10.0	DBK-1
DIAMETRE DE L'ANTENNE DE RECEPTION	1.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC1	
CLE DE DIAGRAMME DE GAIN CONTRAPOLATAIRE	GYX1	

1.2 CARACTERSTIQUES NOMINALES DE L'ANTENNE D'EMISSION DU SATELLITE

CLE DE L'ANTENNE	AY02	
DESCRIPTION DE L'ANTENNE: RARC 83 SAT TX ANTENNA (JUNE 83)		
RENDEMENT	.55	
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC2	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GYX2	

1.3 CARACTERISTIQUES NOMINALES DE LA STATION TERRIENNE D'EMISSION

CLE DE L'ANTENNE	AR05	
DESCRIPTION DE L'ANTENNE: CPM FLT		
RENDEMENT	.64	
DIAMETRE	5.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC7	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX7	

1.4 CARACTERISTIQUES NOMINALES DE L'ANTENNE DE RECEPTION DU SATELLITE

CLE DE L'ANTENNE	AP18	
DESCRIPTION DE L'ANTENNE: CPM (JUN-JUL 82)		
TEMPERATURE DE BRUIT	1500.	K
NIVEAU FLUX A LA RECEPTION	1000.	W
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC5	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX5	

1.5 CARACTERISTIQUES DU PLAN

RAPORT PORTEUSE/BRUIT GLOBAL	14.0	DB
RAPPORT DE PROTECTION GLOBAL	28.	DB
CLE DE GABARIT DE RAPPORT DE PROTECTION	PY01	
CLE DE DISPOSITION DES VOIES-LIAISON DESC.	CB04	
-LIAIS.DE CONX.	CB54	
LARGEUR DE BANDE DE VOIE	24.	MHZ
ECARTEMENT DES VOIES	13.0	MHZ
LIAISON DESC. - BANDE DE GARDE: INFERIEURE	12.	MHZ
- BANDE DE GARDE: SUPERIEURE	12.	MHZ
LIAISON DE CONX. - BANDE DE GARDE: INFER.	12.	MHZ
- BANDE DE GARDE: SUPER.	12.	MHZ
FREQ. DE LA VOIE NO.1 - LIAISON DESC.	12.222	MHZ
- LIAISON DE CONX.	17.322	MHZ
NOMBRE TOTAL DE VOIES	36	
POLARISATION - LIAISON DESCENDANTE	C	
- LIAISON DE CONNEXION	C	
MODEL HYDROMETEOROLOGIQUE	R	

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 122-E
1 July 1983
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 5

(PLANNING)

Friday, 24 June 1983, at 1600 hrs

Chairman : Mr. P.D. CROSS (Jamaica)

Subjects discussed :		Documents Nos.
1.	Report from Working Group 5A	DT/24, 15 and Add.1
2.	Planning schedule	-
3.	Requirements and planning problems	16(Rev.1), DT/5
4.	Problem of interregional interference	53
5.	Establishment of a drafting group	-

1. Report from Working Group 5A (Documents Nos. DT/24, 51 and Add.1)

1.1 The Chairman of Working Group 5A said the Group had met twice and the results of its work were in Document No. DT/24, to which he indicated a number of amendments to paragraph 6 and the lists of down-link and feeder link planning parameters.

The Working Group had adopted Document No. DT/24 with those amendments and was submitting it for approval.

1.2 The delegate of Denmark asked to be added to the list of delegations in paragraph 7 reserving their right to review the decision concerning the channel bandwidth value for planning purposes.

Document No. DT/24, as amended, was approved (see Document No. 78 for revised version).

1.3 In reply to an enquiry from the representative of the IFRB, the Chairman confirmed that any different planning parameter values adopted by Committee 4 could be substituted for those in Document No. DT/24 as they became available.

The Committee took note of Committee 4's decisions on planning parameters conveyed in Documents Nos. 51 and Add.1.

2. Planning schedule

2.1 The Chairman said it was hoped to produce the promised sample plan in document form by Monday, 27 June 1983, and to have a first draft plan available for the Committee to examine on 29 or 30 June. The aim was to prepare a second draft plan for Monday, 4 July and to examine the final plan in Committee on Friday, 8 July 1983.

In reply to an enquiry from the delegate of Guyana, who stressed the importance of such information to small delegations when estimating their work-load at various times, he confirmed that a tentative planning schedule could be produced in document form for reference purposes (see Document No. DT/29).

3. Requirements and planning problems

3.1 The Chairman said it was hoped that the planning process and the efforts of Drafting Group 5A-1 would be facilitated by inputs from administrations. A major problem was that present requirements were far greater than could be accommodated. If they could not be reduced, there would be great planning difficulties. One possible solution to the problem would be to start by ensuring that all administrations enjoyed the minimum requirements set out in Administrative Council Resolution No. 865. Another would be to start by allocating each administration four or eight channels and thereafter increase the numbers progressively in line with possibilities.

3.2 The delegate of Canada said that the difficulties would be eased considerably if, for example, some flexibility was allowed in determining orbit locations and if polarizations were specified. Those and other possibilities of easing planning problems should be examined in either the Committee or the working group.

3.3 The Chairman indicated that some thought had already been given to allowing a degree of flexibility in determining orbital arcs, but said it would be premature to take up the subject at the current meeting.

3.4 The delegate of Canada explained that his suggestion had been to examine the possibilities offered by various other options if initial planning difficulties proved to be great, rather than to start by reducing all administrations to four channels only.

3.5 The delegate of the United States supported that view and expressed the hope that analysis of the first plan would help to identify particular problem areas.

3.6 The delegate of Brazil said some delegations had expressed concern because Document No. 16(Rev.1) gave the impression that his country had increased its requirements. That was not in fact the case. His administration had merely sought a better way of expressing the same requirements as in Document No. 16.

3.7 The delegates of the United States, Canada and Chile also clarified and corrected their countries' requirements as represented in Document No. 16(Rev.1).

3.8 The Chairman said that such clarifications could be passed directly to the technical secretariat. The interpretation of Document No. 16(Rev.1) should be left until later in view of the complexity of its contents.

3.9 The delegate of Grenada, referring to the fact that the requirements of St. Vincent and the Grenadines had been entered under a different symbol from that given in Document No. DT/5, asked if future editions of Document No. 16 would use those symbols only.

3.10 The Chairman confirmed that the IFRB would be correcting the error made in the case of St. Vincent and the Grenadines.

4. Problem of interregional interference (Document No. 53)

4.1 The delegate of France said that the Conference would be concerned to protect services in Regions 1 and 3 and, to that end, should be provided with the relevant data, just as Region 2 data was made available when plans for those Regions were formulated in 1977. He suggested that data relating to Region 1 and Region 3 services should be incorporated in the computer analysis of the draft plan for Region 2, and that the IFRB be asked to recommend which points should be taken into consideration.

4.2 The representative of the IFRB, referring to Document No. 53, said that both the IFRB and the Conference would clearly take questions of interregional interference into account. The Board was in fact already identifying test points for entry into the computer analysis program and it would be useful if the Committee could eventually take a decision on them.

4.3 The delegate of Brazil said he hoped that any such decisions would not conflict with those taken in Committee 4.

4.4 The representative of the IFRB said he believed that the Board would select test points and submit them to the Committee in a document for its agreement. Such a document could be put to the next meeting of the Committee. Committee 4 was dealing with matters which would not affect the selection of test points.

5. Establishment of a drafting group

5.1 The Chairman proposed the establishment of a drafting group to align the different language texts of documents approved by the Committee so as to facilitate the work of the Editorial Committee.

5.2 The Chairman of the Editorial Committee said that in the first instance such a measure would be necessary for the final version of the plan for Region 2.

5.3 The delegates of Jamaica, Canada and Mexico said that Members of their delegations would serve on the drafting group and be responsible respectively for the English, French and Spanish versions of texts for submission to the Editorial Committee.

It was so decided.

The meeting rose at 1735 hours.

The Secretary :
M. GIROUX

The Chairman :
P.D. CROSS

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 123-E
1 July 1983
Original : French

COMMITTEE 4
COMMITTEE 5
COMMITTEE 6

NOTE BY THE CHAIRMAN OF COMMITTEE 3

TO THE CHAIRMEN OF COMMITTEES 4, 5 AND 6

In Resolution No. 48, the Plenipotentiary Conference, Nairobi, 1982, decided :

1. that before adopting resolutions or taking decisions which are likely to result in additional and unforeseen demands upon the Budgets of the Union, future administrative conferences and plenary assemblies of the CCIs, having regard to the need for economy, shall :

a) prepare and take into account estimates of the additional demands made on the Budgets of the Union;

b) where two or more proposals are involved, arrange them in an order of priority;

c) prepare and submit to the Administrative Council a statement of the estimated budgetary impact, together with a summary of the significance and benefit to the Union of financing the implementation of those decisions, and an indication of priorities where appropriate;

2. that the Administrative Council shall take all such statements, estimates and priorities into account when reviewing, approving and deciding on the implementation of such resolutions and decisions within the limits of the Budget of the Union.

The Nairobi Conference also decided that the budget control committees of various conferences should present to the plenary meeting a report showing the costs that may be entailed by the execution of the decisions taken by the conference concerned.

Although the Nairobi Convention will not enter into force until 1 January 1984, the Budget Control Committee of the current Conference has decided to amplify its report as far as possible in order to inform the plenary meeting and the Administrative Council of the additional costs to be envisaged for the execution of the decisions of the Conference.

To enable the Secretary-General to prepare an estimate of possible additional expenditure, I should be grateful if you would define the additional tasks which may be assigned to the Organs of the Union as the result of your Committee's deliberations.

I would draw your attention to the fact that the meeting at which Committee 3 will consider this question has been scheduled for 5 July 1983.

P.R.H. BALDUINO
Chairman of Committee 3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 124(Rev.1)-E
6 July 1983
Original : English

COMMITTEE 4

PROPOSED REVISIONS
TO RADIO REGULATIONS,
APPENDIX 30, ANNEX 8

Working Group 4B has prepared the following revisions to sections of the Radio Regulations within its terms of reference.

ANNEX 8

NOC

Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application

1. DEFINITIONS

1.1 *Service area*

NOC

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.

NOC

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. 2674 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 dB(W/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.

MOD

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° in Regions 1 and 3, and less than 0.8° in Region 2 (the agreed minimum practicable satellite antenna half-power beamwidths), there could be a significant difference between the beam area and the coverage area.

NOC

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.

ADD

1.5 to /1.14/ Refer to /Document No. 111(Rev.1) + Corr.1/

2. RADIO PROPAGATION FACTORS

Working Group 4A area.

3. BASIC TECHNICAL CHARACTERISTICS

MOD + ADD

3.1 *Type of modulation*

Refer to /Document No. 113/.

MOD

3.2 *Polarization*

Refer to /Document No. 70/.

3.3 *Carrier-to-noise ratio*

MOD

Refer to /Document No. 102/.

3.4 *Protection ratio between two FM television signals*

MOD + ADD

Refer to /Document No. 98(Rev.2)/.

3.5 *Channel spacing*

3.5.1 *Channel spacing in the Plan*

MOD

Refer to /Document No. 98(Rev.2) + Corr.1/.

NOC

3.5.2 *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.

MOD

3.5.3 *Spacing between channels feeding a common antenna*

For Regions 1 and 3, owing to technical difficulties in the output circuit of a satellite transmitter, spacing between the assigned frequencies of two channels feeding a common antenna must be greater than 40 MHz.

MOD

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

Refer to /Document No. 112/.

3.7 ***Receiving antennae***

MOD

3.7.1 ***Minimum diameter of receiving antennae***

Refer to /Document No. 114/.

MOD

3.7.2 ***Receiving antenna reference patterns***

Refer to /Document No. 77(Rev.1)/.

MOD

3.8 ***Necessary bandwidth***

Refer to /Document No. 86(Rev.1)/.

3.9 ***Guardbands***

Working Group 4C area.

ADD

3.9.4 However, for the administrations of Region 2, the guard bands shall have minimum values of 10 MHz at both the lower and upper edges of the band, regardless of any decrease in e.i.r.p. levels, in order to provide sufficient spectrum for Telemetry, Tracking, and Telecommand frequencies in these guard bands.

MOD

3.10 ***Orbital spacing***

Refer to /Document No. 70/.

MOD

3.11 ***Satellite station keeping***

Refer to /Document No. 70/.

MOD

3.12 ***Elevation angle of receiving antennae***

Refer to /Document No. 106(Rev.1)/.

3.13 ***Transmitting antennae***

MOD

3.13.1 ***Cross-section of transmitted beam***

Refer to /Document No. 69 + Corr.1/.

MOD

3.13.2 ***Minimum beamwidth of transmitting antenna***

Refer to /Document No. 66/.

MOD

3.13.3 ***Transmitting antenna reference patterns***

Refer to /Document No. 108 + Corr.1/.
Radio Regulation modifications not included.

MOD

3.14 ***Pointing accuracy of satellite antennae***

Refer to /Document No. 69/.

NOC

3.15 ***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.

MOD

3.16 ***Power flux-density at edge of coverage area***

Refer to /Document No. 112/.

NOC

3.17 ***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.

3.18 ***Use of energy dispersal***

Working Group 4C area of discussion.
Working Group 4B did not require energy dispersal.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 124-E
1 July 1983
Original : English

COMMITTEE 4

PROPOSED REVISIONS
TO RADIO REGULATIONS,
APPENDIX 30, ANNEX 8

Working Group 4B has prepared the following revisions to sections of the Radio Regulations within its terms of reference.

ANNEX 8

NOC

Technical Data Used in Establishing the Provisions and Associated Plan and Which Should Be Used for their Application

1. DEFINITIONS

1.1 *Service area*

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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 dB(W/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.

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NOC

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.

ADD

1.5 to /1.14/ Refer to /Document No. 111/.

2. RADIO PROPAGATION FACTORS

Working Group 4A area.

3. BASIC TECHNICAL CHARACTERISTICS

MOD + ADD

3.1 *Type of modulation*

Refer to /Document No. 113/.

MOD

3.2 *Polarization*

Refer to /Document No. 70/.

3.3 *Carrier-to-noise ratio*

MOD

Refer to /Document No. 102/.

3.4 *Protection ratio between two FM television signals*

MOD + ADD

Refer to /Document No. 98(Rev.2)/.

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3.5.1 *Channel spacing in the Plan*

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Refer to /Document No. 98(Rev.2)/.

NOC

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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.

NOC

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

MOD

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Refer to /Document No. 112/.

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Refer to /Document No. 114/.

MOD

3.7.2 ***Receiving antenna reference patterns***

Refer to /Document No. 77(Rev.1)/.

MOD

3.8 ***Necessary bandwidth***

Refer to /Document No. 86/.

3.9 ***Guardbands***

Working Group 4C area.

ADD

3.9.4 However, for the administrations of Region 2, the guard bands shall have minimum values of 10 MHz at both the lower and upper edges of the band, regardless of any decrease in e.i.r.p. levels, in order to provide sufficient spectrum for Telemetry, Tracking, and Telecommand frequencies in these guard bands.

MOD

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MOD

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Refer to /Document No. 70/.

MOD

3.12 ***Elevation angle of receiving antennae***

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3.13 ***Transmitting antennae***

MOD

3.13.1 ***Cross-section of transmitted beam***

Refer to /Document No. 69 + Corr.1/.

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Refer to /Document No. 66/.

MOD

3.13.3 ***Transmitting antenna reference patterns***

Refer to /Document No. 108 + Corr.1/.
Radio Regulation modifications not included.

MOD

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Refer to /Document No. 69/.

NOC

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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.

MOD

3.16 ***Power flux-density at edge of coverage area***

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NOC

3.17 ***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.

3.18 ***Use of energy dispersal***

Working Group 4C area of discussion.
Working Group 4B did not require energy dispersal.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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WORKING GROUP 6A

SECOND REPORT OF SUB-WORKING GROUP 6A 1

ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service in Region 2

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 apply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date.[1]

[1] Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan in sufficient time to ensure that this limit is observed.

5.1.4 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.

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 of this Appendix (with the exception of those relating to conformity with the Region 2 Plan and the Interim List referred to in 4A.11);

b) with respect to its conformity with the Region 2 Plan;

c) with respect to its conformity with the Interim List referred to in 4A.11.

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a) and 5.2.1 b), the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt 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.

5.2.2A Where the Board reaches a favourable finding with respect to 5.2.1 a) and finds that the difference between the notified characteristics and those appearing in the Plan results in :

- a reduced e.i.r.p; or
- a reduced coverage area entirely situated within the coverage area appearing in the Plan; or
- different modulation characteristics[1] without exceeding the assigned bandwidth; or
- a use of the assignment for transmission in the fixed-satellite service in accordance with RR846;

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. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.

[1]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.

5.2.2B Where the Board reaches a favourable finding with respect to 5.2.1 a), but an unfavourable finding with respect to 5.2.1 b), it shall examine the notice with respect to its conformity with the Interim List referred to in 4A.11. A frequency assignment which is in conformity with the Interim List shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. 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 a) or 5.2.1 b) and c), the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of 5.2.1, the notice shall be treated as in 5.2.2, 5.2.2A or 5.2.2B, as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled.

5.2.7 If a frequency assignment notified in advance of bringing into use 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 six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Stations Affecting Broadcasting-Satellite Frequency Assignments in the Band 12.2 - 12.7 GHz (in Region 2)[1]

[1] These procedures do not involve any dispensation from the procedures prescribed for terrestrial stations in Article 12 of the Radio Regulations and Appendix 30 thereto.

Section I. Coordination Procedure to Be Applied

6.1.1 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[1] if

- **the necessary bandwidths of the two transmissions 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.**

6.1.2 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.

6.1.3 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 2 months 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] For the purpose of application of the provisions of RR844, the assignments in the Interim List shall be treated as if they were part of the Plan.

6.1.4 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 interference to the service to be rendered by the broadcasting-satellite stations of other administrations, in conformity with the Plan.

6.1.5 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 6.1.3 within one month of dispatch of the coordination data;

b) an administration which has acknowledged receipt under paragraph 6.1.3 fails to give a decision within 3 months 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.

6.1.6 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.**

6.1.7 Where the Board receives a request under paragraph 6.1.5 *a)*, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

6.1.8 Where the Board receives an acknowledgement following its action under paragraph 6.1.7 or where the Board receives a request under paragraph 6.1.5 *b)*, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

6.1.9 Where the Board receives a request under paragraph 6.1.5 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 6.1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 6.1.3, it shall act in accordance with paragraph 6.1.7.

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[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.

6.1.10 Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under paragraph 6.1.7 requesting an acknowledgement or fails to give a decision on the matter within 2 months of dispatch of the Board's telegram of request sent under paragraph 6.1.8, 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.

6.1.11 Where necessary, as part of the procedure under paragraph 6.1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

6.1.12 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

6.2.1 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].

6.2.2 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.

6.2.3 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 6.2.2 must reach the Board not earlier than three years and not later than 3 months before the date on which the assignment is to be brought into use.

6.2.4 Any frequency assignment, the notice of which reaches the Board less than 3 months 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 6.2.3.

Section III. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

6.3.1 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.

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

6.3.3 Any notice which is incomplete shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

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[1] The attention of administrations is specifically drawn to the provisions of Section I of this Article.

6.3.4 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.

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

6.3.6 Complete notices shall be considered by the Board in the order specified in paragraph 6.3.2. 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.

6.3.7 The Board shall examine each notice:

6.3.8 *a)* with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

6.3.9 *b)* with respect to its conformity with the provisions of paragraph 6.1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;

6.3.10 *c)* where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station whose frequency assignment is in accordance with the Plan.

6.3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 6.3.8, 6.3.9 and 6.3.10, further action shall be as follows:

6.3.12 ***Finding unfavourable with respect to paragraph 6.3.8***

6.3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be examined immediately with respect to paragraphs 6.3.9 and 6.3.10.

6.3.14 If the finding is favourable with respect to paragraph 6.3.9 or 6.3.10, 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.

6.3.15 If the finding is unfavourable with respect to paragraph 6.3.9 or 6.3.10, 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 6.3.14 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.

6.3.16 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. **342** 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.

6.3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 6.3.16.

6.3.18 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. 342 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 6.3.13 and 6.3.14 or 6.3.15, as appropriate.

6.3.19 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 6.3.8, the notice shall be treated under the provisions of paragraphs 6.3.20 to 6.3.32. 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.

6.3.20 *Finding favourable with respect to paragraph 6.3.8*

6.3.21 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.22 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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 6.3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 6.3.10.

6.3.23 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.25 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 6.3.22. 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.

6.3.26 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 6.3.10. 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.

6.3.27 *Finding favourable with respect to paragraphs 6.3.8 and 6.3.10*

6.3.28 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.

6.3.29 *Finding favourable with respect to paragraph 6.3.8 but unfavourable with respect to paragraph 6.3.10*

6.3.30 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.

6.3.31 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 6.3.10, 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.

6.3.32 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 6.3.31 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 6.3.30. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 6.3.31 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.

6.3.33 *Change in the basic characteristics of assignments already recorded in the Master Register*

6.3.34 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 2c, 3 and 4a of the Master Register), shall be examined by the Board in accordance with paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and paragraphs 6.3.12 to 6.3.32 inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

6.3.35 However, in the case of a change in the basic characteristics of an assignment which is in conformity with paragraph 6.3.8, should the Board reach a favourable finding with respect to paragraph 6.3.9 and, if applicable, paragraph 6.3.10, 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.

6.3.35A The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by three months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed six months from the original projected date of bringing into use.

6.3.36 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.

6.3.37 *Recording of frequency assignments notified before being brought into use*

6.3.38 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraphs 6.3.8 and 6.3.9, and, where appropriate, 6.3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

6.3.39A Within thirty days after the date of bringing into use, either as originally notified or as modified in application of paragraph 6.3.35A, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.

6.3.39B If the Board does not receive this confirmation within the period referred to in paragraph 6.3.39A, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

6.3.40 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 /12.2 - 12.7/ GHz in Regions 1 and 3, when Frequency Assignments to Broadcasting-Satellite Stations in Conformity with Region 2 Plan are Involved

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[1] These provisions do not replace the procedures prescribed in Articles 11 and 13 of the Radio Regulations and Appendix 30 thereto.

Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems

Publication of Information

7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 7.2.1 where applicable, send to the International Frequency Registration Board, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 4 to the Radio Regulations.

7.1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 7.1.1 shall also be sent to the Board as soon as they become available.

7.1.3 The Board shall publish the information sent under paragraphs 7 1 1 and 7.1.2 in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administations by circular telegram. The circular telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the orbital location of the space station.

7.1.3A If the information is found to be incomplete, the Board shall publish it under paragraph 7.1.3 and immediately seek, from the administration concerned, any clarification and information not provided. In such cases, the period of 3 months specified in paragraph 7.1.4 shall count from the date of publication, under paragraph 7.1.3, of the complete information.

Comments on Published Information

7.1.4 If, after studying the information published under paragraph 7.1.3, 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 3 months after the date of the weekly circular publishing the information listed in Appendix 4 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.

Resolution of Difficulties

7.1.5 An administration receiving comments sent in accordance with paragraph 7.1.4 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.

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

ADD

Results of Advance Publication

ADD

7.1.6A An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of paragraphs 7.1.1 and 7.1.2 shall, after the period of 3 months specified in paragraph 7.1.4, inform the Board whether or not comments provided for in paragraph 7.1.4 have been received and of the progress made in resolving any remaining diffculties Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending in of notices to the Board. The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

Commencement of Coordination or Notification Procedure

7.1.7 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Board until 5 months after the date of the weekly circular containing the information listed in Appendix 4 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 5 months mentioned above.

Section II. Coordination Procedures to Be Applied in Appropriate Cases

7.2.1 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 3 to the Radio Regulations.

7.2.2 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 7.2.1 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.

7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix 3 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.

7.2.4 An administration believing that it should have been included in the procedure under paragraph 7.2.1 shall have the right to request that it be brought into the procedure.

7.2.5 An administration whose agreement is sought under paragraph 7.2.1 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 7.2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of 1 month. 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 interference[1] which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 7.2.1, and shall, within 3 months 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] **The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in this Appendix or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.**

7.2.6 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 7.2.1 fails to acknowledge receipt, under paragraph 7.2.5, within 2 months after the date of the weekly circular publishing the information relating to the request for coordination;

b) an administration has acknowledged receipt under paragraph 7.2.5, but fails to give a decision within 3 months 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 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.

7.2.7 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.**

7.2.8 Where the Board receives a request under paragraph 7.2.6 *a)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

7.2.9 Where the Board receives an acknowledgement following its action under paragraph 7.2.8, or where the Board receives a request under paragraph 7.2.6 *b)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision in the matter.

7.2.10 Where the Board receives a request under paragraph 7.2.6 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 7.2.1. The Board shall also, where appropriate, act in accordance with paragraph 7.2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 7.2.5, it shall act in accordance with paragraph 7.2.8.

7.2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 7.2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 7.2.9, 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.

7.2.12 Where necessary, as part of the procedure under paragraph 7.2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

7.2.13 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 5 months from the date of the request for coordination, taking into consideration the provisions of paragraph 7.3.4, 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 7.4.11.2 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

7.3.1 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 Plan[1]; or

b) if it is desired to obtain international recognition of the use of the frequency,

[1] The attention of administrations is specifically drawn to the application of paragraph 7.2.1 above.

7.3.2 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 7.3.1 are applicable.

7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 3 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.

7.3.4 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 3 months before this date.

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

7.3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 7.3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 7.3.4.

Section IV. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 3 to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

7.4.2 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.

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

7.4.4 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.

7.4.5 The Board shall examine each notice:

7.4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);

7.4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 7.2.1, 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;

7.4.5.3 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.

7.4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 7.4.5.1, 7.4.5.2 and 7.4.5.3, as appropriate, further action shall be as follows:

7.4.7 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are not applicable*

7.4.7.1 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.

7.4.8 *Finding unfavourable with respect to paragraph 7.4.5.1*

7.4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is favourable with respect to paragraphs 7.4.5.2 and 7.4.5.3, 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.

7.4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is unfavourable with respect to paragraph 7.4.5.2 or 7.4.5.3, 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 7.4.8.1 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.

7.4.8.3 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. **342** 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.

7.4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 7.4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 7.4.8.1 or 7.4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 7.4.5.1, it shall be treated as a new notice.

7.4.9 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are applicable*

7.4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 7.4.5.2 have been successfully completed with all administrations whose frequency assignments in accordance 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.

7.4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 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 7.4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3.

7.4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 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.

7.4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has 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.

7.4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 7.2.1, it shall be treated in accordance with the provisions of paragraph 7.4.9.2. 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.

7.4.9.6 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 7.4.5.3. 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.

7.4.10 *Finding favourable with respect to paragraphs 7.4.5.1* and 7.4.5.3.

7.4.10.1 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.

7.4.11 *Finding favourable with respect to paragraph 7.4.5.1, but unfavourable with respect to paragraph 7.4.5.3.*

7.4.11.1 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.

7.4.11.2 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 7.4.5.3, 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.

7.4.11.3 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 7.4.11.2 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 7.4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 7.4.11.2 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.

7.4.12 *Change in the basic characteristics of assignments already recorded in the Master Register*

7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix 3 to the Radio Regulations (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Board according to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

7.4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 7.4.5.1, should the Board reach a favourable finding with respect to paragraphs 7.4.5.2 and 7.4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to frequency assignments in accordance 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.

7.4.12.2A The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by four months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed eighteen months from the original projected date of bringing into use.

7.4.12.3 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.

7.4.13 *Recording of frequency assignments in the fixed-satellite service notified before being brought into use*

7.4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

7.4.13.2A Within thirty days after the date of bringing into use either as originally notified or as modified in application of paragraph 7.4.12.2A the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assigment has been brought into use, the special symbol shall be deleted from the Remarks Column.

7.4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 7.4.13.2, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

Section V. Recording of Findings in the Master Register

7.5 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

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

7.6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment is in accordance 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 7.4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

7.6.3 If harmful interference to the reception of any broadcasting-satellite station whose frequency assignment is in accordance with the Plan is actually caused by the use of a frequency assignment which is not in conformity with paragraph 7.4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of Findings

7.7.1 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.

7.7.2 The Board, in the light of all the data at its disposal, shall review the matter, taking into account paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.7.3 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.

7.7.4 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

7.8A The Board shall at intervals not exceeding two years, request confirmation from the notifying administration that its assignment has been and will continue to be in regular use in accordance with its recorded characteristics.

7.8.1 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.

7.8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 7.8.1, 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.

7.8.3 If no reply is received within six months of action by the Board under paragraph 7.8.2, 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 mark should be entered against the entry in the Master Register.

7.8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within 3 months of such discontinuance, whereupon the entry shall be removed from the Master Register.

7.8.5 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 or retain the basic characteristics of the entry.

7.8.6 If, in connection with an inquiry by the Board under paragraph 7.8.5 the notifying administration has failed to supply the Board within 3 months 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

8.1 If it is requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these provisions or of harmful interference.

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

8.2A On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

8.3 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 3 months the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

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

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 this Appendix.

8.5 In making a request to the Board under paragraph 8.4, the administration shall furnish the Board with the necessary information.

ARTICLE [10]

Power Flux-Density Limits Between 12.2 GHz and 12.7 GHz to Protect Space Services in Regions 1 and 3 from Interference from Broadcasting-Satellite Space Stations of Region 2

ARTICLE 11

Plan for the broadcasting-satellite service
in the frequency band 12.2 - 12.7 GHz in Region 2

ARTICLE 12

Interference

12.1 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.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 126-E
4 July 1983
Original : Spanish

COMMITTEE 4

Republic of Venezuela

The title and the signature in Document No. 126 were erroneously inserted and should be deleted.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 126-E
4 July 1983
Original : Spanish

COMMITTEE 4

Republic of Venezuela

DRAFT RECOMMENDATION ( )

The Broadcasting-Satellite Conference, Region 2, Geneva, 1983

considering

a) that Annex 6 of Section I and Annex 3 of Section II of the Final Acts of the Conference indicate, on the basis of the relevant CCIR Recommendations, the method to be used for calculating the rain attenuation exceeded for not more than 1% of the worst month;

b) that according to more recent studies, the calculation method referred to in a) above might result in an overestimation of rain attenuation, particularly in rain-climatic zones M, N and P of Region 2;

invites the CCIR to accelerate and extend its studies on rain attenuation in the tropical zones of Region 2 and in particular in zones with the greatest rain intensity;

urges the Administrations of Region 2

1. to participate actively and collaborate in the proposed studies and to make available their observations;

2. in setting up their broadcasting-satellite systems, to make use of the above method and the latest available data in estimating rain attenuation with a view to ensuring that satellite transmission powers are no higher than necessary for achieving efficient coverage of their respective service areas at the service quality levels laid down in the Plan and its annexes, at the same time meeting the requirements of the other parameters and objectives contained in the Broadcasting-Satellite Plan for Region 2.

S.E. AGUERREVERE
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 127(Rev.2)-E
11 July 1983
Original : English

COMMITTEE 4

Report of Working Group 4C to Committee 4

ANNEXES FOR PART II, DOCUMENT No. 74

Annex 1 :

In paragraph 1, delete brackets before and after 10, relative to the threshold value $\Delta T/T$.

In paragraph 2, the first sub-paragraph should read :

"With respect to paragraph [4.3.1.2] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of section 5 of Annex 4, that administration ...."

Annex 4 :

In paragraph 1, the last sentence should read :

"The above provision does not apply when the geocentric angular separation, between a ..."

In paragraph 5.1, add a superscript number "1" to the end of the last paragraph with the following footnote at the bottom of the page :

---

1) (See Resolution [Document No. 201]

In paragraph 5.5, second sub-paragraph, last line, read :

"... intersects the maximum expected rain scatter altitude h_s.[1)]"

and add the following footnote :

---

1) The maximum scatter height h_s is similar to the maximum rain height h_R of section 2.1.2 of Annex [6], Part I, used in the calculation of effective path length for the determination of rain attenuation, except that the factor c of section 2.1.2 is omitted.

Attachment (to Annex 4)

Delete : "Proposed addition to draft Note from C4 to C6."

J.M. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 127(Rev.2)-E
8 July 1983
Original : English

COMMITTEE 4

REPORT OF WORKING GROUP 4C TO COMMITTEE 4

ANNEXES FOR PART II, DOCUMENT No. 74

Working Group 4C has reviewed proposals for Annexes 1 through 4 of Part II, Document No. 74 (Document No. DL/15 refers).

Proposed texts for Annexes 1 and 4 are submitted herewith in toto, including, in the Attachment to Annex 4, a proposed Note to Committee 6 from Committee 4.

Proposals for Annexes 2 and 3 were reviewed insofar as they pertain to inter-service sharing, and comments are submitted under the headings of Annexes 2 and 3.

A proposal concerning transportable feeder link earth stations, referred to Working Group 4C by Working Group 4B, was considered and draft conclusions are contained in a proposed Note from Working Group 4C to Working Group 4B. (ref. Attachment to Annex 3.)

J. ZAMUDIO ZEA
Chairman of Working Group 4C

Annexes : 4

ANNEX 1

LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION IS CONSIDERED TO BE AFFECTED BY A PROPOSED MODIFICATION TO THE PLAN

1. Limits on a change in the feeder link Plan in the band 17.3 - 17.8 GHz (of Region 2) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder links to broadcasting satellites in Regions 1 and 3.

With respect to paragraph [4.3.1.2], an administration of Regions 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 feeder link Plan would cause, to a feeder link to broadcasting satellites in Regions 1 and 3, an increase in the noise temperature of the feeder link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value $\Delta T/T$ corresponding to [10]% at the feeder link space station.

2. Limits on a change in the feeder link Plan to protect a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth).

With respect to paragraph [4.3.1.2] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Section [ ] of Annex 4, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station.

For the purpose of such a determination, the parameters of the transmitting feeder link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

3. Limits on a change in the feeder link Plan to protect a terrestrial station in the band 17.7 - 17.8 GHz

With respect to paragraph [4.3.1.4] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Appendix 28 of the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder link earth station.

For the purpose of such a determination, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

ANNEX 2

Those elements of proposed Annex 2 (Basic characteristics to be furnished ...) which contain information particularly useful in evaluating sharing situations are noted below with comments as appropriate (references are to the appropriate parts of United States' Document No. 11 and Canadian Document No. 13).

Feeder-link earth stations

1. Geographical coordinates (USA A5, CAN 2.5). Preferably to the nearest tenth of a minute (see Radio Regulations Appendix 3, Section B, item 4c)).

2. Rain climatic zone (in conformity with Radio Regulations Appendix 28 (USA A7)).

3. Class of emission and necessary bandwidth (USA A9, CAN 2.8).

4. Power supplied to the antenna (USA A10, CAN 2.7). If power control is employed to compensate for rain attenuation, both nominal and maximum values should be given.

5. Transmitting antenna characteristics (USA A11, CAN 2.10).

6. Modulation characteristics (USA A12, CAN 2.9).

7. Other information (USA A16, CAN 2.14). Coordination area should be included for stations operating between 17.7 and 17.8 GHz.

Feeder link space stations

1. Feeder link service area (USA B6, CAN 1.7).

2. Antenna characteristics (USA B9, CAN 1.14). It would be helpful to have the gain contours, plotted on a map of the Earth's surface, for all space station receiving antennas, and to require information on gain towards those portions of the geostationary satellite orbit which are visible from the satellite (see Radio Regulations Appendix 4, Section C, item 5d)).

ANNEX 3

TECHNICAL DATA USED IN ESTABLISHING PROVISIONS AND ASSOCIATED PLAN AND WHICH SHOULD BE USED FOR THEIR APPLICATIONS

Those elements on this subject (listed in Document No. 51, Table II) which were used within Committee 4 to evaluate sharing situations, are noted below with comments as appropriate.

1. C/N as guideline for Plan synthesis. Committee 4 used a value for C/N up = 24.5 dB, such that it degraded the down-link C/N by no more than 0.5 dB.

2. Protection ratio (single entry) C/I as guideline for Plan synthesis. Committee 4 used either C/I $\geqslant$ 35 dB for 99% of the time, or $\Delta T/T$ corresponding to 10% at the feeder link space station.

3. Power control. An increase of P_t in excess of 5 dB may affect the coordination area.

4. Polarization. Circular polarization assumed in Committee 4 for purposes of evaluating interference.

5. Propagation. Committee 4 used the clear air value of attenuation (Document No. 79) for evaluating interference to and from terrestrial stations. Propagation data in CCIR Report 382-4 were used for coordination area calculations.

18. Transportable feeder link stations. See attached draft Note from Working Group 4C to Working Group 4B.

Attachment
(to Annex 3)

Draft Note from Chairman, Working Group 4C to Chairman, Working Group 4B

Working Group 4C has considered your Memorandum of 22 June, concerning the United States' proposal that transportable earth stations shall operate only below 17.7 GHz.

Working Group 4C concludes that, for inter-service sharing, a transportable feeder-link earth station is subject to the same coordination procedures applicable to a fixed feeder-link earth station. Therefore, no frequency restrictions appear to be required. However, technical constraints on transportable feeder-link earth stations may be necessary to meet protection requirements within the Region 2 feeder link Plan.

ANNEX 4

CRITERIA FOR SHARING BETWEEN SERVICES

1. Threshold values for determining when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder link Plan in the band 17.7 - 17.8 GHz

With respect to paragraph /7.2.1/ of this Appendix, coordination of a transmitting space station in the fixed-satellite service with a broadcasting-satellite in the Region 2 Plan is required, for inter-satellite geocentric angular separations less than 10° or greater than 150°, when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder-link station of another administration would cause an increase in the noise temperature of the feeder-link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/T$ corresponding to 10%. Coordination is also required when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder-link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service does not exceed a value of -123 dB ($W/m^2/24$ MHz) on the Earth's surface at the equatorial earth limb.

2. Threshold values for determining when coordination is required between an earth station in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 and a broadcasting-satellite space station receiver in Region 2 in the band 17.7 - 17.8 GHz

With respect to paragraph /7.2.1/ of this Appendix, an administration shall be considered as being affected by a frequency assignment in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 if that assignment would result in an increase in the noise temperature of the feeder link space station in Region 2, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/T$ corresponding to 10% at the feeder-link space station.

3. Threshold values for determining when coordination is required between an earth station in the fixed-satellite service (space-to-Earth) and a broadcasting-satellite service feeder link earth station (17.7 - 17.8 GHz)

Working Group 4C-4 concluded that coordination is not required for this situation, and that this conclusion should be referred to Committee 6 for information and comment. A draft Note to Committee 6 is contained in Attachment 1 to this Annex.

4. Interference into feeder link space station receivers from terrestrial transmitters in the band 17.7 - 17.8 GHz

If a terrestrial transmitter has an e.i.r.p. equal to or greater than +52 dBW in 24 MHz directed towards a feeder link space station receiver operating in accordance with the Plan, the administration responsible for the terrestrial station shall coordinate with the administration responsible for the broadcasting-satellite space station.

Comment : There is a small but finite probability of interference into a space station receiver of a feeder link from a terrestrial transmitter pointing at or near the geostationary-satellite orbit. Consequently, Sub-Working Group 4C-4 drafted the foregoing text, but Sub-Working Group 4C-4 agreed that the text should be placed in square brackets until after the Plan is completed, when the likelihood of such interference can be quantitatively evaluated. If at that time potential interference situations appear to be matters for bilateral coordination, rather than a general limitation on the terrestrial service, a provision to this effect will be substituted for the proposal in square brackets.

5. Method for the determination of the coordination area*) around a feeder-link earth station of the Region 2 [BSS] Plan with respect to receiving earth stations in the fixed-satellite service in the frequency band 17.7 to 17.8 GHz

5.1 Introduction

In the frequency band 17.7 - 17.8 GHz which is allocated to the fixed-satellite service, in the Earth-to-space direction for BSS feeder links only, and in the space-to-Earth direction, emissions from transmitting feeder-link earth stations may cause interference at receiving earth stations in the fixed-satellite service.

Electromagnetic coupling of an emission originating at a feeder-link earth station into a receiving earth station may occur through two propagation mechanisms or "modes" :

Propagation mode (1) : coupling along a great circle tropospheric interference horizon path;

Propagation mode (2) : coupling through scatter from hydrometeors.

The determination of whether emissions from a feeder link earth station may cause unacceptable interference in a receiving earth station is by means of coordination contours drawn around a feeder-link earth station on a map. When a receiving earth station is located within either or both coordination contours, i.e., within the coordination area, a possibility for unacceptable interference exists.

The procedure for the determination of the coordination area for a feeder-link earth station in relation to a receiving earth station in the fixed-satellite service is similar to that described in Appendix 28 of the Radio Regulations but differs from it in the details described below.

5.2 Determination of the coordination contour for propagation mode (1)

The distance at which a signal of power $P_{t'}$ (in dBW) applied to the antenna terminals of a feeder-link earth station will produce a received power $P_r(p)$ at the antenna terminals of a receiving earth station, for propagation mode (1), is given by :

$$d_1 = (P_{t'} + G_{t'} + G_r - P_r(p) - A_o - A_h) / \beta \text{ km} \qquad (1)$$

as derived from equations (2) and (8) of Appendix 28 of the Radio Regulations,

where $P_{t'}$ = maximum r.f. power (dBW) in any 1 MHz band applied to the antenna terminals of a feeder-link earth station;

*) Bidirectional case

G_t' = gain (dB) of the feeder-link earth station antenna towards the physical horizon on the azimuth to the receiving earth station;

G_r = gain (dB) of the receiving earth station antenna towards the physical horizon on the azimuth to the feeder-link earth station;

$P_r(p)$ = permissible interfering r.f. power (dBW) in any 1 MHz band to be exceeded for no more than p% of the time at the antenna terminals of the receiving earth station;

A_o = a constant; equal to 145.0 dB;

A_h = the sum (dB) of available site shielding at the feeder link earth station, A_{ht}', and at the receiving station, A_{hr}, on the respective azimuth towards the other earth station (both in dB);

β = the rate of attenuation along the interference path (dB/km), a function of the radio-climatic zone and of p as used in $P_r(p)$ above.

To determine the coordination contour for propagation mode (1) for a feeder-link earth station, equation (1) is solved for all azimuths around the earth station site (in suitable increments; e.g., every 5 degrees), and the resulting distances plotted for all azimuths on a map of suitable scale from the earth station site. The connection of the so marked distance points constitutes the coordination contour for the feeder-link earth station.

5.3 Determination of parameters used in equation (1)

The parameters used in equation (1) are determined as follows :

5.3.1 Determination of G_t' and G_r

The determination of G_t' follows the procedure set forth in Annex II to Appendix 28 of the Radio Regulations, using the notified feeder-link earth station antenna pattern.

For the receiving earth station, a minimum main beam elevation angle of 5^o is assumed for which the reference antenna radiation diagram of section 4 of Annex II to Appendix 28 of the Radio Regulations yields, in the absence of site shielding, a horizon antenna gain of G_r = 14.5 dB.

5.3.2 Determination of $A_{ht'}$ and A_{hr}

The calculation of $A_{ht'}$ requires the determination of the horizon elevation angle Θ (degrees) for all azimuths around a feeder-link earth station site. With these horizon elevation angles and the frequency of f = 17.75 GHz, $A_{ht'}$ is then calculated for each azimuth from equation (7A) of Appendix 28 of the Radio Regulations for $\Theta > 0^o$, and it should be taken = 0 dB for $\Theta < 0^o$.

For the fixed-satellite receiving earth station the assumption must be made that no site shielding is available; hence A_{hr} = 0 dB.

5.3.3 Determination of $P_r(p)$ and p

The maximum permissible interfering r.f. power in any 1 MHz band is taken, under nominal conditions, to be limited to 15% of the total noise received at an earth station, or about 20% of the thermal noise of the receiving system. This corresponds to a value of -7 dB for the parameter J of Appendix 28 of the Radio Regulations. For percentages of the time of less than 0.003%, a permissible increase in the interference by 5 dB is assumed. Considering further that the band 17.7 - 17.8 GHz is also shared with terrestrial services, the assumption is made that up to three equivalent entries of interference may be present which, however, produce their maximum interference during periods uncorrelated in time, thus allowing each to produce the maximum permissible value of interfering r.f. power during p = 0.001% of the time.

Therefore, according to Appendix 28 of the Radio Regulations :

$$P_r(p) = 10 \log (kTB) + 5 - 7 \text{ dBW/MHz} \qquad (2)$$

which, with k = Boltzmann's constant,

B = 1 MHz, and

T = receiving system noise temperature, assumed to be 200K,

yields :

$P_r(p) = -147.6$ dBW/MHz,

with p = 0.001% of the time.

5.3.4 Determination of β

The rates of attenuation for a percentage of the time of 0.001%, for the three radio-climatic zones as defined in section 3.1 of Appendix 28 of the Radio Regulations at 17.75 GHz, are the following :

Zone A : $\beta_A = 0.198$ dB/km

Zone B : $\beta_B = 0.06$ dB/km

Zone C : $\beta_C = 0.074$ dB/km

5.3.5 Graphical method

Figure 1 provides curves by means of which d_1 may be determined when only a single radio-climatic zone is involved. The three curves shown are for the three radio-climatic zones as defined in Appendix 28 of the Radio Regulations. The abscissa is given in terms of the parameter P as defined for equation (3) above.

5.4 Mixed zone contours

When the solution of equation (1) yields a distance d_1, which, on the azimuth under consideration, produces a point which lies in a different radio-climatic zone than that in which the feeder-link earth station is located, it is necessary to determine a mixed-zone coordination distance for that azimuth. Thus, if the feeder-link earth station is located in a radio-climatic zone identified by the suffix a and the solution of equation (1) produces a distance which ends in another radio-climatic zone, identified by the suffix b (a and b referring to any one of the zones A, B or C, with $a \neq b$), the coordination distance is calculated from :

$$d_1 = \frac{P - d_a \beta_a}{\beta_b} + d_a \text{ Km} \qquad (3)$$

where $P = P_t' + G_t' + G_r - P_r(p) - A_o - A_h$ (in dB) as calculated to solve equation (1) and d_a is the distance (km) from the feeder-link earth station site to the boundary between the two climatic zones.

For the rare case that more than two radio-climatic zones are involved, the applicable equation would be :

$$d_1 = \frac{P - d_a \beta_a - d_b \beta_b}{\beta_c} + d_a + d_b \text{ km} \qquad (4)$$

where the subscript c denotes the zone farthest away from the feeder-link earth station site within which the coordination distance "ends".

5.5 Determination of the coordination contour for propagation mode (2)

In the case of scattering from hydrometeors, the high main beam e.i.r.p. from a transmitting feeder-link earth station antenna and the likewise expected high sensitivity of a fixed-satellite service receiving earth station suggest that interference from a feeder-link earth station into a fixed-satellite earth station may only be unacceptable when either earth station can see the main beam of the other earth station, below the maximum altitudes from which significant hydrometeor scatter reflectivity prevails.

Accordingly, to avoid such mutual visibility conditions, the rain scatter distance d_r is to be that distance at which the receiving earth station's horizon intersects the maximum expected rain bearing altitude h_R.

5.5.1 The rain scatter distance d_r

For a zero degree assumed horizon elevation angle at the fixed receiving earth station, d_r is given by

$$d_r = 130 \sqrt{h_R} \text{ km} \qquad (5)$$

in a 4/3 earth radius reference atmosphere, with

$$h_R = 5.1 - 2.15 \log \left[1 + 10^{(\phi - 27)/25}\right] \text{ km} \qquad (6)$$

where ϕ is the latitude (North or South) of the feeder-link earth station site (degrees).

The rain scatter distance d_r so calculated yields the rain scatter coordination contour for the feeder-link earth station by the procedure described in section 4.5 of Appendix 28 of the Radio Regulations.

5.5.2 Graphical method

Figure 2 provides a curve by means of which the rain scatter distance d_r may be directly read for a given feeder-link earth station latitude ϕ.

5.6 Minimum coordination distances

The minimum coordination distance for a feeder-link earth station shall be 100 km.

5.7 Coordination area

The coordination area for a feeder-link earth station is the total area contained within the combined coordination contours for propagation modes (1) and (2).

Attachment

(to Annex 4)

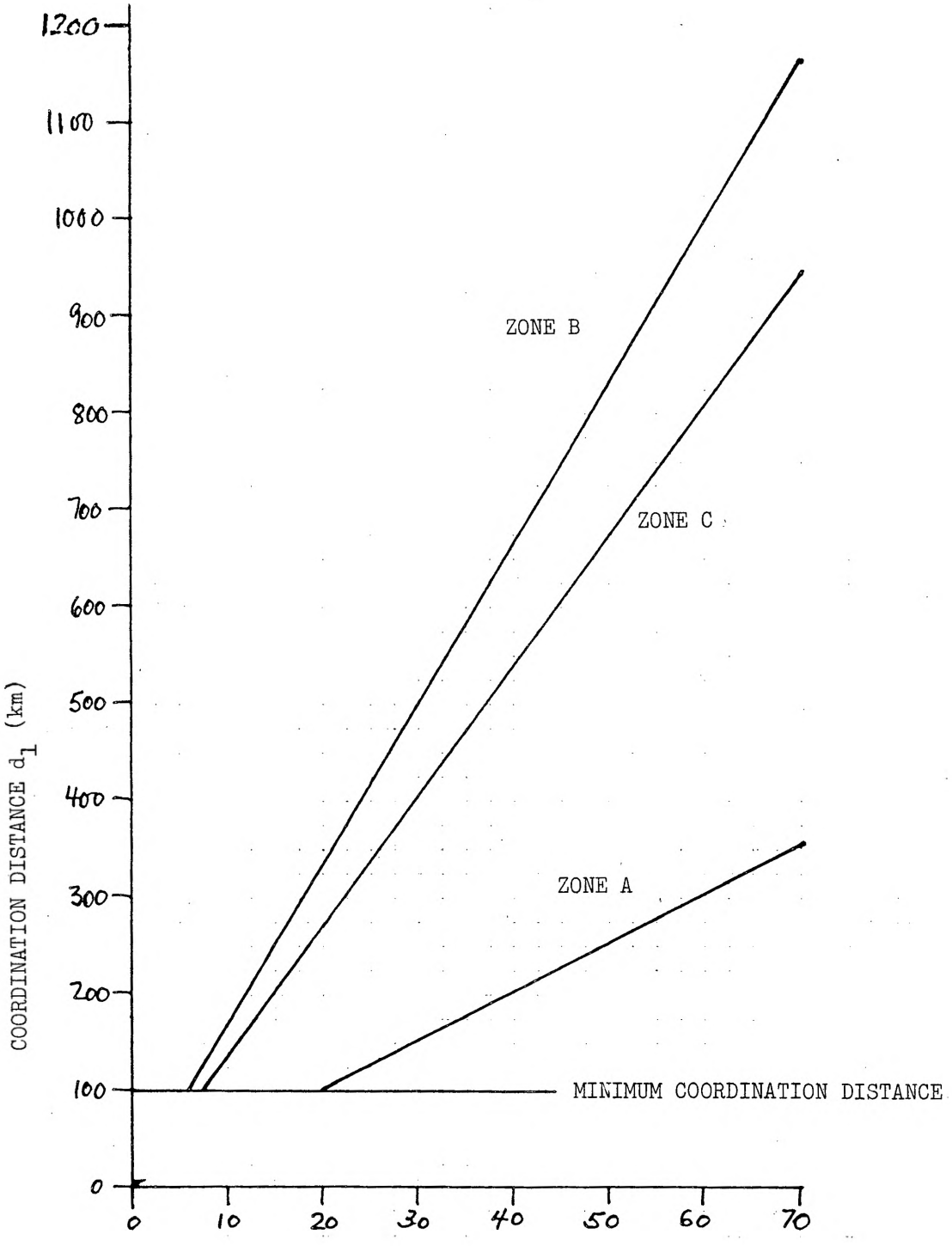
Draft note from Chairman, Committee 4 to Chairman, Committee 6

Committee 4 considered the question of requirements for coordination of a fixed-satellite service earth station (space-to-Earth) in the 17.7 - 17.8 GHz band, seeking to locate within the coordination contour of a feeder-link earth station which is operative in conformity with the Plan. Committee 4 concluded that coordination is not required in this situation.

Proposed addition to draft note from C4 to C6.

However, an administration seeking to construct a receiving earth station in the fixed-satellite service, in the band 17.7- 17.8 GHz, may be unaware that the station's intended location lies within the coordination area of a feeder link earth station and may thus be subject to unacceptable interference. It would appear to be desirable that administrations be alerted to this danger. To that end, C6 may wish to include the following or similar text within its regulatory provisions :

"An administration seeking a frequency assignment to a receiving earth station in the FSS, in the band 17.7 - 17.8 GHz, should consult, as early as possible, with the IFRB to ascertain whether the proposed assignment would be located within the coordination area of a feeder-link earth station, operating in accordance with the Region 2 feeder-link Plan, with a view towards establishing whether the assignment would be subject to unacceptable interference."



$$P = P_{t'} + G_{t'} + G_r - P_r(p) - A_o - A_h \quad (dB)$$

FIGURE 1

Coordination Distance as a Function of the Parameter P. Propagation Mode (1); 17.75 GHz; p = 0.001% of the time

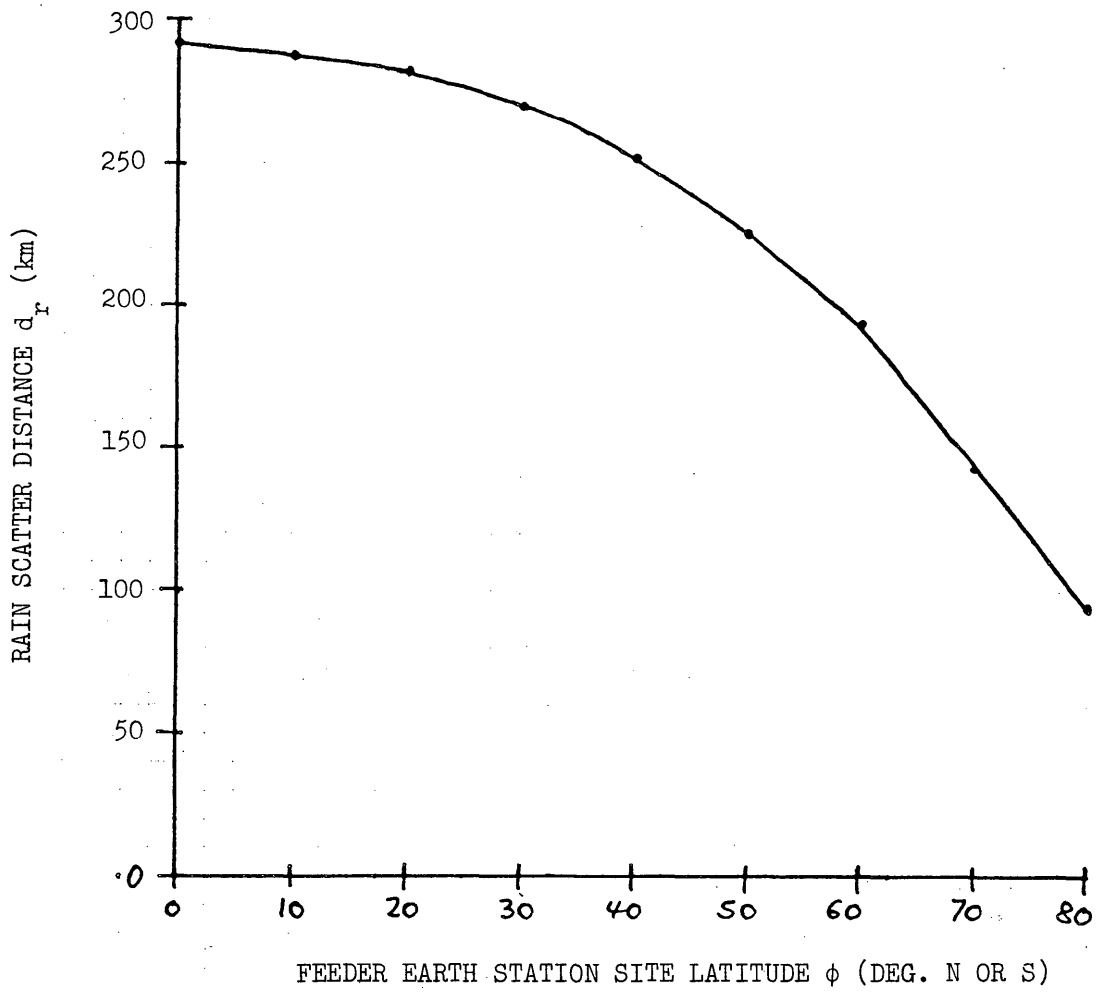


FIGURE 2

Rain Scatter Distance d_r as a Function of
Feeder Earth Station Site Latitude ϕ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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WORKING GROUP 4C

REPORT OF SUB-WORKING GROUP 4C-4 TO WORKING GROUP 4C

ANNEXES FOR PART II, DOCUMENT No. 74.

Sub-Working Group 4C-4 has reviewed proposals for Annexes 1 through 4 of Part II, Document No. 74. (Document No. DL/15 refers.)

Proposed texts for Annexes 1 and 4 are submitted herewith in toto, including, in the Attachment to Annex 4, a proposed Note to Committee 6 from Committee 4.

Proposals for Annexes 2 and 3 were reviewed insofar as they pertain to inter-service sharing, and comments are submitted under the headings of Annexes 2 and 3.

A proposal concerning transportable feeder link earth stations, referred to Working Group 4C by Working Group 4B, was considered and draft conclusions are contained in a proposed Note from Working Group 4C to Working Group 4B. (ref. Attachment to Annex 3.)

J.J. KELLEHER
Chairman of Sub-Working Group 4C-4

Annexes : 4

ANNEX 1

LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION IS CONSIDERED TO BE AFFECTED BY A PROPOSED MODIFICATION TO THE PLAN

1. Limits on a change in the feeder link Plan in the band 17.3 - 17.8 GHz (of Region 2) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder links to broadcasting satellites in Regions 1 and 3.

With respect to paragraph [4.3.1.2], an administration of Regions 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 feeder link Plan would cause, to a feeder link to broadcasting satellites in Regions 1 and 3, an increase in the noise temperature of the feeder link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value $\Delta T/T$ corresponding to [10]%.

2. Limits on a change in the feeder link Plan to protect a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth).

With respect to paragraph [4.3.1.2] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Section [ ] of Annex 4, that administration is included in the coordination area of the frequency assignment to a transmitting feeder-link earth station. However, an administration shall not be considered as being affected if the coordination area resulting from a change in the feeeder link Plan includes no additional territory of that administration relative to the coordination contour of a feeder link frequency assignment previously recorded in the Master Register, or which is being coordinated under the provisions of Article 4.

For the purpose of such a determination, the parameters of the transmitting feeder link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

3. Limits on a change in the feeder link Plan to protect a terrestrial station in the band 17.7 - 17.8 GHz

With respect to paragraph [4.3.1.4] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Appendix 28 of the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder link earth station. However, an administration shall not be considered as being affected if the coordination area resulting from a change in the feeder link Plan includes no additional territory of that administration relative to the coordination contour of a feeder link frequency assignment previously recorded in the Master Register, or which is being coordinated under the provisions of Article 4.

For the purpose of such a determination, the parameters of the transmitting feeder-link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

ANNEX 2

Those elements of proposed Annex 2 (Basic characteristics to be furnished ...) which contain information particularly useful in evaluating sharing situations are noted below with comments as appropriate (references are to the appropriate parts of United States' Document No. 11 and Canadian Document No. 13).

Feeder-link earth stations

1. Geographical coordinates (USA A5, CAN 2.5). Preferably to the nearest tenth of a minute (see Radio Regulations Appendix 3, Section B, item 4c)).

2. Rain climatic zone (in conformity with Radio Regulations Appendix 28 (USA A7)).

3. Class of emission and necessary bandwidth (USA A9, CAN 2.8).

4. Power supplied to the antenna (USA A10, CAN 2.7). If power control is employed to compensate for rain attenuation, both nominal and maximum values should be given.

5. Transmitting antenna characteristics (USA A11, CAN 2.10).

6. Modulation characteristics (USA A12, CAN 2.9).

7. Other information (USA A16, CAN 2.14). Coordination area should be included for stations operating between 17.7 and 17.8 GHz.

Feeder link space stations

1. Feeder link service area (USA B6, CAN 1.7).

2. Antenna characteristics (USA B9, CAN 1.14). It would be helpful to have the gain contours, plotted on a map of the Earth's surface, for all space station receiving antennas, and to require information on gain towards those portions of the geostationary satellite orbit which are visible from the satellite (see Radio Regulations Appendix 4, Section C, item 5d)).

ANNEX 3

TECHNICAL DATA USED IN ESTABLISHING PROVISIONS AND ASSOCIATED PLAN AND WHICH SHOULD BE USED FOR THEIR APPLICATIONS

Those elements on this subject (listed in Document No. 51, Table II) which were used within Committee 4 to evaluate sharing situations, are noted below with comments as appropriate.

1. C/N as guideline for Plan synthesis. Committee 4 used C/N up = 24.5 dB.

2. Protection ratio (single entry) C/I as guideline for Plan synthesis. Committee 4 used either C/I $\geq$ 35 dB for 99% of the time, or $\Delta T/_T$ corresponding to 10%.

3. Power control. PT in excess of 30 dBW will affect the coordination area.

4. Polarization. Circular polarization assumed in Committee 4 for purposes of evaluating interference.

5. Propagation. Committee 4 used the clear air value of attenuation (Document No. 79) for evaluating interference to and from terrestrial stations. Propagation data in CCIR Report 382-4 were used for coordination area calculations.

18. Transportable feeder link stations. See attached draft Note from Working Group 4C to Working Group 4B.

Attachment

(to Annex 3)

Draft Note from Chairman, Working Group 4C to Chairman, Working Group 4B

Working Group 4C has considered your Memorandum of 22 June, concerning the United States' proposal that transportable earth stations shall operate only below 17.7 GHz.

Working Group 4C concludes that, for inter-service sharing, a transportable feeder-link earth station is subject to the same coordination procedures applicable to a fixed feeder-link earth station. Therefore, no frequency restrictions appear to be required. However, technical constraints on transportable feeder-link earth stations may be necessary to meet protection requirements within the Region 2 feeder link Plan.

ANNEX 4

CRITERIA FOR SHARING BETWEEN SERVICES

1. Threshold values for determining when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder link Plan in the band 17.7 - 17.8 GHz

With respect to paragraph /7.2.1/ of this Appendix, coordination of a transmitting space station in the fixed-satellite service is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder link station of another administration would cause an increase in the noise temperature of the feeder link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/_T$ corresponding to 10%. Coordination is also required when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service exceeds a value of -123 dB (W/m^2/24 MHz) on the Earth's surface at the equatorial earth limb.

2. Limits from earth stations in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 to protect broadcasting-satellite space station receivers in Region 2 in the band 17.7 - 17.8 GHz

With respect to paragraph /7.2.1/ of this Appendix, an administration shall be considered as being affected by a frequency assignment in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 if that assignment would result in an increase in the noise temperature of the feeder link space station in Region 2, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/_T$ corresponding to 10%.

3. Limits for earth stations in the fixed-satellite service (space-to-Earth) with respect to a broadcasting-satellite service feeder link earth station (17.7 - 17.8 GHz)

Sub-Working Group 4C-4 concluded that coordination is not required for this situation, and that this conclusion should be referred to Committee 6 for information and comment. A draft Note to Committee 6 is contained in Attachment 1 to this Annex.

[4. Interference into feeder link space station receivers from terrestrial transmitters in the band 17.7 - 17.8 GHz

If a terrestrial transmitter has an e.i.r.p. equal to or greater than +52 dBW in 24 MHz directed towards a feeder link space station receiver operating in accordance with the Plan, the administration responsible for the terrestrial station shall coordinate with the administration responsible for the broadcasting-satellite space station.]

Comment : There is a small but finite probability of interference into a space station receiver of a feeder link from a terrestrial transmitter pointing at or near the geostationary-satellite orbit. Consequently, Sub-Working Group 4C-4 drafted the foregoing text, but Sub-Working Group 4C-4 agreed that the text should be placed in square brackets until after the Plan is completed, when the likelihood of such interference can be quantitatively evaluated. If at that time potential interference situations appear to be matters for bilateral coordination, rather than a general limitation on the terrestrial service, a provision to this effect will be substituted for the proposal in square brackets.

5. Method for the determination of the coordination area*) around a feeder-link earth station of the Region 2 [BSS] Plan with respect to receiving earth stations in the fixed-satellite service in the frequency band 17.7 to 17.8 GHz

5.1 Introduction

In the frequency band 17.7 - 17.8 GHz which is allocated to the fixed-satellite service, in the Earth-to-space direction for BSS feeder links only, and in the space-to-Earth direction, emissions from transmitting feeder-link earth stations may cause interference at receiving earth stations in the fixed-satellite service.

Electromagnetic coupling of an emission originating at a feeder-link earth station into a receiving earth station may occur through two propagation mechanisms or "modes" :

Propagation mode (1) : coupling along a great circle tropospheric interference horizon path;

Propagation mode (2) : coupling through scatter from hydrometeors.

The determination of whether emissions from a feeder link earth station may cause unacceptable interference in a receiving earth station is by means of coordination contours drawn around a feeder-link earth station on a map. When a receiving earth station is located within either or both coordination contours, i.e., within the coordination area, a possibility for unacceptable interference exists.

The procedure for the determination of the coordination area for a feeder-link earth station in relation to a receiving earth station in the fixed-satellite service is similar to that described in Appendix 28 of the Radio Regulations but differs from it in the details described below.

5.2 Determination of the coordination contour for propagation mode (1)

The distance at which a signal of power P_t' (in dBW) applied to the antenna terminals of a feeder-link earth station will produce a received power $P_r(p)$ at the antenna terminals of a receiving earth station, for propagation mode (1), is given by :

$$d_1 = (P_t' + G_t' + G_r - P_r(p) - A_o - A_h) / \beta \text{ km} \qquad (1)$$

as derived from equations (2) and (8) of Appendix 28 of the Radio Regulations,

where P_t' = maximum r.f. power (dBW) in any 1 MHz band applied to the antenna terminals of a feeder-link earth station;

G_t' = gain (dB) of the feeder-link earth station antenna towards the physical horizon on the azimuth to the receiving earth station;

G_r = gain (dB) of the receiving earth station antenna towards the physical horizon on the azimuth to the feeder-link earth station;

$P_r(p)$ = permissible interfering r.f. power (dBW) in any 1 MHz band to be exceeded for no more than p% of the time at the antenna terminals of the receiving earth station;

A_o = a constant; equal to 145.0 dB;

A_h = the sum (dB) of available site shielding at the feeder link earth station, A_{ht}', and at the receiving station, A_{hr}, on the respective azimuth towards the other earth station (both in dB);

β = the rate of attenuation along the interference path (dB/km), a function of the radio-climatic zone and of p as used in $P_r(p)$ above.

*) Bidirectional case

To determine the coordination contour for propagation mode (1) for a feeder-link earth station, equation (1) is solved for all azimuths around the earth station site (in suitable increments; e.g., every 5 degrees), and the resulting distances plotted for all azimuths on a map of suitable scale from the earth station site. The connection of the so marked distance points constitutes the coordination contour for the feeder-link earth station.

5.3 Determination of parameters used in equation (1)

The parameters used in equation (1) are determined as follows :

5.3.1 Determination of G_t' and G_r

The determination of G_t' follows the procedure set forth in Annex II to Appendix 28 of the Radio Regulations. The feeder-link earth station antenna radiation pattern is that given in [..... of this Appendix].

For the receiving earth station, a minimum main beam elevation angle of 5° is assumed for which the reference antenna radiation diagram of section 4 of Annex II to Appendix 28 of the Radio Regulations yields, in the absence of site shielding, a horizon antenna gain of $G_r = 14.5$ dB.

5.3.2 Determination of $A_{ht'}$ and A_{hr}

The calculation of $A_{ht'}$ requires the determination of the horizon elevation angle Θ (degrees) for all azimuths around a feeder-link earth station site. With these horizon elevation angles and the frequency of f = 17.75 GHz, $A_{ht'}$ is then calculated from equation (7) of Appendix 28 of the Radio Regulations for each azimuth.

For the fixed-satellite receiving earth station the assumption must be made that no site shielding is available; hence $A_{hr} = 0$ dB.

5.3.3 Determination of $P_r(p)$ and p

The maximum permissible interfering r.f. power in any 1 MHz band is taken, under nominal conditions, to be limited to 15% of the total noise received at an earth station, or about 20% of the thermal noise of the receiving system. This corresponds to a value of -7 dB for the parameter J of Appendix 28 of the Radio Regulations. For percentages of the time of less than 0.003%, an increase in the interference by 5 dB is acceptable. Considering further that the band 17.7 - 17.8 GHz is also shared with terrestrial services, the assumption is made that up to three equivalent entries of interference may be present which, however, produce their maximum interference during periods uncorrelated in time, thus allowing each to produce the maximum permissible value of interfering r.f. power during p = 0.001% of the time.

Therefore, according to Appendix 28 of the Radio Regulations :

$$P_r(p) = 10 \log (kTB) + 5 - 7 \text{ dBW/MHz} \qquad (2)$$

which, with k = Boltzmann's constant,

B = 1 MHz, and

T = receiving system noise temperature, assumed to be 200K,

yields :

$P_r(p) = -147.6$ dBW/MHz,

with $p = 0.001\%$ of the time.

5.3.4 Determination of β

The rate of attentuation*) for a percentage of the time of 0.001%, yields, for the three radio-climatic zones defined in section 3.1 of Appendix 28 of the Radio Regulations, the following values at 17.75 GHz :

Zone A : $\beta_A = 0.198$ dB/km

Zone B : $\beta_B = 0.06$ dB/km

Zone C : $\beta_C = 0.074$ dB/km

5.3.5 Graphical method

Figure 1 provides curves by means of which d_1 may be determined when only a single radio-climatic zone is involved. The three curves shown are for the three radio-climatic zones. The abscissa is given in terms of the parameter P as defined for equation (3) above.

5.4 Mixed zone contours

When the solution of equation (1) yields a distance d_1, which, on the azimuth under consideration, produces a point which lies in a different radio-climatic zone than that in which the feeder-link earth station is located, it is necessary to determine a mixed-zone coordination distance for that azimuth. Thus, if the feeder-link earth station is located in a radio-climatic zone identified by the suffix a and the solution of equation (1) produces a distance which ends in another radio-climatic zone, identified by the suffix b (a and b referring to any one of the zones A, B or C, with $a \neq b$), the coordination distance is calculated from :

$$d_1 = \frac{P - d_a \beta_a}{\beta_b} + d_a \text{ Km} \qquad (3)$$

where $P = P_t' + G_t' + G_r - P_r(p) - A_o - A_h$ (in dB) as calculated to solve equation (1) and d_a is the distance (km) from the feeder-link earth station site to the boundary between the two climatic zones.

For the rare case that more than two radio-climatic zones are involved, the applicable equation would be :

$$d_1 = \frac{P - d_a \beta_a - d_b \beta_b}{\beta_c} + d_a + d_b \text{ km} \qquad (4)$$

where the subscript c denotes the zone farthest away from the feeder-link earth station site within which the coordination distance "ends".

---

*) Calculated from equations 10-13 of CCIR Report 382-4.

5.5 Determination of the coordination contour for propagation mode (2)

In the case of scattering from hydrometeors, the high main beam e.i.r.p. from a transmitting feeder-link earth station antenna and the likewise expected high sensitivity of a fixed-satellite service receiving earth station suggest that interference from a feeder-link earth station into a fixed-satellite earth station may only be unacceptable when the main beam of either earth station is within line-of-sight of the other earth station, up to altitudes from which significant hydrometeor scatter reflectivity prevails.

Accordingly, to avoid such mutual visibility conditions, the rain scatter distance d_r is to be that distance at which the receiving earth station's horizon intersects the maximum expected rain bearing altitude h_R.

5.5.1 The rain scatter distance d_r

For a zero degree assumed horizon elevation angle at the fixed receiving earth station, d_r is given by

$$d_r = 130\sqrt{h_R} \text{ km} \quad (5)$$

in a 4/3 earth radius reference atmosphere, with

$$h_R = 5.1 - 2.15 \log \left[1 + 10^{(\phi - 27)/25}\right] \text{ km} \quad (6)$$

where ϕ is the latitude (North or South) of the feeder-link earth station site (degrees).

The rain scatter distance d_r so calculated yields the rain scatter coordination contour for the feeder-link earth station by the procedure described in section 4.5 of Appendix 28 of the Radio Regulations.

5.5.2 Graphical method

Figure 2 provides a curve by means of which the rain scatter distance d_r may be directly read for a given feeder-link earth station latitude ϕ.

5.6 Minimum coordination distances

The minimum coordination distance for a feeder-link earth station shall be 100 km.

5.7 Coordination area

The coordination area for a feeder-link earth station is the total area contained within the combined coordination contours for propagation modes (1) and (2).

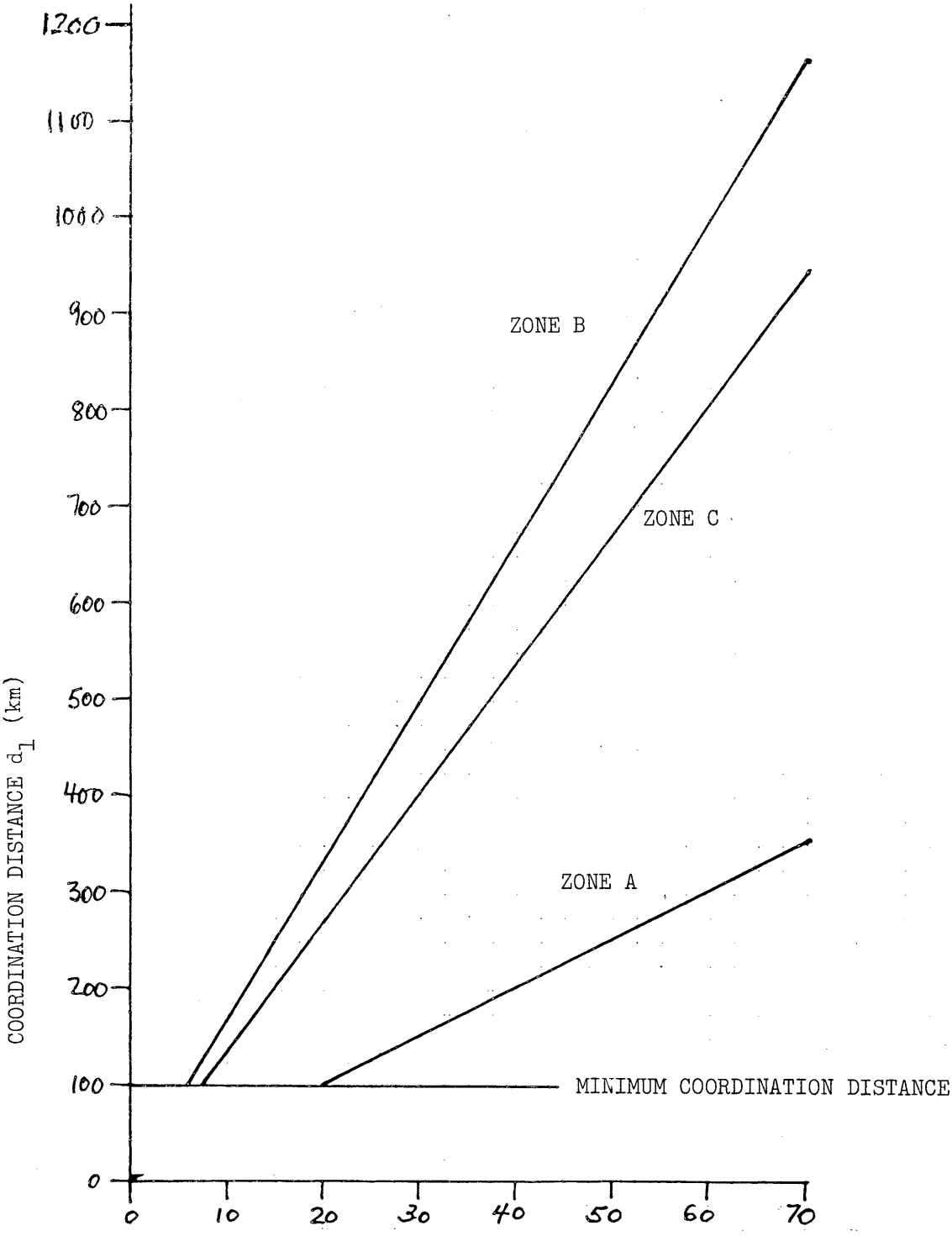
Attachment

(to Annex 4)

Draft note from Chairman, Committee 4 to Chairman, Committee 6

Committee 4 considered the question of requirements for coordination of a fixed-satellite service earth station (space-to-Earth) in the 17.7 - 17.8 GHz band, seeking to locate within the coordination contour of a feeder-link earth station which is operative in conformity with the Plan. Committee 4 concluded that coordination is not required in this situation.

This conclusion is referred to Committee 6 for information and comment.



$$P = P_{t'} + G_{t'} + G_r - P_r(p) - A_o - A_h \quad (dB)$$

FIGURE 1

Coordination Distance as a Function of the Parameter P. Propagation Mode (1); 17.75 GHz; p = 0.001% of the time

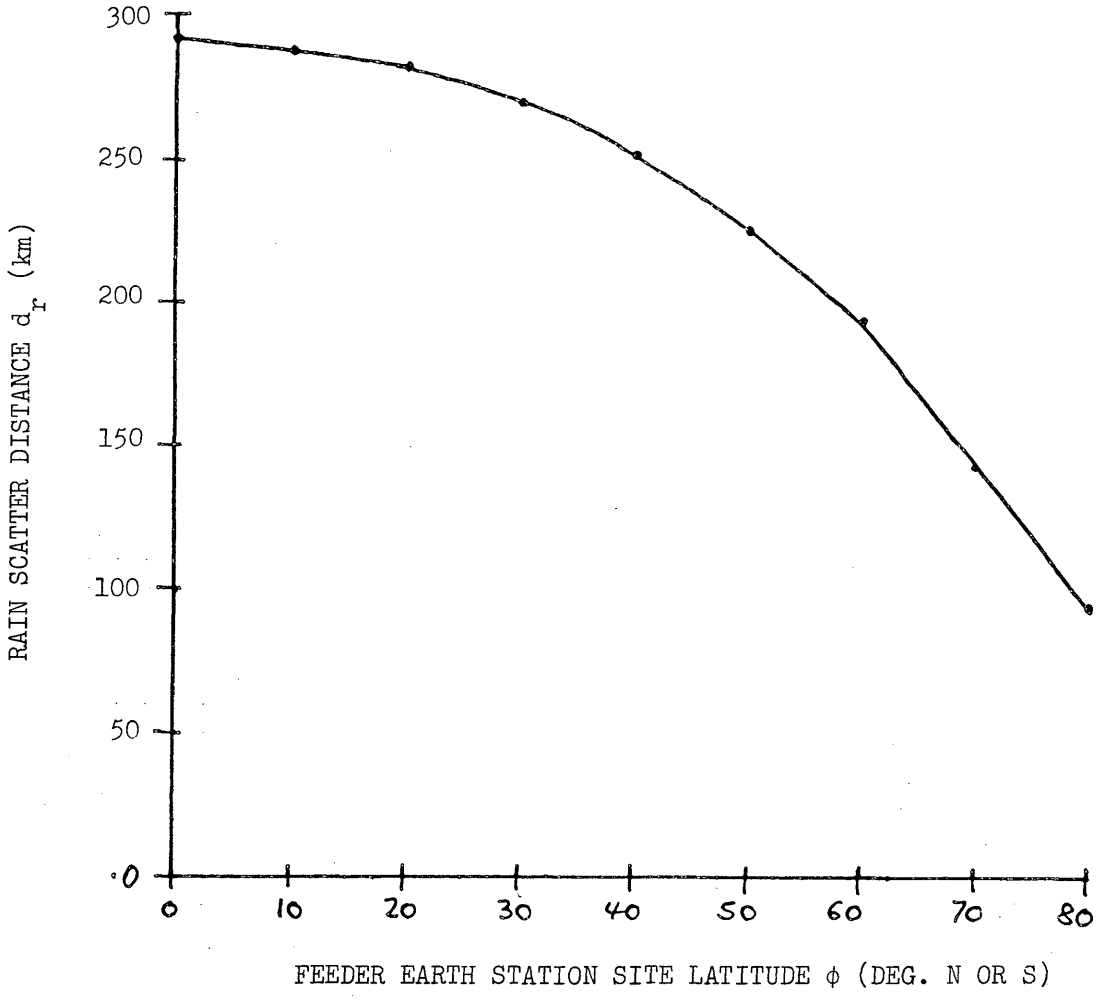


FIGURE 2

Rain Scatter Distance d_r as a Function of
Feeder Earth Station Site Latitude ϕ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Addendum No. 1 to
Document No. 127-E
4 July 1983
Original : English

WORKING GROUP 4C

The following is proposed as an alternative text for paragraph 5 of Annex 4 :

Method for the determination of the coordination area around a feeder earth station of the Region 2 /BSS/ Plan with respect to receiving earth stations in the fixed-satellite service in the frequency band 17.7 to 17.8 GHz.

The method for the determination of the coordination area around a feeder link earth station with respect to receiving earth stations in the fixed-satellite service, in the frequency band 17.7 - 17.8 GHz, follows the basic procedure of Appendix 28 of the Radio Regulations, with the following specific provisions referring to the text of Appendix :

1. In equation (2), assume the following :

for P_t' assume a reference bandwidth of 1 MHz;

for G_t' use the reference antenna diagram of /...../ of this Appendix;

for G_r assume a value of 14.5 dB;

for $P_r(p)$ see item 2 below

2. In equation (2), assume the following parameter values :

for T_e : 200 k

for B : 1 MHz

for J : -7 dB

for M(p) : +5 dB

for W : 0 dB

for p : 0.001%

3. In equations (6) and (7), assume the following parameter values :

for A_o : 145 dB

for β_A : 0.198 dB/km*)

for β_B : 0.081 dB/km*)

for β_C : 0.094 dB/km*)

*) These values include the effects of oxygen and water vapour absorption.

4. Bypassing sections 4.1 to 4.4, calculate the value for d_r directly from :

$$d_r = 130 \left\{ 5.1 - 2.15 \log \left[1 + 10^{(\phi-27)/25} \right] \right\}^{1/2} \text{ km}$$

where ϕ is the latitude of the feeder earth station site in degrees north or south.

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WORKING GROUP 4C

REPORT OF SUB-WORKING GROUP 4C-4 TO WORKING GROUP 4C

ANNEXES FOR PART II, DOCUMENT No. 74.

Sub-Working Group 4C-4 has reviewed proposals for Annexes 1 through 4 of Part II, Document No. 74. (Document No. DL/15 refers.)

Proposed texts for Annexes 1 and 4 are submitted herewith in toto, including, in the Attachment to Annex 4, a proposed Note to Committee 6 from Committee 4.

Proposals for Annexes 2 and 3 were reviewed insofar as they pertain to inter-service sharing, and comments are submitted under the headings of Annexes 2 and 3.

A proposal concerning transportable feeder link earth stations, referred to Working Group 4C by Working Group 4B, was considered and draft conclusions are contained in a proposed Note from Working Group 4C to Working Group 4B. (ref. Attachment to Annex 3.)

J.J. KELLEHER
Chairman of Sub-Working Group 4C-4

Annexes : 4

ANNEX 1

LIMITS FOR DETERMINING WHETHER A SERVICE OF AN ADMINISTRATION IS CONSIDERED TO BE AFFECTED BY A PROPOSED MODIFICATION TO THE PLAN

1. Limits on a change in the feeder link Plan in the band 17.3 - 17.8 GHz (of Region 2) to protect a frequency assignment to the fixed-satellite service (Earth-to-space) for feeder links to broadcasting satellites in Regions 1 and 3.

With respect to paragraph [4.3.1.2], an administration of Regions 1 or 3 shall be considered as being affected if the proposed modification to the Region 2 feeder link Plan would cause, to a feeder link to broadcasting satellites in Regions 1 and 3, an increase in the noise temperature of the feeder link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value $\Delta T/T$ corresponding to 10 %.

2. Limits on a change in the feeder link Plan to protect a frequency assignment in the band 17.7 - 17.8 GHz to an earth station in the fixed-satellite service (space-to-Earth).

With respect to paragraph [4.3.1.2] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Section [ ] of Annex 4, that administration is included in the coordination area of the frequency assignment to a transmitting feeder link earth station. However, an administration shall not be considered as being affected if the coordination area resulting from a change in the feeeder link Plan includes no additional territory of that administration relative to the coordination contour of a feeder link frequency assignment previously recorded in the Master Register, or which is being coordinated under the provisions of Article 4.

For the purpose of such a determination, the parameters of the transmitting feeder link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

3. Limits on a change in the feeder link Plan to protect a terrestrial station in the band 17.7 - 17.8 GHz

With respect to paragraph [4.3.1.4] of this Appendix, an administration shall be considered as being affected if, upon application of the procedures of Appendix 28 of the Radio Regulations, that administration is included in the coordination area of the frequency assignment to a transmitting feeder link earth station. However, an administration shall not be considered as being affected if the coordination area resulting from a change in the feeder link Plan includes no additional territory of that administration relative to the coordination contour of a feeder link frequency assignment previously recorded in the Master Register, or which is being coordinated under the provisions of Article 4.

For the purpose of such a determination, the parameters of the transmitting feeder link earth station, as may be modified from those parameters given in Annex 3 of this Appendix, shall be used.

ANNEX 2

Those elements of proposed Annex 2 (Basic characteristics to be furnished ...) which contain information particularly useful in evaluating sharing situations are noted below with comments as appropriate (references are to the appropriate parts of United States' Document No. 11 and Canadian Document No. 13).

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TECHNICAL DATA USED IN ESTABLISHING PROVISIONS AND ASSOCIATED PLAN AND WHICH SHOULD BE USED FOR THEIR APPLICATIONS

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3. Power control. PT in excess of 30 dBW will affect the coordination area.

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18. Transportable feeder link stations. See attached draft Note from Working Group 4C to Working Group 4B.

Attachment

(to Annex 3)

Draft Note from Chairman, Working Group 4C to Chairman, Working Group 4B

Working Group 4C has considered your Memorandum of 22 June, concerning the United States' proposal that transportable earth stations shall operate only below 17.7 GHz.

Working Group 4C concludes that, for inter-service sharing, a transportable feeder link earth station is subject to the same coordination procedures applicable to a fixed feeder link earth station. Therefore, no frequency restrictions appear to be required. However, technical constraints on transportable feeder link earth stations may be necessary to meet protection requirements within the Region 2 feeder link Plan.

ANNEX 4

CRITERIA FOR SHARING BETWEEN SERVICES

1. Threshold values for determining when coordination is required between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder link Plan in the band 17.7 - 17.8 GHz

With respect to paragraph [7.2.1] of this Appendix, coordination of a transmitting space station in the fixed-satellite service is required when the power flux-density arriving at the receiving space station of a broadcasting-satellite feeder link station of another administration would cause an increase in the noise temperature of the feeder link space station, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/T$ corresponding to 10%. Coordination is also required when the geocentric angular separation, between a transmitting space station in the fixed-satellite service and a receiving space station in the feeder link Plan, exceeds 150° of arc and the free-space power flux-density of the transmitting space station in the fixed-satellite service exceeds a value of -123 dB (W/m^2/24 MHz) on the Earth's surface at the equatorial earth limb.

2. Limits from earth stations in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 to protect broadcasting-satellite space station receivers in Region 2 in the band 17.7 - 17.8 GHz

With respect to paragraph [7.2.1] of this Appendix, an administration shall be considered as being affected by a frequency assignment in the fixed-satellite service (Earth-to-space) in Regions 1 and 3 if that assignment would result in an increase in the noise temperature of the feeder link space station in Region 2, calculated in accordance with the method given in Appendix 29 of the Radio Regulations, which exceeds a threshold value of $\Delta T/T$ corresponding to 10%.

3. Limits for earth stations in the fixed-satellite service (space-to-Earth) with respect to a broadcasting-satellite service feeder link earth station (17.7 - 17.8 GHz)

Sub-Working Group 4C-4 concluded that coordination is not required for this situation, and that this conclusion should be referred to Committee 6 for information and comment. A draft Note to Committee 6 is contained in Attachment 1 to this Annex.

[4. Interference into feeder link space station receivers from terrestrial transmitters in the band 17.7 - 17.8 GHz

If a terrestrial transmitter has an e.i.r.p. equal to or greater than +52 dBW in 24 MHz towards a broadcasting-satellite space station receiver operating in accordance with the Plan, the administration responsible for the terrestrial station shall coordinate with the administration responsible for the broadcasting-satellite space station.]

Comment : There is a small but finite probability of interference into a space station receiver of a feeder link from a terrestrial transmitter pointing at or near the geostationary-satellite orbit. Consequently, Sub-Working Group 4C-4 drafted the foregoing text, but Sub-Working Group 4C-4 agreed that the text should be placed in square brackets until after the Plan is completed, when the likelihood of such interference can be quantitatively evaluated. If at that time potential interference situations appear to be matters for bilateral coordination, rather than a general limitation on the terrestrial service, a provision to this effect will be substituted for the proposal in square brackets.

5. Method for the determination of the coordination area*) around a transmitting earth station in the frequency band 17.7 - 17.8 GHz allocated to the fixed-satellite service, Earth-to-space (feeder links for the broadcasting-satellite service only) and space-to-Earth

5.1 Introduction

In the frequency band 17.7 - 17.8 GHz which is allocated to the fixed-satellite service, in the Earth-to-space direction for BSS feeder links only, and in the space-to-Earth direction, emissions from transmitting feeder link earth stations may cause interference at receiving earth stations in the fixed-satellite service.

Electromagnetic coupling of an emission originating at a feeder link earth station into a receiving earth station may occur through two propagation mechanisms or "modes" :

Propagation mode (1) : coupling along a great circle tropospheric interference horizon path;

Propagation mode (2) : coupling through scatter from hydrometeors.

The determination of whether emissions from a feeder link earth station may cause unacceptable interference in a receiving earth station is by means of coordination contours drawn around a feeder link earth station on a map. When a receiving earth station is located within either or both coordination contours, i.e., within the coordination area, a possibility for unacceptable interference exists.

5.2 Determination of the coordination contour for propagation mode (1)

The distance at which a signal of power $P_{t'}$ (in dBW) applied to the terminals of a feeder earth station will produce a received power $P_r(p)$ at the antennas terminal of a receiving earth station, for propagation mode (1), is given by :

$$d_1 = (P_{t'} + G_{t'} + G_r - P_r(p) - A_o - A_h) / \beta \text{ km} \qquad (1)$$

where

$P_{t'}$ = maximum r.f. power (dBW) in any 1 MHz band applied to the antenna terminals of a feeder earth station;

$G_{t'}$ = gain (dB) of the feeder earth station antenna towards the physical horizon on the azimuth to the receiving earth station;

G_r = gain (dB) of the receiving earth station antenna towards the physical horizon on the azimuth to the feeder earth station;

$P_r(p)$ = permissible interfering r.f. power (dBW) in any 1 MHz band to be exceeded for no more than p% of the time at the antenna terminals of the receiving earth station;

A_o = a constant; equal to 145.0 dB;

A_h = the sum (dB) of available site shielding at the feeder link earth station, $A_{ht'}$, and at the receiving station, A_{hr}, on the respective azimuth towards the other earth station (both in dB);

β = the rate of attenuation along the interference path (dB/km), a function of the radio-climatic zone and of p as used in $P_r(p)$ above.

*) Bidirectional case

To determine the coordination contour for propagation mode (1) for a feeder earth station, equation (1) is solved for all azimuths around the earth station site (in suitable increments; e.g., every 5 degrees), and the resulting distances plotted for all azimuths on a map of suitable scale from the earth station site. The connection of the so marked distance points constitutes the coordination contour for the feeder earth station.

5.3 Determination of parameters used in equation (1)

The parameters used in equation (1) are determined as follows :

5.3.1 Determination of G_t' and G_r

The determination of G_t' follows the procedure set forth in Annex II to Appendix 28 of the Radio Regulations. The feeder earth station antenna radiation pattern is that given in [..... of this Appendix].

For the receiving earth station, a minimum main beam elevation angle of 5^o is assumed for which the reference antenna radiation diagram of section 4 of Annex II to Appendix 28 of the Radio Regulations yields, in the absence of site shielding, a horizon antenna gain of $G_r = 14.5$ dB.

5.3.2 Determination of $A_{ht'}$ and A_{hr}

The calculation of $A_{ht'}$ requires the determination of the horizon elevation angle, Θ (degrees) for all azimuths around a feeder earth station site. With these horizon elevation angles and the frequency of f = 17.75 GHz, $A_{ht'}$ is then calculated from equation (7) of Appendix 28 of the Radio Regulations.

For the fixed-satellite receiving earth station the assumption must be made that no site shielding is available; hence $A_{hr} = 0$ dB.

5.3.3 Determination of $P_r(p)$ and p

The maximum permissible interfering r.f. power in any 1 MHz band is taken, under nominal conditions, to be limited to 15% of the total noise received at an earth station, or about 20% of the thermal noise of the receiving system. For percentages of the time of less than 0.003%, an increase in the interference by 5 dB is acceptable. Considering further that the band 17.7 - 17.8 GHz is also shared with terrestrial services, the assumption is made that up to three equivalent entries of interference may be present which, however produced their maximum interference during periods uncorrelated in time, thus allowing each to produce the maximum permissible value of interfering r.f. power during p = 0.001% of the time.

Therefore

$$P_r(p) = 10 \log (0.2kTB) + 5 \text{ dBW/B} \qquad (2)$$

which, with k = Boltamann's constant,

B = 1 MHz, and

T = assumed to be no less than about 200k,

yields :

$$P_r(p) = -147.6 \text{ dBW/MHz},$$

with $p = 0.001\%$ of the time.

5.3.4 Determination of β

The rate of attenuation, calculated from equations [.....] of CCIR Report 382-4, for a percentage of the time of 0.001%, yields, for the three radio-climatic zones defined in section 3.1 of Appendix 28 of the Radio Regulations, the following values at 17.75 GHz :

Zone A : β_A = [....] dB/km

Zone B : β_B = [....] dB/km

Zone C : β_C = [....] dB/km

5.4 Application notes

Several points need to be made in regard to the application of the method described in this section.

5.4.1 Mixed zone contours

When the solution of equation (1) yields a distance d_1, which, on the azimuth under consideration, produces a point which lies in a different radio-climatic zone than that in which the feeder earth station is located, it is necessary to determine a mixed-zone coordination distance for that azimuth. Thus, if the feeder earth station is located in a radio-climatic zone identified by the suffix a and the solution of equation (1) produces a distance which ends in another radio-climatic zone, identified by the suffix b (a and b referring to any one of the zones A, B or C, with $a \neq b$), the coordination distance is calculated from :

$$d_1 = \frac{P - d_a \beta_a}{\beta_b} + d_a \text{ Km} \qquad (3)$$

where $P = P_t' + G_t' + G_r - P_r(p) - A_o - A_h$ (in dB) as calculated to solve equation (1) and d_a is the distance (km) from the feeder earth station site to the boundary between the two climatic zones.

For the rare case that more than two radio-climatic zones are involved, the applicable equation would be :

$$d_1 = \frac{P - d_a \beta_a - d_b \beta_b}{\beta_c} + d_a + d_b \text{ km} \qquad (4)$$

where the subscript c denotes the zone farthest away from the feeder earth station site within which the coordination distance "ends".

5.4.2 Minimum coordination distances

The minimum coordination distance for a feeder earth station shall be 100 km regardless of how small d_1 is.

5.4.3 Graphical method

Figure 1 provides curves by means of which d_1 may be determined when only a single radio-climatic zone is involved. The three curves shown are for the three radio-climatic zones. The abscissa is given in terms of the parameter P as defined for equation (3) above.

5.5 Determination of the coordination contour for propagation mode (2)

In the case of scatter from hydrometeors, the high main beam e.i.r.p. from a transmitting feeder earth station antenna and the likewise expected high sensitivity of a fixed-satellite service receiving earth station through its antenna main beam suggest that interference from a feeder earth station into a fixed-satellite earth station is only then not likely to be unacceptable when the main beam of either earth station is not within line-of-sight of the other earth station, up to altitudes from which significant hydrometeor scatter reflectivity prevails.

Accordingly, to avoid such visibility conditions, the rain scatter distance d_r is to be that distance at which the fixed earth station's horizon beam intersects the maximum expected rain bearing altitude h_R.

5.5.1 The rain scatter distance d_r

For a zero degree assumed horizon elevation angle at the fixed receiving earth station, d_r is given by

$$d_r = 130\sqrt{h_R} \text{ km} \qquad (5)$$

in a 4/3 earth radius reference atmosphere, with

$$h_R = 5.1 - 2.15 \log [1 + 10 (\phi - 27)/25] \text{ km} \qquad (6)$$

where ϕ is the latitude (North or South) of the feeder earth station site (degrees).

The rain scatter distance d_r so calculated yields the rain scatter coordination contour for the feeder link earth station by the procedure described in section 4.5 of Appendix 28 of the Radio Regulations.

5.5.2 Graphical method

Figure 2 provides a curve by means of which the rain scatter distance d_r may be directly read for a given feeder earth station latitude ϕ.

Attachment

(to Annex 4)

Draft note from Chairman, Committee 4 to Chairman, Committee 6

Committee 4 considered the question of requirements for coordination of a fixed-satellite service earth station (space-to-Earth) in the 17.7 - 17.8 GHz band, seeking to locate within the coordination contour of a feeder-link earth station which is operative in conformity with the Plan. Committee 4 concluded that coordination is not required in this situation.

This conclusion is referred to Committee 6 for information and comment.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 128-E
4 July 1983
Original : English

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.12 OF ANNEX 3 TO SECTION II OF THE FINAL ACTS

3.12 Depolarization compensation

The Plan is developed without the use of depolarization compensation. Depolarization compensation is only permitted to the extent that interference to other satellites does not increase more than 0.5 dB relative to that calculated in the feeder link Plan.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 129(Rev.2)-E
8 July 1983
Original : English

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.9 OF ANNEX 3
TO SECTION II OF THE FINAL ACTS

3.9 Automatic gain control

3.9.1 The plan is based on use of automatic gain control on-board satellites to maintain a constant signal level at the satellite transponder.

3.9.2 The dynamic range of automatic gain control is limited to 15 dB when satellites are located within 0.4 degrees of each other and operate on cross-polarized adjacent channels serving common or adjacent feeder link service areas.

3.9.3 The 15 dB limit of automatic gain control does not apply for satellites other than those specified in paragraph 3.9.2 above.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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5 July 1983
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WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.9 OF ANNEX 3 TO SECTION II OF THE FINAL ACTS

3.9 Automatic gain control

3.9.1 The plan is based on use of automatic gain control on-board satellites to maintain a constant signal level at the satellite transponder.

3.9.2 The dynamic range of automatic gain control is limited to 15 dB when nominally co-located satellites operate on cross-polarized adjacent channels serving common or adjacent feeder link service areas.

3.9.3 The 15 dB limit of automatic gain control does not apply for satellites other than those specified in paragraph 3.9.2 above.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.9 OF ANNEX 3 TO SECTION II OF THE FINAL ACTS

3.9 Automatic gain control

3.9.1 The plan is based on use of automatic gain control on-board satellites to maintain a constant signal level at the satellite transponder.

3.9.2 The dynamic range of automatic gain control is limited to 15 dB when nominally co-located satellites operate on cross-polarized adjacent channels.

3.9.3 The 15 dB limit of automatic gain control does not apply for satellites other than those specified in paragraph 3.9.2 above.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

WARC FOR MOBILE SERVICES

GENEVA, FEBRUARY/MARCH 1983

Corrigendum No. 1 to
Document No. 130-E
17 August 1983

COMMITTEE 4

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 4

Replace paragraph 3.2.2 by the following :

"3.2.2 The delegate of the Netherlands said his delegation had proposed that the frequency 156.8 MHz be used in the FGMDSS as the radio-telephone distress traffic frequency. It was proposed to locate the frequency for digital selective calling to be used in the FGDMSS within the guardband around 156.8 MHz, namely the frequency 156.825 MHz. Moreover, placing the frequency within the guardband would not disturb existing arrangements on VHF for the maritime mobile service. Recent developments in IMO had not yet demonstrated any clearcut need for narrow-band direct-printing on VHF for the FGMDSS. He therefore proposed to withdraw his delegation's proposal HOL/11/133 for narrow-band direct-printing on 156.775 MHz, leaving only the proposal on the use of channel 16 for radiotelephony and the proposal for DSC alerting on 156.825 MHz."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 130-E
4 July 1983
Original : English

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.7 OF ANNEX 3 TO SECTION II OF THE FINAL ACTS

3.7 System noise temperature

The Plan is based on a value of 1500 K for the satellite system noise temperature.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

WARC FOR MOBILE SERVICES

GENEVA, FEBRUARY/MARCH 1983

Corrigendum No. 2 to
Document No. 131-E
17 August 1983

COMMITTEE 4

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 4

Replace paragraph 1.14 by the following :

"1.14 The delegate of the Netherlands said that the major disadvantage of the dispersed frequency arrangements, as proposed among others by the United States of America, was that it would be very difficult for the 1987 WARC for the Mobile Services to leave the frequencies which were set aside by the present Conference for the FGMDSS unchanged when revising Appendix 31. Furthermore, the consequential changes in Appendix 31 following the adoption of the proposed dispersed arrangement were considered to be outside the terms of reference of the current Conference."

Documents of the Regional Administrative Conference for the planning of the Broadcasting-Satellite Service in Region 2 (RARC SAT-83) (Geneva, 1983)

Document No. 131 Corr. 1

Not available

****

Pas disponible

****

No disponible

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 131-E
4 July 1983
Original : English

COMMITTEE 4

United Kingdom

PLANNING VALUE OF PFD IN RELATION TO C-MAC TELEVISION STANDARD FOR SATELLITE BROADCASTING

(Information Document)

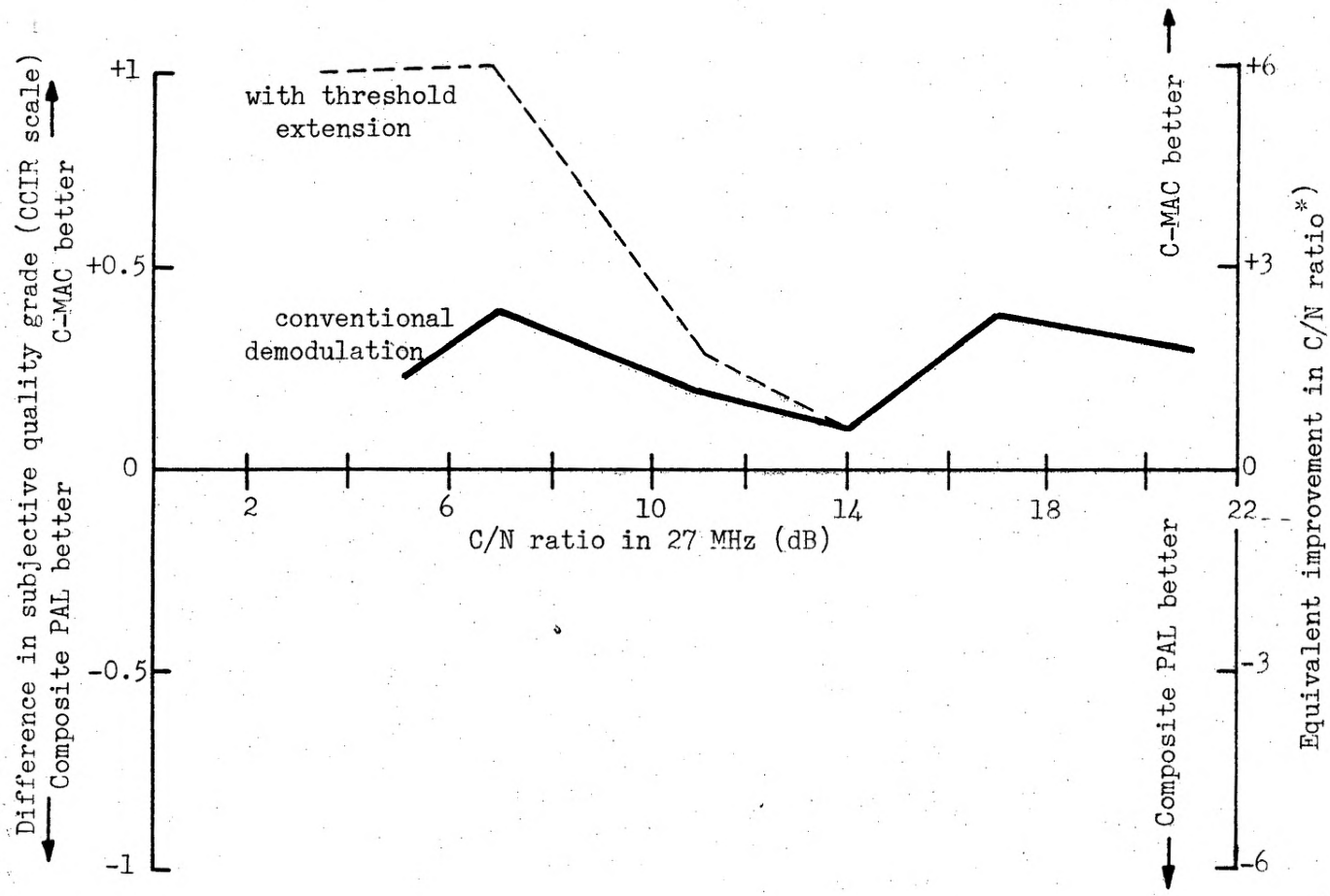
Document No. 117 from the United States of America discusses the need to achieve higher PFDs and C/N ratios to permit the introduction of future enhanced television formats. However certain statements made in Document No. 117 have created misunderstandings about the performance of the MAC multiplexed analogue components system.

1. The standard C-MAC/packet Satellite Broadcasting System does not require higher C/N ratios than conventional composite-coded colour television systems to achieve better picture quality. Figure 2 in Corrigendum No. 1 to Document No. 64 shows that the improvement in picture quality using C-MAC is maintained over the complete C/N ratio range. Figure 1 (attached) has been drawn to illustrate more clearly the improvements obtained. Nonetheless, C/N ratios somewhat greater than 14 dB are desirable to realize the full improvements in picture quality available with the C-MAC system.

2. Section 2 of Document No. 64 lists fourteen reasons for choosing the C-MAC/packet Standard for satellite broadcasting. Twelve of these permit better satellite broadcasting systems, in all 3 Regions, using presently available technology and television displays.

3. The United Kingdom supports Document No. 117 in advocating the C-MAC system for its potential to provide for enhanced television, using large-screen displays, in the future. Document No. 57 shows that more favourable C/N and C/I ratios than set for the 99% worst-month planning limits are necessary to secure these benefits. Unless the higher PFD and C/I ratios addressed in Document No. 117 are available, such enhanced television will be impractical for individual reception, except by using large antennas approaching 1.5 m.

Annex : 1 figure



*) A change of one subjective grade on the CCIR quality scale is approximately equivalent to a 6 dB change in video SNR and hence C/N ratio, see for example Figure 2 of Document No. 55 (NTSC) and Figure 2 of Corrigendum No. 1 to Document No. 64 (PAL, C-MAC).

Figure 1 - Improvement in picture quality for C-MAC system compared with conventional composite PAL system

INTERNATIONAL TELECOMMUNICATION UNION

WARC FOR MOBILE SERVICES

GENEVA, FEBRUARY/MARCH 1983

Corrigendum No. 1 to
Document No. 132-E
19 August 1983

COMMITTEE 4

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 4

Replace paragraph 1.3 by the following :

"1.3 The delegate of the Netherlands said that the discussions on the pros and cons of the two options had been objective and his delegation would accept the Committee's decision to accommodate the FGMDSS elements in the HF bands in a dispersed frequency arrangement, although he foresaw difficulties in meeting the requirement as stated by IMO that the frequencies for the FGMDSS once assigned should remain unchanged. Therefore, the frequencies should be chosen very carefully so as to ensure that they were not to be changed by the 1987 WARC for the Mobile Services. A Netherlands compromise proposal would be circulated shortly, which sought to overcome the disadvantages of the other proposals for a dispersed arrangement. In the said compromise it was proposed to accommodate the three FGMDSS elements in a dispersed frequency arrangement within the radiotelephony sub-bands of the exclusive maritime mobile HF bands."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 132-E
4 July 1983
Original : French

PLENARY MEETING

FOURTH REPORT OF COMMITTEE 5 TO THE PLENARY MEETING

At its seventh meeting, held on Monday, 4 July 1983, Committee 5 adopted the Plan format to appear in Articles 11 (Part I) and 9 (Part II) of the Final Acts. The format, which was the subject of Document No. 133, has been transmitted to the Editorial Committee.

P.D. CROSS
Chairman of Committee 5

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 133-E
4 July 1983
Original : English/
French/
Spanish

COMMITTEE 7

FIRST SERIES OF TEXTS FROM COMMITTEE 5
TO THE EDITORIAL COMMITTEE

The texts mentioned in Document No. 132 are hereby submitted to the Editorial Committee.

P.D. CROSS
Chairman of Committee 5

Annex : 1

ARTICLE I.II

The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz in Region 2

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2. *Nominal orbital position*, in degrees.

Col. 3. *Channel number* (see Table showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5. *Antenna beamwidth*. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect). [1)]

Col. 8. *E.i.r.p.* in the direction of maximum radiation in dBW.

Col. 9. *Remarks*.

11.2 NOTES RELATING TO THE PLAN

---

1) See Annex 6, paragraph .....

Table relating to Article I.11

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

(ΔF = 14,58 MHz, 2 guard bands of 12 MHz)

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	12224.00	17	12457.28
2	12238.58	18	12471.86
3	12253.16	19	12486.44
4	12267.74	20	12501.02
5	12282.32	21	12515.60
6	12296.90	22	12530.18
7	12311.48	23	12544.76
8	12326.06	24	12559.34
9	12340.64	25	12573.92
10	12355.22	26	12588.50
11	12369.80	27	12603.08
12	12384.38	28	12617.66
13	12398.96	29	12632.24
14	12413.54	30	12646.82
15	12428.12	31	12661.40
16	12442.70	32	12675.98

ARTICLE II.9

The Plan for the Feeder Link of the Fixed-Satellite Service in the Frequency Band [17.3 - 17.8] GHz in Region 2

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2. *Nominal orbital position*, in degrees.

Col. 3. *Channel number* (see Table showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5. *Antenna beamwidth*. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect).[1)]

Col. 8. *E.i.r.p.* in the direction of maximum radiation in dBW.

Col. 9. *Remarks*.

11.2 NOTES RELATING TO THE PLAN

---

1) See Annex 6, paragraph .....

Table relating to Article II.9

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	17324.00	17	17557.28
2	17338.58	18	17571.86
3	17353.16	19	17586.44
4	17367.74	20	17601.02
5	17382.32	21	17615.60
6	17396.90	22	17630.18
7	17411.48	23	17644.76
8	17426.06	24	17659.34
9	17440.64	25	17673.92
10	17455.22	26	17688.50
11	17469.80	27	17703.08
12	17484.38	28	17717.66
13	17498.96	29	17732.24
14	17513.54	30	17746.82
15	17528.12	31	17761.40
16	17542.70	32	17775.98

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 134-E
4 July 1983
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Source : Document No. DL/34

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.4.3 OF SECTION II OF THE FINAL ACTS

3.4.3 Antenna efficiency

The Plan is based on an antenna efficiency of 65%. The corresponding on-axis gain for an antenna having a 5 metre diameter is 57.4 dBi at 17.55 GHz, relative to an isotropic source and the corresponding value of e.i.r.p. used for planning purposes is 87.4 dB(W).

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 135-E
5 July 1983
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Source : Document No. DL/42

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.1 OF SECTION II
OF THE FINAL ACTS

3.1 Translation frequency

The feeder link plan is based on the use of a single common frequency translation of 5.1 GHz between the 17 GHz feeder link channels and the 12 GHz down-link channels. Other values of the translation frequency may be used, provided that the corresponding channels have been assigned to the space station of the administration.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Addendum No. 1 to
Document No. 136(Rev.3)-E
12 July 1983
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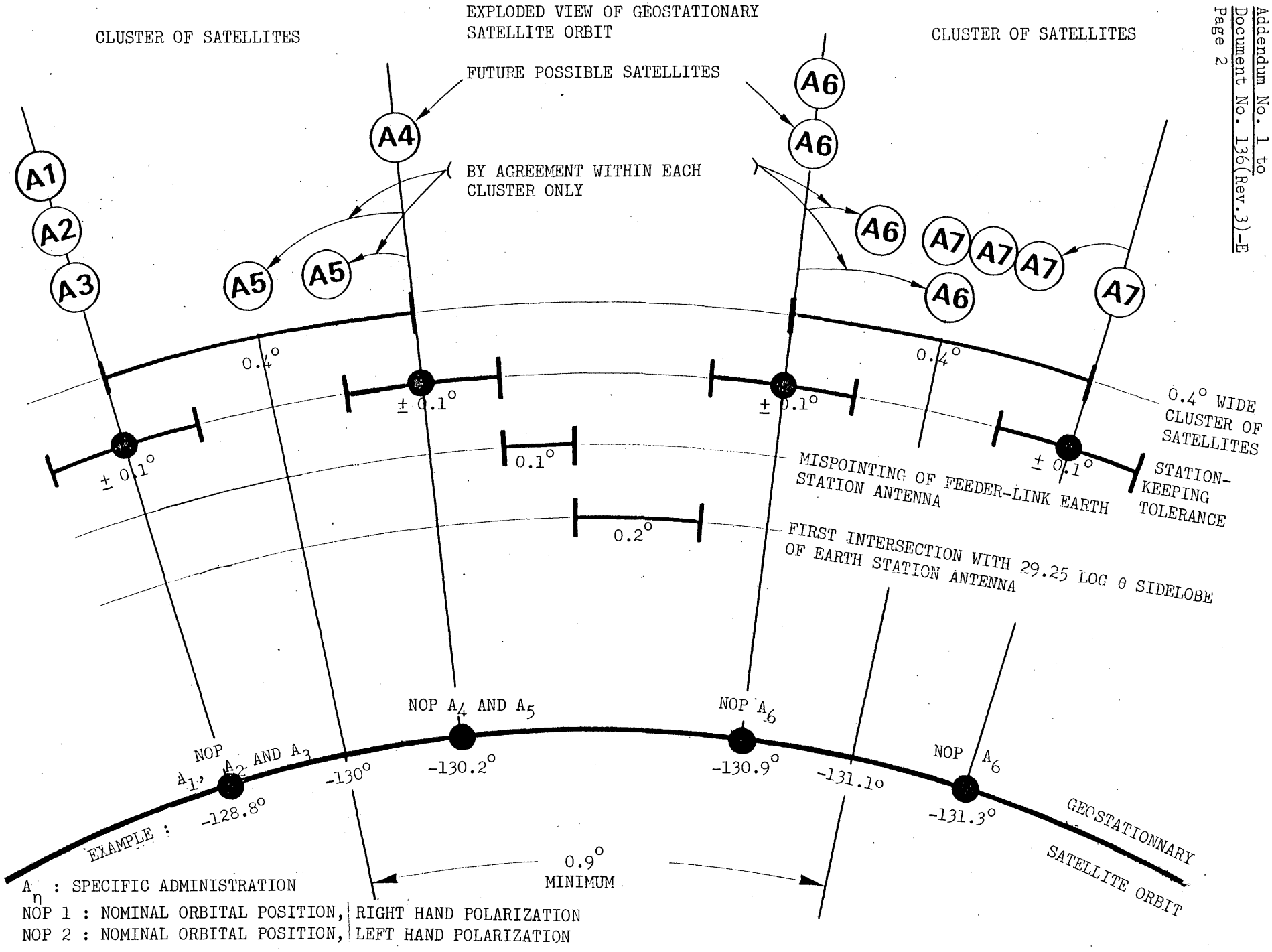
WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.13 OF ANNEX 3 OF SECTION II OF THE FINAL ACTS


CLUSTER OF SATELLITES
EXPLODED VIEW OF GEOSTATIONARY SATELLITE ORBIT
CLUSTER OF SATELLITES
FUTURE POSSIBLE SATELLITES
BY AGREEMENT WITHIN EACH CLUSTER ONLY
A1
A2
A3
A4
A5
A5
A6
A6
A6
A6
A7
A7
A7
A7
0.4°
0.4°
± 0.1°
± 0.1°
± 0.1°
± 0.1°
0.1°
0.2°
0.4° WIDE CLUSTER OF SATELLITES
MISPOINTING OF FEEDER-LINK EARTH STATION ANTENNA
STATION-KEEPING TOLERANCE
FIRST INTERSECTION WITH 29.25 LOG θ SIDELOBE OF EARTH STATION ANTENNA
NOP A1, A2 AND A3
NOP A4 AND A5
NOP A6
NOP A6
-128.8°
-130°
-130.2°
-130.9°
-131.1°
-131.3°
EXAMPLE :
0.9° MINIMUM
GEOSTATIONNARY SATELLITE ORBIT
An : SPECIFIC ADMINISTRATION
NOP 1 : NOMINAL ORBITAL POSITION, RIGHT HAND POLARIZATION
NOP 2 : NOMINAL ORBITAL POSITION, LEFT HAND POLARIZATION

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 136(Rev.3)-E
11 July 1983
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Source : Document No. DL/40

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.13 OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.13 Minimum separation between satellites

Figure x illustrates two adjacent clusters of satellites separated by 0.8 degrees between the centres of the clusters. A_η identifies a satellite of Administration η. A cluster is formed by two or more satellites separated by 0.4 degrees and located at two nominal orbital positions as specified in the Plan; one position for right-hand polarized channels and one position for left-hand polarized channels.

3.13.1 Satellites of the same cluster

The Plan is based on an orbital separation of 0.4 degrees between satellites having cross-polarized adjacent channels (i.e. satellites located at +0.2 degrees and -0.2 degrees from the centre of the cluster). However, the orbital positions of satellites may be located at any orbital position located within the cluster with only the agreement of the other administrations sharing the same cluster required. Such orbital positioning of satellites within the cluster is illustrated in the figure by the satellites A5, A6 and some of the satellites A7.

The station-keeping tolerance of $\pm$ 0.1 degrees indicated in paragraph [ ] of Annex 6 of Section I of the Final Acts must be applied to satellites located at any position within the 0.4 degrees-wide cluster.

3.13.2 Satellites of different clusters

In the Plan, the orbital separation between the centres of adjacent clusters of satellites is at least 0.8 degrees. The value of 0.8 degrees is also the minimum orbital separation to provide the flexibility in the implementation of feeder links indicated in paragraph 3.4.1 of this Annex without the need for coordination (see paragraph [ ]).

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.13 OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.13 Minimum separation between satellites

Figure x illustrates two adjacent clusters of satellites separated by 0.8 degrees between the centres of the clusters. A_η identifies a satellite of Administration η. A cluster is formed by two or more satellites separated by 0.4 degrees and located at two nominal orbital positions as specified in the Plan; one position for right-hand polarized channels and one position for left-hand polarized channels.

3.13.1 Satellites of the same cluster

The Plan is based on an orbital separation of 0.4 degrees between satellites having cross-polarized adjacent channels (i.e. satellites located at 0.2 degrees and -0.2 degrees from the centre of the orbital cluster). The orbital positions of satellites within a cluster of satellites may be implemented at any orbital position located within the cluster with only the agreement of the other administrations sharing the same cluster required. Such orbital positioning of satellites within the cluster is illustrated in the figure by the satellites A5, A6 and some of the satellites A7.

The station-keeping tolerance of $\pm$ 0.1 degrees indicated in paragraph [ ] of Annex 6 of Section I of the Final Acts must be applied to satellites located at any position within the 0.4 degrees-wide cluster.

3.13.2 Satellites of different clusters

In the Plan, the orbital separation between the centres of adjacent clusters of satellites is at least 0.8 degrees. The value of 0.8 degrees is also the minimum orbital separation to provide the flexibility in the implementation of feeder links indicated in paragraph 3.4.1 of this Annex without the need for coordination (see paragraph [ ]).

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 136(Rev.1)-E
7 July 1983
Original : English

SOURCE : Document No. DL/40

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.13 OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.13 Minimum separation between satellites

3.13.1 Satellites nominally co-located

The orbital positions of nominally co-located satellites having cross-polarized adjacent channel assignments may be implemented at any orbital position located within ± 0.2 degrees of the nominal orbital position recorded in the plan. However, the plan is analyzed on the basis of an orbital separation of 0.4 degrees between satellites having cross-polarized adjacent channels (i.e. satellites located at +0.2 degrees and -0.2 degrees from the nominal orbital position).

The station-keeping tolerance of ± 0.1 degrees indicated in paragraph 3.11 of Annex 3 of Section II of the Final Acts must be applied to satellites located at any position within ± 0.2 degrees about the nominal orbital position.

3.13.2 Satellites not nominally co-located

In the plan, the orbital separation between space stations assigned to different nominal orbital positions is at least 0.8 degrees. The value of 0.8 degrees is also the minimum orbital separation to provide the flexibility in the implementation of feeder links indicated in paragraph 3.4.1 of Annex 3 of Section II of the Final Acts without the need for coordination (see paragraph /_ _7).

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 136-E
5 July 1983
Original : English

SOURCE : Document No. DL/40

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.13 OF SECTION II OF THE FINAL ACTS

3.13 Minimum separation between satellites

3.13.1 Assignment to different administrations

In the plan, the orbital separation between space stations assigned to different administrations is greater than 0.8 degrees unless the space stations of the administrations are specifically intended to be co-located. The value of 0.8 degrees is also the minimum orbital separation to provide the flexibility in the implementation of feeder links indicated in paragraph 3.4.1 of Annex 3 of Section II of the Final Acts without the need for coordination. For orbital separation less than 0.8 degrees, a modification of the plan is not required for the provision of the above flexibility in the implementation of the feeder links, but coordination in accordance with /_ _/ is required for feeder link e.i.r.p. exceeding the planned value (indicated in paragraph 3.4.3 of Annex 3 of Section II of the Final Acts).

3.13.2 Nominally co-located satellites

The orbital positions of nominally co-located satellites having cross-polarized adjacent channel assignments may be implemented at any orbital position located within ± 0.2 degrees of the nominal orbital position recorded in the plan. This is needed to alleviate the effect of feeder link rain attenuation on the /_first_/ adjacent channel interference and the value of ± 0.2 degrees is optimal for a feeder link earth station transmit antenna of 5 metres. The plan is based on an orbital separation of 0.4 degrees between satellites having cross-polarized adjacent channels.

The satellite station-keeping tolerance of ± 0.1 degrees indicated in paragraph 3.11 of Annex 3 of Section II of the Final Acts applies to the orbital positions of the satellites.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 137-E
4 July 1983
Original : English

Source : Document No. DL/35

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.2 OF ANNEX 3,
SECTION II OF THE FINAL ACTS

3.2 Carrier-to-noise ratio

Section 3.3 of Annex 8 of Section I of the Final Acts indicates a guidance for planning and the basis for the evaluation of the carrier-to-noise ratios of the feeder link and down-link plans.

As a guidance for planning, a feeder link contribution to the degradation of the down-link carrier-to-noise ratio of 0.5 dB for 99% of the worst month is assumed.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 138-E
4 July 1983
Original : English

Source : Document No. DL/38

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.4.1
OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.4 Transmitting antenna

3.4.1 Antenna diameters

The feeder link plan is based on an antenna diameter of 5 meters.

The minimum antenna diameter which can be used in the plan is 2.5 meters. However, the feeder link carrier-to-noise ratio and carrier-to-interference ratio resulting from the use of antennas with diameters smaller than 5 meters would generally be less than those calculated in the plan.

The use of antennas larger than 5 meters, with corresponding values of e.i.r.p. higher than the planned value (indicated in paragraph 3.4.3) is permitted if the orbital separation between the assigned orbital location of the administration and the assigned orbital location of any other administration is greater than 0.8 degrees.

Antennas with diameters larger than 5 meters can also be implemented if the above orbital separation is less than 0.8 degrees and if the e.i.r.p. of the desired feeder link earth station does not exceed the planned value of e.i.r.p.

If the above orbital separation is less than 0.8 degrees and if the e.i.r.p. of the desired feeder link earth station exceeds the planned value, coordination is required in accordance with [ ].

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 139-E
4 July 1983
Original : English

Source : Document No. DL/37

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK SECTION 3.3
OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.3 Protection ratio

Section 3.4 of Annex 8 of Section I of the Final Acts indicates a guidance for planning for the reduction of the down-link co-channel interference due to co-channel interference in the feeder link of 10%, in power, for 99% of the worst month. However, the feeder link and down-link plans are evaluated on the overall equivalent protection margin of the combined down-link and feeder link contributions. Definitions 1.10, 1.11, 1.12, 1.13 and 1.14 of /paragraph 1 of Annex 8 of Section I of the Final Acts/ and the protection ratios given in paragraph 3.4 of Annex 8 of Section I of the Final Acts are used in the analysis of the plans.

For the /first/ adjacent channels, the Plan is based on an orbital separation of 0.4 degrees between nominally co-located satellites having cross-polarized /first/ adjacent channel assignments.

For the second adjacent channels, the Plan is based on a /10/ dB improvement on the feeder link carrier-to-interference ratio due to the satellite receive filtering.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 140-E
4 July 1983
Original : English

Source : Document No. DL/36

WORKING GROUP 4B

DRAFT

NOTE FROM COMMITTEE 4 TO COMMITTEE 5
ON SATELLITE RECEIVE FILTERING

Committee 4 wishes to bring to the attention of Committee 5 the necessity of including the effect of satellite receive filtering in the calculation of the carrier-to-interference ratio of the second adjacent channels in the analysis of the Plan. For the second adjacent channel a [10] dB improvement on the feeder link carrier-to-interference ratio due to satellite receive filtering is possible and is needed to alleviate the interference problem caused by rain attenuation on feeder links. The value of [10] dB is consistent with and related to the [13] dB limit on the calculated rain attenuation in the Plan (see Document No. 80).

A corresponding change to the analysis software may be required to incorporate the [10] dB improvement into the planning process.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 141-E
4 July 1983
Original : English

WORKING GROUP 4B

DRAFT

NOTE FROM COMMITTEE 4 TO COMMITTEE 6 ON THE OCCASIONAL NEED FOR COORDINATION BETWEEN TRANSMITTING EARTH STATIONS

Committee 4 wishes to bring to the attention of Committee 6 that under very special conditions given in paragraph 3.4.1 of Annex 3 of Section II of the Final Acts (see Document No. 138), there may be a need for coordination between feeder link earth stations.

Committee 6 may wish to consider the mechanism for coordination when the above conditions indicate that coordination is required.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 142-E
8 July 1983
Original : English/
French

COMMITTEE 6

SUMMARY RECORD

OF THE

FIRST SESSION OF COMMITTEE 6

(PROCEDURES)

Wednesday, 15 June 1983, at 0930 hrs

This Corrigendum affects only the Spanish text.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 142-E
4 July 1983
Original : English/French

COMMITTEE 6

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 6

(PROCEDURES)

Wednesday, 15 June 1983, at 0930 hrs

Chairman : Mr. J.A. ZAVATTIERO (Uruguay)

Subjects discussed :	Document No.
1. Introduction of documents	6, 11, 13, 17, 19, 38
2. Decision regarding creation of separate Appendices to Radio Regulations containing Plans and related procedures and/or amendments to Appendix 30	-

1. Introduction of documents (Documents Nos. 6, 11, 13, 17, 19, 38)

1.1 The delegate of Cuba introduced Document No. 6 containing general remarks on the proposals for the development of a plan, drawing attention to the major elements of the document in paragraphs 2.7, 2.8 and 2.9.

1.2 The delegate of the United States said that the tardiness of certain documents was due to the discussions among the Panel of Experts and in CITEL where stress was laid on the necessity for the procedures to be both flexible enough to take account of the evolution of technique, and as simple as possible for ease of implementation. He emphasized that his country had tried to follow those Recommendations in drawing up its proposals in Documents Nos. 11 and 19.

He drew particular attention to proposal USA/11/10 which dealt with interim provisions to cover the period up to the incorporation of the Conference provisions in the Radio Regulations. The United States made proposals for the amendment of Appendix 30 (down-links) and a new Appendix 30A (feeder links). In that respect the United States had endeavoured to produce a text which was self-sufficient and clarified the status of the associated assignments.

He also mentioned proposals USA/19/8, USA/19/1 and USA/19/14 which were of concern to Committee 6.

1.3 The delegate of Canada introduced Document No. 13 which contained proposals for certain provisions of the Radio Regulations, amendments to Appendix 30, a new Appendix 30A and two draft Resolutions. The main objective of the proposals was to increase flexibility in the use of the Plan assignments in the Region.

1.4 The representative of the IFRB recalled that on the request of the Panel of Experts to study the definitions of the terms "assignment" and "allotment", the Board had submitted a document. The Board considered that there was no ambiguity in the definitions and the terms were explained fully in Document No. 17. The present Conference had to draw up a frequency assignment plan for satellite broadcasting stations but it was not yet known whether the Plan for feeder links would be a frequency assignment or a frequency allotment plan. That would depend upon the contents of the Plan. The solutions suggested by the IFRB were to be found in section 5 of Document No. 17.

1.5 The IFRB views were supported by the delegate of Brazil and the delegate of Canada.

1.6 The delegate of Venezuela introduced Document No. 38, which recalled that regional conferences could not depart from the terms of the Radio Regulations and that WARC-79 had itself defined the two terms in question. According to those definitions, the plan to be drawn up should be referred to as "a plan of allotment of frequencies and orbital positions ..."

He also wondered whether the Conference had any juridical basis for imposing its decisions on administrations not taking part in its work, since there could be no infringement of national sovereignty. If the Conference decided in favour of an allotment plan, developing countries would be afforded the guarantee of being able to have access to the orbit when they were in a position to do so.

1.7 The delegate of Brazil referred to his administration's document, as yet unpublished, emphasizing that the basic principles to be followed in establishing procedures had been examined by the Panel of Experts and then analyzed by CITEL before being put to the Conference as a recommended working basis. He considered that the Final Acts should be in the form of a modification to Appendix 30 and a new Appendix 30A. All countries should have the possibility of having calculations made for implementing systems with characteristics different from those applied during the planning phase. It was also of course important for the procedures to guarantee protection of all systems entered in the Plan regardless of the date of their bringing into use, as might be decided by countries of the Region.

1.8 The delegate of Argentina supported those views, and suggested that the final decision on the title of the Plan might be deferred until the scope of Articles 4 and 5 of the Agreement had been examined.

1.9 The delegate of the Netherlands thought the Conference was competent to draw up an assignment plan for the down-links and to adopt options for the development of a plan for the feeder links.

1.10 The Vice-Chairman of the IFRB said that the IFRB Report (Document No. 17) referred to the current ITU practice. In the opinion of the IFRB, the mandate of the Conference was to establish a plan containing the characteristics of every station and every assignment and that such a plan was known as an assignment plan.

1.11 The delegate of the United States endorsed that statement. He thought that if the Plan contained procedures different from those in Appendix 30, the whole work of the regional meetings, the Panel of Experts and CITEL would be called into question.

The legal implications would naturally be taken into account when selecting the wording used in the Final Acts. However, as the Vice-Chairman of the IFRB had pointed out, there was a precedent for assigning frequencies to administrations not present at a meeting.

1.12 The delegate of the United Kingdom did not see any reason for conflict between ITU practice and the legal aspects. He proposed that a small group study the point raised by the delegate of Venezuela, together with the ITU's Legal Adviser.

1.13 The delegates of Cuba and of Argentina said that both the substance and the form were important aspects which required very close attention.

1.14 The delegate of the Netherlands supported the suggestion to seek the advice of the Legal Adviser on the principle of whether or not the Conference was competent to make assignments for countries not represented.

1.15 The Vice-Chairman of the IFRB said that as a Member of the Board he could not take a stand on the need to seek a legal definition. However, although the Conference clearly could not assign frequencies to stations, it could determine the characteristics of the frequencies to be adopted by administrations for assignment to stations. He quoted Article 12 of Appendix 30 which stated that the Conference should in principle guarantee to every administration a minimum of four channels whether the administration was present at the Conference or not.

Under the Convention, only the Secretary-General could give a legal opinion on the terms of the Convention, taking into account the IFRB's role in the context of the application of the Radio Regulations. However, the Legal Adviser could be consulted, through the Secretary-General, on a point of substance.

It was agreed to leave the matter in abeyance pending further study.

2. Decision regarding creation of separate Appendices to Radio Regulations containing Plans and related procedures and/or amendments to Appendix 30

2.1 The delegate of Venezuela considered that the Conference was not competent to modify Appendix 30 to the Radio Regulations but to establish a regional plan with a similar presentation to that Appendix.

2.2 The Chairman confirmed that modification of the Appendix would be the task of a World Administrative Radio Conference.

2.3 The delegate of the Netherlands saw the Conference's task as the drawing up of a Regional Agreement comprising a plan, a series of procedures and any annex or annexes required, plus a Resolution to the effect that the texts were to be incorporated in Appendix 30 of the Radio Regulations (by WARC-85) and a document similar to the form of that Appendix to deal with feeder links.

2.4 The Vice-Chairman of the IFRB outlined the background to the present regional conference which had a very special character in that, unlike other regional conferences, its mandate did not specify the establishment of an agreement, but of Final Acts in the form of proposed modifications to the Regulations, to enter into force when approved by a competent conference (probably the 1985 Space Conference). In addition, it was invited to modify the Regulations and take account of the requirements of all administrations in Region 2 present or not. If that work was not done, the 1985 Conference would have to study Appendix 30 in detail, and its transitional provisions for Region 2. Two proposals had been submitted for the period between the end of the Conference and the entry into force of its decision, one by the United States suggesting a Covering Agreement and the other by Canada for a Resolution stating that the Final Acts be regarded as a Regional Agreement during the period in question. Committee 6 or a Working Group could go into those proposals in detail.

2.5 The delegate of Argentina agreed with the interpretation given by the delegate of the Netherlands. The Conference had the possibility of following the procedure adopted at the 1977 Conference which had drawn up a Regional Agreement and invited WARC-79 to annex the provisions and associated plan as part of the Radio Regulations. Article 13 of Appendix 30 stipulated that the provisions and plan would be considered as comprising a World Agreement.

It was clear that absent States could not influence the decisions taken by the Conference. It had been decided that the IFRB would defend their interests but as the Board was not competent to represent them, that action was considered as an expression of international cooperation.

2.6 The delegate of Brazil recalled that in the case of the 1977 Conference it had only been realized at the last moment by the Administrative Council that the Conference was not authorized to modify the Regulations, although all administrations had prepared their proposals in that form. It was obviously the task of the 1985 Space Conference to adopt the text of the Final Acts and thus endorse the decisions of the present Conference.

2.7 The delegate of Venezuela agreed with the Netherlands delegate on the presentation of the Agreement but thought the proposal to have a single annex was somewhat restrictive; it might be preferable to envisage two annexes, to be merged by the 1985 Conference.

2.8 The delegate of Brazil said that the idea of presenting the Final Acts in the form of modifications to Appendix 30 had been examined by the Panel of Experts at the CITEL meeting in Lima, and that approach should accelerate adoption of the texts and their integration in the Radio Regulations.

2.9 The Vice-Chairman of the IFRB pointed out that Resolution No. 504 of WARC-79 stated that the interim provisions of Appendix 30 concerning Region 2 would be regarded as cancelled by the Final Acts of the Conference, subject to official adoption of the latter by the following competent World Administrative Radio Conference. Furthermore, Article 13 of Appendix 30 referred to a World Agreement in the broadest sense. The 1985 Conference was instructed merely to incorporate in the Regulations the decisions taken by the present Conference on condition that they were in conformity with the Radio Regulations; if they were not, then the 1985 Conference could consider whether or not to include them.

2.10 The Chairman proposed that a group be set up to study the question and report to the next meeting of the Committee. It might consist of delegates of Argentina, Brazil, Canada, United States, Netherlands and Venezuela and a representative of the IFRB and be coordinated by the delegate of Canada.

It was so agreed.

The meeting rose at 1245 hours.

The Secretary :
M. AHMAD

The Chairman :
J.A. ZAVATTIERO

INTERNATIONAL TELECOMMUNICATION UNION

WARC FOR MOBILE SERVICES

GENEVA, FEBRUARY/MARCH 1983

Corrigendum No. 2 to
Document No. 143-E
19 August 1983

COMMITTEE 4

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 4

Replace paragraph 1.1 by the following :

"1.1 The delegate of the Netherlands, introducing his delegation's proposals in Document No. 61, said the Committee had reached the conclusion that the three elements (SSB, DSC and NBDP) should be accommodated in a dispersed frequency rather than a composite channel arrangement. His delegation had originally been against the dispersed arrangement for a number of reasons and particularly in view of the International Maritime Organization (IMO)'s requirements since, under that arrangement, it would be very difficult to ensure that frequencies once assigned would remain unchanged. However, his delegation also recognized that the composite channel arrangement presented a number of disadvantages, particularly since it was not possible to keep a continuous watch on DSC frequencies when calling and receiving antennas were co-sited. Those disadvantages had been taken into account in producing Document No. 61 which attempted to propose a dispersed arrangement which retained the advantages of the composite arrangement.

It was proposed to use the frequencies for calling purposes in the sub-bands for ship stations for telephony also for radiotelephony distress traffic in the FGMDSS. By reducing the channel spacing from 3.1 to 3 kHz starting from the calling frequencies in both directions, frequency space became available at the lower and upper band edge in which the DSC and NBDP elements respectively could be accommodated.. That was shown clearly on page 12 of Document No. 61.

His delegation was convinced that that type of layout permitted continuous monitoring of the DSC channel at coast stations while working on the frequency for narrow-band direct-printing distress traffic or on the radiotelephony distress traffic frequency. In the Netherlands' compromise proposal, the frequency separation between the different elements of the FGMDSS was about the same in the 4 MHz band, and even better for the other bands, than in the other proposals for accommodating the FGMDSS elements in a dispersed frequency arrangement.

His delegation realized that in order to accommodate the three FGMDSS elements within the sub-bands for ship stations for radiotelephony it would be necessary to reduce the channel spacing for radiotelephony in the exclusive maritime mobile HF bands. There was no technical difficulty in reducing the spacing from

3.1 to 3 kHz when synthesized equipment was being used. His Administration recognized that for crystal controlled equipment such a reduction undoubtedly involved expenditure which would constitute a financial burden. However, if the change was made after the 1987 WARC, the costs in terms of delay in the introduction of the FGMDSS would be high, whereas the costs for the change of the crystals would be the same. The Netherlands' proposal, if accepted, had a built-in guarantee that the frequencies, once assigned for the FGMDSS, would remain unchanged and would not require another change of the Appendix 25 radiotelephony frequencies after the 1987 WARC."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 143-E
8 July 1983
Original : English/
French

COMMITTEE 6.

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 6

(PROCEDURES)

Thursday, 16 June 1983, at 1430 hrs

Paragraph 2.3

Correct as follows :

"Working Group 6B (Chairman : Mr. Stephens (United States of America))"

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 143-E
4 July 1983
Original : English/French

COMMITTEE 6

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 6

(PROCEDURES)

Thursday, 16 June 1983, at 1430 hrs

Chairman : Mr. J.A. ZAVATTIERO (Uruguay)

Subjects discussed :	Document No.
1. Oral report by the Chairman of ad hoc Group 1	-
2. Organization of the Committee's work	-

1. Oral report by the Chairman of ad hoc Group 1

1.1 The Chairman of ad hoc Group 1, reporting on the outcome of the meeting held that morning to consider the question put by the Committee, read out a series of conclusions (subsequently issued in Document No. 46) which the Group had reached after a lengthy discussion.

The conclusions of the ad hoc Group*) were approved.

2. Organization of the Committee's work

2.1. The Chairman proposed that the Committee should set up two working groups to deal, respectively, with the proposals relating to feeder links and down-links and with modifications to the Radio Regulations, Resolutions and Recommendations.

2.2 The delegate of Brazil, having regard to the difficulties faced by small delegations, suggested that the Working Groups should not meet simultaneously.

It was so agreed.

2.3 Following a discussion in which the delegates of the United States of America, Canada, the Netherlands, Venezuela, Brazil and Argentina and the Vice-Chairman of the IFRB took part, the following terms of reference were approved for the two Working Groups :

Working Group 6A (Chairman : Mr. DuCharme (Canada))

- to examine proposals concerning texts for procedures relating to the broadcasting-satellite service in Region 2, and to prepare texts in appropriate form for approval by Committee 6;

- to examine proposals concerning texts for procedures relating to the feeder link plan for Region 2, and to prepare texts in appropriate form for approval by Committee 6;

- to arrange such texts in a form compatible for incorporation into the Radio Regulations by the WARC-85;

- if time is available, to consolidate the provisions relating to Regions 1, 2 and 3 with a view to their inclusion in a Recommendation to WARC-85.

Working Group 6B (Chairman : Mr. Stevens (United States of America))

- to examine proposals relating to :

  a) Articles 8, 11, 12, 13 and 15 of the Radio Regulations;

  b) New Article 15A of the Radio Regulations;

  c) Review of WARC-79 Resolutions and new Resolutions and Recommendations for adoption by the Conference;

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*) See Document No. 46

- to arrange such texts in a form compatible for incorporation into the Radio Regulations by the WARC-85;

- and to prepare texts in appropriate form for approval by Committee 6.

The meeting rose at 1550 hours.

The Secretary :
M. AHMAD

The Chairman :
J.A. ZAVATTIERO

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CONFÉRENCE DE RADIODIFFUSION PAR SATELLITE (RÉGION 2)

GENÈVE, 1983

Corrigendum No. 1 to
Document No. 144-F/E/S
11 July 1983
Original : English

COMMITTEE 5

Page 25, A109, paragraph 4, to read as follows :

4. The two orbit locations that originally showed coverage of the eastern service area, Puerto Rico, and the United States Virgin Islands, with the option to cover the central service area should now show coverage of the eastern and central service areas combined in one beam and coverage of Puerto Rico and the United States Virgin Islands in another single beam.

Ne concerne que la version anglaise

Concierne al texto inglés solamente

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 144-E
6 July 1983
Original : English/Spanish

Source : Document No. DT/40

COMMITTEE 5

CLARIFICATIONS AND INFORMATION ON REQUIREMENTS [1)]

1. The present document contains the clarifications and information on requirements published in Document No. 16(Rev.) and the Corrigendum to that document, which have been received by the Chairman of Committee 5 (see footnote 1) on the first page of the Corrigendum).

2. For ease of reference, the present document has been prepared in a layout similar to that of the List of Requirements.

3. Those requirements which have been added are reproduced in Annex 1 attached.

4. The texts of the clarifications and information received from delegations are reproduced as Remarks to the pertinent requirements and appear in Annex 2 attached.

5. The requirement(s) to which a Remark appearing in Annex 2 refers is(are) indicated against the Remark number in Annex 2 and the document in which the requirement(s) appear(s) is indicated in the following table by a cross in the appropriate column :

Item No.	Delegation	Remark No.	Requirement Beam identification		Requirement appears in:		
			New	Previous	Doc.16 (Rev.)	Corr. to Doc. 16 (Rev.)	Annex 1 to present document
1	CLM	A 101		BOLANDO1	X		
				CLMANDO1	X		
				EQACAND1	X		
				EQACAND1	X		
				PRUANDO1	X		
				VENANDO2		X	
2	HOL	A 102	ATNBEAM1				X
				ATNSOUTH	X		
				ATNNORTH	X		

1) Approved by seventh meeting of Committee 5, 4 July 1983

Item No.	Delegation	Remark No.	Requirement Beam identification		Requirement appears in:		
			New	Previous	Doc.16 (Rev.)	Corr. to Doc. 16 (Rev.)	Annex 1 to present document
3	CAN	A103	CAN00101				X
			CAN00102				X
			CAN00201				X
			CAN00202				X
			CAN00203				X
			CAN00302				X
			CAN00303				X
			CAN00304				X
			CAN00403				X
			CAN00404				X
			CAN00405				X
			CAN00504				X
			CAN00505				X
			CAN00506				X
			CAN00605				X
			CAN00606				X
4	JMC	A104	CRBBLZ01				X
			CRBJMC01				X
			CRBBAH01				X
				CRBNW001			
			CRBBER01				X
			CRBSE001				X
5	CHL	A105		CHLPAC02	X		
				CHLCONT4	X		
				CHLCONT5	X		
				CHLCONT6	X		
				PAQPAC01	X		
6	DNK	A106		GRLDNK01	X		
7	GRD			GRD00002			X
		A107		GRD00003			X
		A110	GRD00059				X
8	GUY	A108	GUY00302				X
				GUY00202		X	
	JMC	A108	JMC00005				X
				JMC00002		X	
9	USA	A109	USAEH001				X
			USAEH002				X
			USAEH003				X
			USAEH004				X
			USAWH001				
			USAWH002				
			USAWH003				
			USAWH004				
10	BOL	A111	BOL00001				X

6. Any further clarifications or information received from delegations will be published as Addenda to the present document.

P.D. CROSS
Chairman of Committee 5

Annexes : 2

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 1

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
ARG	ARGINSU2	000261	06	85.0W	.0W	.0W	.0	.0	X		N		PAL-N	000024	Y	060W	.	A28

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-L-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	062W00	70S00	000000 A	045W30	60S40	000000 A	058W17	37S50	000111 K						
2	069W00	67S00	000000 A	060W00	65S00	000000 A	063W54	30S56	001000 K						
3	062W00	63S00	000000 A				067W29	45S52	000010 E						
4															
5															
6															
7															
8															
9															
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	053W50	27S10	000200 P									
2	063W48	54S44	000005 D									
3	068W19	54S48	000010 D									
4	073W03	49S16	003375 D									
5	070W33	31S27	003852 E									
6	068W34	24S48	004800 C									
7	066W11	21S48	004000 E									
8	062W49	22S00	000500 N									
9	053W51	25S35	000628 P									
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
ARG	ARGNORT2	000262	18	85.0W	.0W	.0W	.0	.0	X		N		PAL-N	000024	Y	060W	.	A28

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	056W40	36S52	000002 K	058W28	34S38	000010 K	058W17	37S50	000111 K						
2	071W25	39S00	000840 E	060W39	32S57	000024 K	063W54	30S56	001000 K						
3	070W33	31S27	003852 E	064W17	36S37	000177 K	067W29	45S52	000010 E						
4	068W34	24S48	004800 C	058W51	27S28	000055 N									
5	066W11	21S48	004000 E	055W54	27S23	000080 N									
6	062W49	22S00	000500 N	058W10	26S11	000058 N									
7	053W51	25S35	000628 P	065W24	24S47	001187 N									
8	053W50	27S10	000200 P	066W52	29S25	000498 E									
9				068W49	32S53	000850 E									
10				065W12	26S50	000447 K									

	14A			14B			16			16(CONT)		
	-A-	-L-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	053W50	27S10	000200 P									
2	063W48	54S44	000005 D									
3	068W19	54S48	000010 D									
4	073W03	49S16	003373 D									
5	070W33	31S27	003852 E									
6	068W34	24S48	004800 C									
7	066W11	21S48	004000 E									
8	062W49	22S00	000500 N									
9	053W51	25S35	000628 P									
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 2

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
ARG	ARGSUR02	000263	12	85.0W	.0W	.0W	.0	.0	X		N		PAL-N	000024	Y	060W	.	A28

	06B -A-	-B-	-C-	07 -A-	-B-	-C-	13 -A-	-B-	-C-	13(CONT) -A-	-B-	-C-	13(CONT) -A-	-B-	-C-
1	056W40	36S52	000002 K	071W17	41S08	000790 D	058W17	37S50	000111 K						
2	071W25	39S00	000840 E	071W21	42S55	002100 D	063W54	30S56	001000 K						
3	073W03	49S16	003375 D	070W16	45S41	000425 E	067W29	45S52	000010 E						
4	073W14	50S53	002060 D	065W18	43S15	000011 E									
5	068W19	54S48	000010 D	067W29	45S52	000010 E									
6	063W48	54S44	000005 D	062W17	38S41	000030 K									
7				068W04	38S58	000265 E									
8				072W18	51S33	000310 D									
9				069W15	51S37	000015 D									
10				067W42	53S47	000020 D									

	14A -A-	-B-	-C-	14B -A-	-B-	-C-	16 -A-	-B-	-C-	16(CONT) -A-	-B-	-C-
1	053W50	27S10	000200 P									
2	063W48	54S44	000005 D									
3	068W19	54S48	000010 D									
4	073W03	49S16	003375 D									
5	070W33	31S27	003852 E									
6	068W34	24S48	004800 C									
7	066W11	21S48	004000 E									
8	062W49	22S00	000500 N									
9	053W51	25S35	000628 P									
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
ATN	ATNBEAM1	000283	08	60.0W	.0W	.0W	.0	.0			Y			000000		060W		

	06B -A-	-B-	-C-	07 -A-	-B-	-C-	13 -A-	-B-	-C-	13(CONT) -A-	-B-	-C-	13(CONT) -A-	-B-	-C-
1	062W45	17N35	000000 N												
2	063W00	18N03	000000 N												
3	063W08	18N03	000000 N												
4	067W55	12N00	000000 N												
5	069W00	11N40	000000 N												
6	070W10	12N20	000000 N												
7	070W10	12N50	000000 N												
8															
9															
10															

	14A -A-	-B-	-C-	14B -A-	-B-	-C-	16 -A-	-B-	-C-	16(CONT) -A-	-B-	-C-
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 3

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
BOL	BOLAND01	000219	16	106.0W	.0W	.0W	.0	.0		Y			000000	Y	060W .	A30

06B

	-A-	-B-	-C-
1	065W00	12S12	000000 N
2	065W30	09S48	000000 N
3	069W00	11S12	000000 N
4	060W00	16S06	000000 P
5	057W30	18S00	000000 P
6	067W30	22S40	000000 C
7			
8			
9			
10			

07

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

13

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

14A

	-A-	-B-	-C-
1	057W50	18S00	000000 P
2	067W48	22S48	000000 C
3	077W13	08N30	000001 N
4	071W10	12N00	000001 N
5	080W58	02S13	000010 P
6	080W05	00N50	000010 P
7	070W25	18S21	000015 N
8	061W10	06S05	000015 P
9	061W51	10N45	000000 P
10			

14B

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

16

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

16(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00101	000284	32	165.0W	170.0W	142.0W	.0	.0	X		N	NTSC-M	000022	Y	135W .	A08

06B

	-A-	-B-	-C-
1	141W00	70N00	000450 A
2	120W00	70N00	000750 A
3	120W00	60N00	000750 C
4	120W00	53N42	001000 B
5	114W06	49N00	001500 E
6	123W54	48N18	002250 D
7	126W42	49N24	000200 D
8	132W12	52N36	000750 D
9	141W00	60N18	000050 D
10			

07

	-A-	-B-	-C-
1	123W00	49N12	000050 D
2	120W24	50N42	000750 B
3	117W18	49N30	001200 B
4	122W42	53N54	000750 B
5	122W42	58N48	000350 C
6	135W00	61N00	000350 D
7			
8			
9			
10			

13

	-A-	-B-	-C-
1	123W00	49N12	000050 D
2	114W00	51N00	001250 E
3	104W36	50N30	000100 E
4	097W12	49N54	000350 K
5	083W00	42N18	000150 K
6	079W00	43N06	000050 K
7	079W24	43N42	000150 K
8	076W30	44N18	000050 K
9	075W42	45N24	000050 K
10	073W30	45N30	000050 K

13(CONT)

	-A-	-B-	-C-
1	071W12	46N48	000350 K
2	066W06	45N18	000050 K
3	063W36	44N42	000050 K
4	052W42	47N30	000050 F
5	135W00	61N00	000350 D
6	063W06	46N12	000050 F
7	115W00	62N00	000100 C
8	068W30	63N42	000300 A
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

14A

	-A-	-B-	-C-
1	141W00	70N00	000450 A
2	064W48	70N00	000200 A
3	052W30	47N00	000050 F
4	060W00	43N00	000050 K
5	062W36	41N42	000150 K
6	061W12	44N36	000050 F
7	106W00	49N00	000750 E
8	123W54	48N18	002250 D
9	132W12	52N36	000750 D
10	141W00	60N18	000050 D

14B

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

16

	-A-	-B-	-C-
1	135W00	64N00	000350 C
2	135W00	61N00	000350 D
3	118W00	49N00	000350 D
4	117W00	59N00	000350 B
5	115W00	62N00	000100 C
6	100W00	50N00	000350 E
7	097W00	50N00	000350 K
8	089W00	48N00	000350 K
9	079W00	43N00	000050 K
10	074W00	45N00	000050 K

16(CONT)

	-A-	-B-	-C-
1	071W00	47N00	000050 K
2	071W00	48N00	000150 E
3	066W00	44N00	000050 K
4	069W00	58N00	000100 C
5	060W00	53N00	000100 B
6	113W30	53N30	000000 E
7	106W42	52N12	000000 E
8			
9			
10			

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 4

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00102	000285	32	147.0W	151.0W	127.0W	.0	.0	X		N	NTSC-M	000022	Y	135W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450 A	123W00	49N12	000050 D	123W00	49N12	000050 D	071W12	46N48	000350 K			
2	120W00	70N00	000750 A	120W24	50N42	000750 B	114W00	51N00	001250 E	066W06	45N18	000050 K			
3	120W00	60N00	000750 C	117W18	49N30	001200 B	104W36	50N30	000100 E	063W36	44N42	000050 K			
4	120W00	53N42	001000 B	122W42	53N54	000750 B	097W12	49N54	000350 K	052W42	47N30	000050 F			
5	114W06	49N00	001500 E	122W42	58N48	000350 C	083W00	42N18	000150 K	135W00	61N00	000350 D			
6	123W54	48N18	002250 D	135W00	61N00	000350 D	079W00	43N06	000050 K	063W06	46N12	000050 F			
7	126W42	49N24	000200 D				079W24	43N42	000150 K	115W00	62N00	000100 C			
8	132W12	52N36	000750 D				076W30	44N18	000050 K	068W30	63N42	000300 A			
9	141W00	60N18	000050 D				075W42	45N24	000050 K						
10							073W30	45N30	000050 K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450 A				135W00	64N00	000350 C	071W00	47N00	000050 K
2	064W48	70N00	000200 A				135W00	61N00	000350 D	071W00	48N00	000150 E
3	052W30	47N00	000050 F				118W00	49N00	000350 D	066W00	44N00	000050 K
4	060W00	43N00	000050 K				117W00	59N00	000350 B	069W00	58N00	000100 C
5	082W36	41N42	000150 K				115W00	62N00	000100 C	060W00	53N00	000100 B
6	081W12	44N36	000350 K				100W00	50N00	000350 E	113W30	53N30	000000 E
7	106W00	49N00	000750 E				097W00	50N00	000350 K	106W42	52N12	000000 E
8	123W54	48N18	002250 D				089W00	48N00	000350 K			
9	132W12	52N36	000750 D				079W00	43N00	000050 K			
10	141W00	60N18	000050 D				074W00	45N00	000050 K			

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00201	000286	32	165.0W	170.0W	142.0W	.0	.0	X		N	NTSC-M	000022	Y	105W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	120W00	70N00	000750 A	114W00	51N00	001250 E	123W00	49N12	000050 D	071W12	46N48	000350 K			
2	115W00	70N00	000100 A	110W42	50N00	000750 B	114W00	51N00	001250 E	066W06	45N18	000050 K			
3	101W48	60N00	000750 C	112W48	49N42	000750 E	104W36	50N30	000100 E	063W36	44N42	000050 K			
4	101W18	49N00	000750 E	113W30	53N30	000750 E	097W12	49N54	000350 K	052W42	47N30	000050 F			
5	106W00	49N00	000750 E	106W42	52N12	000150 E	083W00	42N18	000150 K	135W00	61N00	000350 D			
6	114W06	49N00	001750 E	114W00	62N00	000050 C	079W00	43N06	000050 K	063W06	46N12	000050 F			
7	123W00	53N42	002300 B	104W00	50N30	000600 E	079W24	43N42	000150 K	115W00	62N00	000100 C			
8				102W30	51N12	000750 E	076W30	44N18	000050 K	068W30	63N42	000300 A			
9							075W42	45N24	000050 K						
10							073W30	45N30	000050 K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450 A				135W00	64N00	000350 C	071W00	47N00	000050 K
2	064W48	70N00	000200 A				135W00	61N00	000350 D	071W00	48N00	000150 E
3	052W30	47N00	000050 F				118W00	49N00	000350 D	066W00	44N00	000050 K
4	060W00	43N00	000050 K				117W00	59N00	000350 B	069W00	58N00	000100 C
5	082W36	41N42	000150 K				115W00	62N00	000100 C	060W00	53N00	000100 B
6	081W12	44N36	000350 K				100W00	50N00	000350 E	113W30	53N30	000000 E
7	106W00	49N00	000750 E				097W00	50N00	000350 K	106W42	52N12	000000 E
8	123W54	48N18	002250 D				089W00	48N00	000350 K			
9	132W12	52N36	000750 D				079W00	43N00	000050 K			
10	141W00	60N18	000050 D				074W00	45N00	000050 K			

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00202	000287	32	147.0W	151.0W	127.0W	.0	.0	X		N	NTSC-M	000022	Y	105W	.	A08

	06B				07				13				13(CONT)				13(CONT)		
	-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-
1	120W00	70N00	000750	A	114W00	51N00	001250	E	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	115W00	70N00	000100	A	110W42	50N00	000750	B	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	101W48	60N00	000750	C	112W48	49N42	000750	E	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	101W18	49N00	000750	E	113W30	53N30	000750	E	097W12	49N54	000350	K	052W42	47N30	000050	F			
5	106W00	49N00	000750	E	106W42	52N12	000150	E	083W00	42N18	000150	K	135W00	61N00	000350	D			
6	114W06	49N00	001750	E	114W00	62N00	000050	C	079W00	43N06	000050	K	063W06	46N12	000050	F			
7	120W00	53N42	002300	B	104W00	50N30	000600	E	079W24	43N42	000150	K	115W00	62N00	000100	C			
8					102W30	51N12	000750	E	076W30	44N18	000050	K	068W30	63N42	000300	A			
9									075W42	45N24	000050	K							
10									073W30	45N30	000050	K							

	14A				14B				16				16(CONT)			
	-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-	
1	141W00	70N00	000450	A					135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A					135W00	61N00	000350	D	071W00	48N00	000150	E
3	052W30	47N00	000050	F					118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K					117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K					115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K					100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E					097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D					089W00	48N00	000350	K				
9	132W12	52N36	000750	D					079W00	43N00	000050	K				
10	141W00	60N18	000050	D					074W00	45N00	000050	K				

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00203	000288	32	129.0W	140.0W	112.0W	.0	.0	X		N	NTSC-M	000022	Y	105W	.	A08

	06B				07				13				13(CONT)				13(CONT)		
	-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-
1	120W00	70N00	000750	A	114W00	51N00	001250	E	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	115W00	70N00	000100	A	110W42	50N00	000750	B	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	101W48	60N00	000750	C	112W48	49N42	000750	E	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	101W18	49N00	000750	E	113W30	53N30	000750	E	097W12	49N54	000350	K	052W42	47N30	000050	F			
5	106W00	49N00	000750	E	106W42	52N12	000150	E	083W00	42N18	000150	K	135W00	61N00	000350	D			
6	114W06	49N00	001750	E	114W00	62N00	000050	C	079W00	43N06	000050	K	063W06	46N12	000050	F			
7	120W00	53N42	002300	B	104W00	50N30	000600	E	079W24	43N42	000150	K	115W00	62N00	000100	C			
8					102W30	51N12	000750	E	076W30	44N18	000050	K	068W30	63N42	000300	A			
9									075W42	45N24	000050	K							
10									073W30	45N30	000050	K							

	14A				14B				16				16(CONT)			
	-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-		-A-	-B-	-C-	
1	141W00	70N00	000450	A					135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A					135W00	61N00	000350	D	071W00	48N00	000150	E
3	052W30	47N00	000050	F					118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K					117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K					115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K					100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E					097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D					089W00	48N00	000350	K				
9	132W12	52N36	000750	D					079W00	43N00	000050	K				
10	141W00	60N18	000050	D					074W00	45N00	000050	K				

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 — 6

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00302	000289	32	147.0W	151.0W	127.0W	.0	.0	X		N	NTSC-M	000022		105W	.	A08

	06L			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	115W00	70N00	000100	A	099W54	49N48	000350	K	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	095W00	70N00	000350	A	097W12	49N54	000350	K	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	089W00	56N54	000150	C	099W18	53N12	000350	E	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	095W12	52N48	000350	E					097W12	49N54	000350	K	052W42	47N30	000050	F			
5	095W12	49N00	000350	K					083W00	42N18	000150	K	135W00	61N00	000350	D			
6	101W18	49N00	000750	E					079W00	43N06	000050	K	063W06	46N12	000050	F			
7	101W48	60N00	000750	C					079W24	43N42	000150	K	115W00	62N00	000100	C			
8									076W30	44N18	000050	K	068W30	63N42	000300	A			
9									075W42	45N24	000050	K							
10									073W30	45N30	000050	K							

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450	A			135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A			135W00	61N00	000350	D	071W00	48N00	000151	E
3	052W30	47N00	000050	F			118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K			117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K			115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K			100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E			097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D			089W00	48N00	000350	K				
9	132W12	52N36	000750	D			079W00	43N00	000050	K				
10	141W00	60N18	000050	D			074W00	45N00	000050	K				

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00303	000290	32	129.0W	140.0W	112.0W	.0	.0	X		N	NTSC-M	000022		105W	.	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	115W00	70N00	000100	A	099W54	49N48	000350	K	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	095W00	70N00	000350	A	097W12	49N54	000350	K	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	089W00	56N54	000150	C	099W18	53N12	000350	E	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	095W12	52N48	000350	E					097W12	49N54	000350	K	052W42	47N30	000050	F			
5	095W12	49N00	000350	K					083W00	42N18	000150	K	135W00	61N00	000350	D			
6	101W18	49N00	000750	E					079W00	43N06	000050	K	063W06	46N12	000050	F			
7	101W48	60N00	000750	C					079W24	43N42	000150	K	115W00	62N00	000100	C			
8									076W30	44N18	000050	K	068W30	63N42	000300	A			
9									075W42	45N24	000050	K							
10									073W30	45N30	000050	K							

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450	A			135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A			135W00	61N00	000350	D	071W00	48N00	000151	E
3	052W30	47N00	000050	F			118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K			117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K			115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K			100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E			097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D			089W00	48N00	000350	K				
9	132W12	52N36	000750	D			079W00	43N00	000050	K				
10	141W00	60N18	000050	D			074W00	45N00	000050	K				

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00304	000291	32	111.0W	139.0W	97.0W	.0	.0	X		N	NTSC-M	000022		105W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	115W00 70N00	000100	A	099W54 49N48	000350	K	123W00 49N12	000050	D	071W12 46N48	000350	K			
2	095W00 70N00	000350	A	097W12 49N54	000350	K	114W00 51N00	001250	E	066W06 45N18	000050	K			
3	089W00 56N54	000150	C	099W18 53N12	000350	E	104W36 50N30	000100	E	063W36 44N42	000050	K			
4	095W12 52N48	000350	E				097W12 49N54	000350	K	052W42 47N30	000050	F			
5	093W12 49N00	000350	K				083W00 42N18	000150	K	135W00 61N00	000350	D			
6	101W18 49N00	000750	E				079W00 43N06	000050	K	063W06 46N12	000050	F			
7	101W48 60N00	000750	C				079W24 43N42	000150	K	115W00 62N00	000100	C			
8							076W30 44N18	000050	K	068W30 63N42	000300	A			
9							075W42 45N24	000050	K						
10							073W30 45N30	000050	K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00 70N00	000450	A				135W00 64N00	000350	C	071W00 47N00	000050	K
2	064W48 70N00	000200	A				135W00 61N00	000350	D	071W00 48N00	000151	E
3	052W30 47N00	000050	F				118W00 49N00	000350	D	066W00 44N00	000050	K
4	060W00 43N00	000050	K				117W00 59N00	000350	B	069W00 58N00	000100	C
5	082W36 41N42	000150	K				115W00 62N00	000100	C	060W00 53N00	000100	B
6	081W12 44N36	000350	K				100W00 50N00	000350	E	113W30 53N30	000000	E
7	106W00 49N00	000750	E				097W00 50N00	000350	K	106W42 52N12	000000	E
8	123W54 48N18	000250	D				089W00 48N00	000350	K			
9	132W12 52N36	000750	D				079W00 43N00	000050	K			
10	141W00 60N18	000050	D				074W00 45N00	000050	K			

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LISTE DES BESOINS LIST OF REQUIREMENTS LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00403	000292	32	129.0W	140.0W	112.0W	.0	.0		N		NTSC-M	000022	Y	075W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	095W00 70N00	000350	A	089W18 48N24	000350	K	123W00 49N12	000050	D	071W12 46N48	000350	K			
2	086W00 70N00	000150	A	084W24 46N30	000200	K	114W00 51N00	001250	E	066W06 45N18	000050	K			
3	079W30 47N18	000350	E	081W00 46N30	000350	K	104W36 50N30	000100	E	063W36 44N42	000050	K			
4	074W24 45N36	000050	K	079W24 46N18	000350	K	097W12 49N54	000350	K	052W42 47N30	000050	F			
5	078W54 42N54	000350	K	075W42 45N24	000150	K	083W00 42N18	000150	K	135W00 61N00	000350	D			
6	082W36 41N42	000200	K	079W24 43N42	000150	K	079W00 43N06	000050	K	063W06 46N12	000050	F			
7	081W12 44N36	000350	K	081W24 48N24	000350	E	079W24 43N42	000150	K	115W00 62N00	000100	C			
8	093W12 49N00	000350	K	086W54 49N42	000350	E	076W30 44N18	000050	K	068W30 63N42	000300	A			
9	093W12 52N48	000350	E				075W42 45N24	000050	K						
10	089W00 56N54	000200	C				073W30 45N30	000050	K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00 70N00	000450	A				135W00 64N00	000350	C	071W00 47N00	000050	K
2	064W48 70N00	000200	A				135W00 61N00	000350	D	071W00 48N00	000150	E
3	052W30 47N00	000050	F				118W00 49N00	000350	D	066W00 44N00	000050	K
4	060W00 43N00	000050	K				117W00 59N00	000350	B	069W00 58N00	000100	C
5	082W36 41N42	000150	K				115W00 62N00	000100	C	060W00 53N00	000100	B
6	081W12 44N36	000350	K				100W00 50N00	000350	E	113W30 53N30	000000	E
7	106W00 49N00	000750	E				097W00 50N00	000350	K	106W42 52N12	000000	E
8	123W54 48N18	000250	D				089W00 48N00	000350	K			
9	132W12 52N36	000750	D				079W00 43N00	000050	K			
10	141W00 60N18	000050	D				074W00 45N00	000050	K			

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 — 8

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00404	000293	32	111.0W	139.0W	97.0W	.0	.0		N		NTSC-M	000022	Y	075W	.	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	095W00	70N00	000350	A	089W18	48N24	000350	K	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	080W00	70N00	000150	A	084W24	46N30	000200	K	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	079W30	47N18	000350	E	081W00	46N30	000350	K	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	074W24	45N36	000050	K	079W24	46N18	000350	K	097W12	49N54	000350	K	052W42	47N30	000050	F			
5	078W54	42N54	000350	K	075W42	45N24	000150	K	083W00	42N18	000150	K	135W00	61N00	000350	D			
6	082W36	41N42	000200	K	079W24	43N42	000150	K	079W00	43N06	000050	K	063W06	46N12	000050	F			
7	081W12	44N36	000350	K	081W24	48N24	000350	E	079W24	43N42	000150	K	115W00	62N00	000100	C			
8	095W12	49N00	000300	K	086W54	49N42	000350	E	076W30	44N18	000050	K	068W30	63N42	000300	A			
9	095W12	52N48	000350	E					075W42	45N24	000050	K							
10	089W00	56N54	000200	C					073W30	45N30	000050	K							

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450	A			135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A			135W00	61N00	000350	D	071W00	48N00	000150	E
3	052W30	47N00	000050	F			118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K			117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K			115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K			100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E			097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D			089W00	48N00	000350	K				
9	132W12	52N36	000750	D			079W00	43N00	000050	K				
10	141W00	60N18	000050	D			074W00	45N00	000050	K				

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
CAN	CAN00405	000294	32	93.0W	109.0W	93.0W	.0	.0		N		NTSC-M	000022	Y	075W	.	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	095W00	70N00	000350	A	089W18	48N24	000350	K	123W00	49N12	000050	D	071W12	46N48	000350	K			
2	080W00	70N00	000150	A	084W24	46N30	000200	K	114W00	51N00	001250	E	066W06	45N18	000050	K			
3	079W30	47N18	000350	E	081W00	46N30	000350	K	104W36	50N30	000100	E	063W36	44N42	000050	K			
4	074W24	45N36	000050	K	079W24	46N18	000350	K	097W12	49N54	000350	K	052W42	47N30	000050	F			
5	078W54	42N54	000350	K	075W42	45N24	000150	K	083W00	42N18	000150	K	135W00	61N00	000350	D			
6	082W36	41N42	000200	K	079W24	43N42	000150	K	079W00	43N06	000050	K	063W06	46N12	000050	F			
7	081W12	44N36	000350	K	081W24	48N24	000350	E	079W24	43N42	000150	K	115W00	62N00	000100	C			
8	095W12	49N00	000300	K	086W54	49N42	000350	E	076W30	44N18	000050	K	068W30	63N42	000300	A			
9	095W12	52N48	000350	E					075W42	45N24	000050	K							
10	089W00	56N54	000200	C					073W30	45N30	000050	K							

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450	A			135W00	64N00	000350	C	071W00	47N00	000050	K
2	064W48	70N00	000200	A			135W00	61N00	000350	D	071W00	48N00	000150	E
3	052W30	47N00	000050	F			118W00	49N00	000350	D	066W00	44N00	000050	K
4	060W00	43N00	000050	K			117W00	59N00	000350	B	069W00	58N00	000100	C
5	082W36	41N42	000150	K			115W00	62N00	000100	C	060W00	53N00	000100	B
6	081W12	44N36	000350	K			100W00	50N00	000350	E	113W30	53N30	000000	E
7	106W00	49N00	000750	E			097W00	50N00	000350	K	106W42	52N12	000000	E
8	123W54	48N18	002250	D			089W00	48N00	000350	K				
9	132W12	52N36	000750	D			079W00	43N00	000050	K				
10	141W00	60N18	000050	D			074W00	45N00	000050	K				

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00504	000295	32	111.0W	139.0W	97.0W	.0	.0	X			NTSC-M	000022	Y	075W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	080W00 70N00	000150	A	075W48 45N24	000150	E	123W00 49N12	000050	D	071W12 46N48	000350	K			
2	067W24 70N00	000200	A	073W30 45N30	000050	K	114W00 51N00	001250	E	066W06 45N18	000050	K			
3	060W54 66N36	000100	A	071W12 46N48	000050	K	104W36 50N30	000100	E	063W36 44N42	000050	K			
4	057W00 52N00	000350	B	071W00 48N24	000150	K	097W12 49N54	000350	K	052W42 47N30	000050	F			
5	057W00 51N24	000050	B	072W30 45N48	000350	K	083W00 42N18	000150	K	135W00 61N00	000350	D			
6	061W42 47N18	000150	F	068W30 48N24	000350	K	079W00 43N06	000050	K	063W06 46N12	000050	F			
7	071W30 45N00	000750	K	068W24 58N06	000100	C	079W24 43N42	000150	K	115W00 62N00	000100	C			
8	075W00 45N00	000050	K	071W54 45N24	000350	K	076W30 44N18	000050	K	068W30 63N42	000300	A			
9	078W48 46N18	000350	K				075W42 45N24	000050	K						
10	079W30 47N18	000350	E				073W30 45N30	000050	K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00 70N00	000450	A				135W00 64N00	000350	C	071W00 47N00	000050	K
2	064W48 70N00	000200	A				135W00 61N00	000350	D	071W00 48N00	000150	E
3	052W30 47N00	000050	F				118W00 49N00	000350	D	066W00 44N00	000050	K
4	060W00 43N00	000050	K				117W00 59N00	000350	B	069W00 58N00	000100	C
5	082W36 41N42	000150	K				115W00 62N00	000100	C	060W00 53N00	000100	B
6	081W12 44N36	000350	K				100W00 50N00	000350	E	113W30 53N30	000000	E
7	106W00 49N00	000750	E				097W00 50N00	000350	K	106W42 52N12	000000	E
8	123W54 48N18	002250	D				089W00 48N00	000350	K			
9	132W12 52N36	000750	D				079W00 43N00	000050	K			
10	141W00 60N18	000050	D				074W00 45N00	000050	K			

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LISTE DES BESOINS LIST OF REQUIREMENTS LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00505	000296	32	93.0W	109.0W	93.0W	.0	.0	X			NTSC-M	000022	Y	075W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	080W00 70N00	000150	A	075W48 45N24	000150	E	123W00 49N12	000050	D	071W12 46N48	000350	K			
2	067W24 70N00	000200	A	073W30 45N30	000050	K	114W00 51N00	001250	E	066W06 45N18	000050	K			
3	060W54 66N36	000100	A	071W12 46N48	000050	K	104W36 50N30	000100	E	063W36 44N42	000050	K			
4	057W00 52N00	000350	B	071W00 48N24	000150	K	097W12 49N54	000350	K	052W42 47N30	000050	F			
5	057W00 51N24	000050	B	072W30 45N48	000350	K	083W00 42N18	000150	K	135W00 61N00	000350	D			
6	061W42 47N18	000150	F	068W30 48N24	000350	K	079W00 43N06	000050	K	063W06 46N12	000050	F			
7	071W30 45N00	000750	K	068W24 58N06	000100	C	079W24 43N42	000150	K	115W00 62N00	000100	C			
8	075W00 45N00	000050	K	071W54 45N24	000350	K	076W30 44N18	000050	K	068W30 63N42	000300	A			
9	078W48 46N18	000350	K				075W42 45N24	000050	K						
10	079W30 47N18	000350	E				073W30 45N30	000050	K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00 70N00	000450	A				135W00 64N00	000350	C	071W00 47N00	000050	K
2	064W48 70N00	000200	A				135W00 61N00	000350	D	071W00 48N00	000150	E
3	052W30 47N00	000050	F				118W00 49N00	000350	D	066W00 44N00	000050	K
4	060W00 43N00	000050	K				117W00 59N00	000350	B	069W00 58N00	000100	C
5	082W36 41N42	000150	K				115W00 62N00	000100	C	060W00 53N00	000100	B
6	081W12 44N36	000350	K				100W00 50N00	000350	E	113W30 53N30	000000	E
7	106W00 49N00	000750	E				097W00 50N00	000350	K	106W42 52N12	000000	E
8	123W54 48N18	002250	D				089W00 48N00	000350	K			
9	132W12 52N36	000750	D				079W00 43N00	000050	K			
10	141W00 60N18	000050	D				074W00 45N00	000050	K			

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 10

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00506	000297	32	75.0W	107.0W	75.0W		.0	.0	X		NTSC-M	000022	Y	075W .	A08

06B

	-A-	-B-	-C-
1	080W00	70N00	000150 A
2	067W24	70N00	000200 A
3	060W54	66N36	000100 A
4	057W00	52N00	000350 L
5	057W00	51N24	000050 L
6	061W42	47N18	000150 F
7	071W30	45N00	000750 K
8	075W00	45N00	000050 K
9	078W48	46N18	000350 K
10	079W30	47N18	000350 E

07

	-A-	-B-	-C-
1	075W48	45N24	000150 E
2	073W30	45N30	000050 K
3	071W12	46N48	000050 K
4	071W00	48N24	000150 K
5	072W30	45N48	000350 K
6	068W30	48N24	000350 K
7	068W24	58N06	000100 C
8	071W54	45N24	000350 K

13

	-A-	-B-	-C-
1	123W00	49N12	000050 D
2	114W00	51N00	001250 E
3	104W36	50N30	000100 E
4	097W12	49N54	000350 K
5	083W00	42N18	000150 K
6	079W00	43N06	000050 K
7	079W24	43N42	000150 K
8	076W30	44N18	000050 K
9	075W42	45N24	000050 K
10	073W30	45N30	000050 K

13(CONT)

	-A-	-B-	-C-
1	071W12	46N48	000350 K
2	066W06	45N18	000050 K
3	063W36	44N42	000050 K
4	052W42	47N30	000050 F
5	135W00	61N00	000350 D
6	063W06	46N12	000050 F
7	115W00	62N00	000100 C
8	068W30	63N42	000300 A

13(CONT)

	-A-	-B-	-C-

14A

	-A-	-B-	-C-
1	141W00	70N00	000450 A
2	064W48	70N00	000200 A
3	052W30	47N00	000050 F
4	060W00	43N00	000050 K
5	082W36	41N42	000150 K
6	081W12	44N36	000350 K
7	106W00	49N00	000750 E
8	123W54	48N18	002250 D
9	132W12	52N36	000750 D
10	141W00	60N18	000050 D

14B

	-A-	-B-	-C-

16

	-A-	-B-	-C-
1	135W00	64N00	000350 C
2	135W00	61N00	000350 D
3	118W00	49N00	000350 D
4	117W00	59N00	000350 B
5	115W00	62N00	000100 C
6	100W00	50N00	000350 E
7	097W00	50N00	000350 K
8	089W00	48N00	000350 K
9	079W00	43N00	000050 K
10	074W00	45N00	000050 K

16(CONT)

	-A-	-B-	-C-
1	071W00	47N00	000050 K
2	071W00	48N00	000150 E
3	066W00	44N00	000050 K
4	069W00	58N00	000100 C
5	060W00	53N00	000100 B
6	113W30	53N30	000000 E
7	106W42	52N12	000000 E

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00605	000298	32	93.0W	109.0W	93.0W		.0	.0		N	NTSC-M	000022	Y	053W .	A08

06B

	-A-	-B-	-C-
1	064W30	60N36	000200 C
2	055W42	53N30	000050 L
3	052W30	47N30	000050 F
4	052W48	46N36	000050 F
5	059W48	43N54	000050 F
6	065W42	43N24	000050 K
7	069W00	47N12	000350 L
8	067W48	54N24	000750 C
9			
10			

07

	-A-	-B-	-C-
1	066W06	45N18	000050 K
2	066W36	46N00	000050 K
3	064W48	46N06	000050 F
4	063W36	44N42	000050 K
5	060W12	46N12	000050 K
6	063W06	46N12	000050 F
7	060W24	53N24	000350 B

13

	-A-	-B-	-C-
1	123W00	49N12	000050 D
2	114W00	51N00	001250 E
3	104W36	50N30	000100 E
4	097W12	49N54	000350 K
5	083W00	42N18	000150 K
6	079W00	43N06	000050 K
7	079W24	43N42	000150 K
8	076W30	44N18	000050 K
9	075W42	45N24	000050 K
10	073W30	45N30	000050 K

13(CONT)

	-A-	-B-	-C-
1	071W12	46N48	000350 K
2	066W06	45N18	000050 K
3	063W36	44N42	000050 K
4	052W42	47N30	000050 F
5	135W00	61N00	000350 D
6	063W06	46N12	000050 F
7	115W00	62N00	000100 C
8	068W30	63N42	000300 A

13(CONT)

	-A-	-B-	-C-

14A

	-A-	-B-	-C-
1	141W00	70N00	000450 A
2	064W48	70N00	000200 A
3	052W30	47N00	000050 F
4	060W00	43N00	000050 K
5	082W36	41N42	000150 K
6	081W12	44N36	000350 K
7	106W00	49N00	000750 E
8	123W54	48N18	002250 D
9	132W12	52N36	000750 D
10	141W00	60N18	000050 D

14B

	-A-	-B-	-C-

16

	-A-	-B-	-C-
1	135W00	64N00	000350 C
2	135W00	61N00	000350 D
3	118W00	49N00	000350 D
4	117W00	59N00	000350 B
5	115W00	62N00	000100 C
6	100W00	50N00	000350 E
7	097W00	50N00	000350 K
8	089W00	48N00	000350 K
9	079W00	43N00	000050 K
10	074W00	45N00	000050 K

16(CONT)

	-A-	-B-	-C-
1	071W00	47N00	000050 K
2	071W00	48N00	000150 E
3	066W00	44N00	000050 K
4	069W00	58N00	000100 C
5	060W00	53N00	000100 B
6	113W30	53N30	000000 E
7	106W42	52N12	000000 E

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 11

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CAN	CAN00606	000299	32	75.0W	107.0W		75.0W	.0	.0		N	NTSC-M	000022	Y	053W .	A08

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	064W30	60N36	000200 C	066W06	45N18	000050 K	123W00	49N12	000050 D	071W12	46N48	000350 K			
2	055W42	53N30	000050 B	066W36	46N00	000050 K	114W00	51N00	001250 E	066W06	45N18	000050 K			
3	052W30	47N30	000050 F	064W48	46N06	000050 F	104W36	50N30	000100 E	063W36	44N42	000050 K			
4	052W48	46N36	000050 F	063W36	44N42	000050 K	097W12	49N54	000350 K	052W42	47N30	000050 F			
5	059W48	43N54	000050 F	060W12	46N12	000050 K	083W00	42N18	000150 K	135W00	61N00	000350 D			
6	065W42	43N24	000050 K	063W06	46N12	000050 F	079W00	43N06	000050 K	063W06	46N12	000050 F			
7	069W00	47N12	000350 K	060W24	53N24	000350 B	079W24	43N42	000150 K	115W00	62N00	000100 C			
8	067W48	54N24	000750 C				076W30	44N18	000050 K	068W30	63N42	000300 A			
9							075W42	45N24	000050 K						
10							073W30	45N30	000050 K						

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	141W00	70N00	000450 A				135W00	64N00	000350 C	071W00	47N00	000050 K
2	064W48	70N00	000200 A				135W00	61N00	000350 D	071W00	48N00	000150 E
3	052W30	47N00	000050 F				118W00	49N00	000350 D	066W00	44N00	000050 K
4	060W00	43N00	000050 K				117W00	59N00	000350 B	069W00	58N00	000100 C
5	082W36	41N42	000150 K				115W00	62N00	000100 C	060W00	53N00	000100 B
6	081W12	44N36	000350 K				100W00	50N00	000350 E	113W30	53N30	000000 E
7	106W00	49N00	000750 E				097W00	50N00	000350 K	106W42	52N12	000000 E
8	123W54	48N18	002250 D				089W00	48N00	000350 K			
9	132W12	52N36	000750 D				079W00	43N00	000050 K			
10	141W00	60N18	000050 D				074W00	45N00	000050 K			

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
CLM	CLMAND01	000220	16	106.0W	.0W		.0W	.0	.0		Y	NTSC-M	000000	Y	075W .	A30

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	081W43	12N33	000005 P												
2	081W21	13N19	000100 P												
3	071W10	12N00	000001 N												
4	070W40	07N00	000100 N												
5	067W30	06N12	000100 N												
6	066W50	01N20	000100 P												
7	070W00	04S00	000100 N												
8	073W00	02S10	000100 N												
9	078W30	01N35	000001 N												
10	077W13	08N30	000001 N												

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	057W50	18S00	000000 P									
2	067W48	22S48	000000 C									
3	077W13	08N30	000001 N									
4	071W10	12N00	000001 N									
5	080W58	02S13	000010 P									
6	080W05	00N50	000010 P									
7	076W25	18S21	000015 N									
8	081W10	06S05	000015 P									
9	061W51	10N45	000000 P									

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 12

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
EQA	EQACAND1	000221	16	106.0W	.0W		.0W	.0	.0		Y	NTSC-M	000000	Y	075W	.	A30

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	078W52	01N24	000010	P											
2	076W17	00N26	000270	N											
3	075W17	00S07	000250	N											
4	075W13	00S57	000250	N											
5	076W03	02S07	000280	N											
6	079W02	04S58	001300	N											
7	080W26	04S26	000280	P											
8	081W07	02S00	000000	P											
9	080W54	01S04	000010	P											
10	080W05	00N46	000010	P											

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	057W50	18S00	000000	P								
2	067W48	22S48	000000	C								
3	077W13	08N30	000001	N								
4	071W10	12N00	000001	N								
5	080W58	02S13	000010	P								
6	080W05	00N50	000010	P								
7	076W25	18S21	000015	N								
8	081W10	06S05	000015	P								
9	061W51	10N45	000000	P								
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15		08
EQA	EQAGAND1	000222	16	106.0W	.0W		.0W	.0	.0		Y	NTSC-M	000000	Y	090W	.	A30

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	091W19	01N07	000000	N											
2	089W19	01N07	000000	N											
3	088W41	00S36	000000	N											
4	089W19	02S21	000000	N											
5	091W19	02S21	000000	N											
6	092W18	00S36	000000	N											
7															
8															
9															
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	057W50	18S00	000000	P								
2	067W48	22S48	000000	C								
3	077W13	08N30	000001	N								
4	071W10	12N00	000001	N								
5	080W58	02S13	000010	P								
6	080W05	00N50	000010	P								
7	076W25	18S21	000015	N								
8	081W10	06S05	000015	P								
9	061W51	10N45	000000	P								
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 13

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
GRD	GRD00002	000058	16	42.0W	37.5W	46.0W	30.0	2.0	X		N		M	000022	Y	060W	

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	061W45 12N45	000000	N	061W46 12N01	000000	N	061W46 12N01	000000	N						
2	061W10 12N35	000000	N	061W37 12N29	000000	N									
3	061W45 12N35	000000	N												
4	062W00 12N00	000000	N												
5															
6															
7															
8															
9															
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	061W46 12N01	000000	N									
2	061W27 12N29	000000	N									
3	061W37 12N07	000000	N									
4												
5												
6												
7												
8												
9												
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
GRD	GRD00003	000059	04	.0W	77.0W	97.0W	30.0	.0	X		Y		M	000022	Y	060W	A17

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	061W45 12N45	000000	N	061W46 12N01	000000	N	061W46 12N01	000000	N						
2	061W10 12N35	000000	N	061W37 12N29	000000	N									
3	061W45 12N35	000000	N												
4	062W00 12N00	000000	N												
5															
6															
7															
8															
9															
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	061W46 12N01	000000	N									
2	061W27 12N29	000000	N									
3	061W37 12N07	000000	N									
4												
5												
6												
7												
8												
9												
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 14

01 06A 00 02 03 04A OR 04B 05A 05B 09A 09B 10 11 12 15 08
GRD GRD00059 000272 08 .0W 60.0W 97.0W 30.0 .0 X Y M 000022 Y 060W . A17

	06B -A-	-B-	-C-	07 -A-	-B-	-C-	13 -A-	-B-	-C-	13(CONT) -A-	-B-	-C-	13(CONT) -A-	-B-	-C-
1	061W45	12N45	000000 N	061W46	12N01	000000 N	061W46	12N01	000000 N						
2	061W10	12N35	000000 N	061W37	12N29	000000 N									
3	061W45	12N35	000000 N												
4	062W00	12N00	000000 N												
5															
6															
7															
8															
9															
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	14A -A-	-B-	-C-	14B -A-	-B-	-C-	16 -A-	-B-	-C-	16(CONT) -A-	-B-	-C-
1	061W46	12N01	000000 N									
2	061W27	12N29	000000 N									
3	061W37	12N07	000000 N									
4												
5												
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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01 06A 00 02 03 04A OR 04B 05A 05B 09A 09B 10 11 12 15 08
GUY GUY00302 000274 04 38.0W 37.0W 42.0W .0 .0 X Y CRB C-MAC 000024 Y 068W

	06B -A-	-B-	-C-	07 -A-	-B-	-C-	13 -A-	-B-	-C-	13(CONT) -A-	-B-	-C-	13(CONT) -A-	-B-	-C-
1	059W43	08N15	000000 P	058W12	06N49	000000 P	058W12	06N49	000000 P						
2	057W08	06N00	000000 P				059W39	03N29	000000 P						
3	057W19	03N20	000000 P				059W44	07N40	000000 P						
4	058W50	01N15	000000 P				057W15	06N00	000000 P						
5	059W45	03N20	000000 P												
6	061W15	05N55	000000 P												
7															
8															
9															
10															

	14A -A-	-B-	-C-	14B -A-	-B-	-C-	16 -A-	-B-	-C-	16(CONT) -A-	-B-	-C-
1	058W12	06N49	000000 P									
2	059W39	03N29	000000 P									
3	059W44	07N40	000000 P									
4	057W15	06N00	000000 P									
5												
6												
7												
8												
9												
10												

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
JMC	JMC00005	000273	04	38.0W	37.0W	42.0W	.0	.0	X	0	Y		C-MAC	000024	Y	075W	.	

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	078W25	18N30	000000 N				076W50	18N00	000174 N						
2	078W25	18N00	000000 N				077W30	18N05	000348 N						
3	077W15	17N30	000000 N				077W52	18N30	000174 N						
4	077W15	18N40	000000 N												
5	076W30	17N35	000000 N												
6	076W30	18N30	000000 N												
7	078W35	18N15	000000 N												
8	076W00	18N00	000000 N												
9															
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1												
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LISTE DES BESOINS LIST OF REQUIREMENTS LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
PRU	PRUAND01	000223	16	106.0W	.0W	.0W	.0	.0			Y		NTSC-M	000000	Y	075W	.	A30

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	070W23	18S21	000200 E												
2	069W00	12S18	000365 N												
3	070W29	09S26	000365 N												
4	073W59	07S35	000365 N												
5	070W03	02S45	000365 N												
6	075W13	00S02	000365 N												
7	080W19	03S22	000015 P												
8	081W20	04S26	000015 P												
9	081W10	06S05	000015 P												
10	076W07	13S27	000015 N												

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	057W50	18S00	000000 P									
2	067W48	22S48	000000 C									
3	077W13	08N30	000001 N									
4	071W10	12N00	000001 N									
5	080W58	02S13	000010 P									
6	080W05	00S50	000010 P									
7	076W25	18S21	000015 N									
8	081W10	06S05	000015 P									
9	061W51	10N45	000000 P									

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 16

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15	08
USA	USAEH001	000279	32	.0W	100.0W	123.0W	.0	.0	X		N			000000	Y	090W	A 109

06B

	-A-	-B-	-C-
1	069W12 47N24	000000	K
2	066W54 44N48	000000	K
3	069W54 41N30	000000	K
4	081W48 24N24	000000	N
5	085W48 30N12	000000	N
6	097W12 26N00	000000	M
7	103W00 29N00	000000	M
8	104W42 29N42	000000	M
9	104W00 49N00	000000	K
10	095W06 49N24	000000	K

07

	-A-	-B-	-C-
1	089W30 48N00	000000	K
2	090W30 46N54	000000	K
3	087W06 45N48	000000	K
4	087W36 38N42	000000	N
5	084W06 36N36	000000	M
6	084W54 30N42	000000	N
7	076W09 43N03	000000	K
8	084W32 42N44	000000	K
9	080W11 25N47	000000	N
10			

13

	-A-	-B-	-C-
1	066W54 44N48	000000	K
2	064W30 17N45	000000	N
3	155W40 18N55	000000	D
4	178W00 28N00	000000	D
5	168W00 65N00	000000	A
6	156W30 71N00	000000	A
7	068W24 47N18	000000	K
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

14A

	-A-	-B-	-C-
1	066W54 44N48	000000	K
2	064W30 17N45	000000	K
3	155W40 18N55	000000	D
4	178W00 28N00	000000	D
5	168W00 65N30	000000	A
6	156W30 71N00	000000	A
7	068W24 47N18	000000	K
8			
9			
10			

14B

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

16

	-A-	-B-	-C-
1	073W47 48N38	000009	K
2	077W02 38N51	000008	K
3	084W25 33N38	000322	M
4	087W54 41N58	000182	K
5	097W02 32N54	000156	M
6			
7			
8			
9			
10			

16(CONT)

	-A-	-B-	-C-
1			
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9			
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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15	08
USA	USAEH002	000280	32	.0W	100.0W	123.0W	.0	.0	X		N			000000	Y	090W	A 109

06B

	-A-	-B-	-C-
1	069W12 47N24	000000	K
2	066W54 44N48	000000	K
3	069W54 41N30	000000	K
4	081W48 24N24	000000	N
5	085W48 30N12	000000	N
6	097W12 26N00	000000	M
7	103W00 29N00	000000	M
8	104W42 29N42	000000	M
9	104W00 49N00	000000	K
10	095W06 49N24	000000	K

07

	-A-	-B-	-C-
1	089W30 48N00	000000	K
2	090W30 46N54	000000	K
3	087W06 45N48	000000	K
4	087W36 38N42	000000	N
5	084W06 36N36	000000	M
6	084W54 30N42	000000	N
7	076W09 43N03	000000	K
8	084W32 42N44	000000	K
9	080W11 25N47	000000	N
10			

13

	-A-	-B-	-C-
1	066W54 44N48	000000	K
2	064W30 17N45	000000	N
3	155W40 18N55	000000	D
4	178W00 28N00	000000	D
5	168W00 65N00	000000	A
6	156W30 71N00	000000	A
7	068W24 47N18	000000	K
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

13(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

14A

	-A-	-B-	-C-
1	066W54 44N48	000000	K
2	064W30 17N45	000000	K
3	155W40 18N55	000000	D
4	178W00 28N00	000000	D
5	168W00 65N30	000000	A
6	156W30 71N00	000000	A
7	068W24 47N18	000000	K
8			
9			
10			

14B

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

16

	-A-	-B-	-C-
1	073W47 48N38	000009	K
2	077W02 38N51	000008	K
3	084W25 33N38	000322	M
4	087W54 41N58	000182	K
5	097W02 32N54	000156	M
6			
7			
8			
9			
10			

16(CONT)

	-A-	-B-	-C-
1			
2			
3			
4			
5			
6			
7			
8			
9			
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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 17

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
USA	USAEH003	000281	32	.0W	115.0W	142.0W	.0	.0	X		N			000000	Y	090W		A 109

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	069W12 47N24	000000	K	089W30 48N00	000000	K	066W54 44N48	000000	K						
2	066W54 44N48	000000	K	090W30 46N54	000000	K	064W30 17N45	000000	N						
3	069W54 41N30	000000	K	087W06 45N48	000000	K	155W40 18N55	000000	D						
4	081W48 24N24	000000	N	087W36 38N42	000000	N	178W00 28N00	000000	D						
5	085W48 30N12	000000	N	084W06 36N36	000000	M	168W00 65N00	000000	A						
6	097W12 26N00	000000	M	084W54 30N42	000000	N	156W30 71N00	000000	A						
7	103W00 29N00	000000	M	076W09 43N03	000000	K	068W24 47N18	000000	K						
8	104W42 29N42	000000	M	084W32 42N44	000000	K									
9	104W00 49N00	000000	K	080W11 25N47	000000	N									
10	095W06 49N24	000000	K												

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	066W54 44N48	000000	K				073W47 48N38	000009	K			
2	064W30 17N45	000000	K				077W02 38N51	000008	K			
3	155W40 18N55	000000	D				084W25 33N38	000322	M			
4	178W00 28N00	000000	D				087W54 41N58	000182	K			
5	168W00 65N30	000000	A				097W02 32N54	000156	M			
6	156W30 71N00	000000	A									
7	068W24 47N18	000000	K									
8												
9												
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
USA	USAEH004	000282	32	.0W	115.0W	142.0W	.0	.0	X		N			000000	Y	090W		A 109

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	069W12 47N24	000000	K	089W30 48N00	000000	K	066W54 44N48	000000	K						
2	066W54 44N48	000000	K	090W30 46N54	000000	K	064W30 17N45	000000	N						
3	069W54 41N30	000000	K	087W06 45N48	000000	K	155W40 18N55	000000	D						
4	081W48 24N24	000000	N	087W36 38N42	000000	N	178W00 28N00	000000	D						
5	085W48 30N12	000000	N	084W06 36N36	000000	M	168W00 65N00	000000	A						
6	097W12 26N00	000000	M	084W54 30N42	000000	N	156W30 71N00	000000	A						
7	103W00 29N00	000000	M	076W09 43N03	000000	K	068W24 47N18	000000	K						
8	104W42 29N42	000000	M	084W32 42N44	000000	K									
9	104W00 49N00	000000	K	080W11 25N47	000000	N									
10	095W06 49N24	000000	K												

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	066W54 44N48	000000	K				073W47 48N38	000009	K			
2	064W30 17N45	000000	K				077W02 38N51	000008	K			
3	155W40 18N55	000000	D				084W25 33N38	000322	M			
4	178W00 28N00	000000	D				087W54 41N58	000182	K			
5	168W00 65N30	000000	A				097W02 32N54	000156	M			
6	156W30 71N00	000000	A									
7	068W24 47N18	000000	K									
8												
9												
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 18

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
USA	USAWH001	000275	32	.0W	130.0W	157.0W	.0	.0	X		N		000000	Y	120W	A 109

	06B -A-	06B -B-	06B -C-	07 -A-	07 -B-	07 -C-	13 -A-	13 -B-	13 -C-	13(CONT) -A-	13(CONT) -B-	13(CONT) -C-	13(CONT) -A-	13(CONT) -B-	13(CONT) -C-
1	124W42	48N24	000000 D	116W00	49N00	000000 E	066W54	44N48	000000 K						
2	097W15	49N00	000000 K	111W00	49N00	000000 E	064W30	17N45	000000 N						
3	094W30	39N10	000000 K	101W12	45N54	000000 K	155W40	18N55	000000 D						
4	097W12	26N00	000000 M	100W12	43N00	000000 K	178W00	28N00	000000 D						
5	109W00	31N20	000000 M	103W00	29N00	000000 M	168W00	65N30	000000 A						
6	117W06	32N20	000000 E	114W48	32N30	000000 E	156W30	71N00	000000 A						
7	124W12	40N24	000000 D	120W42	34N36	000000 D	068W24	47N18	000000 K						
8	122W48	49N00	000000 D	118W12	44N18	000000 B									
9				111W00	45N00	000000 E									
10															

	14A -A-	14A -B-	14A -C-	14B -A-	14B -B-	14B -C-	16 -A-	16 -B-	16 -C-	16(CONT) -A-	16(CONT) -B-	16(CONT) -C-
1	066W54	44N48	000000 K				104W52	39N45	001609 E			
2	064W30	17N45	000000 N				112W04	33N27	000332 E			
3	155W40	18N55	000000 D				122W23	37N37	000019 D			
4	178W00	28N00	000000 D				118W25	33N56	000087 E			
5	168W00	65N30	000000 A									
6	156W30	71N00	000000 A									
7	068W24	47N18	000000 K									
8												
9												
10												

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LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
USA	USAWH002	000276	32	.0W	130.0W	157.0W	.0	.0	X		N		000000	Y	120W	A 109

	06B -A-	06B -B-	06B -C-	07 -A-	07 -B-	07 -C-	13 -A-	13 -B-	13 -C-	13(CONT) -A-	13(CONT) -B-	13(CONT) -C-	13(CONT) -A-	13(CONT) -B-	13(CONT) -C-
1	124W42	48N24	000000 D	116W00	49N00	000000 E	066W54	44N48	000000 K						
2	097W15	49N00	000000 K	111W00	49N00	000000 E	064W30	17N45	000000 N						
3	094W30	39N10	000000 K	101W12	45N54	000000 K	155W40	18N55	000000 D						
4	097W12	26N00	000000 M	100W12	43N00	000000 K	178W00	28N00	000000 D						
5	109W00	31N20	000000 M	103W00	29N00	000000 M	168W00	65N30	000000 A						
6	117W06	32N20	000000 E	114W48	32N30	000000 E	156W30	71N00	000000 A						
7	124W12	40N24	000000 D	120W42	34N36	000000 D	068W24	47N18	000000 K						
8	122W48	49N00	000000 D	118W12	44N18	000000 B									
9				111W00	45N00	000000 E									
10															

	14A -A-	14A -B-	14A -C-	14B -A-	14B -B-	14B -C-	16 -A-	16 -B-	16 -C-	16(CONT) -A-	16(CONT) -B-	16(CONT) -C-
1	066W54	44N48	000000 K				104W52	39N45	001609 E			
2	064W30	17N45	000000 N				112W04	33N27	000332 E			
3	155W40	18N55	000000 D				122W23	37N37	000019 D			
4	178W00	28N00	000000 D				118W25	33N56	000087 E			
5	168W00	65N30	000000 A									
6	156W30	71N00	000000 A									
7	068W24	47N18	000000 K									
8												
9												
10												

	06A			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	124W42	48N24	000000 D	116W00	49N00	000000 E	066W54	44N48	000000 K						
2	097W15	49N00	000000 K	111W00	49N00	000000 E	064W30	17N45	000000 N						
3	094W30	39N10	000000 K	101W12	45N54	000000 K	155W40	18N55	000000 D						
4	097W12	26N00	000000 M	100W12	43N00	000000 K	178W00	28N00	000000 D						
5	109W00	31N20	000000 M	103W00	29N00	000000 M	168W00	65N30	000000 A						
6	117W06	32N20	000000 E	114W48	32N30	000000 E	156W30	71N00	000000 A						
7	124W12	40N24	000000 D	120W42	34N36	000000 D	068W24	47N18	000000 K						
8	122W48	49N00	000000 D	118W12	44N18	000000 B									
9				111W00	45N00	000000 E									
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	066W54	44N48	000000 K				104W52	39N45	001609 E			
2	064W30	17N45	000000 N				112W04	33N27	000332 E			
3	155W40	18N55	000000 D				122W23	37N37	000019 D			
4	178W00	28N00	000000 D				118W25	33N56	000087 E			
5	168W00	65N30	000000 A									
6	156W30	71N00	000000 A									
7	068W24	47N18	000000 K									
8												
9												
10												

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LISTE DES BESOINS **LIST OF REQUIREMENTS** **LISTA DE SOLICITUDES**

01	06A	00	02	03	04A	OR	04B	05A	05B	09A	09B	10	11	12	15	08
USA	USAWH004	000278	32	.0W	145.0W	170.0W	.0	.0	X		N		000000	Y	120W	A 109

	06B			07			13			13(CONT)			13(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	124W42	48N24	000000 D	116W00	49N00	000000 E	066W54	44N48	000000 K						
2	097W15	49N00	000000 K	111W00	49N00	000000 E	064W30	17N45	000000 N						
3	094W30	39N10	000000 K	101W12	45N54	000000 K	155W40	18N55	000000 D						
4	097W12	26N00	000000 M	100W12	43N00	000000 K	178W00	28N00	000000 D						
5	109W00	31N20	000000 M	103W00	29N00	000000 M	168W00	65N30	000000 A						
6	117W06	32N20	000000 E	114W48	32N30	000000. E	156W30	71N00	000000 A						
7	124W12	40N24	000000 D	120W42	34N36	000000 D	068W24	47N18	000000 K						
8	122W48	49N00	000000 D	118W12	44N18	000000 B									
9				111W00	45N00	000000 E									
10															

	14A			14B			16			16(CONT)		
	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-	-A-	-B-	-C-
1	066W54	44N48	000000 K				104W52	39N45	001609 E			
2	064W30	17N45	000000 N				112W04	33N27	000332 E			
3	155W40	18N55	000000 D				122W23	37N37	000019 D			
4	178W00	28N00	000000 D				118W25	33N56	000087 E			
5	168W00	65N30	000000 A									
6	156W30	71N00	000000 A									
7	068W24	47N18	000000 K									
8												
9												
10												

LISTE DES BESOINS — LIST OF REQUIREMENTS — LISTA DE SOLICITUDES — 07/01/83 — 20

01	06A	00	02	03	04A	OR	04B		05A	05B	09A	09B	10	11	12	15		08
VEN	VENAND02	000269	16	106.0W	.0W		.0W	.0	.0			Y		NTSC-M	000000	Y	068W	.	A30

06B

	-A-	-B-	-C-
1	070W50	12N26	000000 N
2	061W48	10N40	000000 P
3	060W00	08N33	000000 P
4	060W38	04N56	000000 P
5	067W50	05N19	000040 P
6	073W22	09N12	001000 N
7	063W30	16N00	000000 N
8	063W55	15N13	000000 N
9	063W04	15N40	000000 N
10	065W17	00N42	002000 P

14A

	-A-	-B-	-C-
1	057W50	18S00	000000 P
2	067W48	22S48	000000 C
3	077W13	08N30	000001 N
4	071W10	12N00	000001 N
5	080W58	02S13	000010 P
6	080W05	00N50	000010 P
7	076W25	18S21	000015 N
8	081W10	06S05	000015 P
9	061W51	10N45	000000 P
10			

07

	-A-	-B-	-C-

14B

	-A-	-B-	-C-

13

	-A-	-B-	-C-

16

	-A-	-B-	-C-

13(CONT)

	-A-	-B-	-C-

16(CONT)

	-A-	-B-	-C-

13(CONT)

	-A-	-B-	-C-

ANNEX 2

TEXTS OF CLARIFICATIONS AND INFORMATION ON REQUIREMENTS RECEIVED FROM DELEGATIONS AND REPRODUCED AS REMARKS IN THE SERIES A BEGINNING A101

A101 BOLAND01
CLMAND01
EQACAND1
EQACAND1
PRUAND01
VENAND02

1. Box 02 for each of the beams should read "16".

2. Box 08 should be deleted for all the beams.

3. Observation A30 should be replaced by the attached text :

"A30 The service channels requested for each of the six service areas BOLIFRB1, CLM00001, EQAC0001, EQAG0001, PRU00001 and VEN01VEN, corresponding to the orbital position 106°W, must be such that the six service areas together be considered as one greater service area to which 16 different channels should be assigned. For planning purposes, this is equivalent to having shaped beams for one greater service area."

.....

A102 ATNBEAM1
ATNSOUTH
ATNNORTH

1. Delete IFRB serial number 000028 Beam ATNNORTH completely.

2. IFRB serial number 000027 Beam ATNSOUTH will have "one" beam to cover both Antilles South and Antilles North and be renumbered ATNBEAM1.

The orbit position will change from 95° to 60°.

We will share with France and Denmark.

We will review the number of channels to 8 instead of 16.

.....

A103 CAN00101
CAN00102
CAN00201
CAN00202
CAN00203
CAN00302
CAN00303
CAN00304
CAN00403
CAN00404
CAN00405
CAN00504
CAN00505
CAN00506
CAN00605
CAN00606

As indicated in the Statement of Requirements submitted by Canada to the IFRB in June 1982, Canada has the need to provide service to more than one service area per orbital position.

Specifically, Canada wishes to serve adjacent service areas from given orbital positions, as indicated in the following table :

Service Area	Adjacent Service Areas to be served
CAN1	CAN2
CAN2	CAN1, CAN3
CAN3	CAN2, CAN4
CAN4	CAN3, CAN5
CAN5	CAN4, CAN6
CAN6	CAN5

../..

A103 (cont.) CAN00101 CAN00102 CAN00201 CAN00202 CAN00203 CAN00302 CAN00303 CAN00304 CAN00403 CAN00404 CAN00405 CAN00504 CAN00505 CAN00506 CAN00605 CAN00606

As specified, Canada requests a total of 32 channels, each 24 MHz wide, from each of the six orbital positions, as indicated in its Statement of Requirements.

This requirement might be modelled for plan synthesis and analysis purposes by assuming, for example, that each channel assigned to the CAN3 service area could be radiated from the CAN3 orbital position into a beam serving CAN3, and a beam serving CAN2, and a beam serving CAN4. The interferences between transmission into these three beams from a single orbital position should of course be ignored, and the interferences into other service areas should be indicative of that from a single transmission into the three beams.

.....

A104 CRBBLZ01 CRBJMC01 CRBBAH01 CRBNW001 CRBBER01 CRBSE001

These clarifications on the Caribbean Beam were not included in the first draft Plan. These clarifications will be taken into account in the second draft Plan and are summarized below :

Beam identification

Previous	New	Same beam characteristics as :
CRBNW01	CRBBLZ01 CRBJMC01 CRBBAH01	BLZ00001 (NEW)* BAHIFRB1
CRBBER01	CRBBER01	CBRBER01
CRBSE001	CRBEC001	CRBSE001

The beam CRBNW001 has been replaced by beams CRBBLZ01, CRBJMC01 and CRBBAH01.

* Column 06B : 1 - 081W17 19N16
2 - 081W23 19N16
3 - 077W17 17N05

.....

A105 CHLPAC02 CHLCONT4 CHLCONT5 CHLCONT6 PAQPAC01

I request consideration of all the channels in any service area relating to continental Chile and its Antarctic and island territory, including Easter Island (CHLPAC02, CHLCONT4, CHLCONT5, CHLCONT6, PAQPAC01). This means that for all planning purposes it should be considered as a single service area, to which the 32 channels should be assigned.

.....

A106 GRLDNK01 With reference to Document No. DT/31, paragraph 5, Denmark requests that if possible the four channels for Greenland (GRLDNK01) be placed in the frequency band 12.2 - 12.5 GHz in order to avoid interference between the BSS for Greenland and FSS in Region 1.

.....

A107 GRD00003 Remarks : These four channels can share an orbital position with British Virgin Islands, Antigua and Barbuda, Montserrat, Dominica, St. Christopher-Nevis, Saint Vincent and the Grenadines, Saint Lucia.

.....

A108 GUY00302 Guyana/Jamaica
JMC00005

a) Guyana moves orbital position from 95°W to 38°W.

b) JMC with respect to note All shares four channels at 38°W with GUY and note All is suppressed.

c) All other conditions remain unchanged.

.....

A109 USAEH001 As a result of the decisions taken by Committee 5 at its Plenary Session on
USAEH002 27 June 1983, the United States delegation hereby submits information responsive
USAEH003 to item No. 7 of Document No. DT/31, which was approved by Committee 5.
USAEH004 Item No. 7 calls for administrations to make a selection as to which service
USAWH001 areas and which polarizations are to be assigned for purposes of the analysis
USAWH002 of a plan when more than one option has been specified by an administration in the
USAWH003 submission of its requirements, so that the analysis can be completed in a
USAWH004 single run of the program. As part of the original United States requirements submission, it was stated that the orbit location serving a given service area must be able to also simultaneously serve the adjacent service area. Also, as was clarified in the Plenary Session of Committee 5 on 24 June 1983, coverage of the adjacent service area was to be through the use of a single beam that would cover both service areas. Therefore, in order to be responsive to item No. 7 of DT/31, the United States requirements should be modified as follows :

1. The two United States orbit locations that originally showed coverage of the pacific service area, Alaska, and Hawaii, with the option to cover the mountain service area, should now show coverage of the pacific and mountain service areas combined, as well as service to Alaska and Hawaii through the current Alaska and Hawaii beams.

2. The two orbit locations that originally showed coverage of the mountain service area, with the option to cover the pacific service area should now show coverage of the mountain and pacific service areas combined.

3. The two orbit locations that originally showed coverage of the central service area, with the option to cover the eastern service area should show coverage of the central and eastern service areas combined.

4. The two orbit locations that originally showed coverage of the eastern service area, Puerto Rico, and the United States Virgin Islands, with the option to cover the central service area should now show coverage of the eastern and central service areas combined in one beam and as coverage to Puerto Rico and the Unites States Virgin Islands in another single beam.

../..

A109 (cont.) USAEH001 USAEH002 USAEH003 USAEH004 USAWH001 USAWH002 USAWH003 USAWH004

The combined pacific and mountain service areas and the combined eastern and central service areas can be defined by the following set of polygon and test points. It should be noted that all of the polygon points specified for the combined service areas are contained within the set of originally submitted polygon points.

Combined eastern and central service areas : (polygon points)

	Geographical Coordinates		Rain Climatic Zone
1.	69W12	47N24	K
2.	66W54	44N48	K
3.	69W54	41N30	K
4.	81W48	24N24	N
5.	85W48	30N12	N
6.	97W12	26N00	M
7.	103W00	29N00	M
8.	104W42	29N42	M
9.	104W00	49N00	K
10.	95W06	49N24	K

Combined mountain and pacific service areas : (polygon points)

	Geographical Coordinates		Rain Climatic Zone
1.	124W42	48N24	D
2.	97W15	49N00	K
3.	94W30	39N10	K
4.	97W12	26N00	M
5.	109W00	31N20	M
6.	117W06	32N20	E
7.	124W12	40N24	D
8.	122W48	49N00	D

The following points should be considered as additional test points for the combined eastern/central and mountain/pacific service areas :

Combined eastern and central service areas : (additional test points)

	Geographical Coordinates		Rain Climatic Zone
1.	89W30	48N00	K
2.	90W30	46N54	K
3.	87W06	45N48	K
4.	87W36	38N42	N
5.	84W06	36N36	M
6.	84W54	30N42	N
7.	76W09	43N03	K
8.	84W32	42N44	K
9.	80W11	25N47	N

../..

A109 (cont.) USAEH001 USAEH002 USAEH003 USAEH004 USAWH001 USAWH002 USAWH003 USAWH004 Combined mountain and central service areas : (additional test points)

	Geographical Coordinates	Rain Climatic Zone
1.	116W00 49N00	E
2.	111W00 49N00	E
3.	101W12 45N54	K
4.	100W12 43N00	K
5.	103W00 29N00	M
6.	114W48 32N30	E
7.	120W42 34N36	D
8.	118W12 44N18	B
9.	111W00 45N00	E

I hope that the above listed information will ease the work of the Planning Committee. This is not the configuration that the United States believes will ultimately be implemented within the United States, but it does reflect those minimum changes necessary to comply with the directives of Committee 5 and still be responsive to the earlier and timely-filed requirements of our Administration.

Other information

Box 08

The two orbit locations specified in the preferred arc of 100° - 123° W.L. will also serve Puerto Rico and the United States Virgin Islands, with the full complement of channels available to the eastern half of the United States from those locations.

Boxes 13 and 14

Transportable and fixed earth stations serving these service areas may be located at any point within the territory of the United States from which the satellite is visible.

.....

A110 GRD00059 Remarks :

a) of the original requirement for 32 channels, 4 channels have been transferred to orbital position -92° on the basis of sharing with British Virgin Islands, Montserrat, Antigua and Barbuda, St. Christopher-Nevis, Dominica, Saint Lucia, Saint Vincent and the Grenadines;

b) 20 channels have been deleted;

c) 8 remaining channels still required in the arc -60° to -97°.

.....

A111 BOL00001 I am writing to inform you that my Administration hereby requests that Bolivia be granted four additional channels over and above those which the International Frequency Registration Board has allotted to my country, since the minimum number of 8 is considered insufficient to cover Bolivia's future requirements. This is due to the fact that Bolivia is an extremely large country where three languages are spoken, namely, Aymará, Kechua and Spanish.

We understand that the 8 channels requested by my Administration would not complicate planning.

With respect to the designation of the orbital arc, my Administration asks that two criteria be taken into account :

- an elevation angle of 40° and the eclipse at 1 a.m.

I trust that this request can be granted, and thank you in advance.

.....

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 145(Rev.1)-E
5 July 1983
Original : English

WORKING GROUP 4B

Planning elements considered by Sub-Working Group 4B-3 and their reference in the Final Acts

The planning elements given in Annex 1 have been considered by Sub-Sub-Working Group 4B-3 and new and/or modified texts have been proposed for the Final Acts (starting 5 July 1983).

In addition, the Sub-Working Group has initiated documentation to bring to the attention of other Working Groups and/or Committees the need to consider specific technical parameters and values in their work of the Conference (see Annex 2).

The following list of items is intended to provide a guide for the work of the Sub-Working Group and a progress report as of today. The Sub-Working Group held a total of 14 meetings.

The Chairman wishes to express his most sincere gratitude to all members of Sub-Working Group 4B-3 for their hard work and their spirit of cooperation which prevailed throughout the discussions.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

Annexes : 2

A N N E X 1

TECHNICAL PARAMETERS

Technical Parameter	Conference Document No.	Section of the Final Acts
Down-Links		Annex 6 of Part I
Carrier-to-noise ratio	102	3.3
Figure of merit of receiver G/T	112	3.6
Down-link power flux-density PFD	112	3.16
Number of channels	98	3.5.1
Co-channel and adjacent channels protection ratios	98	3.4
Adjacent channel protection ratio template	98	3.4
Type of modulation	113	3.1
Feeder Links		Annex 3 of Part II
Translation frequency	135	3.1
Carrier-to-noise ratio	137	3.2
Carrier-to-interference ratio	139	3.3
Transmit antenna diameter	138	3.4.1
Transmit antenna efficiency	134	3.4.3
Transmitted power	158	3.5
System noise temperature	130	3.7
Automatic gain control	129	3.9
Power control	148	3.10
Site diversity	147	3.11
Depolarization compensation	128	3.12
Minimum separation between satellites	136	3.13
Satellite receiver filtering	139	3.3

ANNEX 2

NOTES FROM WORKING GROUP 4 TO OTHER WORKING GROUPS AND/OR COMMITTEES

Purpose	Other Working Groups and/or Committees	Conference Document
Minimum orbital separation between nominally co-located satellites	5 and 6	115
Minimum orbital separation between space stations of different administrations	5	116
Need for coordination between co-located satellites	6	151
Satellite receive filtering	5	140
Need for coordination between feeder feeder link earth stations	6	141
Feeder link power control	4C	149

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 145-E
5 July 1983
Original : English

WORKING GROUP 4B

Planning elements considered by Sub-Working Group 4B-3 and their reference in the Final Acts

The planning elements given in Annex 1 have been considered by Sub-Sub-Working Group 4B-3 and new and/or modified texts have been proposed for the Final Acts (starting 4 July 1983).

In addition, the Sub-Working Group has initiated documentation to bring to the attention of other Working Groups and/or Committees the need to consider specific technical parameters and values in their work of the Conference (see Annex 2).

The following list of items is intended to provide a guide for the work of the Sub-Working Group and a progress report as of today.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

Annexes : 2

A N N E X 1

TECHNICAL PARAMETERS

Technical Parameter	Conference Document No.	Section of the Final Acts
Down-Links		Annex 6 of Part I
Carrier-to-noise ratio	102	3.3
Figure of merit of receiver G/T	112	3.6
Down-link power flux-density PFD	112	3.16
Number of channels	98	3.5.1
Co-channel and adjacent channels protection ratios	98	3.4
Adjacent channel protection ratio template	98	3.4
Type of modulation	113	3.1
Feeder Links		Annex 3 of Part II
Translation frequency	135	3.1
Carrier-to-noise ratio	137	3.2
Carrier-to-interference ratio	139	3.3
Transmit antenna diameter	138	3.4.1
Transmit antenna efficiency	134	3.4.3
Transmitted power	DL/39	3.5
System noise temperature	130	3.7
Automatic gain control	129	3.9
Power control	DL/43	3.10
Site diversity	DL/44	3.11
Depolarization compensation	128	3.12
Minimum separation between satellites	136	3.13
Satellite receiver filtering	139	3.3

ANNEX 2

NOTES FROM WORKING GROUP 4 TO OTHER WORKING GROUPS AND/OR COMMITTEES

Purpose	Other Working Groups and/or Committees	Conference Document
Minimum orbital separation between nominally co-located satellites	5 and 6	115
Minimum orbital separation between space stations of different administrations	5	116
Need for coordination between co-located satellites	6	DL/46
Satellite receive filtering	5	140
Need for coordination between feeder feeder link earth stations	6	144
Feeder link power control	4C	DL/41

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 146-E
5 July 1983
Original : English

PLENARY MEETING

MINUTES

OF THE

THIRD PLENARY MEETING

Thursday, 23 June 1983, at 1435 hrs

Chairman : Mr. L. VALENCIA (Mexico)

Subjects discussed :		Document No.
1.	Second report of Committee 5	65, 45(Rev.2)
2.	Oral reports by Committee Chairmen on the organization and progress of their work	-
3.	Approval of the minutes of the first Plenary Meeting	59
4.	Revised List of Requirements	16(Rev.)
5.	Statements concerning equitable access to the geostationary satellite orbit	-

1. Second report of Committee 5 (Documents Nos. 65, 45(Rev.2))

1.1 The Chairman of Committee 5 introduced Document No. 45(Rev.2), which contained the planning principles adopted by the Committee as a basis for the development of the first draft Plan. "Assignment", "Assignments" and "Assigning" appeared between square brackets because the question of the correctness of their use was still under consideration in Committee 6.

Document No. 45(Rev.2) was approved.

2. Oral reports by Committee Chairmen on the organization and progress of their work

2.1 The Chairman of Committee 2 said that delegations' credentials were being examined by the group set up for that purpose. Those delegations which had not yet submitted credentials were requested to do so as soon as possible.

2.2 The Chairman of Committee 3 said that his Committee would be submitting a report to the next Plenary Meeting.

2.3 The Chairman of Committee 4 said that at its meeting the previous day, the Committee had adopted a number of documents emanating from its Working Groups, all of which were working very intensively. Working Group A was currently focusing most of its attention on rain attenuation and hoped to present its conclusions to the Committee's next meeting for approval. Working Group B had set up three Sub-Groups whose findings were also expected to be ready for consideration at the next meeting. Working Group C was well on the way towards reaching consensus on many of the issues referred to it. In short, good progress had been made and he was confident that the Committee would complete the greater part of its work at its next meeting.

2.4 The Chairman of Committee 5 said that since the expiry of the deadline set for the submission of requirements, Antigua had submitted its own requirements in replacement of those submitted on its behalf by the IFRB, and Paraguay had sent in a modification to one of its coordinates. The changes involved in both cases were very minor and did not affect the ellipse in any way, but a decision was required from the Plenary Meeting as to whether or not they should be accepted.

Errors had been noted in the time zone longitude data submitted by some administrations; delegations were requested to make the necessary checks with a view to ensuring that no such errors subsisted.

The Committee had set up a Working Group to be in charge of Plan development. That Working Group had in turn established a Drafting Group to be directly involved with the generation of the Plan.

Within the next two or three days, it was hoped to issue an unofficial document containing the results of the first planning exercise carried out in Committee 5. Assuming that the work of Committee 4 proceeded according to schedule, the first draft Plan should be ready in the second half of the following week, the second draft towards the beginning of the fourth week of the Conference and the final version perhaps by the end of that same week.

2.5 The Chairman said that if he heard no objection, he would take it that the minor modifications to the original List of Requirements to which the Chairman of Committee 5 had referred were acceptable.

It was so agreed.

2.6 Following comments by the delegates of Brazil and Colombia on the existence of errors and ambiguities in some of the data in the revised List of Requirements issued after the expiry of the deadline, the Chairman said that any delegation which was not satisfied with the presentation of its requirements in the revised list should so inform the Technical Secretary of the Conference.

2.7 Responding to questions and comments by the delegates of Colombia and Venezuela on the manner in which later modifications to the revised List of Requirements would be handled, the Secretary-General observed that the deadline fixed by Committee 5 had referred to the submission of basic requirements. During the planning process, however, the need to introduce modifications would arise as the draft Plan was discussed and reviewed. Such modifications of an evolutionary nature would not be subject to a deadline. However, any other modifications to basic requirements would need to be considered in Committee 5, and related fundamental issues could be raised either in that Committee or in the Plenary Meeting under the appropriate agenda item.

2.8 The delegate of Venezuela said that it was absolutely essential to leave open the possibility of introducing minor changes during planning, in order to facilitate the exercise.

2.9 The Vice-Chairman of the IFRB said that the IFRB officials dealing with the requirements had been told that corrections which had no impact on the Plan could be entered without undergoing any formalities. Corrections or modifications received, which had possible implications for planning, would be submitted by the Technical Secretary of the Conference to Committee 5 for consideration. As the Chairman had said, delegations which found discrepancies between the revised list and their own submissions should contact the Technical Secretary so that the appropriate action could be taken in consultation with the Chairman of Committee 5.

2.10 The Chairman said that if he heard no objection, he would take it that delegations could agree to proceed along the lines suggested by the Vice-Chairman of the IFRB.

It was so agreed.

2.11 The Chairman said he had been advised by the Chairman of Committee 6 that progress of work in that Committee was not such as to warrant a report at the present time.

2.12 The Chairman of Committee 7 said that the first meeting of his Committee had been devoted to questions concerning its constitution and the organization of its work. Committees 4, 5 and 6 had each been asked to set up a small Drafting Group to prepare texts for submission to Committee 7. It should be noted that there was still some doubt concerning the form which the Final Acts of the Conference would take. Unless a final decision was taken fairly soon, some of the texts transmitted to Committee 7 would almost certainly give rise to difficulties.

2.13 The Secretary-General said that the matter which the Chairman of Committee 7 had raised was a very complex one. The best course would perhaps be for a coordination meeting to be held between the Chairmen of Committees 4, 6 and 7 after which the question would be discussed in the Steering Committee with a view to preparing a Recommendation for submission to the Plenary Meeting.

2.14 The delegate of Argentina said that she would have no objection to following such a procedure. However, it should be borne in mind that issues of principle and substance might be involved and that any such issues would need to be considered by all the delegations attending the Conference, rather than by the Steering Committee alone.

2.15 The Chairman said that if he heard no objection, he would take it that the procedure suggested by the Secretary-General was acceptable, on the understanding that the previous speaker's comments would be taken into account by Committee 1.

It was so agreed.

3. Minutes of the First Plenary Meeting (Document No. 59)

Approved.

4. Revised List of Requirements (Document No. 16(Rev.))

4.1 The delegate of Argentina expressed his consternation that his country's list of requirements as submitted originally in Document No. 16 had been curtailed and asked for an explanation. He had understood that the planning exercises were to be based on the requirements submitted by administrations. Since his Government had not been consulted, such unilateral action constituted a violation of the ITU's international mandate.

4.2 The Vice-Chairman of the IFRB said that the Board had acted in accordance with the Convention and the Radio Regulations, the Preamble to which stipulated that the application of the provisions of the Regulations by the permanent organs of the ITU did not imply the expression of any opinion whatsoever on the part of the Union concerning the sovereignty or legal status of any country, territory or geographical area.

The Board had received a requirement from Argentina which it had published as notified by an administration. At the Second Plenary Meeting, the United Kingdom delegation had presented a statement to the effect that it had the authority over the territory in question and would request the IFRB to withdraw that entry from the list of requirements. The Board noted that no objection had been raised at that time to the above-mentioned statement, and noting that the notifications had to be presented by the administration having the authority over the territory in question, had subsequently informed the United Kingdom that it would act upon the request, in accordance with Resolution No. 1 of WARC-79, and the practice of the Board. In so doing, it considered that it had acted in keeping with the Convention, the Radio Regulations and the proceedings of the Second Plenary Meeting.

If the Conference so decided, the requirement could be reinstated but that was a decision to be taken by the Conference itself and not by the IFRB.

4.3 The delegate of Argentina requested the reinsertion of the requirement in question in the list submitted by his Administration so that the planning exercise would be correct. The wording quoted by the Vice-Chairman of the IFRB, although apparently simple, led to a delicate situation and his country would reply to the ITU in writing giving its comments on the Resolution quoted and on the current practice of the ITU.

4.4 The delegate of the United Kingdom emphasized that the United Kingdom request to the IFRB did not relate to the dispute over sovereignty, which did not fall within the scope of the present Conference, but to the correct application of ITU procedures and respect of principles contained in the Convention and in the Radio Regulations.

4.5 The delegate of Argentina said that it was certainly not his intention to stray into the political aspects of the question, but the technical problem must be solved in order to ensure that the resulting plan was just and fair.

4.6 The delegate of the United Kingdom said that if the action requested of the IFRB led to undesirable technical and practical consequences, his delegation was at the service of the Board to seek a way of solving the difficulties.

4.7 The Vice-Chairman of the IFRB said that the IFRB was at the disposal of both the Argentina and United Kingdom delegations to carry out a technical study and the Plenary Meeting would then be called upon to decide on a solution for including the test point into the calculations.

4.8 The delegate of Argentina said he was not authorized to reply immediately but would suggest that after the Plenary Meeting he and his legal advisers should begin to discuss the matter with the Vice-Chairman of the IFRB. However, it would be incorrect to interpret that readiness to initiate a discussion as acceptance of the unilateral curtailment of his country's list of requirements, which was out of the question.

The above suggestion was adopted.

5. Statements concerning equitable access to the geostationary satellite orbit

5.1 The delegate of Ecuador made the statement reproduced in Annex 1.

5.2 The delegate of Colombia made the statement reproduced in Annex 2.

5.3 The delegate of the United States said that his delegation had not been prepared to review the entire history of the resolutions passed in various bodies of the United Nations with regard to the very important issue of access to the geostationary satellite orbit. The United States position on each of them was however, well-known. The United States had expressed support for the fundamental principle of equitable access both in the United Nations and in the ITU and had

stated for the record on many occasions its concern regarding any sovereignty of outer space. The debate had been going on for some time in the United Nations Committee for the Peaceful Uses of Outer Space and the United States understood the position taken by the equatorial countries but it had found itself unable in the past, and still unable at present, to subscribe to that concept.

The meeting rose at 1640 hours.

The Secretary-General :

R.E. BUTLER

The Chairman :

L. VALENCIA

Annexes : 2

ANNEX 1

STATEMENT BY THE DELEGATION OF ECUADOR

"Since this is the first Plenary Meeting of the Broadcasting-Satellite Conference in Region 2 since the expiry of the deadline for the submission of applications for orbital positions by the Administrations in Region 2 and since Document No. 16(Rev.) containing the list of orbital positions was circulated, the delegation of Ecuador wishes to make the following statement :

Ecuador has consistently upheld its rights as an equatorial country over the segments of the geostationary satellite orbit which correspond to its own mainland and offshore territories.

That position has been affirmed in the appropriate United Nations forums and at meetings held by the equatorial countries, and has been reflected in the instruments endorsed by the States concerned.

The delegation of Ecuador now wishes to reiterate its position to safeguard its rights over these orbital segments.

The delegation of Ecuador considers that any occupation of the geostationary satellite orbit which conflicts with the rights of the equatorial countries, irrespective of the nature or duration of such occupation, can neither affect the position of the principles upheld by those countries nor constitute a valid precedent in law.

Moreover, in keeping with the principles maintained by the equatorial countries, the delegation of Ecuador attaches special importance to the application of the requirement of prior authorization as a proper means of ensuring compliance with the rights of the equatorial countries and considering the needs of other countries, especially the developing countries in Region 2.

This statement is made without prejudice to the position of the Ecuadorian delegation concerning the conclusions and Final Acts of this Conference."

ANNEX 2

STATEMENT BY THE DELEGATION OF COLOMBIA

"We have taken cognizance of Document No. 16 (Rev.) of 21 June 1983, containing the revised list of requirements received by the International Frequency Registration Board to be negotiated at the Conference.

Under Administrative Council Resolution 856, the question is to assign frequencies and orbital positions to the broadcasting-satellite service in Region 2 (the Americas).

In its statement of requirements which also appears in Document No. 16 (Rev.), the Colombian Administration stated its position with regard to assignments, which we now reaffirm. The delegation of Colombia notes that some Administrations of the Region have stated their wish to use orbital positions located within the Colombian geostationary arc or their preferred orbital arc might lead to the assignment of a position above our own country's geostationary arc.

In accordance with the position upheld by Colombia ever since the statement made at the XXXth United Nations General Assembly in 1976, we are prepared to contribute to equitable regional planning in accordance with the principles approved at the Vienna Space Conference, the United Nations General Assembly and the provisions of the ITU Nairobi Convention. We trust that account will also be taken of the principles set out in our reply to the requirements form, as indicated on page 4 of Appendix 3 to Document No. 16 (Rev.), particularly with regard to the prior authorization mentioned therein.

Obviously, this regional meeting will not take decisions on, nor has it responsibility for, matters affecting sovereignty over the geostationary orbit since these are questions for other bodies, particularly the Sub-Committee on Outer Space and the United Nations General Assembly itself.

There occurred last year two events of major significance which should be taken into account, since they constitute guidelines of the new international law on the subject and the regulations that can be applied by the ITU.

The technical and scientific definitions and specifications concerning the geostationary orbit laid down at Vienna will, if endorsed by the General Assembly, constitute the framework of the new International Space Law. As the records show, they take into account the position of the equatorial countries.

For instance, paragraph 284 of the Vienna Conference, Final Report, states that the States members of the ITU should continue to formulate criteria for the more equitable and efficient use of the geostationary orbit and the frequency spectrum and develop planning methods and/or provisions based on the real present and future requirements of each country. It went on to state that this planning method should allow for the specific needs of the developing countries, as well as the special geographical situation of certain countries.

The Nairobi Convention will come into force on 1 January 1984 and its provisions on the subject have substantially modified Articles 10 and 33 so far as our proposals are concerned. For instance :

Article 10 on the duties of the International Frequency Registration Board reads as follows :

67 c) To furnish advice to Members with a view to the operation of the maximum practicable number of radio channels in those portions of the spectrum where harmful interference may occur, and with a view to the equitable, effective and economical use of the geostationary satellite orbit, taking into account the needs of Members requiring assistance, the specific needs of developing countries, as well as the special geographical situation of particular countries.

Article 33, which is a substantive provision concerning the rational use of the frequency spectrum and the geostationary satellite orbit, reads as follows :

> In using frequency bands for space radio services Members shall bear in mind that radio frequencies and the geostationary satellite orbit are limited natural resources and that they must be used efficiently and economically, in conformity with the provisions of the Radio Regulations, so that countries or groups of countries may have equitable access to both, taking into account the special needs of the developing countries and the geographical situation of particular countries.

Both texts should be borne in mind in solving any difficulties in this planning exercise. In addition, the non-aligned and developing countries have reached a consensus on this matter to the effect that the geostationary orbit should be used for the benefit of all so as to guarantee fairness and, in particular, to ensure the observance of the rights and needs of the developing and the equatorial countries.

The fundamental principles are : peaceful use, non-military use, or the use of outer space for non-aggressive purposes or purposes which endanger mankind, respect for the security of all States, the right of the developing countries to exploit their own natural resources, recognition of the existence of technical, scientific and financial inequalities, fairness, and the desirability of regional and international cooperation.

As this planning exercise for the broadcasting-satellite service in the Americas begins, I wish explicitly to reiterate the Colombian position on behalf of my delegation."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 147-E
5 July 1983
Original : English

Source : Document No. DL/44

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.11 OF SECTION 2 OF THE FINAL ACTS

3.11 Site diversity

Site diversity refers to the alternate use during rain of two or more transmitting earth stations which may be separated by sufficient distance to ensure uncorrelated rainfall conditions.

The use of site diversity is permitted and is considered to be an effective technique for maintaining high carrier-to-noise ratio and carrier-to-interference ratio during periods of moderate to severe rain attenuation. However, the plan is not based on the use of site diversity.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 148(Rev.1)-E
8 July 1983
Original : English

Source : Document No. DL/43

WORKING GROUP 4B

PROPOSED NEW PARAGRAPH 3.10 OF SECTION II OF THE FINAL ACTS

3.10 Power control

The plan has been developed without the use of power control.

The use of transmitted power levels higher than those given in paragraph 3.5 is only permitted when rain attenuation exceeds 5 dB at 17 GHz. In such cases, the transmitted power may be increased by the amount that the instantaneous rain attenuation exceeds 5 dB at 17 dB up to the limit given in Table I.

TABLE I

Transmit radio frequency power delivered to the input of the feeder-link earth station antenna permitted in excess of 1,000 watts as a function of elevation angle

Elevation angle of feeder link earth station antenna, degrees	Transmit power permitted in excess of 1,000 watts, dB
0 to 40	0
40 to 50	2
50 to 60	3
60 to 90	5

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 148-E
5 July 1983
Original : English

Source : Document No. DL/43

WORKING GROUP 4B

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TABLE I

Transmitted radio frequency power of the feeder link earth station permitted in excess of 1,000 watts as a function of elevation angle

Elevation angle of feeder link earth station antennas, degrees	Transmitted power permitted in excess of 1,000 watts, dB
0 to 40	0
40 to 50	2
50 to 60	3
60 to 90	5

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 149-E
5 July 1983
Original : English

Source : Document No. DL/41

WORKING GROUP 4B

PROPOSED NOTE FROM WORKING GROUP 4B TO WORKING GROUP 4C
ON THE USE OF POWER CONTROL FOR FEEDER LINKS

Working Group 4B wishes to bring to the attention of Working Group 4C that power control is permitted in the feeder-link plan under the conditions indicated in the proposed new paragraph 3.10 of Section II of the Final Acts.

The proposed new paragraph is given in Document No. [DL/43].

Working Group 4B considers that the use of power control may or may not affect the interservice sharing depending on the differential rain statistics between the wanted and the interfering radio frequency paths. Working Group 4C is therefore invited to consider the possible impact of the use of power control on other services sharing the same frequency band.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 150-E
8 July 1983

LIST OF DOCUMENTS
(Nos. 101 to 150)

C = Committee
PL = Plenary Meeting
WG = Working Group
SWG = Sub-Working Group

No.	Origin	Title	Destination
101	SWG/6A-1	First Report of Sub-Working Group 6A-1 to Working Group 6A	WG/6A
102	WG/4B	Paragraph 3.3 of Annex 8 of Appendix 30	C.4
103	VEN	Draft Recommendation	C.6
104(Rev.1)	SG	Note for information by the Secretary-General on the nature of the Final Acts	C.6
105	WG/4C	Inter- and intra-regional sharing	C.4
106(Rev.1)	WG/4B	Proposed revision to the Radio Regulations (paragraph 3.12)	C.4
107	WG/4B	Outline - Annex 3	C.4
108 + Corr.1	WG/4B	Information document from Committee 4 to Committee 5 - Satellite transmit antenna patterns	C.4
109	C.6	Note from the Chairman of Committee 6	C.4, 5 and 7
110	C.6	First Report of Committee 6 to the Plenary Meeting	PL
111(Rev.1) + Corr.1	WG/4B	Definitions to be added to / Section 1 of Annex 8 of Appendix 30 /	C.4
112	WG/4B	Figure of merit (G/T) and PFD	C.4
113	WG/4B	Proposed changes to the Radio Regulations	C.4
114	WG/4B	Proposed amendment to Appendix 30, Annex 8	C.4
115	WG/4B	Note from Committee 4 to Committees 5 and 6 on orbital separation between nominally co-located satellites	C.5, 6
116(Rev.1)	C.4	Note from Committee 4 to Committee 5 on the orbital separation between space stations of different administrations	C.4, 5

No.	Origin	Title	Destination
117	USA	United States position of the planning values for PFD and G/T	C.4 and 5
118	SWG/4B-1	Progress Report on the work of Sub-Working Group 4B-1	WG/4B
119	WG/4B	Text for Annex 3 of Section 2 of the Final Acts	C.4
120	C.5	Note from the Chairman of Committee 5 to the Chairman of Commitee 6	C.6
121	SWG/5A-1	Result from the first Draft Plan	C.5
122	C.5	Summary Record of the fourth meeting of Committee 5	C.5
123	C.3	Note by the Chairman of Committee 3 to the Chairmen of Committees 4, 5 and 6	C.4, 5, 6
124(Rev.1)	WG/4B	Proposed revisions to Radio Regulations	C.4
125	SWG/6A-1	Second Report of Sub-Working Group 6A 1	WG/6A
126 + Corr.1	VEN	Draft Recommendation	C.4
127(Rev.2) + Corr. 1	SWG/4C-4	Report of Sub-Working Group 4C-4 to Working Group 4C	WG/4C
128	SWG/4B-3	Proposed new feeder link Section 3.12 of Annex 3 of Section II of the Final Acts	WG/4B
129(Rev.1) + Rev.2	SWG/4B-3	Proposed new feeder link Section 3.9 of Annex 3 to Section II of the Final Acts	WG/4B
130	SWG/4B-3	Proposed new feeder link Section 3.7 of Annex 3 to Section II of the Final Acts	WG/4B
131	G	Planning value of PFD in relation to C-MAC television standard for satellite broadcasting	C.4
132	C.5	Fourth Report of Committee 5 to the Plenary Meeting	PL
133	C.5	First series of texts from Committee 5 to the Editorial Committee	C.7

No.	Origin	Title	Destination
134	SWG/4B-3	Proposed new feeder link Section 3.4.3 of Section II of the Final Acts	WG/4B
135	SWG/4B-3	Proposed new paragraph 3.1 of Section II of the Final Acts	WG/4B
136(Rev.1) + Rev. 2 & 3 + Add. 1 (and Rev. 3)	SWG/4B-3	Proposed new paragraph 3.13 of Section II of the Final Acts	WG/4B
137	SWG/4B-3	Proposed new feeder link Section 3.2 of Annex 3, Section II of the Final Acts	WG/4B
138	SWG/4B-3	Proposed new feeder link Section 3.4.1 of Annex 3 of Section II of the Final Acts	WG/4B
139	SWG/4B-3	Proposed new feeder link Section 3.3 of Annex 3 of Section II of the Final Acts	WG/4B
140	SWG/4B-3	Draft Note from Committee 4 to Committee 5 on satellite receive filtering	WG/4B
141	SWG/4B-3	Draft Note from Committee 4 to Committee 6 on the occasional need for coordination between transmitting earth stations	WG/4B
142 + Corr. 1	C.6	Summary Record of the first meeting of Committee 6	C.6
143 + Corr. 1	C.6	Summary Record of the second meeting of Committee 6	C.6
144 + Corr. 1	C.5	Clarifications and information on requirements	C.5
145(Rev.1)	SWG/4B-3	Planning elements considered by Sub-Working Group 4B-3 and their reference in the Final Acts	WG/4B
146	PL	Minutes of the third Plenary Meeting	PL
147	SWG/4B-3	Proposed new paragraph 3.11 of Section 2 of the Final Acts	WG/4B
148 + Rev. 1	SWG/4B-3	Proposed new paragraph 3.10 of Section II of the Final Acts	WG/4B

No.	Origin	Title	Destination
149	SWG/4B-3	Proposed note from Working Group 4B to Working Group 4C on the use of power control for feeder links	WG/4B
150	SG	List of documents	-

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 151-E
5 July 1983
Original : English

Source : Document No. DL/46

WORKING GROUP 4B

PROPOSED NOTE FROM COMMITTEE 4 TO COMMITTEE 6 ON THE NEED FOR COORDINATION BETWEEN NOMINALLY CO-LOCATED SPACE STATIONS OF DIFFERENT ADMINISTRATIONS

Committee 4 wishes to bring to the attention of Committee 6 that there may be a need for the coordination of nominally co-located space stations of different administrations when the assignments include cross-polarized first adjacent channels. This need arises from the provision of a small orbital window of not more than 0.4 degrees centred around the nominal orbital location as indicated in paragraph 3.13.2 of Annex 3 of Section II of the Final Acts (see Document No. 136).

Committee 6 may wish to consider the mechanism for coordination when the above conditions indicate that coordination is required.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 152-E
5 July 1983
Original : English

COMMITTEE 6

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 6

(PROCEDURES)

Monday, 27 June 1983, at 0940 hrs

Chairman : Mr. J. ZAVATTIERO (Uruguay)

Subjects discussed :	Document No.
1. Formal adoption of the report of ad hoc Group 1	46
2. Layout of the Final Acts	74
3. Reports by the Chairmen of Working Groups 6A and 6B	47(Rev.1)
4. Interpretation of the terms "assignment" and "allotment"	-

1. Formal adoption of the report of ad hoc Group 1 (Document No. 46)

The report of ad hoc Group 1 was adopted.

2. Layout of the Final Acts (Document No. 74)

2.1 The Chairman invited the Committee to consider the suggested layout of the Final Acts given in Document No. 74.

2.2 The Vice-Chairman of the IFRB emphasized that the list of contents in Document No. 74 was not exhaustive. In particular, Committee 4 might find it unnecessary to include certain of the annexes and/or wish to add others.

2.3 The delegate of Argentina considered that the third and fourth items listed, namely, "Approval of the Final Acts" and "Entry into force of the Final Acts" should be deleted. In their place, items entitled "Approval of this section of the Final Acts" and "Entry into force of this section of the Final Acts" would be added to each of Sections I and II.

2.4 The Vice-Chairman of the IFRB observed that the date of entry into force of the Plan and associated procedures was to be decided by the 1985 Space Conference. The Final Acts of the current Conference should contain the Plan and associated procedures as well as consequential modifications to the Radio Regulations to be considered by the 1985 Conference. They might also contain any other provisions regarded as essential for the interim period between the end of the present Conference and the entry into force of the Final Acts of the 1985 Conference. The proposal by the delegate of Argentina would have the practical disadvantage of making it possible for different dates to be adopted for the two Plans which, as he understood it, were intended to form a package. In his view, no legal risk would be involved for any country in retaining the layout in Document No. 74.

2.5 The Secretary-General observed that the term "Final Acts" had been used in the 1977 Broadcasting-Satellite Conference in a sense somewhat different from the traditional one, in order to overcome a legal difficulty which had arisen there. The Final Acts signed by delegations at the end of a Conference grouped all the texts adopted by that Conference and usually consisted on the one hand of regulatory provisions requiring subsequent approval by Governments (which had to be notified to the Secretary-General) and, on the other, Resolutions, Recommendations and/or Opinions which did not require such approval. Until it was known more clearly which of the texts produced by the present Conference would be subject to the approval procedure, it might be advisable to place square brackets around the words "Final Acts" in both of the items to which the delegate of Argentina had referred without, however, changing their position in the list of contents.

2.6 Following a discussion in which the delegates of Argentina, Canada, Brazil, the United States of America, Venezuela and Mexico, the Vice-Chairman of the IFRB and the Secretary-General took part, it was agreed to place square brackets around the words "Final Acts" in the third and fourth items of the table of contents.

2.7 The delegate of Canada, referring to Section I, Article 4, drew attention to the fact that a new article, to be numbered 4A, was being developed in Working Group 6A.

2.8 The delegate of France, referring to Articles 9 and 10 of the same section, observed that it might be necessary to modify the titles when more was known about the nature of the relation between the services in question.

2.9 The delegate of the United States of America, referring to Section II, said he assumed that the titles of the various articles and annexes would be subject to alteration in the light of the contents actually adopted.

2.10 Following a short discussion, it was agreed to delete the words "and the Conference so decides" from the note at the end of the table of contents.

The table of contents in Document No. 74, as amended, was approved on the understanding that further modifications might be necessary to bring it into line with the texts adopted.

2.11 The Vice-Chairman of the IFRB, replying to a question by the delegate of the United States of America, said that the procedures to be applied by administrations and the IFRB from the present time up to the entry into force of the Final Acts of the 1985 Conference would be governed by :

a) Resolution No. 33, in accordance with the provisions of Article 12, Appendix 30 and Resolution No. 504;

b) any Resolution that the present Conference might wish to adopt to govern the relationship between the countries present at the Conference, within the framework of Resolution No. 33;

c) any Resolution that the 1985 Conference might adopt for implementation in Region 2 before the entry into force of its Final Acts.

Any ratification by administrations of the Final Acts of the present Conference, except with respect to the interim period to which he had referred, could not be applied by the Board, since such application would be in contravention of Resolution No. 504.

2.12 The delegate of the United States of America said it was still not entirely clear what status the results of the present Conference would have. It would be useful if the Secretariat could prepare an information document in order to help delegations understand the situation better.

2.13 The delegate of Argentina asked whether the Plan to be established at the present Conference would be subject to revision at the 1985 Conference.

2.14 The delegate of Venezuela said that the Secretariat should take account of Resolution No. 1 (PLA/5) of the Nairobi Plenipotentiary Conference when it prepared the information document.

2.15 The Secretary-General said that the 1985 Conference would not have an open-ended mandate to modify the provisions adopted at the present Conference. It would, however, need to satisfy itself that nothing had been done to cause prejudice to the Plan and associated provisions which had been adopted for Regions 1 and 3 and were already part of the Radio Regulations.

2.16 The Vice-Chairman of the IFRB, referring to the down-link Plan, said that as long as the entries did not affect the Regions 1 and 3 Plan in Appendix 30, and the procedures governing the interregional relationship were not modified, the 1985 Conference would have a moral obligation to include that Plan in the Radio Regulations without change. It would not, however, have any obligation to do the same with the feeder link Plan, inter alia because it might decide to plan the 17 GHz band for the fixed-satellite service.

2.17 The delegate of the United States of America said that his Administration expected the 1985 Conference to consider the up-link and down-link results of the present Conference as a package and to adopt the feeder link Plan rather than defer it to a later date. That should be made very clear, if necessary by means of a Resolution addressed to the Administrative Council by the Conference.

2.18 The Secretary-General pointed out that the 1985 Conference had far wider scope for action in respect of the feeder link Plan than of the down-link Plan, although it would naturally have to take account of the work done at the present Conference. The Secretariat would attempt to cover all the points raised during the discussion in the information document which it would be preparing in compliance with the request of the United States delegate*).

3. Report of the Chairmen of Working Groups 6A and 6B (Document No. 47(Rev.1))

3.1 The Chairman of Working Group 6A said that the Group had spent most of its time dealing with some of the key issues expected to be contained in Appendix 30, notably the procedures for down-links and feeder links. A Drafting Group 6A1, which had been formed to work on the Group's texts, had already completed its work on Articles 1 and 2 for the down-link procedures. As Articles 3 and 4 were causing the Working Group more difficulty, a sub-Drafting Group had been formed which had produced a reasonable text, and it was hoped that after some further work that text would be available in all three working languages the following day. The Working Group would, later in the day, work on Article 5 of the down-link Plan, deferring Articles 3 and 4 until the Drafting Group had completed its work, possibly by mid-week.

3.2 The Chairman of Working Group 6B said that his Group had managed to go through all the Articles of the Radio Regulations assigned to it and prepare recommended amendments to bring those Regulations into line with the circumstances which it was hoped would be comprised in the Final Acts of the present Conference. The Working Group's Report was contained in Document No. DT/21. The Working Group was now considering the Resolutions related to procedures and hoped to be able to conclude its work later in the week.

4. Interpretation of the terms "assignment" and "allotment"

4.1 The delegate of Venezuela asked whether the Secretariat was in a position to provide a legal interpretation of the terms "allotment" and "assignment" as requested by his delegation in Document No. 38. The terms still appeared in square brackets in the decisions taken by the present Conference.

4.2 The Legal Adviser made the statement subsequently reproduced as Document No. 97.

4.3 The delegate of Venezuela pointed out that all the references made in Document No. 17, on which the Legal Adviser's statement had been based, had been taken from provisions which existed prior to the entry into force of the Radio Regulations adopted by WARC-79. The Venezuelan Administration was anxious to ensure that such a step should not establish a precedent for the future, and that proper use should be made of the terms defined by WARC-79. He reserved the right to refer to the matter again after analyzing the Legal Adviser's statement in writing.

4.4 The Secretary-General expressed his disagreement with one aspect of the statement by the delegate of Venezuela, and drew particular attention to 12.9.1 of Appendix 30 which stated that the present Conference should draw up a detailed plan providing for a detailed assignment of the orbital positions and frequency channels

*) Subsequently issued as Document No. 104(Rev.1).

available. It therefore appeared that for the down-link Plan the legal situation had been clearly established both by the Legal Adviser and by the agenda adopted by the Administrative Council in full consultation with Members of the region. There was greater flexibility with regard to up-link planning. The approach within the Union to the form of up-link planning acceptable to Members of the Union was only now becoming clearer as a result of CCIR studies and discussions at the present Conference. The doubts expressed at earlier conferences had led the Administrative Council to leave that point of the agenda somewhat open and to refer only to a plan. Furthermore, with up-links, there was no question of an assignment to a particular station, since many countries would operate their links from different points, and access to the satellite might well be via other countries. The term "allotment" might well be appropriate, therefore, and the Conference would have to make its own decision. The statement made by the Legal Adviser should greatly assist the Conference with that decision.

4.5 The Vice-Chairman of the IFRB pointed out that there were on the one hand the provisions of the Radio Regulations and on the other the long-standing practice within the Union which was not defined in the Radio Regulations. Everyone involved in international frequency management knew exactly what was meant by a frequency assignment plan and by a frequency allotment plan. Difficulties probably could have been caused by WARC-79's introduction into the Radio Regulations of a definition. In view of the difficulty of dealing with the problem at the level of a regional administrative conference, he suggested that the present Conference should establish the Plan as indicated in its terms of reference and draft a Recommendation to the 1985 Space Conference, which was more competent to deal with the substance of the problem, indicating the difficulties encountered during the present Conference and requesting it to consider whether the existing definitions should be reviewed or new definitions added to make the meaning of frequency allotment plan and frequency assignment plan very clear.

4.6 The delegate of Venezuela said that although he agreed in principle with that suggestion, he would prefer to see the Secretariat's opinion in writing before fully committing himself. A proposal could then be made to the Plenary to enable the Conference itself to take a decision.

The meeting rose at 1220 hours.

The Secretary :
J.M. AHMAD

The Chairman :
J. ZAVATTIERO

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 153-E
5 July 1983
Original : English

PLENARY MEETING

FIRST REPORT OF COMMITTEE 4 TO THE PLENARY

Up to 5 July 1983, the Committee has met six times and has adopted Documents Nos. 84, 99 and 107 which have been submitted to the Editorial Committee, (see Document No. 154).

S. AGUERREVERE
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 154-E
5 July 1983
Original : English/
French/
Spanish

COMMITTEE 7

FIRST SERIES OF TEXTS FROM COMMITTEE 4
TO THE EDITORIAL COMMITTEE

The following texts, in Document No. 153 adopted by Committee 4, are hereby submitted to the Editorial Committee.

S. AGUERREVERE
Chairman

Annexes : 2

ANNEX 1

(to the Editorial Committee, for information only)

PART II - OUTLINE ANNEX 3

ANNEX 3

Technical data used in establishing the provisions and associated plan and which should be used for their application

1. Definitions

2. Radio Propagation factors

   2.1 Atmospheric absorption
   2.2 Rain attenuation
   2.3 Rain attenuation limit
   2.4 Depolarization

3. Basic technical characteristics

   3.1 Translation frequency
   3.2 Carrier-to-noise ratio
   3.3 Protection ratio
   3.4 Transmitting antenna

      3.4.1 Antenna diameters
      3.4.2 Reference patterns
      3.4.3 Antenna efficiency
      3.4.4 Pointing accuracy

   3.5 Transmitted power
   3.6 Receiving antenna

      3.6.1 Cross-section of receive beam
      3.6.2 Minimum beamwidth
      3.6.3 Reference patterns
      3.6.4 Pointing accuracy

   3.7 System noise temperature
   3.8 Polarization
   3.9 Automatic gain control
   3.10 Power control
   3.11 Site diversity
   3.12 Depolarization compensation
   3.13 Minimum separation between satellites

A N N E X 2

(Texts for inclusion in Final Acts, SAT-83)

PART II - ANNEX 3

REFERENCE PATTERNS OF TRANSMITTING ANTENNA

3.4.2 The co-polar and cross-polar reference patterns of transmitting antennas used for planning in Region 2 are given in Figure X.

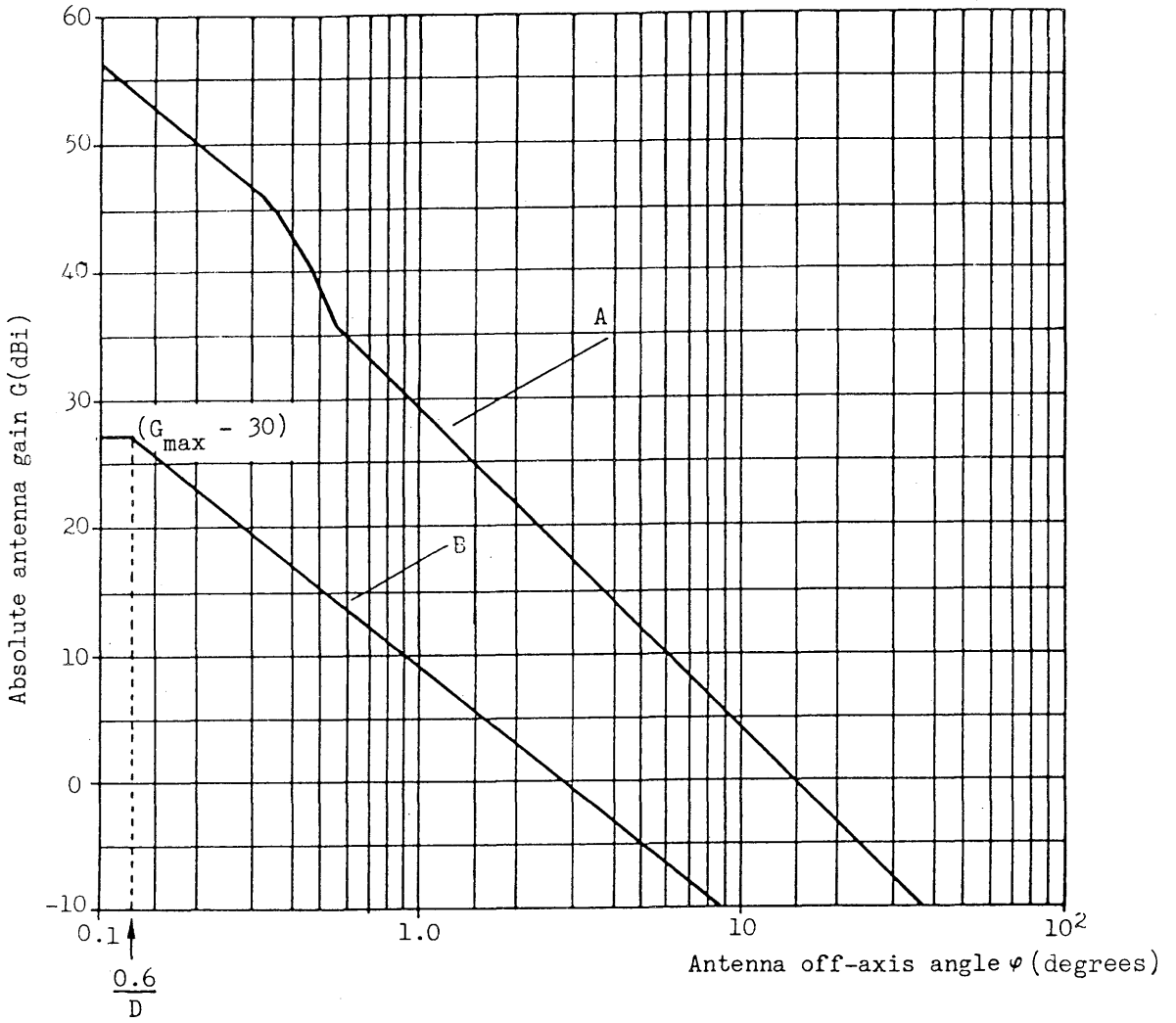

Figure X - Reference patterns for co-polar and cross-polar components for transmitting antennas for Region 2

Curve A : Co-polar component
(dBi relative to isotropic source)

$36 - 20 \log_{10} \varphi$ for $0.1^\circ \leq \varphi < 0.32^\circ$

$51.3 - 53.2 \varphi^2$ for $0.32^\circ \leq \varphi < 0.54^\circ$

$29 - 25 \log_{10} \varphi$ for $0.54 \leq \varphi < 36^\circ$

-10 for $\varphi \geq 36^\circ$

Curve B : Cross-polar component
(dBi relative to isotropic source)

$G_{max} - 30$ for $\varphi < \left(\frac{0.6}{D}\right)^\circ$

$9 - 20 \log_{10} \varphi$ for $\left(\frac{0.6}{D}\right)^\circ \leq \varphi < 8.7^\circ$

-10 for $\varphi \geq 8.7^\circ$

where,

φ = off-axis angle referred to the main-lobe axis;

G_{max} = on axis co-polar gain of the antenna;

D = diameter of the antenna in meters ($D \geq 2.5$).

Note 1 : In the angular range between 0.1° and 0.54° the co-polar gain must not exceed the reference pattern.

Note 2 : In the angular range between 0° and $(0.6/D)^\circ$, the cross polar gain must not exceed the reference pattern.

Note 3 : At larger off axis angles, the gain of 90% of all sidelobe peaks in each of the reference angular windows must not exceed the reference patterns. The reference angular windows are 0.54° to 1°, 1° to 2°, 2° to 4°, 4° to 7°, 7° to 10°, 10° to 20°, 20° to 40°, 40° to 70°, 70° to 100°, 100° to 180°. The first reference angular window for evaluating the cross-polar component should start at $(0.6/D)^\circ$.

FEEDER LINK POLARIZATION

3.8 In Region 2, for the purpose of planning the feeder links, circular polarization is used. However, in the cases where an administration has been allotted all channels of both senses of polarization at a single orbital location, without any polarization constraints with other orbital positions, the type of polarization need not be specified.

3.9 In the cases where there are polarization constraints, use of polarization other than circular is permitted only upon agreement of administrations that may be affected.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 155-E
5 July 1983
Original : English

COMMITTEES 5 AND 6

Note by the Secretary-General

INTERREGIONAL SHARING

I hereby transmit to the Conference a Report by the IFRB concerning the above-mentioned subject.

R.E. BUTLER
Secretary-General

Annex : 1

REPORT BY THE IFRB ON INTERREGIONAL SHARING

1. Introduction

1.1 In the sixth meeting of Committee 5, when Document No. 53 was presented by the IFRB, there was a request that the Board should present to the Conference a document indicating how the Board would apply the interregional sharing criteria contained in Appendix 30 to the Radio Regulations. In addition, it was requested that the same document should include the test points used to protect Regions 1 and 3 services.

1.2 In examining the various sharing possibilities there are three types of interregional sharing :

a) Region 2 Broadcasting-Satellite sharing with Regions 1 and 3 Broadcasting-Satellite Service;

b) Region 2 Broadcasting-Satellite sharing with Regions 1 and 3 Terrestrial Services;

c) Region 2 Broadcasting-Satellite sharing with Regions 1 and 3 Fixed-Satellite Service.

2. Regions 1 and 3 Broadcasting-Satellite Service

2.1 Footnote 1 to paragraph 4.3.1.2 of Appendix 30 states that the Region 2 Plan shall not degrade the protection afforded to the frequency assignments in the Regions 1 and 3 Plan below the limits specified in Appendix 30. The appropriate p.f.d. limits for protecting Regions 1 and 3 Broadcasting-Satellite Service assignments are contained in Annex 4 of Appendix 30. The Board, in applying Annex 4, has used a series of test points which are contained in Annex 1 to the present report and are located within the service areas of the assignments appearing in the Regions 1 and 3 Broadcasting-Satellite Plan. Region 3 does not have to be considered because the upper frequency limit for Region 3 is 12.2 GHz and only Region 1 assignments above 12.2 GHz need to be considered. The p.f.d. limits in Annex 4 are dependent on the orbital separation between the two satellites and with the upper limit being -106 dBW per square metre for 27 MHz. For practical reasons only assignments of the Region 2 Plan with orbital separation less than 19° from Region 1 assignments in the Plan will be examined, except for certain Region 2 beam areas which are in close proximity to service areas in Region 1. These calculations will be based on the e.i.r.p. and beam characteristics of the assignments in the Region 2 Plan and using free space propagation conditions.

3. Regions 1 and 3 Terrestrial Services

3.1 Resolves 2 of Resolution No. 701 states that planning shall take account of the pertinent provisions of Appendix 30, in particular those contained in Annexes 4 and 5. Article 9 of Appendix 30 also refers to Annex 5. Annex 5 applies for the frequency band 12.2 - 12.5 GHz in accordance with Resolves 4 of Resolution No. 31. It also applies for the band 12.5 - 12.7 GHz in accordance with Resolves 5 of Resolution No. 31 until this Conference takes a decision on the limits to be applied for protecting Regions 1 and 3 Terrestrial Services. The Board also notes that the limits in sub-paragraph 2) of Annex 5 do not apply to territories in Region 1 east of 30°E and additional protection may be required.

3.2 In the application of Annex 5, the test points contained in Annex 2 to the present report will also be used to calculate the p.f.d. over the territories of Regions 1 and 3 in order to compare it with the limits contained in Annex 5. Where the per carrier p.f.d. exceeds the spectral power flux-density limits these will be identified in the Board's analysis. In these cases special measures such as energy dispersal and additional antenna discrimination will be necessary to comply with the interregional sharing criteria. The p.f.d. will be calculated on the basis of free space propagation as all references in Appendix 30 and also Article 28 and Appendix 29 to the Radio Regulations where slant path propagation is used are based on free space propagation conditions.

4. Regions 1 and 3 Fixed-Satellite Service

4.1 Resolution No. 700 covers the requirements to protect Regions 1 and 3 Fixed-Satellite systems from the Region 2 Broadcasting-Satellite system. In the application of Resolution No. 700, the Board will examine the entries in the Region 2 Plan using Appendix 29 against any Regions 1 and 3 Fixed-Satellite assignment recorded in the Master Register or in the process of being coordinated under RR 1060. In addition, the Board will calculate the p.f.d. from entries in the Region 2 Plan and compare them with the limits in paragraph 4 of Annex 1 of Appendix 30.

4.2 If as a result of the Appendix 29 calculations the ΔT exceeds 4%, then those assignments of Region 2 will be entered in the Plan subject to coordination with the administration having assignments when the ΔT exceeds 4%. The Conference should indicate to the Board what action is to be taken in case an agreement on coordination is not reached.

5. Calculations

5.1 It should be noted that an entry in the Region 2 Plan exceeding the p.f.d. limits over Regions 1 and 3 or which degrades a broadcasting-satellite station in Region 1 or 3, would be considered as not in conformity with the Radio Regulations. Its consideration by the 1985 WARC would probably be subjected to agreement with the administration(s) concerned.

5.2 For the examination with respect to Regions 1 and 3 Broadcasting-Satellite system and Regions 1 and 3 Terrestrial Services (parts 2 and 3 of this document), the Board will endeavour to make these calculations during the course of the Conference and advise the Conference of the results of the analysis.

5.3 The calculations made during the course of the Conference may need to be done in greater detail after the Conference, and in the event the Board finds that the p.f.d. limits are exceeded or that an assignment in the Region 2 Plan degrades the service of an assignment in the Regions 1 and 3 Plan, Committee 6 should provide some guidance for further action by the Board.

5.4 With respect to the examination conducted in accordance with part 4 of this document, the Board may not be able to complete this examination during the

course of the Conference, therefore, the Board will conduct these examinations after the Conference. In the event that coordination of some of the assignments in the Region 2 Plan is required with Regions 1 and 3 Fixed-Satellite system assignments in accordance with Resolution No. 33, Committee 6 might need to address the question.

Y. KURIHARA
Chairman of the IFRB

Annex 1 : Region 1 test points used for determining compliance with limits in Annex 4 of Appendix 30

Annex 2 : Regions 1 and 3 test points used for determining compliance with limits in Annex 5 of Appendix 30

ANNEXE 1 - ANNEX 1 - ANEXO 1

POINTS DE CALCUL DE LA REGION 1 UTILISES POUR DETERMINER SI LES LIMITES FIGURANT A L'ANNEXE 4 A L'APPENDICE 30 SONT RESPECTEES

REGION 1 TEST POINTS USED FOR DETERMINING COMPLIANCE WITH LIMITS IN ANNEX 4 OF APPENDIX 30

PUNTOS DE PRUEBA DE LA REGIÓN 1 UTILIZADOS PARA DETERMINAR EL CUMPLIMIENTO DE LOS LÍMITES INDICADOS EN EL ANEXO 4 AL APÉNDICE 30

Symbole du pays et numéro de référence de l'IFRB Country symbol and IFRB Serial number Símbolo de país y número de orden de la IFRB	Position nominale sur l'orbite Nominal orbital position Posición orbital nominal	Longitude et latitude du point de calcul Longitude and latitude of test point Longitud y latitude del punto de cálculo
COG235B	-13.00	010E36 03S24
CTI237B	-31.00	008W45 06N25
MTN223B	-37.00	016W19 16N01
NIG119B	-19.00	003E24 06N24
SUI140B	-19.00	006E00 46N06
TUN150B	-25.00	007E00 34N00
URS080A	140.00	171W00 66N30
AGL295B	-13.00	012E30 06S30
CNR130B	-31.00	018W00 29N00
CVA083A	-37.00	011E00 42N30
E 129B	-31.00	009W16 42N52
GHA108B	-25.00	003W18 06N36
GNE303B	-19.00	009E36 01N12
HOL213B	-19.00	003E06 51N12
SRL259B	-31.00	013W12 08N30
CAF258B	-13.00	015E30 07N30
I 082B	-19.00	008E18 46N30
MTN288B	-37.00	012W00 23N27
NGR115B	-25.00	002E06 13N30
BEL018C	-19.00	002E30 51N00
HVO107C	-31.00	005W00 10N00
ISL049C	-31.00	022W42 63N48
ISR110B	-13.00	034E18 31N12
MCO116C	-37.00	003E00 43N30
MRC209C	-25.00	010W00 28N30
NMB025B	-19.00	012E00 17N00
SEN222C	-37.00	016W45 14N12

ANNEXE 2 - ANNEX 2 - ANEXO 2

POINTS DE CALCUL DES REGIONS 1 ET 3 UTILISES POUR DETERMINER SI LES LIMITES FIGURANT A L'ANNEXE 5 A L'APPENDICE 30 SONT RESPECTEES

REGIONS 1 AND 3 TEST POINTS USED FOR DETERMINING COMPLIANCE WITH LIMITS IN ANNEX 5 OF APPENDIX 30

PUNTOS DE PRUEBA DE LAS REGIONES 1 Y 3 UTILIZADOS PARA DETERMINAR EL CUMPLIMIENTO DE LOS LÍMITES INDICADOS EN EL ANEXO 5 AL APÉNDICE 30

Longitude et latitude du point de calcul / Longitude and latitude of test point / Longitude y latitude del punto de cálculo	Longitude et latitude du point de calcul / Longitude and latitude of test point / Longitude y latitude del punto de cálculo	Longitude et latitude du point de calcul / Longitude and latitude of test point / Longitude y latitude del punto de cálculo	Longitude et latitude du point de calcul / Longitude and latitude of test point / Longitude y latitude del punto de cálculo
020E00 80N00	015W30 28N00	030E00 30S00	150W00 10S00
020E00 70N00	018W30 20N00	031E12 30S00	140W00 10S00
030E00 70N00	010W00 20N00	013W00 37S00	171W30 12S00
023W00 63N00	000W00 20N00	128E30 40N00	167E00 15S00
005E00 60N00	010E00 20N00	141E00 35N00	168E30 18S00
010E00 60N00	020E00 20N00	110E00 30N00	178E00 18S00
020E00 60N00	030E00 20N00	122E30 30N00	149W00 18S00
030E00 60N00	040E00 20N00	120E00 26N00	120E00 20S00
040E00 60N00	050E00 20N00	120E00 23N00	130E00 20S00
050E00 60N00	024W00 16N00	110E00 20N00	140E00 20S00
011W00 52N00	017W00 13N00	121E30 15N00	148E00 20S00
005W00 50N00	014W30 10N00	163E00 12N30	165E30 22S00
000W00 50N00	010W00 10N00	119E00 10N00	115E00 30S00
010E00 50N00	000W00 10N00	123E30 10N00	120E00 30S00
020E00 50N00	020E00 10N00	170E00 10N00	130E00 30S00
030E00 50N00	030E00 10N00	125E00 07N00	140E00 30S00
040E00 50N00	040E00 10N00	173E00 01N00	150E00 30S00
050E00 50N00	051E30 10N00	110E00 00N00	154E00 30S00
009W30 40N00	008E30 00N00	120E00 00N00	173E00 34S00
000W00 40N00	020E00 00N00	130E00 00N00	140E00 37S00
010E00 40N00	030E00 00N00	173E00 00N00	173E00 37S00
020E00 40N00	043E12 00N00	140E00 05S00	150E00 37S00
030E00 40N00	015W00 08S00	172W30 05S00	147E00 42S00
040E00 40N00	013E12 10S00	154E00 05S00	175E00 40S00
050E00 50N00	020E00 10S00	110E00 08S00	172E00 43S00
026W00 38N00	030E00 10S00	140W00 08S00	167E00 45S00
010W00 30N00	040E00 10S00	120E00 10S00	171E00 69N00
000W00 30N00	012E42 20S00	150E00 10S00	170W00 66N00
010E00 30N00	020E00 20S00	160E00 10S00	173W00 64N00
020E00 30N00	030E00 20S00	170E00 10S00	170E00 60N00
030E00 30N00	035E00 10S00	180E00 10S00	169E00 54N00
040E00 30N00	016E30 30S00	170W00 10S00	155E00 50N00
050E00 30N00	020E00 30S00	160W00 10S00	150E00 45N00

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 156-E
5 July 1983
Original : English

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6A TO COMMITTEE 6

The Annex to this document contains the first series of the texts adopted in the Working Group.

The square brackets have been used to indicate the following two situations :

- the texts for which no consensus could be arrived at in the Working Group. The Committee 6 is requested to take appropriate decisions in the matter; or

- the relevant information is awaited from other Committees.

A desire was also expressed in the Working Group for a flow-chart of the Article 4A procedure which could be made available by the IFRB.

E.D. DuCHARME
Chairman of Working Group 6A

Annex : As mentioned

FINAL ACTS

of the Regional Administrative Radio Conference for the planning, in Region 2, of the broadcasting-satellite service in the frequency band [12.2]- 12.7 GHz and associated feeder links in the fixed-satellite service (Earth-to-space) in the frequency band /17.3 - 17.8/ GHz

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General Definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below:

Union:	The International Telecommunication Union;
Secretary-General:	The Secretary-General of the Union.
IFRB (Board):	The International Frequency Registration Board;
CCIR:	The International Radio Consultative Committee;
Convention:	The International Telecommunication Convention in force;
Radio Regulations:	The Radio Regulations annexed to the Convention.
Regions 1, 2 and 3:	The geographical areas defined in Nos. ~~126~~ 393 to ~~132~~ 399 of the Radio Regulations
Master Register:	The Master International Frequency Register;
IFRB weekly circular:	The publication referred to in No. ~~497~~ 1235 of the Radio Regulations;
Administration:	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.

WARC : World Administrative Radio Conference;

Geneva 1983 Conference : Regional Administrative Radio Conference (RARC [-1983]) for the planning in Region 2 of the broadcasting-satellite service in the frequency band [12.2]- 12.7 GHz and associated feeder links in the frequency band /17.3 - 17.8/ GHz;

PART I

Provisions and Associated Plan for the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2

ARTICLE 1

Definitions

Region 2 Plan: The Plan for the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2 contained in this Part of the Final Acts, together with any modifications resulting from the successful application of the procedures of Article 4 of this Part.

Frequency assignment in conformity with the Region 2 Plan: Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this Part has been successfully applied.

Regions 1 & 3 Plan: 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 contained in Appendix 30 to the Radio Regulations, together with any modifications resulting from the successful application of the procedures contained in the said Appendix.

ARTICLE 2

Frequency Band

2.1 The provisions of this Part apply to the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2 and to the other services to which this band is allocated in Regions 1, 2 and 3, insofar as their relationship to the broadcasting-satellite service in this band in Region 2 is concerned.

ARTICLE 3

Execution of the Provisions and Associated Plan

3.1 The Members of the Union in Region 2 shall adopt, for their broadcasting-satellite space stations[1] operating in the frequency bands referred to in this Part the characteristics specified in the Plan for that Region.

3.2 Administrations shall not bring into use assignments to broadcasting-satellite stations which are not in conformity with the Region 2 Plan, except in those cases referred to in Article 4A as interim systems and those cases covered by paragraph [5.2.].

ARTICLE 4A

Interim systems

4A.1 An administration or a group of administrations may, after successful application of the procedure contained in this Article, use an interim system during a specified maximum period not exceeding [12 years] in order :

a) to use an increased e.i.r.p. in any direction relative to that appearing in the Plan;

b) to use different modulation characteristics relative to those appearing in the annexes to the Plan resulting in an increase of the probability of harmful interference or in wider assigned bandwidth;

c) to change the coverage area by displacing boresight, or by increasing the major or minor axis or by rotating them;

d) to use a coverage area appearing in the Plan or a coverage area encompassing two or more coverage areas appearing in the Plan from an orbital position which [may] [shall] be one of the corresponding orbital positions appearing in the Plan [or any other];

[e) to use a polarization different from that in the Plan.]

4A.2 An interim system shall in all cases correspond to assignments in the Region 2 Plan; the number of assignments to be used in an interim system shall in all cases correspond to no more than the same number of assignments appearing in the Plan which are to be suspended. During the use of an interim system, the use of the corresponding assignments in the Plan is suspended, they shall not be brought into use before the cessation of use of the interim system. [However, the suspended assignments, but not the interim systems assignments, of an administration shall be taken into account when other administrations apply the procedure of Article 4 in order to modify the Plan or the procedure of Article 4A in order to bring into use an interim system.]

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[1] Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with RR 846.

4A.2A When an administration proposes to use an assignment in accordance with paragraph 4A.1, it shall communicate to the Board the information listed in / Annex 2 / not earlier than five years but, preferably, not later than twelve months before the date of putting into use. The administration shall also indicate :

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

b) the assignment(s) in the Plan the use of which will remain suspended for the duration of the use of the corresponding interim assignment;

c) the names of the administrations with which an agreement for the use of the interim assignment has been reached together with any comment relating to the period of use so agreed and the names of administrations with which an agreement may be required but has not yet been reached.

4A.3 An administration is considered to be affected if :

a) any overall equivalent protection margins of one of its assignments in the Region 2 Plan, calculated in accordance with Annex / 6 / including the cumulative effect of all interim uses during the maximum specified period of use of the interim system, but excluding the corresponding suspended assignment(s) (paragraph 4A.2b), / becomes negative or a former negative value is made more negative / / it is reduced / ;

[aa) if any overall equivalent protection margins of one of its interim assignments in the Interim List calculated in accordance with Annex / 6 / / becomes negative or a former negative value is made more negative / / is reduced /];

b) it has an assignment in the fixed-satellite service which is recorded in the Master Register or which has been coordinated or is being coordinated under the provisions of RR 1060, or those of paragraph 7.2.1 of this Part and the appropriate limits of / Annex 1 / are exceeded;

c) having no frequency assignment in the broadcasting-satellite service in the channel concerned, it nevertheless would receive on its territory the power flux-density value which exceeds the prescribed limits as given in / Annex 1 / as a result of the proposed interim assignment;

d) in countries of Region 1 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in accordance with the Plan contained in Appendix 30 or in respect of which modifications have been published by the Board in accordance with the provisions of that Appendix and the appropriate limits of / Annex 1 / are exceeded;

e) having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 to 12.7 GHz in Region 3 with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment and which

- is recorded in the Master Register; or

- has been coordinated or is being coordinated under the provisions of Resolution No. 33; or

- appears in a Region 3 Plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the Final Acts of that Conference,

and the appropriate limits of [Annex 1] are exceeded.

4A.4 The Board shall publish in a special section of its weekly circular the information received under paragraph 4A.2A, together with the names of the administrations it has identified in application of paragraph 4A.3.

[4A.4A When the Board finds that the suspended assignment of an administration having an interim system is not affected, it shall examine the projected interim system with respect to the interim system of that administration and in case there exists an incompatibility, it shall request the two administrations concerned to adopt any measure that may permit the new interim system to be operated.]

4A.4B The Board shall send a telegram to the administrations listed in the special section of the weekly circular drawing their attention to the information it contains and shall send them the results of its calculations.

4A.5 Any administration of Region 1 or 3, on the territory of which the p.f.d. limit specified in [Annex 1], paragraph [___] (protection of the FSS) is exceeded and which considers that its FSS systems in the band 12.5 - 12.7 GHz in Region 1 or 12.2 - 12.7 GHz in Region 3 which are planned to be brought into use during the maximum specified period of use of the interim system may be affected, may so inform the Board within a period of 4 months. The Board shall calculate the interference to the planned FSS system and if required shall include the name of this administration in the special section.

4A.5A Any administration not listed in the special section which considers that its planned interim assignment may be affected shall so inform the administration responsible for the interim system and the IFRB and the two administrations shall endeavour to resolve the difficulty before the proposed date of bringing the interim assignment into use.

4A.5B An administration which has not notified its comments either to the administration seeking agreement or to the Board within a period of 4 months following the date of the weekly circular referred to in paragraph 4A.4 shall be understood to have agreed to the proposed interim use.

4A.6 At the expiry of 4 months, following the date of publication of the weekly circular referred to in paragraph 4A.4, the Board shall review the matter and, accor according to the results obtained, inform the administration proposing the interim assignment that :

a) it may notify its proposed use in accordance with Article 5 if no agreement is required or the required agreement was obtained from the administrations concerned. In this case the Board shall update the Interim List;

b) it may not bring into use its interim system before having obtained the agreement of the administrations affected, either directly or by an analogous application of the procedure of Article 4 as a means of obtaining that agreement.

4A.7 The Board shall include all the interim assignments in an Interim List and shall update it in accordance with this article. The Interim List shall be published together with the Plan. It does not constitute part of the Plan /except in cases referred to in paragraph 4A.14/.

4A.8 One year prior to the expiry of the interim period, the Board shall draw the attention of the administration concerned to this fact and request it to notify in due time the cancellation of the assignment from the Master Register and the Interim List.

4A.9 If, notwithstanding the reminders by the Board, an administration does not reply to its request sent in application of paragraph 4A.8, the Board shall, at the termination of the interim period :

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

4A.10 Where an administration confirms the termination of the use of the interim assignment, the Board shall delete the assignment concerned from the Interim List and the Master Register. The corresponding assignment(s) in the Plan, suspended earlier, may then be brought into use.

[4A.11 If an administration wishes to extend the maximum specified period, it shall apply again the provisions of this Article.]

[4A.11 An administration which considers that its interim system may continue to be used after the expiry of the interim period, shall apply the procedure of this article for the same interim system for a period not exceeding /2 years/.

4A.12 Where an administration applies the procedure in accordance with 4A.11, but could not obtain the agreement of one or more affected administrations, the Board shall indicate this situation by inserting appropriate symbols in the Master Register. Upon receipt of a complaint of harmful interference, it shall immediately cease operation of the interim assignment.

4A.13 Where an administration, having been informed of a complaint of [actual] harmful interference does not stop transmission within the period of 30 days after the receipt of complaint, the Board shall apply the provisions of paragraph 4A.9.

[4A.14 For the purposes of the application of the provisions of RR 844, the assignments in the Interim List shall be treated as if they were part of the Plan.]

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 157-E
7 July 1983
Original : English

COMMITTEE 4

SHARING CRITERIA

Working Group 4C reconsidered Document No. 157 and decided that since the material contained therein is adequately referenced in Annex [6][1] of Section I of the Final Acts of this Conference Document No. 157 may be withdrawn. Consequentially it is not necessary to include Annex [7] titled Criteria for sharing between services in Section I[1] of the Final Acts of this Conference.

J. ZAMUDIO ZEA
Chairman of Working Group 4C

1) References are to Document No. 74.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 157-E
5 July 1983
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Source : Document No. DL/31

COMMITTEE 4

SHARING CRITERIA

The following text is proposed for inclusion as Annex [ ] of Section I of the Final Acts of RARC-83 :

ANNEX [ ]

Criteria for Sharing between Services

1. *Protection requirements for sharing between services in the 12 GHz band*

1.1 The establishment of sharing criteria for the different services using the 12 GHz band should be based on the protection requirements listed in the table below:

Wanted Service[1]	Interfering Service[1]	Protection requirements[2]	
		Total acceptable[3]	Single entry
BSS (Region 2)	BSS (Region 2)	See Annex [8] § ____	
BSS (Region 2)	BSS, FSS, FS, BS (Regions 1 and 3)	C/I = 30.5 dB[4]	C/I = [35.5] dB

Notes: [1] **BSS** = broadcasting-satellite service
FSS = fixed-satellite service
BS = broadcasting service
FS = fixed service
~~**TV** = television~~
~~**FM** = frequency modulation~~

[2] These limits include down-link contributions only.

[3] Values in dB are protection ratios for the sum of interfering signals.

[4] C/I = ratio of carrier-to-interfering signal

1.2 The values given as "total acceptable" are those necessary to protect the wanted signal. The "single entry" values are those which should be used as a guide for determining sharing criteria. 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 wanted service within the channel to be protected.

1.3 The term C/I refers to the ratio of the wanted-to-interfering power at an earth station in the interfered-with system. The value given shall be exceeded for all but 1% of the worst month for the broadcasting-satellite service (BSS).

1.4 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.

1.5 When FM TV carriers are offset in frequency, condition c) does not apply and the adjacent channel protection ratios should be adjusted according to the frequency offset as shown in Figure ____ of Annex [8] / [Figure X of Document No. 98] /.

3. *Use of energy dispersal in the broadcasting-satellite service*

3.1 When the emission from a broadcasting satellite in Region 2 produces a power flux-density equal to or greater than -138 dBW/m^2/24 MHz within the territory of an administration of Region 1 or 3, the administration responsible shall maintain a spectral dispersion of such an emission which produces a spectral power density in any 40 kHz band 12 dB below the unmodulated carrier power. Where such an emission produces a power flux-density of less than -138 dBW/m^2/24 MHz, spectral dispersion need only be maintained to the extent that a spectral power flux-density of -150 dBW/m^2/40 kHz is not exceeded.

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

$$\left.\begin{array}{l}\text{Relative reduction (in dB)}\\ \text{in a } B_r \text{ kHz band}\end{array}\right\} = 10 \log \frac{\Delta F_{pp} + \delta f_{rms}}{B_r}$$

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

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

B_r = reference bandwidth (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 631-2.

Reduction of spectral power flux density

Peak-to-peak deviation (kHz)	Relative reduction (dB) (4 kHz reference bandwidth)	Relative reduction (dB) (40 kHz reference bandwidth)
0	10	0
100	15.44	5.4
200	17.78	7.8
300	19.29	9.3
400	20.41	10.4
500	21.30	11.3
600	22.04	12.0

J. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 158(Rev.1)-E
7 July 1983
Original : English

Source : Document No. DL/39

WORKING GROUP 4B

PROPOSED NEW FEEDER LINK PARAGRAPH 3.5 OF SECTION II OF THE FINAL ACTS

3.5 Transmitted power

The maximum transmit power delivered to the input of the antenna of the feeder-link earth station is 1,000 watts per 24 MHz [or 27 MHz] television channel. This level of power can only be exceeded under certain conditions specified in paragraph 3.10 of Section II of the Final Acts.

M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 158-E
5 July 1983
Original : English

SOURCE : Document No. DL/39

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M. BOUCHARD
Chairman of Sub-Working Group 4B-3

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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5 July 1983
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Source : Document No. DL/28(Rev.1)

COMMITTEE 4

PROPOSED NOTE ON THE APPLICABILITY OF INTERREGIONAL CRITERIA

The following draft note is proposed for consideration by Committee 4 as a note to be forwarded from Committee 4 to Committees 5 and 6 :

The attention of Committees 5 and 6 are drawn to the following :

Committee 4 has developed interregional criteria in Annexes 1 and 4 of Section I of the Final Acts of RARC-83 based upon reciprocity and the needs of the services likely to be affected in Regions 1 and 3. In addition, the criteria for the protection of terrestrial services in Regions 1 and 3 given in Annex 5 of Appendix 30 are noted. It is also noted that it is stipulated in Article 4 of Appendix 30 to the Radio Regulations that the Plan for Region 2 to be adopted by the present Conference shall not degrade the protection afforded to the frequency assignments in the Plan below the limits specified in that Appendix.

It is the intent of this Committee that these criteria are mainly for application when systems are being implemented or modified. During the Plan development stages, the possibility of meeting interregional criteria using the standard reference parameters of Annex /8/ should first be considered. However, where these criteria cannot be met, using these standard parameters, orbital positions along with their related beam parameters should not be disqualified from the Plan due to such causes alone. If the orbital position is otherwise acceptable to the Region 2 Administration(s) most directly concerned, the systems occupying this position may be notated as requiring special considerations. For example, systems so notated may only be implemented if :

a) the affected administrations in Region 1 or 3 agree to exceeding the interregional criteria in the Plan;

b) the technical parameters proposed satisfy the IFRB that the interregional criteria will be met.

Committees 5 and 6 are urged to take the above into account in the course of their deliberations. In particular, appropriate provisions for such systems may be required in Article /5/.

J. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 1 to
Document No. 160-E
6 July 1983
Original : English

Source : Document No. DL/21(Rev.1) COMMITTEE 4

Replace page 1 by the following :

PROBLEMS RELATING TO SHARING BETWEEN REGION 2 BROADCASTING SATELLITE SPACE STATIONS AND CERTAIN TERRESTRIAL SERVICES IN REGION 2

1. The following text is proposed as a consequential modification to Appendix 30 for inclusion in Section III of the Final Acts of this Conference.

Revise Appendix 30 Annex 5 as follows :

a) Change title to :

MOD

Power Flux Density Limits between 12.2 and 12.7 GHz to protect the terrestrial services in Regions 1 and 3 from Interference from Region 2 Broadcasting Satellite Space Stations (Article 9)

b) Modify 1) as follows :

MOD 1) for all the territories of administrations in Regions 1[1] and 3

ADD [1] In the band 12.5 to 12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in RR 848 and RR 850.

c) Modify 2) as follows :

MOD 2) in the band 12.2 - 12.5 GHz, for territories of administrations in Region 3 and those in the western part of Region 1, west of longitude 30°E :

2. The draft Recommendation contained in Annex 1 is proposed for inclusion in Section V of the Final Acts and a related draft note from the Chairman of Committee 4 is presented in Annex 2.

J. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 160-E
5 July 1983
Original : English

Source : Document No. DL/21(Rev.1)

COMMITTEE 4

PROBLEMS RELATING TO SHARING BETWEEN REGION 2 BROADCASTING SATELLITE SPACE STATIONS AND CERTAIN TERRESTRIAL SERVICES IN REGION 2

1. The following text is proposed as a consequential modification to Appendix 30 for inclusion in Section III of the Final Acts of this Conference

Revise Appendix 30 Annex 5 as follows :

a) Change title to :

"**Power Flux Density Limits between ~~11.7~~ 12.2 and ~~12.2~~ 12.7 GHz to protect the terrestrial services in Regions 1 and 3 from Interference from Region 2 Broadcasting-Satellite Space Stations (Article 9)**"

b) Modify 2) as follows :

2) in the band 12.2 - 12.5 GHz, for territories of administrations in Region 3 and those in the western part of Region 1, West of longitude 30°E :

2. The draft Recommendation contained in Annex 1 is proposed for inclusion in Section V of the Final Acts and a related draft note from the Chairman of Committee 4 is presented in Annex 2.

J. ZAMUDIO ZEA
Chairman of Working Group 4C

Annexes : 2

ANNEX 1

DRAFT

RECOMMENDATION ...

Relating to Interregional Sharing Problems between Region 2 Broadcasting Satellite Space Stations and certain Terrestrial Services in Region 1

The RARC-BSS, 1983

considering

a) that the present Conference considered the matter of interregional sharing criteria and adopted appropriate values where possible;

b) that regarding the sharing possibilities between Region 2 BSS and certain fixed terrestrial services in the eastern part of Region 1, the CCIR Report to the Conference included proposed PFD limits, identified geographic areas where these limits could not be met without the use of special techniques and recommended that bilateral discussions be held between the administrations most directly concerned;

c) that since the resolution of the matter requires the participation of the parties most directly affected and such was not the case at this Conference;

requests the CCIR

to continue its study of this matter on an urgent basis with a view to including appropriate conclusions in the CPM Report to the Space Services WARC;

recommends

1. that administrations concerned initiate and continue discussions of the problems on a bilateral basis on the resolution of problems;

2. that the first session of the Space Services WARC take appropriate action on the matter as may be necessary.

ANNEX 2

NOTE FROM CHAIRMAN OF COMMITTEE 4

Committee 4 considered the proposal of some administrations to include, in /Annex 5 of Appendix 30/ the limits set forth by the Report of the Conference Preparatory Meeings (CPM) of the CCIR to protect fixed service AM/VSB reception in the eastern part of Region 1, East of 30°E.

It was decided that at the present time the Final Acts of the Conference should not include the recommended values for the following reasons :

1) the CPM Report suggests that some problem areas still remain and can be resolved on a bilateral basis;

2) the resolution of the matter requires the participation of the parties most directly affected and such was not the case at this conference;

3) the Region 2 administrations most directly involved seek the opportunity to explore the several alternatives identified by the CPM for ameliorating the inferference situations on a bilateral basis; as well as other opportunities offered by the ITU, such as the CPM for WARC 85 and the Interim Meetings of the CCIR.

A resolution of this problem can more easily be reached once the satellite locations and beam parameters are known.

It was also decided to include a Recommendation on this subject in the Final Acts of RARC-83. A draft of such a Recommendation is given below.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 161-E
5 July 1983
Original : English

Source : Documents Nos. 52, 80 and DT/18

COMMITTEE 4

PART V OF THE FINAL ACTS

/ANNEX 6 OF PART I/

Committee 4 has decided to adopt the CPM model reduced by 12% (i.e. $A = 0.88\ A_{CPM}$) to take account of new CCIR Study Group 5 data. This method is presented in the following text for 12.5 GHz using circular polarization at 1% of the worst month.

In addition, the Committee has approved the principle of using attenuation limits in the analysis of the down-link and feeder link plans. For the down-link, /6-9/ dB is suggested. The final values are to be decided during the plan development.

Appendix 30, Annex 8

2. RADIO PROPAGATION FACTORS

ADD In Regions 1 and 3 :

NOC **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 Fig. 1 for the five rain-climatic zones shown in Fig. 2.**

NOC **2.2 In using the curves of Fig. 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.**

NOC **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:**

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

ADD In Region 2 :

ADD 2.4 The propagation loss on an earth-space path is equal to the free space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

ADD 2.4.1 Atmospheric absorption

The loss due to atmospheric absorption (i.e. clear air attenuation) is given by (CCIR Report 719-1) :

$$A_a = \frac{0.0584 + 0.0028\rho}{\sin\theta} \qquad \text{for } \theta \geq 5^\circ$$

where

θ = the elevation angle; (degrees)

ρ = the surface water vapour concentration, g/m^3, being ρ = 10 g/m^3 for climates A to K and ρ = 20 g/m^3 for climates M to P (see Figure 2bis 1).

ADD 2.4.2 Rain attenuation

The rain attenuation A of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz is given by

$$A = 0.21\ \gamma\ L\ r \text{ dB} \qquad (2.1)$$

where

L = the slant path length through rain

$$= \frac{2(h_R - h_0)}{\left[\sin^2\theta + 2\frac{(h_R - h_0)}{8500}\right]^{\frac{1}{2}} + \sin\theta} \text{ km}$$

r = the rain path length reduction factor

$$= \frac{90}{90 + 4L\cos\theta}$$

h_R = rain height (km)

$$= c\left\{5.1 - 2.15 \log\left[1 + 10^{\left(\frac{\phi - 27}{25}\right)}\right]\right\} \text{ km}$$

$c = 0.6$ for $\phi \leq 20^\circ$

$c = 0.6 + 0.02(\phi - 20)$ for $20^\circ < \phi \leq 40^\circ$

$c = 1.0$ for $\phi > 40^\circ$

h_o = height (km) above mean sea level of the earth station

ϕ = earth station latitude (degrees)

θ = elevation angle (degrees)

γ = specific rain attenuation

$= 0.0202\ R^{1.198}$ dB/km

R = rain intensity (mm/h) obtained from Table I for the rain climates identified in Figure 2bis 1.

(Note : method is based on R exceeded for 0.01% of an average year.)

TABLE I

Rainfall intensity (R) for the rain climatic zones (Figure 2bis 1)

Zone	A	B	C	D	E	F	G	K	M	N	P
(mm/h)	8	12	15	19	22	28	30	42	63	95	145

Figure 2bis 2 presents plots of rain attenuation, as calculated using equation (2.1), of circularly polarized signals exceeded for 1% of the worst month at 12.5 GHz, as a function of earth station latitude and elevation angle for each of the rain climates shown in Figure 2bis 1.

ADD 2.4.3 Rain attentuation limit

In the analysis of the plan, a maximum attenuation on the down-link of [6-9] dB was considered to place a bound on the inhomogeneity of broadcasting-satellites in order to facilitate sharing during clear sky conditions.

ADD 2.5 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For circularly polarized emissions, the XPD ratio not exceeded for 1% of the worst month is obtained from :

$$XPD = 30 \log f - 40 \log (\cos \theta) - 20 \log A_p \quad \text{dB} \quad \text{for } 5^o \leq \theta \leq 60^o \quad (2.2)$$

where A_p (dB) is the co-polar rain attentuation exceeded for 1% of the worst month (calculated in section 2.4), f is the frequency in GHz and θ is the elevation angle. For angle of θ greater than 60^o, use $\theta = 60^o$ in equation (2.2).

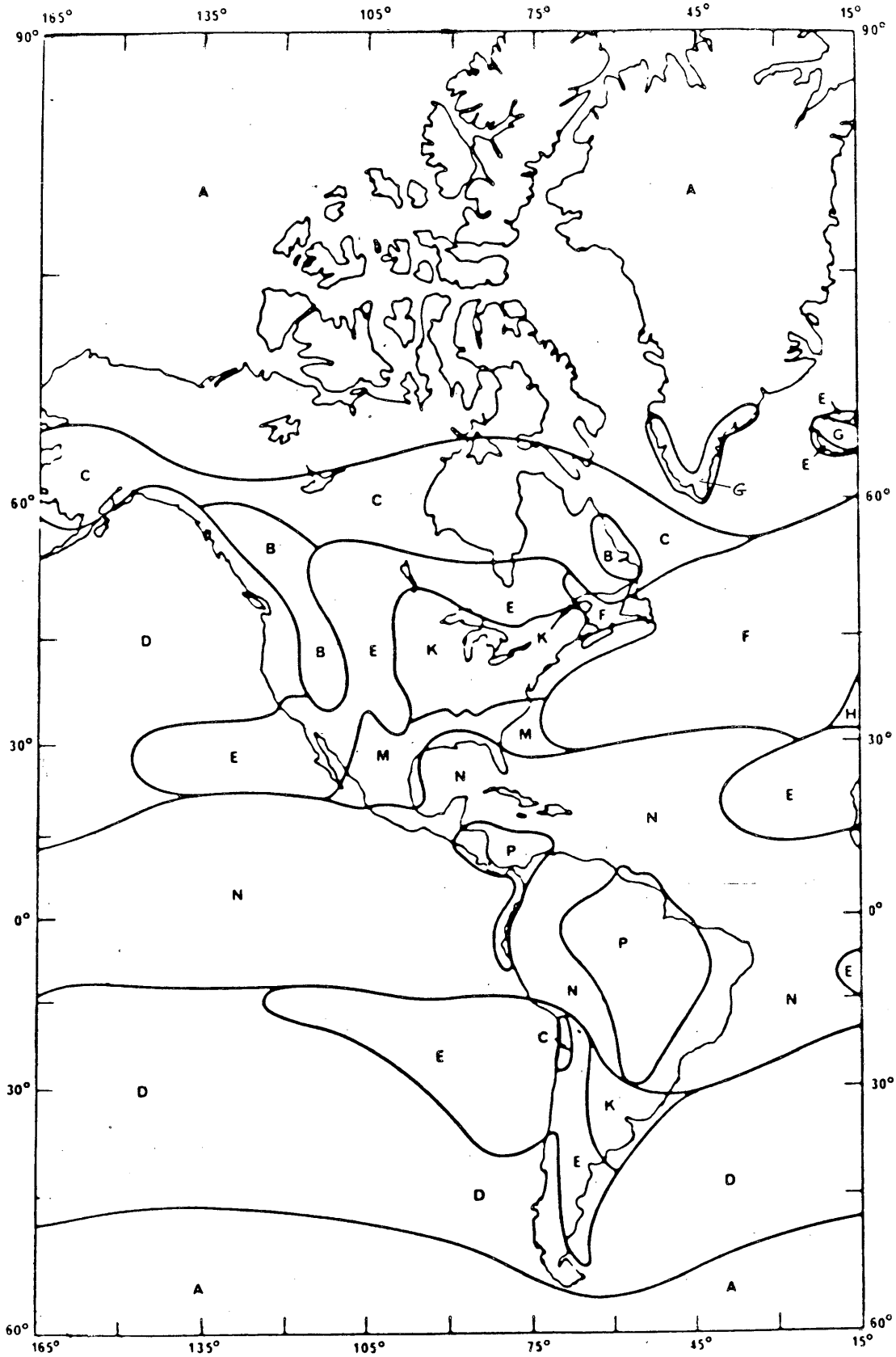
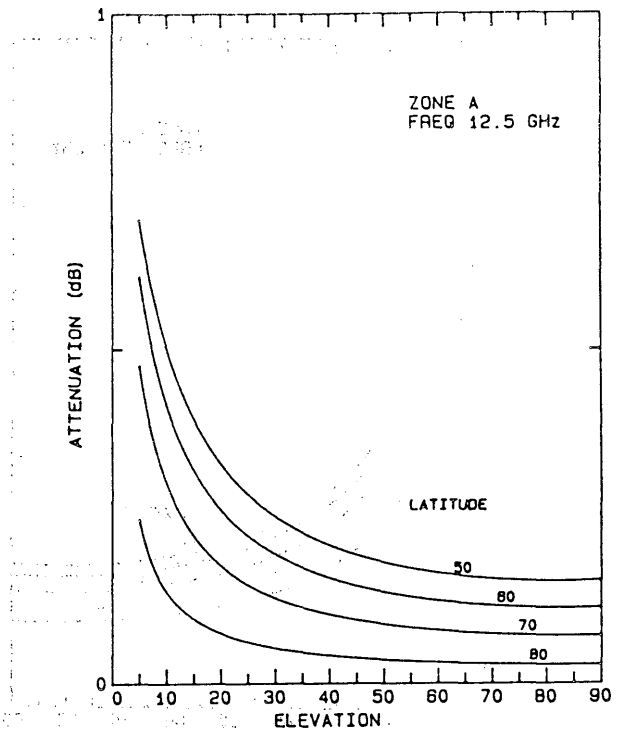
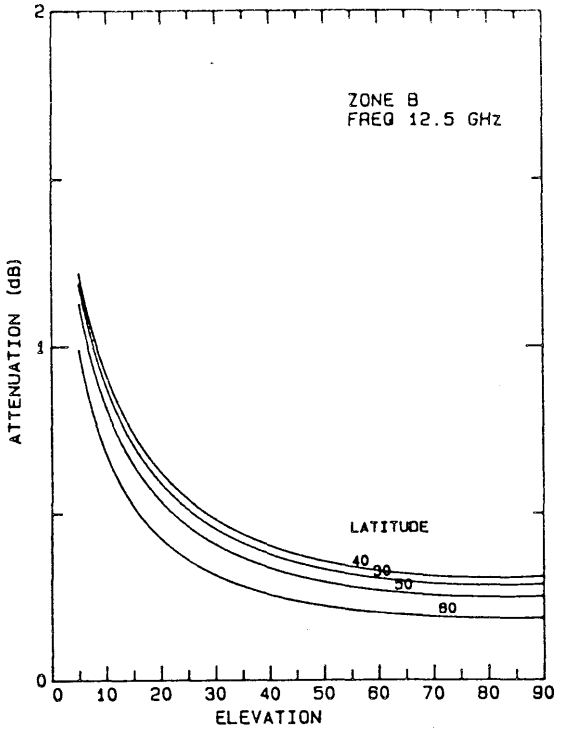


FIGURE 2bis 1

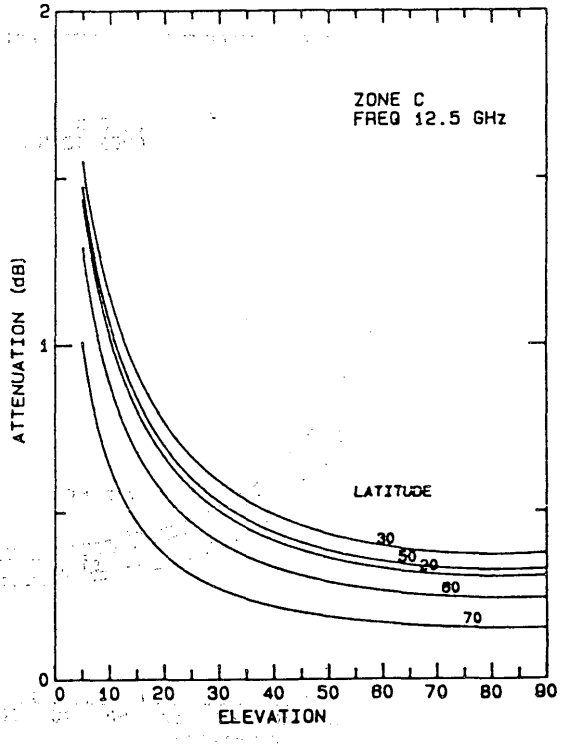
Rain climatic zones (Region 2)



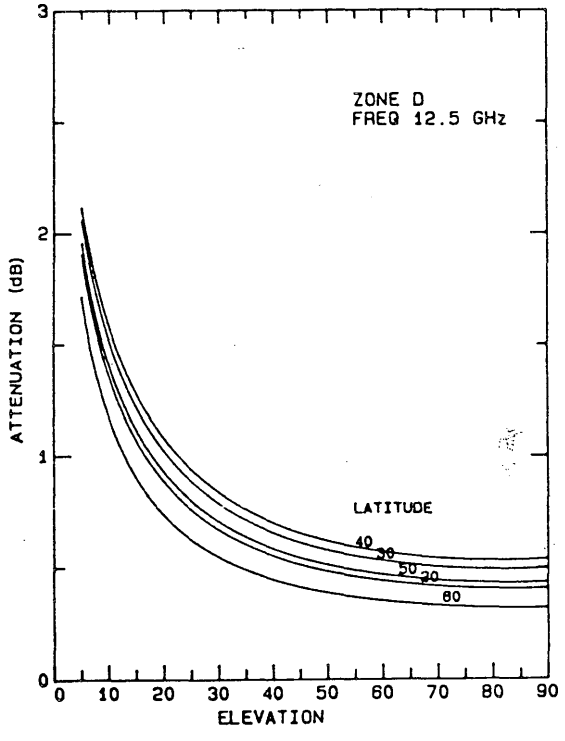
A



B



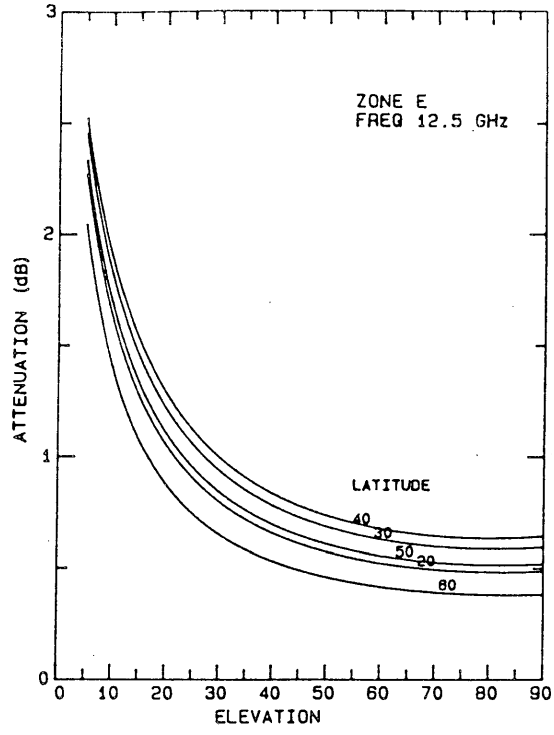
C



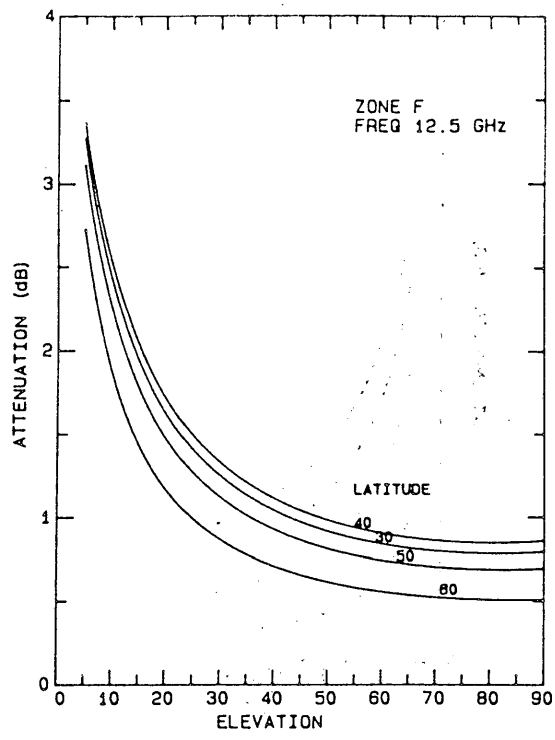
D

FIGURE 2bis 2

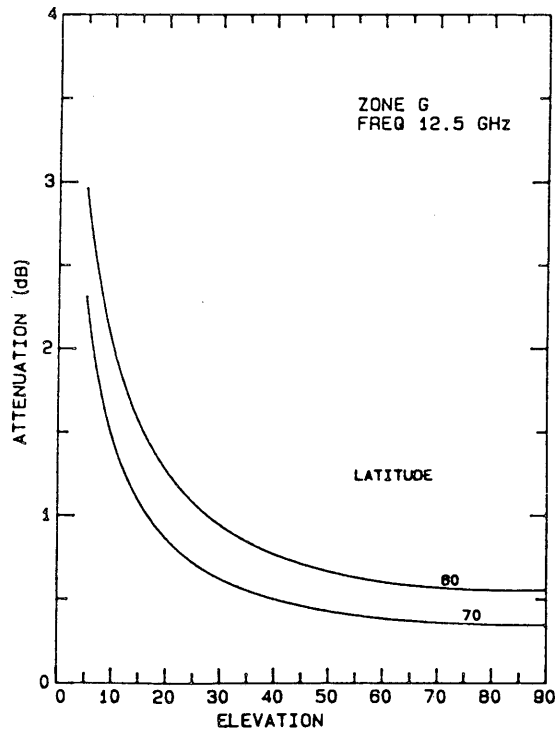
Rain attenuation for Region 2 rain climatic zones (A, B, C, D)



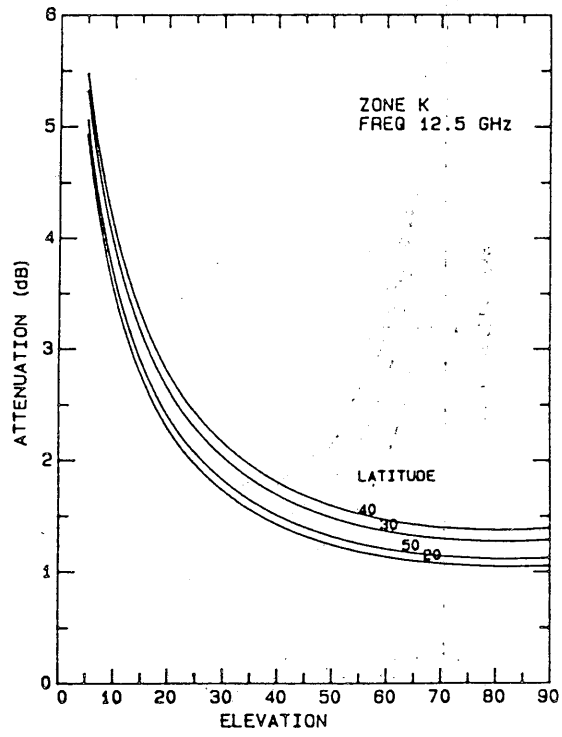
E



F



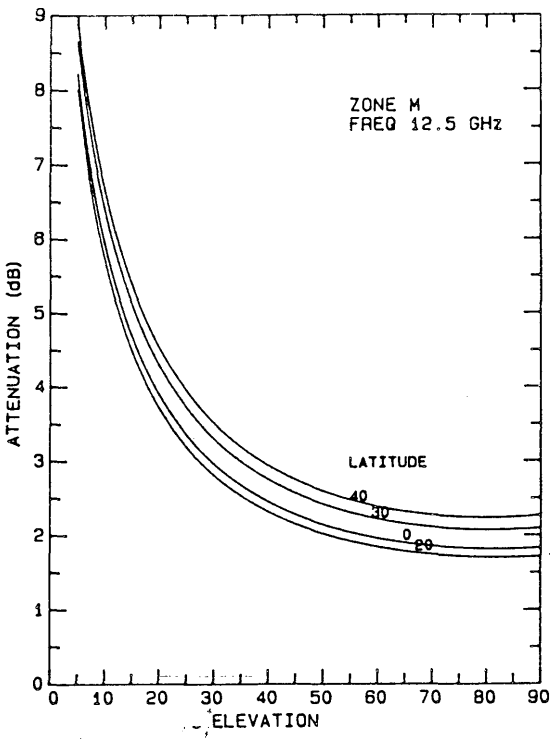
G



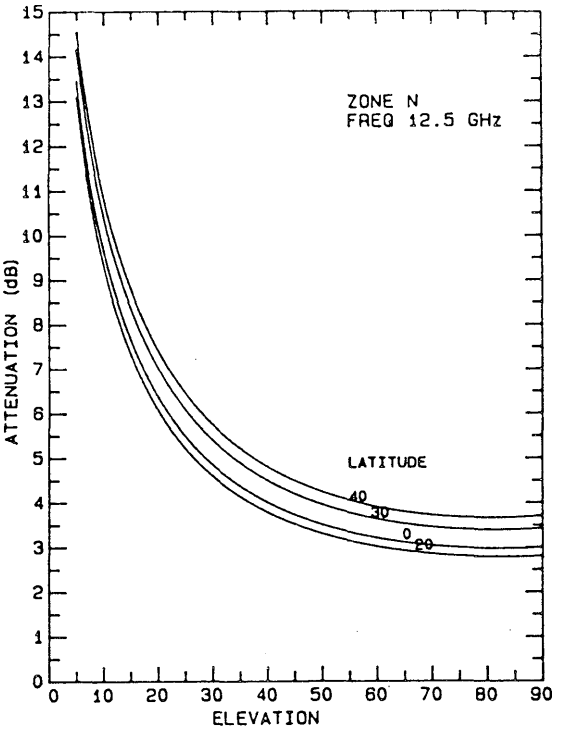
H

FIGURE 2bis 2

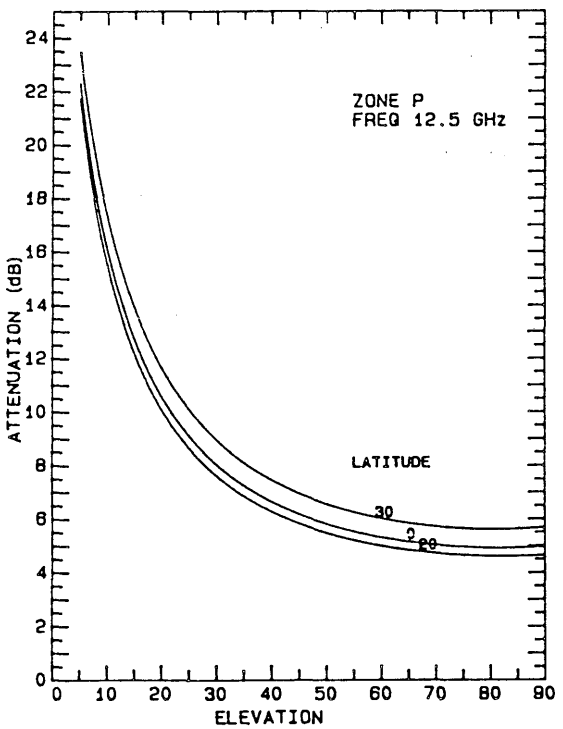
Rain attenuation for Region 2 rain climatic zones (E, F, G, H)



I



J



K

FIGURE 2 bis 2

Rain attenuation for Region 2 rain climatic zones (I, J, K)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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PLENARY MEETING

SECOND REPORT OF COMMITTEE 4 TO THE PLENARY

Committee 4 has adopted texts to be included in Part V of the Final Acts as consolidated Appendix 30. Pending decisions to be taken by the Plenary Meeting on this subject, the following texts have been submitted to the Editorial Committee for possible consideration (see Documents Nos. 163, 66, 69, 70, 77(Rev.1), 81, 98(Rev.2), 102, 106(Rev.1), 112, 113, 114).

The results of discussions on protection ratios and the number of channels for planning the broadcasting-satellite service in Region 2 are summarized in Document No. 98(Rev.2). Proposed modifications to sections 3.4 and 3.5.1 of Annex 8 to Appendix 30 are also given. A new section 3.4.1 is added to Annex 8 on the adjacent channel protection ratio template for Region 2 planning.

The proposed number of channels is 32. However, it is understood that this number may be reviewed following the analysis of the first draft plans. This number is used, together with the total width of the guard bands given in Document No. 82(Rev.1) and Corrigendum No. 1 and the protection ratio template, to determine the protection ratio values appearing in the document.

Considerable discussions have taken place on the values of G/T and p.f.d. used for planning the broadcasting-satellite service in Region 2 with the common understanding of the relationship that ties these parameters together.

Three sets of values for these parameters that were proposed, of which the one that received the support of the largest number of administrations given is in Document No. 112 in the proposed modifications for paragraphs 3.6 and 3.16 of Annex 8 to Appendix 30 with the understanding that a single set of values is desirable for planning purposes.

For Document No. 108 and Corrigendum No. 1, the pattern shown in Figure 1, derived from an antenna producing an elliptical beam with a Gaussian main lobe, is generally preferred for reasons of simplicity of implementation.

The pattern shown in Figure 2, derived from an antenna producing an elliptical beam with fast roll-off in the main lobe, is suggested when necessary to improve or reduce intra-service interference.

The patterns shown in Figure 3 (co-polar) and Figure 1 (cross-polar) may be used to improve some special cases of interregional sharing.

Committee 4 recommends that Committee 5 evaluate the relative merits of the patterns in Figures 1 and 2, bearing in mind that the pattern shown in Figure 1 is generally preferred for reasons of simplicity of implementation. The specific text for 3.13.3 of the Final Acts (Radio Regulations) will be prepared after Committee 5 has completed this evaluation.

S. AGUERREVERE
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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COMMITTEE 7

SECOND SERIES OF TEXTS FROM COMMITTEE 4

TO THE EDITORIAL COMMITTEE

The following texts, mentioned in Document No. 162, are hereby submitted to the Editorial Committee.

S.E. AGUERREVERE
Chairman of Committee 4

Annexes : 2

A N N E X 1

TEXTS FOR INCLUSION IN FINAL ACTS, SAT-83

PART V - APPENDIX 30 - ANNEX 8

3. BASIC TECHNICAL CHARACTERISTICS

3.1 Type of modulation

MOD In Regions 1 and 3, 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 Fig. 3 (from CCIR Recommendation 405).

ADD In Region 2, planning is based on the use of a frequency-modulated composite-coded colour television signal with two sound sub-carriers. However, recognizing the need to provide for the use of new, enhanced television coding and modulation formats (e.g. time-compressed, multiplexed analogue video component signals and digitally-coded sound and data signals), values of the important technical characteristics have been chosen to take into consideration the implementation of these new formats within the provisions of the Plan.

MOD Nevertheless, 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 Plans.

NOC **3.2** ***Polarization***

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

MOD 3.2.2 If possible, the polarization of different beams intended to serve the same area should be the same, in Regions 1 and 3, and unrestricted in Region 2.

MOD [1] **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.**

NOC

3.2.3 The terms "direct" and "indirect" used in the Plans to indicate the direction of rotation of circularly-polarized waves correspond to right-hand (clockwise) and left-hand (anti-clockwise) polarization respectively according to the following definitions:

Direct polarization (right-hand or clockwise polarization)

An elliptically or circularly-polarized wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *right-hand* or clockwise direction.

Note: For circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *left-hand* helix.

Indirect polarization (left-hand or anti-clockwise polarization)

An elliptically or circularly-polarized wave, in which the electric field-intensity vector, observed in any *fixed plane*, normal to the direction of propagation, whilst looking in (i.e., not against) the direction of propagation, rotates *with time* in a *left-hand* or anti-clockwise direction.

Note: For circularly-polarized plane waves, the ends of the electric vectors drawn from any points along a straight line normal to the plane of the wave front form, *at any instant*, a *right-hand* helix.

MOD

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.

In Regions 1 and 3, 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. In Region 2, as a guidance for planning, the reduction in quality in the down-link due to thermal noise in the feeder link is taken as equivalent to a degradation in the down-link carrier-to-noise ratio of approximately 0.5 dB for 99% of the worst month, but the feeder link and down-link Plans are evaluated on the overall carrier-to-noise ratio of 14 dB for the combined down-link and feeder-link contributions.

MOD

3.4 *Protection ratio between two FM television signals*

For planning in Regions 1 and 3 the following protection ratios have been adopted for the purpose of calculating equivalent protection margins [1]:

31 dB for co-channel signals;
15 dB for adjacent-channel signals.

In Region 2, the following protection ratios have been adopted for the purpose of calculating the overall equivalent protection margin[2] :

28 dB for co-channel signals;

13.6 dB for first adjacent channel signals;

-10.0 dB for second adjacent channel signals.

In Region 2, as a guidance for planning, the reduction in the down-link co-channel interference due to co-channel interference in the feeder link is taken as equivalent to a degradation in the down-link co-channel carrier-to-interference ratio of approximately 0.5 dB for 99% of the worst month but the feeder link and down-link plans are evaluated on the overall equivalent protection margin, which includes the combined down-link and feeder link contributions.

---

[1] The equivalent protection margin M is given in dB by the formula

$$M = -10 \log [10^{-M_1/10} + 10^{-M_2/10} + 10^{-M_3/10}]$$

where M_1 is the value in dB of the protection margin for the same channel. This is defined in the following expression where the powers are evaluated at the receiver input:

$$\frac{\text{wanted power}}{\text{sum of the co-channel interfering powers}}\ (\text{dB}) - \text{co-channel protection ratio (dB)}$$

M_2 and M_3 are the values in dB of the upper and lower adjacent-channel protection margins.

The definition of the adjacent-channel protection margin is similar to that for the co-channel case except that the adjacent-channel protection ratio and the sum of the interfering powers due to transmissions in the adjacent channel are considered.

ADD

[2] Definitions in §§ /1.10, 1.11, 1.12, 1.13 and 1.14/ of this Annex apply to these calculations.

ADD 3.4.1 Protection ratio template for Region 2 (FMTV into FMTV)

The protection ratios for adjacent channels are derived from the template given in Figure /X/. The template is symmetrical and is given in terms of absolute levels for the carrier-to-interference ratios.

The template is obtained by joining the segment for adjacent channels to the horizontal extension of the co-channel protection ratio value. The adjacent channel protection ratios cannot be adjusted relative to the co-channel value.

The template is given by the following expressions :

$$PR = \begin{cases} 28 \text{ dB} & \text{for } |F_o| \leq 8.36 \text{ MHz} \\ -2.762\,|F_o| + 51.09 \text{ dB} & \text{for } 8.36 < |F_o| \leq 12.87 \text{ MHz} \\ -1.154\,|F_o| + 30.4 \text{ dB} & \text{for } 12.87 < |F_o| \leq 21.25 \text{ MHz} \\ -2.00\,|F_o| + 48.38 \text{ dB} & \text{for } |F_o| > 21.25 \text{ MHz} \end{cases}$$

where,

PR is the protection ratio in dB and, $|F_o|$ is the absolute value of the carrier spacing between the interfering and wanted signals in MHz.

NOC 3.5 Channel spacing

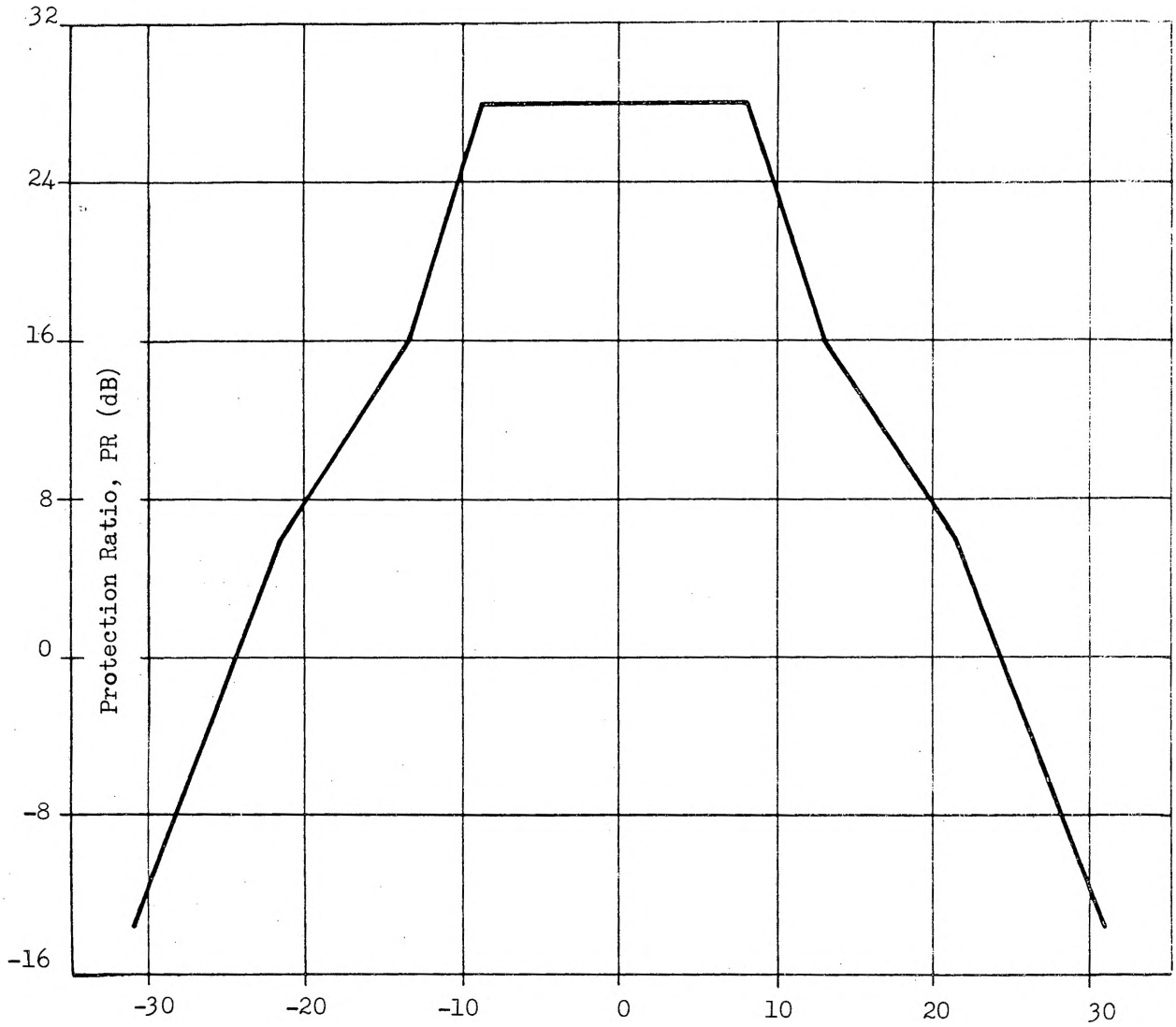
MOD 3.5.1 Channel spacing in the Plan

In Regions 1 and 3, the spacing between the assigned frequencies of two adjacent channels is 19.18 MHz. The Plan gives the assigned frequencies for each channel.

In Region 2, the spacing between the assigned frequencies of two adjacent channels is 14.58 MHz.

3.5.2 /To follow/

3.5.3 /To follow/



ADD Figure [X] - Protection ratio template (FMTV)
(for Region 2 intra-system planning)

MOD 3.6 *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:

for Regions 1 and 3 :

6 dB/K for individual reception;
14 dB/K for community reception, and

for Region 2 :

10 dB/K for individual 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;

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 1).

NOC 3.7 Receiving anntennas

MOD 3.7.1 *Minimum diameter of receiving antennae*

For planning the broadcasting-satellite service the minimum diameter of receiving antennae considered is such that the half-power beamwidth φ_o is:

MOD *a)* for individual reception: 2° in Regions 1 and 3, 1.7° in Region 2;

b) for community reception: 1° in Regions 1 and 3.

MOD 3.7.2 *Receiving antenna reference patterns*

The co-polar and cross-polar reference patterns of receiving antennae are given in Figures 4 and 5.

a) The relative antenna gain (dB) is given by the curves in Figure 4 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 Regions 1 and 3 :
  - Curve A' up to the intersection with Curve C, then Curve C, for the co-polar component;
  - Curve B for the cross-polar component.

b) For Region 2, the relative antenna gain (dB) is given by the curves in Figure 5 for:

– individual reception, for which use should be made of:
  – Curve A for the co-polar component,
  – Curve B for the cross-polar component;

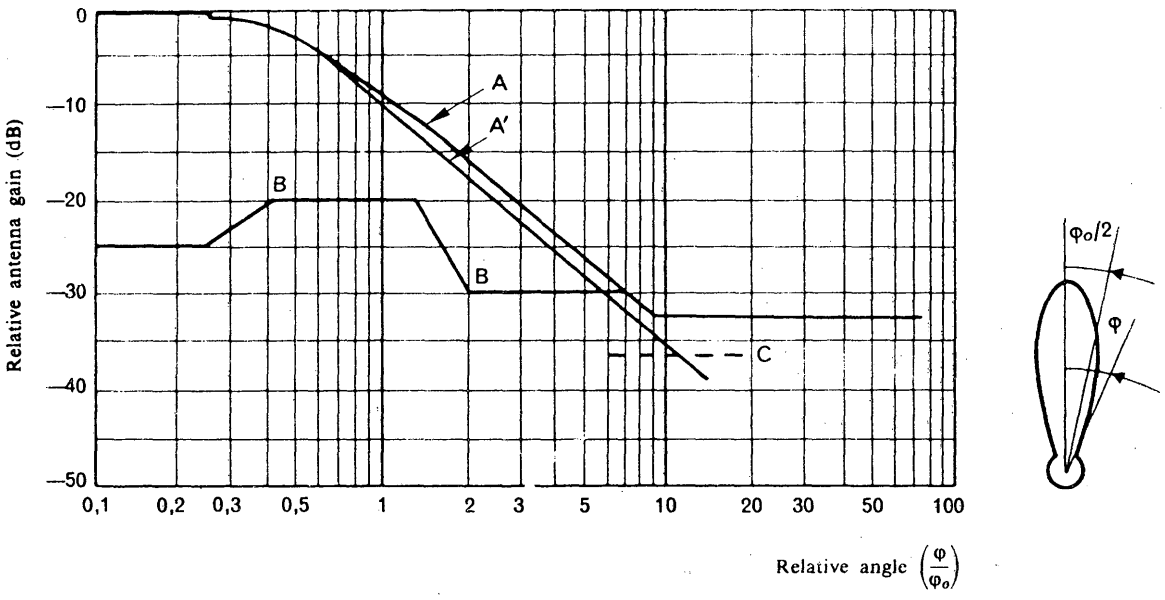


FIGURE 4

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

Curve A Co-polar component for individual reception without side-lobe suppression

0 for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$

$-12\left(\frac{\varphi}{\varphi_o}\right)^2$ for $0.25\,\varphi_o < \varphi \leqslant 0.707\,\varphi_c$

NOC $-\left[9.0 + 20\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $0.707\,\varphi_o < \varphi \leqslant 1.26\,\varphi_o$

$-\left[8.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $1.26\,\varphi_o < \varphi \leqslant 9.55\,\varphi_o$

-33 for $9.55\,\varphi_o < \varphi$

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

0 for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$

NOC $-12\left(\frac{\varphi}{\varphi_o}\right)^2$ for $0.25\,\varphi_o < \varphi \leqslant 0.86\,\varphi_o$

$-\left[10.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right]$ for $0.86\,\varphi_o < \varphi$ up to intersection with Curve C (then Curve C)

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

-25 for $0 \leqslant \varphi \leqslant 0.25\,\varphi_o$

$-\left(30 + 40\log_{10}\left|\frac{\varphi}{\varphi_o} - 1\right|\right)$ for $0.25\,\varphi_o < \varphi \leqslant 0.44\,\varphi_o$

NOC

-20 for $0.44\,\varphi_o < \varphi \leqslant 1.4\,\varphi_o$

$-\left(30 + 25\log_{10}\left|\frac{\varphi}{\varphi_o} - 1\right|\right)$ for $1.4\,\varphi_o < \varphi \leqslant 2\,\varphi_o$

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

NOC *Curve C*: Minus the on-axis gain

Note: for values of φ_o see 3.7.1.

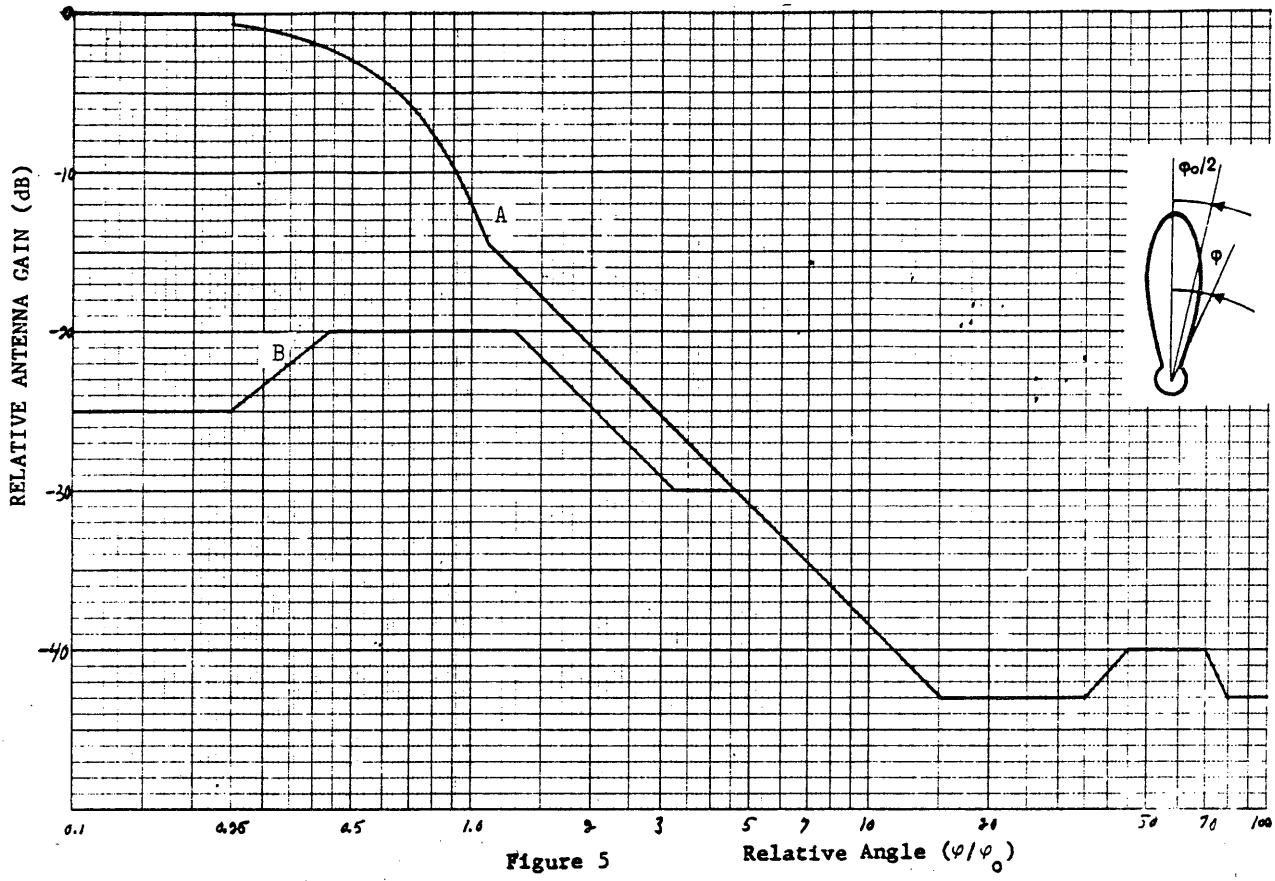


Figure 5

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

ADD

Curve A: Co-polar component without side-lobe suppression

$$
\begin{aligned}
&0 && \text{for } 0 \leq \varphi \leq 0.25\varphi_o \\
&-12\,(\varphi/\varphi_o)^2 && \text{for } 0.25\varphi_o < \varphi \leq 1.13\varphi_o \\
&-\{14 + 25 \log (\varphi/\varphi_o)\} && \text{for } 1.13\varphi_o < \varphi \leq 14.7\varphi_o \\
&-43.2 && \text{for } 14.7\varphi_o < \varphi \leq 35\varphi_o \\
&-\{85.2 - 27.2 \log (\varphi/\varphi_o)\} && \text{for } 35\varphi_o < \varphi \leq 45.1\varphi_o \\
&-40.2 && \text{for } 45.1\varphi_o < \varphi \leq 70\varphi_o \\
&-\{-55.2 + 51.7 \log (\varphi/\varphi_o)\} && \text{for } 70\varphi_o < \varphi \leq 80\varphi_o \\
&-43.2 && \text{for } 80\varphi_o < \varphi \leq 180^\circ
\end{aligned}
$$

MOD

Curve B: Cross-polar component

$$
\begin{aligned}
&-25 && \text{for } 0 \leqslant \varphi \leqslant 0.25\,\varphi_o \\
&-\left(30 + 40 \log_{10} \left| \frac{\varphi}{\varphi_o} - 1 \right|\right) && \text{for } 0.25\,\varphi_o < \varphi \leqslant 0.44\,\varphi_o \\
&-20 && \text{for } 0.44\,\varphi_o < \varphi \leqslant \frac{1.28}{\varphi_o} \\
&-\left(\frac{17.3}{} + 25 \log_{10} \left| \frac{\varphi}{\varphi_o} \right|\right) && \text{for } \frac{1.28}{\varphi_o} < \varphi \leqslant \frac{3.22}{\varphi_o}
\end{aligned}
$$

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

MOD Note 1 : For values of φ_o, see 3.7.

ADD Note 2 : In the angular range between $0.1\varphi_o$ and $1.13\varphi_o$ the co-polar and cross-polar gains must not exceed the reference patterns.

ADD Note 3 : At off axis angles larger than $1.13\varphi_o$, the gain of 90% of all sidelobe peaks in each of the reference angular windows must not exceed the reference patterns. The reference angular windows are $1.13\varphi_o$ to $3\varphi_o$, $3\varphi_o$ to $6\varphi_o$, $6\varphi_o$ to $10\varphi_o$, $10\varphi_o$ to $20\varphi_o$, $20\varphi_o$ to $40\varphi_o$, $40\varphi_o$ to $75\varphi_o$ and $75\varphi_o$ to $180\varphi_o$.

3.8 [To follow]

3.9 [To follow]

MOD 3.10 *Orbital spacing*

The Plan for Regions 1 and 3 has been based generally on nominal orbital positions spaced uniformly at intervals of 6°. The Plan for Region 2 has been based on a non-uniform spacing.

MOD 3.11 *Satellite station keeping*

Space stations in the broadcasting-satellite service must be maintained in position with an accuracy of better than ± 0.1° in both the N-S and E-W directions. (These tolerances lead to a maximum excursion of ± 0.14° from the nominal satellite position.) For such space stations in the Region 2 Plan, the maintenance of this tolerance in the N-S direction is recommended but is not a requirement.

NOC 3.12 ***Elevation angle of receiving antennae***

NOC 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°. Attention is also directed to paragraph 2.2.

MOD 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 at least 40° has been considered for service areas subject to high precipitation (e.g., in Regions 1 and 3, rain climatic zone 1; in Region 2, zones M, N, and P.), but exceptions were taken in some cases in Region 2.

NOC 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.

NOC 3.13 Transmitting antennas

MOD 3.13.1 Cross-section of transmitted beam

Planning in Regions 1 and 3 has been based on the use of transmitting antennas with beams of elliptical or circular cross-section. In Region 2, planning has generally been based on beams of elliptical or circular cross-section / but, in certain limited cases, beams with non-elliptical or "shaped" cross-sections have been used /.

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

MOD 3.13.2 Minimum beamwidth of transmitting antenna

A minimum value of 0.6° for the half-power beamwidth of a transmitting antenna has been agreed on for planning for Regions 1 and 3, whereas for Region 2, the corresponding value agreed upon is 0.8°.

3.13.3 / To follow /

NOC 3.14 Pointing accuracy of satellite antennas

MOD 3.14.1 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 $\pm 2^\circ$ for Regions 1 and 3 and $\pm 1^\circ$ for Region 2; the limit on rotation is not necessary for beams of circular cross-section using circular polarization.

NOC 3.14.2 The following 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 effect of the yaw error increases as the beam ellipse lengthens.

NOC 3.14.3 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.

NOC 3.14.4 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.

3.15 /To follow/

MOD **3.16** ***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 dB(W/m²) for individual reception in Regions 1 and 3;

– 107 dB(W/m²) for individual reception in Region 2; and

– 111 dB(W/m²) for community reception in Regions 1 and 3.

ANNEX 2

TEXTS FOR INCLUSION IN FINAL ACTS, SAT-83

PART V, APPENDIX 30, ANNEX 3

MOD 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:

$$A = 137.6 + 0.2324\, d_t + 0.0814\, d_m \quad \text{(Regions 1 and 3)} \qquad (4)$$

$$A = 141.9 + 0.2867\, d_t + 0.1522\, d_m \quad \text{(Region 2)} \qquad (4bis)$$

where:

d_t **and** d_m **are the overland and oversea path lengths respectively, in kilometres.**

MOD 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) for Regions 1 and 3 and equations (4bis) and (5bis) for Region 2 and the lower value obtained is substituted in formula (3) to calculate the power flux-density produced at the point on the edge of the service area :

$$A = 109.5 + 20 \log (d_t + d_m) \quad \text{(Regions 1 and 3)} \qquad (5)$$

$$A = 114.4 + 20 \log (d_t + d_m) + 0.01 (d_t + d_m) \quad \text{(Region 2)} \qquad (5bis)$$

The variation in A for Regions 1 and 3 for different path lengths and percentage of oversea path is shown in Figure 3.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 164-E
5 July 1983
Original : English

COMMITTEES 4 AND 5

United States of America

IMPACT OF USING P.F.D. = -105 dBW/m^2 AND G/T = 8 dB/K ON THE PLAN AND ITS IMPLEMENTATION

(Background Information Document)

1. Introduction

The United States in Document No. 117, has proposed that Committee 4 reconsider the values of p.f.d. = -107 dBW/m^2 and G/T = 10 dB/K initially recommended for planning and replace them with the values -105 dBW/m^2 and 8 dB/K, respectively. As explained in Document No. 117, the primary objective is to give all administrations greater flexibility for implementing the Plan with systems that best match their particular needs, now and in the future.

The present document attempts to answer some of the questions that other administrations may have about the effects that changing the values of p.f.d and G/T will have on : a) the Plans being drafted by Committee 5, and b) the systems that can be implemented under the Final Plan.

2. Question : The lower value of G/T associated with -105 dBW/m^2 implies smaller home antennas. Won't these smaller antennas have poorer angular discrimination which will require wider satellite spacings and lead to a Plan with a smaller capacity to meet requirements?

Answer

No. Smaller antennas with lower values of G/T need not have worse angular discrimination than the antenna reference pattern used for planning and shown in Figure 1. This is demonstrated by the measured data for 0.75 m antennas with G/T = 8 dB/K that are also plotted in Figure 1. The orbital spacings and the capacity of a Plan are determined by the receiving antenna reference pattern used for planning. The United States proposes no change in the reference pattern; so the only effect on the first and subsequent draft Plans of using -105 dBW/m^2 and 8 dB/K will be to increase the allowable satellite input power by 2 dB.

Comment

It is this 2 dB increase in allowable satellite power that gives all countries the option to implement conventional TV systems using smaller, less expensive antennas, or to build enhanced TV systems without having to use exorbitantly large antennas.

3. Question : The measured data you show are for offset-fed antennas. What about countries that do not wish to implement with offset-fed antennas?

Answer

They need not do so. The only requirement for implementing a system at -105 dBW/m^2 is to use an antenna whose measured pattern meets (or exceeds) the reference pattern used for planning and has a G/T of at least 8 dB/K. That pattern was based on a 1 m centre-fed design and any country that wishes to use such an antenna is free to do so with no risk of interference from other systems in the Plan.

Comment

Since 1986 is the earliest date that any Region 2 country will be able to implement a system due to satellite construction lead time, it is doubtful that many Region 2 administrations will choose to buy or manufacture antennas that offer less performance than today's offset-fed designs. By 1986 the tooling costs of such antennas will have been written off; hundreds of thousands, if not millions, will have been built. Unit cost for a given gain and sidelobe performance are almost certain to be lower than for a centre-fed design. Although the shape of the reflector is not symmetrical, less material is required for a given gain and, with the necessary tooling, the stamping or molding operation is no more complex. Since the feed and its supporting structure are not in the aperture, they can be larger, simpler, and easier to assemble. Thus, small offset-fed antennas are likely to be lower in cost than centre-fed antennas of comparable performance; and they can be manufactured competitively in a large number of Region 2 countries.

4. Question : Won't use of -105 dBW/m^2 cause worse spillover into neighbouring countries?

Answer

There are really two questions here. The first is whether spillover will cause worse interference to systems in neighbouring countries operating on the same or adjacent channels. The other is whether the spillover signal of one country will be more easily received in the territory of a neighbouring country or countries.

The answer to the first question is no. The interfering effects of spillover are measured by the ratio, C/I, of wanted to interfering power. If -105 dBW/m^2 is used instead of -107 dBW/m^2, both C and I increase by 2 dB, but their ratio remains the same. If a country implements a system using a p.f.d. lower than -105 dBW/m^2, and does not increase antenna size and G/T above 8 dB/K it will suffer increased noise (lower C/N) from the beginning of service and will suffer increased interference (lower C/I) when and if neighbouring countries start service with systems having p.f.d.s of -105 dBW/m^2. However, as explained in Document No. 117, if the system uses antennas large enough to restore noise performance, these same antennas will normally provide more than enough discrimination to reject interference from possible "full-p.f.d." neighbouring systems.

With regard to the receivability of a spillover signal, the answer is that increasing the p.f.d. for planning by 2 dB will not significantly extend the geographical extent of the spillover. This is determined primarily by the shape of the coverage areas assumed in the Plan and whether a rapid rolloff satellite antenna is used for planning. The spillover areas in the Plan would be minimized if shaped beam antennas were used, but Committee 4 has not recommended such antennas for routine

planning. Within the spillover areas, a 2 dB increase in p.f.d. means that the same picture quality can be received with a 20% smaller antenna or, conversely, that the same antenna will deliver a somewhat higher quality picture (about 0.3 higher picture impairment grade). In summary, the increase in p.f.d. will not alter the receivability of a country's spillover signal in a major way.

Comment

Before a country decides whether to implement with -105 dBW/m^2 or some lower value of p.f.d., it would be prudent to determine whether or not neighbouring countries were planning to implement with -105 dBW/m^2. If the country in question has good reasons for starting service with a p.f.d. lower than -105 dBW/m^2, the same reasons might very well motivate neighbouring countries to use the same lower value, and there would be no interference problem. On the other hand, if one or more neighbours did plan a -105 dBW/m^2 system, a bilateral agreement to coordinate frequency assignments could avoid potential interference.

5. Question : The first draft Plan was based on -107 dBW/m^2 and shows a number of assignments where the satellite antenna input power exceeds 230 W, the current limit on commercially available travelling wave tube amplifier (TWTA) output power. Won't the use of - 105 dBW/m^2 make this disparity even worse?

Answer

Without question, the use of -105 dBW/m^2 will increase the satellite antenna input powers allowed by the Plan by 2 dB over the values in a Plan based on -107 dBW/m^2. Whether this power is needed for implementation depends on the design of the satellite. Modern satellite designs, optimized to provide equivalent or superior system performance within the service area at significantly lower cost, require much smaller TWTA power for implementation in most cases below the 230 W level, even when delivering -105 dBW/m^2 in heavy rain. These designs save power by shaping the satellite antenna beam to match the service area and to make the p.f.d. within the service area more uniform except for possible "spot" beams towards large population centres or areas of heavier rainfall. The details of the satellite design considerations involved are given in a companion document which includes examples for specific service areas.

In cases where the TWTA power for implementation cannot be reduced below 230 W, the estimated costs of going to higher TWTA powers are not exorbitant. For example, an increase from 200 W to 400 W increases satellite costs by about 28%. A further increase to 800 W results in another 22% increase. The bases for these cost estimates are also given in the companion document.

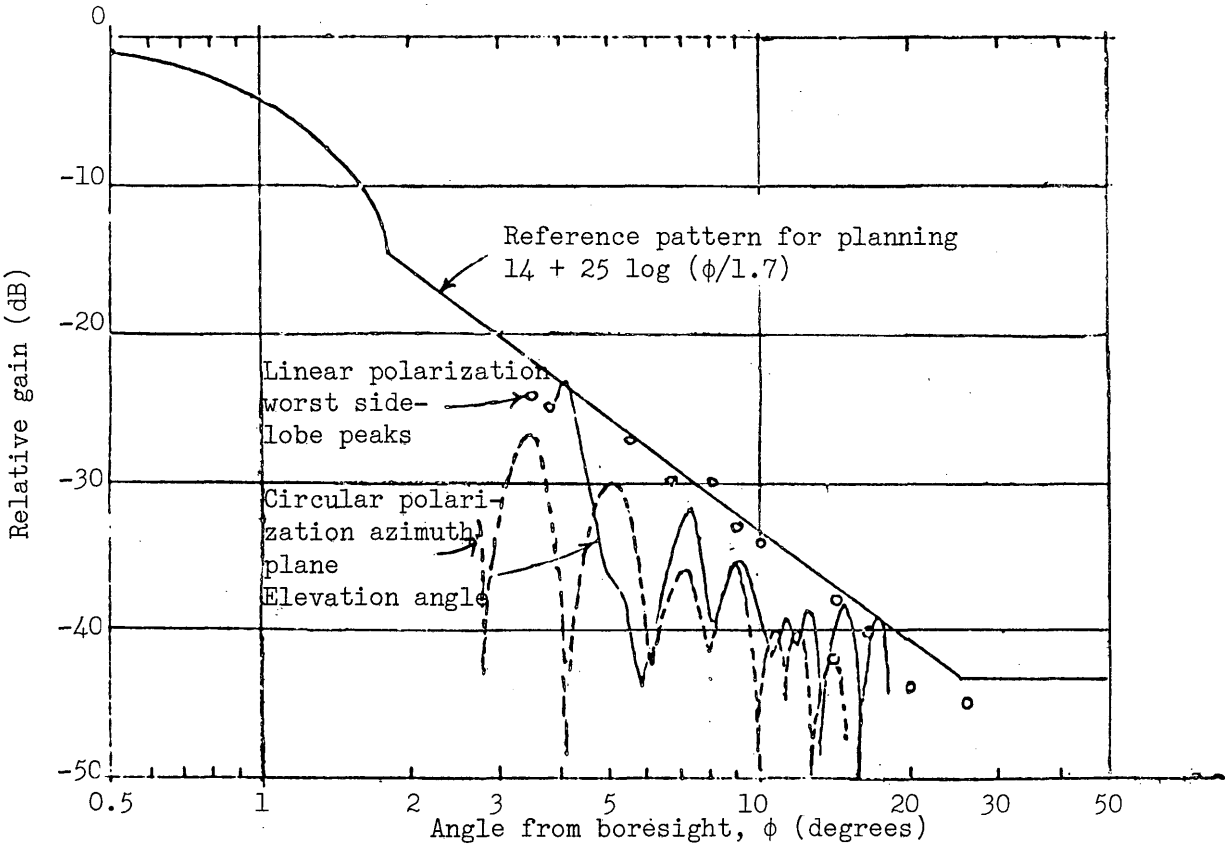


Figure 1 - Measured pattern data for three different 0.75 m offset-fed antennas compared with receiving antenna pattern recommended by Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No.165(Rev.1)-E
6 July 1983
Original : English

Source : Documents Nos. 52, 80 and DT/18

COMMITTEE 4

PART II, ANNEX 3 OF THE FINAL ACTS

RADIO PROPAGATION FACTORS

Committee 4 has decided to adopt the CPM model reduced by 12% (i.e. $A = 0.88\ A_{CPM}$) to take account of new CCIR Study Group 5 data. This method is presented in the following text for 17.5 GHz using circular polarization at 1% of the worst month.

In addition, the Committee has approved the principle of using attenuation limits in the analysis of the down-link and feeder link plans. For the feeder link a value of ± 13 dB is suggested. The final values are to be decided during the plan development.

Following is the proposed text on radio propagation factors for Part II, Annex 3 of the Final Acts.

J. SCHLESAK
Chairman of Working Group 4A

2. Radio propagation factors

2.1 The propagation loss on an earth-space path is equal to the free space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

2.1.1 Atmospheric absorption

The loss due to atmospheric absorption (i.e. clear air attenuation) is given by (CCIR Report 719-1) :

$$A_a = \frac{0.0669 + 0.0091\rho}{\sin\theta} \qquad \theta \geq 5^\circ$$

where

θ = the elevation angle; (degrees)

ρ = the surface water vapour concentration, g/m^3, being $\rho = 10\ g/m^3$ for climates A to K and $\rho = 20\ g/m^3$ for climates M to P (see Figure 1)

2.1.2 Rain attenuation

The rain attenuation A of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz is calculated using the method outlined in section 2.4.2 of Annex 6, Section I, of the Final Acts of SAT-83 by substituting the relation

$$\gamma = 0.0521\ R^{1.114}$$

for the one given in that Appendix.

Figure 2 presents plots of rain attenuation of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz, as a function of earth station latitude and elevation angle for each of the rain climates in Region 2.

2.1.3 Rain attenuation limit

In the analysis of the plan, a maximum rain attenuation on the feeder link of [13] dB was considered assuming that other means would be used at the implementation stage to protect for larger rain attenuation on the feeder links.

2.2 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For the feeder link, the XPD ratio, in dB, not exceeded for 1% of the worst month is given by :

$$XPD = 30 \log f - 40 \log (\cos\theta) - 23 \log A_p \quad \text{dB for } 5^\circ \leq \theta \leq 60^\circ$$

where A_p is the co-polar rain attentuation exceeded for 1% of the worst month, f is the frequeny in GHz and θ is the elevation angle. For values of θ greater than 60°, use $\theta = 60^\circ$ in the previous equation.

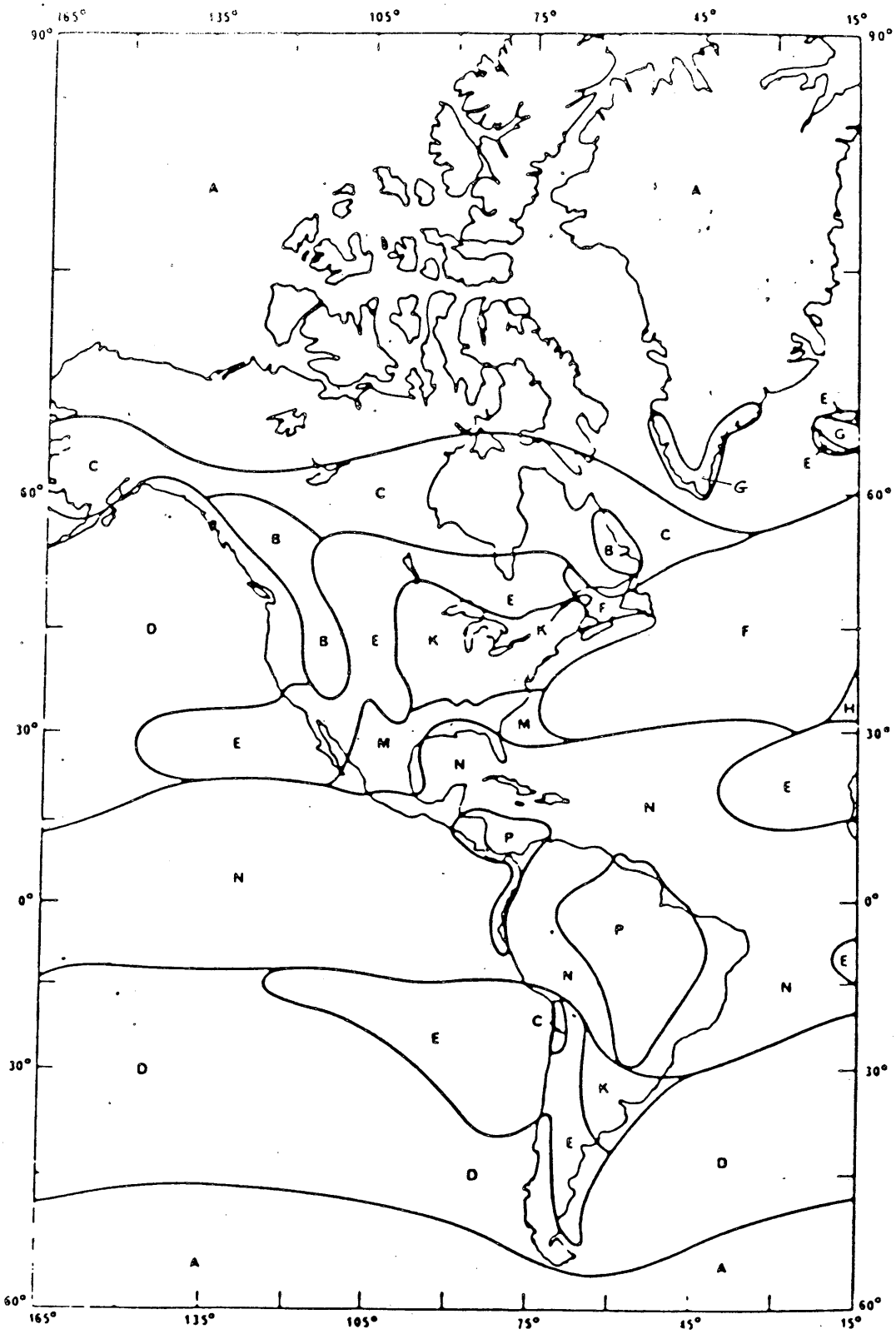


FIGURE 1 *Rain climatic zones (Region 2)*

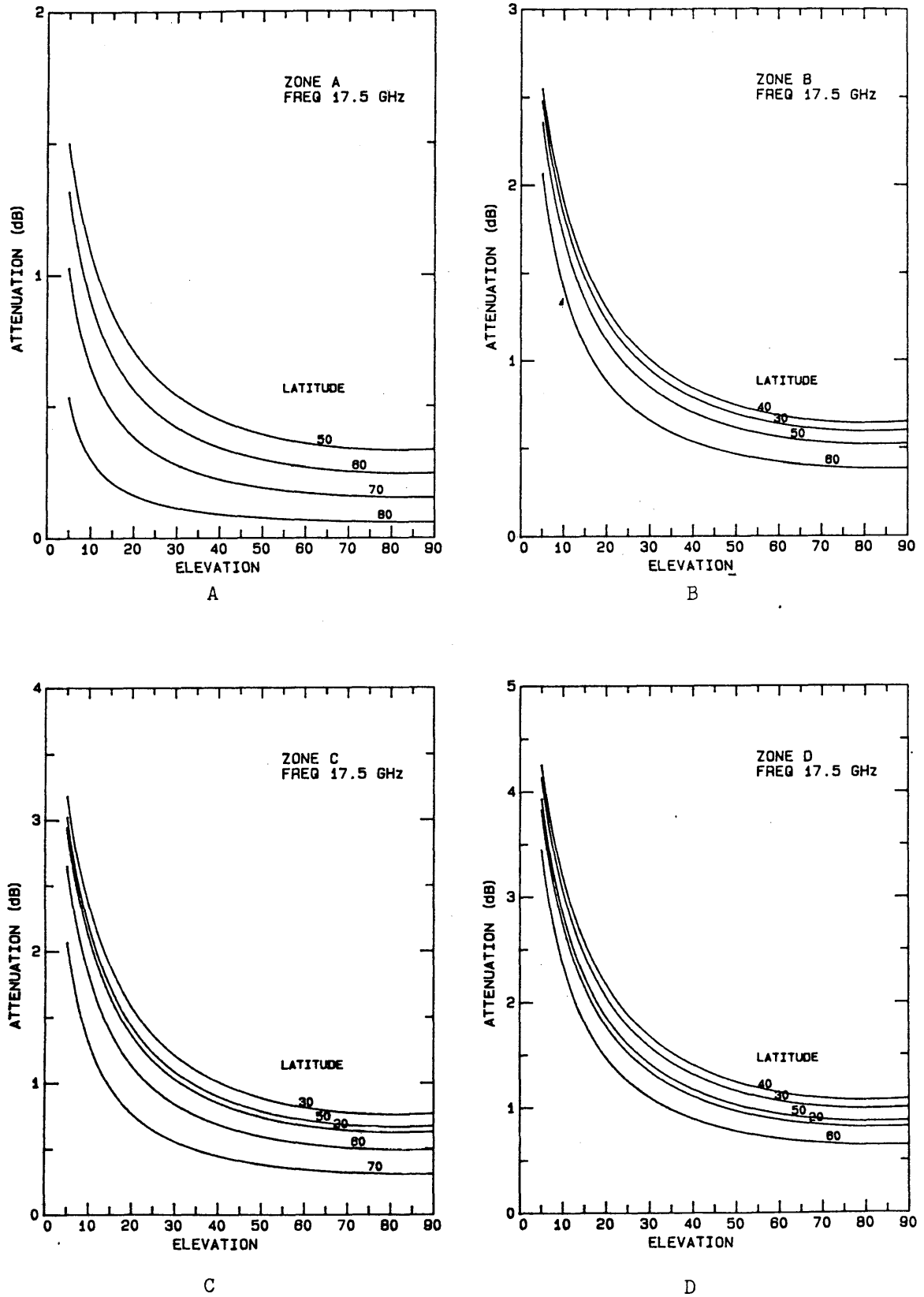


Figure 2

Rain attenuation for Region 2 rain climatic zones (A, B, C, D)

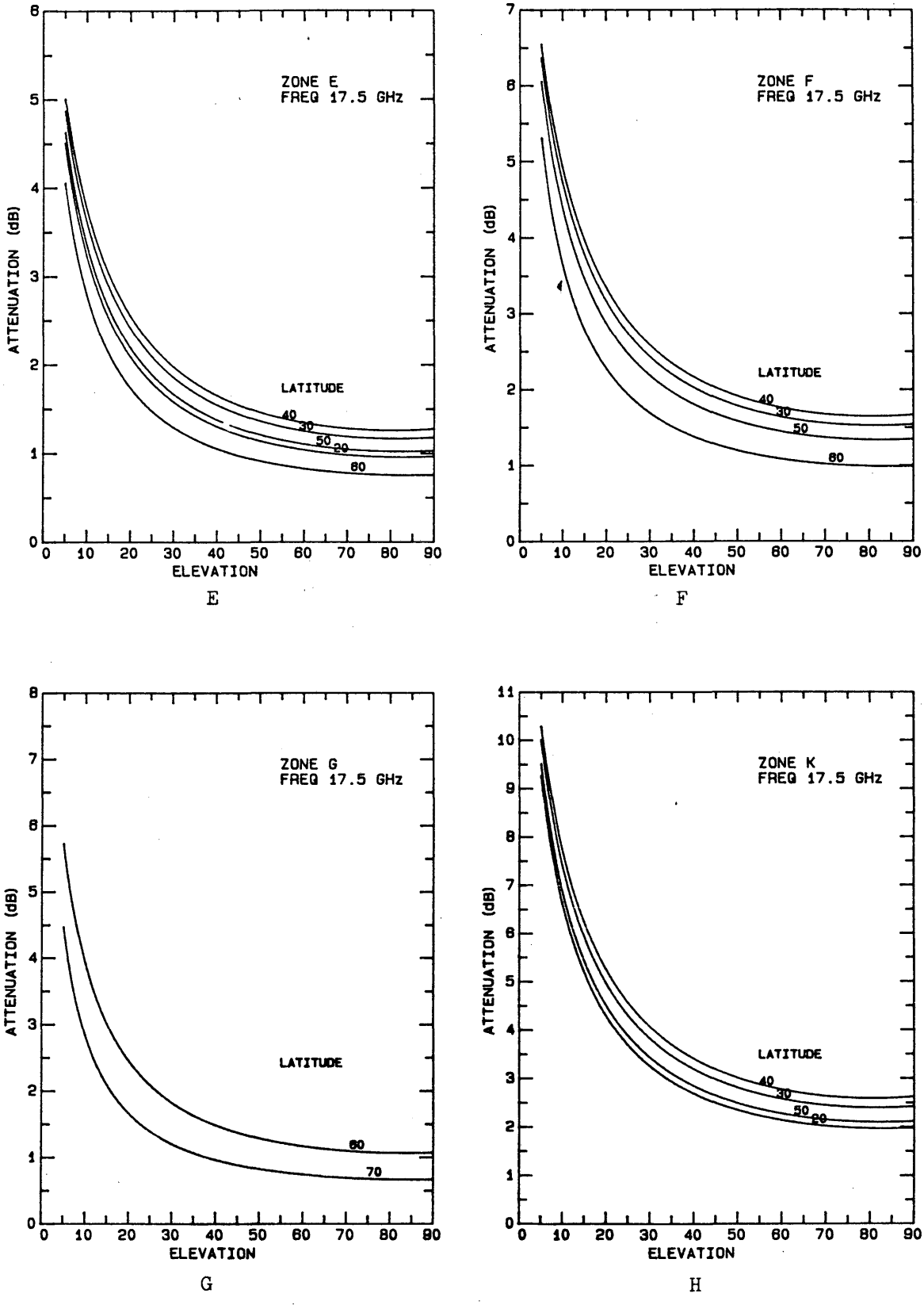
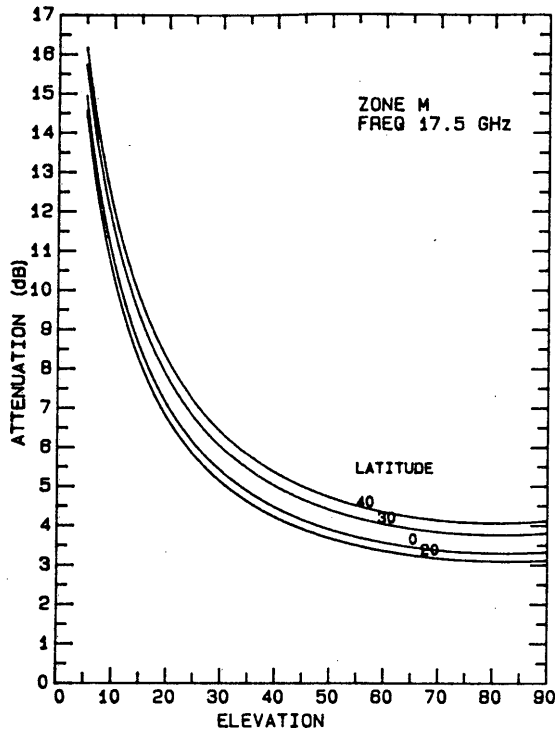
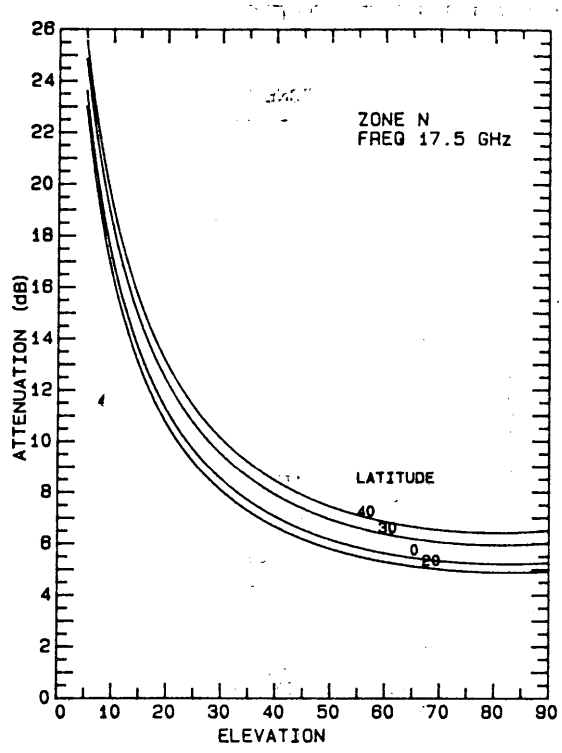


Figure 2

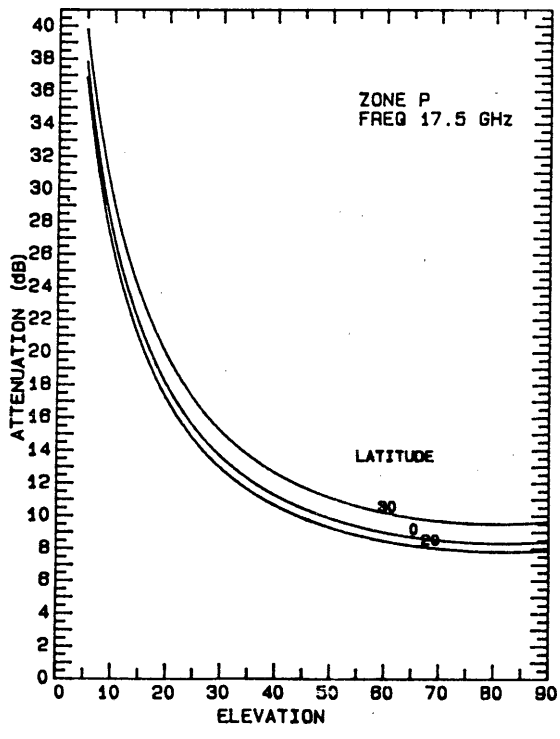
Rain attenuation for Region 2 rain climatic zones (E, F, G, H)



I



J



K

Figure 2
Rain attenuation for Region 2 rain climatic zones (I, J, K)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 165-E
5 July 1983
Original : English

Source : Documents Nos. 52, 80 and DT/18

COMMITTEE 4

PART II, ANNEX 3 OF THE FINAL ACTS

RADIO PROPAGATION FACTORS

Committee 4 has decided to adopt the CPM model reduced by 12% (i.e. $A = 0.88\ A_{CPM}$) to take account of new CCIR Study Group 5 data. This method is presented in the following text for 17.5 GHz using circular polarization at 1% of the worst month.

In addition, the Committee has approved the principle of using attenuation limits in the analysis of the down-link and feeder link plans. For the feeder link a value of ± 13 dB is suggested. The final values are to be decided during the plan development.

Following is the proposed text on radio propagation factors for Part II, Annex 3 of the Final Acts.

J. SCHLESAK
Chairman of Working Group 4A

2. Radio propagation factors

2.1 The propagation loss on an earth-space path is equal to the free space path loss plus the atmospheric absorption loss plus the rain attenuation exceeded for 1% of the worst month.

2.1.1 Atmospheric absorption

The loss due to atmospheric absorption (i.e. clear air attenuation) is given by (CCIR Report 719-1) :

$$A_a = \frac{0.0669 + 0.0091\rho}{\sin\theta} \qquad \theta \geq 5^\circ$$

where

θ = the elevation angle; (degrees)

ρ = the surface water vapour concentration, g/m^3, being $\rho = 10\ g/m^3$ for climates A to K and $\rho = 20\ g/m^3$ for climates M to P (see Figure 1)

2.1.2 Rain attenuation

The rain attenuation A of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz is calculated using the method outlined in section 2.4.2 of Annex 6, Section I, of the Final Acts of SAT-83 by substituting the relation

$$\gamma = 0.0521\ R^{1.114}$$

for the one given in that Appendix.

Figure ... presents plots of rain attenuation of circularly polarized signals exceeded for 1% of the worst month at 17.5 GHz, as a function of earth station latitude and elevation angle for each of the rain climates in Region 2.

2.1.3 Rain attenuation limit

In the analysis of the plan, a maximum rain attenuation on the feeder link of [13] dB was considered assuming that other means would be used at the implementation stage to protect for larger rain attenuation on the feeder links.

2.2 Depolarization

Rain and ice can cause depolarization of radio frequency signals. The level of the co-polar component relative to the depolarized component is given by the cross-polarization discrimination (XPD) ratio. For the feeder link, the XPD ratio, in dB, not exceeded for 1% of the worst month is given by :

$$XPD = 30 \log f - 40 \log (\cos\theta) - 23 \log A_p \quad \text{dB for } 5^\circ \leq \theta \leq 60^\circ$$

where A_p is the co-polar rain attentuation exceeded for 1% of the worst month, f is the frequeny in GHz and θ is the elevation angle. For values of θ greater than 60°, use $\theta = 60^\circ$ in the previous equation.

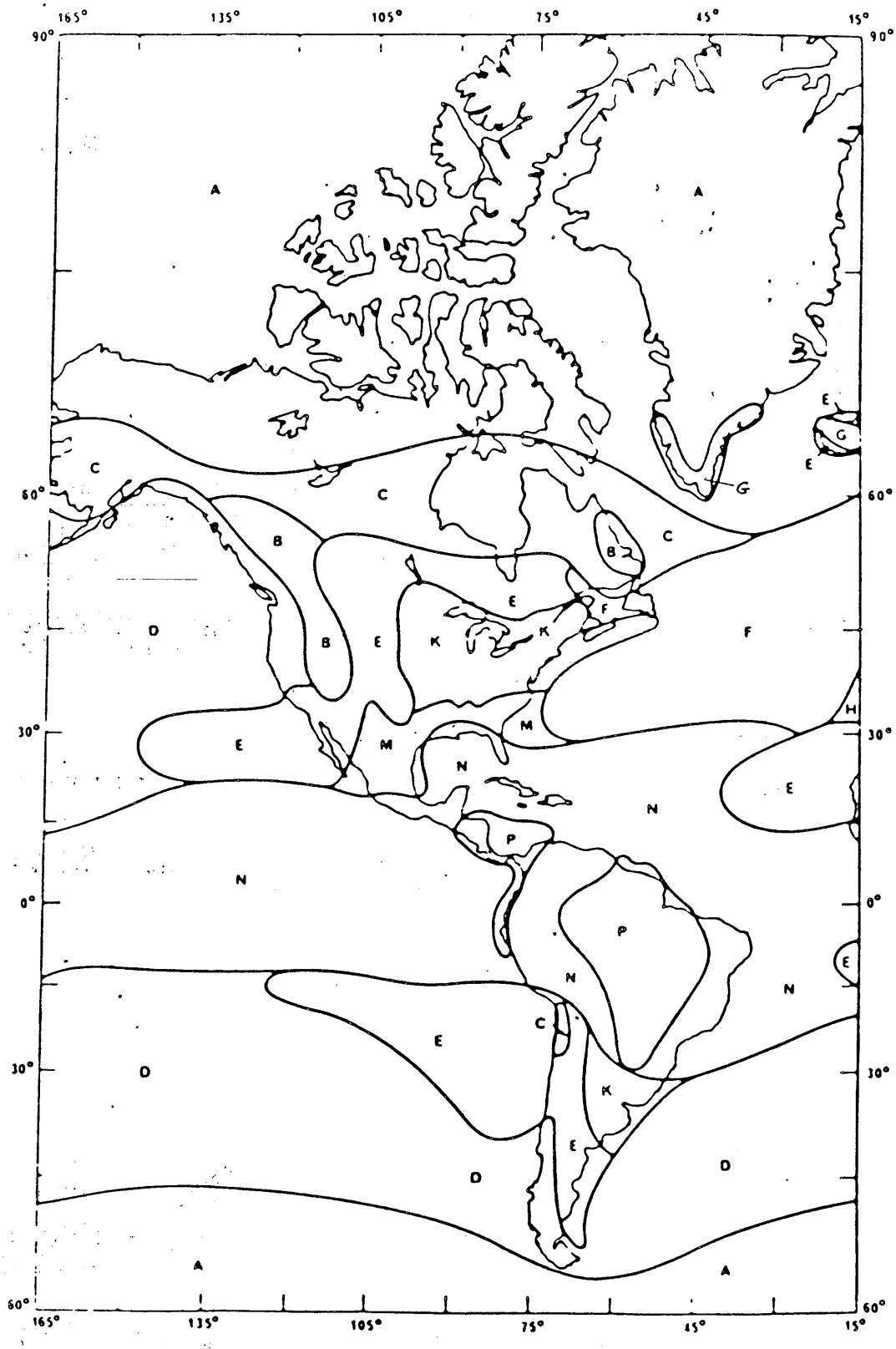
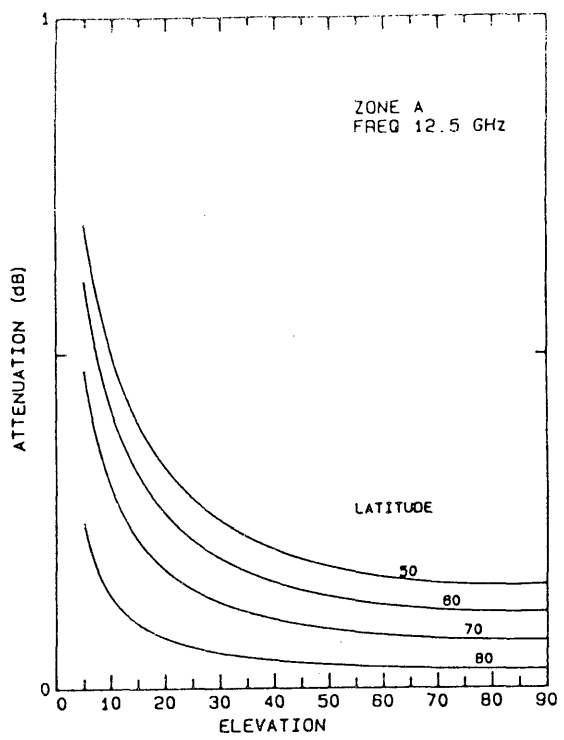
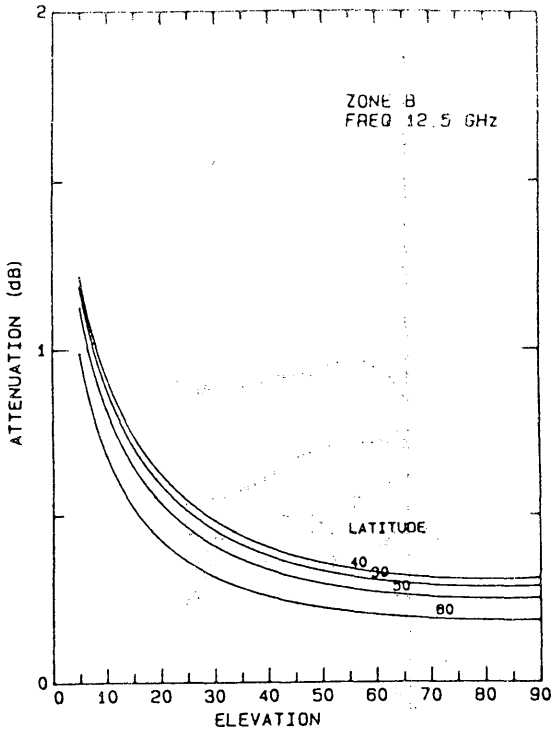


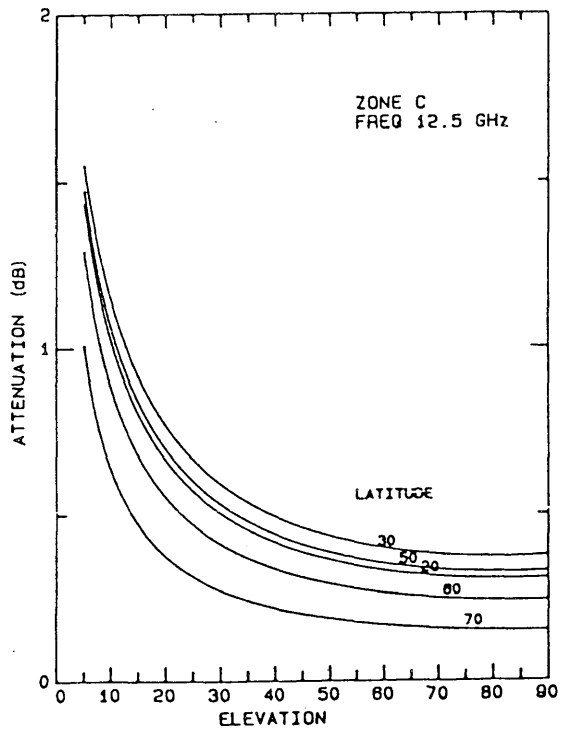
FIGURE 1 *Rain climatic zones (Region 2)*



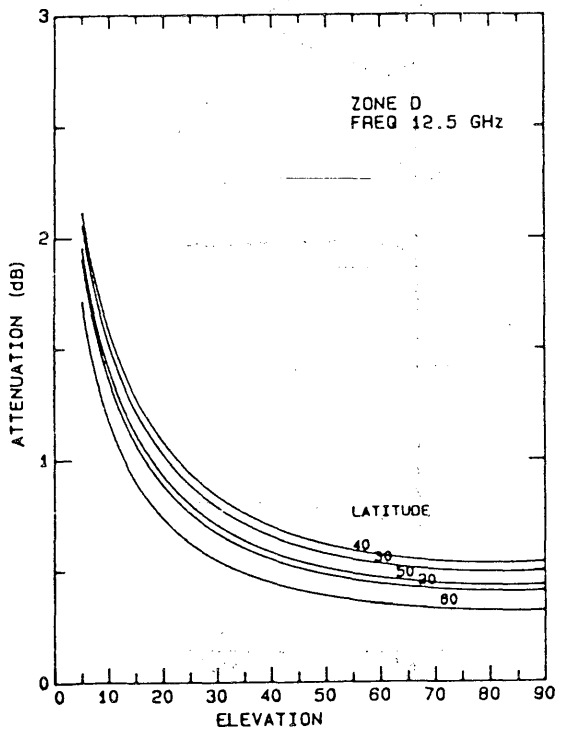
A



B



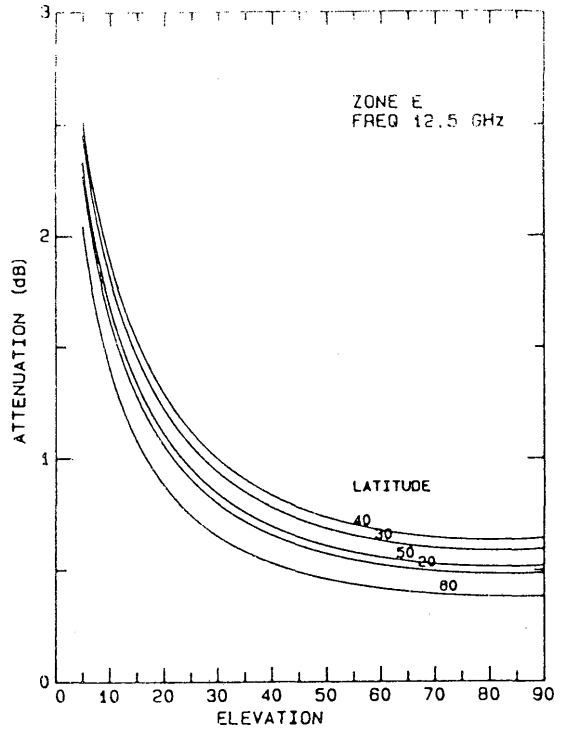
C



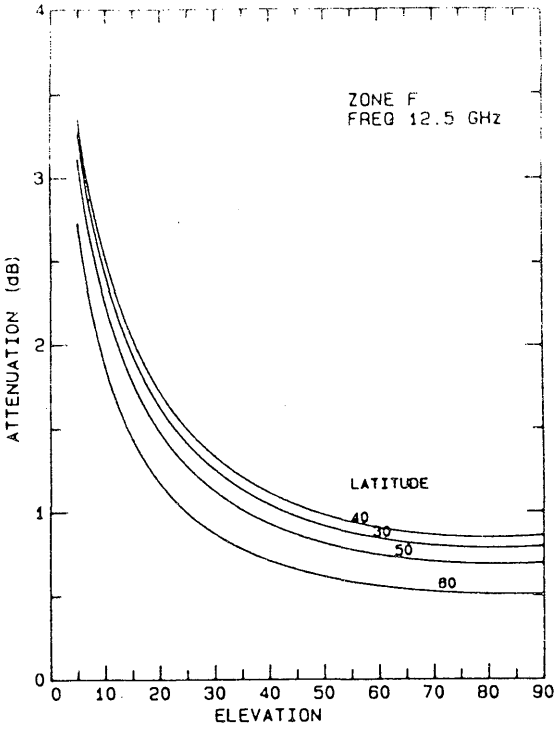
D

Figure 2

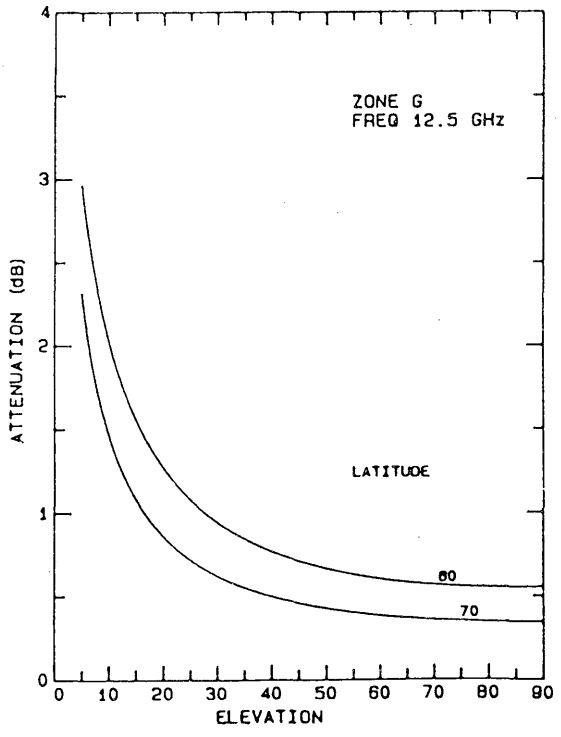
Rain attenuation for Region 2 rain climatic zones (A, B, C, D)



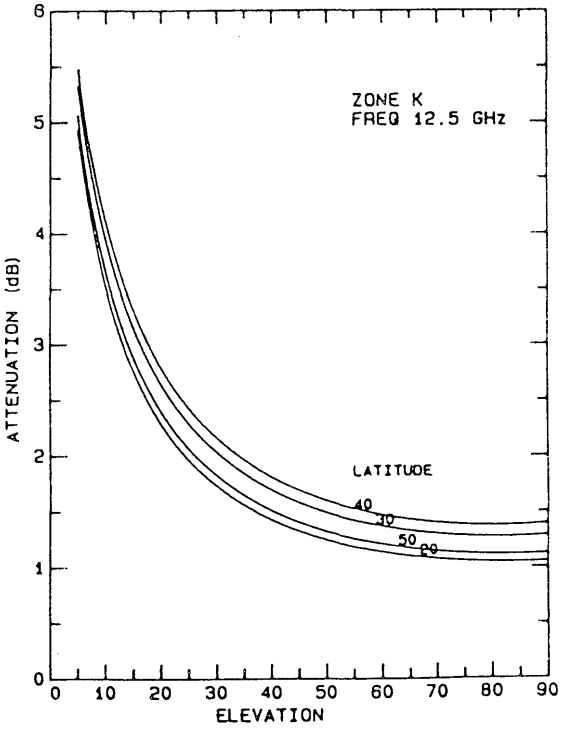
E



F



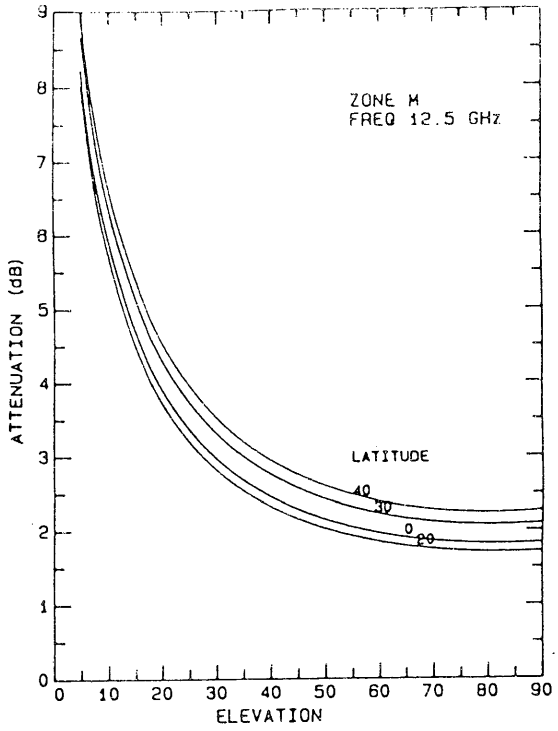
G



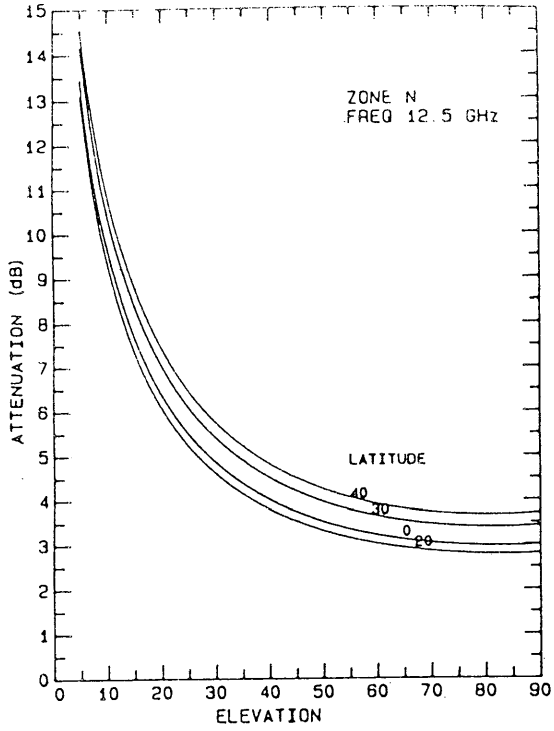
H

Figure 2

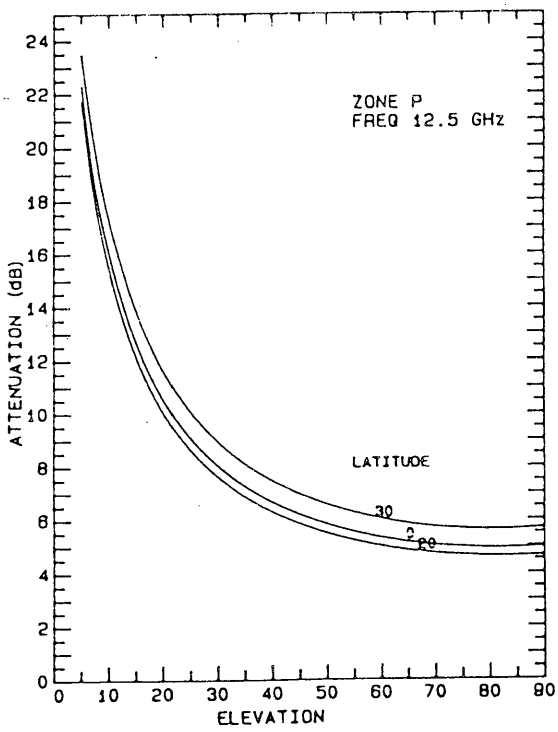
Rain attenuation for Region 2 rain climatic zones (E, F, G, H)



I



J



K

Figure 2
Rain attenuation for Region 2 rain climatic zones (I, J, K)

INTERNATIONAL TELECOMMUNICATION UNION

WARC FOR MOBILE SERVICES

GENEVA, FEBRUARY/MARCH 1983

Corrigendum No. 1 to
Document No. 166-E
19 August 1983

COMMITTEE 4

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 4

Replace paragraph 4.6 by the following :

"4.6 The delegate of the Netherlands said that his Administration's main purpose was to develop and gradually introduce the FGMDSS for which a regulatory framework within the Radio Regulations must be set up. It had concluded that accommodating the frequencies in a composite channel would be a workable solution which would satisfy the IMO requirement that the frequencies once assigned, would remain unchanged, that being difficult to achieve with a dispersed frequency arrangement.

His Administration was aware of certain technical problems with respect to the accommodation of the three elements of the FGMDSS in a composite channel. In order to overcome difficulties with intermodulation, it was proposed to locate the DSC elements on a frequency 3.5 kHz above the lower end of the composite channel and the NBDP elements on a frequency 4.5 kHz above the lower end of the composite channel. A number of consequential changes would then have to be made in the Netherlands' proposals for Article 38.

One problem that might arise when all frequencies were in a composite channel was that it was not always possible for coast stations to receive a DSC alert when operating one of the other functions, but that could be overcome by separating the transmitter and receiving sides of a coast station, though admittedly that might not be easy for some countries at present. However, the number of distress alerts in the HF bands was likely to be small as the records showed that only about 5% of the distress situations occurred at distances of more than 100 miles from shore. Consequently no major difficulties were foreseen in respect of unreceived DSC alerts on the HF frequencies. Moreover, IMO requirements indicated that in the HF bands short interruptions in the reception on the DSC channel could be tolerated. Furthermore, ships could be expected to be fitted with a satellite EPIRB as their primary means of alerting."

INTERNATIONAL TELECOMMUNICATION UNION

BLUE PAGES

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 166-E
6 July 1983

B.1

PLENARY MEETING

FIRST SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

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

Source	Document No.	Title	
COM4	154	Transmitting antenna Polarization	Part II - Annex 3

D. SAUVET-GOICHON
Chairman of Committee 7

Annex : 2 pages

PART II

ANNEX 3

3.4 Transmitting antenna

. . . . . .

3.4.2 Reference patterns of transmitting antennas

The co-polar and cross-polar reference patterns of transmitting antennas used for planning in Region 2 are given in Figure [x].

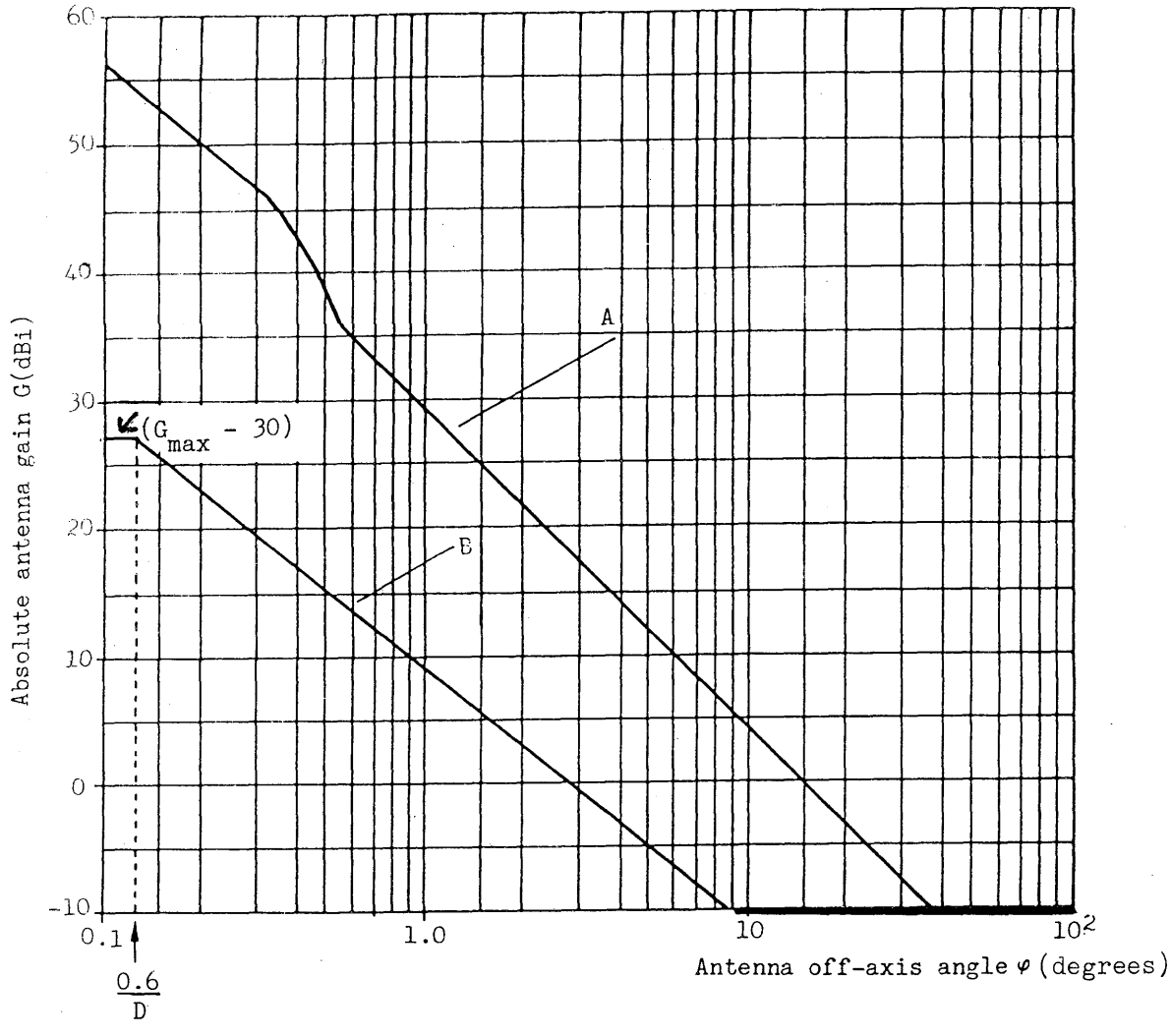


FIGURE [x]

Reference patterns for co-polar and cross-polar components for transmitting antennas for Region 2

Part II - Annex 3

Curve A : Co-polar component
(dBi relative to isotropic source)

$36 - 20 \log_{10} \varphi$ for $0.1^\circ \leq \varphi < 0.32^\circ$

$51.3 - 53.2 \varphi^2$ for $0.32^\circ \leq \varphi < 0.54^\circ$

$29 - 25 \log_{10} \varphi$ for $0.54 \leq \varphi < 36^\circ$

-10 for $\varphi \geq 36^\circ$

Curve B : Cross-polar component
(dBi relative to isotropic source)

$G_{max} - 30$ for $\varphi < \left(\frac{0.6}{D}\right)^\circ$

$9 - 20 \log_{10} \varphi$ for $\left(\frac{0.6}{D}\right)^\circ \leq \varphi < 8.7^\circ$

-10 for $\varphi \geq 8.7^\circ$

where,

φ = off-axis angle referred to the main-lobe axis;

G_{max} = on axis co-polar gain of the antenna;

D = diameter of the antenna in meters ($D \geq 2.5$).

Note 1 : In the angular range between 0.1° and 0.54° the co-polar gain must not exceed the reference pattern.

Note 2 : In the angular range between 0° and $(0.6/D)^\circ$, the cross polar gain must not exceed the reference pattern.

Note 3 : At larger off-axis angles and for 90% of all sidelobe peaks in each of the reference angular windows, the gain must not exceed the reference patterns. The reference angular windows are 0.54° to 1°, 1° to 2°, 2° to 4°, 4° to 7°, 7° to 10°, 10° to 20°, 20° to 40°, 40° to 70°, 70° to 100°, 100° to 180°. The first reference angular window for evaluating the cross-polar component should start at $(0.6/D)^\circ$.

. . . . . .

3.8 Polarization

3.8.1 In Region 2, for the purpose of planning the feeder links, circular polarization is used. However, in the cases where an administration has been allotted all channels in both senses of polarization at a single orbital location, without any polarization constraints with respect to other orbital positions, the type of polarization need not be specified.

3.8.2 In the cases where there are polarization constraints, use of polarization other than circular is permitted only upon agreement of administrations that may be affected.

INTERNATIONAL TELECOMMUNICATION UNION

BLUE PAGES

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 167-E
6 July 1983

B.2

PLENARY MEETING

SECOND SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

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

Source	Document No.	Title
COM5	133	Article 11 (Part I)
		Article 9 (Part II)

D. SAUVET-GOICHON
Chairman of Committee 7

Annex : 4 pages

PART I

ARTICLE 11

The Plan for the Broadcasting-Satellite Service in the Frequency Band 12.2 - 12.7 GHz in Region 2

11.1 COLUMN HEADINGS OF THE PLAN

Col. 1. Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2. *Nominal orbital position*, in degrees.

Col. 3. *Channel number* (see Table showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5. *Antenna beamwidth*. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect) .[1)]

Col. 8. *E.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 9. *Remarks*.

11.2 NOTES RELATING TO THE PLAN

. . . . . .

---

1) See Annex /6/, paragraph /3.2/.

Part I - Article 11

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	12224.00	17	12457.28
2	12238.58	18	12471.86
3	12253.16	19	12486.44
4	12267.74	20	12501.02
5	12282.32	21	12515.60
6	12296.90	22	12530.18
7	12311.48	23	12544.76
8	12326.06	24	12559.34
9	12340.64	25	12573.92
10	12355.22	26	12588.50
11	12369.80	27	12603.08
12	12384.38	28	12617.66
13	12398.96	29	12632.24
14	12413.54	30	12646.82
15	12428.12	31	12661.40
16	12442.70	32	12675.98

PART II

ARTICLE 9

The Plan for the Feeder Links in the Fixed-Satellite Service in the Frequency Band 17.3 - 17.8 GHz in Region 2

9.1 COLUMN HEADINGS OF THE PLAN

Col. 1. Beam identification (Column 1 contains the symbol designating the country or the geographical area taken from Table No. 1 of the Preface to the International Frequency List followed by the symbol designating the service area).

Col. 2. *Nominal orbital position*, in degrees.

Col. 3. *Channel number* (see Table showing channel numbers and corresponding assigned frequencies).

Col. 4. *Boresight* geographical coordinates, in degrees and hundredths of a degree.

Col. 5. *Antenna beamwidth*. This column contains two figures corresponding to the major axis and the minor axis respectively of the elliptical cross-section half-power beam, in degrees and hundredths of a degree.

Col. 6. *Orientation of the ellipse* determined as follows: in a plane normal to the beam axis, the direction of a major axis of the ellipse is specified as the angle measured anti-clockwise from a line parallel to the equatorial plane to the major axis of the ellipse to the nearest degree.

Col. 7. *Polarization* (1 = direct, 2 = indirect) .[1)]

Col. 8. *E.i.r.p.* in the direction of maximum radiation, in dBW.

Col. 9. *Remarks*.

9.2 NOTES RELATING TO THE PLAN

. . . . . .

---

1) See Annex /3/, paragraph /3.8/.

Part II - Article 9

TABLE SHOWING CORRESPONDENCE BETWEEN CHANNEL NUMBERS AND ASSIGNED FREQUENCIES

Channel No.	Assigned frequency (MHz)	Channel No.	Assigned frequency (MHz)
1	17324.00	17	17557.28
2	17338.58	18	17571.86
3	17353.16	19	17586.44
4	17367.74	20	17601.02
5	17382.32	21	17615.60
6	17396.90	22	17630.18
7	17411.48	23	17644.76
8	17426.06	24	17659.34
9	17440.64	25	17673.92
10	17455.22	26	17688.50
11	17469.80	27	17703.08
12	17484.38	28	17717.66
13	17498.96	29	17732.24
14	17513.54	30	17746.82
15	17528.12	31	17761.40
16	17542.70	32	17775.98

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 168-E
6 July 1983
Original : Spanish

COMMITTEE 2

SECOND REPORT OF THE WORKING GROUP

OF COMMITTEE 2

(CREDENTIALS)

The Working Group of Committee 2 held a second meeting on 6 July 1983 to examine the credentials of the following delegations :

ARGENTINE REPUBLIC

BRAZIL (Federative Republic of)

UNITED STATES OF AMERICA

MEXICO

NETHERLANDS (Kingdom of the)

SURINAME (Republic of)

The credentials of these delegations were all found to be in order.

M. LASSO
Chairman a.i. of the Working Group

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 169-E
6 July 1983
Original : English

PLENARY MEETING

SECOND REPORT OF COMMITTEE 6 TO THE PLENARY MEETING

Committee 6 has submitted the first series of texts to the Editorial Committee (see Document No. 170). In this connection, attention of the Plenary Meeting is invited to the following :

- concerning the recommended action on RR 843, the Argentine delegation has reserved the right to return to this subject at a later date; and

- while agreeing to the texts for the new Article 15A of the Radio Regulations, the delegate of Venezuela wished to remind his Administration's position regarding the interpretation of the terms "assignment" and "allotment" (Document No. 38).

J.A. ZAVATTIERO
Chairman of Committee 6

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 170-E
6 July 1983
Original : English/
French/
Spanish

COMMITTEE 7

FIRST SERIES OF TEXTS FROM COMMITTEE 6

TO THE EDITORIAL COMMITTEE

The texts mentioned in Document No. 169 are hereby submitted to the Editorial Committee.

J.A. ZAVATTIERO
Chairman of Committee 6

Annex : 1

ANNEX

FINAL ACTS

of the Regional Administrative Radio Conference for the planning, in Region 2, of the broadcasting-satellite service in the frequency band [12.2]- 12.7 GHz and associated feeder links in the fixed-satellite service (Earth-to-space) in the frequency band / 17.3 - 17.8 / GHz

---

General Definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below:

Union:	The International Telecommunication Union;
Secretary-General:	The Secretary-General of the Union;
IFRB (Board):	The International Frequency Registration Board;
CCIR:	The International Radio Consultative Committee;
Convention:	The International Telecommunication Convention in force;
Radio Regulations:	The Radio Regulations annexed to the Convention.
Regions 1, 2 and 3:	The geographical areas defined in Nos. 393 to 399 of the Radio Regulations
Master Register:	The Master International Frequency Register;
IFRB weekly circular:	The publication referred to in No. 1235 of the Radio Regulations;
Administration:	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations.
WARC :	World Administrative Radio Conference
Geneva 1983 Conference :	Regional Administrative Radio Conference (RARC-1983) for the planning in Region 2 of the broadcasting-satellite service in the frequency band / 12.2 / - 12.7 GHz and associated feeder links in the frequency band / 17.3 - 17.8 / GHz;

PART I

Provisions and Associated Plan for the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2

ARTICLE 1

Definitions

Region 2 Plan: The Plan for the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2 contained in this Part of the Final Acts, together with any modifications resulting from the successful application of the procedures of Article 4 of this Part.

Frequency assignment in conformity with the Region 2 Plan: Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this Part has been successfully applied.

Regions 1 & 3 Plan: 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 contained in Appendix 30 to the Radio Regulations, together with any modifications resulting from the successful application of the procedures contained in the said Appendix.

ARTICLE 2

Frequency Band

2.1 The provisions of this Part apply to the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2 and to the other services to which this band is allocated in Regions 1, 2 and 3, insofar as their relationship to the broadcasting-satellite service in this band in Region 2 is concerned.

ARTICLE 3

Execution of the Provisions and Associated Plan

3.1 The Members of the Union in Region 2 shall adopt, for their broadcasting-satellite space stations[1] operating in the frequency bands referred to in this Part the characteristics specified in the Plan for that Region.

3.2 (To be provided later.)

[1] Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with RR 846.

PART III

Consequential modifications to Radio Regulations

1. Modifications to provisions of Article 8 :

TABLE OF FREQUENCY ALLOCATIONS

GHz
11.7 - 12.75

Region 1	Region 2	Region 3
11.7 - 12.5 FIXED BROADCASTING BROADCASTING-SATELLITE Mobile except aeronautical mobile	11.7 - 12.1 FIXED 837 FIXED-SATELLITE (space-to-Earth) Mobile except aeronautical mobile 836 839 840	11.7 - 12.2 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 838 840
	12.1 - [12.2] FIXED SATELLITE (space-to-Earth) 836 839 840 842	12.2 - 12.5 FIXED MOBILE except aeronautical mobile BROADCASTING
838 840	[12.2] - 12.7 FIXED MOBILE except aeronautical mobile BROADCASTING BROADCASTING-SATELLITE 839 840 844 846	838 840 845
12.5 - 12.75 FIXED-SATELLITE (space-to-Earth) (Earth-to-Space) 840 848 849 850	12.7 - 12.75 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE except aeronautical mobile 840	12.5 - 12.75 FIXED FIXED-SATELLITE (space-to-Earth MOBILE except aeronautical mobile BROADCASTING-SATELLITE 847 840

MOD 836 In Region 2, in the band 11.7 - /12.2/ GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

MOD 837 Different category of service : in Canada, Mexico and the United States, the allocation of the band 11.7 - 12.1 GHz to the fixed service is on a secondary basis (see No. 424).

MOD 839 The use of the band 11.7 - 12.7 GHz in Region 2 by the fixed-satellite and broadcasting-satellite services is limited to national and sub-regional systems. The use of the band 11.7 - /12.2/ GHz by the fixed-satellite service in Region 2 is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles 11, 13 and 14). For the use of the band /12.2/ - 12.7 GHz by the broadcasting-satellite service in Region 2, see /Part I of the Final Acts/.

MOD 840 For the use of the band 11.7 - 12.75 GHz in Regions 1, 2 and 3, see Resolution 34.

SUP 841

MOD 842 Additional allocation : the band 12.1 - /12.2/ GHz in Brazil and Peru, is also allocated to the fixed service on a primary basis.

SUP 843

MOD 844 In Region 2, in the band /12.2/- 12.7 GHz, existing and future terrestrial radio-communication services shall not cause harmful interference to the space services operating in accordance with the broadcasting-satellite plan prepared at the 1983 regional administrative radio conference for Region 2.

MOD 846 In Region 2, in the band /12.2/-12.7 GHz, assignments to stations of the broadcasting-satellite service made available in the plan established by the 1983 regional administrative radio conference for Region 2 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference or require more protection from interference than the broadcasting-satellite service transmissions operating in accordance with that plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service.

MOD 869 The use of the band 17.3 - 18.1 GHz by the fixed-satellite (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by the feeder links for the broadcasting-satellite service in the band /12.2/ - 12.7 GHz, see /Part II of Final Acts/.

2. Modifications to provisions of Article 11 of Radio Regulations

MOD A.11.1 [1]For the coordination of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - /12.2/ GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and /12.2/ - 12.7 GHz (in Region 2) as well as the coordination of frequency assignments to feeder link stations utilizing the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in this band, see also Article 15 and Article 15A respectively.

3. Modifications to provisions of Articles 12 of Radio Regulations

ARTICLE 12

MOD Title

Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Terrestrial Radiocommunication stations[2, 3, 4]

MOD A.12.3 [3]For the notification and recording of frequency assignments to terrestrial stations in the frequency bands 11.7 - 12.2 GHz (in Region 3), /12.2/ - 12.7 GHz (in Region 2) and 11.7 - 12.5 GHz (in Region 1), so far as their relationship to the broadcasting-satellite service in these bands is concerned, see also Article 15.

ADD A.12.4 [4]For the notification and recording of frequency assignments to terrestrial stations in the frequency band /17.7/ - 17.8 GHz (in Region 2), so far as their relationship to the fixed-satellite service (Earth-to-space) in this band is concerned, see also Article 15A.

4. Modifications to provisions of Article 13 of Radio Regulations

ARTICLE 13

Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service[2]

MOD A.13.2 [2]For notification and recording of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Region 3) and 11.7 - 12.5 GHz (in Region 1) and /12.2/ - 12.7 GHz (Region 2), as well as the notification and recording of frequency assignments to feeder link stations in the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in this band, see also Article 15 and Article 15A respectively.

5. Modifications to provisions of Article 15 of Radio Regulations

ARTICLE 15

MOD Title Coordination, Notification and Recording of Frequency Assignments to Stations of the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 3) /12.2/ - 12.7 GHz (in Region 2) and 11.7 - 12.5 GHz (in Region 1) 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

MOD 1656 The provisions and associated Region 1 and 3 Plan for the broadcasting-satellite service in the frequency band 11.7 - 12.5 GHz (in Region 1) and 11.7 - 12.2 GHz (in Region 3) adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977 and the provisions and associated Region 2 Plan for the broadcasting-satellite service in the frequency band /12.2/ - 12.7 GHz adopted by the Regional Broadcasting-Satellite Administrative Radio Conference, Geneva, 1983 as contained /in Appendix 30/ shall apply to the assignment and use of frequencies by stations of the broadcasting-satellite service in these bands and to the stations of other services to which these bands are allocated so far as their relationship to the broadcasting-satellite service in these bands is concerned.

6. New Article 15A of the Radio Regulations

ARTICLE 15A

ADD Title Coordination, Notification and Recording of Frequency Assignments applicable to Stations in the Fixed-Satellite Service (Earth-to-space) in the band 17.3 - 17.8 GHz (Region 2) providing feeder links for the broadcasting-satellite service and applicable also to stations of other Services to which this band is allocated, so far as their relationship to the Fixed-Satellite Service (Earth-to-space) in this band is concerned.

ADD 1668 The provision and associated Plan adopted by the Region 2 Broadcasting-Satellite Administrative Radio Conference, (Geneva, 1983), for feeder links for the broadcasting-satellite service utilizing the Fixed-Satellite Service (Earth-to-space) in the band 17.3 - 17.8 GHz (Region 2) as contained in /Appendix 30A/, shall apply to the assignment and use of frequencies by feeder links in this band and to stations of other services to which this band is allocated so far as the relationship of these other services to the Fixed-Satellite Service (Earth-to-space) in this band is concerned.

8. Action on Resolutions and Recommendations of WARC-79

SUP

RESOLUTION No. 31

Relating to the Application of Certain Provisions of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, to Take into Account Changes Made by the World Administrative Radio Conference, Geneva, 1979 to the Table of Frequency Allocations for Region 2 in the Band 11.7 - 12.7 GHz

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SUP

RESOLUTION No. 100

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Assignments to Stations in the Fixed-Satellite Service with Respect to Stations in the Broadcasting-Satellite Service in Region 2 [1]

SUP

RESOLUTION No. 503

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Broadcasting-Satellite Service in Region 2 [1]

SUP

RESOLUTION No. 504

Relating to the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, with Respect to Region 2

SUP

RESOLUTION No. 700

Relating to Sharing Between the Fixed-Satellite Service in Regions 1 and 3 and the Broadcasting-Satellite Service in Region 2 in the Band 12.2 - 12.7 GHz

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SUP

RESOLUTION No. 701

Relating to the Convening of a Regional Administrative Radio Conference for the Detailed Planning of the Broadcasting-Satellite Service in the 12 GHz Band and Associated Feeder Links in Region 2 [1]

PART V

Resolutions and Recommendations of the Regional
Administrative Radio Conference (Region 2), Geneva, 1983

RECOMMENDATION /COM6/1/7

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

considering

that a number of difficulties have been encountered in interpreting Nos. 18 and 19 of Article 1 of the Radio Regulations, concerning the terms "allotment" and "assignment", respectively, with regard to their application to plans produced by regional or world conferences;

recommends

that the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit, 1985, should interpret the terms "allotment" and "assignment" clearly and unequivocally.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 171-E
6 July 1983
Original : English

Source : Document No. 139

COMMITTEE 4

PROPOSED NEW FEEDER LINK SECTION 3.3 OF ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.3 Protection ratio

Section 3.4 of Annex 6 of Section I of the Final Acts indicates a guidance for planning for the reduction of the down-link co-channel interference due to co-channel interference in the feeder link of 10%, in power, for 99% of the worst month. However, the feeder link and down-link plans are evaluated on the overall equivalent protection margin which includes the combined down-link and feeder link contributions. Definitions 1.10, 1.11, 1.12, 1.13 and 1.14 of /paragraph 1 of Annex 6 of Section I of the Final Acts/ and the protection ratios given in paragraph 3.4 of Annex 6 of Section I of the Final Acts are used in the analysis of the plans.

For the first adjacent channels, the Plan is based on an orbital separation of 0.4 degrees between nominally co-located satellites having cross-polarized first adjacent channel assignments.

For the second adjacent channels, the Plan is based on a /10/ dB improvement on the feeder link carrier-to-interference ratio due to the satellite receive filtering.

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 172-E
6 July 1983
Original : English

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COMMITTEE 4

DRAFT

NOTE FROM COMMITTEE 4 TO COMMITTEE 6 ON THE POSSIBLE NEED FOR COORDINATION BETWEEN FEEDER LINKS

Committee 4 wishes to bring to the attention of Committee 6 that under very special conditions given in paragraph 3.4.1 of Annex 3 of Section II of the Final Acts (see Document No. 138), there may be a need for coordination between feeder links.

Committee 6 may wish to consider the mechanism for coordination when the above conditions indicate that coordination is required.

E. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 173-E
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COMMITTEE 4

Source : Document No. DT/43

NOTE FROM CHAIRMAN COMMITTEE 6 TO CHAIRMAN COMMITTEE 4

Subject : Protection of broadcasting-satellite service in the band 12.5 - 12.7 GHz in Region 3 from stations in broadcasting-satellite service in the band 12.2 - 12.7 GHz in Region 2

The Working Group 6A of Committee 6 is, presently, drafting texts for Articles 4 and 4A of Part I of the Final Acts. The Group has decided, inter-alia, to include the procedures for the protection of broadcasting-satellite service in Region 3 as mentioned above. The Committee 6 is expected to adopt the decision arrived at in the Working Group 6A.

Committee 4 is requested to examine the matter and provide the relevant criteria.

J.A. ZAVATTIERO
Chairman of Committee 6

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum No. 2 to
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WORKING GROUP 4B

PROPOSED MODIFICATIONS TO PARAGRAPH 3.13.3 OF ANNEX 8 OF APPENDIX 30

In section 3.13.3, delete second paragraph.

The first line of the last paragraph on page 3 should read as follows : "In Region 2, where it was necessary to reduce...".

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Corrigendum to
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WORKING GROUP 4B

(This corrigendum concerns the French text only.)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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WORKING GROUP 4B

PROPOSED MODIFICATIONS TO PARAGRPAH 3.13.3 OF ANNEX 8 OF APPENDIX 30

MOD 3.13.3 Transmitting antenna reference patterns

The reference patterns for the co-polar and cross-polar components of satellite transmitting antennas used in preparing the Plan are given in Figure 6, for Regions 1 and 3, and in Figure / x 7 for Region 2.

The co-polar pattern given in curve A of Figure 6 was used in Region 2 where appropriate to solve interregional sharing problems.

MOD Figure 6 :

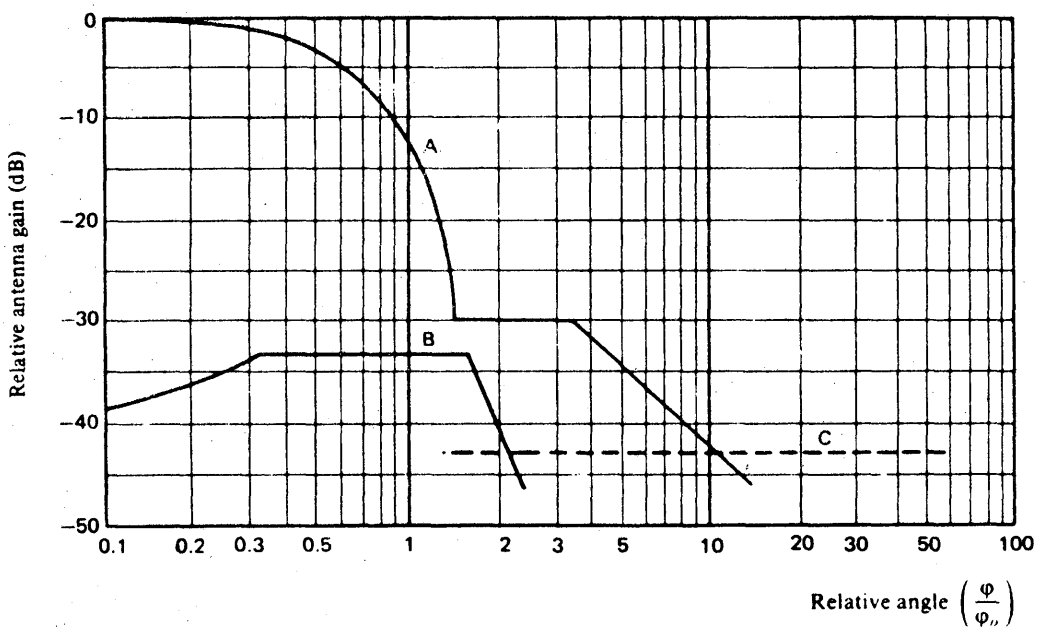

FIGURE 6

Reference patterns for co-polar and cross-polar components for satellite transmitting antennas in Regions 1 and 3 and for interregional sharing in Region 2

NOC

Curve A: Co-polar component

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

$$-30 \qquad \text{for } 1.58\,\varphi_o < \varphi \leq 3.16\,\varphi_o$$

$$-\left[17.5 + 25\log_{10}\left(\frac{\varphi}{\varphi_o}\right)\right] \qquad \text{for } 3.16\,\varphi_o < \varphi$$

after intersection with Curve C: as Curve C

Curve B: Cross-polar component

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

$$-33 \qquad \text{for } 0.33\,\varphi_o < \varphi \leq 1.67\,\varphi_o$$

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

after intersection with Curve C: as Curve C

Curve C: Minus the on-axis gain.

ADD Figure [x]:

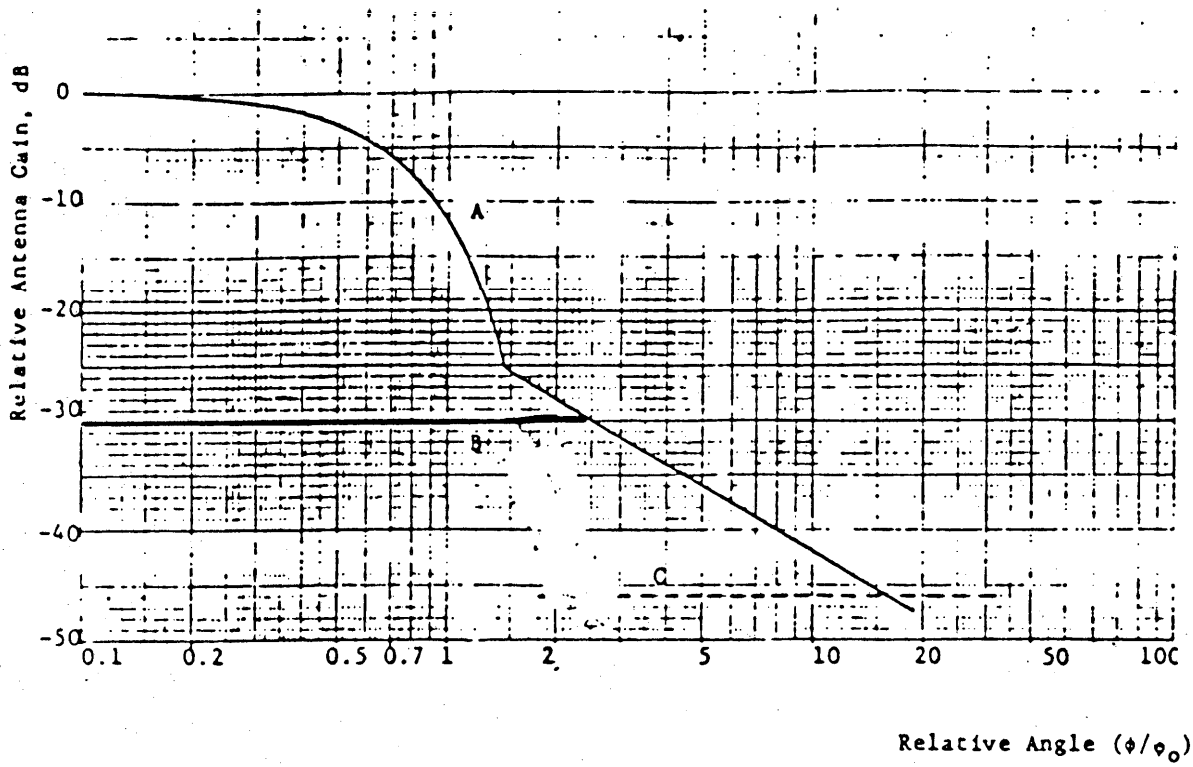

Figure [x] - Reference patterns for co-polar and cross-polar components for satellite transmitting antenna in Region 2

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\phi/\phi_o)^2$ for $0 \leq (\phi/\phi_o) \leq 1.45$
$-(22 + 20 \log (\phi/\phi_o)$ for $1.45 < (\phi/\phi_o)$

after intersection with curve C : as curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leq (\phi/\phi_o) \leq 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C: minus the on-axis gain

ADD In Region 2, where it was necessary to improve or reduce interference, the pattern shown in Figure [y] was used. This pattern is derived from an antenna producing an elliptical beam with fast roll-off in the main lobe. Three possible curves for different values of ϕ_o are shown as examples.

ADD Figure [y] :

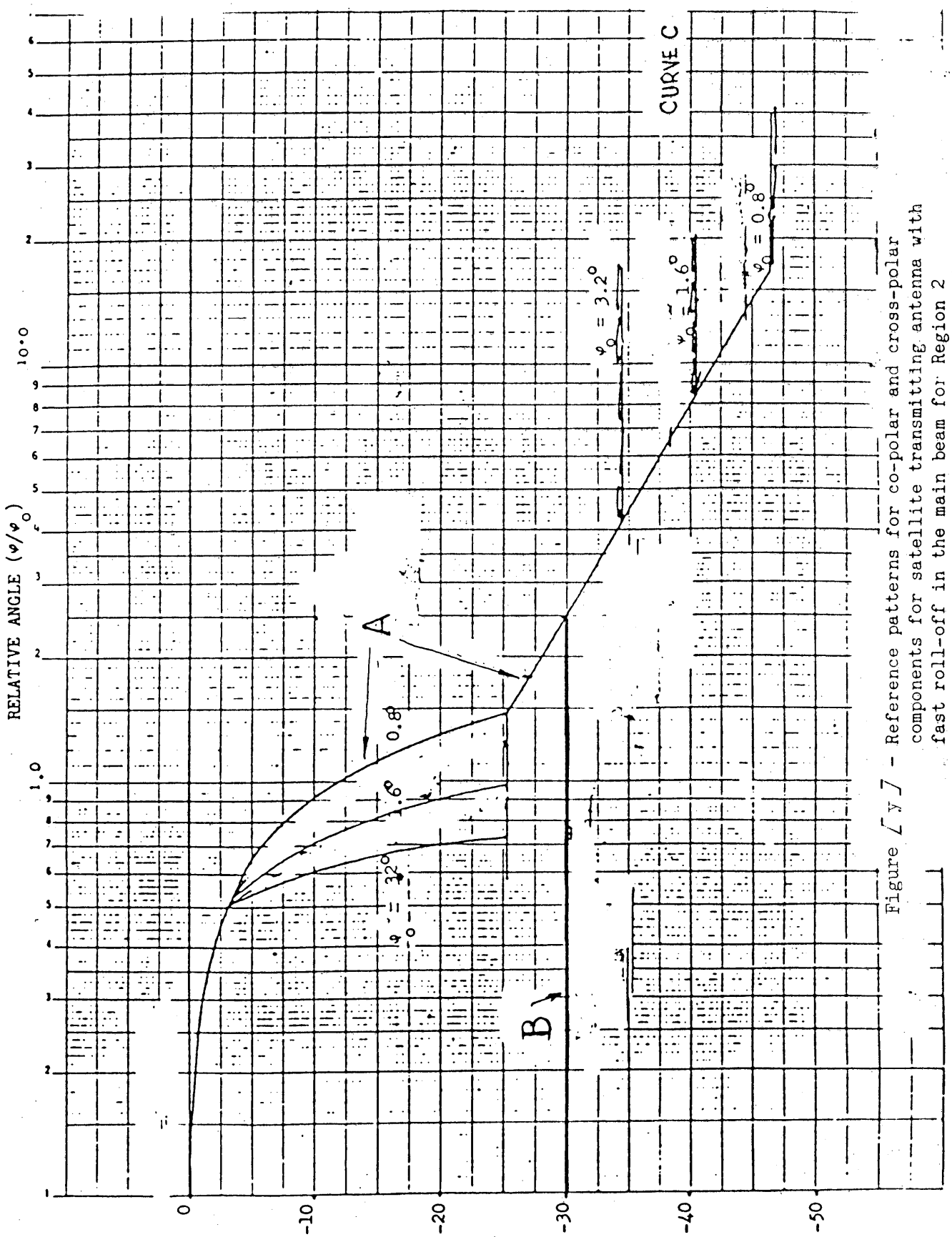

Figure [y] - Reference patterns for co-polar and cross-polar components for satellite transmitting antenna with fast roll-off in the main beam for Region 2

Curve A - Co-Polar component

$-12(\varphi/\varphi_o)^2$ for $0 \leq \varphi/\varphi_o \leq 0.5$

$-18.75\ \varphi_o^2 [\varphi/\varphi_o - x]^2$ for $0.5 < \varphi/\varphi_o \leq \frac{1.16}{\varphi_o} + x$

-25.23 for $\frac{1.16}{\varphi_o} + x < \varphi/\varphi_o < 1.45$

$-[22 + 20 \log \varphi/\varphi_o]$ for $1.45 < \varphi/\varphi_o$

after intersection with Curve C : as Curve C

Curve B - Cross-polar component

-30 for $0 \leq \varphi/\varphi_o < 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C - Minus the on-axis gain

where :

φ = off-axis angle (degrees)

φ_o = dimension of the minimum ellipse fitted around the down-link service area in the direction of interest

$x = 0.5 [1 - \frac{0.8}{\varphi_o}]$

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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6 July 1983
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WORKING GROUP 4B

PROPOSED TEXT FOR ITEM 3.6.1 IN ANNEX 3
OF SECTION II OF THE FINAL ACTS

3.6.1 Cross-section of receive beam

In Region 2, planning has generally been based on beams of elliptical or circular cross-section [but, in certain limited cases, beams with non-elliptical or "shaped" cross-sections have been used].

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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WORKING GROUP 4B

PROPOSED TEXT FOR ITEM 3.6.2 IN ANNEX OF
SECTION II OF THE FINAL ACTS

3.6.2 Minimum beamwidth

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

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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WORKING GROUP 4B

PROPOSED TEXT FOR ITEM 3.6.3 IN ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.6.3 Receiving antenna reference patterns

The reference patterns for the co-polar and cross-polar components of the satellite receiving antenna used in preparing the Plan are given in Figures /X/ and /Y/.

The pattern shown in Figure /X/, derived from an antenna producing an elliptical beam with a Gaussian main lobe, was generally preferred.

The pattern shown in Figure /Y/, derived from an antenna producing an elliptical beam with fast roll-off in the main lobe, was used when necessary to improve or reduce intra-service interference. Three possible curves for different values of φ_o are shown as examples.

In both figures, curve A corresponds to the co-polar pattern and curve B to the cross-polar pattern.

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

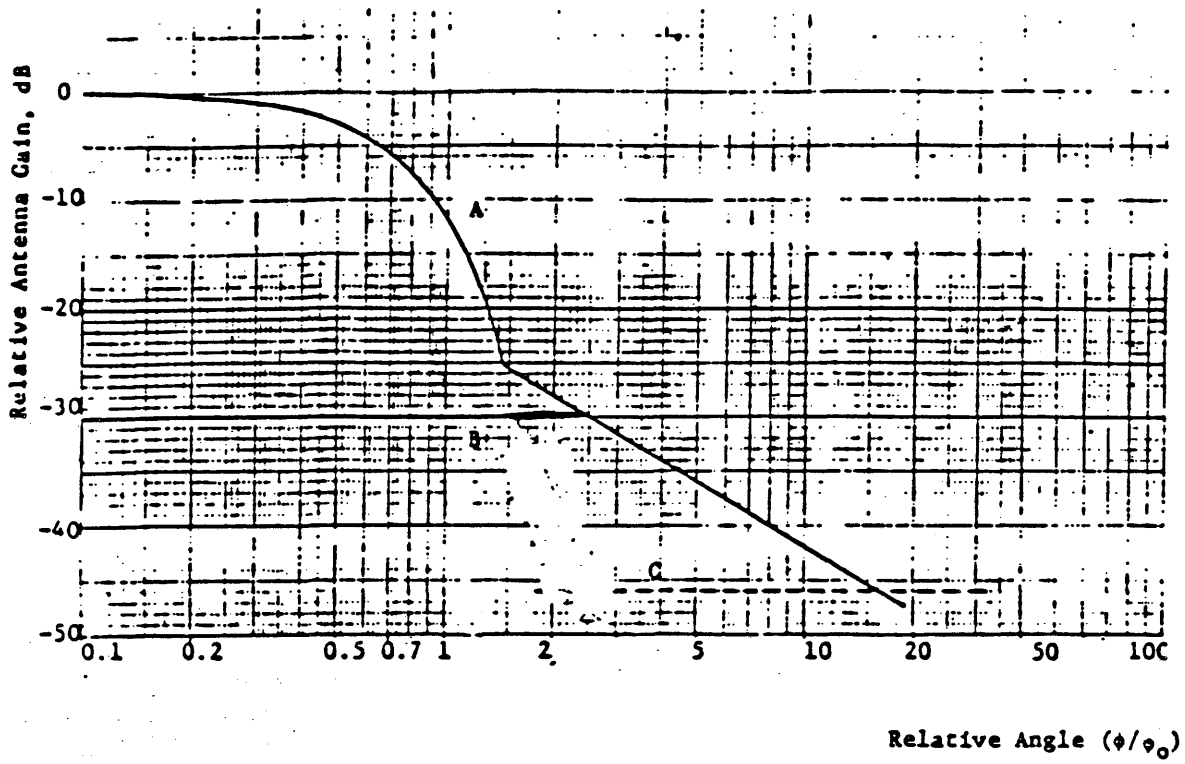

Figure /X/ - Reference patterns for co-polar and cross-polar components for satellite receiving antenna in Region 2

Figure /X/ :

Curve A: Co-polar component (dB relative to main beam gain)

$-12\ (\phi/\phi_o)^2$ for $0 \leq (\phi/\phi_o) \leq 1.45$
$-(22 + 20 \log (\phi/\phi_o)$ for $1.45 < (\phi/\phi_o)$

after intersection with curve C : as curve C

Curve B: Cross-polar component (dB relative to main beam gain)

-30 for $0 \leq (\phi/\phi_o) \leq 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C: minus the on-axis gain

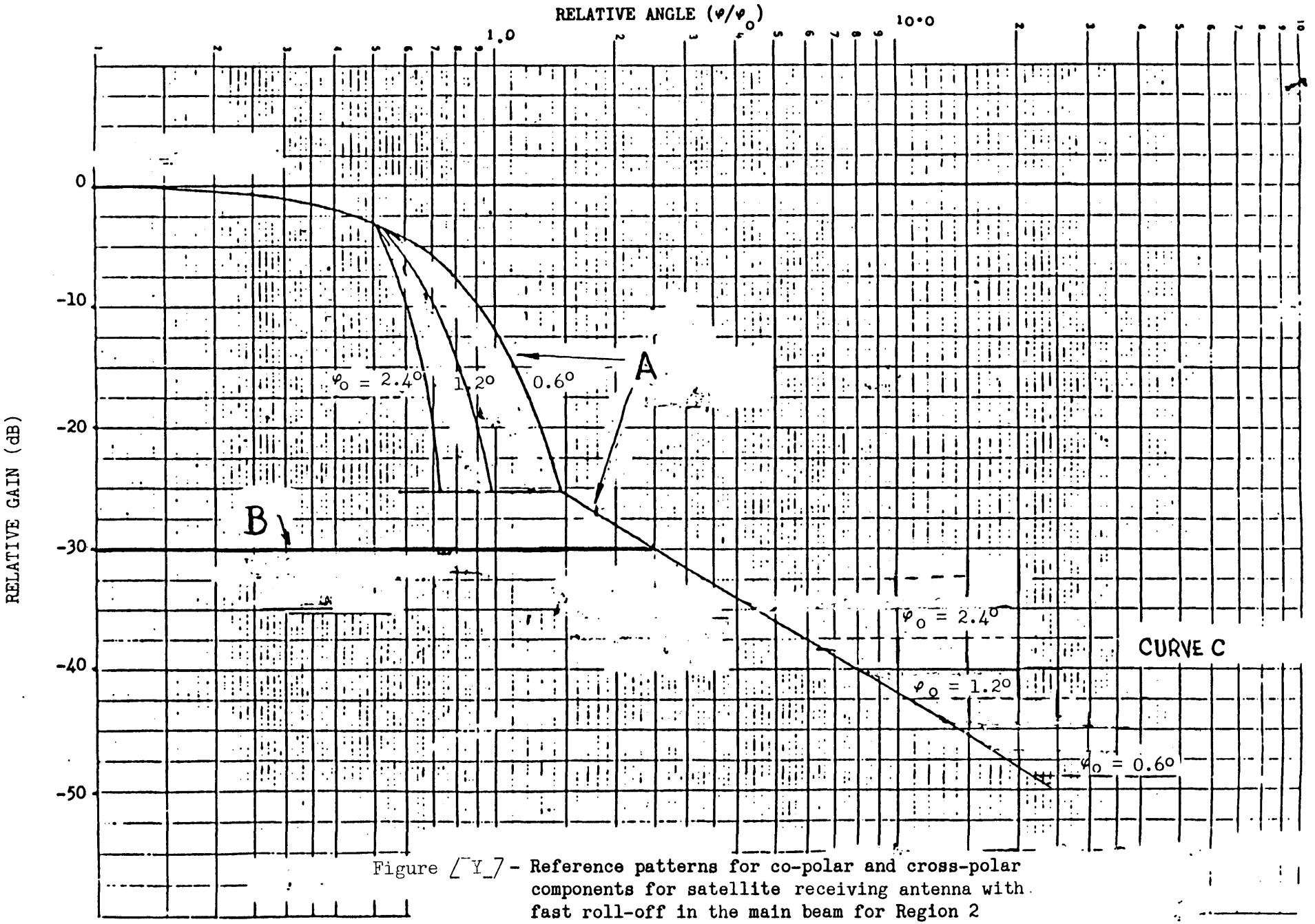

Figure [Y] - Reference patterns for co-polar and cross-polar components for satellite receiving antenna with fast roll-off in the main beam for Region 2

Figure [Y]

Curve A - Co-Polar component

$-12(\varphi/\varphi_o)^2$ for $0 \leq \varphi/\varphi_o \leq 0.5$

$-33.33\ \varphi_o^2 [\varphi/\varphi_o - x]^2$ for $0.5 < \varphi/\varphi_o \leq \frac{0.866}{\varphi_o} + x$

-25.23 for $\frac{0.866}{\varphi_o} + x < \varphi/\varphi_o < 1.413$

$-[22 + 20 \log \varphi/\varphi_o]$ for $1.413 < \varphi/\varphi_o$

after intersection with Curve C : as Curve C

Curve B - Cross-polar component

-30 for $0 \leq \varphi/\varphi_o < 2.51$

after intersection with co-polar pattern : as co-polar pattern

Curve C - Minus the on-axis gain

where :

φ = off-axis angle (degrees)

φ_o = dimension of the minimum ellipse fitted around the down-link service area in the direction of interest

$x = 0.5 [1 - \frac{0.6}{\varphi_o}]$

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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WORKING GROUP 4B

PROPOSED TEXT FOR ITEM 3.6.4 IN ANNEX 3 OF SECTION II OF THE FINAL ACTS

3.6.4 Pointing tolerance

The deviation of the receiving antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a receiving beam about its axis must not exceed a limit of $\pm 1^{\circ}$; this latter limit is not necessary for beams of circular cross-section using circular polarization.

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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WORKING GROUP 4B

PROPOSED TEXT FOR ITEM 3.6.4 IN ANNEX 3
OF SECTION II OF THE FINAL ACTS

3.6.4 Pointing accuracy of satellite receiving antennas

The deviation of the receiving antenna beam from its nominal pointing direction must not exceed a limit of 0.1° in any direction. Moreover, the angular rotation of a receiving beam about its axis must not exceed a limit of $\pm 1^{\circ}$; this latter limit is not necessary for beams of circular cross-section using circular polarization.

The following factors contribute to the total variation in the area on the surface of the Earth covered by the satellite received beam :

- variations in satellite station-keeping;
- the variations caused by the pointing tolerances, which become more significant for beam areas having earth station transmitting antennas with low angles of elevation;
- the effect of the yaw error increases as the beam ellipse lengthens.

The effect of these possible variations should be assessed on a case-by-case basis, since their total effect on the received signal 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.

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

C. PEREZ VEGA
Chairman of Sub-Working Group 4B-2

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CONFÉRENCE DE RADIODIFFUSION PAR SATELLITE (RÉGION 2)

GENÈVE, 1983

Document N° 179-F/E/S
7 juillet 1983
Original : français
anglais
espagnol

COMMISSION 5
COMMITTEE 5
COMISIÓN 5

RESULTATS DU SECOND PROJET DE PLAN

RESULT FROM THE SECOND DRAFT PLAN

RESULTADOS DEL SEGUNDO PROYECTO DE PLAN

H.G. SAAVEDRA

Président du sous-Groupe de travail 5A-1

Chairman of Sub-Working Group 5A-1

Presidente del Subgrupo de Trabajo 5A-1

RAPPORT SUR LA MARGE TOTALE/TOTAL MARGIN REPORT/INFORME DEL MARGEN TOTAL

Col.	Description / Description / Descripción
1	Numéro de référence de l'IFRB de la zone de service qui subit un brouillage. IFRB reference number of service area subject to interference. Número de referencia de la IFRB de la zona de servicio sometida a interferencia.
2	Administration / Administration / Administración.
3	Position sur l'orbite / Orbital position / Posición orbital.
4	Identification du faisceau de la liaison descendante (zone de service). Downlink beam identification (service area). Identificación del haz del enlace descendente (zona de servicio).
5	Puissance aux bornes d'entrée de l'antenne du satellite (W). Satellite Antenna Input Power (W). Potencia de entrada de la antena de satélite (W).
6	Angle de site minimal dans la zone de service de la liaison descendante. Minimal elevation angle in downlink service area. Ángulo de elevación mínimo en la zona de servicio del enlace descendente.
7[1)]	Instant initial de l'éclipse solaire (en minutes à partir de minuit). Earliest onset of solar eclipse (in minutes from midnight). Primera aparición del eclipse solar (en minutos a partir de medianoche).
8[2)]	Famille de canaux de la liaison descendante/Groupe de blocs. Downlink channel family/Blocking Group. Familia de canales del enlace descendente/Grupo de bloques.
9[3)]	Marge composite totale pour chaque point de mesure de la liaison descendante (dB) (9.1 à 9.10) Total aggregate margin for each downlink test point (dB)(9.1 to 9.10). Margen agregado total para cada punto de prueba del enlace descendente (dB)(9.1 y a 9.10).
10	P = points sur polygone / Polygon Points / Puntos de polígono T = points de mesure / Punto de polígono / Puntos de prueba

---

1) > o après minuit / after midnight / después de medianoche.
< o avant minuit / before midnight/ antes de medianoche.

2)

Famille / Family / Familia																	
01	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
02	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32

3) Marge composite totale - Différence entre C/I et le rapport de protection.
Total aggregate margin - Difference between C/I and the protection ratio.
Margen compuesto total - Diferencia entre C/I y sobre la relación de protección.

ESCENARIO/ SCENARIO: DPLAN2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE 830707 0001

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
73	USA	-157.9	ALS00002	165.7	10.4	108.6	01	-6.5	-1.5	-2.3	-3.4	-0.1	3.1	3.1				P
73	USA	-158.1	ALS00002	162.7	10.4	109.4	02	-6.5	-1.7	-2.5	-3.7	-0.2	3.2	3.1				P
74	USA	-168.9	ALS00003	161.8	9.2	152.6	01	-9.0	-5.2	-6.0	-6.9	-3.6	0.3	0.8				P
74	USA	-169.1	ALS00003	159.2	9.2	153.4	02	-9.1	-5.5	-6.3	-7.1	-3.6	0.2	0.3				P
261	ARG	-83.9	ARGINSU2	21.7	9.9	52.6	01	-4.9	-5.5	-5.6								P
261	ARG	-84.1	ARGINSU2	21.7	9.9	53.4	02	-4.1	-4.3	-4.4								P
262	ARG	-83.9	ARGNORT2	951.3	38.4	52.6	01	-4.8	-4.1	-4.0	-4.6	-4.9	-4.7	-5.8	-5.8			P
262	ARG	-84.1	ARGNORT2	963.0	38.4	53.4	02	-4.2	-3.9	-3.8	-4.5	-5.2	-5.1	-5.6	-5.6			P
263	ARG	-83.9	ARGSUR02	221.9	24.9	52.6	01	-7.3	-6.2	-5.3	-5.5	-5.4	-5.4					P
263	ARG	-84.1	ARGSUR02	213.0	24.9	53.4	02	-6.1	-5.9	-4.5	-4.5	-4.4	-4.4					P
264	ATG	-91.9	ATGSJN01	18.3	50.1	84.6	01	-7.5	-7.5	-7.5	-7.5	-7.4						P
283	HOL	-54.9	ATNTEAM1	68.7	66.7	-63.4	01	1.7	1.7	1.7	0.5	0.3	0.5	0.6				P
115	BAH	-120.1	BAHIFRB1	105.6	30.9	137.4	02	-6.6	-4.9	-3.7	-4.2	-4.1	-4.8	-5.6				P
18	B	-119.9	BERBERNU	14.0	20.6	196.6	01	-8.3	-8.3	-8.3	-8.4	-8.4	-8.4	-8.4				P
244	B	-30.9	BERBER02	11.5	37.6	-159.4	01	2.5	2.5	2.5	2.5	2.4	2.4	2.5				P
97	BLZ	-120.1	BLZ00001	19.1	47.7	77.4	02	-6.0	-5.3	-7.4	-7.6	-6.8	-5.6					P
219	BOL	-113.9	BOLAND01	737.7	23.8	172.6	01	-8.8	-9.1	-9.1	-8.7	-8.9	-8.6					P
121	BOL	-78.1	BOL00001	485.2	58.4	29.4	02	0.9	0.8	1.3	-0.9	-2.7	-3.1					P
63	BRB	-87.9	BRB00001	17.8	53.7	68.6	01	-8.3	-8.4	-8.4	-8.5	-8.5	-8.5	-8.4				P
228	B	-90.9	BOOCE311	376.0	23.3	140.6	01	-2.6	-1.9	-1.9	-3.7	-4.3	-2.2	-2.0				P
228	B	-91.1	BOOCE311	388.5	23.3	141.4	02	-3.4	-2.8	-2.9	-4.2	-5.1	-3.1	-3.0				P
235	B	-47.9	BOOCE312	336.6	71.1	-31.4	01	1.2	2.6	2.4	-0.4	-1.9	1.5	2.4				P
235	B	-48.1	BOOCE312	342.3	71.1	-30.6	02	1.1	2.4	2.3	0.2	-1.3	1.5	2.2				P
229	B	-90.9	BOOCE411	361.6	34.8	140.6	01	-4.9	-4.9	-4.9	-4.6	-3.7	-4.4					P
229	B	-91.1	BOOCE411	333.4	34.8	141.4	02	-5.0	-5.2	-5.3	-4.8	-4.3	-4.7					P
236	B	-47.9	BOOCE412	384.7	61.5	-31.4	01	-1.8	-1.7	-1.8	-1.8	-1.7	-1.2					P
236	B	-48.1	BOOCE412	378.3	61.5	-30.6	02	-1.7	-1.5	-1.6	-1.8	-1.3	-1.3					P
230	B	-90.9	BOOCE511	442.1	40.3	140.6	01	-4.9	-5.0	-5.8	-5.1	-5.1	-5.0					P
230	B	-91.1	BOOCE511	450.8	40.3	141.4	02	-5.3	-5.2	-6.1	-5.2	-5.4	-5.3					P
237	B	-63.9	BOOCE512	395.2	71.1	32.6	01	-0.9	-1.6	-2.1	-1.6	-0.7	-1.5					P
237	B	-64.1	BOOCE512	398.2	71.1	33.4	02	-0.7	-1.7	-2.2	-0.6	-0.4	-1.7					P
231	B	-98.9	BOONO611	382.9	34.7	172.6	01	-4.5	-4.2	-7.7	-4.0	-3.8	-3.1					P
231	B	-99.1	BOONO611	399.7	34.7	173.4	02	-5.3	-5.2	-7.9	-5.0	-4.9	-4.3					P
240	B	-63.9	BOONO612	357.9	69.9	32.6	01	-1.7	0.1	-0.5	-0.5	0.0	0.5					P
240	B	-64.1	BOONO612	352.2	69.9	33.4	02	-1.8	-0.1	-0.5	-0.5	-0.3	0.5					P
232	B	-98.9	BOONO711	461.0	37.3	172.6	01	-10.3	-6.8	-6.1	-10.4	-17.3	-7.2					P
232	B	-99.1	BOONO711	426.1	37.3	173.4	02	-9.2	-6.0	-5.1	-7.7	-13.4	-6.5					P
241	B	-63.9	BOONO712	468.7	74.1	32.6	01	-1.5	-1.5	-0.1	0.3	-0.4	-1.8					P
241	B	-64.1	BOONO712	468.6	74.1	33.4	02	-1.6	-1.6	0.3	0.7	0.0	-2.0					P
233	B	-98.9	BOONO811	294.0	49.6	112.6	01	-4.2	-4.6	-4.4	-4.7	-4.5	-4.3	-4.2				P
233	B	-99.1	BOONO811	301.6	49.6	113.4	02	-4.6	-5.4	-4.9	-5.1	-4.5	-4.6	-4.0				P
242	B	-63.9	BOONO812	280.7	75.4	-27.4	01	-0.4	-1.6	-1.3	-1.2	0.0	-0.4	0.0				P

ESCENARIO/ SCENARIO: DPLAN2 SAT-R2 TOTAL MARGIN MARGEN TOTAL MARGE TOTALE 830707 0002

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
242	B	-64.1	B00N0812	283.4	75.4	-26.6	02	-0.4	-1.6	-1.3	-1.1	0.1	-0.4	0.0				P
239	B	-103.9	B00SE911	245.4	16.0	192.6	01	-7.3	-6.8	-8.0	-8.0	-7.5	-7.4					P
239	B	-104.1	B00SE911	274.3	16.0	193.4	02	-7.9	-7.6	-8.1	-8.7	-8.0	-7.8					P
226	B	-70.9	B00SU111	218.8	47.4	60.6	01	-3.1	-3.2	-2.7	-1.7	-1.8	-2.5					P
226	B	-71.1	B00SU111	214.5	47.4	61.4	02	-2.2	-2.6	-2.9	-1.8	-1.9	-3.3					P
234	B	-47.9	B00SU112	228.4	51.8	-31.4	01	0.7	-0.3	-1.7	0.3	1.0	-1.4					P
234	B	-48.1	B00SU112	234.8	51.8	-30.6	02	0.7	-0.1	-1.7	0.3	0.9	-1.4					P
227	B	-70.9	B00SU211	303.2	47.7	60.6	01	-2.7	-0.8	-0.1	1.0	0.5	-1.7	-0.4				P
227	B	-71.1	B00SU211	302.8	47.7	61.4	02	-3.2	-1.0	-0.3	0.8	0.5	-1.8	-0.7				P
238	B	-47.9	B00SU212	314.8	62.2	-31.4	01	-2.0	1.0	1.5	1.2	-0.7	-1.4	1.4				P
238	B	-48.1	B00SU212	323.0	62.2	-30.6	02	-2.0	0.8	1.2	1.0	-0.5	-1.4	1.1				P
284	CAN	-164.9	CAN00101	112.9	5.3	76.6	01	0.1	-5.0	-10.1	-11.1	-14.3	-12.4	-10.8	-7.1	-0.6		P
284	CAN	-165.1	CAN00101	116.0	5.3	77.4	02	0.3	-4.5	-10.5	-11.6	-14.8	-12.7	-10.8	-6.1	0.6		P
285	CAN	-145.9	CAN00102	130.9	9.3	0.6	01	-2.6	-6.0	-6.2	-6.1	-8.9	-7.1	-6.2	-4.4	-2.3		P
285	CAN	-146.1	CAN00102	131.3	9.3	1.4	02	-2.4	-6.4	-6.4	-6.1	-8.8	-7.1	-6.2	-4.4	-2.1		P
286	CAN	-164.9	CAN00201	130.6	4.0	196.6	01	-4.9	-5.6	-10.7	-12.8	-12.5	-12.3	-9.7				P
286	CAN	-165.1	CAN00201	140.3	4.0	197.4	02	-3.8	-4.6	-11.3	-12.7	-12.5	-12.3	-9.7				P
287	CAN	-145.9	CAN00202	103.5	8.4	120.6	01	-5.2	-5.4	-8.6	-9.1	-7.8	-7.9	-6.9				P
287	CAN	-146.1	CAN00202	104.6	8.4	121.4	02	-5.2	-5.6	-9.2	-9.4	-8.1	-8.2	-7.0				P
288	CAN	-138.9	CAN00203	110.2	9.6	92.6	01	-6.7	-6.7	-8.8	-9.5	-8.1	-8.1	-7.3				P
288	CAN	-139.1	CAN00203	110.2	9.6	93.4	02	-6.4	-6.5	-9.2	-9.4	-8.1	-8.5	-7.7				P
289	CAN	-145.9	CAN00302	151.3	3.7	120.6	01	-4.7	-5.5	-6.8	-6.6	-7.8	-7.3	-5.5				P
289	CAN	-146.1	CAN00302	159.1	3.7	121.4	02	-4.7	-5.9	-7.5	-7.0	-8.0	-7.3	-6.1				P
290	CAN	-138.9	CAN00303	124.6	5.6	92.6	01	-6.5	-6.8	-7.8	-7.0	-8.4	-8.4	-6.1				P
290	CAN	-139.1	CAN00303	127.3	5.6	93.4	02	-6.3	-6.9	-8.0	-7.1	-8.5	-8.3	-6.3				P
291	CAN	-96.9	CAN00304	125.5	10.4	-75.4	01	-6.8	-8.6	-10.2	-8.0	-9.1	-8.1	-6.2				P
291	CAN	-97.1	CAN00304	124.1	10.4	-74.6	02	-8.0	-10.3	-11.2	-8.8	-9.8	-9.4	-7.3				P
292	CAN	-138.9	CAN00403	257.2	1.4	212.6	01	-5.5	-3.8	-5.3	-6.7	-6.8	-8.0	-6.0	-5.2	-4.4	-4.5	P
292	CAN	-139.1	CAN00403	309.5	1.4	213.4	02	-4.6	-3.4	-5.4	-6.9	-6.5	-7.3	-5.8	-4.2	-3.7	-4.4	P
293	CAN	-96.9	CAN00404	258.2	10.5	44.6	01	-8.0	-8.1	-7.9	-8.8	-8.7	-9.0	-8.2	-8.7	-8.1	-7.3	P
293	CAN	-97.1	CAN00404	245.0	10.5	45.4	02	-9.1	-9.8	-9.0	-10.2	-10.0	-10.3	-9.4	-9.9	-9.0	-8.1	P
294	CAN	-92.9	CAN00405	260.9	10.9	28.6	01	-7.6	-7.7	-6.9	-7.6	-7.5	-7.6	-7.1	-7.8	-7.4	-6.8	P
294	CAN	-93.1	CAN00405	248.8	10.9	29.4	02	-7.6	-8.0	-7.0	-7.7	-7.5	-7.7	-7.2	-8.0	-7.5	-6.8	P
295	CAN	-96.9	CAN00504	220.5	8.7	44.6	01	-5.1	-5.9	-7.1	-9.5	-9.5	-9.4	-7.6	-7.3	-7.1	-6.7	P
295	CAN	-97.1	CAN00504	226.2	8.7	45.4	02	-7.3	-8.5	-9.5	-11.0	-11.0	-10.5	-9.0	-8.9	-9.1	-8.7	P
296	CAN	-92.9	CAN00505	226.5	9.4	28.6	01	-7.7	-7.0	-6.4	-5.4	-5.4	-5.5	-6.3	-7.2	-8.2	-8.1	P
296	CAN	-93.1	CAN00505	233.8	9.4	29.4	02	-7.0	-6.4	-6.0	-5.2	-5.2	-5.2	-6.1	-7.1	-8.2	-8.1	P
297	CAN	-82.9	CAN00506	234.8	10.7	-11.4	01	-2.5	-2.6	-2.9	-4.0	-4.2	-4.0	-2.8	-2.7	-2.8	-2.7	P
297	CAN	-83.1	CAN00506	245.9	10.7	-10.6	02	-2.0	-2.3	-2.8	-3.8	-3.9	-3.5	-2.5	-2.5	-2.6	-2.5	P
298	CAN	-92.9	CAN00605	133.6	17.2	116.6	01	-8.6	-6.3	-5.8	-5.7	-5.1	-7.0	-8.3	-7.8			P
298	CAN	-93.1	CAN00605	136.8	17.2	117.4	02	-8.1	-6.3	-5.8	-5.6	-4.9	-7.2	-8.5	-7.5			P
299	CAN	-82.9	CAN00606	144.4	19.5	76.6	01	-4.0	-2.4	-2.8	-2.8	-1.9	-3.5	-4.0	-3.4			P

ESCENARIO/ SCENARIO: DPLAN2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE

830707 0003

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
299	CAN	-83.1	CAN00606	150.9	19.5	77.4	02	-3.5	-2.2	-2.5	-2.4	-1.4	-3.3	-4.0	-3.0			P
210	CHL	-93.9	CHLCONT4	52.1	47.4	92.6	01	-6.5	-6.3	-5.8	-5.6	-6.0	-6.7					P
211	CHL	-94.1	CHLCONT5	61.5	35.3	93.4	02	-5.2	-2.4	-3.1	-3.3	-3.9	-6.0					P
212	CHL	-93.9	CHLCONT6	167.7	7.2	92.6	01	-3.6	-1.9	-0.8	0.1	-1.5	-0.5	-0.3	-3.3	-4.1		P
200	CHL	-94.1	CHLPAC02	32.3	47.6	93.4	02	-2.8	-2.9	-2.8	-2.0	-3.3	-3.2					P
220	CLM	-113.9	CLMAND01	733.7	35.9	112.6	01	-15.4	-15.9	-13.8	-9.9	-10.0	-8.5	-8.8	-8.6	-8.8	-10.5	P
11	CLM	-109.9	CLM00001	696.5	40.1	96.6	01	-5.8	-5.9	-8.6	-8.2	-9.4	-9.3	-10.8	-10.4	-9.5	-6.0	P
11	CLM	-110.1	CLM00001	712.3	40.1	97.4	02	-5.1	-5.2	-5.4	-4.7	-5.6	-5.9	-6.1	-5.6	-5.1	-3.9	P
124	JMC	-98.1	CRBBAH01	83.8	50.7	49.4	02	-8.7	-7.6	-7.3	-8.4	-8.5	-8.9	-8.5				P
251	JMC	-98.1	CRBBER01	11.5	38.0	49.4	02	-9.3	-9.3	-9.3	-9.3	-9.3	-9.2	-9.3				P
123	JMC	-98.1	CRBBLZ01	20.0	65.4	-10.6	02	-15.1	-13.8	-14.7	-14.7	-14.4	-14.1					P
125	JMC	-98.1	CRBEC001	381.5	39.7	49.4	02	-14.6	-17.5	-15.2	-8.3	-7.9	-8.0	-9.5	-17.0			P
122	JMC	-98.1	CRBJMC01	41.0	58.8	49.4	02	-11.8	-12.0	-9.3								P
257	CTR	-132.1	CTR00201	95.8	32.4	185.4	02	-7.1	-6.0	-6.5	-5.3	-5.6						P
12	CUB	-99.9	CUB00001	85.3	52.2	56.6	01	-8.4	-8.6	-8.6	-8.1	-7.2	-7.2	-6.9	-6.9	-7.4	-7.2	P
118	DMA	-92.1	DMAIFRB1	18.6	50.1	85.4	02	-8.5	-8.3	-8.5	-8.4							P
259	DOM	-88.1	DOMIFRB2	36.9	58.2	9.4	02	1.2	0.9	0.6	1.7	2.7						P
221	EQA	-113.9	EQACAND1	125.6	45.2	112.6	01	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	P
98	EQA	-94.9	EQAC0001	126.8	66.7	36.6	01	-3.6	-4.2	-5.4	-5.7	-4.9	-4.0	-3.6	-3.4	-3.4	-3.7	P
98	EQA	-95.1	EQAC0001	125.6	66.7	37.4	02	-4.0	-4.3	-5.6	-5.8	-4.9	-4.1	-3.8	-3.6	-3.6	-3.9	P
222	EQA	-113.9	EQAGAND1	37.1	60.5	52.6	01	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8					P
99	EQA	-94.9	EQAG0001	38.8	82.4	-23.4	01	-3.1	-3.3	-3.1	-3.3	-3.2	-3.2					P
99	EQA	-95.1	EQAG0001	38.3	82.4	-22.6	02	-4.2	-4.3	-4.0	-4.3	-4.2	-4.2					P
243	G	-56.9	FLKANT01	90.3	13.6	-55.4	01	8.9	9.1	6.6	8.2	9.8	6.8	9.2				P
19	G	-30.9	FLKFALKS	15.1	24.1	-159.4	01	7.7	8.2	7.5	8.0	7.6	7.1					P
58	GRD	-41.9	GRD00002	17.8	62.6	-115.4	01	1.6	1.5	1.8	1.6							P
59	GRD	-92.1	GRD00003	19.3	51.4	85.4	02	-10.3	-11.2	-10.4	-11.3							P
272	GRD	-57.1	GRD00059	16.8	74.1	-54.6	02	-0.8	-1.1	-0.5	-0.5							P
13	DNK	-55.1	GRLDNK01	80.2	3.1	-2.6	02	4.8	4.8	4.7	6.8	6.7	6.3	6.5	6.8	8.5	8.2	P
255	GTM	-131.9	GTMIFRE2	49.3	37.5	124.6	01	-8.6	-8.2	-5.9	-5.9	-5.4						P
16	F	-54.9	GUFMGG01	250.7	66.7	-3.4	01	0.4	0.5	0.5	-0.5	-0.5	-0.5	-0.6	-1.1	-1.3		P
267	GUY	-80.9	GUY00201	102.5	61.4	68.6	01	-5.8	-4.7	-4.5	-5.0	-4.1	-6.4					P
274	GUY	-38.1	GUY00302	102.4	62.1	-162.6	02	3.3	3.6	3.3	2.6	3.7	3.0					P
253	HND	-131.9	HNDIFRB2	97.7	32.2	124.6	01	-6.0	-5.4	-5.2	-5.2							P
258	HTI	-88.1	HTI00002	29.9	60.0	9.4	02	0.7	2.1	1.3	1.3	0.8	1.5	1.9				P
75	USA	-157.9	HWA00002	92.0	50.5	-11.4	01	0.6	0.5	0.6	0.8	0.8	1.2	0.4				P
75	USA	-158.1	HWA00002	90.7	50.5	-10.6	02	0.4	0.4	0.4	0.6	0.6	0.9	0.4				P
76	USA	-168.9	HWA00003	95.1	55.8	32.6	01	0.5	0.5	0.5	0.7	0.7	1.0	0.4				P
76	USA	-169.1	HWA00003	93.4	55.8	33.4	02	0.2	0.2	0.2	0.4	0.4	0.8	0.2				P
21	G	-91.9	IOBEVIRG	17.8	51.7	84.6	01	-6.4	-6.5	-6.5	-6.5	-6.4	-6.4					P
22	G	-120.1	IOBCAYMA	22.6	39.1	137.4	02	-5.4	-5.5	-5.6	-5.3	-5.3	-5.6					P
245	G	-91.9	IOBKN001	18.1	50.7	84.6	01	-7.2	-7.1	-7.4	-7.4							P

ESCENARIO/ SCENARIO: DPLAN2 SAT-R2 TOTAL MARGIN MARGEN TOTAL MARGE TOTALE 830707 0004

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
24	G	-91.9	IOBMONTE	19.1	49.9	84.6	01	-7.6	-7.5	-7.5	-7.5	-7.8	-7.6					P
26	G	-120.1	IOBTURCA	29.2	30.2	137.4	02	-3.9	-4.0	-4.0	-3.6	-3.6	-3.6	-3.7	-3.6			P
246	JMC	-95.9	JMC00002	23.5	58.9	40.6	01	-8.2	-7.6	-6.6	-7.3	-7.0	-7.3	-8.1	-7.7			P
273	JMC	-38.1	JMC00005	26.1	39.6	-190.6	02	2.1	2.0	2.7	2.6	2.9	2.7	2.0	2.7			P
117	LCA	-92.1	LCAIFRB1	18.6	50.6	85.4	02	-9.5	-8.9	-9.7	-9.1							P
215	MEX	-115.9	MEX01NTE	304.9	51.6	0.6	01	-7.5	-8.0	-10.4	-11.6	-11.3	-6.7	-6.2	-6.0			P
215	MEX	-116.1	MEX01NTE	309.5	51.6	1.4	02	-7.1	-7.6	-10.2	-11.5	-11.3	-6.3	-5.8	-5.6			P
216	MEX	-96.1	MEX01SUR	416.1	59.6	-78.6	02	-1.5	-2.9	-4.9	-5.9	-4.5	-2.1	-1.5				P
217	MEX	-142.9	MEX02NTE	285.1	31.1	108.6	01	-5.5	-5.5	-6.2	-7.3	-8.4	-7.7	-6.0	-4.9			P
217	MEX	-143.1	MEX02NTE	302.6	31.1	109.4	02	-6.8	-6.7	-7.3	-8.4	-9.5	-8.5	-7.1	-6.3			P
218	MEX	-137.9	MEX02SUR	419.1	27.2	88.6	01	-30.6	-30.6	-30.6	-30.6	-30.6	-30.6	-30.6				P
218	MEX	-138.1	MEX02SUR	452.1	27.2	89.4	02	-30.4	-30.4	-30.4	-30.4	-30.4	-30.4	-30.4				P
256	NCG	-131.9	NCG00003	112.2	32.3	124.6	01	-5.9	-5.6	-5.4	-5.6	-6.2	-6.6	-7.4	-6.5			P
204	CHL	-94.1	PAQPAC01	10.1	53.4	93.4	02	0.0	0.1	0.1	-0.1							P
254	PNR	-132.1	PNRIFRB2	123.5	27.2	185.4	02	-5.9	-5.1	-4.7	-4.7	-4.6	-5.1					P
265	PRG	-108.1	PRG00002	53.6	24.6	149.4	02	-4.7	-5.2	-6.3	-8.2	-10.1	-7.8	-8.1	-6.1	-5.4	-5.1	P
223	PRU	-113.9	PRUAND01	574.5	36.5	112.6	01	-7.4	-7.7	-7.8	-7.5	-9.4	-9.1	-8.0	-7.9	-7.8	-7.3	P
225	PRU	-108.1	PRU00002	588.6	42.2	89.4	01	-7.9	-8.6	-8.3	-6.9	-12.2	-11.9	-7.6	-6.6	-5.6	-4.7	P
77	USA	-102.9	PTRVIR01	27.3	41.5	68.6	01	-8.5	-7.6	-7.5	-8.6	-7.8	-8.1	-8.6	-8.3			P
77	USA	-103.1	PTRVIR01	27.5	41.5	69.4	02	-8.5	-7.9	-8.0	-8.6	-8.3	-8.6	-9.1	-8.9			P
126	USA	-106.9	PTRVIR02	28.2	37.6	84.6	01	-10.6	-9.6	-9.5	-10.6	-9.5	-9.7	-10.3	-10.2			P
126	USA	-107.1	PTRVIR02	28.7	37.6	85.4	02	-8.8	-8.1	-8.0	-8.9	-8.2	-8.5	-8.9	-8.7			P
260	SLV	-131.9	SLVIFRB2	50.5	37.4	124.6	01	-4.9	-4.8	-4.4	-4.4							P
206	F	-55.1	SPMFRAN3	103.5	30.5	-62.6	02	-2.6	-2.8	-3.1	-3.4	-3.6	-2.9					P
61	SUR	-80.9	SURINAME	62.1	58.0	60.6	01	-4.0	-2.5	-4.1	-2.2	-1.8	-4.2	-2.3	-2.2			P
78	TRD	-87.9	TRD00001	21.2	55.6	68.6	01	-11.1	-10.7	-10.4	-9.9	-10.3	-9.7	-9.8	-10.0	-10.5	-9.9	P
32	URG	-77.9	URG00001	32.5	42.5	88.6	01	-6.6	-6.5	-6.4	-6.9	-6.9	-8.0	-8.0	-6.5	-7.4	-7.3	P
279	USA	-103.1	USAEH001	1170.9	26.4	9.4	01	-8.8	-8.6	-8.1	-9.3	-7.1	-7.5	-7.6	-7.7	-7.8	-7.8	P
279	USA	-103.1	USAEH001	1175.5	26.4	9.4	02	-8.5	-8.3	-7.7	-8.2	-6.9	-7.6	-7.4	-7.4	-7.5	-7.4	P
280	USA	-106.9	USAEH002	1194.0	24.4	24.6	01	-8.6	-8.5	-8.2	-9.7	-7.7	-7.9	-7.9	-7.9	-8.0	-8.0	P
280	USA	-107.1	USAEH002	1147.4	24.4	25.4	02	-8.3	-8.2	-7.8	-8.8	-7.2	-7.6	-7.6	-7.7	-7.5	-7.5	P
281	USA	-112.9	USAEH003	1197.8	21.1	48.6	01	-8.7	-8.8	-8.6	-21.6	-13.0	-10.0	-10.3	-10.5	-7.7	-7.7	P
281	USA	-113.1	USAEH003	1140.7	21.1	49.4	02	-6.1	-6.1	-5.7	-8.2	-5.6	-8.6	-9.5	-9.8	-5.5	-5.3	P
282	USA	-123.9	USAEH004	1192.8	14.2	92.6	01	-3.9	-3.8	-3.5	-4.3	-3.5	-4.2	-4.7	-4.9	-4.4	-3.8	P
282	USA	-124.1	USAEH004	1120.5	14.2	93.4	02	-5.5	-5.5	-5.1	-8.0	-5.0	-5.4	-5.9	-6.1	-5.5	-5.0	P
275	USA	-129.9	USAWH001	664.2	25.6	-3.4	01	-9.1	-10.6	-10.2	-10.6	-9.5	-9.3	-9.1	-9.2			P
275	USA	-130.1	USAWH001	683.1	25.6	-2.6	02	-12.2	-13.1	-12.8	-12.9	-12.3	-12.3	-12.2	-12.2			P
276	USA	-151.9	USAWH002	650.4	13.7	84.6	01	-4.0	-6.7	-4.8	-5.4	-4.2	-4.5	-3.9	-4.1			P
276	USA	-152.1	USAWH002	620.7	13.7	85.4	02	-4.0	-7.1	-5.1	-5.4	-4.2	-4.7	-4.1	-4.1			P
277	USA	-157.9	USAWH003	659.5	10.1	108.6	01	-4.2	-6.1	-5.1	-5.4	-4.1	-4.0	-3.7	-4.2			P
277	USA	-158.1	USAWH003	624.4	10.1	109.4	02	-4.3	-6.6	-6.0	-5.4	-3.9	-4.0	-4.0	-4.2			P
278	USA	-168.9	USAWH004	867.1	3.1	152.6	01	-2.7	-6.2	-5.1	-5.9	-2.9	-0.2	-0.4	-2.8			P

ESCENARIO/ SCENARIO: DPLAN2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE 830707 0005

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
278	USA	-169.1	USAWH004	847.4	3.1	153.4	02	-2.6	-7.0	-6.5	-5.1	-1.9	0.7	0.0	-2.4			P
271	VCT	-92.1	VCT00001	18.4	51.1	85.4	02	-10.2	-10.4	-10.5	-10.3	-10.2	-10.1					P
269	VEN	-113.9	VENAND02	798.4	28.0	140.6	01	-15.1	-14.3	-14.1	-13.9	-13.9	-14.8	-15.9	-15.5	-15.7	-13.8	P
57	VEN	-84.9	VEN02VEN	18.4	58.8	24.6	01	-4.8	-5.2	-5.7	-5.5	-4.8	-4.5					P
270	VEN	-84.9	VEN11VEN	479.2	59.3	24.6	01	-3.0	-2.8	-8.4	-9.0	-8.1	-5.8	-5.1	-2.6	-3.0	-3.0	P

SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-158.00	01	58.46	-148.92	3.825	1.298	173.67	+ E	59.7
073	ALS00002	-158.00	02	58.46	-148.92	3.825	1.298	173.67	- E	59.6
074	ALS00003	-168.00	01	58.33	-149.91	3.741	1.224	169.01	+ E	59.9
074	ALS00003	-170.00	02	58.48	-150.18	3.774	1.186	168.62	- E	60.0
261	ARGINSU2	-84.00	01	-65.04	-65.19	0.872	0.800	17.04	+ E	59.4
261	ARGINSU2	-84.00	02	-65.04	-65.19	0.872	0.800	17.04	- E	59.4
262	ARGNORT2	-84.00	01	-29.92	-63.49	3.858	2.256	47.49	+ E	64.8
262	ARGNORT2	-84.00	02	-29.92	-63.49	3.858	2.256	47.49	- E	64.9
263	ARGSUR02	-84.00	01	-42.92	-64.83	3.203	1.726	40.76	+ E	60.5
263	ARGSUR02	-84.00	02	-42.92	-64.83	3.203	1.726	40.76	- E	60.3
264	ATGSJN01	-92.00	01	17.08	-61.79	0.800	0.800	8.35	+ E	59.0
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.800	39.26	+ E	61.2
228	B CE311	-90.00	01	-6.13	-41.30	1.966	1.868	99.64	+ E	64.5
228	B CE311	-92.00	02	-6.16	-41.24	1.942	1.778	106.54	- E	65.0
235	B CE312	-48.00	01	-6.07	-40.30	3.422	2.086	173.98	+ E	61.2
235	B CE312	-48.00	02	-6.07	-40.30	3.422	2.086	173.98	- E	61.2
229	B CE411	-90.00	01	-15.42	-51.51	3.618	1.012	53.67	+ E	64.4
229	B CE411	-92.00	02	-15.41	-51.60	3.654	0.954	54.29	- E	64.2
236	B CE412	-48.00	01	-15.30	-50.77	3.644	1.538	50.69	+ E	62.8
236	B CE412	-48.00	02	-15.30	-50.77	3.644	1.538	50.69	- E	62.7
230	B CE511	-90.00	01	-2.97	-53.34	2.324	1.629	92.46	+ E	65.1
230	B CE511	-92.00	02	-2.97	-53.36	2.314	1.571	91.90	- E	65.4
237	B CE512	-64.00	01	-2.89	-53.11	2.444	2.130	103.87	+ E	63.2
237	B CE512	-64.00	02	-2.89	-53.11	2.444	2.130	103.87	- E	63.3
231	B N0611	-98.00	01	-11.61	-59.97	2.102	1.642	154.85	+ E	64.9
231	B N0611	-100.00	02	-11.61	-60.00	2.031	1.629	151.28	- E	65.3
240	B N0612	-64.00	01	-11.64	-59.47	3.003	1.691	165.07	+ E	62.9
240	B N0612	-64.00	02	-11.64	-59.47	3.003	1.691	165.07	- E	62.9

SCENARIO: DPLAN2 DOWNLINK PLAN LAYOUT 07/07/83 ~~0025~~ 7
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
232	B	NO711	-98.00	01	-1.71	-61.06	3.135	1.443	114.30	+	E	64.5
232	B	NO711	-100.00	02	-1.71	-61.07	3.086	1.403	113.10	-	E	64.4
241	B	NO712	-64.00	01	-1.87	-60.48	3.581	1.843	128.48	+	E	63.0
241	B	NO712	-64.00	02	-1.87	-60.48	3.581	1.843	128.48	-	E	63.0
233	B	NO811	-98.00	01	-4.74	-68.94	2.321	1.376	75.36	+	E	64.1
233	B	NO811	-100.00	02	-4.72	-68.96	2.315	1.341	75.38	-	E	64.3
242	B	NO812	-64.00	01	-4.78	-68.71	2.411	1.625	73.82	+	E	63.0
242	B	NO812	-64.00	02	-4.78	-68.71	2.411	1.625	73.82	-	E	63.0
239	B	SE911	-104.00	01	-19.14	-46.10	2.185	0.800	62.85	+	E	65.9
239	B	SE911	-104.00	02	-19.14	-46.10	2.185	0.800	62.85	-	E	66.4
226	B	SU111	-70.00	01	-25.57	-50.98	2.797	1.196	49.37	+	E	62.6
226	B	SU111	-72.00	02	-25.59	-50.97	2.778	1.179	49.47	-	E	62.6
234	B	SU112	-48.00	01	-25.57	-50.76	2.560	1.429	54.31	+	E	62.4
234	B	SU112	-48.00	02	-25.57	-50.76	2.560	1.429	54.31	-	E	62.5
227	B	SU211	-70.00	01	-16.98	-44.33	3.316	1.596	57.53	+	E	62.0
227	B	SU211	-72.00	02	-16.88	-44.34	3.244	1.584	57.97	-	E	62.1
238	B	SU212	-48.00	01	-16.90	-44.01	3.249	1.923	57.62	+	E	61.5
238	B	SU212	-48.00	02	-16.90	-44.01	3.249	1.923	57.62	-	E	61.6
115	BAHIFRB1	-120.00	02	24.16	-76.03	1.614	0.800	130.46	-	E	63.6
018	BERBERMU	-120.00	01	32.25	-64.26	0.800	0.800	90.00	+	E	57.8
244	BERBER02	-30.00	01	32.32	-64.77	0.800	0.800	90.00	+	E	57.0
097	BLZ00001	-120.00	02	17.27	-88.68	0.800	0.800	90.00	-	E	59.2
219	BOLAND01	-114.00	01	-16.79	-65.00	2.500	1.309	76.38	+	E	68.0
121	BOL00001	-78.00	02	-16.70	-64.51	2.553	2.355	105.89	-	E	63.5
063	BRB00001	-88.00	01	13.10	-59.68	0.800	0.800	90.00	+	E	58.9
284	CAN00101	-164.00	01	57.04	-128.90	4.085	0.800	153.44	+	E	59.8
284	CAN00101	-166.00	02	56.86	-129.21	4.053	0.800	153.92	-	E	60.0
285	CAN00102	-146.00	01	57.19	-126.44	3.671	1.085	155.31	+	E	59.6

SCENARIO: DPLAN2 DOWNLINK PLAN LAYOUT 07/07/83 ~~085~~ 36 8
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6	7	8	9	10
285	CAN00102	-146.00	02	57.19	-126.44	3.671	1.085	155.31	- E	59.6
286	CAN00201	-164.00	01	56.39	-117.08	3.718	0.800	153.19	+ E	60.9
286	CAN00201	-166.00	02	56.15	-118.19	3.732	0.800	152.34	- E	61.2
287	CAN00202	-146.00	01	56.27	-112.69	3.524	0.830	151.32	+ E	59.9
287	CAN00202	-146.00	02	56.27	-112.69	3.524	0.830	151.32	- E	60.0
288	CAN00203	-138.00	01	55.90	-111.94	3.328	0.974	151.00	+ E	59.8
288	CAN00203	-140.00	02	55.98	-112.10	3.376	0.937	151.10	- E	59.9
289	CAN00302	-146.00	01	57.26	-105.96	3.756	0.800	154.15	+ E	61.5
289	CAN00302	-146.00	02	57.26	-105.96	3.756	0.800	154.15	- E	61.7
290	CAN00303	-138.00	01	56.97	-103.58	3.838	0.800	154.31	+ E	60.5
290	CAN00303	-140.00	02	56.97	-104.07	3.849	0.800	154.45	- E	60.6
291	CAN00304	-96.00	01	57.36	-99.55	2.137	1.649	160.57	+ E	60.0
291	CAN00304	-98.00	02	57.28	-99.58	2.224	1.603	155.33	- E	59.9
292	CAN00403	-138.00	01	52.00	-92.73	4.746	0.800	148.35	+ E	62.7
292	CAN00403	-140.00	02	51.78	-94.10	4.720	0.800	148.77	- E	63.6
293	CAN00404	-96.00	01	52.44	-85.25	3.302	1.873	149.65	+ E	60.6
293	CAN00404	-98.00	02	52.37	-85.46	3.391	1.799	148.58	- E	60.5
294	CAN00405	-92.00	01	52.44	-84.88	3.138	2.020	151.80	+ E	60.6
294	CAN00405	-94.00	02	52.46	-85.10	3.230	1.942	150.40	- E	60.4
295	CAN00504	-96.00	01	53.74	-73.17	3.712	1.536	154.50	+ E	60.3
295	CAN00504	-98.00	02	53.69	-73.40	3.781	1.477	153.87	- E	60.5
296	CAN00505	-92.00	01	53.75	-72.74	3.597	1.642	155.87	+ E	60.3
296	CAN00505	-94.00	02	53.72	-72.90	3.654	1.590	154.95	- E	60.5
297	CAN00506	-82.00	01	53.81	-71.75	3.295	1.895	161.93	+ E	60.2
297	CAN00506	-84.00	02	53.77	-71.94	3.356	1.847	160.18	- E	60.4
298	CAN00605	-92.00	01	49.59	-61.91	2.859	1.154	143.06	+ E	60.5
298	CAN00605	-94.00	02	49.62	-62.00	2.891	1.106	143.03	- E	60.8
299	CAN00606	-82.00	01	49.49	-61.58	2.669	1.389	143.91	+ E	60.3

1	2	3	4	5	6	7	8	9	10
299	CAN00606	-84.00	02	49.56	-61.67	2.700	1.348	144.02	- E	60.6
210	CHLCONT4	-94.00	01	-23.00	-69.55	2.179	0.817	70.26	- E	59.1
211	CHLCONT5	-94.00	02	-35.61	-72.05	2.563	0.800	61.35	+ E	59.2
212	CHLCONT6	-94.00	01	-55.58	-71.62	3.032	1.729	45.61	- E	59.5
200	CHLPAC02	-94.00	02	-30.06	-79.79	1.378	0.800	75.14	+ E	59.1
220	CLMAND01	-114.00	01	5.93	-74.72	3.852	1.673	114.18	+ E	65.0
011	CLM00001	-110.00	01	5.93	-74.61	3.913	1.780	115.88	- E	64.4
011	CLM00001	-110.00	02	5.93	-74.61	3.913	1.780	115.88	+ E	64.5
124	CRBBAH01	-98.00	02	24.17	-76.20	1.972	0.800	142.08	+ E	61.7
251	CRBBER01	-98.00	02	32.27	-64.85	0.800	0.800	90.00	+ E	57.0
123	CRBBLZ01	-98.00	02	17.56	-88.77	0.800	0.800	86.42	+ E	59.4
125	CRBEC001	-98.00	02	8.42	-60.26	4.124	0.800	113.50	+ E	65.1
122	CRBJMC01	-98.00	02	18.08	-79.06	1.138	0.800	151.75	+ E	61.0
257	CTR00201	-132.00	02	9.67	-84.33	0.812	0.800	118.84	- E	66.1
012	CUB00001	-100.00	01	21.51	-79.74	2.055	0.800	166.70	- E	61.6
118	DMAIFRB1	-92.00	02	15.35	-61.30	0.800	0.800	90.00	- E	59.1
259	DOMIFRB2	-88.00	02	18.80	-70.47	0.942	0.800	163.46	- E	61.3
221	EQACAND1	-114.00	01	-1.57	-78.41	1.394	0.957	73.76	+ E	64.2
098	EQAC0001	-94.00	01	-1.52	-78.30	1.485	1.156	65.16	+ E	63.1
098	EQAC0001	-96.00	02	-1.51	-78.33	1.477	1.142	63.72	- E	63.2
222	EQAGAND1	-114.00	01	-0.58	-90.38	0.923	0.802	92.79	+ E	61.4
099	EQAG0001	-94.00	01	-0.57	-90.36	0.939	0.888	99.77	+ E	61.1
099	EQAG0001	-96.00	02	-0.57	-90.36	0.938	0.885	99.04	- E	61.1
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.800	12.17	+ E	59.5
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.800	0.800	90.00	+ E	58.2
058	GRD00002	-42.00	01	12.29	-61.58	0.800	0.800	90.00	+ E	58.9
059	GRD00003	-92.00	02	12.39	-61.68	0.800	0.800	90.00	- E	59.2
272	GRD00059	-58.00	02	12.29	-61.58	0.800	0.800	90.00	- E	58.6

SCENARIO: DPLAN2 DOWNLINK PLAN LAYOUT 07/07/83 ~~009~~ 10
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6	7	8	9	10
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.800	171.69	-	E 60.1
255	GTMIFRB2	-132.00	01	15.57	-90.57	0.969	0.800	99.51	+	E 62.5
016	GUFMGG01	-54.00	01	8.18	-56.35	4.263	0.842	123.18	+	E 62.9
267	GUY00201	-80.00	01	4.78	-59.18	1.448	0.886	94.80	+	E 63.5
274	GUY00302	-38.00	02	4.77	-59.09	1.438	0.887	91.22	-	E 63.5
253	HNDIFRB2	-132.00	01	15.13	-86.33	0.846	0.800	123.32	+	E 66.0
258	HTI00002	-88.00	02	18.97	-73.29	0.808	0.800	6.31	-	E 61.1
075	HWA00002	-158.00	01	23.39	-165.48	4.033	0.800	159.47	+	E 59.0
075	HWA00002	-158.00	02	23.39	-165.48	4.033	0.800	159.47	-	E 58.9
076	HWA00003	-168.00	01	23.38	-165.81	4.218	0.800	159.86	+	E 58.9
076	HWA00003	-170.00	02	23.41	-165.92	4.236	0.800	159.65	-	E 58.8
021	IOBBVIRG	-92.00	01	18.51	-64.40	0.800	0.800	90.00	+	E 58.9
022	IOBCAYMA	-120.00	02	19.57	-80.58	0.800	0.800	90.00	-	E 59.9
245	IOBKN001	-92.00	01	17.42	-62.54	0.800	0.800	90.00	+	E 59.0
024	IOBMONTE	-92.00	01	16.75	-61.73	0.800	0.800	90.00	+	E 59.2
026	IOBTURCA	-120.00	02	21.53	-71.79	0.800	0.800	90.00	-	E 61.0
246	JMC00002	-96.00	01	18.12	-77.30	0.800	0.800	90.00	-	E 60.1
273	JMC00005	-38.00	02	18.12	-77.27	0.800	0.800	90.00	-	E 60.5
117	LCAIFRB1	-92.00	02	13.90	-61.15	0.800	0.800	90.00	-	E 59.1
215	MEX01NTE	-116.00	01	26.04	-106.57	4.048	1.794	154.16	+	E 60.7
215	MEX01NTE	-116.00	02	26.04	-106.57	4.048	1.794	154.16	-	E 60.7
216	MEX01SUR	-96.00	02	19.80	-95.53	3.610	2.130	174.88	+	E 61.8
217	MEX02NTE	-142.00	01	26.40	-107.62	3.665	1.478	146.07	+	E 61.7
217	MEX02NTE	-144.00	02	26.44	-107.76	3.607	1.447	145.08	-	E 62.1
218	MEX02SUR	-138.00	01	19.84	-96.76	2.781	1.725	147.12	+	E 63.9
218	MEX02SUR	-138.00	02	19.84	-96.76	2.781	1.725	147.12	-	E 64.2
256	NCG00003	-132.00	01	12.93	-85.05	0.993	0.800	105.62	+	E 65.9
204	PAQPAC01	-94.00	02	-27.53	-109.18	0.800	0.800	90.00	+	E 56.4

SCENARIO: DPLAN2 DOWNLINK PLAN LAYOUT 07/07/83 006 39 //
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
254	PNRIFRB2	-132.00	02	8.50	-80.19	0.821	0.800	133.42	-	E	67.2
265	PRG00002	-108.00	02	-23.31	-58.76	1.446	0.855	74.22	-	E	60.8
223	PRUAND01	-114.00	01	-8.35	-74.69	3.440	1.820	95.52	+	E	64.1
225	PRU00002	-108.00	01	-8.46	-74.64	3.475	2.034	97.36	+	E	63.6
077	PTRVIR01	-102.00	01	18.12	-65.85	0.800	0.800	90.00	+	E	60.7
077	PTRVIR01	-104.00	02	18.12	-65.85	0.800	0.800	90.00	-	E	60.8
126	PTRVIR02	-106.00	01	18.09	-65.86	0.800	0.800	168.40	+	E	60.9
126	PTRVIR02	-108.00	02	18.09	-65.86	0.800	0.800	168.12	-	E	61.0
260	SLVIFRB2	-132.00	01	13.81	-88.80	0.800	0.800	90.00	+	E	63.4
206	SPMFRAN3	-56.00	02	47.49	-67.26	3.162	0.810	6.17	-	E	60.5
061	SURINAME	-80.00	01	4.45	-55.75	1.047	0.800	79.45	+	E	63.1
078	TRD00001	-88.00	01	10.70	-61.23	0.800	0.800	90.00	+	E	59.6
032	URG00001	-78.00	01	-32.57	-56.26	0.994	0.869	20.31	+	E	60.2
279	USAEH001	-104.00	01	36.15	-89.55	5.619	3.716	167.14	+	E	61.9
279	USAEH001	-104.00	02	36.15	-89.55	5.619	3.716	167.14	-	E	61.9
280	USAEH002	-106.00	01	36.10	-89.74	5.635	3.646	165.35	+	E	62.1
280	USAEH002	-108.00	02	36.12	-89.94	5.567	3.619	163.12	-	E	62.0
281	USAEH003	-112.00	01	36.12	-90.41	5.451	3.535	158.53	+	E	62.4
281	USAEH003	-114.00	02	36.12	-90.64	5.402	3.478	156.21	-	E	62.3
282	USAEH004	-124.00	01	36.03	-91.79	5.276	3.024	147.56	+	E	63.2
282	USAEH004	-124.00	02	36.03	-91.79	5.276	3.024	147.56	-	E	62.9
275	USAWH001	-130.00	01	37.63	-107.70	5.496	2.648	149.26	+	E	61.0
275	USAWH001	-130.00	02	37.63	-107.70	5.496	2.648	149.26	-	E	61.2
276	USAWH002	-152.00	01	38.33	-110.44	5.523	1.778	140.17	+	E	62.7
276	USAWH002	-152.00	02	38.33	-110.44	5.523	1.778	140.17	-	E	62.4
277	USAWH003	-158.00	01	38.50	-111.25	5.502	1.501	138.72	+	E	63.5
277	USAWH003	-158.00	02	38.50	-111.25	5.502	1.501	138.72	-	E	63.2
278	USAWH004	-168.00	01	39.36	-114.15	5.576	1.010	135.05	+	E	66.3

SCENARIO: DPLAN2 DOWNLINK PLAN LAYOUT 07/07/83 807 12
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6		7	8	9	10
278	USAWH004	-170.00	02	39.23	-114.67	5.541	0.924	134.78	-	E	66.6
271	VCT00001	-92.00	02	13.23	-61.21	0.800	0.800	91.87	-	E	59.0
269	VENAND02	-114.00	01	8.54	-67.31	2.885	1.471	99.68	+	E	67.2
057	VEN02VEN	-84.00	01	15.51	-63.45	0.800	0.800	90.00	+	E	59.0
270	VEN11VEN	-84.00	01	6.86	-66.57	2.724	2.157	143.75	+	E	63.6

SCENARIO: DPLAN2 FEEDERLINK PLAN LAYOUT 07/07/83 ~~001~~ /3
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-158.00	01	32.23	-145.29	14.235	5.767	160.98	+ P 1000.
073	ALS00002	-158.00	02	32.23	-145.29	14.235	5.767	160.98	- P 1000.
074	ALS00003	-168.00	01	32.64	-150.24	12.799	5.389	157.22	+ P 1000.
074	ALS00003	-170.00	02	32.78	-151.23	12.527	5.288	156.40	- P 1000.
261	ARGINSU2	-84.00	01	-33.19	-63.84	5.599	2.251	58.07	+ P 1000.
261	ARGINSU2	-84.00	02	-33.19	-63.84	5.599	2.251	58.07	- P 1000.
262	ARGNORT2	-84.00	01	-33.19	-63.84	5.599	2.251	58.07	+ P 1000.
262	ARGNORT2	-84.00	02	-33.19	-63.84	5.599	2.251	58.07	- P 1000.
263	ARGSUR02	-84.00	01	-33.19	-63.84	5.599	2.251	58.07	+ P 1000.
263	ARGSUR02	-84.00	02	-33.19	-63.84	5.599	2.251	58.07	- P 1000.
264	ATGSJN01	-92.00	01	17.08	-61.79	0.600	0.600	8.35	+ P 1000.
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.681	39.26	+ P 1000.
228	B CE311	-90.00	01	-6.13	-41.30	1.966	1.868	99.64	+ P 1000.
228	B CE311	-92.00	02	-6.16	-41.24	1.942	1.778	106.54	- P 1000.
235	B CE312	-48.00	01	-6.07	-40.30	3.422	2.086	173.98	+ P 1000.
235	B CE312	-48.00	02	-6.07	-40.30	3.422	2.086	173.98	- P 1000.
229	B CE411	-90.00	01	-15.42	-51.51	3.618	1.012	53.67	+ P 1000.
229	B CE411	-92.00	02	-15.41	-51.60	3.654	0.954	54.29	- P 1000.
236	B CE412	-48.00	01	-15.30	-50.77	3.644	1.538	50.69	+ P 1000.
236	B CE412	-48.00	02	-15.30	-50.77	3.644	1.538	50.69	- P 1000.
230	B CE511	-90.00	01	-2.97	-53.34	2.324	1.629	92.46	+ P 1000.
230	B CE511	-92.00	02	-2.97	-53.36	2.314	1.571	91.90	- P 1000.
237	B CE512	-64.00	01	-2.89	-53.11	2.444	2.130	103.87	+ P 1000.
237	B CE512	-64.00	02	-2.89	-53.11	2.444	2.130	103.87	- P 1000.
231	B N0611	-98.00	01	-11.61	-59.97	2.102	1.642	154.85	+ P 1000.
231	B N0611	-100.00	02	-11.61	-60.00	2.031	1.629	151.28	- P 1000.
240	B N0612	-64.00	01	-11.64	-59.47	3.003	1.691	165.07	+ P 1000.
240	B N0612	-64.00	02	-11.64	-59.47	3.003	1.691	165.07	- P 1000.

SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1		2	3	4	5	6	7	8	9	10
232	B	NO711	-98.00	01	-1.71	-61.06	3.135	1.443	114.30	+ P 1000.
232	B	NO711	-100.00	02	-1.71	-61.07	3.086	1.403	113.10	- P 1000.
241	B	NO712	-64.00	01	-1.87	-60.48	3.581	1.843	128.48	+ P 1000.
241	B	NO712	-64.00	02	-1.87	-60.48	3.581	1.843	128.48	- P 1000.
233	B	NO811	-98.00	01	-4.74	-68.94	2.321	1.376	75.36	+ P 1000.
233	B	NO811	-100.00	02	-4.72	-68.96	2.315	1.341	75.38	- P 1000.
242	B	NO812	-64.00	01	-4.78	-68.71	2.411	1.625	73.82	+ P 1000.
242	B	NO812	-64.00	02	-4.78	-68.71	2.411	1.625	73.82	- P 1000.
239	B	SE911	-104.00	01	-19.14	-46.10	2.185	0.732	62.85	+ P 1000.
239	B	SE911	-104.00	02	-19.14	-46.10	2.185	0.732	62.85	- P 1000.
226	B	SU111	-70.00	01	-25.57	-50.98	2.797	1.196	49.37	+ P 1000.
226	B	SU111	-72.00	02	-25.59	-50.97	2.778	1.179	49.47	- P 1000.
234	B	SU112	-48.00	01	-25.57	-50.76	2.560	1.429	54.31	+ P 1000.
234	B	SU112	-48.00	02	-25.57	-50.76	2.560	1.429	54.31	- P 1000.
227	B	SU211	-70.00	01	-16.98	-44.33	3.316	1.596	57.53	+ P 1000.
227	B	SU211	-72.00	02	-16.88	-44.34	3.244	1.584	57.97	- P 1000.
238	B	SU212	-48.00	01	-16.90	-44.01	3.249	1.923	57.62	+ P 1000.
238	B	SU212	-48.00	02	-16.90	-44.01	3.249	1.923	57.62	- P 1000.
115	BAHIFRB1		-120.00	02	24.16	-76.03	1.614	0.681	130.46	- P 1000.
018	BERBERMU		-120.00	01	32.25	-64.26	0.600	0.600	90.00	+ P 1000.
244	BERBER02		-30.00	01	32.32	-64.77	0.600	0.600	90.00	+ P 1000.
097	BLZ00001		-120.00	02	17.27	-88.68	0.622	0.622	90.00	- P 1000.
219	BOLAND01		-114.00	01	-5.66	-71.53	6.144	2.595	89.83	+ P 1000.
121	BOL00001		-78.00	02	-16.70	-64.51	2.553	2.355	105.89	- P 1000.
063	BRB00001		-88.00	01	13.10	-59.68	0.600	0.600	90.00	+ P 1000.
284	CAN00101		-164.00	01	52.79	-122.85	6.603	0.916	151.38	+ P 1000.
284	CAN00101		-166.00	02	52.93	-123.59	6.652	0.835	151.31	- P 1000.
285	CAN00102		-146.00	01	52.37	-110.68	7.538	1.462	158.71	+ P 1000.

SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
285	CAN00102	-146.00	02	52.37	-110.68	7.538	1.462	158.71	- P 1000.
286	CAN00201	-164.00	01	52.79	-122.85	6.603	0.916	151.38	+ P 1000.
286	CAN00201	-166.00	02	52.93	-123.59	6.652	0.835	151.31	- P 1000.
287	CAN00202	-146.00	01	52.37	-110.68	7.538	1.462	158.71	+ P 1000.
287	CAN00202	-146.00	02	52.37	-110.68	7.538	1.462	158.71	- P 1000.
288	CAN00203	-138.00	01	51.80	-106.02	7.748	1.724	161.69	+ P 1000.
288	CAN00203	-140.00	02	51.82	-106.19	7.767	1.647	161.57	- P 1000.
289	CAN00302	-146.00	01	52.37	-110.68	7.538	1.462	158.71	+ P 1000.
289	CAN00302	-146.00	02	52.37	-110.68	7.538	1.462	158.71	- P 1000.
290	CAN00303	-138.00	01	51.80	-106.02	7.748	1.724	161.69	+ P 1000.
290	CAN00303	-140.00	02	51.82	-106.19	7.767	1.647	161.57	- P 1000.
291	CAN00304	-96.00	01	50.65	-89.18	8.562	2.544	175.84	+ P 1000.
291	CAN00304	-98.00	02	50.77	-89.60	8.651	2.506	175.32	- P 1000.
292	CAN00403	-138.00	01	51.80	-106.02	7.748	1.724	161.69	+ P 1000.
292	CAN00403	-140.00	02	51.82	-106.19	7.767	1.647	161.57	- P 1000.
293	CAN00404	-96.00	01	50.65	-89.18	8.562	2.544	175.84	+ P 1000.
293	CAN00404	-98.00	02	50.77	-89.60	8.651	2.506	175.32	- P 1000.
294	CAN00405	-92.00	01	50.51	-88.02	8.475	2.584	177.13	+ P 1000.
294	CAN00405	-94.00	02	50.53	-88.64	8.485	2.576	176.49	- P 1000.
295	CAN00504	-96.00	01	50.65	-89.18	8.562	2.544	175.84	+ P 1000.
295	CAN00504	-98.00	02	50.77	-89.60	8.651	2.506	175.32	- P 1000.
296	CAN00505	-92.00	01	50.51	-88.02	8.475	2.584	177.13	+ P 1000.
296	CAN00505	-94.00	02	50.53	-88.64	8.485	2.576	176.49	- P 1000.
297	CAN00506	-82.00	01	50.31	-84.92	8.242	2.611	0.66	+ P 1000.
297	CAN00506	-84.00	02	50.38	-85.41	8.339	2.599	179.97	- P 1000.
298	CAN00605	-92.00	01	50.51	-88.02	8.475	2.584	177.13	+ P 1000.
298	CAN00605	-94.00	02	50.53	-88.64	8.485	2.576	176.49	- P 1000.
299	CAN00606	-82.00	01	50.31	-84.92	8.242	2.611	0.66	+ P 1000.

1	2	3	4	5	6	7	8	9	10
299	CAN00606	-84.00	02	50.38	-85.41	8.339	2.599	179.97	- P	1000.
210	CHLCONT4	-94.00	01	-23.00	-69.55	2.179	0.817	70.26	- P	1000.
211	CHLCONT5	-94.00	02	-35.61	-72.05	2.563	0.681	61.35	+ P	1000.
212	CHLCONT6	-94.00	01	-55.58	-71.62	3.032	1.729	45.61	- P	1000.
200	CHLPAC02	-94.00	02	-30.06	-79.79	1.378	0.689	75.14	+ P	1000.
220	CLMAND01	-114.00	01	-4.47	-70.81	6.181	2.823	86.54	+ P	1000.
011	CLM00001	-110.00	01	5.34	-75.60	3.788	1.237	117.60	- P	1000.
011	CLM00001	-110.00	02	5.34	-75.60	3.788	1.237	117.60	+ P	1000.
124	CRBBAH01	-98.00	02	24.17	-76.20	1.972	0.600	142.08	+ P	1000.
251	CRBBER01	-98.00	02	32.27	-64.85	0.600	0.600	90.00	+ P	1000.
123	CRBBLZ01	-98.00	02	17.56	-88.77	0.738	0.600	86.42	+ P	1000.
125	CRBEC001	-98.00	02	8.42	-60.26	4.124	0.790	113.50	+ P	1000.
122	CRBJMC01	-98.00	02	18.08	-79.06	1.138	0.600	151.75	+ P	1000.
257	CTR00201	-132.00	02	9.67	-84.33	0.812	0.681	118.84	- P	1000.
012	CUB00001	-100.00	01	21.51	-79.74	2.055	0.692	166.70	- P	1000.
118	DMAIFRB1	-92.00	02	15.35	-61.30	0.600	0.600	90.00	- P	1000.
259	DOMIFRB2	-88.00	02	18.80	-70.47	0.942	0.700	163.46	- P	1000.
221	EQACAND1	-114.00	01	4.47	-70.81	6.181	2.823	93.46	+ P	1000.
098	EQAC0001	-94.00	01	-1.64	-78.24	1.366	1.137	74.41	+ P	1000.
098	EQAC0001	-96.00	02	-1.62	-78.26	1.368	1.118	72.71	- P	1000.
222	EQAGAND1	-114.00	01	4.47	-70.81	6.181	2.823	93.46	+ P	1000.
099	EQAG0001	-94.00	01	-1.64	-78.24	1.366	1.137	74.41	+ P	1000.
099	EQAG0001	-96.00	02	-1.62	-78.26	1.368	1.118	72.71	- P	1000.
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.681	12.17	+ P	1000.
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.600	0.600	90.00	+ P	1000.
058	GRD00002	-42.00	01	12.25	-61.61	0.600	0.600	90.00	+ P	1000.
059	GRD00003	-92.00	02	12.25	-61.61	0.600	0.600	90.00	- P	1000.
272	GRD00059	-58.00	02	12.29	-61.58	0.600	0.600	90.00	- P	1000.

SCENARIO: DPLAN2 FEEDERLINK PLAN LAYOUT 07/07/83 005
SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5		6		7	8	9	10
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.794	171.69	-	P	1000.
255	GTMIFRB2	-132.00	01	15.57	-90.57	0.969	0.681	99.51	+	P	1000.
016	GUFMGG01	-54.00	01	28.54	-43.95	9.549	5.663	64.54	+	P	1000.
267	GUY00201	-80.00	01	4.78	-59.18	1.448	0.886	94.80	+	P	1000.
274	GUY00302	-38.00	02	4.77	-59.09	1.438	0.887	91.22	-	P	1000.
253	HNDIFRB2	-132.00	01	15.13	-86.33	0.846	0.775	123.32	+	P	1000.
258	HTI00002	-88.00	02	18.97	-73.29	0.808	0.681	6.31	-	P	1000.
075	HWA00002	-158.00	01	32.23	-145.29	14.235	5.767	160.98	+	P	1000.
075	HWA00002	-158.00	02	32.23	-145.29	14.235	5.767	160.98	-	P	1000.
076	HWA00003	-168.00	01	32.64	-150.24	12.799	5.389	157.22	+	P	1000.
076	HWA00003	-170.00	02	32.78	-151.23	12.527	5.288	156.40	-	P	1000.
021	IOBBVIRG	-92.00	01	18.51	-64.40	0.600	0.600	90.00	+	P	1000.
022	IOBCAYMA	-120.00	02	19.57	-80.58	0.600	0.600	90.00	-	P	1000.
245	IOBKN001	-92.00	01	17.42	-62.54	0.600	0.600	90.00	+	P	1000.
024	IOBMONTE	-92.00	01	16.75	-61.73	0.600	0.600	90.00	+	P	1000.
026	IOBTURCA	-120.00	02	21.53	-71.79	0.600	0.600	90.00	-	P	1000.
246	JMC00002	-96.00	01	18.12	-77.30	0.606	0.606	90.00	-	P	1000.
273	JMC00005	-38.00	02	18.12	-77.27	0.600	0.600	90.00	-	P	1000.
117	LCAIFRB1	-92.00	02	13.90	-61.15	0.600	0.600	90.00	-	P	1000.
215	MEX01NTE	-116.00	01	23.32	-101.29	6.034	1.845	154.86	+	P	1000.
215	MEX01NTE	-116.00	02	23.32	-101.29	6.034	1.845	154.86	-	P	1000.
216	MEX01SUR	-96.00	02	23.20	-100.44	5.741	2.073	157.06	+	P	1000.
217	MEX02NTE	-142.00	01	23.76	-102.76	5.316	1.397	145.26	+	P	1000.
217	MEX02NTE	-144.00	02	23.83	-102.95	5.252	1.350	144.11	-	P	1000.
218	MEX02SUR	-138.00	01	23.59	-102.39	5.461	1.474	147.46	+	P	1000.
218	MEX02SUR	-138.00	02	23.59	-102.39	5.461	1.474	147.46	-	P	1000.
256	NCG00003	-132.00	01	12.93	-85.05	0.993	0.716	105.62	+	P	1000.
204	PAQPAC01	-94.00	02	-27.53	-109.18	0.600	0.600	90.00	+	P	1000.

(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
254	PNRIFRB2	-132.00	02	8.50	-80.19	0.821	0.697	133.42	- P	1000.
265	PRG00002	-108.00	02	-23.31	-58.76	1.446	0.855	74.22	- P	1000.
223	PRUAND01	-114.00	01	-4.47	-70.81	6.181	2.823	86.54	+ P	1000.
225	PRU00002	-108.00	01	-8.46	-74.64	3.475	2.034	97.36	+ P	1000.
077	PTRVIR01	-102.00	01	28.56	-110.60	15.159	7.328	174.19	+ P	1000.
077	PTRVIR01	-104.00	02	28.66	-111.66	15.328	7.299	173.78	- P	1000.
126	PTRVIR02	-106.00	01	18.09	-65.86	0.603	0.600	168.40	+ P	1000.
126	PTRVIR02	-108.00	02	18.09	-65.86	0.600	0.600	168.12	- P	1000.
260	SLVIFRB2	-132.00	01	13.81	-88.80	0.600	0.600	90.00	+ P	1000.
206	SPMFRAN3	-56.00	02	28.64	-44.36	9.455	5.589	67.03	- P	1000.
061	SURINAME	-80.00	01	4.53	-55.77	1.066	0.718	83.09	+ P	1000.
078	TRD00001	-88.00	01	10.37	-61.40	0.600	0.600	90.00	+ P	1000.
032	URG00001	-78.00	01	-32.57	-56.26	0.994	0.869	20.31	+ P	1000.
279	USAEH001	-104.00	01	28.66	-111.66	15.328	7.299	173.78	+ P	1000.
279	USAEH001	-104.00	02	28.66	-111.66	15.328	7.299	173.78	- P	1000.
280	USAEH002	-106.00	01	28.67	-112.63	15.417	7.296	173.34	+ P	1000.
280	USAEH002	-108.00	02	28.65	-113.64	15.480	7.293	172.81	- P	1000.
281	USAEH003	-112.00	01	28.74	-115.65	15.596	7.256	171.89	+ P	1000.
281	USAEH003	-114.00	02	28.72	-116.63	15.591	7.248	171.32	- P	1000.
282	USAEH004	-124.00	01	29.97	-123.12	16.154	6.814	169.41	+ P	1000.
282	USAEH004	-124.00	02	29.97	-123.12	16.154	6.814	169.41	- P	1000.
275	USAWH001	-130.00	01	30.88	-127.68	16.496	6.511	168.31	+ P	1000.
275	USAWH001	-130.00	02	30.88	-127.68	16.496	6.511	168.31	- P	1000.
276	USAWH002	-152.00	01	32.06	-142.01	15.033	5.939	162.96	+ P	1000.
276	USAWH002	-152.00	02	32.06	-142.01	15.033	5.939	162.96	- P	1000.
277	USAWH003	-158.00	01	32.23	-145.29	14.235	5.767	160.98	+ P	1000.
277	USAWH003	-158.00	02	32.23	-145.29	14.235	5.767	160.98	- P	1000.
278	USAWH004	-168.00	01	32.64	-150.24	12.799	5.389	157.22	+ P	1000.

SCENARIO: DPLAN2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
278	USAWH004	-170.00	02	32.78	-151.23	12.527	5.288	156.40	- P	1000.
271	VCT00001	-92.00	02	13.23	-61.21	0.600	0.600	91.87	- P	1000.
269	VENAND02	-114.00	01	8.54	-67.31	2.885	1.471	99.68	+ P	1000.
057	VEN02VEN	-84.00	01	15.51	-63.45	0.600	0.600	90.00	+ P	1000.
270	VEN11VEN	-84.00	01	6.86	-66.57	2.724	2.157	143.75	+ P	1000.

PARAMETRES TECHNIQUES RAPPORT 1
- VALEURS PAR DEFAUT.

* CLE DU SCENARIO: DPLAN2 * DATE 07/07/83

1.1 CARECTERISTIQUES NOMINALES DU TERMINAL DE RECEPTION

CLE DE L'ANTENNE	AY01	
DESCRIPTION DE L'ANTENNE: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DU RECEPTEUR (MERIT OU TEMPERATURE)	10.0	DBK-1
DIAMETRE DE L'ANTENNE DE RECEPTION	1.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC1	
CLE DE DIAGRAMME DE GAIN CONTRAPOLATAIRE	GYX1	

1.2 CARACTERSTIQUES NOMINALES DE L'ANTENNE D'EMISSION DU SATELLITE

CLE DE L'ANTENNE	AY02	
DESCRIPTION DE L'ANTENNE: RARC 83 SAT TX ANTENNA (JUNE 83)		
RENDEMENT	.55	
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC2	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GYX2	

1.3 CARACTERISTIQUES NOMINALES DE LA STATION TERRIENNE D'EMISSION

CLE DE L'ANTENNE	AR05	
DESCRIPTION DE L'ANTENNE: CPM FLT		
RENDEMENT	.64	
DIAMETRE	5.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC7	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX7	

1.4 CARACTERISTIQUES NOMINALES DE L'ANTENNE DE RECEPTION DU SATELLITE

CLE DE L'ANTENNE	AP18	
DESCRIPTION DE L'ANTENNE: CPM (JUN-JUL 82)		
TEMPERATURE DE BRUIT	1500.	K
NIVEAU FLUX A LA RECEPTION	1000.	W
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC5	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX5	

1.5 CARACTERISTIQUES DU PLAN

RAPORT PORTEUSE/BRUIT GLOBAL	14.0	DB
RAPPORT DE PROTECTION GLOBAL	28.	DB
CLE DE GABARIT DE RAPPORT DE PROTECTION	PY02	
CLE DE DISPOSITION DES VOIES-LIAISON DESC.	CY01	
-LIAIS.DE CONX.	CY51	
LARGEUR DE BANDE DE VOIE	24.	MHZ
ECARTEMENT DES VOIES	14.58	MHZ
LIAISON DESC. - BANDE DE GARDE: INFERIEURE	12.	MHZ
- BANDE DE GARDE: SUPERIEURE	12.	MHZ
LIAISON DE CONX. - BANDE DE GARDE: INFER.	12.	MHZ
- BANDE DE GARDE: SUPER.	12.	MHZ
FREQ. DE LA VOIE NO.1 - LIAISON DESC.	12.224	MHZ
- LIAISON DE CONX.	17.324	MHZ
NOMBRE TOTAL DE VOIES	32	
POLARISATION - LIAISON DESCENDANTE	C	
- LIAISON DE CONNEXION	C	
MODEL HYDROMETEOROLOGIQUE	R	

TECHNICAL PARAMETERS REPORT 1
- DEFAULT VALUES.

* SCENARIO KEY: DPLAN2 * DATE 07/07/83

1.1 RECEIVING EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AY01	
ANTENNA DESCRIPTION: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
RECEIVE G/T (MERIT OR TEMPERATURE)	10.0	DBK-1
RECEIVE ANTENNA (DIAMETER OR BEAMWIDTH)	1.0	M
CO-POLAR GAIN PATTERN KEY	GYC1	
CROSS-POLAR GAIN PATTERN KEY	GYX1	

1.2 SATELLITE TRANSMIT ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AY02	
ANTENNA DESCRIPTION: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFFICIENCY	.55	
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GYC2	
CROSS-POLAR GAIN PATTERN KEY	GYX2	

1.3 TRANSMIT EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AR05	
ANTENNA DESCRIPTION: CPM FLT		
EFFICIENCY	.64	
DIAMETER	5.0	M
CO-POLAR PATTERN KEY	GPC7	
CROSS-POLAR GAIN PATTERN KEY	GPX7	

1.4 SATELLITE RECEIVE ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AP18	
ANTENNA DESCRIPTION: CPM (JUN-JUL 82)		
NOISE TEMPERATURE	1500.	K
EIRP OR C/N OR PFD OR POWER	1000.	W
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GPC5	
CROSS-POLAR GAIN PATTERN KEY	GPX5	

1.5 PLAN CHARACTERISTICS

OVERALL C/N	14.0	DB
OVERALL AGGREGATE PROTECTION RATIO	28.	DB
PROTECTION RATIO TEMPLATE KEY	PY02	
DOWNLINK CHANNELIZATION KEY	CY01	
FEEDERLINK CHANNELIZATION KEY	CY51	
CHANNEL BANDWIDTH	24.	MHZ
CHANNEL SPACING	14.58	MHZ
DOWNLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
FEEDERLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
CHANNEL #1 FREQUENCY - DOWNLINK	12.224	MHZ
- FEEDERLINK	17.324	MHZ
TOTAL NUMBER OF CHANNELS	32	
DOWNLINK POLARIZATION	C	
FEEDERLINK POLARIZATION	C	
RAIN-MODEL	R	

INFORME NO.1 SOBRE PARAMETROS TECHNICOS
- VALORES SUPLETORIOS.

* CLAVE DE ESCENARIO: DPLAN2 * FECHA 07/07/83

1.1 CARACTERISTICAS NOMINALES DEL TERMINAL EN RECEPCION

CLAVE DE LA ANTENA	AY01	
DESCRIPCION DE LA ANTENA: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DEL RECEPTOR (TEMPERATURA)	10.0	DBK-1
DIAMETRO DE LA ANTENA RECEPTORA	1.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC1	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX1	

1.2 CARACTERISTICAS NOMINALES DE LA ANTENA TRANSMISORA DEL SATELITE

CLAVE DE LA ANTENA	AY02	
DESCRIPCION DE LA ANTENA: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFICACIA	.55	
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC2	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX2	

1.3 CARACTERISTICAS NOMINALES DEL TERMINAL TERRENO EN TRANSMISION

CLAVE DE LA ANTENA	AR05	
DESCRIPCION DE LA ANTENA: CPM FLT		
EFICACIA	.64	
DIAMETRO	5.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC7	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX7	

1.4 CARACTERISTICAS NOMINALES DE LA ANTENA RECEPTORA DEL SATELITE

CLAVE DE LA ANTENA	AP18	
DESCRIPCION DE LA ANTENA: CPM (JUN-JUL 82)		
TEMPERATURA DE RUIDO	1500.	K
PIRE O C/N O DFP O POTENCIA	1000.	W
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC5	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX5	

1.5 CARACTERISTICAS DEL PLAN

RELACION PORTADORA/RUIDO GLOBAL	14.0	DB
RELACION DE PROTECCION TOTAL GENERAL	28.	DB
CLAVE DE PLANTILLA DE LA RELACION DE PROTEC.	PY02	
CLAVE DE DISPOSICION DE CANALES-ENLACE DESC.	CY01	
-ENL.DE CONX.	CY51	
ANCHURA DE BANDA DE CANAL	24.	MHZ
SEPARACION DE CANALES	14.58	MHZ
ENLACE DESC. - BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
ENLACE DE CONX.- BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
FRECUENCIA DEL CANAL NO.1 - ENLACE DESC.	12.224	MHZ
- ENL. DE CONX.	17.324	MHZ
NUMERO TOTAL DE CANALES	32	
POLARIZACION - ENLACE DESCENDENTE	C	
- ENLACE DE CONEXION	C	
MODELO DE LLUVIA	R	

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 180-E
7 July 1983
Original : English

Source : Document No. DT/45

COMMITTEE 6

SECOND REPORT OF WORKING GROUP 6B TO COMMITTEE 6

1. The Working Group adopted unanimously the following draft Resolutions :

a) Resolution relating to the period between 1 January 1984 and the entry into force of the Final Acts of WARC-ORB 1985 to which is attached a proposed Resolution to be adopted by the WARC-ORB 1985 covering the period after the Conference until the entry into force of its Final Acts;

b) Resolution relating to the compatibility of the Plan for the Broadcasting-Satellite Service in Region 2 with Appendix 30 to the Radio Regulations.

2. With respect to the Resolution referred to in sub-paragraph b) /COM6/2/ attention of Committee 6 is drawn to the fact that the text of paragraph 1 under decides to request the IFRB should be developed by Committee 5, on the basis of proposal CAN/13/146.

3. The texts submitted for consideration by Committee 6 appear in Annexes 1 and 2.

L.C. STEPHENS
Chairman of Working Group 6B

Annexes : 2

ANNEX 1

DRAFT RESOLUTION No. COM6/1

Relating to the period between 1 January 1984 and the entry into force of the Final Acts of WARC-ORB 85

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

considering

a) that the provisions and the associated plans prepared by the present Conference are subject to formal adoption and incorporation into the Radio Regulations by WARC-ORB 85;

b) that during the period between 1 January 1984 and the date of entry into force of the Final Acts of the WARC-ORB 85 administrations of countries in Region 2 may wish to bring into use assignments appearing in the Plan or to modify them or to bring them into use as interim systems;

c) that in accordance with the provisions of Resolutions Nos. 31, 503 and 504 of the WARC-1979 and the provision RR 839 of the Radio Regulations, pending the entry into force of the Final Acts of WARC-ORB 1985, the provisions of Resolution No. 33 of the WARC 1979 and of Articles 11, 13 and 14 of the Radio Regulations shall apply to stations of the broadcasting-satellite and fixed-satellite service;

further considering

that there is a need for procedures to be applied by administrations of Region 2 and the IFRB during the above period;

resolves

1. that during the period between 1 January 1984 and the date to be adopted by WARC-ORB 85 on which the provisions and the associated plans established by the present Conference will apply to all countries of Region 2 the following procedures shall be applied;

1.1 the Board shall consider any notification of an assignment to a station of the broadcasting-satellite service in the band 12.2 - 12.7 GHz which is in conformity with the Broadcasting-Satellite Plan :

- as having been agreed to in accordance with Article 14 by countries participating in the Conference and by other countries which have agreed to apply the provisions of this Resolution;
- as having been coordinated among the same countries in accordance with sections A and B of Resolution No. 33;

1.2 the Board shall consider any notification of an assignment to a station of the fixed-satellite service in the band 17.3 - 17.8 GHz which is in conformity with the feeder link plan as having been coordinated among the same countries in accordance with Article 11 of the Radio Regulations;

1.3 that the IFRB, and administrations wishing to modify their assignments in the above Plans or to bring into use interim systems, shall apply the provisions of Articles ..... except for those provisions of paragraphs [ ];

2. on the date of entry into force of the Final Acts of WARC 1985, the IFRB shall publish modifications to the Plans and interim uses resulting from resolves 1 above, in a special section of its weekly Circular in order to enter them in the Plan or in the Interim List referred to in / /;

urges the administrations not present at this Conference

to accept that the provisions of the present Resolution be applied to them within the framework of the procedures contained in Articles 11 and 14 of the Radio Regulations and of Resolution No. 33 of WARC 1979 and to so inform the IFRB as soon as practicable to this effect;

recommends to the /WARC-ORB 85/

to consider and adopt the draft Resolution contained in the Annex to this Resolution in order to permit the application to all countries of Region 2 of the provisions and associated plans for the BBS service and for their feeder links prior to the entry into force of its Final Acts;

requests the IFRB

to communicate to the administrations not participating in the Conference the provisions governing the use of the BSS and the FSS for their feeder links and the associated plans indicating the assignments entered in the Plan on their behalf and outlining the benefit to them of accepting the application of these provisions during the period preceding the /WARC-ORB 85/ as indicated in the present Resolution.

Annex : Draft Resolution

Annex

(to draft Resolution No. COM6/1)

DRAFT RESOLUTION

Relating to the provisional uses of Appendices .....

The World Administrative Radio Conference ....., Geneva, 1985

considering

a) that the present Conference has decided to incorporate within the Radio Regulations the provisions and associated Plans for the BSS and FSS for feeder links in Region 2;

b) that during the period preceding the date of entry into force of the Final Acts of the present Conference administrations of countries in Region 2 may wish to bring into use assignments appearing in the Plan or to modify them or to bring them into use as interim systems;

further considering

that there is a need for procedures to be applied by administrations of Region 2 and the IFRB during the interim period referred to above;

resolves

1. that during the period preceding the date of entry into force of the Final Acts of this Conference administrations and the IFRB shall apply the provisions of Appendices ... and .... on a provisional basis;

2. on the date of entry into force of the Final Acts of WARC 1985, the IFRB shall publish modifications to the Plans and interim uses introduced in application of resolves 1 above, in a special section of its weekly Circular in order to enter them in the Plan or in the Interim List referred to in /7.

ANNEX 2

DRAFT RESOLUTION No. COM6/2

Relating to the compatibility of the Plan for the Broadcasting-Satellite Service in Region 2 in the band 12.2 - 12.7 GHz with Appendix 30 of the Radio Regulations

The Regional Broadcasting-Satellite Conference (Region 2), Geneva, 1983,

considering

a) that it has adopted a Plan for the broadcasting-satellite service in Region 2 in the band 12.2 - 12.7 GHz;

b) that Appendix 30 stipulates that the Region 2 plan to be 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 this Appendix (see footnote to paragraph 4.3.1.2);

c) that Resolution No. 700 of WARC-79 stipulates that in the drawing-up of a plan (and any associated modification procedure) for the broadcasting-satellite service in Region 2 the requirements for satisfactory future operation of the fixed-satellite service in Regions 1 and 3 shall be observed and that, if constraints on the fixed-satellite service are considered necessary to ensure that no harmful interference is caused either to the fixed-satellite or the broadcasting-satellite services involved, they should not in any case be greater than those imposed on the fixed-satellite service in Region 2 by Appendix 30 (see resolves 2 of Resolution No. 700);

d) that Resolution No. 701 of WARC-79 stipulates that planning shall take into account the pertinent provisions of Appendix 30, in particular those contained in Annexes 4 and 5, as well as other decisions of this Conference (see resolves 2 of Resolution No. 701);

e) that due to the limited time available to it, the Conference could not identify the incompatibilities, if any, with broadcasting-satellite stations in Regions 1 and 3 or with other services in these Regions;

decides to request the IFRB

1. /to be developed by Committee 5 in accordance with proposal No. CAN/13/146;/

2. to identify the countries of Regions 1 and 3 which may be affected by the assignments in the Region 2 Plan in accordance with the limits specified in Appendix 30;

3. to communicate to administrations of Region 2 concerned and to the administrations of Regions 1 and 3 so identified the results of its calculations and to invite them to resolve the problem and to communicate to the IFRB the results of their negotiations;

4. to send at regular intervals reminders to those administrations which have not yet communicated the results of their negotiations;

5. to prepare for communication to the World Administrative Radio Conference, Geneva, 1985, a report containing the list of cases which have been identified, together with the indication of those which have been resolved.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 181-E
7 July 1983
Original : English

COMMITTEE 4

United States of America

SATELLITE RF POWER REQUIREMENTS : PLANNING VS. IMPLEMENTATION

(Background information document)

1. Introduction

The total margin reports for the draft Plans generated for Region 2 include for each entry in the Plan a value for the satellite antenna input power. In some cases, this power level is in the neighbourhood of 1 kilowatt or more. By contrast, available traveling wave tubes (TWTs) from manufacturers such as Thomson-CSF (France), AEF-Telefunken (Germany), Hughes (United States), Watkins-Johnson (United States) and NEC (Japan) provide RF power in the range of 220-250 watts. Hence, there could be a disparity of roughly 6 to 8 dB between the satellite powers shown in the Plan and the TWT powers presently available for spacecraft implementation. The purpose of this document is to point out a number of implementation techniques which, in combination, can eliminate this disparity and reduce the satellite power actually required to the available levels.

Table 1 lists the key factors which affect the satellite power level calculated in the Plan. These include the rain attenuation, the size of the coverage area (corresponding to each service area) and the value of home receiver G/T. The planning assumptions which determine the satellite power levels shown in the Plan are contrasted with system implementation techniques which can reduce the required RF power output. The combination of the listed range of possible power reductions is sufficient to arrive at a total reduction of 6 to 8 dB below the satellite powers shown in the Plan.

In the discussion that follows, a number of South American countries have been chosen for purposes of illustration because they have severe rain climates and large, complex polygonal service areas. In addition, countries such as Venezuela and Colombia have sets of islands which extend their coverage areas to include large areas of ocean. The techniques described here are equally valid for many other countries.

2. Description of examples and summary of results

The key descriptive data for the examples analyzed are given in Table 2. Six service areas for five South American countries are included. The Southern service area of Argentina has a much lower power requirement than the others because it has a much drier climate. It is included for completeness since the Argentine service areas have been restructured in order to reduce the size (increase the antenna gain) for the northern beam. Note that the five examples have extremely high transmitter power requirements at the antenna and contain service area polygon points for rain regions P or N, the two most severe regions. Rain attenuations range from 4 to almost 8 dB (even after 12% reduction as agreed by the technical committee). Service areas are typically very large and complex in shape as shown in Figures 1 and 2 for Peru and Colombia respectively.

Table 3 provides a comparison of TWT power derived from the planning assumptions (and adjusted for a PFD of -105 dBW/m^2) with the TWT power that would be required for implementation after the application of a number of power saving implementation techniques. In all cases, it is possible to implement the broadcast-satellite system with TWT power levels in the 230 watt range. It is emphasized that this has been achieved after raising required power by 2 dB, corresponding to a power flux-density (PFD) of -105 dBW/m^2, as proposed by the United States (rather than the -107 dBW/m^2 value used for initial planning). Also, the TWT power is referred back from the antenna input to the TWT output by adding an allowance of 1.5 dB for circuit losses between the power tube and the antenna.

3. Description of techniques

It is convenient to explain the power saving technique results by means of examples. Let us take Colombia and Peru as typical. The three factors to be examined include rain attenuation, shaped beam antenna design and home receiver G/T.

3.1 Compensating for rain attenuation

Rain attenuation is specified in terms of the percentage of time that the attenuation exceeds various levels. For planning, the rain attenuation is calculated using the CPM model (reduced by 12 percent) for 1% of the worst month (or 0.29% of the year). Implementation for even a slightly higher level of excedance for very severe rain conditions can significantly reduce power requirements. Figure 3 plots rain attenuation as a function of excedance for the two most severe rain zones, P and N, for the worst polygon points in Colombia and Peru. Two hours per average month corresponds roughly to 1% of the worst month. The CPM rain model and data from the IFRB requirements document (Document No. 16(Rev)) have been used. Table 3 includes estimated savings of 0.5 and 1 dB for the use of slightly higher excedance in rain zone N (e.g., 98.5 instead of 99% of worst month) for Colombia and Peru respectively.

It should be noted that this change in excedance merely means that subjective picture quality will be a fraction of a picture grade lower than the value used for planning during 3 hours of the average month rather than 2 hours. Of course in rain zones N and P picture quality will be much higher than the planning value during most of the rest of the time.

Note from Figure 3 that Colombia and Peru each have both rain zones P and N included within their service areas. Figure 4, the CPM model map of rain climatic zones, illustrates the fact that Colombia and Peru are quite non-homogenous with respect to the area occupied by rain zones. (See also Figures 1 and 2.) Peru, especially, has only a small area along the coast which is in rain zone P while the remainder is N. Similarly, Colombia is predominantly N with small P regions in the northwest and southeast parts of the country. System implementation can use such non-homogeneity to advantage in order to reduce required TWT power.

One way of compensating for higher rain attenuation is to use higher G/T in those areas. In terms of the number and cost of larger antennas required, this technique is most effective when those areas are small and even better if they are also sparsely populated. The P region of Peru is a good example. In this case, one can gain the difference between the N and P zone attenuations (since the planning has been based on the more severe attenuation). As can be seen from Figure 3, the difference ranges from approximately 2.2 to 2.6 dB at 2 hours excedance for the examples illustrated.

Another technique to take advantage of rain attenuation inhomogeneity is the use of a shaped beam antenna with a weighted gain distribution in which heavy rain areas are given greater antenna gain. An excellent practical illustration of this technique is the antenna being developed for the G-STAR satellite which will operate in the 11.7 - 12.2 GHz band. In this case, the United States coverage antenna gain requirements are weighted according to the Crane[1] rain model for the United States. For the cases of Peru and Colombia, since only very small areas require increased gain, the 2.2 - 2.6 dB required gain differential can be implemented with negligible impact on the antenna gain achieved for the remainder of the coverage area.

3.2 Matching satellite antenna coverage to service area

The next factor of importance is the size of the coverage area corresponding to the designated service area. Figures 1 and 2 show elliptical beam coverages for the orbital position of 106° W covering the service area boundary points furnished to the IFRB by Peru and Colombia. As can be seen from these figures, there is a large amount of power wasted by illuminating areas outside the service area. (Note that the ellipse is enlarged by the pointing error of ± 0.1° so that the worst case of power loss is realized full time.) The solution clearly indicated is the use of a shaped beam satellite antenna, an approach now used in nearly all current satellite designs. An example of a shaped beam design for a United States Eastern service area is shown in Figure 5. By contrast, an elliptical coverage of the same service area is shown in Figure 6. In this case the boundary marked -3 dB defines the coverage area used for planning.

An estimation has been made of the savings possible from the shaped beam in Figure 5. Note that the 37 dB directivity contour essentially encompasses the service area. This is roughly equivalent to a 36.3 dB antenna gain. By contrast, an ellipse with dimensions 1.8° x 3° would be required. The equivalent edge-of-coverage antenna gain would be 2.2 dB lower. For all the cases shown in Table 3, estimations of the increase in antenna gain and the corresponding decrease in required satellite power possible with shaped beam implementation have been made by comparing area differences.

The case of an island significantly enlarging the coverage area as exemplified by Colombia is nicely handled by a shaped beam implementation with a separate spot beam. For example, Figure 7 shows the coverage of the principle Hawaiian Islands by a spot beam sharing power with a beam covering the United States Pacific service area. The impact on the e.i.r.p. available to the United States Pacific service area is negligible. The use of lower e.i.r.p., and hence higher G/T, in the island area is always possible as a further adjustment should the effect of power sharing become non-negligible.

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1) Crane, R.K. (1980), Prediction of Attenuation by Rain IEEE Trans. Commun., Com-28, 1717-1733

3.3 Improving the home terminal figure-of-merit

For large service areas with heavy rain, satellite power can be reduced by increasing the home receiver G/T above that used for planning. This is the case for the South American countries listed in Table 3. Table 4 indicates the range of home receiver G/T values, near-term and future, for two typical values of antenna diameter, 0.75 and 0.9 metres. Values are given for clear sky and for degradations due to a 4 dB rain fade and equivalent pointing error. In the latter case, a 0.5 dB loss is maintained independent of antenna diameter based on the assumption that installation will be done to a 0.5 dB gain threshold rather than to a 0.5 degree pointing error. The difference is small in any case for the range of diameters cited.

Note that a planning value of G/T = 8 dB corresponds to the PFD of -105 dBW/m^2. Hence, for the "future" cases which are probably of most interest for these examples, degraded G/T differentials in excess of 3 dB for a 0.75 metre antenna are available. We estimate conservatively that "future" corresponds to second generation DBS equipment in the 1990 era. Values of G/T improvement of 1.5 to 2.0 dB have been listed in Table 3 for the examples cited.

A further small saving in implementation (compared with planning) results from the use of a lower rain attenuation to calculate G/T degradation, i.e. zone N values rather than zone P values. This saving ranges from 0.3 to 0.7 dB and is 0.3 dB for the examples cited.

4. Conclusions

Combining the various implementation power savings just reviewed results in potential required TWT power decreases in the 7 to 8 dB range. Thus, as may be seen from Table 3, practical TWT power output levels in the 230 watt range are possible even for countries having high rain attenuations and large service areas.

Note that these power levels are calculated to provide a value of overall C/N = 14 dB for a 24 MHz bandwidth including an allowance of 0.5 dB for the uplink contribution. Should it be desired to increase C/N by 2 to 4 dB to implement high definition MAC systems, then only the combination of higher G/T and higher excedance levels are available. Figure 3 and Table 4 show that this additional capability is available.

TABLE 1

Factors that determine the value of satellite power shown in the plan and techniques for reducing the power required for implementation

Factor affecting Satellite Power	Planning Assumption	Possible System Implementation Techniques	Resultant Power Reduction
Rain attenuation	1% of worst month excedance	Use slightly higher level of excedance	1.5 - 2.5 dB
	Most severe rain region (service areas generally non-homogeneous)	Use higher G/T in high rain regions	1.5 - 3 dB
		Match satellite antenna gain to rain attenuation	
Size of coverage area corresponding to service area	Elliptical beam (increased by $\pm$ 0.1° pointing error)	Match service area by shaped beam contour including spot beams on islands	1.5 - 3 dB
Home receiver G/T	Rain-degraded G/T	Use G/T for rain attenuation at assumed higher excedance	0.3 - 0.7 dB
	Nominal, near term, G/T value	Use higher future term (1990) G/T value	1.0 - 3.0 dB

TABLE 2

Examples of satellite transmitter powers shown in first draft plan

Country and Service Area	Satellite Antenna Input Power[1]	Orbital Position	Elevation Angle	Rain Zones Specified	Maximum[2] Rain Attenuation	Coverage Area[3] Beam Size
Colombia - CLMANDO1	675 W	106°W	44.6°	P, N	6.2 dB	1.91° x 4.06°
Peru - PRUANDO1	594	106°W	59.7°	P, N	5.4 dB	2.12° x 3.50°
Venezuela - VENANDO2	671.8	106°W	37.3°	P, N	7.3 dB	1.92° x 3.33°
Argentina - ARGNORT2	( )[4] 531	82.1°W	45.5°	N, K	3.9 dB	2.3° x 3.8°
Argentina - ARGSURO2	214.1	82.1°W	50.8°	K, E	1.8 dB	1.7° x 3.3°
Bolivia - BOLANDO1	607	106°W	31.7°	P, N	7.6 dB	1.63° x 2.52°

(1) As shown in Column 5 of Document No. 121. Power at output of TWT is 1.5 dB higher. PFD = -107 dBW/m^2.

(2) Calculated using CPM Rain Model. Value reduced by 12% as agreed by Technical Committee.

(3) Includes effect of Beam Pointing Errors ($\pm$0.1 Deg. and 1° rotation).

(4) Value shown in plan apparently in error.

TABLE 3

Travelling Wave Tube (TWT) power outputs for PFD = -105 dBW/m^2. Planning vs. Implementation

Country	Planning values(1) TWT Power (Watts) At Antenna PFD= -107 dBW.m^2	Planning values(1) TWT Power (Watts) at TWT Output PFD= -105 dBW.m^2	Implementation Values: Power Savings (dB) Rain: Less Severe Rain Zone	Rain: Higher Excedance	Shaped Beam Antenna	G/T: Rain Degradation	G/T: Improved Technology / (2) Larger Antenna	Total Power Savings	Resultant TWT Power Output (Watts)
Colombia	675	1511	2.6	0.5	3.3	0.3	1.5	8.2	229
Peru	594	1330	2.2	1.0	2.1	0.3	2.0	7.6	231
Venezuela	672	1504	3.0	1.0	3.0	0.3	1.0	8.3	222
Argentina (N)	( )(3) 531	1189	2.2	0.4	2.5	0.4	1.5	7.0	237
Argentina (S)	214	479	1.2	--	2.5	0.4	---	4.1	186
Bolivia	607	1359	3.7	1	1.7	0.3	1.0	7.6	231

1. Note that there is a 3.5 dB difference between the two values of TWT power. PFD increase is 2 dB and circuit losses between TWT output and antenna are estimated to be 1.5 dB.

2. See Table 4

3. Value apparently in error.

TABLE 4

Range of home receiver G/T values -- near term and future

	Cases (1)	G/T (dB/K) Clear Sky	Clear Sky (2) Plus Equivalent Pointing Error	Rain Degraded (4 dB Fade)	Rain and Equivalent Pointing Degraded
NEAR TERM	D=0.75 M. Eff.=0.55 N.F.=4.0 dB	10.4	9.9	9.2	8.7
	D=0.9 M. Eff.=0.55 N.F.=4.0 dB	12.0	11.5	10.8	10.3
FUTURE	D=0.75 M. Eff.=0.65 N.F.=2.5 dB	13.7	13.2	11.7	11.2
	D=0.9 M. Eff. 0.65 N.F. 2.5 dB	15.3	14.8	13.3	12.8

(1) D = antenna diameter (meters), eff.= antenna efficiency, N.F.= receiver noise figure (dB). Included in the calculation is a 20K antenna sky temperature and 0.3 dB line losses.

(2) Assumes 0.5 dB "equivalent pointing error" independent of antenna diameter. Assumes home installation nominally done to a gain threshold of 0.5 dB rather than a pointing error of 0.5 degrees.

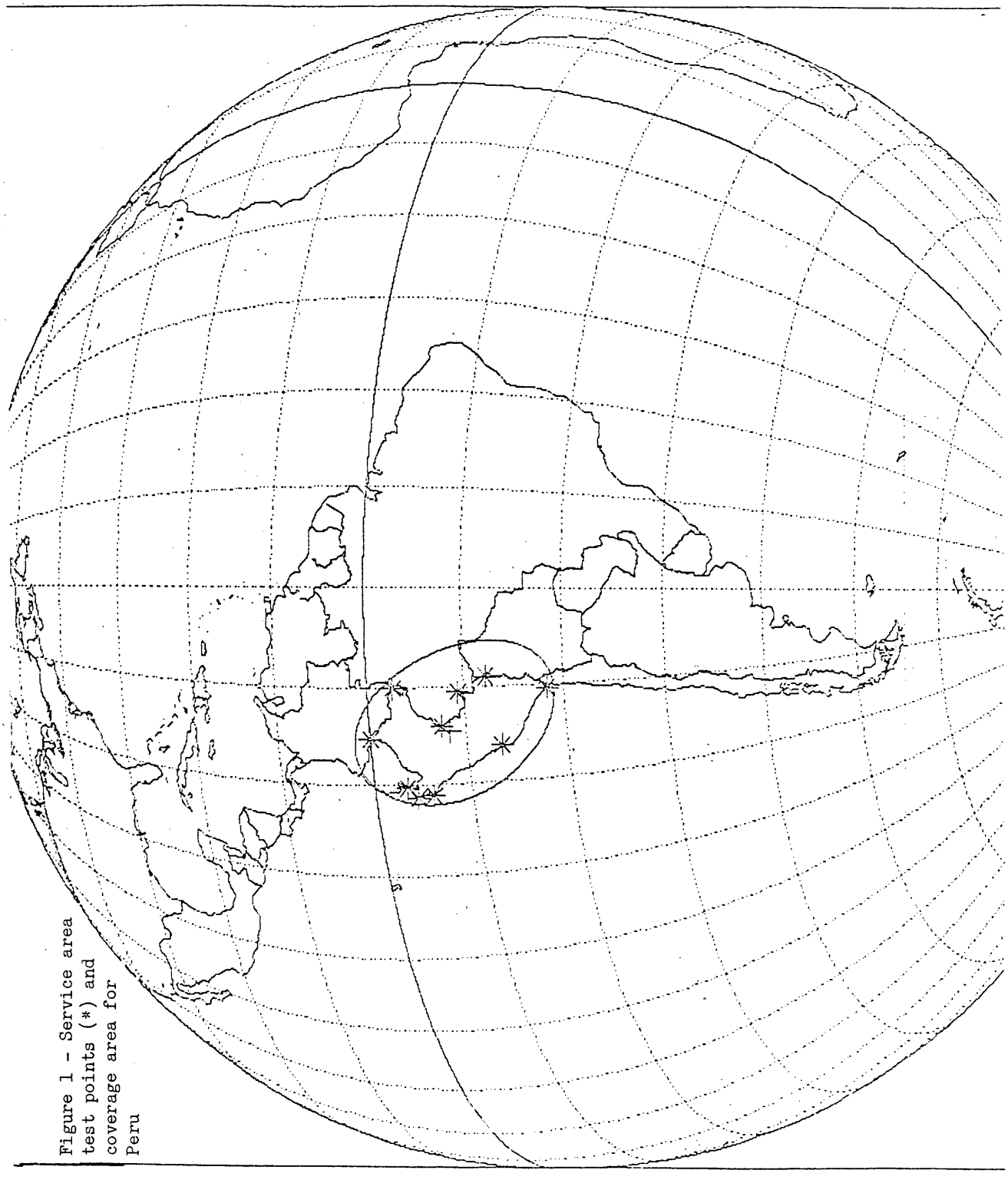


Figure 1 - Service area test points (*) and coverage area for Peru

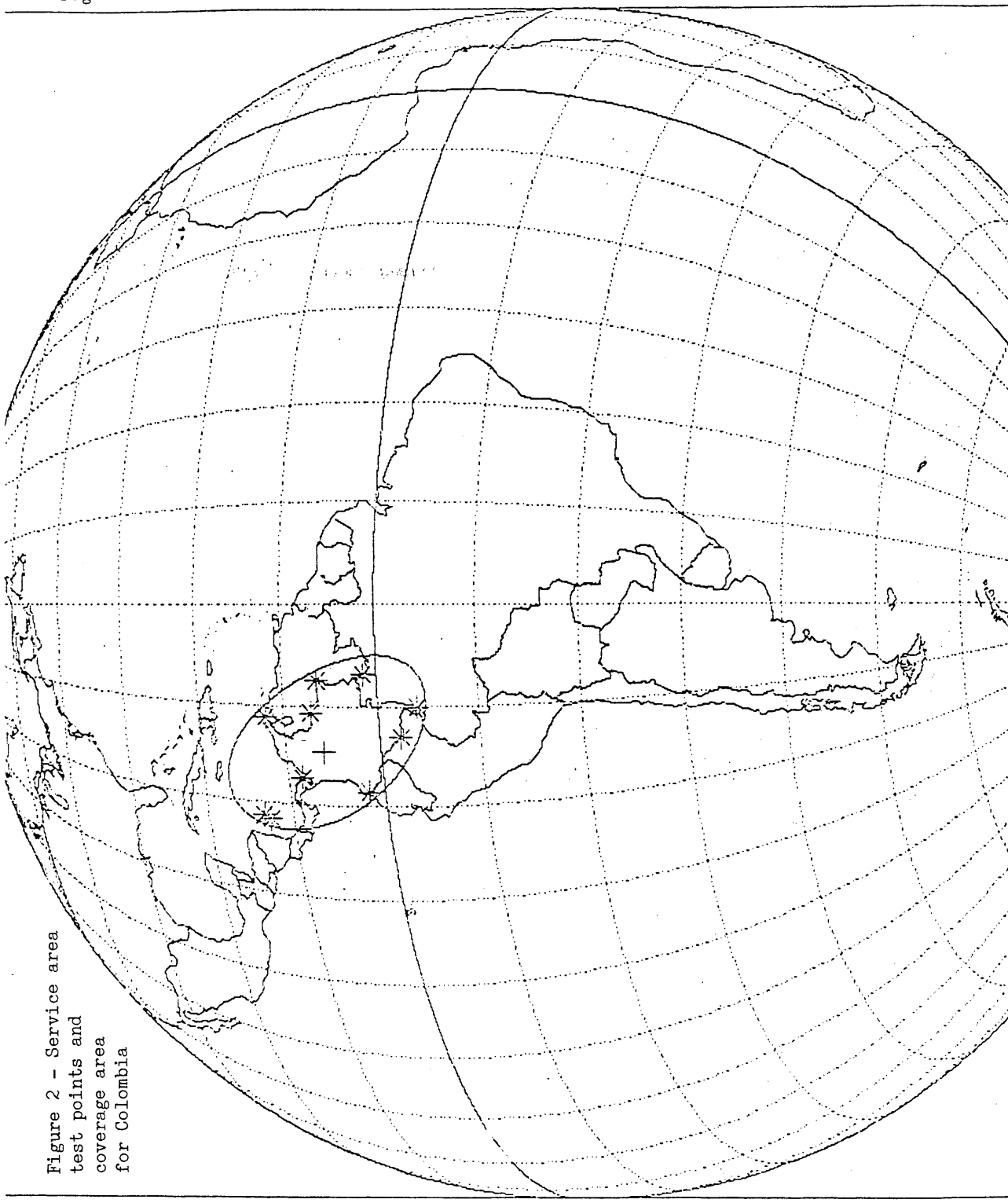
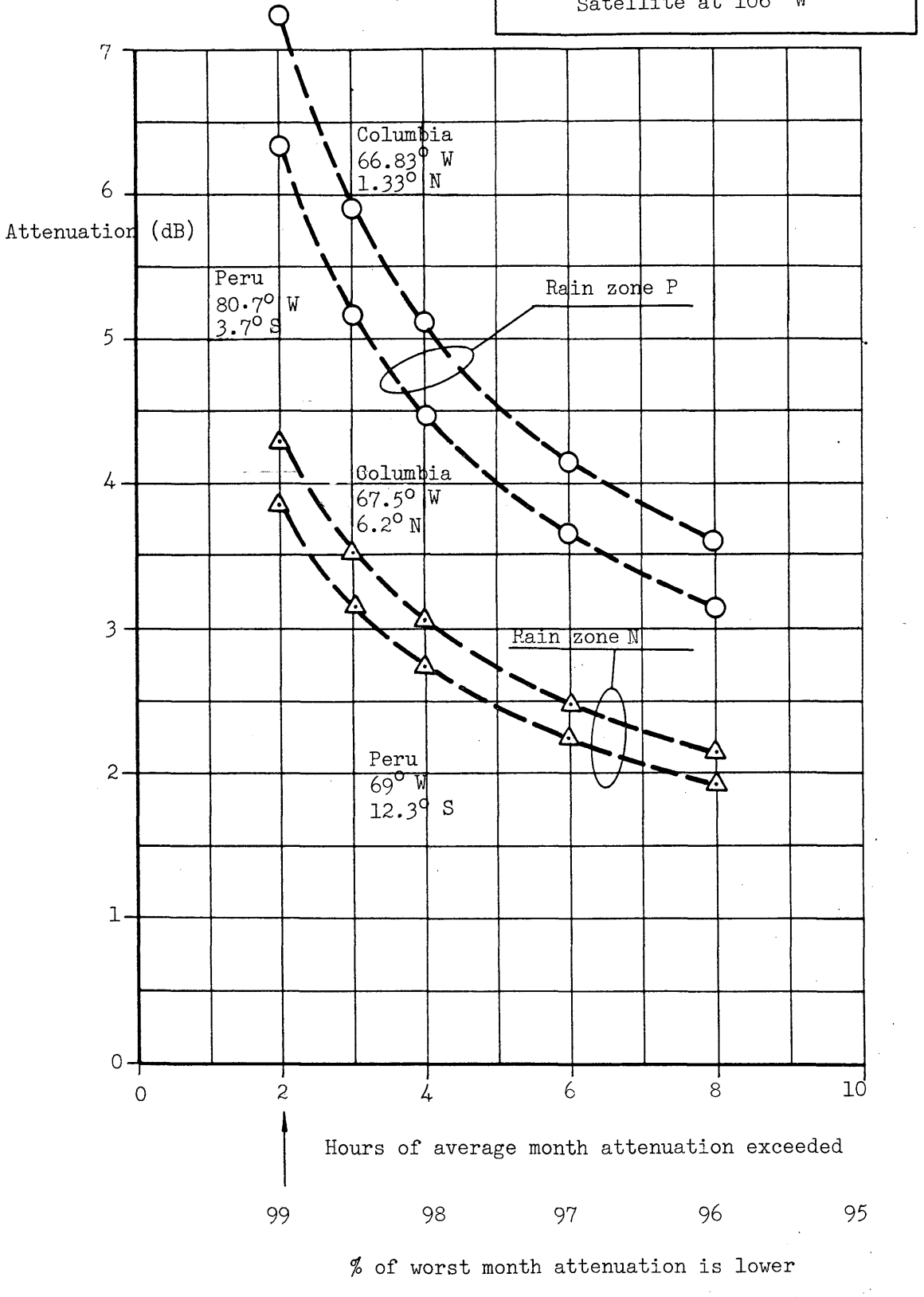


Figure 2 - Service area test points and coverage area for Colombia

Figure 3

CPM Rain Model
Satellite at 106° W



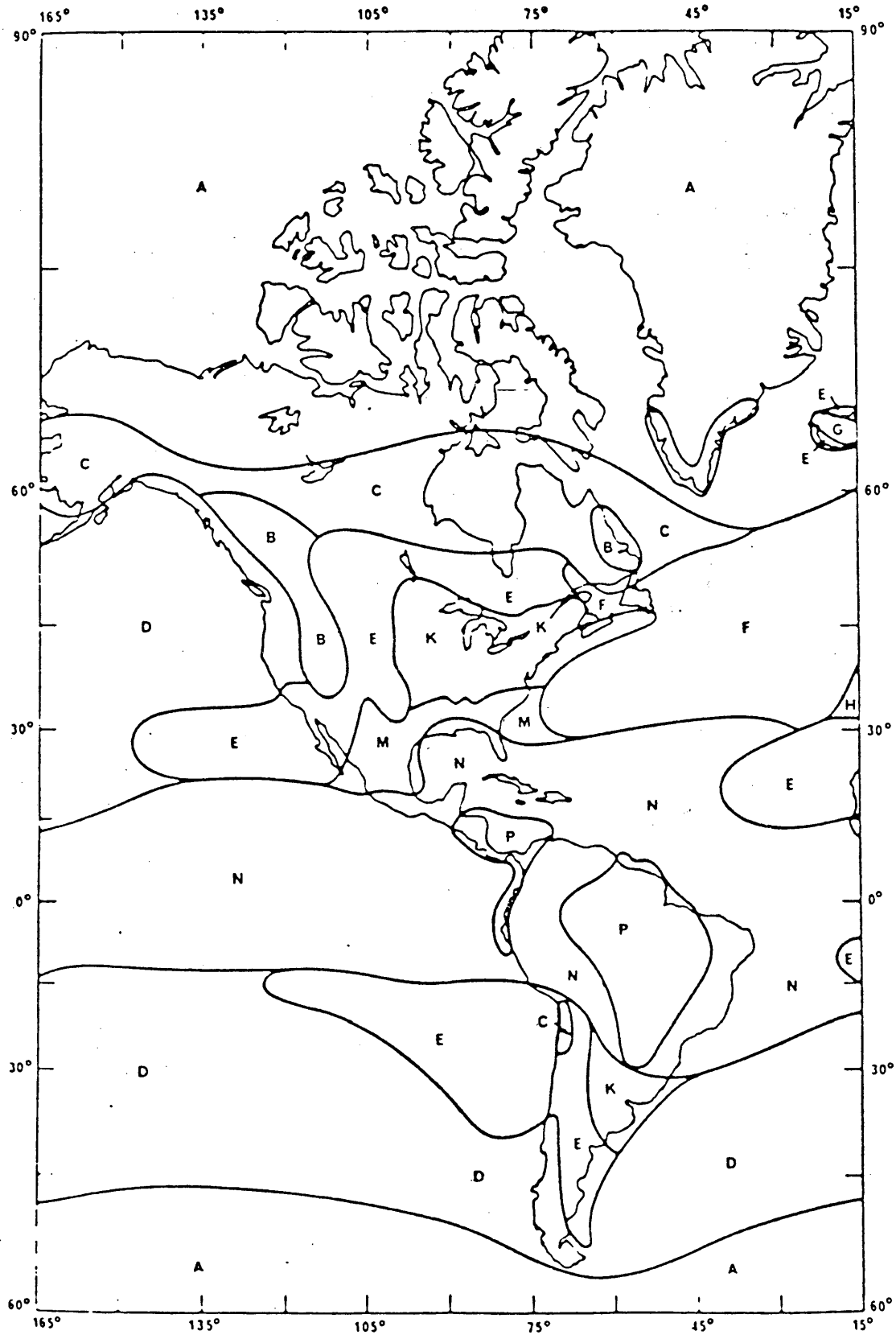


Figure 4 – Rain climatic zones (Region 2)

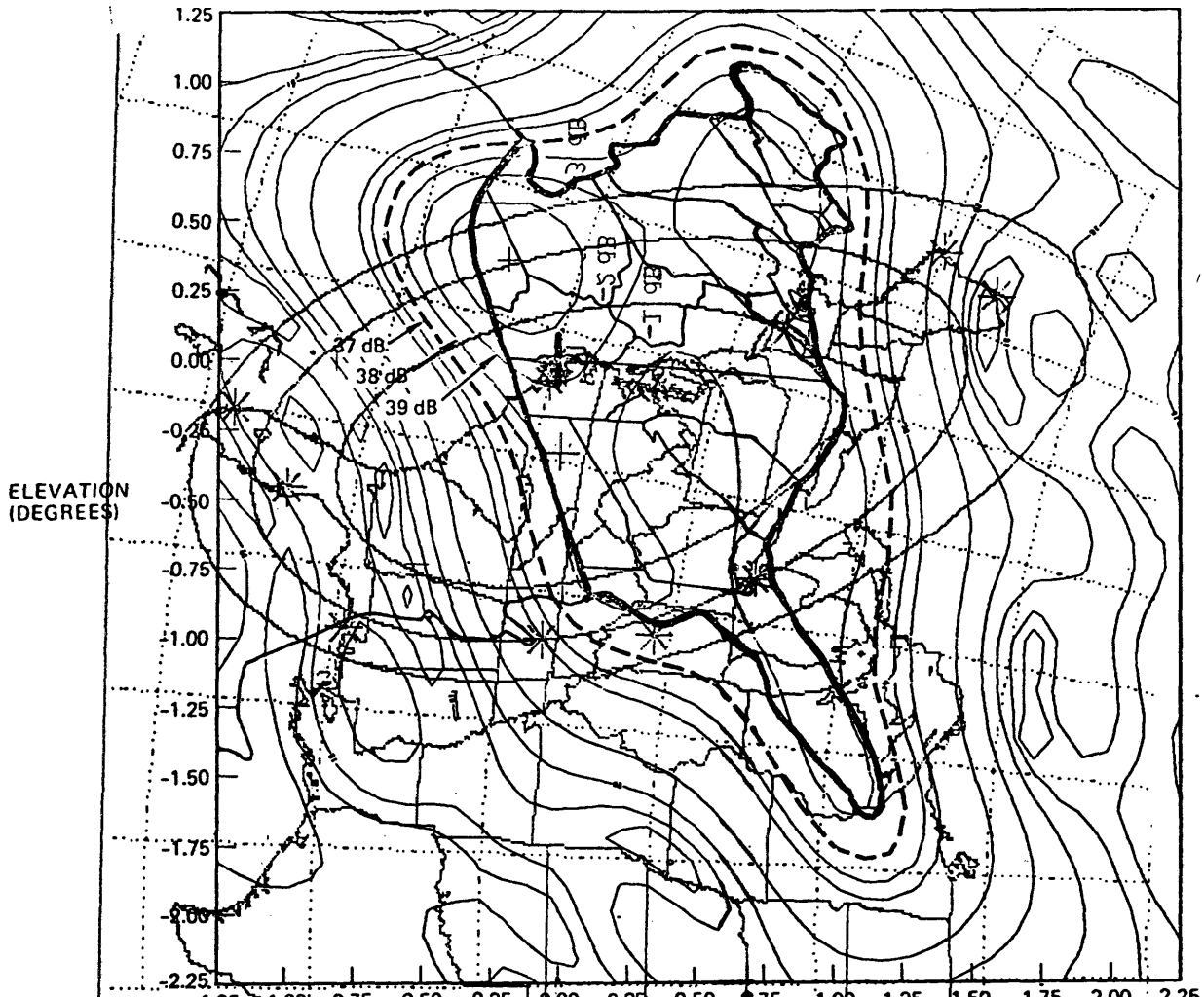


Figure 5 – Directivity contours for shaped beam coverage of the eastern service area of the United States (satellite at 115°W)

Figure 6 - Elliptical beam coverage of the eastern service area of the United States

Figure 5 - Directivity contours for shaped beam coverage of the eastern service area of the United States (satellite at 115°W)

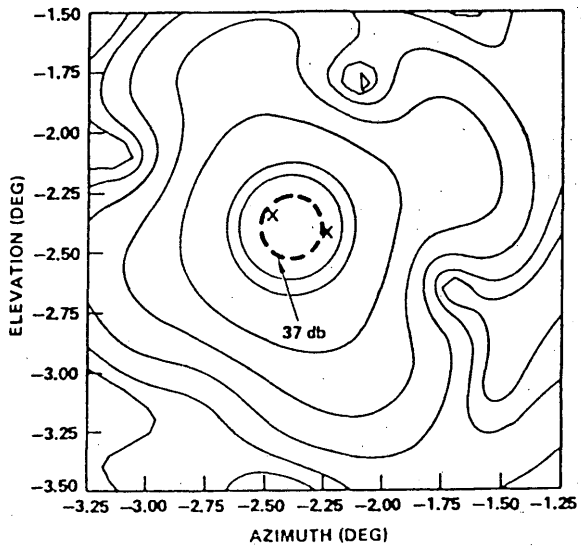


Figure 7 - Directivity contours for coverage of Hawaii (Satellite at 175°W)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 182-E
7 July 1983
Original : English

Source : Documents Nos. DT/46 and 104(Rev.1)

COMMITTEE 6

THIRD REPORT OF WORKING GROUP 6B TO COMMITTEE 6

1. The Working Group adopted unanimously the following texts :

a) Draft Recommendation to the WARC-ORB 1985 relating to the incorporation in the Radio Regulations of the provisions and Plans adopted by this Conference and recording of the assignments of the Plans in the Master Register;

b) Draft Resolution relating to the review of the use of the band 12.2 - 12.7 GHz by the Terrestrial Services in Region 2.

2. The Working Group also considered the preliminary first draft Preamble contained in Document No. 104(Rev.1) and adopted a text which is based on this document.

3. While considering this document the Working Group took note of the fact that during the preliminary consideration of Document No. 104(Rev.1) by Committe 6, the delegate of Colombia had proposed a text which was intended to amend the general considerations proposed on page 2 of the document (see Minutes of the 4th Meeting of Committee 6 - Document No. 183).

However, it was the general feeling of the Working Group that such general considerations were not necessary in a document of this nature and consequently no text of this kind is proposed in the draft Preamble proposed by Working Group 6B.

4. The texts submitted for consideration by Committee 6 appear in Annexes 1, 2 and 3.

L.C. STEPHENS
Chairman of Working Group 6B

Annexes : 3

ANNEX 1

DRAFT RECOMMENDATION [No. COM6/1]

Relating to the Incorporation into the Radio Regulations of the Provisions and Associated Plans for the Broadcasting-Satellite Service in the Band 12.2 - 12.7 GHz and for Associated Feeder Links in the Band 17.3 - 17.8 GHz in Region 2 and the Recording of the Assignments contained in the Plans in the Master International Frequency Register

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

considering

that the provisions and associated Plans prepared by the present Conference are applicable in Region 2 subject to their adoption and their incorporation into the Radio Regulations by WARC-ORB 85;

recommends the WARC-ORB 85

1. to incorporate into the Radio Regulations the provisions and associated Plans prepared for the broadcasting-satellite service in the band 12.2 - 12.7 GHz and for associated feeder links in the band 17.3 - 17.8 GHz in Region 2 without modifying them;

[2. to consider the possibility of combining the provisions relating to the broadcasting-satellite service in the three Regions in the same Appendix to the Radio Regulations, the content of which is contained in the Annex to this Recommendation;]

3. to instruct the IFRB to record in the Master International Frequency Register the assignments appearing in the two Plans.

Annex [to be prepared]

ANNEX 2

DRAFT RESOLUTION /No. COM6/3 7

Relating to the Review of the Use of the Band 12.2 - 12.7 GHz by the Terrestrial Services in Region 2

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

considering

a) that Provision 844 of the Radio Regulations stipulates that :

"In Region 2, in the band 12.1 - 12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in accordance with the broadcasting-satellite plan to be prepared at the 1983 Regional Administrative Radio Conference for Region 2, and shall not impose restrictions on the elaboration of such a plan";

b) that the Conference had no information relating to terrestrial services which would permit it to determine the compatibility between existing and planned terrestrial services and the broadcasting-satellite service;

resolves

1. that all administrations using or intending to use frequency assignments to terrestrial stations in the band covered by the Plan shall decide as soon as possible, whether or not these assignments will affect frequency assignments in conformity with the Plan (if necessary, with the assistance of the IFRB);

2. that, if it is found that frequency assignments in conformity with the Plan may be subject to interference, administrations shall inform the IFRB of the measures they intend to take to ensure the protection of the frequency assignments concerned before the date of entry into force of the Final Acts of WARC-ORB 85 ;

3. that administrations may continue to use frequency assignments which are not in accordance with the 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 its weekly circular;

invites the IFRB

to assist administrations in implementing the provisions of this Resolution;

urges the Administrations of Region 2

that in addition to applying the procedure of Article 6 of Part I, when planning new stations in the terrestrial services, administrations should give due consideration to their implementation in a manner which will not impose constraints on future modifications of the Plan by other administrations.

ANNEX 3

FINAL ACTS
OF THE
REGIONAL ADMINISTRATIVE RADIO CONFERENCE
FOR THE PLANNING OF THE BROADCASTING-SATELLITE SERVICE IN REGION 2
GENEVA, 1983.

PREAMBLE

1. The delegates of the following Members of the International Telecommunication Union having participated in the present Regional Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in Region 2,

/ List of Countries /

a) have adopted

i) provisions and associated Plan for the broadcasting-satellite service in the frequency band / 12.2-12.7 / GHz in Region 2 (Part I);

ii) provisions and associated Plan for the feeder links for the broadcasting-satellite service (/ 12.2-12.7 /) in the frequency band / 17.3-17.8 / GHz (Part II);

iii) recommendations for consequential modifications to certain ariticles of the Radio Regulations and to Appendix 30 thereto (Part III);

b) have decided

to transmit their decisions listed in paragraph a) above to the First Session (1985) of the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit and the Planning of Space Services Utilizing It (ORB (1)) for the latter's consideration with the objective of their being incorporated in the Radio Regulations (Recommendation No. / COM6/1 /);

c) have noted further

that, notwithstanding the interim procedure to be applied in the period between 1 January 1984 and the date of entry into force of the Final Acts of the WARC-85 and notwithstanding the related instructions given by the present Conference to the IFRB - contained in Resolution No. / COM6/1 / of the present Final Acts - the decisions of the present Conference shall enter into force only after their incorporation in the Radio Regulations by the First Session (1985) of the ORB (1), which shall, to achieve this objective, adopt appropriate Final Acts;

d) have also adopted

the interim procedure and instructions contained in Resolution No. / COM6/1 / of the present Final Acts to be applied between 1 January 1984 and the entry into force of the Final Acts of WARC-ORB 85 together with Resolutions Nos. / COM4/2 / and / COM4/3 / containing instructions concerning the protection of other services in Regions 1 and 3 and in Region 2.

IN WITNESS WHEREOF, the delegates of the Members of the Union mentioned above have, on behalf of their respective competent authorities, signed the present Final Acts in a single copy in the English, French and Spanish languages, of 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, ... July 1983

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 183-E
15 July 1983
Original : English

COMMITTEE 6

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 6

(PROCEDURES)

Wednesday, 6 July 1983, at 0930 hrs and 1430 hrs

Chairman : Mr. J.A. ZAVATTIERO (Uruguay)

Subjects discussed :		Document No.
1.	Approval of the Summary Records of the first and second meetings	142, 143
2.	Draft note to the Chairman of Committee 4	DT/43
3.	Interpretation of the terms "assignment" and "allotment"	97, 103
4.	First Report of Working Group 6B	91
5.	Draft of the Preamble	104(Rev.1)
6.	Notes from other Committees	53, 115, 120, 123
7.	First Report of Working Group 6A	156

1. Approval of the Summary Records of the first and second meetings (Documents Nos. 142 and 143)

The Summary Record of the first meeting was approved, subject to a minor amendment in the Spanish text (see Corrigendum No. 1 to Document No. 142).

The Summary Record of the second meeting was approved, with a correction to the name of the Chairman of Working Group 6B (see Corrigendum No. 1 to Document No. 143).

2. Draft note to the Chairman of Committee 4 (Document No. DT/43)

2.1 The draft note requesting Committee 4 to provide criteria to facilitate the drafting of certain texts for Articles 4 and 4A of Part I of the Final Acts was approved.

3. Interpretation of the terms "assignment" and "allotment" (Documents Nos. 97 and 103)

3.1 The Chairman introduced the Note by the Secretary-General containing the text prepared by the Legal Adviser at the Committee's request on the issue of "assignment" and "allotment" Plans (Document No. 97).

3.2 The delegate of Venezuela said that his Administration's draft Recommendation (Document No. 103) was self-explanatory : it requested WARC-85 to interpret the terms in question clearly, so that in future there should be no confusion as to their use.

After a discussion in which the Vice-Chairman of the IFRB and the delegates of Venezuela, Argentina and France took part, the draft Recommendation contained in Document No. 103 was approved with editorial amendments to the final paragraph.

4. First Report of Working Group 6B (Document No. 91)

4.1 The Chairman of Working Group 6B said that the report in Document No. 91 was self-explanatory. Since approving it, the Group had turned its attention to Resolutions which would establish provisions and the Plan for Region 2 as operational procedures for the period between the end of the Conference and the effective entry into force of the decisions taken by WARC-85 to incorporate the results of the Conference into the Radio Regulations. He hoped to present the text of the Resolutions very shortly.

Meanwhile, the Annex to Document No. 91 contained recommendations for the necessary adjustments to the Radio Regulations and additional interim provisions for Region 2, pending implementation of the Conference's Final Acts. It also proposed the deletion of WARC-79 Resolutions Nos. 31, 100, 503, 504, 700 and 701 which contained interim provisions for Region 2 pending the holding of the current Regional Conference. Working Group 6B proposed that the Committee approve those recommendations for submission to the Plenary Meeting together with the relevant Resolutions still in preparation.

4.2 The Chairman congratulated Working Group 6B on the work it had accomplished and submitted Document No. 91 for approval section by section.

4.3 The delegate of Brazil said, with reference to paragraph 3 of the report, that the draft Resolution still to be considered by Working Group 6B on the relationship between modifications to the Plan and existing or future terrestrial services might well lead to consequential changes to the text of footnote MOD RR 844 as presented in the Annex.

4.4 Article 8

Table of Frequency Allocations, 11.7 - 12.75 GHz, as contained in Document No. 91, was approved.

4.4.1 MOD 839

It was agreed to delete the reference to the broadcasting-satellite service from the new second sentence, and the words "and Resolution No. 33" at the end of the penultimate sentence.

4.4.1.1 The delegate of Canada recalled that the 1971 Space Conference had decided that the use of the band 11.7 - 12.2 by the fixed-satellite service should be subject to agreement, and that WARC-79 had defined the procedure for such agreement in Article 14, retaining footnote No. 839, because the band 12.1 - 12.3 GHz was to be dealt with at the present Conference. As a result of the decision already taken to divide the band 12.1 - 12.3 GHz at 12.2 GHz, the use of the band 11.7 - 12.2 GHz by the fixed-satellite service in Region 2 was covered by Articles 11 and 13 of the Radio Regulations. It therefore seemed to indicate that it was no longer necessary for Article 14 to apply to that band.

4.4.1.2 The representative of the IFRB said that he was not able to support the suggestion to delete Article 14 with respect to the whole band 11.7 - 12.2 GHz. The band 12.1 - 12.2 GHz which, in accordance with the decision of WARC-79, the present Conference was instructed to allocate to the fixed-satellite service without any condition i.e., that Article 14 should not apply to the band 12.1 - 12.2 GHz, was a special situation. There might have been certain reasons for the adoption of No. 839 for the rest of the band 11.7 - 12.1, but they were not in the Radio Regulations, and by excluding Article 14 in respect of the band 11.7 - 12.1 GHz, the Conference would be changing the category of allocation to the fixed-satellite service. Therefore, while the Conference had the authority to modify No. 839 to read, in the new sentence "use of the band 11.7 - 12.1 GHz by the fixed-satellite service in Region 2 ...", the deletion of Article 14 in respect of the entire band would probably go beyond what was required of the present Conference.

4.4.1.3 The Chairman pointed out that the necessary authority rested with the Plenary.

4.4.1.4 The delegate of Canada said that his delegation would accept the situation as it was but reserved the right to refer to the subject again later on.

4.4.2 MOD 842

The delegate of Brazil pointed out that the English text should refer to "band" in the singular.

The delegate of Argentina requested that Argentina be added to the countries named, but asked for, and was accorded, more time to consider the matter after the delegate of Venezuela and the Vice-Chairman of the IFRB had pointed out the problems involved.

4.4.3 MOD 843

The delegate of Argentina reserved her Administration's position pending further clarification of related provisions of the Final Acts.

4.4.4 MOD 844

4.4.4.1 The Chairman of Working Group 6B said that MOD 844, covering the protection which existing and future terrestrial services must accord to space services operating in accordance with the Plan, had raised various questions. Some held that it should also make explicit reference to modifications to the Plan, so as to avoid the interpretation that only services included in the initial Plan enjoyed protection. The Working Group was still considering the question and he proposed that, if time allowed and an alternative formula emerged, it should be reopened.

The possibility had also been raised that WARC-85 might not be authorized to extend still further the protection which No. 844 was intended to provide. He proposed that the Committee should simply take note of the existence of an unresolved question to which the Working Group would revert in its next report.

4.4.4.2 The Chairman said that, in view of the shortage of time, he thought the Committee must try to reach agreement at its current meeting.

4.4.4.3 Following a prolonged discussion of possible solutions to the problems raised, in which the Vice-Chairman of the IFRB, the Chairman of Working Group 6B and the delegates of the United Kingdom, the Netherlands, Brazil and Canada took part, MOD 844 was approved on the understanding that paragraph 6.1.1 of Article 6 would be amended by deleting the first indent, and that a Recommendation or Resolution be forwarded to WARC-85 indicating what the relationship should be in Region 2 between the broadcasting-satellite service and the terrestrial services.

4.4.5 MOD 846

Approved.

4.4.6 MOD 869

4.4.6.1 The delegate of Argentina proposed that, to be consistent with all other documents the words "fixed-satellite service (Earth-to-space) for satellite systems" be replaced by the words "feeder links of the broadcasting-satellite service", and that the words "in the space-to-Earth direction" be deleted.

4.4.6.2 The representative of the IFRB, in response to the delegate of Brazil, said that it would still be possible, with that amendment, to use feeder links as mentioned in No. 846 since the only stations transmitting in the fixed-satellite service were broadcasting-satellite stations.

The amendment was approved.

4.4.6.3 The delegate of Argentina said that the Secretariat should ensure that that amendment was made throughout.

4.4.6.4 The representative of the IFRB said that while the amendment was acceptable in No. 869, there might be difficulties if the modification was made throughout the procedures without first checking the content of each provision, since feeder links constituted only one particular use of the fixed-satellite service.

4.4.6.5 The delegate of Argentina said that the text of A.13.2 at least should be changed. To save time she would submit an appropriate text later in the day.

4.4.6.6 The representative of the IFRB, recalling his earlier explanation in connection with No. 839, suggested that if the figure 12.2 were replaced by 12.1, the square brackets could be removed.

4.4.6.7 The delegate of Canada said that since the question of the limit of the band allocated to the broadcasting-satellite service had not yet been settled, the figure of 12.2 should be left in square brackets.

It was so agreed.

MOD 869, as amended by Argentina, was approved.

Article 8, as amended, was approved.

4.5 Articles 11, 12, 13 and 15

Approved.

4.6 ADD Article 15A

Approved, with the deletion of the word "allotments" and consequent removal of the square brackets in both paragraphs.

It was agreed that Venezuela's preference to retain both words in square brackets, pending a decision by the Plenary, should be made clear in the Committee's report.

4.7 SUP Resolutions Nos. 31, 100, 503, 504, 700 and 701

Approved.

Document No. 91, as amended, was approved.

5. Draft of the Preamble (Document No. 104(Rev.1))

It was agreed that the Secretariat should be asked to draft paragraphs 1 and 2, giving the background from 1971 in paragraph 1, and adding the list of countries after paragraph 2.

It was further agreed that the remainder of the text should be considered by Working Group 6B, in the light of i) proposal by Colombia that sub-paragraphs of paragraph 2 should follow Article 33 of the Nairobi Convention in view of the importance of drawing up a plan which guaranteed equitable access to the orbit and the need to use the spectrum and geostationary satellite orbit efficiently and economically and to permit the development of the services to which those bands were allocated; ii) the counter proposal by Venezuela that the wording should be that of a Resolution adopted by WARC-79; and iii) bearing in mind the various dates of entry into force involved.

6. Notes from other Committees

6.1 Orbital separation between nominally co-located satellites (Document No. 115)

6.1.1 The delegate of Venezuela said that his delegation's proposals concerning rain attenuation in Document No. 126 might usefully be considered together with Document No. 115 or submitted directly to Committee 4.

6.1.2 The representative of the IFRB drew attention to the large number of documents being referred to Committee 6 from Working Groups of other Committees, and to the following two main problems involved :

1) to satisfy administrations' requirements, Committee 6 had been requested by Working Groups of Committees 4 and 5 to develop procedures permitting the use of an orbital position other than that shown in the Plan. Such work was extremely complex and required an indication of the nominal position to be protected and of the situation when, some time in the future, an administration wished to use a position other than the nominal position, so creating difficulties for other systems. Because of the lack of time, a decision of principle in respect of such requests would have to be taken quickly in Committee 6;

2) the problems raised by Documents Nos. 123 and 138 concerning coordination between earth stations in the feeder links required three or four days of continuous work to modify the procedures already suggested by Working Group 6A.

Those problems had been brought to the attention of the Coordinating Group established by the Steering Committee.

6.1.3 The Convenor of the Coordinating Group said that having examined the capacity of Committee 6 to meet the demands of other Committees, the Group had concluded that in the time left Committee 6 could not possibly develop and elaborate procedures such as those described, and that the Plenary should be advised that no further decisions should be taken by other Committees involving Committee 6 in any extra work.

6.1.4 The delegate of Brazil suggested that there be some coordination with Committee 4 to determine which technical criteria were absolutely essential for insertion into the Final Acts. He had some reservations about the statements made by the representative of the IFRB and the Convenor of the Coordinating Group, since some requests from other Committees required the approval of Committee 6, and could not be refused.

6.1.5 The delegate of the Netherlands said that while he was not opposed to Brazil's suggestion, it should be clearly stated in the Plenary that priority would be given to work already before the Committee and that other work from Committee 4 could only be undertaken if there was time.

It was so agreed.

6.2 Interregional interference (Documents Nos. 120 and 53)

It was agreed that Document No. 53 should be referred to Working Group 6B together with the draft Resolution in Document No. DT/45.

The meeting was suspended at 1230 hours and resumed at 1435 hours.

6.3 Note by the Chairman of Committee 3 to the Chairmen of Committees 4, 5, and 6 (Document No. 123)

6.3.1 The Vice-Chairman of the IFRB said that the Board too had received a request from Committee 3 for an estimate of the financial implications of Committee decisions. In the case of Committee 6, the Board had replied that it was too early to give such an estimate, since most of the procedures were still under study.

6.3.2 The delegate of the United States observed that a rough estimate of 4 man-months for additional software had been mentioned in the event of the approval of Article 4A.

6.3.3 The Vice-Chairman of the IFRB confirmed that such an estimate had been made for the SOUP analysis program and added that since then some serious deficiencies in that program had been ascertained, calling for its drastic revision at a cost which had not yet been estimated.

The Committee took note of Document No. 123 in the light of those comments.

7. First Report of Working Group 6A (Document No. 156)

7.1 The Chairman of Working Group 6A, introducing the document, said that the Working Group had taken 11 meetings to draft the General Definitions and Part I of the Final Acts, spending most of its time discussing Article 4A on Interim Systems. The text in the report unfortunately still contained many passages in square brackets, some of them reflecting issues on which agreement could not be reached and others awaiting the decisions of Committees 4 and 5.

7.2 The Chairman invited the Committee to consider the document paragraph by paragraph.

7.3 Title and General Definitions

Approved.

7.4 Part I : Article 1, Definitions, and Article 2, Frequency Band

Approved.

7.5 Article 3, Execution of the Provisions and Associated Plan

Paragraph 3.1

Approved.

Paragraph 3.2

7.5.1 The delegate of Ecuador observed that his delegation had proposed in Working Group 6A that the last phrase of the paragraph, beginning with the words "except in those cases ...", should be placed in square brackets, since the insertion of Article 4A in the Radio Regulations was still in doubt.

7.5.2 The delegate of Argentina supported that proposal.

7.5.3 The Chairman of Working Group 6A said that the paragraph reflected the decision reached in the Working Group, but that he would have no objection to the proposed introduction of square brackets.

Paragraph 3.2 was approved on that understanding.

7.6 Article 4A, Interim Systems

7.6.1 The Chairman suggested that, in order to avoid reopening the debate on issues on which Working Group 6A had been unable to reach agreement, the Committee should first decide whether or not to include Article 4A in the Radio Regulations.

7.6.2 The delegate of the United States said that, although his delegation was generally in favour of interim systems, its approval of Article 4A would largely depend on the final wording of some of the texts appearing in square brackets. The original purpose of the Article had been to provide some flexibility of implementation in the context of the Plan and to enable administrations to take the most practical and economical measures in the early stages of the development of their broadcasting-satellite systems; nevertheless, some of the controversial texts indeed went too far and really implied, as had been stated in the Working Group, that the interim systems and the Plan could not be protected simultaneously. He therefore did not think it desirable to take a clear-cut decision on the retention of Article 4A at that stage.

7.6.3 The delegate of Canada said that the best course would be to examine texts in the regular way. He was sure that some further compromise solutions could be reached. In examining the whole question, it was important not to adopt the approach of narrow self-interest, but to consider the way in which the broadcasting-satellite service would develop in Region 2 and to take the geographical realities of North and South America into account.

7.6.4 The delegate of Cuba said his Administration was concerned by the fact that the proposed Article seemed to constitute a kind of parallel plan which could be seriously detrimental to the Plan itself and could place assignments in Region 2 at a disadvantage vis-à-vis those of Regions 1 and 3. The Committee should take a decision forthwith on whether or not it wished to include in the Radio Regulations provisions which could jeopardize the Plan.

7.6.5 The delegate of Brazil supported the Canadian suggestion.

7.6.6 The delegates of Colombia and Mexico endorsed the views expressed by the delegate of the United States.

7.6.7 The delegate of Argentina supported the Chairman's original proposal. Article 4A indeed represented a separate Plan, which could be used to undermine the rights set out in the Plan itself - as it could be seen, for example, from sub-paragraph d) of paragraph 4A.1 - and thus was contrary to the interests of developing countries.

7.6.8 The delegate of Canada said that his delegation would have no objection to deleting the word "may" in that sub-paragraph and removing the square brackets from the word "shall".

7.6.9 The delegates of Ecuador and the Netherlands said they were in favour of the Chairman's original proposal.

7.6.10 The delegate of Venezuela proposed that the Committee should go through the Article in order to remove all the existing square brackets, if necessary by voting on controversial texts, and that the whole Article should then be placed in square brackets and submitted to the Plenary Meeting.

After a brief discussion, that proposal was approved.

The meeting rose at 1550 hours.

The Secretary : The Chairman :

M. AHMAD J.A. ZAVATTIERO

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 184-E
7 July 1983
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COMMITTEE 6

Brazil

PROPOSAL FOR THE WORK OF COMMITTEE 6

Considering the decisions of Working Group 6B to adopt a Resolution relating to the compatibility of the plan of the broadcasting-satellite service in Region 2 with Appendix 30 of the Radio Regulations (Document No. DT/45), and in the light of some new information recently made available as contained in Documents Nos. 155 and 159, the Brazilian Delegation considers the following amendments important in that Resolution :

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

considering

NOC a)

NOC b)

NOC c)

NOC d)

NOC e)

ADD taking note

f) that during the WARC-77, the power flux-densities produced at territories of Region 2 countries from space stations of Regions 1 and 3 were calculated only with respect to one test point in Region 2 (35° W, 8° S);

g) that the results of such calculations show that there are 40 beams where the value of power flux-densities in that test point exceed the limit of -138 dB(W/m^2), the worst case being one where the calculated power flux-density was -127.77 dB(W/m^2);

noting further

h) that during the elaboration of the Region 2 broadcasting-satellite service plan consideration was duly given to the need for protecting the systems of Regions 1 and 3;

i) that in the cases where it was not possible to exactly meet the limits specified in Appendix 30 of the Radio Regulations, the Region 2 administrations concerned stated their intention to seek the agreement of the countries of Regions 1 and 3 that may be affected;

j) that probably there will be more difficulties in meeting the limits to protect the terrestrial systems of Regions 1 and 3;

decides to request the IFRB

NOC 1.

NOC 2.

ADD 2A. to calculate the power flux-densities from space stations of Regions 1 and 3 produced at the following additional test points :

Long.	Lat.	Long.	Lat.	Long.	Lat.
60° W 00	10° N 00	60° W 00	52° S 00	43° W 00	60° N 00
70° W 00	10° N 00	70° W 00	50° S 00	50° W 00	60° N 00
80° W 00	10° N 00	38° W 00	55° S 00	60° W 00	60° N 00
30° W 00	0° N 00	27° W 00	60° S 00	70° W 00	60° N 00
50° W 00	0° N 00	65° W 00	20° N 00	80° W 00	60° N 00
60° W 00	0° N 00	70° W 00	20° N 00	90° W 00	60° N 00
70° W 00	0° N 00	80° W 00	20° N 00	100° W 00	60° N 00
80° W 00	0° N 00	90° W 00	20° N 00	110° W 00	60° N 00
90° W 00	0° N 00	100° W 00	20° N 00	120° W 00	60° N 00
33° W 00	4° S 00	110° W 00	20° N 00	130° W 00	60° N 00
35° W 00	7° S 00	80° W 00	30° N 00	140° W 00	60° N 00
36° W 00	10° S 00	90° W 00	30° N 00	150° W 00	60° N 00
40° W 00	10° S 00	100° W 00	30° N 00	160° W 00	60° N 00
50° W 00	10° S 00	110° W 00	30° N 00	170° W 00	60° N 00
60° W 00	10° S 00	120° W 00	30° N 00	178° W 00	60° N 00
70° W 00	10° S 00	74° W 00	40° N 00	22° W 00	70° N 00
80° W 00	10° S 00	80° W 00	40° N 00	30° W 00	70° N 00
90° W 00	10° S 00	90° W 00	40° N 00	40° W 00	70° N 00
38° W 00	21° S 00	100° W 00	40° N 00	50° W 00	70° N 00
40° W 00	20° S 00	110° W 00	40° N 00	60° W 00	70° N 00
50° W 00	20° S 00	124° W 00	40° N 00	70° W 00	70° N 00
60° W 00	20° S 00	50° W 00	50° N 00	80° W 00	70° N 00
70° W 00	20° S 00	60° W 00	50° N 00	90° W 00	70° N 00
50° W 00	30° S 00	70° W 00	50° N 00	100° W 00	70° N 00
60° W 00	30° S 00	80° W 00	50° N 00	110° W 00	70° N 00
70° W 00	30° S 00	90° W 00	50° N 00	120° W 00	70° N 00
80° W 00	30° S 00	100° W 00	50° N 00	130° W 00	70° N 00
60° W 00	40° S 00	110° W 00	50° N 00	140° W 00	70° N 00
70° W 00	40° S 00	120° W 00	50° N 00	150° W 00	70° N 00
80° W 00	40° S 00	127° W 00	50° N 00	162° W 00	70° N 00

MOD 3. to communicate to administrations of the three Regions the results of its calculations and to invite the administrations concerned to solve the problem and to communicate to the IFRB the results of their negotiations;

NOC 4.

NOC 5.

ADD 5A. to consider that, due to administrative problems, some agreements could not be reached before 1985 and that in those cases the Board should request from the Region 2 administration concerned that, in notifying one DBS system, it should provide some additional information to demonstrate that adequate protection will be provided to the systems of Regions 1 and 3;

ADD draws the attention of countries of Regions 1 and 3

to the statement of administrations of Region 2 concerned in the sense that they will seek the agreement of the administrations affected and that, because of unexpected circumstances, it would be impossible to reach all the agreements before 1985; such agreements would certainly be obtained before the implementation of those systems of Region 2.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

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COMMITTEE 4

United States of America

THE EFFECT OF RF POWER REQUIREMENTS ON SPACE SEGMENT COSTS IN THE BROADCASTING-SATELLITE SERVICE

(Background information document)

1. Introduction

The purpose of this document is to provide estimates of how total broadcasting-satellite space segment costs (including procurement, launch, spares and seven years of operating costs) vary with the required RF power output per broadcast channel. It is intended for use in conjunction with the data on home receiver costs presented in Document No. 117 and the estimates of satellite RF power requirements given in Document No. 181. The costs should be taken as approximate; however, the trends are accurate. Namely, that the total cost increase with RF power is comparatively small; far below a linear relationship. The costing assumptions are given in Tables I to III; results are tabulated in Table IV and plotted in Figure 1.

Note that most of the examples shown in Table IV correspond to real requirements for which spacecraft are under development or in very active preliminary design. Practical shuttle launch systems are possible in all cases. The 3 x 200 W case (3 channels at 200 W RF TWT power) is under development for Satellite Television Corporation (STC). The 3 x 400 W (or 6 x 200 W) case, for which the costing and spacecraft sizing are similar, is close to the size under consideration for the CBS and USSB applications. The 3 x 800 W case is a possible future size which has been synthesized for purposes of cost comparison. The 16 x 40 W, with batteries for full eclipse operation, has been added since it is under development by RCA for the 11.7 - 12.2 GHz fixed-satellite service (FSS) band and can be of considerable interest for small countries or groups of countries sharing a satellite. The 8 x 100 W case (without batteries) was extrapolated from the 16 x 40 W case. It could be applicable for some Central and South American applications.

2. Space segment cost elements

The dependence of cost on total RF power shown in Table IV and Figure 1 is due to a number of effects. First, there are a significant number of cost elements which are virtually independent of satellite power and size. These include the operation and control center cost, the operations cost for 7 years of system operation and the cost of administering the program during at least 12 years of system procurement and operation.

These costs are presented as a range of values for a number of reasons. Operation and control center costs can vary with the size of feeder-link antenna, complexity of equipment, land costs, labor costs, etc. Operations costs vary mainly with labor rates and size of staff. Administrative costs vary with size of staff (degree of planning, construction supervision, number of procuring organizations involved, etc.) and labor rates.

Second, spacecraft costs, both developmental (non-recurring) and recurring, do not increase linearly with spacecraft weight and power. Many sub-elements remain unchanged regardless of spacecraft size. These include management and service functions (such as product assurance) and spacecraft sub-systems such as attitude control; tracking, telemetry and command; the communications antenna; reaction control except for the tankage, electrical power other than the solar array; and parts of the transponder such as the receivers, input multiplexers and redundancy switching. Assembly, integration and test costs would only increase by a small percentage with power level.

Finally, some elements do increase linearly with power. A good example is the solar array whose estimated recurring cost is roughly 1,000 dollars per end-of-life Watt. The travelling wave tube (TWT) costs are difficult to model. For example, a major manufacturer quotes the cost of a 200 W TWT the same as a 100 W TWT. A 200 W TWTA (TWT plus power supply) costs about 500,000 dollars.

3. Cost assumptions

Spacecraft costs have been extrapolated based on good estimates of one United States DBS system under development (3 x 200 W) and planned systems (3 x 400 W) which have undergone extensive preliminary design. The latter system would either use two 200 W class tubes in parallel or a single 400 W device. AEG-Telefunken has shown the feasibility of a coupled cavity 450 W TWT by building an engineering model and measuring performance. Hughes has done a preliminary study of a similar TWT under contract to the Nordic Telecommunications Administration for the NORDSAT DBS and expressed confidence in its realizability.

An 800 W device is in the future and would require development; however, no technological breakthrough is required. The German Government sponsored development work at approximately this level (700 W) in the early 70s prior to settling on the 450 W value to ease first development efforts. Both Siemens and AEG-Telefunken were involved. A novel, hybrid klystron (klystron slow wave structure combined with TWT collector) was breadboarded at approximately the 1 kW level by a Philips company named Valvo. This device had extremely promising characteristics in terms of efficiency, bandwidth, weight and simplicity of power supply.

A preliminary weight and power sizing of the 3 x 800 W spacecraft was performed to determine solar array power and launch weight. The launch weight is approximately 2,730 kg in geosynchronous transfer orbit. This would require the development of a new perigee stage (assuming shuttle launch). Douglas has recently estimated a cost of roughly 30 million dollars to modify the PAM-A (Payload Assist Model - Atlas) structure and to have Thiokol lengthen the IPSM-2 motor under development for the PAM-D2 (Payload Assist Module - Delta - second model).

Note that launch only by Shuttle has been considered in this comparative analysis for ease of costing. Expendable launch vehicles could be used but the Shuttle cost formula (length or weight occupancy dependent) enables a straightforward comparison. Upper stage use (various PAM models) was also standardized for purposes of easy comparison (see Table III). Again other ascent means could be employed.

A number of costing assumptions (see Table I) are key to the absolute value of the results but have little effect on the comparative costs. Non-recurring developmental costs for the basic satellite design are assumed to be averaged over a number of satellites (10 satellites). This is customary for most commercial satellite projects today. A unique, small development cost has been added in each case, i.e., a tailored antenna design, different transponder filtering, start-up costs, etc.

Both the average and special development costs are shown as a range of values for a number of reasons. Usually early users will tend to pay a larger share of the basic development cost. At times, first users benefit from a vigorous competition and pay only a small part of the development cost. Late users may order after the basic development has been completely amortized. Special development costs can be high if there are extensive, unique requirements. In addition, there could be start-up costs if satellite production is discontinuous. By contrast, near copies from a running production line result in near zero special development costs.

The recurring costs are based on a mature design (i.e., the 40 million dollar cost - including in-orbit performance incentive - for the Delta class spacecraft assumes one is well down the learning curve for spacecraft manufacturing).

It is important to note that four classes of spacecraft and their corresponding launch vehicles have been treated here. (See Table III and Figure 1.) There are and will be others, to be sure. These include the Intelsat VI and TDRSS class which require full Ariane 4 and full shuttle capability respectively. At the lower end of the scale, the Delta class spacecraft - represented by the 3 x 200 W case - is the smallest commercial class worthy of consideration. (There is a 0.8 - 1 kW solar array spin stabilized satellite that is very much used for FSS applications. It could deliver 3-4 channels at 100 W with eclipse operation. However, the total program cost would be of the same order as that shown on Figure 1.)

Hence, we have not extended the curve to the left of the 3 x 200 W case. There are many possible combinations of number of channels x RF power per channel at low levels of RF power with and without eclipse operation. These can be of interest to small nations sharing a satellite or to medium size nations with dry climates. However, the total program cost will decrease negligibly below the values shown in Figure 1.

4. Conclusions

The total costs of one operating satellite and one on-the-ground spare, including procurement, shuttle launch, and seven years of operating costs, can be expected to vary with total RF system power as shown by the upper and lower bounds plotted in Figure 1. Most of these estimates are based on the assumption of three television-bandwidth transponders with TWT powers ranging from 200 W to 800 W, and no capability for operation during eclipses. Estimates for the case of 8 x 100 W channels and 6 x 40 W channels (with batteries) are also included. Costs increase with RF power rather slowly. For example, a 100% in-satellite power from 200 to 400 W per channel leads to only a 28% increase in total space segment costs.

TABLE I

Costing assumptions

- 1983 Constant Dollars
- 5 year Procurement Cycle
- 7 year Operating Cycle
- Basic Satellite and Upper Stage Development Costs Averaged over 10 Satellites
- Unique, small, Non-Recurring Satellite Cost
- Recurring Satellite Cost Based on Mature Design
- 1 Satellite Plus Ground Spare
- Shuttle Launch Only (For Ease of Costing)

TABLE II

Satellite system characteristics

- Single Satellite in Orbit
- Single, Fixed 2.5 Meter Shaped Beam Antenna
- 3 Channel with 6 for 3 Redundancy
- - 200 Watt, 400 Watt or 800 Watt RF Output Per Channel
- 3 Axis Attitude Control
- 1.7 KW, 3.3 KW, or 6 KW Solar Array End of Life Power
- No Eclipse Operation
- Telemetry and Command in BSS Frequency Band for Ascent and on Orbit

TABLE III

Shuttle launch costs (millions of 1983 dollars)

Spacecraft	Full Shuttle	Shared Launch Factor	Shuttle Cost	Upper Stage Cost	Total
3 x 200 W	78	.22	17	5(1)	22
6 x 100 W	78	.27	21	6(2)	27
3 x 400 W	78	.34	26	6(3)	32
3 x 800 W	78	.45	35	10(4)	45

(1) PAM-D (Payload Assist Module - Delta Class) plus mission specific charges.

(2) PAM-D2 Advanced Delta class assist module plus mission specific charges.

(3) PAM-A (Payload Assist Module - Atlas Class) plus mission specific charges.

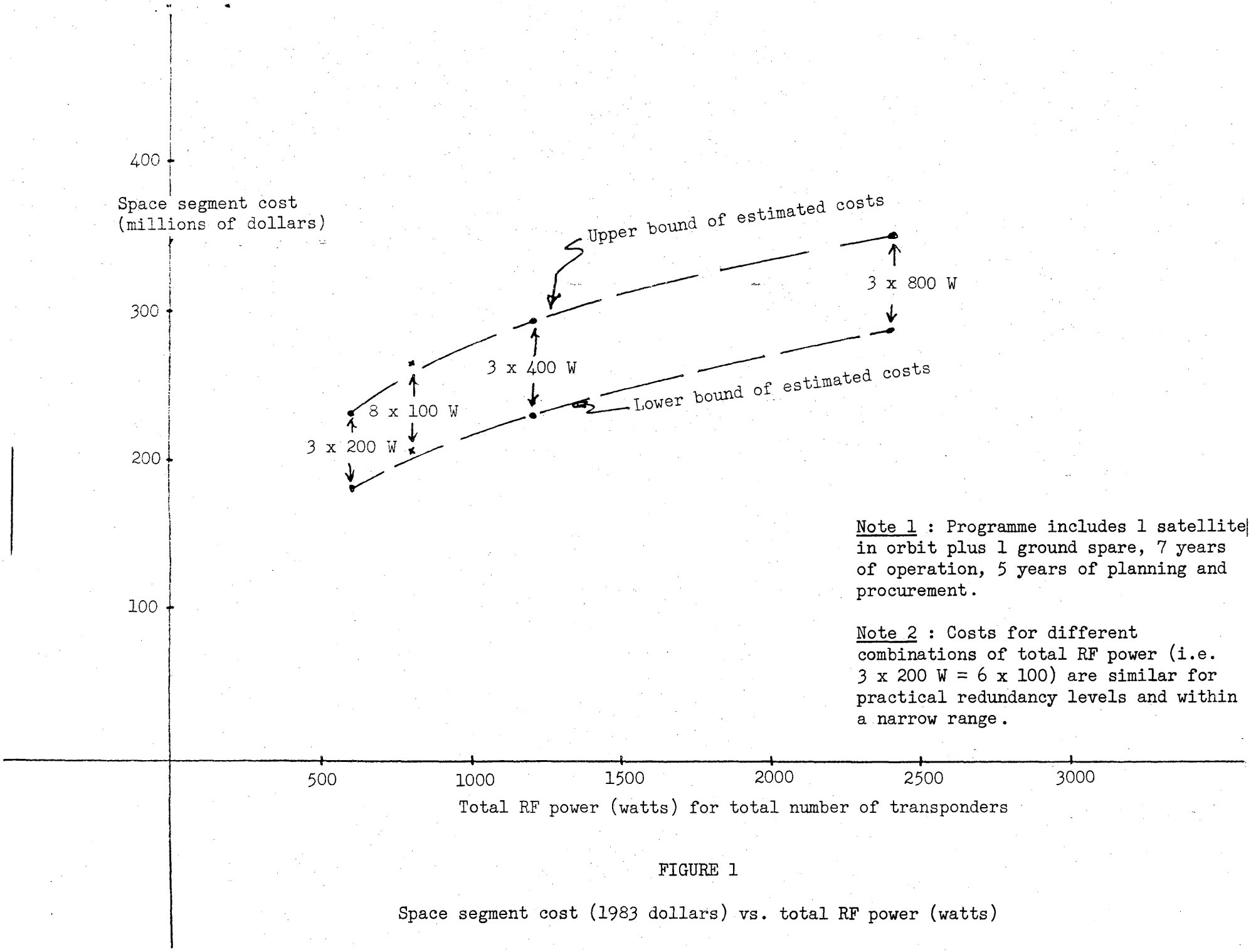
(4) Includes development cost of PAM-A2 at a cost of 30 million dollars averaged over 10 launches (including missions other than broadcasting satellites).

TABLE IV

Space segment costs (millions of 1983 dollars)

Cost Element	3 x 200 W	8 x 100 W or 16 x 40 W (with batteries)	3 x 400 W	3 x 800 W
Spacecraft				
Average Development	5-12	5-13	5-16	5-18
Special Development	2-10	2-11	2-12	2-14
Recurring (1)	2x40	2x50	2x60	2x80
Launch (1)	22	27	32	45
Launch Insurance (1)	5	6	7	9
Operation and Control Center	20-35	20-35	20-35	20x35
	134-164	160-192	186-222	241-281
Operations (7 years)	28-42	28-42	28-42	28-42
Program Administration (12 years)	18-30	18-30	18-30	18-30
TOTALS	180-236	206-264	232-294	287-353

(1) Procure 2 flight spacecraft. Launch one, keep second for ground spare.



Note 1 : Programme includes 1 satellite in orbit plus 1 ground spare, 7 years of operation, 5 years of planning and procurement.

Note 2 : Costs for different combinations of total RF power (i.e. 3 x 200 W = 6 x 100) are similar for practical redundancy levels and within a narrow range.

FIGURE 1

Space segment cost (1983 dollars) vs. total RF power (watts)

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UNIÓN INTERNACIONAL DE TELECOMUNICACIONES

CONFERENCIA DE RADIODIFUSIÓN POR SATÉLITE (REGIÓN 2)

GINEBRA, 1983

Corrigéndum N.° 1 al
Documento N.° 186-S
7 de julio de 1983

Corr.1 al B.3

SESIÓN PLENARIA

TERCERA SERIE DE TEXTOS SOMETIDOS POR LA
COMISIÓN DE REDACCIÓN AL PLENO DE LA CONFERENCIA

Página B.3/7

Reemplácese el nuevo número 1668 por el siguiente:

ADD 1668 Las disposiciones y el Plan asociado aprobados por la Conferencia Administrativa Regional para la planificación del servicio de radiodifusión por satélite en la Región 2 (Ginebra, 1983) para los enlaces de conexión, asociados al servicio de radiodifusión por satélite, que utilizan el servicio fijo por satélite (Tierra-espacio) en la banda de frecuencias 17,3 - 17,8 GHz (en la Región 2) y que figuran en / el apéndice 30A /, se aplican a la asignación y utilización de frecuencias por los enlaces de conexión en esta banda y a las estaciones de otros servicios a los cuales está atribuida dicha banda así como a la utilización de estas frecuencias por las mencionadas estaciones, en lo referente a la relación de estos otros servicios con el servicio fijo por satélite (Tierra-espacio) en esta banda.

SEANCE PLENIERE

TROISIEME SERIE DE TEXTES SOUMISE PAR LA
COMMISSION DE REDACTION A LA SEANCE PLENIERE

Ne concerne que la version espagnole

PLENARY MEETING

THIRD SERIE OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

Concerns only Spanish text

INTERNATIONAL TELECOMMUNICATION UNION

BLUE PAGES

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 186-E
7 July 1983

B.3

PLENARY MEETING

THIRD SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

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

Source	Document No.	Title
COM/6	170	General Definitions Part I : Articles 1, 2, 3 Part III : Radio Regulations Articles 8, 11, 12, 13, 15, 15A Resolutions and Recommendations of WARC 1979 Part V : Recommendation No. COM6/1

D. SAUVET-GOICHON
Chairman of Committee 7

Annex : 9 pages

BLUE PAGES

FINAL ACTS

of the Regional Administrative Radio Conference for the Planning, in Region 2, of the Broadcasting-Satellite Service in the Frequency Band [12.2] - 12.7 GHz and Associated Feeder Links in the Fixed-Satellite Service (Earth-to-Space) in the Frequency Band [17.3 - 17.8] GHz

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General Definitions

For the purposes of these Final Acts the following terms shall have the meanings defined below :

Union:	The International Telecommunication Union;
Secretary-General:	The Secretary-General of the Union;
IFRB (Board):	The International Frequency Registration Board;
CCIR:	The International Radio Consultative Committee ;
Convention:	The International Telecommunication Convention; in force;
Radio Regulations:	The Radio Regulations annexed to the Convention;
Regions 1, 2 and 3:	The geographical areas defined in Nos. 393 to 399 of the Radio Regulations;
Master Register:	The Master International Frequency Register ;
IFRB weekly circular:	The publication referred to in No. 1235 of the Radio Regulations;
Administration:	Any governmental department or service responsible for discharging the obligations undertaken in the Convention and the Radio Regulations;
WARC :	World Administrative Radio Conference ;
Conference :	Regional Administrative Radio Conference for the Planning in Region 2 of the Broadcasting-Satellite Service in the Frequency Band [12.2] - 12.7 GHz and Associated Feeder Links in the Frequency Band [17.3 - 17.8] GHz, called in short Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983.

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PART I

Provisions and Associated Plan for the Broadcasting-Satellite Service in the Frequency Band [12.2] - 12.7 GHz in Region 2

ARTICLE 1

Definitions

Region 2 Plan: The Plan for the Broadcasting-Satellite Service in the Frequency Band [12.2] - 12.7 GHz in Region 2 contained in this Part of the Final Acts, together with any modifications resulting from the successful application of the procedures of Article 4 of this Part.

Frequency assignment in conformity with the Region 2 Plan: Any frequency assignment which appears in the Region 2 Plan or for which the procedure of Article 4 of this Part has been successfully applied.

Regions 1 & 3 Plan: 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 contained in Appendix 30 to the Radio Regulations, together with any modifications resulting from the successful application of the procedures contained in the said Appendix.

ARTICLE 2

Frequency Band

2.1 The provisions of this Part apply to the broadcasting-satellite service in the frequency band [12.2] - 12.7 GHz in Region 2 and to the other services to which this band is allocated in Regions 1, 2 and 3, insofar as their relationship to the broadcasting-satellite service in this band in Region 2 is concerned.

ARTICLE 3

Execution of the Provisions and Associated Plan

3.1 The Members of the Union in Region 2 shall adopt, for their broadcasting-satellite space stations[1] operating in the frequency bands referred to in this Part the characteristics specified in the Plan for that Region.

3.2 [To be provided later.]

[1] Such stations may also be used for transmissions in the fixed-satellite service (space-to-Earth) in accordance with No. 846 of the Radio Regulations.

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PART III

Consequential modifications to Radio Regulations

1. Modifications to the provisions of Article 8 of the Radio Regulations :

ARTICLE 8

TABLE OF FREQUENCY ALLOCATIONS

GHz
11.7 - 12.75

<table>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td rowspan="2">11.7 - 12.5
FIXED
BROADCASTING
BROADCASTING-SATELLITE
Mobile except aeronautical mobile

838 840</td><td>11.7 - 12.1
FIXED 837
FIXED-SATELLITE (space-to-Earth)
Mobile except aeronautical mobile

836 839 840</td><td>11.7 - 12.2
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE
838 840</td></tr>
<tr><td>12.1 - [12.2]

FIXED SATELLITE (space-to-Earth)

836 839 840
842

[12.2] - 12.7
FIXED
MOBILE except aeronautical mobile
BROADCASTING
BROADCASTING-SATELLITE
839 840 844 846</td><td>12.2 - 12.5
FIXED
MOBILE except aeronautical mobile

BROADCASTING

838 840 845</td></tr>
<tr><td>12.5 - 12.75
FIXED-SATELLITE (space-to-Earth)
(Earth-to-space)

840 848 849 850</td><td>12.7 - 12.75
FIXED
FIXED-SATELLITE (Earth-to-space)
MOBILE except aeronautical mobile
840</td><td>12.5 - 12.75
FIXED
FIXED-SATELLITE (space-to-Earth)
MOBILE except aeronautical mobile
BROADCASTING-SATELLITE 847

840</td></tr>
</table>

MOD 836 In Region 2, in the band 11.7 - /12.2/ GHz, transponders on space stations in the fixed-satellite service may be used additionally for transmissions in the broadcasting-satellite service, provided that such transmissions do not have a maximum e.i.r.p. greater than 53 dBW per television channel and do not cause greater interference or require more protection from interference than the coordinated fixed-satellite service frequency assignments. With respect to the space services, this band shall be used principally for the fixed-satellite service.

MOD 837 Different category of service : in Canada, Mexico and the United States, the allocation of the band 11.7 - 12.1 GHz to the fixed service is on a secondary basis (see No. 424).

MOD 839 The use of the band 11.7 - 12.7 GHz in Region 2 by the fixed-satellite and broadcasting-satellite services is limited to national and sub-regional systems. The use of the band 11.7 - /12.2/ GHz by the fixed-satellite service in Region 2 is subject to previous agreement between the administrations concerned and those having services, operating or planned to operate in accordance with the Table, which may be affected (see Articles 11, 13 and 14). For the use of the band /12.2/ - 12.7 GHz by the broadcasting-satellite service in Region 2, see /Part I of the Final Acts of the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2./

MOD 840 For the use of the band 11.7 - 12.75 GHz in Regions 1, 2 and 3, see Resolution 34.

SUP 841

MOD 842 Additional allocation : the band 12.1 - /12.2/ GHz in Brazil and Peru, is also allocated to the fixed service on a primary basis.

SUP 843

MOD 844 In Region 2, in the band /12.2/ - 12.7 GHz, existing and future terrestrial radiocommunication services shall not cause harmful interference to the space services operating in accordance with the Broadcasting-Satellite Plan prepared at the 1983 Regional Administrative Conference of the Planning of the Broadcasting-Satellite Service in Region 2.

MOD 846 In Region 2, in the band /12.2/ - 12.7 GHz, assignments to stations of the broadcasting-satellite service made available in the plan established by the 1983 Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2 may also be used for transmissions in the fixed-satellite service (space-to-Earth), provided that such transmissions do not cause more interference or require more protection from interference than the broadcasting-satellite service transmissions operating in accordance with that Plan. With respect to the space services, this band shall be used principally for the broadcasting-satellite service.

MOD 869 The use of the band 17.3 - 18.1 GHz by the fixed-satellite service (Earth-to-space) is limited to feeder links for the broadcasting-satellite service. For the use of the band 17.3 - 17.8 GHz in Region 2 by the feeder links for the broadcasting-satellite service in the band /12.2/ - 12.7 GHz, see /Part II of Final Acts of the Regional Administrative Conference for/ the Planning of the Broadcasting-Satellite Service in Region 2/.

2. Modifications to the provisions of Article 11 of the Radio Regulations

ARTICLE 11

MOD A.11.1 [1]For the coordination of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - /12.2/ GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and /12.2/ - 12.7 GHz (in Region 2) as well as the coordination of frequency assignments to feeder link stations utilizing the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in this band, see also Article 15 and Article 15A respectively.

3. Modifications to the provisions of Article 12 of the Radio Regulations

ARTICLE 12

MOD (Title) Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Terrestrial Radiocommunication Stations[2, 3, 4]

MOD A.12.3 [3]For the notification and recording of frequency assignments to terrestrial stations in the frequency bands 11.7 - 12.2 GHz (in Region 3), /12.2/ - 12.7 GHz (in Region 2) and 11.7 - 12.5 GHz (in Region 1), so far as their relationship to the broadcasting-satellite service in these bands is concerned, see also Article 15.

ADD A.12.4 [4]For the notification and recording of frequency assignments to terrestrial stations in the frequency band /17.7/ - 17.8 GHz (in Region 2), so far as their relationship to the fixed-satellite service (Earth-to-space) in this band is concerned, see also Article 15A.

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4. Modifications to the provisions of Article 13 of the Radio Regulations

ARTICLE 13

Notification and Recording in the Master International Frequency Register of Frequency Assignments[1] to Radio Astronomy and Space Radiocommunication Stations Except Stations in the Broadcasting-Satellite Service[2]

MOD A.13.2 [2]For notification and recording of frequency assignments to stations in the broadcasting-satellite service and other services in the frequency bands 11.7 - 12.2 GHz (in Region 3), 11.7 - 12.5 GHz (in Region 1) and /12.2/ - 12.7 GHz (Region 2), as well as the notification and recording of frequency assignments to feeder link stations in the fixed-satellite service (Earth-to-space) in the frequency band 17.3 - 17.8 GHz (in Region 2) and other services in this band, see also Article 15 and Article 15A respectively.

5. Modifications to the provisions of Article 15 of the Radio Regulations

ARTICLE 15

MOD (Title) Coordination, Notification and Recording of Frequency Assignments to Stations of the Broadcasting-Satellite Service in the Frequency Bands 11.7 - 12.2 GHz (in Region 3) /12.2/ - 12.7 GHz (in Region 2) and 11.7 - 12.5 GHz (in Region 1) 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

MOD 1656 The provisions and associated Region 1 and 3 Plan for the broadcasting-satellite service in the frequency band 11.7 - 12.5 GHz (in Region 1) and 11.7 - 12.2 GHz (in Region 3) adopted by the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977 and the provisions and associated Region 2 Plan for the broadcasting-satellite service in the frequency band /12.2/ - 12.7 GHz adopted by the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983 as contained /in Appendix 30/ shall apply to the assignment and use of frequencies by stations of the broadcasting-satellite service in these bands and to the stations of other services to which these bands are allocated so far as their relationship to the broadcasting-satellite service in these bands is concerned.

6. New Article 15A of the Radio Regulations

ARTICLE 15A

ADD (Title) Coordination, Notification and Recording of Frequency Assignments to Stations in the Fixed-Satellite Service (Earth-to-Space) in the Frequency Band 17.3 - 17.8 GHz (Region 2) Providing Feeder Links for the Broadcasting-Satellite Service and also to Stations of Other Services to Which this Band is Allocated, so far as Their Relationship to the Fixed-Satellite Service (Earth-to-Space) in this Band is Concerned

ADD 1668 The provision and associated Plan adopted by the Regional Administrative Conference for the Planning of the Broadcasting-Satellite Service in Region 2, Geneva, 1983, for feeder links associated with the broadcasting-satellite service utilizing the fixed-satellite service (Earth-to-space) in the band 17.3 - 17.8 GHz (Region 2) as contained in /Appendix 30A/, shall apply to the assignment to and use by feeder links of frequencies in this band and to stations of other services to which this band is allocated so far as the relationship of these other services to the fixed-satellite service (Earth-to-space) in this band is concerned.

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8. Action on Resolutions and Recommendations of WARC-79

SUP

RESOLUTION No. 31

Relating to the Application of Certain Provisions of the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, to Take into Account Changes Made by the World Administrative Radio Conference, Geneva, 1979 to the Table of Frequency Allocations for Region 2 in the Band 11.7 - 12.7 GHz

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SUP

RESOLUTION No. 100

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Assignments to Stations in the Fixed-Satellite Service with Respect to Stations in the Broadcasting-Satellite Service in Region 2 [1]

SUP

RESOLUTION No. 503

Relating to the Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Broadcasting-Satellite Service in Region 2 [1]

SUP

RESOLUTION No. 504

Relating to the Final Acts of the World Broadcasting-Satellite Administrative Radio Conference, Geneva, 1977, with Respect to Region 2

SUP

RESOLUTION No. 700

Relating to Sharing Between the Fixed-Satellite Service in Regions 1 and 3 and the Broadcasting-Satellite Service in Region 2 in the Band 12.2 - 12.7 GHz

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SUP

RESOLUTION No. 701

Relating to the Convening of a Regional Administrative Radio Conference for the Detailed Planning of the Broadcasting-Satellite Service in the 12 GHz Band and Associated Feeder Links in Region 2 [1]

PART V

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

RECOMMENDATION No. COM6/1

Relating to the Interpretation of Terms "Allotment" and "Assignment"

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

considering

that a number of difficulties have been encountered in interpreting Nos. 18 and 19 of Article 1 of the Radio Regulations concerning the terms "allotment" and "assignment" respectively, with regard to their application to plans produced by regional or world conferences;

recommends

that the World Administrative Radio Conference on the Use of the Geostationary-Satellite Orbit, 1985, should interpret the terms "allotment" and "assignment" clearly and unequivocally.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 187-E
7 July 1983
Original : English

COMMITTEE 6

SECOND REPORT OF WORKING GROUP 6A TO COMMITTEE 6

The Annex to this document contains the second series of the texts adopted in the Working Group.

The square brackets have been used to indicate the following situations :

- paragraph 5.2.1 b) is in square brackets on account of the relationship with the matter raised by Committee 4. Attention, in this respect, is invited to Documents Nos. 115, 136, 151 and 159;

- as decided in Committee 6, the procedures of the former Article 4A will now form part of a Resolution. Square brackets have been used in the text where reference is made to this Resolution;

- whether or not Article 10 is retained in Part I of the Final Acts will depend upon the work done in Committee 4.

E.D. DuCHARME
Chairman of Working Group 6A

Annex : As mentioned

ARTICLE 5

Notification, Examination and Recording in the Master Register of Frequency Assignments to Space Stations in the Broadcasting-Satellite Service in Region 2

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 apply any other data it may consider useful.

5.1.3 Each notice must reach the Board not earlier than three years before the date on which the frequency assignment is to be brought into use. In any case, the notice must reach the Board not later than three months before that date.[1]

[1] Where appropriate, the notifying administration shall initiate the procedure for modifying the Plan in sufficient time to ensure that this limit is observed.

5.1.4 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.

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 of this Appendix (with the exception of those relating to conformity with the Region 2 Plan and the provisions of Resolution [ ];

[b) with respect to its conformity with the Region 2 Plan;]

c) with respect to its conformity with the provisions of Resolution [ ].

5.2.2 Where the Board reaches a favourable finding with respect to 5.2.1 a) and [5.2.1 b)], the frequency assignment of an administration shall be recorded in the Master Register. The date of receipt 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.

5.2.2A Where the Board reaches a favourable finding with respect to 5.2.1 a) and finds that the difference between the notified characteristics and those appearing in the Plan is :

- a reduced e.i.r.p; or
- a reduced coverage area entirely situated within the coverage area appearing in the Plan; or
- different modulation characteristics[1] without exceeding the assigned bandwidth; or
- a use of the assignment for transmission in the fixed-satellite service in accordance with RR846;

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. In relations between administrations all frequency assignments brought into use in conformity with the Plan and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments. When recording these assignments the Board shall indicate by an appropriate symbol the characteristics having a value different from that appearing in the Plan.

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[1] 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.

5.2.2B Where the Board reaches a favourable finding with respect to 5.2.1 a), but an unfavourable finding with respect to [5.2.1 b)], it shall examine the notice with respect to its conformity with the provisions of Resolution [ ]. A frequency assignment which is in conformity with the provisions of Resolution [ ] shall be recorded in the Master Register with an appropriate symbol to indicate its interim status. 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 provisions of Resolution [ ] and recorded in the Master Register shall be considered to have the same status irrespective of the dates entered in Column 2d for such frequency assignments.

5.2.3 Whenever a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a.

5.2.4 Where the Board reaches an unfavourable finding with respect to 5.2.1 a) or [5.2.1 b)] and c), the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to a satisfactory solution of the problem.

5.2.5 Where the notifying administration resubmits the notice and the finding of the Board becomes favourable with respect to the appropriate parts of 5.2.1, the notice shall be treated as in 5.2.2, 5.2.2A or 5.2.2B, as appropriate.

5.2.6 If the notifying administration resubmits the notice without modification and insists on its reconsideration, and if the Board's finding with respect to 5.2.1 remains unfavourable, the notice is returned to the notifying administration in accordance with 5.2.4. In this case, the notifying administration undertakes not to bring into use the frequency assignment until the condition specified in 5.2.5 is fulfilled.

5.2.7 If a frequency assignment notified in advance of bringing into use 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 six months after the expiry of the period specified in 5.1.3. On receipt of the relevant information, the Board will either modify the date of coming into use or cancel the entry.

5.3.2 If the use of any recorded frequency assignment is permanently discontinued, the notifying administration shall so inform the Board within three months, whereupon the entry shall be removed from the Master Register.

ARTICLE 6

Coordination, Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Stations Affecting Broadcasting-Satellite Frequency Assignments in the Band 12.2 - 12.7 GHz (in Region 2)[1]

[1] These procedures do not involve any dispensation from the procedures prescribed for terrestrial stations in Articles 11 and 12 of the Radio Regulations and Appendix 30 thereto.

Section I. Coordination Procedure to Be Applied

6.1.1 Before an administration notifies to the Board a frequency assignment to a terrestrial transmitting station, it shall initiate coordination with any other administration if the power flux-density which would be produced by the proposed terrestrial transmitting station at any point on the border of its territory exceeds the value derived in accordance with Annex 3.

6.1.2 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.

6.1.3 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 2 months 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] **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.**

6.1.4 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 interference to the service to be rendered by the broadcasting-satellite stations of other administrations.

6.1.5 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 6.1.3 within one month of dispatch of the coordination data;

b) an administration which has acknowledged receipt under paragraph 6.1.3 fails to give a decision within 3 months 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.

6.1.6 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.**

6.1.7 Where the Board receives a request under paragraph 6.1.5 *a)*, it shall forthwith send a telegram to the administration concerned requesting immediate acknowledgement.

6.1.8 Where the Board receives an acknowledgement following its action under paragraph 6.1.7 or where the Board receives a request under paragraph 6.1.5 *b)*, it shall forthwith send a telegram to the administration concerned requesting an early decision in the matter.

6.1.9 Where the Board receives a request under paragraph 6.1.5 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 6.1.2. Where the Board receives no acknowledgement of its request for coordination within the period specified in paragraph 6.1.3, it shall act in accordance with paragraph 6.1.7.

6.1.10 Where an administration fails to reply within thirty days of dispatch of the Board's telegram sent under paragraph 6.1.7 requesting an acknowledgement or fails to give a decision on the matter within 2 months of dispatch of the Board's telegram of request sent under paragraph 6.1.8, 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.

6.1.11 Where necessary, as part of the procedure under paragraph 6.1.5, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

6.1.12 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

6.2.1 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].

6.2.2 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.

6.2.3 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 6.2.2 must reach the Board not earlier than three years and not later than 3 months before the date on which the assignment is to be brought into use.

6.2.4 Any frequency assignment, the notice of which reaches the Board less than 3 months 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 6.2.3.

Section III. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

6.3.1 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.

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

6.3.3 Any notice which is incomplete shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

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[1] The attention of administrations is specifically drawn to the provisions of Section I of this Article.

6.3.4 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.

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

6.3.6 Complete notices shall be considered by the Board in the order specified in paragraph 6.3.2. 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.

6.3.7 The Board shall examine each notice:

6.3.8 *a)* with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedure and the probability of harmful interference);

6.3.9 *b)* with respect to its conformity with the provisions of paragraph 6.1.1 relating to coordination of the use of the frequency assignment with the other administrations concerned;

6.3.10 *c)* where appropriate, with respect to the probability of harmful interference to a broadcasting-satellite station whose frequency assignment is in accordance with the Plan.

6.3.11 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 6.3.8, 6.3.9 and 6.3.10, further action shall be as follows:

6.3.12 ***Finding unfavourable with respect to paragraph 6.3.8***

6.3.13 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be examined immediately with respect to paragraphs 6.3.9 and 6.3.10.

6.3.14 If the finding is favourable with respect to paragraph 6.3.9 or 6.3.10, 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.

6.3.15 If the finding is unfavourable with respect to paragraph 6.3.9 or 6.3.10, 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 6.3.14 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.

6.3.16 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. **342** 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.

6.3.17 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 6.3.16.

6.3.18 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. 342 of the Radio Regulations, it shall be treated in accordance with the provisions of paragraphs 6.3.13 and 6.3.14 or 6.3.15, as appropriate.

6.3.19 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 6.3.8, the notice shall be treated under the provisions of paragraphs 6.3.20 to 6.3.32. 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.

6.3.20 *Finding favourable with respect to paragraph 6.3.8*

6.3.21 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.22 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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 6.3.21. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 6.3.10.

6.3.23 Where the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.24 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 6.3.9 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.

6.3.25 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 6.3.22. 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.

6.3.26 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 6.3.10. 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.

6.3.27 *Finding favourable with respect to paragraphs 6.3.8 and 6.3.10*

6.3.28 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.

6.3.29 *Finding favourable with respect to paragraph 6.3.8 but unfavourable with respect to paragraph 6.3.10*

6.3.30 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.

6.3.31 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 6.3.10, 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.

6.3.32 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 6.3.31 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 6.3.30. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition specified in paragraph 6.3.31 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.

6.3.33 *Change in the basic characteristics of assignments already recorded in the Master Register*

6.3.34 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 2c, 3 and 4a of the Master Register), shall be examined by the Board in accordance with paragraphs 6.3.8 and 6.3.9 and, where appropriate, paragraph 6.3.10 and paragraphs 6.3.12 to 6.3.32 inclusive applied. Where the change should be recorded, the original assignment shall be amended according to the notice.

6.3.35 However, in the case of a change in the basic characteristics of an assignment which is in conformity with paragraph 6.3.8, should the Board reach a favourable finding with respect to paragraph 6.3.9 and, if applicable, paragraph 6.3.10, 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.

6.3.35A The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by three months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed six months from the original projected date of bringing into use.

6.3.36 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.

6.3.37 *Recording of frequency assignments notified before being brought into use*

6.3.38 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraphs 6.3.8 and 6.3.9, and, where appropriate, 6.3.10, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

6.3.39A Within thirty days after the date of bringing into use, either as originally notified or as modified in application of paragraph 6.3.35A, the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assignment has been brought into use, the special symbol shall be deleted from the Remarks Column.

6.3.39B If the Board does not receive this confirmation within the period referred to in paragraph 6.3.39A, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

6.3.40 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, 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 [12.2 - 12.7] GHz in Regions 1 and 3, when Frequency Assignments to Broadcasting-Satellite Stations in Conformity with the Region 2 Plan are Involved

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[1] These provisions do not replace the procedures prescribed in Articles 11 and 13 of the Radio Regulations and Appendix 30 thereto.

Section I. Procedure for the Advance Publication of Information on Planned Fixed-Satellite Systems

Publication of Information

7.1.1 An administration which intends to establish a fixed-satellite system shall, prior to the procedure in accordance with paragraph 7.2.1 where applicable, send to the International Frequency Registration Board, not earlier than five years and preferably not later than two years before the date of bringing into service each satellite network of the planned system, the information listed in Appendix 4 to the Radio Regulations.

7.1.2 Any amendments to the information concerning a planned satellite system sent in accordance with paragraph 7.1.1 shall also be sent to the Board as soon as they become available.

7.1.3 The Board shall publish the information sent under paragraphs 7 1 1 and 7.1.2 in a special section of its weekly circular and shall also, when the weekly circular contains such information, so advise all administations by circular telegram. The circular telegram shall include the frequency bands to be used and, in the case of a geostationary satellite, the orbital location of the space station.

7.1.3A If the information is found to be incomplete, the Board shall publish it under paragraph 7.1.3 and immediately seek, from the administration concerned, any clarification and information not provided. In such cases, the period of 3 months specified in paragraph 7.1.4 shall count from the date of publication, under paragraph 7.1.3, of the complete information.

Comments on Published Information

7.1.4 If, after studying the information published under paragraph 7.1.3, 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 3 months after the date of the weekly circular publishing the information listed in Appendix 4 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.

Resolution of Difficulties

7.1.5 An administration receiving comments sent in accordance with paragraph 7.1.4 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.

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

ADD Results of Advance Publication

ADD 7.1.6A An administration on behalf of which details of planned satellite networks have been published in accordance with the provisions of paragraphs 7.1.1 and 7.1.2 shall, after the period of 3 months specified in paragraph 7.1.4, inform the Board whether or not comments provided for in paragraph 7.1.4 have been received and of the progress made in resolving any remaining diffculties Additional information on the progress made in resolving any remaining difficulties shall be sent to the Board at intervals not exceeding six months prior to the commencement of coordination or the sending in of notices to the Board. The Board shall publish this information in a special section of its weekly circular and shall also, when the weekly circular contains such information, so inform all administrations by circular telegram.

Commencement of Coordination or Notification Procedure

7.1.7 In complying with the provisions of paragraphs 7.1.5 and 7.1.6, an administration responsible for a planned fixed-satellite system shall, if necessary, defer its commencement of the coordination procedure of paragraph 7.2.1 or, where this is not applicable, the sending of its notices to the Board until 5 months after the date of the weekly circular containing the information listed in Appendix 4 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 5 months mentioned above.

Section II. Coordination Procedures to Be Applied in Appropriate Cases

7.2.1 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 3 to the Radio Regulations.

7.2.2 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 7.2.1 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.

7.2.3 An administration seeking coordination under paragraph 7.2.1 shall at the same time send to the Board a copy of the request for coordination together with the information listed in Appendix 3 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.

7.2.4 An administration believing that it should have been included in the procedure under paragraph 7.2.1 shall have the right to request that it be brought into the procedure.

7.2.5 An administration whose agreement is sought under paragraph 7.2.1 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 7.2.3, the administration seeking coordination shall dispatch a telegram requesting acknowledgement, to which the receiving administration shall reply within a further period of 1 month. 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 interference[1] which would be caused to the service rendered by its stations in respect of which agreement is sought under paragraph 7.2.1, and shall, within 3 months 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] **The criteria to be employed in evaluating interference levels shall be based upon the technical information contained in this Appendix or upon relevant CCIR Recommendations and shall be agreed between the administrations concerned.**

7.2.6 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 7.2.1 fails to acknowledge receipt, under paragraph 7.2.5, within 2 months after the date of the weekly circular publishing the information relating to the request for coordination;

b) an administration has acknowledged receipt under paragraph 7.2.5, but fails to give a decision within 3 months 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 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.

7.2.7 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.**

7.2.8 Where the Board receives a request under paragraph 7.2.6 *a)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting immediate acknowledgement.

7.2.9 Where the Board receives an acknowledgement following its action under paragraph 7.2.8, or where the Board receives a request under paragraph 7.2.6 *b)*, it shall forthwith send a telegram to the administration whose agreement is sought requesting an early decision in the matter.

7.2.10 Where the Board receives a request under paragraph 7.2.6 *d)*, it shall endeavour to effect coordination in accordance with the provisions of paragraph 7.2.1. The Board shall also, where appropriate, act in accordance with paragraph 7.2.3. Where the Board receives no acknowledgement to its request for coordination within the periods specified in paragraph 7.2.5, it shall act in accordance with paragraph 7.2.8.

7.2.11 Where an administration fails to reply within thirty days of dispatch of the Board's telegram requesting an acknowledgement sent under paragraph 7.2.8, or fails to give a decision in the matter within thirty days of dispatch of the Board's telegram of request under paragraph 7.2.9, 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.

7.2.12 Where necessary, as part of the procedure under paragraph 7.2.6, the Board shall assess the level of interference. In any case, the Board shall inform the administrations concerned of the results obtained.

7.2.13 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 5 months from the date of the request for coordination, taking into consideration the provisions of paragraph 7.3.4, 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 7.4.11.2 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

7.3.1 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 Plan[1]; or

b) if it is desired to obtain international recognition of the use of the frequency.

[1] The attention of administrations is specifically drawn to the application of paragraph 7.2.1 above.

7.3.2 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 7.3.1 are applicable.

7.3.3 For any notification under paragraph 7.3.1 or 7.3.2, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 3 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.

7.3.4 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 3 months before this date.

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

7.3.5 Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in paragraph 7.3.4, shall, where it is to be recorded, bear a mark in the Master Register to indicate that it is not in conformity with paragraph 7.3.4.

Section IV. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

7.4.1 Any notice which does not contain at least those basic characteristics specified in Appendix 3 to the Radio Regulations shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

7.4.2 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.

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

7.4.4 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.

7.4.5 The Board shall examine each notice:

7.4.5.1 with respect to its conformity with the Convention, the relevant provisions of the Radio Regulations and the provisions of this Appendix (with the exception of those relating to the coordination procedures and the probability of harmful interference);

7.4.5.2 where appropriate, with respect to its conformity with the provisions of paragraph 7.2.1, 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;

7.4.5.3 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.

7.4.6 Depending upon the findings of the Board subsequent to the examination prescribed in paragraphs 7.4.5.1, 7.4.5.2 and 7.4.5.3, as appropriate, further action shall be as follows:

7.4.7 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are not applicable*

7.4.7.1 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.

7.4.8 *Finding unfavourable with respect to paragraph 7.4.5.1*

7.4.8.1 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is favourable with respect to paragraphs 7.4.5.2 and 7.4.5.3, 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.

7.4.8.2 Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations and the finding is unfavourable with respect to paragraph 7.4.5.2 or 7.4.5.3, 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 7.4.8.1 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.

7.4.8.3 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. **342** 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.

7.4.8.4 If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of paragraph 7.4.8.3. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **342** of the Radio Regulations, it shall be treated in accordance with the provisions of paragraph 7.4.8.1 or 7.4.8.2, as appropriate. If it is resubmitted with modifications which, after re-examination, result in a favourable finding by the Board with respect to paragraph 7.4.5.1, it shall be treated as a new notice.

7.4.9 *Finding favourable with respect to paragraph 7.4.5.1 in cases where the provisions of paragraph 7.4.5.2 are applicable*

7.4.9.1 Where the Board finds that the coordination procedures mentioned in paragraph 7.4.5.2 have been successfully completed with all administrations whose frequency assignments in accordance 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.

7.4.9.2 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 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 7.4.9.1. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of paragraph 7.4.5.3.

7.4.9.3 Where the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 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.

7.4.9.4 Where the notifying administration resubmits the notice and the Board finds that the coordination procedure mentioned in paragraph 7.4.5.2 has 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.

7.4.9.5 Where the notifying administration resubmits the notice with a request that the Board effect the required coordination under paragraph 7.2.1, it shall be treated in accordance with the provisions of paragraph 7.4.9.2. 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.

7.4.9.6 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 7.4.5.3. 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.

7.4.10 *Finding favourable with respect to paragraphs 7.4.5.1* and 7.4.5.3.

7.4.10.1 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.

7.4.11 *Finding favourable with respect to paragraph 7.4.5.1, but unfavourable with respect to paragraph 7.4.5.3 .*

7.4.11.1 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.

7.4.11.2 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 7.4.5.3, 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.

7.4.11.3 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 7.4.11.2 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 7.4.11.1. In those circumstances, the notifying administration shall undertake not to bring into use the proposed frequency assignment until the condition in paragraph 7.4.11.2 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.

7.4.12 *Change in the basic characteristics of assignments already recorded in the Master Register*

7.4.12.1 A notice of a change in the basic characteristics of an assignment in the fixed-satellite service already recorded, as specified in Appendix 3 to the Radio Regulations (except the name of the station or the name of the locality in which it is situated or the date of bringing into use), shall be examined by the Board according to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and the provisions of paragraphs 7.4.7 to 7.4.11.3 inclusive shall apply. Where the change should be recorded, the original assignment shall be amended accordingly.

7.4.12.2 However, in the case of a change in the characteristics of an assignment which is in conformity with paragraph 7.4.5.1, should the Board reach a favourable finding with respect to paragraphs 7.4.5.2 and 7.4.5.3, where appropriate, or find that the changes do not increase the probability of harmful interference to frequency assignments in accordance 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.

7.4.12.2A The projected date of bringing into use of a frequency assignment may be extended on request of the notifying administration by four months. In the case where the administration states that, due to exceptional circumstances, it needs a further extension of this period, such extension may be provided but it shall in no case exceed eighteen months from the original projected date of bringing into use.

7.4.12.3 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.

7.4.13 *Recording of frequency assignments in the fixed-satellite service notified before being brought into use*

7.4.13.1 If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

7.4.13.2A Within thirty days after the date of bringing into use either as originally notified or as modified in application of paragraph 7.4.12.2A the notifying administration shall confirm that the frequency assignment has been brought into use. When the Board is informed that the assigment has been brought into use, the special symbol shall be deleted from the Remarks Column.

7.4.13.3 If the Board does not receive this confirmation within the period referred to in paragraph 7.4.13.2, the entry concerned shall be cancelled. The Board shall consult the administration concerned before taking such action.

Section V. Recording of Findings in the Master Register

7.5 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

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

7.6.2 If harmful interference is actually caused to the reception of any broadcasting-satellite station whose frequency assignment is in accordance 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 7.4.11.3, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

7.6.3 If harmful interference to the reception of any broadcasting-satellite station whose frequency assignment is in accordance with the Plan is actually caused by the use of a frequency assignment which is not in conformity with paragraph 7.4.5.1, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section VII. Review of Findings

7.7.1 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.

7.7.2 The Board, in the light of all the data at its disposal, shall review the matter, taking into account paragraph 7.4.5.1 and, where appropriate, paragraphs 7.4.5.2 and 7.4.5.3, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

7.7.3 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.

7.7.4 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

7.8A The Board shall at intervals not exceeding two years, request confirmation from the notifying administration that its assignment has been and will continue to be in regular use in accordance with its recorded characteristics.

7.8.1 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.

7.8.2 Whenever it appears to the Board, whether or not as a result of action under paragraph 7.8.1, 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.

7.8.3 If no reply is received within six months of action by the Board under paragraph 7.8.2, 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 mark should be entered against the entry in the Master Register.

7.8.4 In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within 3 months of such discontinuance, whereupon the entry shall be removed from the Master Register.

7.8.5 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 or retain the basic characteristics of the entry.

7.8.6 If, in connection with an inquiry by the Board under paragraph 7.8.5 the notifying administration has failed to supply the Board within 3 months 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

8.1 If it is requested by any administration, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these provisions or of harmful interference.

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

8.2A On receiving the Board's recommendations for the solution of the problem, an administration shall promptly acknowledge the receipt by telegram and shall subsequently indicate the action it intends to take. In cases when the Board's suggestions or recommendations are unacceptable to the administrations concerned, further efforts should be made by the Board to find an acceptable solution to the problem.

8.3 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 3 months the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

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

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 this Appendix.

8.5 In making a request to the Board under paragraph 8.4, the administration shall furnish the Board with the necessary information.

SUP

ARTICLE 9

ARTICLE [10]

Power Flux-Density Limits Between 12.2 GHz and 12.7 GHz to Protect Space Services in Regions 1 and 3 from Interference from Broadcasting-Satellite Space Stations of Region 2

(The contents of this Article depends on the results of Committee 4.)

ARTICLE 11

Plan for the broadcasting-satellite service
in the frequency band 12.2 - 12.7 GHz in Region 2

ARTICLE 12

Interference

12.1 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.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 188-E
7 July 1983
Original : English

Source : Document No. DT/48

COMMITTEE 4

PROPOSED NOTE FROM COMMITTEE 4 TO COMMITTEE 5

Document No. 86(Rev.1) and its Corr.1 include a footnote (in brackets) that indicates that channels in the Plan, for France, Denmark, and some United Kingdom requirements have a necessary bandwidth of 27 MHz. The following points have been identified :

1) WARC-77 Final Acts have provided the technical parameters used for planning with 27 MHz signals in Regions 1 and 3.

2) The sections of the Final Acts of the Conference, presently being developed by Committee 4, provide technical parameters for planning with 24 MHz bandwidth signals.

3) Document No. 48 provides limited information on protection ratios for wanted and interfering signals of different standards.[1)]

4) In the absence of sufficient complementary information on the protection ratios between different television standards having different necessary bandwidths, Committee 4 does not expect to be able to provide additional technical information that may be needed for the planning of the broadcasting-satellite service on the basis of two different necessary bandwidths.

E.F. MILLER
Chairman of Working Group 4B

1) Committee 4 will draw to the attention of the CCIR the need for further studies on the protection ratios between systems of different standards and different bandwidths.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 189-E
7 July 1983
Original : English

Source : Document No. 116(Rev.1)

COMMITTEE 4

PROPOSED NOTE FROM COMMITTEE 4 TO COMMITTEE 5
ON THE MINIMUM SEPARATION BETWEEN SATELLITES NOT
NOMINALLY CO-LOCATED

In response to the request of Committee 5 for further information on Document No. 116, Committee 4 wishes to bring to the attention of Committee 5 that when satellites are placed at different nominal orbital positions in a plan, the spacing between such satellites should be at least 0.8°. This applies only to satellites at different nominal orbital positions which use the same channel or an adjacent channel. The spacing of 0.8° is a composite of a 0.4° spacing between satellites at the same nominal orbital position using adjacent channels, at ± 0.1° station-keeping tolerance of all satellites considered, a feeder-link earth station mispointing tolerance of 0.1° and a spacing of at least 0.1° between satellites at different nominal positions under all circumstances. Committee 4 notes with interest that the first draft plan already includes the feature described above, i.e., an orbital separation of at least 0.8°.

E.F. MILLER
Chairman of Working Group 4B

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CONFÉRENCE DE RADIODIFFUSION PAR SATELLITE (RÉGION 2)

GENÈVE, 1983

Document N° 190(Rev.1)-F/E/S
8 juillet 1983
Original : français
anglais
espagnol

COMMISSION 5
COMMITTEE 5
COMISIÓN 5

RESULTATS DU TROISIEME PROJET DE PLAN

RESULT FROM THE THIRD DRAFT PLAN

RESULTADOS DEL TERCER PROYECTO DE PLAN

Président du sous-Groupe de travail 5A-1

Chairman of Sub-Working Group 5A-1

Presidente del Subgrupo de Trabajo 5A-1

RAPPORT SUR LA MARGE TOTALE/TOTAL MARGIN REPORT/INFORME DEL MARGEN TOTAL

Col.	Description / Description / Descripción
1	Numéro de référence de l'IFRB de la zone de service qui subit un brouillage. IFRB reference number of service area subject to interference. Número de referencia de la IFRB de la zona de servicio sometida a interferencia.
2	Administration / Administration / Administración.
3	Position sur l'orbite / Orbital position / Posición orbital.
4	Identification du faisceau de la liaison descendante (zone de service). Downlink beam identification (service area). Identificación del haz del enlace descendente (zona de servicio).
5	Puissance aux bornes d'entrée de l'antenne du satellite (W). Satellite Antenna Input Power (W). Potencia de entrada de la antena de satélite (W).
6	Angle de site minimal dans la zone de service de la liaison descendante. Minimal elevation angle in downlink service area. Ángulo de elevación mínimo en la zona de servicio del enlace descendente.
7[1)]	Instant initial de l'éclipse solaire (en minutes à partir de minuit). Earliest onset of solar eclipse (in minutes from midnight). Primera aparición del eclipse solar (en minutos a partir de medianoche).
8[2)]	Famille de canaux de la liaison descendante/Groupe de blocs. Downlink channel family/Blocking Group. Familia de canales del enlace descendente/Grupo de bloques.
9[3)]	Marge composite totale pour chaque point de mesure de la liaison descendante (dB) (9.1 à 9.10) Total aggregate margin for each downlink test point (dB)(9.1 to 9.10). Margen agregado total para cada punto de prueba del enlace descendente (dB)(9.1 y a 9.10).
10	P = points sur polygone / Polygon Points / Puntos de polígono T = points de mesure / Punto de polígono / Puntos de prueba

---

1) > o après minuit / after midnight / después de medianoche.
< o avant minuit / before midnight/ antes de medianoche.

2)

Famille / Family / Familia																
01	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
02	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32

3) Marge composite totale - Différence entre C/I et le rapport de protection.
Total aggregate margin - Difference between C/I and the protection ratio.
Margen compuesto total - Diferencia entre C/I y sobre la relación de protección.

ESCENARIO/ SCENARIO: DPLANER2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE 830709 0001

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
73	USA	-160.9	ALSOOOO2	165.9	10.4	120.6	01	1.9	5.5	4.6	3.4	6.1	9.5	9.6				P
261	ARG	-84.9	ARGINSU2	22.1	9.8	56.6	01	2.0	0.7	0.2								P
262	ARG	-85.1	ARGNORT2	968.4	37.9	57.4	02	-2.2	-2.1	-1.8	-2.0	-2.2	-2.0	-3.3	-3.1			P
263	ARG	-84.9	ARGSUR02	223.7	24.7	56.6	01	-4.0	-2.9	-0.8	-0.9	-0.7	-0.7					P
264	ATG	-78.1	ATGSJN01	16.4	62.5	29.4	02	1.1	1.1	1.1	1.2	1.2						P
283	HOL	-54.9	ATNLEAN1	68.7	66.7	-63.4	01	4.1	4.1	4.1	4.0	3.8	3.9	4.0				P
115	LAH	-99.1	LAHIFRM1	83.5	49.9	53.4	02	1.7	2.5	1.3	-0.1	-0.3	0.7	1.3				P
18	C	-98.9	BERLERN0	11.5	37.4	112.6	01	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9	-0.9				P
244	C	-30.9	BERLERR2	11.5	37.6	-159.4	01	6.1	6.1	6.1	6.0	6.0	6.0	6.1				P
97	LLZ	-99.1	BLZ00001	17.7	64.9	-6.6	02	1.0	1.8	0.1	0.4	1.6	2.1					P
219	LOL	-113.9	LOLAND01	737.7	23.8	172.6	01	-7.8	-8.0	-7.8	-8.9	-9.5	-7.4					P
121	LOL	-114.1	LOLC0001	735.2	23.6	173.4	02	-8.2	-8.4	-8.4	-9.1	-9.6	-7.9					P
63	LRB	-91.1	LRL00J01	18.6	50.4	81.4	02	-3.1	-3.1	-3.1	-3.2	-3.2	-3.2	-3.2				P
228	L	-66.9	BOOCE311	340.6	49.7	44.6	01	1.1	2.0	1.9	-0.9	-1.8	1.3	1.7				P
229	L	-79.9	BOOCE411	352.6	46.7	96.6	01	-1.8	-1.1	-1.1	-1.5	-1.8	-1.8					P
230	L	-67.1	LOOCE511	398.2	67.6	45.4	02	-0.6	-0.4	-0.2	0.0	-0.6	-0.7					P
231	L	-104.9	LOONO611	423.2	28.6	196.6	01	-2.7	-2.4	-1.7	-2.4	-2.8	-1.8					P
232	L	-87.1	LOONO711	445.9	50.3	125.4	02	-5.7	-3.6	-2.5	-1.4	-2.0	-5.0					P
233	L	-86.9	LOONO811	280.9	63.4	64.6	01	-1.6	-4.3	-6.0	-6.2	-1.0	-1.5	-0.9				P
239	L	-80.1	BOOSE911	212.1	40.0	97.4	02	-3.8	-4.6	-1.5	-1.0	-3.9	-4.9					P
226	L	-96.9	BOOSU111	205.0	27.3	164.6	01	-1.7	-1.6	-3.9	-4.1	-2.7	-2.5					P
227	L	-97.1	BOOSU211	201.4	22.2	165.4	02	-3.9	-3.7	-3.5	-2.4	-2.2	-3.1	-3.9				P
4	CAN	-150.9	CAN00001	122.2	8.5	20.6	01	0.4	-1.0	-0.8	-0.3	-2.1	-0.6	0.0	0.4	0.2		P
5	CAN	-151.1	CAN00002	108.3	7.4	141.4	02	0.5	0.8	0.0	-1.0	-0.5	-0.7	-0.3				P
6	CAN	-126.9	CAN00003	120.2	8.3	44.6	01	0.7	-0.7	-1.8	-0.4	-1.6	-0.2	0.8				P
7	CAN	-127.1	CAN00004	212.6	4.8	165.4	02	-0.1	0.2	0.7	0.2	0.8	0.6	0.8	-0.9	0.2	0.7	P
8	CAN	-92.9	CAN00005	226.9	9.4	28.6	01	1.0	0.3	-0.3	-1.3	-1.4	-1.5	-0.8	-0.3	0.2	0.5	P
9	CAN	-93.1	CAN00006	135.3	17.2	117.4	02	-0.3	0.8	0.7	0.7	1.3	-0.3	-0.9	0.2			P
210	CHL	-101.1	CHLCONT4	52.0	42.0	121.4	02	-4.2	-3.4	-1.4	-1.3	-1.6	-3.2					P
211	CHL	-100.9	CHLCONT5	64.9	32.1	120.6	01	0.5	4.1	3.1	2.9	2.7	-0.6					P
212	CHL	-101.1	CHLCONT6	168.7	5.7	121.4	02	0.5	2.3	4.6	4.8	3.5	3.4	3.5	0.8	0.1		P
200	CHL	-100.9	CHLPAC02	32.9	44.4	120.6	01	4.7	4.6	5.5	6.4	5.3	5.4					P
220	CLM	-113.9	CLMAND01	733.7	35.9	112.6	01	-0.6	-0.7	-0.8	-0.2	-0.6	-1.0	-2.1	-0.9	-0.4	0.1	P
11	CLM	-105.1	CLM00001	678.9	45.6	77.4	02	-0.1	-0.2	0.1	0.6	0.0	-0.2	-1.5	-0.5	-0.8	1.0	P
124	JMC	-90.9	CRBAH01	80.3	54.9	20.6	01	2.7	3.0	2.5	1.6	1.4	2.8	3.1				P
251	JMC	-90.9	CRLLER01	11.1	42.9	20.6	01	-3.3	-3.3	-3.2	-3.2	-3.2	-3.1	-3.2				P
123	JMC	-90.9	CRBELZ01	19.4	68.0	-39.4	01	2.9	4.3	4.1	4.5	4.9	4.5					P
125	JMC	-90.9	CRBEC001	352.3	47.7	20.6	01	-2.0	-3.4	-3.7	-1.7	-1.7	-2.0	-2.6	-3.8			P
122	JMC	-90.9	CRBJMC01	67.9	64.6	20.6	01	0.9	0.9	-0.3								P
257	CTR	-135.1	CTR00201	107.2	29.3	197.4	02	-7.4	-6.5	-7.0	-5.9	-6.2						P
12	CUB	-112.1	CUL00J01	88.1	41.0	105.4	02	-2.7	-3.0	-3.1	-2.9	-3.7	-3.7	-3.4	-3.2	-3.1	-2.4	P
118	DMA	-77.9	DMAIFRM1	16.8	63.3	28.6	01	-3.5	-3.5	-3.7	-3.9							P

ESCENARIO/ SCENARIO: DPLAN3R2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE 830709 0002

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
259	DOM	-112.1	DOMIFRD2	41.4	35.9	105.4	02	-2.6	-2.3	-3.5	-3.1	-1.5						P
221	EQA	-113.9	EQACAND1	125.6	45.2	112.6	01	1.4	1.5	0.9	0.8	1.2	1.0	1.3	1.6	1.6	1.3	P
98	EQA	-95.1	EQAC0001	126.6	66.7	37.4	02	2.7	2.4	1.6	1.7	2.8	3.9	4.4	4.3	4.0	3.1	P
222	EQA	-113.9	EQACAND1	37.1	60.5	52.6	01	3.3	2.6	2.7	2.3	2.7	3.2					P
99	EQA	-95.1	EQAG0001	38.6	82.4	-22.6	02	8.6	8.1	8.3	8.3	8.6	8.6					P
243	G	-56.9	FLEANT01	90.3	13.6	-55.4	01	9.6	9.9	8.3	9.8	10.8	8.3	10.0				P
19	G	-30.9	FLEFALKS	15.1	24.1	-159.4	01	8.7	9.2	8.7	9.1	8.8	8.3					P
58	GRD	-38.1	GRD00002	17.9	58.8	-130.6	02	2.0	1.9	2.1	1.7							P
59	GRD	-77.9	GRD00003	17.1	65.6	28.6	01	-4.8	-4.8	-4.8	-5.4							P
13	DNK	-55.1	GRLDNK01	80.2	3.1	-2.6	02	8.1	8.1	8.1	8.7	8.6	8.2	8.2	8.5	9.5	9.7	P
255	GTM	-134.9	GTMIFRD2	52.3	34.5	136.6	01	1.2	1.3	1.9	0.2	2.1						P
127	F	-54.9	GUFING02	255.6	66.7	-3.4	01	3.1	3.2	3.2	4.4	4.5	4.5	4.4	3.5			P
267	GUY	-71.9	GUY00201	101.3	71.3	32.6	01	1.0	1.6	2.1	1.7	2.5	1.3					P
274	GUY	-37.9	GUY00302	101.1	61.9	-163.4	01	0.7	1.3	1.7	1.8	2.0	1.1					P
253	HND	-134.9	HNDIFRD2	101.9	29.1	136.6	01	-2.8	-3.4	-3.9	-3.0							P
258	HTI	-112.1	HTI00002	31.3	38.9	105.4	02	-3.0	-2.7	-3.7	-2.7	-2.8	-2.4	-2.3				P
75	USA	-161.1	HWA00002	93.1	52.4	1.4	02	9.0	8.8	8.7	9.0	9.0	9.3	8.0				P
21	G	-78.1	IOBFVIRG	10.2	62.9	29.4	02	3.8	3.6	3.6	3.6	3.7	3.7					P
22	G	-99.1	IOBCAYLA	19.1	58.0	53.4	02	-2.1	-2.1	-2.1	-2.4	-2.5	-2.7					P
245	G	-78.1	IOBENN01	16.3	62.7	29.4	02	1.7	1.8	1.4	1.5							P
24	G	-78.1	IOBMONTE	17.3	62.4	29.4	02	0.9	0.8	0.9	0.8	0.7	0.8					P
26	G	-99.1	IOBTURCA	20.6	49.7	53.4	02	0.3	0.5	1.0	1.1	1.2	1.3	0.7	1.1			P
240	JMC	-91.1	JMC00002	23.0	62.6	21.4	02	-1.7	-1.5	-0.7	-0.7	-0.9	-0.8	-1.9	-1.2			P
273	JMC	-37.9	JMC00005	25.8	39.4	-191.4	01	3.6	3.4	3.6	4.0	3.7	3.9	3.5	3.7			P
117	LCA	-77.9	LCAIFRD1	16.4	64.4	28.6	01	-2.9	-3.1	-2.6	-2.8							P
215	MEX	-121.9	MEXO1NTE	302.7	48.7	24.6	01	2.2	2.3	1.6	0.5	-0.9	-0.3	0.9	2.3			P
216	MEX	-122.1	MEXO1SUR	404.8	42.2	25.4	02	0.7	0.3	-0.4	-1.3	-1.0	-0.2	0.3				P
256	NCG	-134.9	NCG00003	126.3	29.2	136.6	01	-5.4	-5.1	-4.9	-5.1	-5.2	-6.7	-7.8	-6.7			P
204	CHL	-100.9	PARPAC01	10.0	56.1	120.6	01	8.4	8.5	8.5	8.3							P
254	PNR	-135.1	PNRIFRD2	134.9	24.1	197.4	02	-6.8	-6.2	-5.9	-5.9	-5.8	-6.2					P
265	PRG	-70.1	PRG00002	72.8	54.6	-2.6	02	1.1	-0.9	-0.9	-0.3	-0.7	-0.1	-0.7	-0.2	-0.2	-0.8	P
129	PRU	-113.9	PRUAND02	574.5	36.5	112.6	01	-4.4	-5.1	-3.9	-2.3	-3.1	-2.0	-1.8	-1.9	-1.9	-2.7	P
130	PRU	-120.1	PRU00003	565.3	30.4	137.4	02	-5.8	-5.1	-2.9	0.3	-0.5	1.0	1.5	1.6	1.8	-0.6	P
77	USA	-124.9	PTRVIRG1	46.4	19.9	156.6	01	0.0	0.0	0.1	0.0	0.1	-0.1	-0.6	-0.6			P
260	SLV	-134.9	SLVIFRD2	55.3	34.3	136.6	01	-1.2	-2.5	-2.1	-1.4							P
206	F	-55.1	SPMFRAL3	103.5	30.5	-62.6	02	6.7	6.3	5.1	4.3	3.8	5.4					P
128	SUR	-71.9	SURINAL2	59.5	68.1	24.6	01	1.9	2.5	1.5	3.0	2.1	1.8	2.6				P
78	TRD	-91.1	TRD00001	21.5	52.3	81.4	02	-5.6	-5.2	-4.9	-4.5	-4.7	-4.3	-4.4	-4.5	-5.1	-4.4	P
32	URG	-69.9	URG00001	33.7	46.3	56.6	01	2.4	2.3	2.2	1.6	1.5	0.2	0.1	1.8	1.8	1.9	P
67	USA	-108.1	USACSA02	789.8	32.0	29.4	02	-1.2	-1.4	-1.8	-3.0	-2.7	-0.2	0.4	0.4	0.2	-0.6	P
65	USA	-107.9	USAESA02	642.6	23.6	88.6	01	-0.4	-0.4	-0.1	-2.6	-1.6	-0.4	-1.1	-1.5			P
69	USA	-141.1	USAMSA02	485.2	20.1	101.4	02	-1.0	-0.1	0.3	0.6	0.5	0.8	-0.5	-0.9	-1.3		P

ESCENARIO/ SCENARIO: DPLAN3R2 SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE 830709 0003

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10
71	USA	-140.9	USAPSA02	294.3	26.9	40.6	01	-1.1	-0.4	-1.5	-0.2	-0.1	0.8	0.5	0.4			P
271	VCT	-77.9	VCT00001	16.2	65.0	28.6	01	-4.4	-4.5	-4.5	-4.5	-4.5	-4.4					P
269	VEN	-113.9	VENANDC2	798.4	28.0	140.6	01	-2.5	-2.6	-2.9	-3.0	-2.4	-2.6	-2.8	-2.7	-2.8	-2.7	P
57	VEN	-82.9	VEN02VEN	17.8	60.6	16.6	01	-3.9	-4.2	-4.4	-4.1	-3.6	-3.6					P
270	VEN	-82.9	VEN11VEN	472.9	61.5	16.6	01	1.0	0.9	-4.1	-3.3	-2.9	-2.3	-5.3	-1.1	0.4	0.9	P

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-160.00	01	58.47	-149.08	3.819	1.285	172.86	- E	59.7
261	ARGINSU2	-84.00	01	-65.04	-65.19	0.872	0.800	17.04	- E	59.4
262	ARGNORT2	-86.00	02	-29.92	-63.54	3.886	2.194	47.84	+ E	65.0
263	ARGSUR02	-84.00	01	-42.92	-64.83	3.203	1.726	40.76	- E	60.5
264	ATGSJN01	-78.00	02	17.08	-61.79	0.800	0.800	10.94	+ E	58.5
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.800	39.26	- E	61.2
228	B CE311	-66.00	01	-6.07	-40.73	2.951	2.071	175.43	- E	61.9
229	B CE411	-80.00	01	-15.39	-51.29	3.739	1.185	51.02	- E	63.4
230	B CE511	-68.00	02	-2.97	-53.14	2.406	2.104	103.82	+ E	63.4
231	B NO611	-104.00	01	-11.57	-60.19	1.860	1.615	143.80	- E	65.9
232	B NO711	-88.00	02	-1.67	-60.94	3.351	1.611	120.26	+ E	63.6
233	B NO811	-86.00	01	-4.73	-68.81	2.399	1.526	72.25	- E	63.3
239	B SE911	-80.00	02	-18.89	-45.52	2.465	1.315	53.17	+ E	62.6
226	B SU111	-96.00	01	-25.67	-51.35	2.671	0.803	52.90	- E	64.2
227	B SU211	-98.00	02	-16.75	-44.93	2.961	0.933	65.28	+ E	64.8
115	BAHIFRB1	-100.00	02	24.09	-76.01	1.756	0.800	138.10	+ E	62.2
018	BERBERMU	-98.00	01	32.32	-64.77	0.800	0.800	90.00	- E	57.0
244	BERBER02	-30.00	01	32.32	-64.77	0.800	0.800	90.00	- E	57.0
097	BLZ00001	-100.00	02	17.27	-88.72	0.800	0.800	90.00	+ E	58.9
219	BOLAND01	-114.00	01	-16.79	-65.00	2.500	1.309	76.38	- E	68.0
121	BOL00001	-114.00	02	-16.79	-65.00	2.500	1.309	76.38	+ E	68.0
063	BRB00001	-92.00	02	13.14	-59.65	0.800	0.800	90.00	+ E	59.1
004	CAN00001	-150.00	01	57.16	-126.87	3.767	0.993	154.90	- E	59.6
005	CAN00002	-152.00	02	56.59	-113.54	3.658	0.800	151.50	+ E	60.1
006	CAN00003	-126.00	01	57.06	-101.89	3.479	0.960	153.52	- E	60.0
007	CAN00004	-128.00	02	51.90	-89.41	4.655	0.810	148.10	+ E	62.0
008	CAN00005	-92.00	01	53.77	-72.78	3.600	1.641	156.06	- E	60.3
009	CAN00006	-94.00	02	49.62	-62.04	2.893	1.105	143.23	+ E	60.7

SCENARIO: DPLAN3R2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN3R2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
210	CHLCONT4	-102.00	02	-23.05	-69.59	2.186	0.800	68.16	+ E	59.2
211	CHLCONT5	-100.00	01	-35.59	-72.10	2.573	0.800	57.98	- E	59.4
212	CHLCONT6	-102.00	02	-55.58	-72.81	3.451	1.438	40.72	+ E	59.8
200	CHLPAC02	-100.00	01	-30.04	-79.89	1.371	0.800	70.71	- E	59.2
220	CLMAND01	-114.00	01	5.93	-74.72	3.852	1.673	114.18	- E	65.0
011	CLM00001	-106.00	02	5.91	-74.56	3.951	1.891	117.17	+ E	64.0
124	CRBBAH01	-90.00	01	24.17	-76.14	1.910	0.800	142.55	- E	61.6
251	CRBBER01	-90.00	01	32.24	-64.63	0.800	0.800	90.00	- E	56.8
123	CRBBLZ01	-90.00	01	17.54	-88.81	0.800	0.800	79.98	- E	59.3
125	CRBEC001	-90.00	01	8.12	-59.96	4.282	0.876	114.85	- E	64.2
122	CRBJMC01	-90.00	01	17.41	-77.82	2.902	0.800	152.40	- E	59.1
257	CTR00201	-136.00	02	9.67	-84.34	0.800	0.800	116.66	+ E	66.7
012	CUB00001	-112.00	02	21.50	-79.65	1.821	0.800	164.87	+ E	62.3
118	DMAIFRB1	-78.00	01	15.35	-61.30	0.800	0.800	90.00	- E	58.6
259	DOMIFRB2	-112.00	02	18.99	-70.26	0.800	0.800	130.39	+ E	62.5
221	EQACAND1	-114.00	01	-1.57	-78.41	1.394	0.957	73.76	- E	64.2
098	EQAC0001	-96.00	02	-1.51	-78.33	1.477	1.142	63.72	+ E	63.2
222	EQAGAND1	-114.00	01	-0.58	-90.38	0.923	0.802	92.79	- E	61.4
099	EQAG0001	-96.00	02	-0.57	-90.36	0.938	0.885	99.04	+ E	61.1
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.800	12.17	- E	59.5
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.800	0.800	90.00	- E	58.2
058	GRD00002	-38.00	02	12.29	-61.58	0.800	0.800	90.00	+ E	58.9
059	GRD00003	-78.00	01	12.34	-61.62	0.800	0.800	90.00	- E	58.7
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.800	171.69	+ E	60.1
255	GTMIFRB2	-134.00	01	15.57	-90.50	0.963	0.800	102.91	- E	62.8
127	GUFMGG02	-54.00	01	7.84	-56.01	4.444	0.800	123.60	- E	62.7
267	GUY00201	-72.00	01	4.74	-59.04	1.463	0.931	102.43	- E	63.2
274	GUY00302	-38.00	01	4.77	-59.09	1.438	0.887	91.22	- E	63.4

(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6		7	8	9	10
253	HNDIFRB2	-134.00	01	15.16	-86.27	0.835	0.800	107.70	-	E	66.3
258	HTI00002	-112.00	02	18.91	-73.29	0.800	0.800	90.00	+	E	61.3
075	HWA00002	-162.00	02	23.36	-165.60	4.130	0.800	159.73	+	E	58.9
021	IOBBVIRG	-78.00	02	18.55	-64.51	0.800	0.800	90.00	+	E	58.5
022	IOBCAYMA	-100.00	02	19.57	-80.58	0.800	0.800	90.00	+	E	59.2
245	IOBKN001	-78.00	02	17.42	-62.50	0.800	0.800	90.00	+	E	58.5
024	IOBMONTE	-78.00	02	16.75	-61.73	0.800	0.800	90.00	+	E	58.8
026	IOBTURCA	-100.00	02	21.61	-71.71	0.800	0.800	90.00	+	E	59.5
246	JMC00002	-92.00	02	18.12	-77.30	0.800	0.800	90.00	+	E	60.0
273	JMC00005	-38.00	01	18.12	-77.27	0.800	0.800	90.00	-	E	60.5
117	LCAIFRB1	-78.00	01	13.90	-61.15	0.800	0.800	90.00	-	E	58.5
215	MEX01NTE	-122.00	01	26.11	-106.85	4.024	1.739	153.38	-	E	60.8
216	MEX01SUR	-122.00	02	19.77	-96.21	3.206	2.021	164.12	+	E	62.4
256	NCG00003	-134.00	01	12.93	-85.06	0.989	0.800	105.15	-	E	66.5
204	PAOPAC01	-100.00	01	-27.53	-109.18	0.800	0.800	90.00	-	E	56.4
254	PNR1FRB2	-136.00	02	8.42	-80.32	0.800	0.800	137.40	+	E	67.7
265	PRG00002	-70.00	02	-23.26	-58.53	1.586	1.381	140.95	+	E	59.7
129	PRUAND02	-114.00	01	-8.36	-74.68	3.437	1.821	95.59	-	E	64.1
130	PRU00003	-120.00	02	-8.34	-74.88	3.393	1.594	92.44	+	E	64.6
077	PTRVIR01	-124.00	01	18.12	-65.87	0.800	0.800	90.00	-	E	63.0
260	SLVIFRB2	-134.00	01	13.82	-88.78	0.800	0.800	90.00	-	E	63.8
206	SPMFRAN3	-56.00	02	47.49	-67.26	3.162	0.810	6.17	+	E	60.5
128	SURINAM2	-72.00	01	4.44	-55.71	1.048	0.800	78.71	-	E	63.0
078	TRD00001	-92.00	02	10.70	-61.23	0.800	0.800	90.00	+	E	59.7
032	URG00001	-70.00	01	-32.50	-56.17	1.020	0.896	13.31	-	E	60.1
067	USACSA02	-108.00	02	36.32	-96.56	4.054	2.888	149.18	+	E	62.7
065	USAESA02	-108.00	01	37.51	-81.45	4.268	2.566	122.54	-	E	62.1
069	USAMSA02	-142.00	02	37.08	-106.60	4.724	1.898	135.29	+	E	61.8

SCENARIO: DPLAN3R2 DOWNLINK PLAN LAYOUT 07/09/83 004

SCENARIO: DPLAN3R2 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES

ESCENARIO:DPLAN3R2 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS

(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6		7	8	9	10
071	USAPSA02	-140.00	01	40.00	-116.06	3.647	1.605	135.49	-	E	61.5
271	VCT00001	-78.00	01	13.23	-61.21	0.800	0.800	89.80	-	E	58.5
269	VENAND02	-114.00	01	8.54	-67.31	2.885	1.471	99.68	-	E	67.2
057	VEN02VEN	-82.00	01	15.48	-63.50	0.800	0.800	90.00	-	E	58.9
270	VEN11VEN	-82.00	01	6.82	-66.43	2.796	2.134	145.58	-	E	63.4

SCENARIO: DPLAN3R2 FEEDERLINK PLAN LAYOUT 07/09/83 007 P
SCÉNARIO: DPLAN3R2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN3R2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-160.00	01	58.47	-149.08	3.819	1.285	172.86	- P	1000.
261	ARGINSU2	-84.00	01	-65.04	-65.19	0.872	0.681	17.04	- P	1000.
262	ARGNORT2	-86.00	02	-29.92	-63.54	3.886	2.194	47.84	+ P	1000.
263	ARGSUR02	-84.00	01	-42.92	-64.83	3.203	1.726	40.76	- P	1000.
264	ATGSJN01	-78.00	02	17.08	-61.79	0.600	0.600	10.94	+ P	1000.
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.681	39.26	- P	1000.
228	B CE311	-66.00	01	-6.07	-40.73	2.951	2.071	175.43	- P	1000.
229	B CE411	-80.00	01	-15.39	-51.29	3.739	1.185	51.02	- P	1000.
230	B CE511	-68.00	02	-2.97	-53.14	2.406	2.104	103.82	+ P	1000.
231	B NO611	-104.00	01	-11.57	-60.19	1.860	1.615	143.80	- P	1000.
232	B NO711	-88.00	02	-1.67	-60.94	3.351	1.611	120.26	+ P	1000.
233	B NO811	-86.00	01	-4.73	-68.81	2.399	1.526	72.25	- P	1000.
239	B SE911	-80.00	02	-18.89	-45.52	2.465	1.315	53.17	+ P	1000.
226	B SU111	-96.00	01	-25.67	-51.35	2.671	0.803	52.90	- P	1000.
227	B SU211	-98.00	02	-16.75	-44.93	2.961	0.933	65.28	+ P	1000.
115	BAHIFRB1	-100.00	02	24.09	-76.01	1.756	0.681	138.10	+ P	1000.
018	BERBERMU	-98.00	01	32.32	-64.77	0.600	0.600	90.00	- P	1000.
244	BERBER02	-30.00	01	32.32	-64.77	0.600	0.600	90.00	- P	1000.
097	BLZ00001	-100.00	02	17.27	-88.72	0.637	0.637	90.00	+ P	1000.
219	BOLAND01	-114.00	01	-16.79	-65.00	2.500	1.309	76.38	- P	1000.
121	BOL00001	-114.00	02	-16.79	-65.00	2.500	1.309	76.38	+ P	1000.
063	BRB00001	-92.00	02	13.14	-59.65	0.600	0.600	90.00	+ P	1000.
004	CAN00001	-150.00	01	57.16	-126.87	3.767	0.993	154.90	- P	1000.
005	CAN00002	-152.00	02	56.59	-113.54	3.658	0.731	151.50	+ P	1000.
006	CAN00003	-126.00	01	57.06	-101.89	3.479	0.960	153.52	- P	1000.
007	CAN00004	-128.00	02	51.90	-89.41	4.655	0.810	148.10	+ P	1000.
008	CAN00005	-92.00	01	53.77	-72.78	3.600	1.641	156.06	- P	1000.
009	CAN00006	-94.00	02	49.62	-62.04	2.893	1.105	143.23	+ P	1000.

1	2	3	4	5	6	7	8	9	10
210	CHLCONT4	-102.00	02	-23.05	-69.59	2.186	0.740	68.16	+ P	1000.
211	CHLCONT5	-100.00	01	-35.59	-72.10	2.573	0.681	57.98	- P	1000.
212	CHLCONT6	-102.00	02	-55.58	-72.81	3.451	1.438	40.72	+ P	1000.
200	CHLPAC02	-100.00	01	-30.04	-79.89	1.371	0.681	70.71	- P	1000.
220	CLMAND01	-114.00	01	5.93	-74.72	3.852	1.673	114.18	- P	1000.
011	CLM00001	-106.00	02	5.91	-74.56	3.951	1.891	117.17	+ P	1000.
124	CRBBAH01	-90.00	01	24.17	-76.14	1.910	0.648	142.55	- P	1000.
251	CRBBER01	-90.00	01	32.24	-64.63	0.600	0.600	90.00	- P	1000.
123	CRBBLZ01	-90.00	01	17.54	-88.81	0.757	0.600	79.98	- P	1000.
125	CRBEC001	-90.00	01	8.12	-59.96	4.282	0.876	114.85	- P	1000.
122	CRBJMC01	-90.00	01	17.41	-77.82	2.902	0.600	152.40	- P	1000.
257	CTR00201	-136.00	02	9.67	-84.34	0.796	0.681	116.66	+ P	1000.
012	CUB00001	-112.00	02	21.50	-79.65	1.821	0.681	164.87	+ P	1000.
118	DMAIFRB1	-78.00	01	15.35	-61.30	0.600	0.600	90.00	- P	1000.
259	DOMIFRH2	-112.00	02	18.99	-70.26	0.783	0.681	130.39	+ P	1000.
221	EQACAND1	-114.00	01	-1.57	-78.41	1.394	0.957	73.76	- P	1000.
098	EQAC0001	-96.00	02	-1.51	-78.33	1.477	1.142	63.72	+ P	1000.
222	EQAGAND1	-114.00	01	-0.58	-90.38	0.923	0.802	92.79	- P	1000.
099	EQAG0001	-96.00	02	-0.57	-90.36	0.938	0.885	99.04	+ P	1000.
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.681	12.17	- P	1000.
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.600	0.600	90.00	- P	1000.
058	GRD00002	-38.00	02	12.29	-61.58	0.600	0.600	90.00	+ P	1000.
059	GRD00003	-78.00	01	12.34	-61.62	0.600	0.600	90.00	- P	1000.
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.794	171.69	+ P	1000.
255	GTMIFRB2	-134.00	01	15.57	-90.50	0.963	0.681	102.91	- P	1000.
127	GUFMGG02	-54.00	01	7.84	-56.01	4.444	0.763	123.60	- P	1000.
267	GUY00201	-72.00	01	4.74	-59.04	1.463	0.931	102.43	- P	1000.
274	GUY00302	-38.00	01	4.77	-59.09	1.438	0.887	91.22	- P	1000.

SCENARIO: DPLAN3R2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN3R2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
253	HNDIFRB2	-134.00	01	15.16	-86.27	0.835	0.752	107.70	- P	1000.
258	HTI00002	-112.00	02	18.91	-73.29	0.626	0.626	90.00	+ P	1000.
075	HWA00002	-162.00	02	23.36	-165.60	4.130	0.681	159.73	+ P	1000.
021	IOBBVIRG	-78.00	02	18.55	-64.51	0.600	0.600	90.00	+ P	1000.
022	IOBCAYMA	-100.00	02	19.57	-80.58	0.600	0.600	90.00	+ P	1000.
245	IOBKN001	-78.00	02	17.42	-62.50	0.600	0.600	90.00	+ P	1000.
024	IOBMONTE	-78.00	02	16.75	-61.73	0.600	0.600	90.00	+ P	1000.
026	IOBTURCA	-100.00	02	21.61	-71.71	0.600	0.600	90.00	+ P	1000.
246	JMC00002	-92.00	02	18.12	-77.30	0.617	0.617	90.00	+ P	1000.
273	JMC00005	-38.00	01	18.12	-77.27	0.600	0.600	90.00	- P	1000.
117	LCAIFRB1	-78.00	01	13.90	-61.15	0.600	0.600	90.00	- P	1000.
215	MEX01NTE	-122.00	01	26.11	-106.85	4.024	1.739	153.38	- P	1000.
216	MEX01SUR	-122.00	02	19.77	-96.21	3.206	2.021	164.12	+ P	1000.
256	NCG00003	-134.00	01	12.93	-85.06	0.989	0.685	105.15	- P	1000.
204	PAQPAC01	-100.00	01	-27.53	-109.18	0.600	0.600	90.00	- P	1000.
254	PNRIFRB2	-136.00	02	8.42	-80.32	0.767	0.681	137.40	+ P	1000.
265	PRG00002	-70.00	02	-23.26	-58.53	1.586	1.381	140.95	+ P	1000.
129	PRUAND02	-114.00	01	-8.36	-74.68	3.437	1.821	95.59	- P	1000.
130	PRU00003	-120.00	02	-8.34	-74.88	3.393	1.594	92.44	+ P	1000.
077	PIRVIR01	-124.00	01	18.12	-65.87	0.600	0.600	90.00	- P	1000.
260	SLVIFRB2	-134.00	01	13.82	-88.78	0.600	0.600	90.00	- P	1000.
206	SPMFRAN3	-56.00	02	47.49	-67.26	3.162	0.810	6.17	+ P	1000.
128	SURINAM2	-72.00	01	4.44	-55.71	1.048	0.743	78.71	- P	1000.
078	TRD00001	-92.00	02	10.70	-61.23	0.600	0.600	90.00	+ P	1000.
032	URG00001	-70.00	01	-32.50	-56.17	1.020	0.896	13.31	- P	1000.
067	USACSA02	-108.00	02	36.32	-96.56	4.054	2.888	149.18	+ P	1000.
065	USAESA02	-108.00	01	37.51	-81.45	4.268	2.566	122.54	- P	1000.
069	USAMSA02	-142.00	02	37.08	-106.60	4.724	1.898	135.29	+ P	1000.

SCENARIO: DPLAN3R2 FEEDERLINK PLAN LAYOUT 07/09/83 00K //
SCENARIO: DPLAN3R2 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO: DPLAN3R2 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5		6		7	8	9	10
071	USAPSA02	-140.00	01	40.00	-116.06	3.647	1.605	135.49	-	P	1000.
271	VCT00001	-78.00	01	13.23	-61.21	0.600	0.600	89.80	-	P	1000.
269	VENAND02	-114.00	01	8.54	-67.31	2.885	1.471	99.68	-	P	1000.
057	VEN02VEN	-82.00	01	15.48	-63.50	0.600	0.600	90.00	-	P	1000.
270	VEN11VEN	-82.00	01	6.82	-66.43	2.796	2.134	145.58	-	P	1000.

PARAMETRES TECHNIQUES RAPPORT 1
- VALEURS PAR DEFAUT.

* CLE DU SCENARIO: DPLAN3R2 * DATE 07/09/83

1.1 CARECTERISTIQUES NOMINALES DU TERMINAL DE RECEPTION

CLE DE L'ANTENNE	AY01	
DESCRIPTION DE L'ANTENNE: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DU RECEPTEUR (MERIT OU TEMPERATURE)	10.0	DBK-1
DIAMETRE DE L'ANTENNE DE RECEPTION	1.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC1	
CLE DE DIAGRAMME DE GAIN CONTRAPOLATAIRE	GYX1	

1.2 CARACTERSTIQUES NOMINALES DE L'ANTENNE D'EMISSION DU SATELLITE

CLE DE L'ANTENNE	AY02	
DESCRIPTION DE L'ANTENNE: RARC 83 SAT TX ANTENNA (JUNE 83)		
RENDEMENT	.55	
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC2	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GYX2	

1.3 CARACTERISTIQUES NOMINALES DE LA STATION TERRIENNE D'EMISSION

CLE DE L'ANTENNE	AR05	
DESCRIPTION DE L'ANTENNE: CPM FLT		
RENDEMENT	.64	
DIAMETRE	5.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC7	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX7	

1.4 CARACTERISTIQUES NOMINALES DE L'ANTENNE DE RECEPTION DU SATELLITE

CLE DE L'ANTENNE	AP18	
DESCRIPTION DE L'ANTENNE: CPM (JUN-JUL 82)		
TEMPERATURE DE BRUIT	1500.	K
NIVEAU FLUX A LA RECEPTION	1000.	W
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC5	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX5	

1.5 CARACTERISTIQUES DU PLAN

RAPORT PORTEUSE/BRUIT GLOBAL	14.0	DB
RAPPORT DE PROTECTION GLOBAL	28.	DB
CLE DE GABARIT DE RAPPORT DE PROTECTION	PY02	
CLE DE DISPOSITION DES VOIES-LIAISON DESC.	CY01	
-LIAIS.DE CONX.	CY51	
LARGEUR DE BANDE DE VOIE	24.	MHZ
ECARTEMENT DES VOIES	14.58	MHZ
LIAISON DESC. - BANDE DE GARDE: INFERIEURE	12.	MHZ
- BANDE DE GARDE: SUPERIEURE	12.	MHZ
LIAISON DE CONX. - BANDE DE GARDE: INFER.	12.	MHZ
- BANDE DE GARDE: SUPER.	12.	MHZ
FREQ. DE LA VOIE NO.1 - LIAISON DESC.	12.224	MHZ
- LIAISON DE CONX.	17.324	MHZ
NOMBRE TOTAL DE VOIES	32	
POLARISATION - LIAISON DESCENDANTE	C	
- LIAISON DE CONNEXION	C	
MODEL HYDROMETEOROLOGIQUE	R	

TECHNICAL PARAMETERS REPORT 1
- DEFAULT VALUES.

* SCENARIO KEY: DPLAN3R2 * DATE 07/09/83

1.1 RECEIVING EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AY01	
ANTENNA DESCRIPTION: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
RECEIVE G/T (MERIT OR TEMPERATURE)	10.0	DBK-1
RECEIVE ANTENNA (DIAMETER OR BEAMWIDTH)	1.0	M
CO-POLAR GAIN PATTERN KEY	GYC1	
CROSS-POLAR GAIN PATTERN KEY	GYX1	

1.2 SATELLITE TRANSMIT ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AY02	
ANTENNA DESCRIPTION: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFFICIENCY	.55	
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GYC2	
CROSS-POLAR GAIN PATTERN KEY	GYX2	

1.3 TRANSMIT EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AR05	
ANTENNA DESCRIPTION: CPM FLT		
EFFICIENCY	.64	
DIAMETER	5.0	M
CO-POLAR PATTERN KEY	GPC7	
CROSS-POLAR GAIN PATTERN KEY	GPX7	

1.4 SATELLITE RECEIVE ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AP18	
ANTENNA DESCRIPTION: CPM (JUN-JUL 82)		
NOISE TEMPERATURE	1500.	K
EIRP OR C/N OR PFD OR POWER	1000.	W
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GPC5	
CROSS-POLAR GAIN PATTERN KEY	GPX5	

1.5 PLAN CHARACTERISTICS

OVERALL C/N	14.0	DB
OVERALL AGGREGATE PROTECTION RATIO	28.	DB
PROTECTION RATIO TEMPLATE KEY	PY02	
DOWNLINK CHANNELIZATION KEY	CY01	
FEEDERLINK CHANNELIZATION KEY	CY51	
CHANNEL BANDWIDTH	24.	MHZ
CHANNEL SPACING	14.58	MHZ
DOWNLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
FEEDERLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
CHANNEL #1 FREQUENCY - DOWNLINK	12.224	MHZ
- FEEDERLINK	17.324	MHZ
TOTAL NUMBER OF CHANNELS	32	
DOWNLINK POLARIZATION	C	
FEEDERLINK POLARIZATION	C	
RAIN-MODEL	R	

INFORME NO.1 SOBRE PARAMETROS TECHNICOS
- VALORES SUPLETORIOS.

* CLAVE DE ESCENARIO: DPLAN3R2 * FECHA 07/09/83

1.1 CARACTERISTICAS NOMINALES DEL TERMINAL EN RECEPCION

CLAVE DE LA ANTENA	AY01	
DESCRIPCION DE LA ANTENA: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DEL RECEPTOR (TEMPERATURA)	10.0	DBK-1
DIAMETRO DE LA ANTENA RECEPTORA	1.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC1	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX1	

1.2 CARACTERISTICAS NOMINALES DE LA ANTENA TRANSMISORA DEL SATELITE

CLAVE DE LA ANTENA	AY02	
DESCRIPCION DE LA ANTENA: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFICACIA	.55	
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC2	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX2	

1.3 CARACTERISTICAS NOMINALES DEL TERMINAL TERRENO EN TRANSMISION

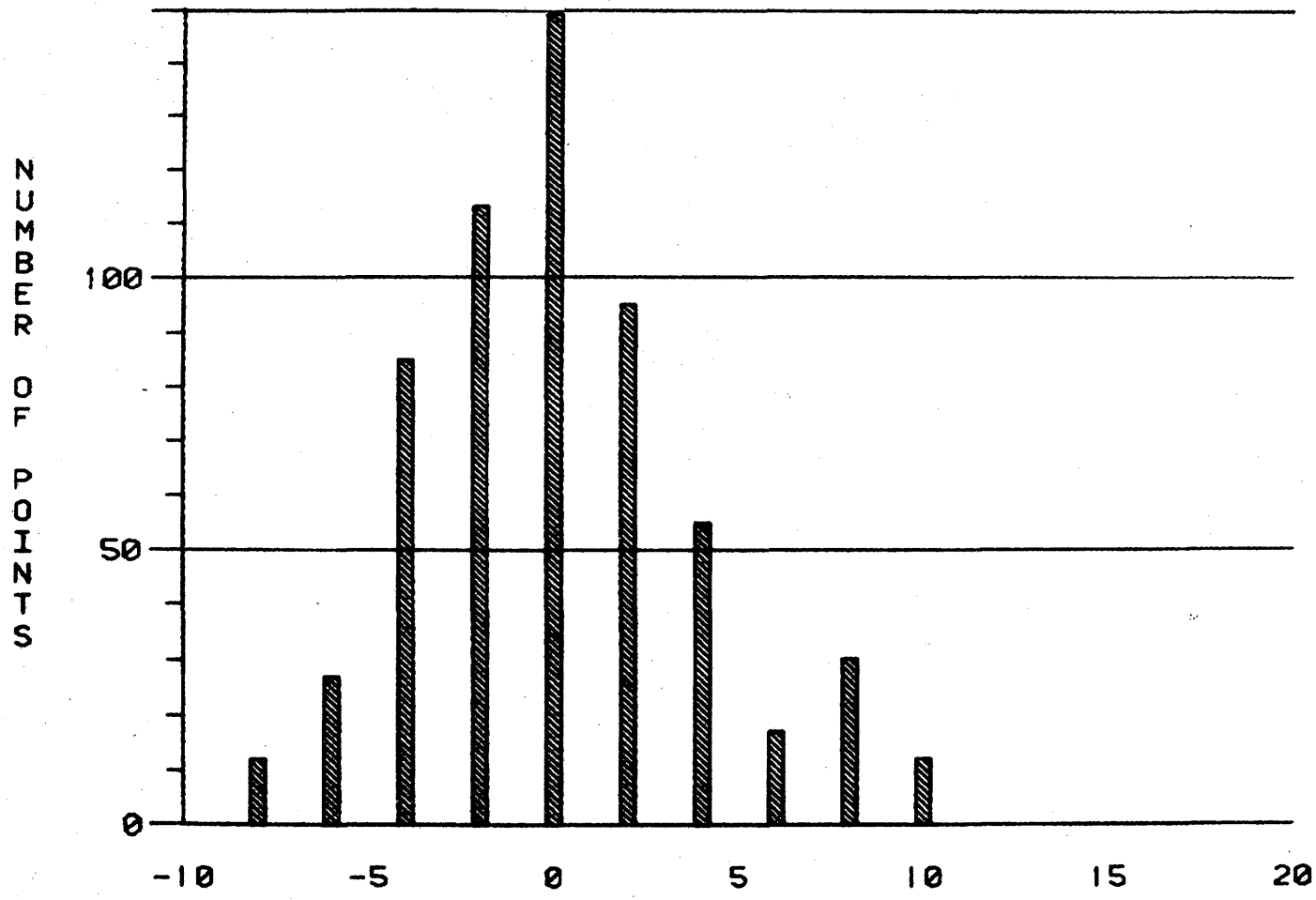
CLAVE DE LA ANTENA	AR05	
DESCRIPCION DE LA ANTENA: CPM FLT		
EFICACIA	.64	
DIAMETRO	5.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC7	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX7	

1.4 CARACTERISTICAS NOMINALES DE LA ANTENA RECEPTORA DEL SATELITE

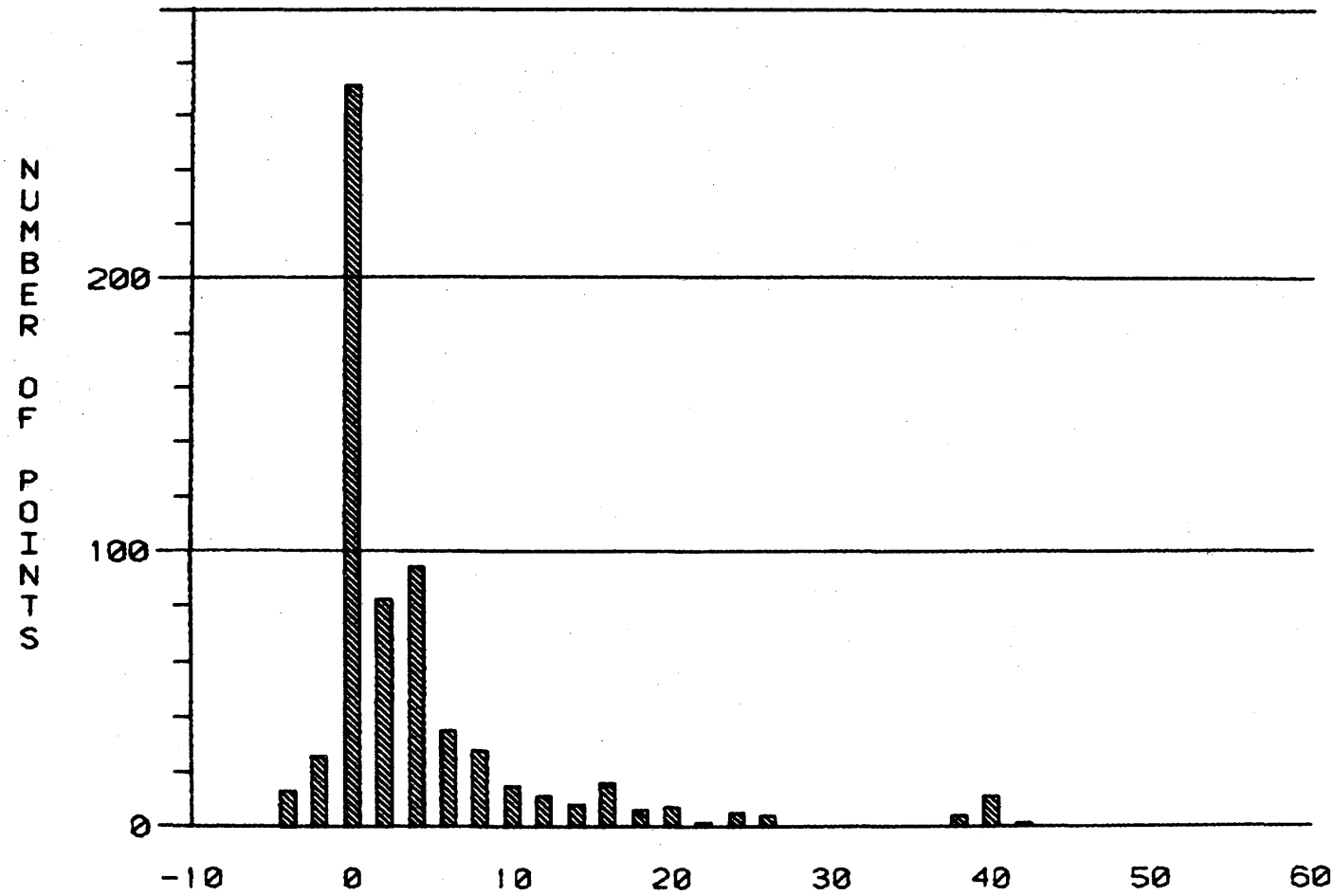
CLAVE DE LA ANTENA	AP18	
DESCRIPCION DE LA ANTENA: CPM (JUN-JUL 82)		
TEMPERATURA DE RUIDO	1500.	K
PIRE O C/N O DFP O POTENCIA	1000.	W
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC5	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX5	

1.5 CARACTERISTICAS DEL PLAN

RELACION PORTADORA/RUIDO GLOBAL	14.0	DB
RELACION DE PROTECCION TOTAL GENERAL	28.	DB
CLAVE DE PLANTILLA DE LA RELACION DE PROTEC.	PY02	
CLAVE DE DISPOSICION DE CANALES-ENLACE DESC.	CY01	
-ENL.DE CONX.	CY51	
ANCHURA DE BANDA DE CANAL	24.	MHZ
SEPARACION DE CANALES	14.58	MHZ
ENLACE DESC. - BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
ENLACE DE CONX.- BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
FRECUENCIA DEL CANAL NO.1 - ENLACE DESC.	12.224	MHZ
- ENL. DE CONX.	17.324	MHZ
NUMERO TOTAL DE CANALES	32	
POLARIZACION - ENLACE DESCENDENTE	C	
- ENLACE DE CONEXION	C	
MODELO DE LLUVIA	R	


NUMBER OF POINTS
100
50
0
-10
-5
0
5
10
15
20
MARGIN (OR DELTA MARGIN) DB

DPLAN3 REV 2



DPLAN 3 REV 2 / DPLAN 3

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

CONFÉRENCE DE RADIODIFFUSION PAR SATELLITE (RÉGION 2)

GENÈVE, 1983

Document N° 190-F/E/S
7 juillet 1983
Original : français
anglais
espagnol

COMMISSION 5
COMMITTEE 5
COMISIÓN 5

RESULTATS DU TROISIEME PROJET DE PLAN

RESULT FROM THE THIRD DRAFT PLAN

RESULTADOS DEL TERCER PROYECTO DE PLAN

Président du sous-Groupe de travail 5A-1

Chairman of Sub-Working Group 5A-1

Presidente del Subgrupo de Trabajo 5A-1

RAPPORT SUR LA MARGE TOTALE/TOTAL MARGIN REPORT/INFORME DEL MARGEN TOTAL

Col.	Description / Description / Descripción
1	Numéro de référence de l'IFRB de la zone de service qui subit un brouillage. IFRB reference number of service area subject to interference. Número de referencia de la IFRB de la zona de servicio sometida a interferencia.
2	Administration / Administration / Administración.
3	Position sur l'orbite / Orbital position / Posición orbital.
4	Identification du faisceau de la liaison descendante (zone de service). Downlink beam identification (service area). Identificación del haz del enlace descendente (zona de servicio).
5	Puissance aux bornes d'entrée de l'antenne du satellite (W). Satellite Antenna Input Power (W). Potencia de entrada de la antena de satélite (W).
6	Angle de site minimal dans la zone de service de la liaison descendante. Minimal elevation angle in downlink service area. Ángulo de elevación mínimo en la zona de servicio del enlace descendente.
7[1)]	Instant initial de l'éclipse solaire (en minutes à partir de minuit). Earliest onset of solar eclipse (in minutes from midnight). Primera aparición del eclipse solar (en minutos a partir de medianoche).
8[2)]	Famille de canaux de la liaïson descendante/Groupe de blocs. Downlink channel family/Blocking Group. Familia de canales del enlace descendente/Grupo de bloques.
9[3)]	Marge composite totale pour chaque point de mesure de la liaison descendante (dB) (9.1 à 9.10) Total aggregate margin for each downlink test point (dB)(9.1 to 9.10). Margen agregado total para cada punto de prueba del enlace descendente (dB)(9.1 y a 9.10).
10	P = points sur polygone / Polygon Points / Puntos de polígono T = points de mesure / Punto de polígono / Puntos de prueba

1) > o après minuit / after midnight / después de medianoche.
< o avant minuit / before midnight/ antes de medianoche.

2)

Famille / Family / Familia																
01	1	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31
02	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32

3) Marge composite totale - Différence entre C/I et le rapport de protection.
Total aggregate margin - Difference between C/I and the protection ratio.
Margen compuesto total - Diferencia entre C/I y sobre la relación de protección.

ESCENARIO/ SCENARIO: DPLAN3 SAT-R2 TOTAL MARGIN 830708 0001
MARGEN TOTAL
MARGE TOTALE

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10	
73	USA	-160.9	ALS00002	165.9	10.4	120.6	01	1.4	4.4	3.6	2.7	4.8	7.1	7.1					P
261	ARG	-83.9	ARGINSU2	21.7	9.9	52.6	01	-6.1	-6.4	-6.5									P
262	ARG	-84.1	ARGNORT2	957.7	38.4	53.4	02	-3.2	-2.8	-3.1	-4.9	-5.8	-4.7	-8.7	-7.8				P
263	ARG	-83.9	ARGSUR02	221.9	24.9	52.6	01	-8.7	-7.3	-6.5	-6.5	-6.5	-6.5						P
264	ATG	-80.1	ATGSJN01	16.6	60.9	37.4	02	-4.0	-4.0	-4.0	-4.0	-3.9							P
283	HOL	-54.9	ATNBEAM1	68.7	66.7	-63.4	01	1.9	1.9	1.9	1.9	1.8	1.9	1.9					P
115	BAH	-109.1	BAHIFRB1	90.3	41.1	93.4	02	-2.5	-1.1	-2.3	-4.0	-3.9	-3.0	-2.8					P
18	G	-108.9	BERBERMU	12.4	29.7	152.6	01	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5	-4.5					P
244	G	-30.9	BERBER02	11.5	37.6	-159.4	01	5.6	5.6	5.6	5.6	5.6	5.6	5.6					P
97	BLZ	-109.1	BLZ00001	17.9	57.6	33.4	02	-3.4	-2.6	-4.3	-4.1	-3.1	-2.2						P
219	BOL	-112.9	BOLAND01	708.8	24.8	168.6	01	-12.6	-12.6	-12.6	-12.9	-13.1	-12.4						P
121	BOL	-113.1	BOL00001	738.8	24.6	169.4	02	-7.3	-7.5	-7.4	-8.4	-9.0	-7.1						P
63	BRB	-89.9	BRB00001	18.2	51.6	76.6	01	-2.7	-2.7	-2.8	-2.9	-2.9	-2.9	-2.8					P
228	B	-70.9	BOOCE311	339.1	45.2	60.6	01	-0.5	0.8	0.8	-1.7	-3.0	0.3	0.6					P
229	B	-81.9	BOOCE411	351.6	44.6	104.6	01	-5.2	-4.5	-4.3	-2.8	-3.2	-3.3						P
230	B	-71.1	BOOCE511	401.9	62.9	61.4	02	-0.9	-0.7	-1.1	-0.2	-0.9	-1.0						P
231	B	-104.9	BOON0611	423.2	28.6	196.6	01	-3.1	-2.8	-2.3	-3.2	-3.2	-2.3						P
232	B	-88.1	BOON0711	451.0	49.2	129.4	02	-2.1	-2.3	-2.7	-1.1	-1.2	-2.3						P
233	B	-87.9	BOON0811	283.2	62.2	68.6	01	-1.1	-2.2	-2.0	-1.9	-0.5	-1.1	-0.7					P
239	B	-82.1	BOOSE911	212.6	38.1	105.4	02	-12.7	-13.8	-8.6	-6.1	-9.9	-13.8						P
226	B	-96.9	BOOSU111	205.0	27.3	164.6	01	-2.0	-1.9	-4.1	-4.3	-2.9	-2.9						P
227	B	-97.1	BOOSU211	301.4	22.2	165.4	02	-4.0	-3.8	-3.6	-2.7	-2.5	-3.2	-4.0					P
4	CAN	-150.9	CAN00001	122.2	8.5	20.6	01	-2.6	-3.4	-3.2	-3.0	-4.0	-3.2	-2.8	-2.6	-2.7			P
5	CAN	-151.1	CAN00002	108.3	7.4	141.4	02	-2.6	-2.5	-2.9	-3.4	-3.1	-3.2	-3.0					P
6	CAN	-126.9	CAN00003	120.2	8.3	44.6	01	-5.1	-5.5	-6.0	-5.4	-5.9	-5.4	-5.0					P
7	CAN	-127.1	CAN00004	212.6	4.8	165.4	02	-2.2	-2.0	-1.8	-2.1	-1.8	-2.0	-1.8	-2.9	-2.1	-1.7		P
8	CAN	-97.9	CAN00005	219.8	8.5	48.6	01	0.2	-0.3	-1.1	-2.4	-2.5	-2.7	-1.3	-1.0	-0.7	-0.4		P
9	CAN	-98.1	CAN00006	126.2	15.8	137.4	02	-1.2	-0.1	-0.5	-0.5	0.2	-1.1	-1.6	-0.5				P
210	CHL	-102.1	CHLCONT4	52.5	41.2	125.4	02	-5.9	-4.9	-1.7	-1.7	-2.1	-4.2						P
211	CHL	-101.9	CHLCONT5	64.6	31.6	124.6	01	-3.9	-0.1	-1.2	-1.2	-1.4	-4.7						P
212	CHL	-102.1	CHLCONT6	162.1	5.5	125.4	02	0.3	2.1	4.1	4.5	3.2	3.2	3.3	0.7	-0.1			P
200	CHL	-101.9	CHLPAC02	32.9	43.8	124.6	01	-1.4	-1.4	-1.4	-0.4	-2.4	-2.3						P
220	CLM	-112.9	CLMAND01	717.6	37.0	108.6	01	-15.0	-15.6	-14.2	-10.8	-10.8	-9.6	-9.7	-9.5	-9.5	-11.2		P
11	CLM	-105.1	CLM00001	678.9	45.6	77.4	02	1.4	1.4	0.2	0.6	-0.4	-0.2	-1.1	0.1	-0.1	1.5		P
124	JMC	-99.9	CRBBAH01	84.0	49.2	56.6	01	-5.3	-5.1	-14.4	-18.0	-17.4	-7.2	-5.1					P
251	JMC	-99.9	CRBBER01	11.9	36.6	56.6	01	-7.9	-7.9	-7.9	-8.0	-7.9	-7.8	-7.9					P
123	JMC	-99.9	CRBBLZ01	18.1	64.4	-3.4	01	-6.5	-5.4	-6.4	-6.1	-5.2	-5.0						P
125	JMC	-99.9	CRBEC001	396.4	37.7	56.6	01	-22.0	-23.7	-25.2	-20.0	-19.6	-20.3	-22.5	-24.5				P
122	JMC	-99.9	CRBJMC01	38.2	57.2	56.6	01	-12.7	-12.7	-20.3									P
257	CTR	-135.1	CTR00201	107.2	29.3	197.4	02	-7.4	-6.5	-7.0	-5.9	-6.1							P
12	CUB	-100.1	CUB00001	85.7	52.0	57.4	02	-5.4	-5.6	-5.4	-4.2	-1.9	-1.7	-1.6	-2.2	-3.3	-3.9		P
118	DMA	-79.9	DMAIFRB1	16.6	61.6	36.6	01	-1.0	-0.9	-1.0	-0.9								P

ESCENARIO/ SCENARIO: DPLAN3

SAT-R2 TOTAL MARGIN
MARGEN TOTAL
MARGE TOTALE

830708 0002

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10	
259	DOM	-90.1	DOMIFRB2	36.4	56.5	17.4	02	-1.0	-2.4	-3.4	-2.8	-0.7							P
221	EQA	-112.9	EQACAND1	126.1	46.3	108.6	01	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8		P
98	EQA	-95.1	EQAC0001	126.6	66.7	37.4	02	1.8	1.5	0.7	0.7	1.7	2.6	3.0	3.1	2.9	2.1		P
222	EQA	-112.9	EQAGAND1	37.1	61.7	48.6	01	-37.8	-37.8	-37.8	-37.8	-37.8	-37.8						P
99	EQA	-95.1	EQAG0001	38.6	82.4	-22.6	02	4.9	4.6	4.7	4.7	4.9	5.0						P
243	G	-56.9	FLKANT01	90.3	13.6	-55.4	01	9.5	9.7	8.3	9.8	10.7	8.4	9.8					P
19	G	-30.9	FLKFALKS	15.1	24.1	-159.4	01	8.7	9.2	8.7	9.1	8.8	8.3						P
58	GRD	-38.1	GRD00002	17.9	58.8	-130.6	02	2.3	2.1	2.3	2.0								P
59	GRD	-79.9	GRD00003	17.4	63.7	36.6	01	-0.9	-1.2	-0.8	-1.3								P
13	DNK	-55.1	GRLDNK01	80.2	3.1	-2.6	02	7.6	7.6	7.6	8.2	8.0	7.6	7.7	7.9	9.0	9.0		P
255	GTM	-134.9	GTMIFRB2	52.3	34.5	136.6	01	1.1	1.2	1.8	0.1	2.0							P
16	F	-54.9	GUFMGG01	250.7	66.7	-3.4	01	0.6	0.6	0.7	1.3	1.3	1.4	1.3	1.0	0.8			P
267	GUY	-73.9	GUY00201	100.9	69.1	40.6	01	1.6	1.4	1.1	0.4	2.4	2.1						P
274	GUY	-37.9	GUY00302	101.1	61.9	-163.4	01	0.3	1.0	1.4	1.5	1.8	0.7						P
253	HND	-134.9	HNDIFRB2	101.9	29.1	136.6	01	-2.9	-3.5	-3.9	-3.0								P
258	HTI	-90.1	HTI00002	30.2	58.5	17.4	02	-1.1	-0.6	-2.5	-1.5	-1.3	-0.1	0.2					P
75	USA	-161.1	HWA00002	93.1	52.4	1.4	02	6.5	6.4	6.4	6.5	6.5	6.7	5.9					P
21	G	-80.1	IOBBVIRG	16.4	61.6	37.4	02	-3.6	-3.7	-3.7	-3.8	-3.8	-3.7						P
22	G	-109.1	IOBCAYMA	20.1	49.5	93.4	02	-6.1	-6.2	-6.1	-6.1	-6.2	-6.3						P
245	G	-80.1	IOBKN001	16.5	61.1	37.4	02	-3.9	-3.8	-4.0	-4.0								P
24	G	-80.1	IOBMONTE	17.4	60.8	37.4	02	-4.2	-4.0	-4.0	-4.2	-4.1	-4.2						P
26	G	-109.1	IOBTURCA	23.2	40.6	93.4	02	-3.5	-3.3	-3.0	-2.8	-2.7	-2.8	-3.2	-2.9				P
246	JMC	-73.9	JMC00002	22.9	67.7	-47.4	01	4.3	4.2	4.8	5.1	4.6	4.8	4.0	4.3				P
273	JMC	-37.9	JMC00005	25.8	39.4	-191.4	01	2.8	2.6	2.9	3.3	3.1	3.2	2.6	3.1				P
117	LCA	-79.9	LCAIFRB1	16.6	62.6	36.6	01	-0.9	-0.9	-1.0	-0.9								P
215	MEX	-121.9	MEX01NTE	302.7	48.7	24.6	01	0.2	0.2	-0.4	-1.4	-2.4	-1.6	-0.6	0.3				P
216	MEX	-122.1	MEX01SUR	404.8	42.2	25.4	02	0.4	0.1	-0.6	-1.1	-2.4	-0.7	-0.1					P
256	NCG	-134.9	NCG00003	126.3	29.2	136.6	01	-5.4	-5.1	-4.9	-5.1	-5.2	-6.7	-7.8	-6.7				P
204	CHL	-101.9	PAQPAC01	10.1	56.4	124.6	01	1.1	1.2	1.3	1.1								P
254	PNR	-135.1	PNRIFRB2	134.9	24.1	197.4	02	-6.8	-6.2	-5.9	-5.9	-5.8	-6.2						P
265	PRG	-69.9	PRG00002	72.3	54.7	-3.4	01	-2.9	-6.6	-7.0	-4.7	-4.9	-4.6	-5.2	-4.2	-3.6	-6.3		P
223	PRU	-112.9	PRUAND01	574.3	37.5	108.6	01	-9.9	-10.1	-9.8	-9.3	-9.8	-9.6	-9.4	-9.4	-9.4	-9.4		P
225	PRU	-81.1	PRU00002	678.1	65.2	-18.6	02	-6.3	-2.3	-0.3	2.4	-0.5	1.0	1.7	1.7	1.9	-0.6		P
77	USA	-124.9	PTRVIR01	46.4	19.9	156.6	01	-6.7	-6.7	-6.7	-6.7	-6.7	-6.8	-6.9	-6.9				P
260	SLV	-134.9	SLVIFRB2	55.3	34.3	136.6	01	-1.2	-2.6	-2.2	-1.4								P
206	F	-55.1	SPMFRAN3	103.5	30.5	-62.6	02	1.0	0.9	0.5	0.2	0.0	0.6						P
61	SUR	-73.9	SURINAME	59.5	65.9	32.6	01	1.2	0.7	-0.9	1.8	1.6	0.5	0.7	0.9				P
78	TRD	-89.9	TRD00001	21.4	53.5	76.6	01	-5.7	-5.3	-5.0	-4.5	-4.8	-4.2	-4.2	-4.5	-5.1	-4.3		P
32	URG	-72.9	URG00001	33.1	45.0	68.6	01	-0.9	-1.0	-1.6	-2.9	-4.2	-6.1	-6.1	-3.0	-1.8	-1.5		P
67	USA	-114.1	USACSA02	809.3	29.9	53.4	02	-3.3	-3.4	-3.8	-4.6	-4.3	-3.3	-2.4	-2.3	-2.0	-2.7		P
65	USA	-113.9	USAESA02	626.8	20.2	112.6	01	-8.3	-8.0	-8.2	-21.4	-8.0	-8.0	-13.5	-7.9				P
69	USA	-141.1	USAMSA02	483.2	20.1	101.4	02	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4	-16.4			P

ESCENARIO/ SCENARIO: DPLAN3 SAT-R2 TOTAL MARGIN 830708 0003
MARGEN TOTAL
MARGE TOTALE

1	2	3	4	5	6	7	8	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9	9.10	10	
71	USA	-140.9	USAPSA02	294.3	26.9	40.6	01	-15.9	-15.9	-15.9	-15.8	-15.8	-15.8	-15.8	-15.8				P
271	VCT	-79.9	VCT00001	16.4	63.2	36.6	01	-1.1	-1.1	-1.1	-1.1	-1.1	-1.0						P
269	VEN	-112.9	VENAND02	770.9	29.0	136.6	01	-14.7	-13.8	-13.6	-13.4	-13.3	-14.3	-15.1	-14.8	-14.9	-13.3		P
57	VEN	-100.9	VEN02VEN	21.8	43.1	88.6	01	-29.2	-29.1	-29.4	-29.4	-28.9	-28.8						P
270	VEN	-100.9	VEN11VEN	527.4	41.9	88.6	01	-13.3	-14.5	-27.6	-27.8	-26.2	-22.2	-14.1	-13.3	-12.0	-12.1		P

SCENARIO: DPLAN3 DOWNLINK PLAN LAYOUT 07/08/83 ~~001~~ 4
SCENARIO: DPLAN3 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN3 ESTRUCTURA DEL PLÁN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-160.00	01	58.47	-149.08	3.819	1.285	172.86	- E	59.7
261	ARGINSU2	-84.00	01	-65.04	-65.19	0.872	0.800	17.04	- E	59.4
262	ARGNORT2	-84.00	02	-29.92	-63.49	3.858	2.256	47.49	+ E	64.9
263	ARGSUR02	-84.00	01	-42.92	-64.83	3.203	1.726	40.76	- E	60.5
264	ATGSJN01	-80.00	02	17.08	-61.78	0.800	0.800	7.76	+ E	58.6
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.800	39.26	- E	61.2
228	B CE311	-70.00	01	-6.04	-40.80	2.767	2.079	176.53	- E	62.1
229	B CE411	-82.00	01	-15.45	-51.35	3.654	1.172	51.47	- E	63.6
230	B CE511	-72.00	02	-2.95	-53.19	2.401	2.044	99.00	+ E	63.6
231	B NO611	-104.00	01	-11.57	-60.19	1.860	1.615	143.80	- E	65.9
232	B NO711	-88.00	02	-1.67	-60.94	3.351	1.611	120.26	+ E	63.7
233	B NO811	-88.00	01	-4.72	-68.83	2.386	1.505	72.70	- E	63.4
239	B SE911	-82.00	02	-18.91	-45.57	2.446	1.278	53.79	+ E	62.8
226	B SU111	-96.00	01	-25.67	-51.35	2.671	0.803	52.90	- E	64.2
227	B SU211	-98.00	02	-16.75	-44.93	2.961	0.933	65.28	+ E	64.8
115	BAHIFRB1	-110.00	02	24.13	-76.00	1.671	0.800	132.86	+ E	62.7
018	BERBERMU	-108.00	01	32.22	-64.67	0.800	0.800	90.00	- E	57.3
244	BERBER02	-30.00	01	32.32	-64.77	0.800	0.800	90.00	- E	57.0
097	BLZ00001	-110.00	02	17.27	-88.68	0.800	0.800	90.00	+ E	58.9
219	BOLAND01	-112.00	01	-16.74	-64.99	2.492	1.390	75.94	- E	67.5
121	BOL00001	-114.00	02	-16.79	-65.00	2.500	1.309	76.38	+ E	68.0
063	BRB00001	-90.00	01	13.26	-59.52	0.800	0.800	90.00	- E	59.0
004	CAN00001	-150.00	01	57.16	-126.87	3.767	0.993	154.90	- E	59.6
005	CAN00002	-152.00	02	56.59	-113.54	3.658	0.800	151.50	+ E	60.1
006	CAN00003	-126.00	01	57.06	-101.89	3.479	0.960	153.52	- E	60.0
007	CAN00004	-128.00	02	51.90	-89.41	4.655	0.810	148.10	+ E	62.0
008	CAN00005	-98.00	01	53.72	-73.44	3.777	1.478	154.05	- E	60.4
009	CAN00006	-98.00	02	49.61	-62.27	2.974	1.001	143.25	+ E	60.7

1	2	3	4	5	6	7	8	9	10
210	CHLCONT4	-102.00	02	-23.05	-69.59	2.186	0.800	68.16	+ E	59.2
211	CHLCONT5	-102.00	01	-35.60	-72.14	2.581	0.800	57.04	- E	59.4
212	CHLCONT6	-102.00	02	-55.58	-72.81	3.451	1.438	40.72	+ E	59.6
200	CHLPAC02	-102.00	01	-30.04	-79.93	1.367	0.800	69.68	- E	59.2
220	CLMAND01	-112.00	01	5.91	-74.64	3.885	1.728	115.23	- E	64.7
011	CLM00001	-106.00	02	5.91	-74.56	3.951	1.891	117.17	+ E	64.0
124	CRBBAH01	-100.00	01	24.17	-76.21	1.959	0.800	141.72	- E	61.7
251	CRBBER01	-100.00	01	32.15	-64.41	0.800	0.800	90.00	- E	57.1
123	CRBBLZ01	-100.00	01	17.37	-88.81	0.800	0.800	80.96	- E	59.0
125	CRBEC001	-100.00	01	8.54	-60.30	4.150	0.800	112.77	- E	65.2
122	CRBJMC01	-100.00	01	18.17	-79.34	0.998	0.800	150.40	- E	61.2
257	CTR00201	-136.00	02	9.67	-84.34	0.800	0.800	116.66	+ E	66.7
012	CUB00001	-100.00	02	21.51	-79.74	2.055	0.800	166.70	+ E	61.6
118	DMAIFRB1	-80.00	01	15.35	-61.30	0.800	0.800	90.00	- E	58.6
259	DOMIFRB2	-90.00	02	18.78	-70.43	0.930	0.800	159.32	+ E	61.3
221	EQACAND1	-112.00	01	-1.57	-78.37	1.406	0.981	74.03	- E	64.1
098	EQAC0001	-96.00	02	-1.51	-78.33	1.477	1.142	63.72	+ E	63.2
222	EQAGAND1	-112.00	01	-0.58	-90.38	0.926	0.815	93.25	- E	61.4
099	EQAG0001	-96.00	02	-0.57	-90.36	0.938	0.885	99.04	+ E	61.1
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.800	12.17	- E	59.5
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.800	0.800	90.00	- E	58.2
058	GRD00002	-38.00	02	12.29	-61.58	0.800	0.800	90.00	+ E	58.9
059	GRD00003	-80.00	01	12.36	-61.63	0.800	0.800	90.00	- E	58.8
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.800	171.69	+ E	60.1
255	GTMIFRB2	-134.00	01	15.57	-90.50	0.963	0.800	102.91	- E	62.8
016	GUFMGG01	-54.00	01	8.18	-56.35	4.263	0.842	123.18	- E	62.9
267	GUY00201	-74.00	01	4.74	-59.04	1.461	0.921	102.29	- E	63.2
274	GUY00302	-38.00	01	4.77	-59.09	1.438	0.887	91.22	- E	63.4

SCENARIO: DPLAN3 DOWNLINK PLAN LAYOUT 07/08/83 ~~005~~ 6
SCENARIO: DPLAN3 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN3 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5		6		7	8	9	10
253	HNDIFRB2	-134.00	01	15.16	-86.27	0.835	0.800	107.70	-	E	66.3
258	HTI00002	-90.00	02	18.92	-73.27	0.800	0.800	11.34	+	E	61.2
075	HWA00002	-162.00	02	23.36	-165.60	4.130	0.800	159.73	+	E	58.9
021	IOBBVIRG	-80.00	02	18.55	-64.48	0.800	0.800	90.00	+	E	58.5
022	IOBCAYMA	-110.00	02	19.57	-80.58	0.800	0.800	90.00	+	E	59.4
245	IOBKN001	-80.00	02	17.42	-62.49	0.800	0.800	90.00	+	E	58.6
024	IOBMONTE	-80.00	02	16.75	-61.73	0.800	0.800	90.00	+	E	58.8
026	IOBTURCA	-110.00	02	21.53	-71.79	0.800	0.800	90.00	+	E	60.0
246	JMC00002	-74.00	01	18.12	-77.29	0.800	0.800	90.00	-	E	60.0
273	JMC00005	-38.00	01	18.12	-77.27	0.800	0.800	90.00	-	E	60.5
117	LCAIFRB1	-80.00	01	13.90	-61.15	0.800	0.800	90.00	-	E	58.6
215	MEX01NTE	-122.00	01	26.11	-106.85	4.024	1.739	153.38	-	E	60.8
216	MEX01SUR	-122.00	02	19.77	-96.21	3.206	2.021	164.12	+	E	62.4
256	NCG00003	-134.00	01	12.93	-85.06	0.989	0.800	105.15	-	E	66.5
204	PARPACU1	-102.00	01	-27.53	-109.18	0.800	0.800	90.00	-	E	56.4
254	PNRIFRB2	-136.00	02	8.42	-80.32	0.800	0.800	137.40	+	E	67.7
265	PRG00002	-70.00	01	-23.26	-58.53	1.586	1.381	140.95	-	E	59.6
223	PRUAND01	-112.00	01	-8.35	-74.60	3.455	1.891	97.18	-	E	63.9
225	PRU00002	-82.00	02	-8.52	-74.20	3.724	2.512	112.50	+	E	63.0
077	PIRVIR01	-124.00	01	18.12	-65.87	0.800	0.800	90.00	-	E	63.0
260	SLVIFRB2	-134.00	01	13.82	-88.78	0.800	0.800	90.00	-	E	63.8
206	SPMFRAN3	-56.00	02	47.49	-67.26	3.162	0.810	6.17	+	E	60.5
061	SURINAME	-74.00	01	4.43	-55.72	1.042	0.800	78.78	-	E	63.0
078	TRD00001	-90.00	01	10.70	-61.23	0.800	0.800	90.00	-	E	59.7
032	URG00001	-72.00	01	-32.51	-56.14	1.012	0.893	22.18	-	E	60.1
067	USACSA02	-114.00	02	36.47	-96.89	4.142	2.710	147.24	+	E	63.0
065	USAFSA02	-114.00	01	37.46	-81.92	4.356	2.292	124.06	-	E	62.4
069	USAMSA02	-142.00	02	37.08	-106.60	4.724	1.898	135.29	+	E	61.8

SCENARIO: DPLAN3 DOWNLINK PLAN LAYOUT 07/08/83 004 7
SCENARIO: DPLAN3 CONFIGURATION DU PLAN - LIAISONS DESCENDANTES
ESCENARIO:DPLAN3 ESTRUCTURA DEL PLAN DE LOS ENLACES DESCENDENTS
(CHANNEL FAMILY/FAMILLE DE CANAUX/FAMILIAS DE CANALES)

1	2	3	4	5	6	7	8	9	10
071	USAPSA02	-140.00	01	40.00 -116.06	3.647	1.605	135.49	-	E 61.5
271	VCT00001	-80.00	01	13.23 -61.21	0.800	0.800	90.31	-	E 58.5
269	VENAND02	-112.00	01	8.62 -67.26	2.916	1.539	100.78	-	E 66.8
057	VEN02VEN	-100.00	01	15.50 -63.50	0.800	0.800	90.00	-	E 59.8
270	VEN11VEN	-100.00	01	6.87 -66.76	2.529	1.882	126.26	-	E 64.9

SCENARIO: DPLAN3 FEEDERLINK PLAN LAYOUT 07/08/83 ~~001~~ 8
SCENARIO: DPLAN3 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN3 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
073	ALS00002	-160.00	01	32.26	-146.22	13.926	5.714	160.33	- P 1000.
261	ARGINSU2	-84.00	01	-33.19	-63.84	5.599	2.251	58.07	- P 1000.
262	ARGNORT2	-84.00	02	-33.19	-63.84	5.599	2.251	58.07	+ P 1000.
263	ARGSURO2	-84.00	01	-33.19	-63.84	5.599	2.251	58.07	- P 1000.
264	ATGSJN01	-80.00	02	17.08	-61.78	0.600	0.600	7.76	+ P 1000.
283	ATNBEAM1	-54.00	01	14.87	-66.45	1.830	0.681	39.26	- P 1000.
228	B CE311	-70.00	01	-6.04	-40.80	2.767	2.079	176.53	- P 1000.
229	B CE411	-82.00	01	-15.45	-51.35	3.654	1.172	51.47	- P 1000.
230	B CE511	-72.00	02	-2.95	-53.19	2.401	2.044	99.00	+ P 1000.
231	B NO611	-104.00	01	-11.57	-60.19	1.860	1.615	143.80	- P 1000.
232	B NO711	-88.00	02	-1.67	-60.94	3.351	1.611	120.26	+ P 1000.
233	B NO811	-88.00	01	-4.72	-68.83	2.386	1.505	72.70	- P 1000.
239	B SE911	-82.00	02	-18.91	-45.57	2.446	1.278	53.79	+ P 1000.
226	B SU111	-96.00	01	-25.67	-51.35	2.671	0.803	52.90	- P 1000.
227	B SU211	-98.00	02	-16.75	-44.93	2.961	0.933	65.28	+ P 1000.
115	BAHIFRB1	-110.00	02	24.13	-76.00	1.671	0.681	132.86	+ P 1000.
018	BERBERMU	-108.00	01	32.22	-64.67	0.600	0.600	90.00	- P 1000.
244	BERBERO2	-30.00	01	32.32	-64.77	0.600	0.600	90.00	- P 1000.
097	BLZ00001	-110.00	02	17.27	-88.68	0.627	0.627	90.00	+ P 1000.
219	BOLAND01	-112.00	01	-5.79	-71.32	6.207	2.701	90.35	- P 1000.
121	BOL00001	-114.00	02	-16.79	-65.00	2.500	1.309	76.38	+ P 1000.
063	BRB00001	-90.00	01	13.26	-59.52	0.600	0.600	90.00	- P 1000.
004	CAN00001	-150.00	01	52.45	-113.21	7.246	1.356	157.30	- P 1000.
005	CAN00002	-152.00	02	52.56	-114.55	7.105	1.297	156.56	+ P 1000.
006	CAN00003	-126.00	01	51.21	-99.68	8.131	2.070	166.64	- P 1000.
007	CAN00004	-128.00	02	51.25	-100.56	8.049	2.021	165.91	+ P 1000.
008	CAN00005	-98.00	01	50.77	-89.60	8.651	2.506	175.32	- P 1000.
009	CAN00006	-98.00	02	50.77	-89.60	8.651	2.506	175.32	+ P 1000.

1	2	3	4	5	6	7	8	9	10
210	CHLCONT4	-102.00	02	-23.05	-69.59	2.186	0.740	68.16	+ P 1000.
211	CHLCONT5	-102.00	01	-35.60	-72.14	2.581	0.681	57.04	- P 1000.
212	CHLCONT6	-102.00	02	-55.58	-72.81	3.451	1.438	40.72	+ P 1000.
200	CHLPAC02	-102.00	01	-30.04	-79.93	1.367	0.681	69.68	- P 1000.
220	CLMAND01	-112.00	01	-4.43	-70.55	6.377	2.891	86.76	- P 1000.
011	CLM00001	-106.00	02	5.31	-75.54	3.834	1.298	118.86	+ P 1000.
124	CRBBAH01	-100.00	01	24.17	-76.21	1.959	0.600	141.72	- P 1000.
251	CRBBER01	-100.00	01	32.15	-64.41	0.600	0.600	90.00	- P 1000.
123	CRBBLZ01	-100.00	01	17.37	-88.81	0.695	0.600	80.96	- P 1000.
125	CRBEC001	-100.00	01	8.54	-60.30	4.150	0.761	112.77	- P 1000.
122	CRBJMC01	-100.00	01	18.17	-79.34	0.998	0.600	150.40	- P 1000.
257	CTR00201	-136.00	02	9.67	-84.34	0.796	0.681	116.66	+ P 1000.
012	CUB00001	-100.00	02	21.51	-79.74	2.055	0.692	166.70	+ P 1000.
118	DMAIFRB1	-80.00	01	15.35	-61.30	0.600	0.600	90.00	- P 1000.
259	DOMIFRB2	-90.00	02	18.78	-70.43	0.930	0.700	159.32	+ P 1000.
221	EQACAND1	-112.00	01	4.43	-70.55	6.375	2.892	93.24	- P 1000.
098	EQAC0001	-96.00	02	-1.62	-78.26	1.368	1.118	72.71	+ P 1000.
222	EQAGAND1	-112.00	01	4.43	-70.55	6.375	2.892	93.24	- P 1000.
099	EQAG0001	-96.00	02	-1.62	-78.26	1.368	1.118	72.71	+ P 1000.
243	FLKANT01	-56.00	01	-60.14	-44.25	3.525	0.681	12.17	- P 1000.
019	FLKFALKS	-30.00	01	-51.64	-59.91	0.600	0.600	90.00	- P 1000.
058	GRD00002	-38.00	02	12.25	-61.61	0.600	0.600	90.00	+ P 1000.
059	GRD00003	-80.00	01	12.25	-61.61	0.600	0.600	90.00	- P 1000.
013	GRLDNK01	-56.00	02	66.69	-45.16	2.734	0.794	171.69	+ P 1000.
255	GTMIFRB2	-134.00	01	15.57	-90.50	0.963	0.681	102.91	- P 1000.
016	GUFMGG01	-54.00	01	28.54	-43.95	9.549	5.663	64.54	- P 1000.
267	GUY00201	-74.00	01	4.74	-59.04	1.461	0.921	102.29	- P 1000.
274	GUY00302	-38.00	01	4.77	-59.09	1.438	0.887	91.22	- P 1000.

1	2	3	4	5		6		7	8	9	10
253	HNDIFRB2	-134.00	01	15.16	-86.27	0.835	0.752	107.70	-	P	1000.
258	HTI00002	-90.00	02	18.92	-73.27	0.793	0.681	11.34	+	P	1000.
075	HWA00002	-162.00	02	32.38	-147.29	13.667	5.632	159.61	+	P	1000.
021	IOBBVIRG	-80.00	02	18.55	-64.48	0.600	0.600	90.00	+	P	1000.
022	IOBCAYMA	-110.00	02	19.57	-80.58	0.600	0.600	90.00	+	P	1000.
245	IOBKN001	-80.00	02	17.42	-62.49	0.600	0.600	90.00	+	P	1000.
024	IOBMONTE	-80.00	02	16.75	-61.73	0.600	0.600	90.00	+	P	1000.
026	IOBTURCA	-110.00	02	21.53	-71.79	0.600	0.600	90.00	+	P	1000.
246	JMC00002	-74.00	01	18.12	-77.29	0.632	0.632	90.00	-	P	1000.
273	JMC00005	-38.00	01	18.12	-77.27	0.600	0.600	90.00	-	P	1000.
117	LCAIFRB1	-80.00	01	13.90	-61.15	0.600	0.600	90.00	-	P	1000.
215	MEX01NTE	-122.00	01	23.39	-101.55	5.936	1.764	153.37	-	P	1000.
216	MEX01SUR	-122.00	02	23.39	-101.55	5.936	1.764	153.37	+	P	1000.
256	NCG00003	-134.00	01	12.93	-85.06	0.989	0.685	105.15	-	P	1000.
204	PAQPAC01	-102.00	01	-27.53	-109.18	0.600	0.600	90.00	-	P	1000.
254	PNRIFRB2	-136.00	02	8.42	-80.32	0.767	0.681	137.40	+	P	1000.
265	PRG00002	-70.00	01	-23.26	-58.53	1.586	1.381	140.95	-	P	1000.
223	PRUAND01	-112.00	01	-4.43	-70.55	6.375	2.892	86.76	-	P	1000.
225	PRU00002	-82.00	02	-8.52	-74.20	3.724	2.512	112.50	+	P	1000.
077	PTRVIR01	-124.00	01	29.97	-123.12	16.154	6.814	169.41	-	P	1000.
260	SLVIFRB2	-134.00	01	13.82	-88.78	0.600	0.600	90.00	-	P	1000.
206	SPMFRAN3	-56.00	02	28.64	-44.36	9.455	5.589	67.03	+	P	1000.
061	SURINAME	-74.00	01	4.47	-55.79	1.054	0.769	80.10	-	P	1000.
078	TRD00001	-90.00	01	10.37	-61.40	0.600	0.600	90.00	-	P	1000.
032	URG00001	-72.00	01	-32.51	-56.14	1.012	0.893	22.18	-	P	1000.
067	USACSA02	-114.00	02	28.72	-116.63	15.591	7.248	171.32	+	P	1000.
065	USAESA02	-114.00	01	28.72	-116.63	15.591	7.248	171.32	-	P	1000.
069	USAMSA02	-142.00	02	31.90	-136.03	16.212	6.136	165.90	+	P	1000.

SCENARIO: DPLAN3 FEEDERLINK PLAN LAYOUT 07/08/83 004 //
SCENARIO: DPLAN3 CONFIGURATION DU PLAN - LIAISONS DE CONNEXION
ESCENARIO:DPLAN3 ESTRUCTURA DEL PLAN DE LOS ENLACES DE CONEXION
(CHANNELS FAMILY/FAMILLE DE CANAUX/FAMILIA DE CANALES)

1	2	3	4	5	6	7	8	9	10
071	USAPSA02	-140.00	01	31.90	-134.83	16.421	6.159	166.40	- P 1000.
271	VCT00001	-80.00	01	13.23	-61.21	0.600	0.600	90.31	- P 1000.
269	VENAND02	-112.00	01	8.62	-67.26	2.916	1.539	100.78	- P 1000.
057	VENU2VEN	-100.00	01	15.50	-63.50	0.600	0.600	90.00	- P 1000.
270	VEN11VEN	-100.00	01	6.87	-66.76	2.529	1.882	126.26	- P 1000.

PARAMETRES TECHNIQUES RAPPORT 1
- VALEURS PAR DEFAUT.

* CLE DU SCENARIO: DPLAN3 * DATE 07/08/83

1.1 CARECTERISTIQUES NOMINALES DU TERMINAL DE RECEPTION

CLE DE L'ANTENNE	AY01	
DESCRIPTION DE L'ANTENNE: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DU RECEPTEUR (MERIT OU TEMPERATURE)	10.0	DBK-1
DIAMETRE DE L'ANTENNE DE RECEPTION	1.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC1	
CLE DE DIAGRAMME DE GAIN CONTRAPOLATAIRE	GYX1	

1.2 CARACTERSTIQUES NOMINALES DE L'ANTENNE D'EMISSION DU SATELLITE

CLE DE L'ANTENNE	AY02	
DESCRIPTION DE L'ANTENNE: RARC 83 SAT TX ANTENNA (JUNE 83)		
RENDEMENT	.55	
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GYC2	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GYX2	

1.3 CARACTERISTIQUES NOMINALES DE LA STATION TERRIENNE D'EMISSION

CLE DE L'ANTENNE	AR05	
DESCRIPTION DE L'ANTENNE: CPM FLT		
RENDEMENT	.64	
DIAMETRE	5.0	M
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC7	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX7	

1.4 CARACTERISTIQUES NOMINALES DE L'ANTENNE DE RECEPTION DU SATELLITE

CLE DE L'ANTENNE	AP18	
DESCRIPTION DE L'ANTENNE: CPM (JUN-JUL 82)		
TEMPERATURE DE BRUIT	1500.	K
NIVEAU FLUX A LA RECEPTION	1000.	W
DELTA-G	3.	DB
TOLERANCE DE POINTAGE DU FAISCEAU	.1	DEG
CLE DE DIAGRAMME DE GAIN COPOLAIRE	GPC5	
CLE DE DIAGRAMME DE GAIN CONTRAPOLAIRE	GPX5	

1.5 CARACTERISTIQUES DU PLAN

RAPORT PORTEUSE/BRUIT GLOBAL	14.0	DB
RAPPORT DE PROTECTION GLOBAL	28.	DB
CLE DE GABARIT DE RAPPORT DE PROTECTION	PY02	
CLE DE DISPOSITION DES VOIES-LIAISON DESC.	CY01	
-LIAIS.DE CONX.	CY51	
LARGEUR DE BANDE DE VOIE	24.	MHZ
ECARTEMENT DES VOIES	14.58	MHZ
LIAISON DESC. - BANDE DE GARDE: INFERIEURE	12.	MHZ
- BANDE DE GARDE: SUPERIEURE	12.	MHZ
LIAISON DE CONX. - BANDE DE GARDE: INFER.	12.	MHZ
- BANDE DE GARDE: SUPER.	12.	MHZ
FREQ. DE LA VOIE NO.1 - LIAISON DESC.	12.224	MHZ
- LIAISON DE CONX.	17.324	MHZ
NOMBRE TOTAL DE VOIES	32	
POLARISATION - LIAISON DESCENDANTE	C	
- LIAISON DE CONNEXION	C	
MODEL HYDROMETEOROLOGIQUE	R	

TECHNICAL PARAMETERS REPORT 1
- DEFAULT VALUES.

* SCENARIO KEY: DPLAN3 * DATE 07/08/83

1.1 RECEIVING EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AY01	
ANTENNA DESCRIPTION: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
RECEIVE G/T (MERIT OR TEMPERATURE)	10.0	DBK-1
RECEIVE ANTENNA (DIAMETER OR BEAMWIDTH)	1.0	M
CO-POLAR GAIN PATTERN KEY	GYC1	
CROSS-POLAR GAIN PATTERN KEY	GYX1	

1.2 SATELLITE TRANSMIT ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AY02	
ANTENNA DESCRIPTION: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFFICIENCY	.55	
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GYC2	
CROSS-POLAR GAIN PATTERN KEY	GYX2	

1.3 TRANSMIT EARTH TERMINAL NOMINAL CHARACTERISTICS

ANTENNA KEY	AR05	
ANTENNA DESCRIPTION: CPM FLT		
EFFICIENCY	.64	
DIAMETER	5.0	M
CO-POLAR PATTERN KEY	GPC7	
CROSS-POLAR GAIN PATTERN KEY	GPX7	

1.4 SATELLITE RECEIVE ANTENNA NOMINAL CHARACTERISTICS

ANTENNA KEY	AP18	
ANTENNA DESCRIPTION: CPM (JUN-JUL 82)		
NOISE TEMPERATURE	1500.	K
EIRP OR C/N OR PFD OR POWER	1000.	W
DELTA-G	3.	DB
BEAMPOINTING TOLERANCE	.1	DEG
CO-POLAR GAIN PATTERN KEY	GPC5	
CROSS-POLAR GAIN PATTERN KEY	GPX5	

1.5 PLAN CHARACTERISTICS

OVERALL C/N	14.0	DB
OVERALL AGGREGATE PROTECTION RATIO	28.	DB
PROTECTION RATIO TEMPLATE KEY	PY02	
DOWNLINK CHANNELIZATION KEY	CY01	
FEEDERLINK CHANNELIZATION KEY	CY51	
CHANNEL BANDWIDTH	24.	MHZ
CHANNEL SPACING	14.58	MHZ
DOWNLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
FEEDERLINK - LOWER GUARD BAND	12.	MHZ
- UPPER GUARD BAND	12.	MHZ
CHANNEL #1 FREQUENCY - DOWNLINK	12.224	MHZ
- FEEDERLINK	17.324	MHZ
TOTAL NUMBER OF CHANNELS	32	
DOWNLINK POLARIZATION	C	
FEEDERLINK POLARIZATION	C	
RAIN-MODEL	R	

INFORME NO.1 SOBRE PARAMETROS TECHNICOS
- VALORES SUPLETORIOS.

* CLAVE DE ESCENARIO: DPLAN3 * FECHA 07/08/83

1.1 CARACTERISTICAS NOMINALES DEL TERMINAL EN RECEPCION

CLAVE DE LA ANTENA	AY01	
DESCRIPCION DE LA ANTENA: ADOPTED RARC 83 ESR ANTENNA (JUNE 83)		
G/T DEL RECEPTOR (TEMPERATURA)	10.0	DBK-1
DIAMETRO DE LA ANTENA RECEPTORA	1.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC1	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX1	

1.2 CARACTERISTICAS NOMINALES DE LA ANTENA TRANSMISORA DEL SATELITE

CLAVE DE LA ANTENA	AY02	
DESCRIPCION DE LA ANTENA: RARC 83 SAT TX ANTENNA (JUNE 83)		
EFICACIA	.55	
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GYC2	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GYX2	

1.3 CARACTERISTICAS NOMINALES DEL TERMINAL TERRENO EN TRANSMISION

CLAVE DE LA ANTENA	AR05	
DESCRIPCION DE LA ANTENA: CPM FLT		
EFICACIA	.64	
DIAMETRO	5.0	M
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC7	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX7	

1.4 CARACTERISTICAS NOMINALES DE LA ANTENA RECEPTORA DEL SATELITE

CLAVE DE LA ANTENA	AP18	
DESCRIPCION DE LA ANTENA: CPM (JUN-JUL 82)		
TEMPERATURA DE RUIDO	1500.	K
PIRE O C/N O DFP O POTENCIA	1000.	W
DELTA-G	3.	DB
TOLERANCIA DE PUNTERIA DEL HAZ	.1	DEG
CLAVE DE DIAGRAMA DE GANANCIA COPOLAR	GPC5	
CLAVE DE DIAGR. DE GANANCIA DE POL. CRUZADA	GPX5	

1.5 CARACTERISTICAS DEL PLAN

RELACION PORTADORA/RUIDO GLOBAL	14.0	DB
RELACION DE PROTECCION TOTAL GENERAL	28.	DB
CLAVE DE PLANTILLA DE LA RELACION DE PROTEC.	PY02	
CLAVE DE DISPOSICION DE CANALES-ENLACE DESC.	CY01	
-ENL.DE CONX.	CY51	
ANCHURA DE BANDA DE CANAL	24.	MHZ
SEPARACION DE CANALES	14.58	MHZ
ENLACE DESC. - BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
ENLACE DE CONX.- BANDA DE GUARDA: INFERIOR	12.	MHZ
- BANDA DE GUARDA: SUPERIOR	12.	MHZ
FRECUENCIA DEL CANAL NO.1 - ENLACE DESC.	12.224	MHZ
- ENL. DE CONX.	17.324	MHZ
NUMERO TOTAL DE CANALES	32	
POLARIZACION - ENLACE DESCENDENTE	C	
- ENLACE DE CONEXION	C	
MODELO DE LLUVIA	R	

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Addendum No. 1 to
Document No. 191-E
8 July 1983
Original : English

COMMITTEE 4

Working Group 4C submits the following text for Annex 3 of the consolidated text of Annexes to Appendix 30.

J.M. ZAMUDIO ZEA
Chairman of Working Group 4C

ANNEX 3

Method for Determining the Limiting Interfering Power Flux-Density at the Edge of a Broadcasting-Satellite Service Area in the Bands 11.7 - 12.2 GHz (in Region 3), 12.2 - 12.7 GHz (in Region 2), and 11.7 - 12.5 GHz (in Region 1) and for Predicting the Power Flux-Density Produced There by a Terrestrial Station

1. General

1.1 This Annex describes a method of assessing the interference potential from terrestrial transmitters to broadcasting-satellite receivers in the band 11.7 - 12.2 GHz in Region 3, 12.2 - 12.7 GHz in Region 2 and 11.7 - 12.5 GHz in Region 1 :

1.2 The method is in two parts:

a) the calculation of the maximum permissible interfering power flux density at the edge of the broadcasting-satellite service area concerned;

b) 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 a broadcasting-satellite station 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 Annex 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 the broadcasting-satellite service;

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 of an administration is given by the formula:

$$F = F_o - R + D + P \qquad (1)$$

where F = the maximum permissible interfering power flux density (dBW/m²) in the broadcasting-satellite necessary bandwidth

F_o = the wanted power flux density (dBW/m²) 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_o)*

The value of F_o is equal to

a) −103 dBW/m² for service areas in Regions 1 and 3

b) [−107] dBW/m² 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 amplitude-modulation multichannel television 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 amplitude-modulation multichannel television systems which produce peaks of high power flux density spread over a wide range of their necessary 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 necessary bandwidth overlaps the necessary bandwidth of the broadcasting-satellite assignment.

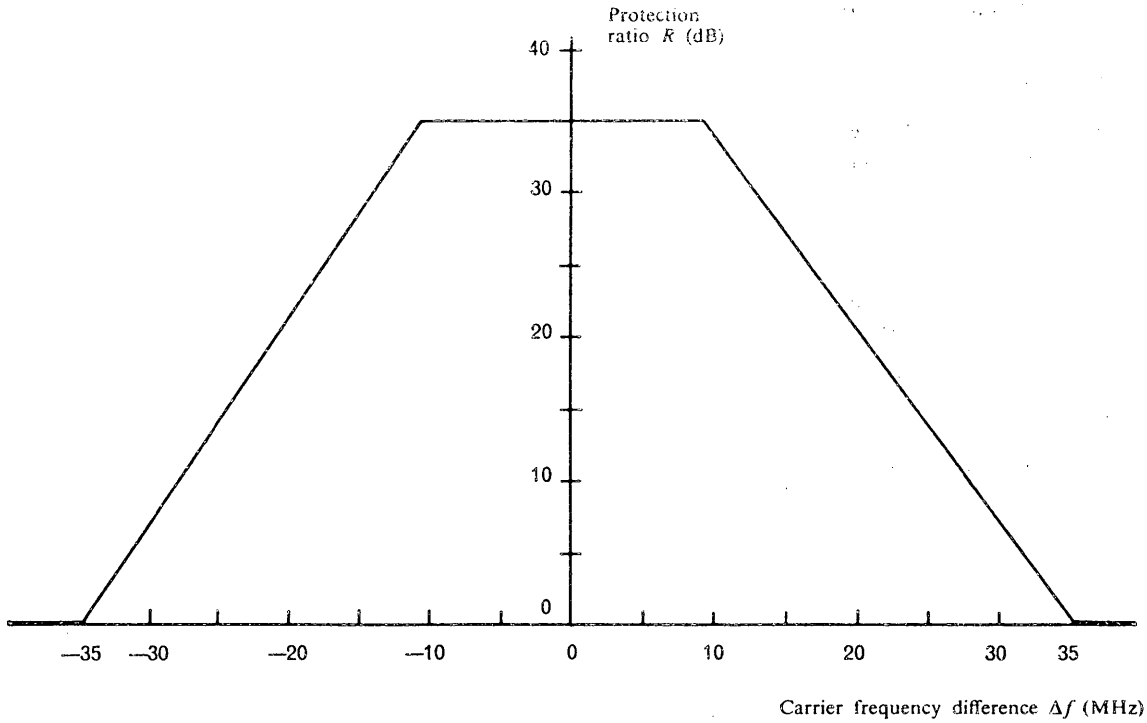


FIGURE 1

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)

2.4 *Angular discrimination (D)*

2.4.1 *Broadcasting-satellite service areas in Regions 1 and 3*

Where the angle of elevation φ 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 the expression (2.a) 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.

$$\begin{aligned} &D = 0 \text{ for } 0 \leqslant \varphi \leqslant 0.5^\circ \\ &D = 3\,\varphi^2 \text{ for } 0.5^\circ < \varphi \leqslant 1.41^\circ \\ &D = 3 + 20 \log_{10} \varphi \text{ for } 1.41^\circ < \varphi \leqslant 2.52^\circ \\ &D = 1 + 25 \log_{10} \varphi \text{ for } 2.52^\circ < \varphi \leqslant 19^\circ \end{aligned} \qquad (2.a)$$

Note: For the graphical determination of D see Figure 2.a.

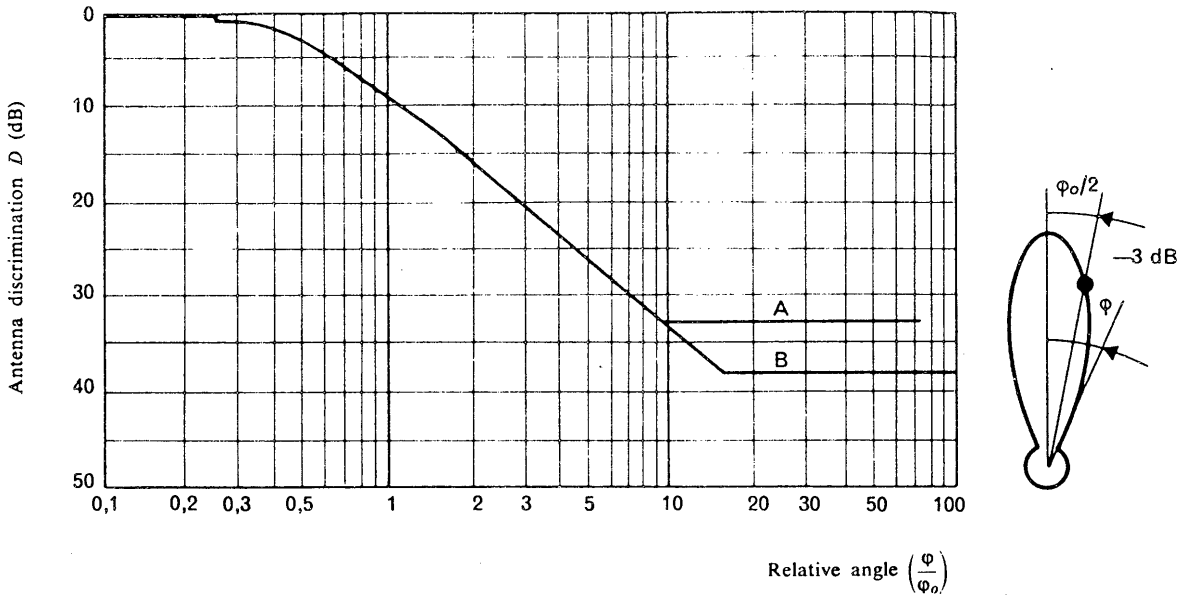


FIGURE 2.a

Discrimination D (dB) of broadcasting-satellite receiver antenna as a function of satellite elevation angle

For service areas in Regions 1 and 3, $\varphi_0 = 2°$

2.4.2 Broadcasting-satellite service areas in Region 2

D should be derived from the expression (2.b) 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.

$$
\begin{aligned}
&D = 0 \text{ for } 0 \leq \varphi \leq 0.43^\circ \\
&D = 4.15\ \varphi^2 \text{ for } 0.43^\circ \leq \varphi \leq 1.92^\circ \\
&D = 8.24 + 25 \log \varphi \text{ for } 1.92^\circ \leq \varphi \leq 25^\circ \\
&D = 43.2 \text{ for } 25^\circ \leq \varphi \leq 59.5^\circ \\
&D = 91.5 - 27.2 \log \varphi \text{ for } 59.5 \leq \varphi < 76.7^\circ \\
&D = 40.2 \text{ for } 76.7 \leq \varphi
\end{aligned}
\qquad (2.b)
$$

For the graphical determination of D see Figure 2.b.

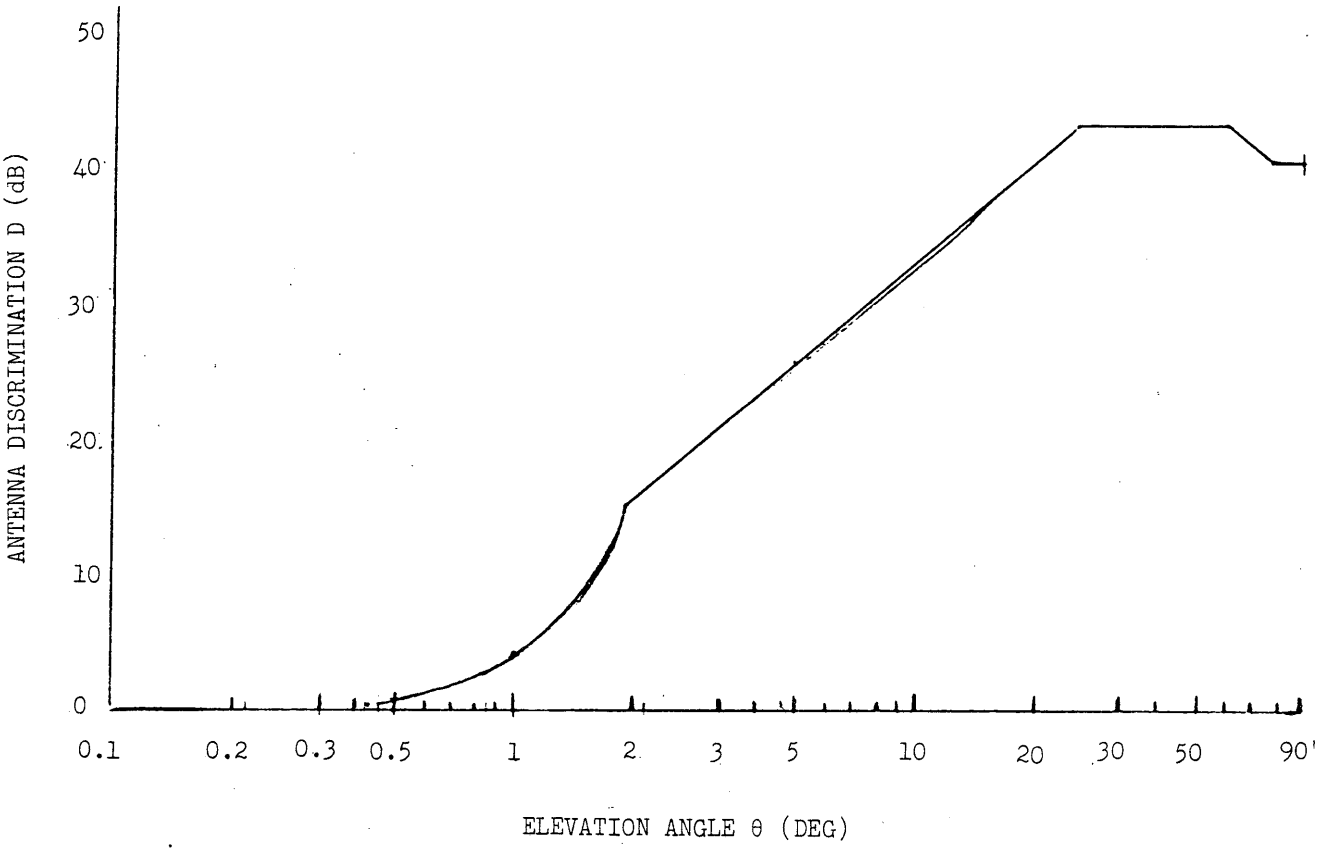


FIGURE 2.b

Discrimination D (dB) of broadcasting-satellite receiver antenna as a function of satellite elevation angle

2.5 *Polarization discrimination (P)*

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 (F_p)*

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:

$$F_p = E - A + 43 \qquad (3)$$

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

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:

$$A = 137.6 + 0.2324\, d_t + 0.0814\, d_m \quad \text{(for Regions 1 and 3)} \qquad (4)$$

ADD

$$A = 141.9 + 0.2867\, d_t + 0.1522\, d_m \quad \text{(for Region 2)}$$

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 lower value obtained is substituted in formula (3) to calculate the power flux density produced at the point on the edge of the service area:

$$A = 109.5 + 20 \log (d_t + d_m) \quad \text{(for Regions 1 and 3)} \qquad (5)$$

ADD

$$A = 114.4 + 20 \log (d_t + d_m) + 0.01\, (d_t + d_m) \quad \text{(for Region 2)}$$

The variation in A for different path lengths and percentage 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 coordination 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) 1 200 km in the case of all oversea or mixed paths.

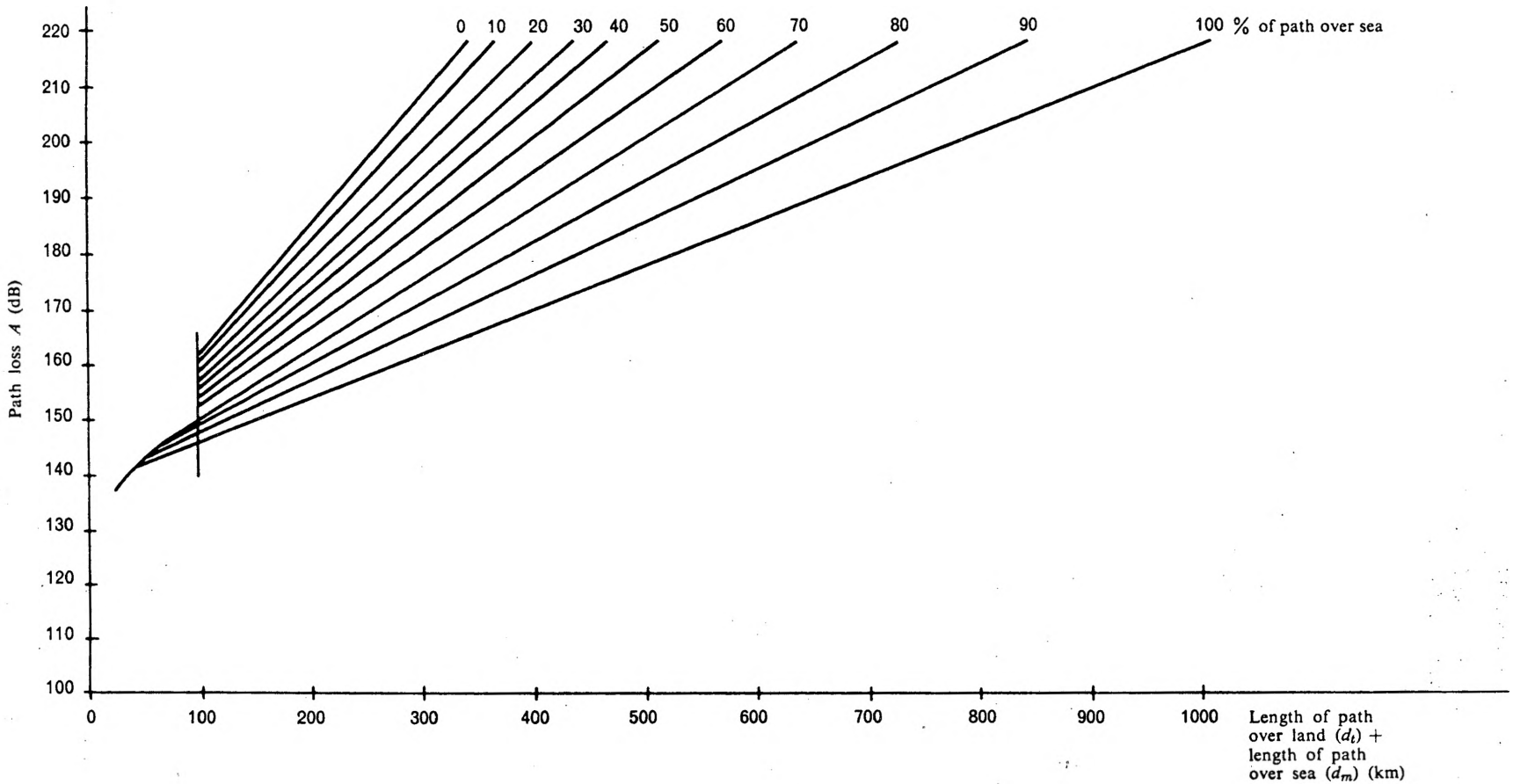


FIGURE 3

Total path loss A (dB) versus total path length ($d_t + d_m$)(km) and percentage of oversea path (for Regions 1 and 2)

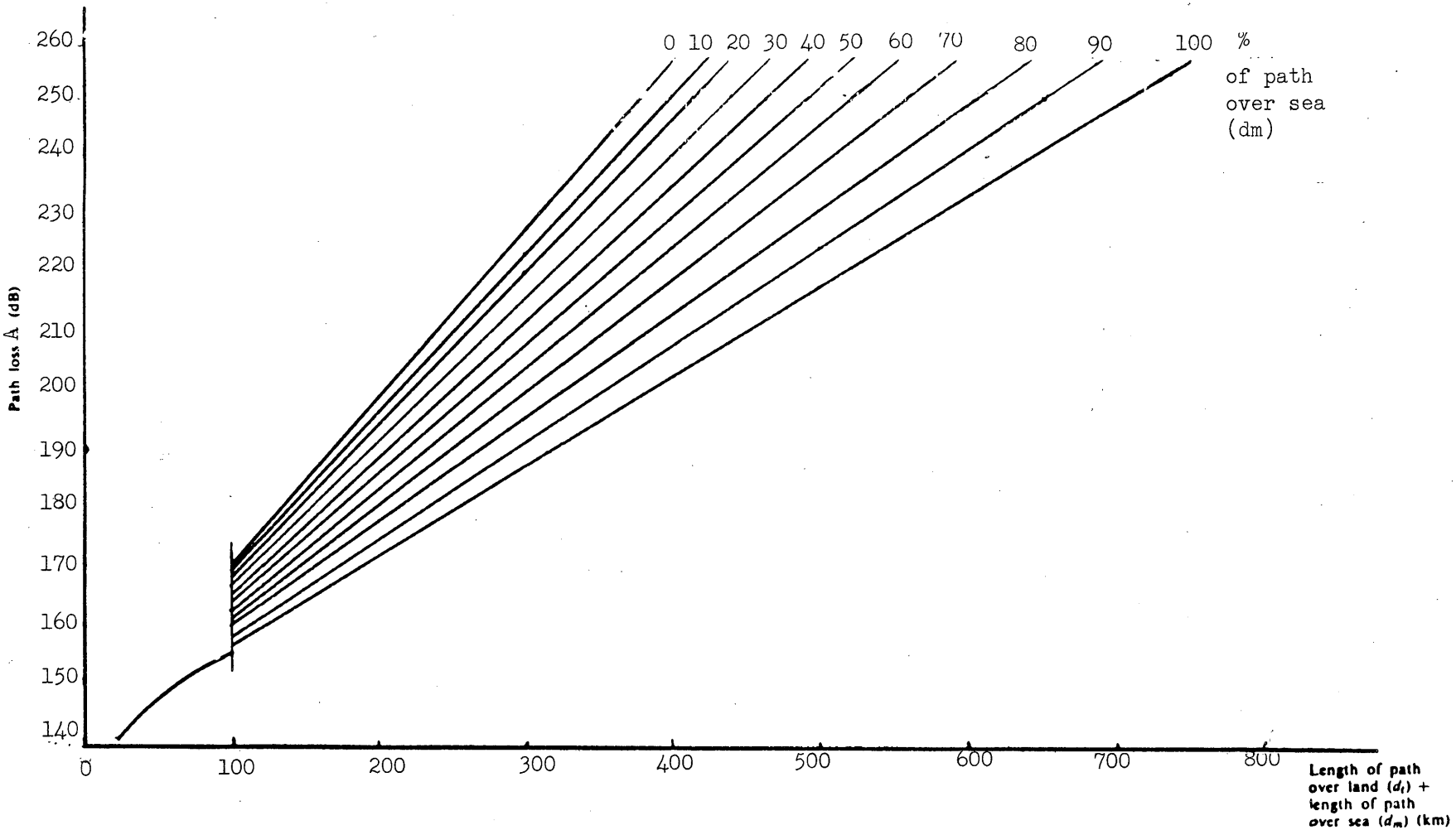


FIGURE 3(bis)

Total path loss A (dB) versus total path length ($d_t + d_m$)(km) and percentage of oversea path (for Region 2)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 191-E
7 July 1983
Original : English

COMMITTEE 4

CONSOLIDATED TEXT OF ANNEXES TO APPENDIX 30 AND THE ANNEXES OF PART I OF THESE FINAL ACTS

Working Group 4C submits the following consolidation of the above-mentioned Annexes, using documents as follows :

Appendix 30, Annex No.	Document No.
Annex 1	75(Rev.4), DL/45, DL/28, 105
Annex 3	76, DL/28, DL/45
Annex 4	90, DL/28, DL/45
Annex 5	160, DL/21, DL/28, DL/45
Annex 8	82(Rev.1) + Corr., 89(Rev.1), DL/28
Annex 9	157, 79, 98(Rev.2), DL/21, DL/28, DL/48
Annex 10	
Annex 11	

Appendix 30, Annexes 1, 3-5, 8-11

ANNEX 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 or the over all equivalent protection margin with respect to frequency assignments in accordance with the Plans

With respect to paragraph /4.3.1.1/, in the case of Regions 1 and 3, an administration shall be considered as being affected if the effect of the proposed modification to the Regions 1 and 3 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.

In the case of Region 2, with respect to paragraph /4.3.1.4/, an administration shall be considered as being affected if the effect of the proposed modification to the Plan, including the cumulative effect of any previous modifications to the plan would result in the overall equivalent protection margin[2] of its entry in the Plan falling either below 0 dB or if already negative, falling more than 0.25 dB below the value resulting from :

- the Plan as established by RARC-83 BSS, or
- the modification of the assignment per Article 4, or
- a new entry in the Plan per Article 4.

---

[1] The limits specified in this Annex relate to the power flux-densities which would be obtained assuming free space propagation conditions, in the case of the Regions 1 and 3 Plan and clear air propagation conditions, including the effects of atmospheric absorption in the Region 2 Plan; see Resolution /No. xyz/ .

[2] For the definition of the overall equivalent protection margin, see item 1.14, Annex /5 of these Final Acts/.

Annex 1, section 2

MOD 2. Limits on the change in the power flux-density in one Plan to protect the broadcasting-satellite service in the other plan in the band 12.2 - 12.5 GHz, and the broadcasting-satellite service in Region 3 in the band 12.5 - 12.7 GHz.

With respect to modifications to a Plan as per paragraph [4.3.1.2] an administration with an assignment in the other Plan or in the broadcasting-satellite service of Region 3 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 dB(W/m^2/27 MHz)	$0^\circ \leq \theta < 0.48^\circ$
$-139 + 25 \log \theta$ dB(W/m^2/27 MHz)	$0.48^\circ \leq \theta < 27.25^\circ$
-103 dB(W/m^2/27 MHz)	$\theta \geq 27.25^\circ$

where θ is the difference in degrees between the longitudes of the broadcasting-satellite space stations of the affected networks.

3. Limits on the change in the 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 Region 1 and 3 Plan is to increase the power flux-density arriving on any part of the territory of that administration by more than 0.25 dB over that resulting from the frequency assignments in the Plan at the time of entry into force of the WARC-BS 77 Final Acts.

The same Region 1 and 3 administration shall be considered as not being affected if the value of the power flux-density anywhere in its territory does not exceed the limits expressed in Annex 5.

An administration in Region 2 shall be considered as being affected if the proposed modification to the Region 1 and 3 Plan would result in exceeding a power flux-density, for any angle of arrival, at any point on its territories, of -125 dBW/m^2/4 kHz when the broadcasting-satellite station uses circular polarization and -128 dBW/m^2/4 kHz when the broadcasting-satellite station uses linear polarization.

Annex 1, Part 4

4. Limits on the change in power flux-density to protect the fixed-satellite service, in the bands 12.5 - 12.7 GHz in Region 1 and 12.2 - 12.7 GHz in Region 3 (with respect to modifications to the Region 2 Plan), and in the band 11.7 - 12.2 GHz in Region 2 (with respect to modifications in the Regions 1 and 3 Plan).

With respect to paragraph /4.3.1.4/, an administration in Region 1 or 3 shall be considered as being affected by a proposed modification to the Region 2 Plan, or one in Region 2 by a proposed modification to the Regions 1 and 3 Plan, if this would result in an increase in the power flux-density on its territory of 0.25 dB or more above that resulting from the frequency assignments in the Plans at the time of entry into force of the respective Final Acts.

However, where an assignment in the Regions 1 and 3 Plan or its subsequent modification gives a power flux-density of less than -138 dB(W/m^2/27 MHz) anywhere in the territory of an administration of Region 2, that administration shall be considered as not affected. Or, where an assignment in the Region 2 Plan or its subsequent modification gives a spectral power flux-density of less than -150 dBW/m^2/40 kHz anywhere in the territory of an administration of Region 1 or 3, that administration shall be considered as not affected.

ANNEX 4

Need for Coordination of a Fixed-Satellite Space Station
with respect to the Plans (Article 7)

The following criteria apply to the coordination of a fixed-satellite space station in Region 2 in the band 11.7 - 12.2 GHz with respect to the Regions 1 and 3 Plan and to the coordination of fixed-satellite space stations in Region 1 in the band 12.5 - 12.7 GHz and in Region 3 in the band 12.2 - 12.7 GHz with respect to the Region 2 Plan.

With respect to paragraph /~7.2.1~/, coordination of a space station in the fixed-satellite service is required when the power flux-density[1] on the territory of an administration having a frequency assignment in a Plan exceeds the value derived from the following expressions :

-147 dBW/m^2/27 MHz for $0 \leqslant \theta < 0.44°$

$-138 + 25 \log \theta$ dBW/m^2/27 MHz for $0.44° \leqslant \theta < 19.1°$

-106 dBW/m^2/27 MHz for $19.1° \leqslant \theta$

θ = the difference in degrees between the longitude of the interfering fixed-satellite or broadcasting-satellite and the longitude of the affected broadcasting-satellite space stations.

[1] For the Regions 1 and 3 to Region 2 direction, free space propagation conditions are assumed. In the reverse direction, clear air propagation conditions are assumed. See Resolution /~No. xyz~/.

ANNEX 5

Power Flux-Density Limits between 12.2 and 12.7 GHz to protect the terrestrial services in Regions 1 and 3 from Interference from Region 2 Broadcasting-Satellite Space Stations (Article 9)

The power flux density limits[1] are as follows:

1) for all the territories of administrations in Regions 1[2] and 3:

-125 dBW/m^2/4 kHz	for broadcasting-satellite space stations using circular polarization;
-128 dBW/m^2/4 kHz	for broadcasting-satellite space stations using linear polarization;

for all angles of arrival; and

2) in the band 12.2 - 12.5 GHz, for territories of administrations in Region 3 and those in the western part of Region 1, West of longitude 30°E :

-132 dBW/m^2/5 MHz	for angles of arrival between 0° and 10° above the horizontal plane;
$-132 + 4.2(\gamma - 10)$ dBW/m^2/5 MHz	for angles of arrival γ (in degrees) between 10° and 15° above the horizontal plane;
-111 dBW/m^2/5 MHz	for angles of arrival between 15° and 90° above the horizontal plane.

---

[1] Calculated assuming clear air propagation conditions. See Resolution [No. xyz].

[2] In the band 12.5 - 12.7 GHz in Region 1, these limits are applicable only to the territory of administrations mentioned in RR 848 and RR 850.

ANNEX /8 (or 6)/7

NOC 3.9

NOC 3.9.1

MOD 3.9.2

Regions	Guard band at the lower edge of the band	Guard band at the upper edge of the band
1	14 MHz	11 MHz
2	12 MHz	12 MHz
3	14 MHz	11 MHz

For Regions 1 and 3, the guard bands assume maximum beam centre e.i.r.p. values of 67 dBW (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.

MOD 3.9.3 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 for Regions 1 and 3 that, for purposes other than a priori planning at this Conference, the latest CCIR Recommendations concerning spurious emissions from broadcasting-satellites should be followed.

CONSOLIDATION OF ANNEX 8

1. Add to section 3.18 of Annex /8/ or /6/

3.18 Use of energy dispersal

For planning in Regions 1 and 3, 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.

In Region 2, for interregional sharing purposes, spectral densities equivalent to those realized in Regions 1 and 3 have to be maintained as specified below but only as required and by whatever means administrations elect to utilize.

When the emission from a broadcasting satellite produces a power flux-density equal to or greater than -138 dBW/m^2/24 MHz within the territory of an administration of Region 1 or 3, the administration responsible shall maintain an energy dispersion of such an emission which would produce a spectral power density in any 40 kHz band 12 dB below the unmodulated carrier power. Where such an emission produces a power flux-density of less than -138 dBW/m^2/24 MHz, energy dispersion need only be maintained to the extent that a spectral power flux-density of -150 dBW/m^2/40 kHz is not exceeded.

ANNEX [9]

Criteria for Sharing Between Services in Regions 1 and 3

ANNEX 10

Orbital Position Limitations

In applying the procedure of Article 4 for modifications to the Regions 1 and 3 Plan administrations shall observe the following criteria :

1) No broadcasting-satellite serving an area in Region 1 and using a frequency in the band 11.7-12.2 GHz shall occupy a nominal orbital position further West than 37° W or further East than 146° E.

2) Any new orbital position in the Plan in the range of orbital arc between 37° W or 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.

ANNEX [11]

Methods of Calculating the Power Flux-Density produced
in the Territories of Regions 1, 2 and 3
by Space Stations in the Broadcasting-Satellite Service

Method of calculation

1. The power flux density produced, under conditions of free space propagation, at a given point, P, on the surface of the Earth, by a satellite in the geostationary orbit, can be calculated from the following data:

1.1 nominal orbital position;

1.2 e.i.r.p., dBW;

1.3 characteristics of the antenna beam at half-power points (i.e. the major and minor axes together with the orientation of the corresponding ellipse);

1.4 geographical coordinates of the boresight (B);

1.5 geographical coordinates of the point P.

2. The values relevant to items 1.1 to 1.4 are indicated in the Plans. The point P can be chosen with reference to the objective of calculation. For the calculations which follow, the coordinates of point P for the Region 1 and 3 Plan have been taken as 35°W and 8°S.

3. To obtain the power flux density [dB (W/m²)] produced at P, calculate:

- the distance, d (metres), between the satellite and the point P;
- the spreading attenuation, A for the distance d:

$$A = 10\log \frac{1}{4\pi d^2}$$

- the angle φ, as seen from the satellite, between points B and P;
- φ_o, the half-power beamwidth, in the direction of P (in the case of a circular beam φ_o will be independent of direction);
- the relative antenna gain, δG in dB, for the calculated values of φ and φ_o using the reference pattern for the co-polar component of the satellite transmitting antenna.

Then apply the expression*:

$$\text{pfd } [\text{dB(W/m}^2)] = \text{e.i.r.p.} + \delta G + A$$

to obtain the power flux density produced at P.

4. The power flux-density produced under clear air conditions[1] is given by :

$$\text{pfd } [\text{dB}(W/m^2)] = \text{e.i.r.p.} + \delta G + A - A_a$$

where

$$A_a = \frac{0.1168}{(\sin^2 \theta + 0.0018)^{\frac{1}{2}} + \sin \theta}$$

where

θ = elevation angle

and the other values are in section 3.

Results

[As in Annex 11 of Appendix 28.]

---

[1] See Resolution [No. xyz]

J.M. ZAMUDIO ZEA
Chairman of Working Group 4C

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Addendum No. 1 to
Document No. 192-E
8 July 1983
Original : English

COMMITTEE 4

CHARACTERISTICS TO BE FURNISHED IN NOTICES

1. Add the following footnote at the bottom of page 6 :

---

[1] In Region 2, notices relating to space stations used for telemetry and tracking purposes associated with the Plan shall be furnished in accordance with Appendix 3 of the Radio Regulations.

2. In Annex /2/ of Section /I/ of the Final Acts, paragraph 12, after co-polar and cross-polar radiation patterns, add :

- rotation accuracy;
- orientation;
- major axis (degrees) at the half-power beamwidth;
- minor axis (degrees) at the half-power beamwidth;
- for beams of other than circular or elliptical shape, indicate the following :
  - co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated;
  - wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;

E.F. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 192-E
7 July 1983
Original : English

Source : Document No. DT/44

COMMITTEE 4

CHARACTERISTICS TO BE FURNISHED IN NOTICES

The attached Annex /2/ of Section /I/ and Annex /2/ of Section /II/ have been agreed upon in Working Group 4B as the appropriate technical parameters to be furnished in notices relating to space stations in the broadcasting-satellite service and for feeder-link stations in the fixed-satellite service, respectively.

It was also agreed that the method of incorporating these parameters into the Radio Regulations could best be determined by a joint working group drawn from Committees 4 and 6 as well as the IFRB.

E.F. MILLER
Chairman of Working Group 4B

ANNEX [2] OF SECTION [II] OF THE FINAL ACTS

DRAFT

Basic characteristics to be furnished in notices relating to feeder link stations in the fixed-satellite service operating in the band 17.3 - 17.8 GHz in Region 2[1]

1. The following information is required in notices relating to transmitting earth stations :

1.1 Country and IFRB number

1.2 [Assigned/allotted] frequency or channel number

1.3 [Assigned/allotted] frequency band

1.4 Date of bringing into use

1.5 Identity of the transmitting feeder link station

1.6 Geographical coordinates of a feeder link earth station transmitting in the band 17.7 - 17.8 GHz. Only the geographical coordinates which define the feeder link service area need be specified for a feeder link earth station transmitting exclusively in the band 17.3 - 17.7 GHz

1.7 Identity of the space station with which communication is to be established

1.8 Rain climatic zone[2]

1.9 Class of emission, necessary bandwidth and description of transmission

1.10 Power characteristics of the transmission

a) The following information is required for each [assigned/allotted] frequency :

- transmit power (dBW) supplied to the input of the antenna;
- maximum power density per Hz (dB (W/Hz)), averaged over the worst 1 MHz band, supplied to the antenna.

---

[1] Notices relating to space stations and earth stations used for telecommand and tracking purposes associated with the Plan shall be furnished in accordance with Appendix 3 of the Radio Regulations.

[2] This information is required for frequency [assignments/allotments] in the band 17.7 - 17.8 GHz.

b) Additional information required if power control is used :

- mode of control;

- range, expressed in dB above the transmit power used in a) above.

c) Additional information required if site diversity is used :

- identity of other earth station with which diversity operation is to be employed

d) Additional information required if depolarization compensation is used :

- characteristics

1.11 Transmitting antenna characteristics :

- gain of the antenna referred to an isotropic radiator in the direction of maximum radiation;

- beamwidth in degrees between the half-power points (describe in detail if not symmetrical);

- the measured radiation diagram of the antenna (taking as a reference the direction of maximum radiation), or the reference radiation diagram to be used for coordination;

- type of polarization;

- sense of polarization;

- the horizon elevation angle[1] in degrees for each azimuth around the earth station;

- altitude[1] of the antenna above mean sea level.

1.12 Modulation characteristics :

- type of modulation;

- pre-emphasis characteristics;

- TV system;

- sound broadcasting characteristics;

- frequency deviation;

- composition of the baseband;

---

[1] This information is required for frequency /assignments/allotments/ in the band 17.7 - 17.8 GHz.

- type of multiplexing of the video and sound signals;

- spectral dispersion characteristics (if used).

1.13 Hours of operation (UTC)

1.14 Coordination

1.15 Agreements

1.16 Other information

1.17 Operating administration or company

2. The following information is required in notices relating to receiving space stations :

2.1 Country and IFRB number

2.2 Orbital position (xxx.xx degrees from the Greenwich Meridian)

2.3 /~Assigned/allotted_/ frequency or channel number

2.4 /~Assigned/allotted_/ frequency band

2.5 Date of bringing into use

2.6 Identity of the space station

2.7 Feeder link service area (geographical coordinates defining the service area)

2.8 Class of station

2.9 Class of emission and necessary bandwidth of the transmission to be received

2.10 Antenna characteristics :

- gain of the antenna referred to an isotropic radiator in the direction of maximum radiation;

- shape of the beam (circular, elliptical or other);

- pointing accuracy;

- type of polarization;

- sense of polarization;

- for circular beams indicate the following :

  - half-power beamwidth in degrees;

  - co-polar and cross-polar radiation patterns;

  - nominal intersection of the antenna beam axis with the Earth;

- For elliptical beams indicate the following :
  - co-polar and cross-polar radiation patterns;
  - rotation accuracy;
  - orientation;
  - major axis (degrees) at the half-power beamwidth;
  - minor axis (degrees) at the half-power beamwidth;
  - nominal intersection of the antenna beam axis with the Earth.
- For beams of other than circular or elliptical shape, indicate the following :
  - co-polar and cross-polar gain contours plotted on a map of the Earth's surface, preferably in a radial projection from the satellite onto a plane perpendicular to the axis from the centre of the Earth to the satellite. The isotropic or absolute gain at each contour which corresponds to a gain of 2, 4, 6, 10 and 20 dB and at 10 dB intervals thereafter, as necessary, below the maximum gain, shall be indicated;
  - wherever practicable, a numerical equation or table providing the necessary information to allow the gain contours to be plotted;
  - for an /assignment/allotment/ in the band 17.7 - 17.8 GHz, gain toward those portions of the geostationary satellite orbit which are visible from the satellite.

2.11 Receiver system noise temperature referenced to the output of the antenna

2.12 Station-keeping accuracy

2.13 Modulation characteristics :

- type of modulation;
- pre-emphasis characteristics;
- TV system;
- sound broadcasting characteristics;
- frequency deviation;
- composition of the baseband;
- type of multiplexing of the video and sound signals
- spectral dispersion characteristics (if used)

2.14 Hours of operation (UTC)

2.15 Coordination

2.16 Agreements

2.17 Other information

2.18 Operating administration or company

[2.19 Range of automatic gain control (if used)]

ANNEX /2/ OF SECTION /I/ OF THE FINAL ACTS

Basic characteristics to be Furnished in Notices Relating to Space Stations in the Broadcasting-Satellite Service[1]

1. Country and IFRB number.

2. Orbital position (xxx.xx 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(s).

9. Class of station.

10. Class of emission and necessary bandwidth.

11. Power supplied to the antenna (dBW) and the maximum power density per Hz (dB(W/Hz)), averaged over the worst 5 MHz, 40 kHz and 4 kHz, supplied to the antenna.

12. Antenna characteristics :

- gain of the antenna referred to an isotropic radiator in the direction of maximum radiation;
- shape of the beam (elliptical, circular, or other);
- pointing accuracy;
- type of polarization;
- sense of polarization;
- for circular beams indicate the following :
  - half-power beamwidth in degrees;
  - co-polar and cross-polar radiation patterns;
- for elliptical beams indicate the following :
  - co-polar and cross-polar radiation patterns.

13. Station-keeping accuracy.

14. Modulation characteristics :
- type of modulation;
- pre-emphasis characteristics;
- TV system;
- sound broadcasting characteristics;
- frequency deviation;
- composition of the baseband;
- type of multiplexing of the video and sound signals;
- energy dispersion characteristics (if used).

15. Hours of operation (UTC).

16. Coordination.

17. Agreements.

18. Other information.

19. Operating administration or company.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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COMMITTEE 4

Brazil

IMPACT OF RAIN ATTENUATION IN PLANNING THE BSS IN TROPICAL REGIONS

(Background information document)

It is well known that rain attenuation plays an important role in planning radio systems at frequencies above 10 GHz. Aiming to use the more appropriate method for rain attenuation calculations in preparing the BSS Plan for Region 2, the CPM model was discussed at length in Working Group 4A. The discussion was based on a proposal to reduce by 23% the rain attenuation calculated from the CPM model to take into account a possible overestimation given by this model. This question was studied in detail and finally it was agreed to adopt a 12% reduction to the CPM model.

It should be pointed out that discussions on this matter have considered CCIR statistical data on an annual basis. For BSS planning we need the value of attenuation exceeded for 1% of the worst month. According to the available data (basically from temperate regions), this value corresponds to an annual percentage of 0.29%. For other climates there is no evidence whether this relationship would be maintained or not. This problem will be discussed below in connection with hydrometeorological Region N.

In general, Region N has two seasons during the year : the dry season and the rainy season. Sometimes during the dry season there is no rain for a long period (several months). However, in the rainy season the showers usually reach very high rain rates. In a climate with these characteristics, it would not be prudent to use a relationship established in temperate regions, where there is no such behaviour through the year. If, on one side the CPM model could produce an overestimation in rain attenuation prediction, on the other side, an underestimation of this value would be due to the relationship between annual and worst month distributions. This statement is based on the evidence that in Region N the relationship above-mentioned probably implies in a worst month, attenuation greater than that observed in temperate climates.

Having in mind that we should use in the implementation of our BSS the more recent available data in estimating rain, a question arises : What should be done if the "possible" overestimation given by the CPM model is exceeded by the "possible" underestimation of the relationship worst month/annual? The problem is critical because depending on the criterion to be used for covering the service areas, more satellite transmission power will be necessary. Probably the best solution is to use the lowest "possible" value of the PFD. If the actual attenuation proves to be lower than the predicted value, it will be possible to reduce the satellite power and,

consequently, to reduce the satellite cost. If this is not the case, we will be aware that the best compromise between rain attenuation and satellite power would have been used.

In conclusion, we must state that :

1) at the moment, for planning purposes, it is advisable to use lower values of PFD;

2) the CCIR should be invited to study not only the models to be used in rain attenuation calculations, but also the relationship between worst month and annual distributions in tropical regions.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

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COMMITTEE 5

Canada

A BASIS FOR DEVELOPMENT OF A REGION-WIDE PLAN

Canada considers it important that one or more plans satisfying stated channel requirements and providing good protection margins be available at this later stage of the Conferenc to compare with the second draft plan, and to provide a basis for future planning work. The first and second draft plans met both channel requirements and orbital constraints, but had excessively large negative protection margins in most service areas. In this document two plans are made available for consideration by the Conference. The development of these plans was different, in that the objective was to meet the channel requirements and provide good protection margins, with the orbital assignments as close to the requested positions as possible.

It is not anticipated that either of the two attached plans will be the exact final plan, but rather that their consideration will provide useful information in the preparation of that plan.

Both attached plans meet the channel requirements of Document 16 (Rev) and DT/40; the reduction in requirements described in Document DT/49 are not all taken into account in these plans due to lack of time. Only downlink interference has been taken into account in calculating the protection margins, although considerable care has been taken in the synthesis of the plans to avoid serious uplink interference.

Because of the approach taken, some of the orbital assignments in the attached plans are outside the stated preferred arcs (especially those of administrations with requirements for many channels). In some cases it may be necessary to choose between reduction of channel requirements and acceptance of less than ideal orbital locations. It is important to note in making this choice that insufficient capacity or unsatisfactory interference levels have continuous consequences, whereas inadequate elevation angles, in most instances, result in poor performance only during extremely heavy rainfall. Similarly, eclipse protection is only significant for a few weeks of the year.

Technical parameters used to model systems in the development of these plans are in accordance with the recommendations of Committee 4 (see Annex 1). The first plan, shown in Annex 2, was developed on the assumption that all satellites would employ simple (Gaussian) elliptical antennas. Such antennas are recommended as being preferred by Committee 4 in Document 108. A second plan, developed on the basis that satellites would use the more complex fast-rolloff antennas described in Document 108 is given for comparison purposes in Annex 3. This second plan provides an estimate of the relative orbit-saving advantages of the fast-rolloff antenna. Comparison of the two plans indicates that it may be advantageous to use fast-rolloff antennas in some areas, but that such use would be of limited benefit in other areas. It is Canada's opinion that fast-rolloff antennas should only be considered where such use would provide a significant advantage. In other areas, where there would be no significant improvement in the plan, they should not be required. This is consistent with the recommendation of Committee 4 (Document 108).

In both plans most assignments are in good orbital positions, with the exception of some of the assignments to administrations requesting several orbital positions. This is consistent with the Canadian note A502 of document DT/49.

It is not expected that either of the attached plans would be the final plan without further improvement. Both of these plans, however, have the important feature that, having satisfied to a large extent the requirements of the Caribbean and Central America, improvements to the sub-plans of North America and South America can be carried out relatively independently of each other. In both plans the protection margins to Canadian, Mexican, and United States assignments are more negative than most others. This should not be taken as an indication that such margins are acceptable but rather that it is anticipated that improvements can be made to those assignments without affecting the rest of the region.

It should be noted that the protection margins given in Annexes 2 and 3 were not calculated with the official analysis program used by the Conference, and may differ slightly from the results of an analysis using the official software. This is due mainly to small changes in the description of beams, technical parameters, etc. Canada believes, however, that the estimates are accurate enough to provide for an initial evaluation of the plans, and to indicate how these plans can be used in future work of the Conference.

Annexes : 3

A N N E X 1

TECHNICAL PARAMETERS
USED IN THE ANALYSIS OF THE PLAN

Number of Channels: 32

Spacing Between Channels: 14.5 MHz

Channel Bandwidth: 24 MHz

Co-Channel Protection Ratio: 28 dB

Adjacent Channel Protection Ratio: 13.5 dB

Rain Model: As agreed in Committee 4

Earth Station Antenna: 1 metre centre-fed, with sidelobe pattern as agreed in Committee 4

Satellite transmitting antenna: Elliptical beam pattern and fast rolloff pattern as agreed in Committee 4

Satellite transmitting antenna pointing accuracy: as agreed in Committee 4

Clear air analysis, having taken into account rain margins in EIRP calculations.

ANNEXE 2 - ANNEX 2 - ANEXO 2

PLAN FONDE SUR DES ANTENNES D'ENGIN SPATIAL SIMPLES (MODELE GAUSSIEN) ET LES PARAMETRES TECHNIQUES RECOMMANDES PAR LA COMMISSION 4

PLAN BASED ON SIMPLE (GAUSSIAN) SPACECRAFT ANTENNAS AND TECHNICAL PARAMETERS AS RECOMMENDED BY COMMITTEE 4

PLAN BASADO EN EL EMPLEO DE ANTENAS DE SATELITE SIMPLES (GAUSSIANAS) Y EN LOS PARAMETROS TECNICOS RECOMENDADOS POR LA COMISION 4

SATELLITE LONGITUDE:	-175.0	-166.0	-157.0	-147.0	-142.0	-137.0	-132.0	-130.0	-128.0	-126.0
SERVICE AREA/POL.+ -	USAP +1	USAP +1	USAM +1	MEX1 +1	CAN1 +1	MEX1 +1	CAN2 +1	PNR +1	----	EQAM -1
SERVICE AREA/POL.+ -	USAP -2	USAP -2	USAM -2	MEX2 -2	CAN1 -2	MEX2 -2	CAN2 -2	CTR -2	----	EQAM +2
SERVICE AREA/POL.+ -	USAP +3	USAP +3	USAM +3	MEX1 +3	CAN1 +3	MEX1 +3	CAN2 +3	----	HNB +3	EQAM -3
SERVICE AREA/POL.+ -	USAP -4	USAP -4	USAM -4	MEX2 -4	CAN1 -4	MEX2 -4	CAN2 -4	CTR -4	----	EQAM +4
SERVICE AREA/POL.+ -	USAP +5	USAP +5	USAM +5	MEX1 +5	CAN1 +5	MEX1 +5	CAN2 +5	----	GTM +5	EQAM -5
SERVICE AREA/POL.+ -	USAP -6	USAP -6	USAM -6	MEX2 -6	CAN1 -6	MEX2 -6	CAN2 -6	----	SLV -6	EQAM +6
SERVICE AREA/POL.+ -	USAP +7	USAP +7	USAM +7	MEX1 +7	CAN1 +7	MEX1 +7	CAN2 +7	----	HND +7	EQAM -7
SERVICE AREA/POL.+ -	USAP -8	USAP -8	USAM -8	MEX2 -8	CAN1 -8	MEX2 -8	CAN2 -8	----	NCG -8	EQAM +8

SATELLITE LONGITUDE:	-124.0	-121.0	-115.0	-112.0	-111.0	-109.0	-108.0	-106.0	-102.0	-101.0
SERVICE AREA/POL.+ -	PRG +1	USAC +1	CLM -1	BR9 +1	USAE +1	CHL2 +1	BRB +1	----	----	----
SERVICE AREA/POL.+ -	----	USAC -2	CLM +2	BR9 -2	USAE -2	CHL1 -2	----	VENM -2	----	CUB +2
SERVICE AREA/POL.+ -	PRG +3	USAC +3	CLM -3	BR9 +3	USAE +3	CHL2 +3	GRD +3	----	----	----
SERVICE AREA/POL.+ -	----	USAC -4	CLM +4	BR9 -4	USAE -4	CHL3 -4	----	VENM -4	BOL +4	----
SERVICE AREA/POL.+ -	PRG +5	USAC +5	CLM -5	BR9 +5	USAE +5	CHL2 +5	BRB +5	----	----	----
SERVICE AREA/POL.+ -	----	USAC -6	CLM +6	BR9 -6	USAE -6	CHL1 -6	----	VENM -6	----	CUB +6
SERVICE AREA/POL.+ -	PRG +7	USAC +7	CLM -7	BR9 +7	USAE +7	CHL2 +7	GRD +7	----	----	----
SERVICE AREA/POL.+ -	----	USAC -8	CLM +8	BR9 -8	USAE -8	CHL3 -8	----	VENM -8	BOL +8	----

SATELLITE LONGITUDE:	-100.0	-98.0	-95.0	-93.5	-92.0	-90.0	-88.5	-86.0	-84.0	-83.0
SERVICE AREA/POL.+ -	AND -1	CAN5 +1	BER +1	ARGS +1	BAH -1	GUY -1	CAN4 +1	PRU -1	----	BR2 -1
SERVICE AREA/POL.+ -	----	CAN5 -2	EQAM -2	ARGN -2	CRB +2	----	CAN4 -2	----	----	BR1 +2
SERVICE AREA/POL.+ -	AND -3	CAN5 +3	BER +3	ARGA +3	BTUR -3	SUR -3	CAN4 +3	PRU -3	HTI +3	BR2 -3
SERVICE AREA/POL.+ -	----	CAN5 -4	EQAM -4	ARGN -4	CRB +4	----	CAN4 -4	----	----	BR1 +4
SERVICE AREA/POL.+ -	AND -5	CAN5 +5	BER +5	ARGS +5	BCAY -5	SUR -5	CAN4 +5	PRU -5	DOM +5	BR2 -5
SERVICE AREA/POL.+ -	----	CAN5 -6	EQAM -6	ARGN -6	CRB +6	----	CAN4 -6	----	----	BR1 +6
SERVICE AREA/POL.+ -	AND -7	CAN5 +7	BER +7	ARGA +7	JMC -7	TRD -6	CAN4 +7	PRU -6	----	BR2 -7
SERVICE AREA/POL.+ -	----	CAN5 -8	EQAM -8	ARGN -8	CRB +8	----	CAN4 -8	----	----	BR1 +8

SATELLITE LONGITUDE:	-82.0	-80.0	-78.0	-74.0	-73.0	-71.5	-68.0	-64.0	-58.0	-57.0
SERVICE AREA/POL.+ -	VCT +1	MEX1 +1	CAN3 +1	BR6 +1	CAN6 +1	URG +1	USAM +1	BR4 +1	MEX1 +1	FLK2 +1
SERVICE AREA/POL.+ -	BMONT -2	MEX2 -2	CAN3 -2	BR7 -2	CAN6 -2	----	USAM -2	BR5 -2	MEX2 -2	----
SERVICE AREA/POL.+ -	BKITS +3	MEX1 +3	CAN3 +3	BR6 +3	CAN6 +3	URG +3	USAM +3	BR4 +3	MEX1 +3	FLK2 +3
SERVICE AREA/POL.+ -	BVIRG -4	MEX2 -4	CAN3 -4	BR8 -4	CAN6 -4	----	USAM -4	BR5 -4	MEX2 -4	----
SERVICE AREA/POL.+ -	LCA +5	MEX1 +5	CAN3 +5	BR6 +5	CAN6 +5	URG +5	USAM +5	BR4 +5	MEX1 +5	----
SERVICE AREA/POL.+ -	ATG -6	MEX2 -6	CAN3 -6	BR7 -6	CAN6 -6	----	USAM -6	BR5 -6	MEX2 -6	----
SERVICE AREA/POL.+ -	DMA +7	MEX1 +7	CAN3 +7	BR6 +7	CAN6 +7	URG +7	USAM +7	BR4 +7	MEX1 +7	----
SERVICE AREA/POL.+ -	GRD -8	MEX2 +8	CAN3 -8	BR8 -8	CAN6 -8	----	USAM -8	BR5 -8 (BR3,4,5)	MEX2 -8	----

SATELLITE LONGITUDE:	-56.0	-49.0	-47.0	-40.0	-33.0	-31.0	-28.0
SERVICE AREA/POL.+ -	SPM2 +1	USAC +1	BR6 +1	USAE +1	BR2 +1	BER +1	GRD +1
SERVICE AREA/POL.+ -	ATN -2	USAC -2	BR7 -2	USAE -2	BR4 -2	FLK -2	JMC -2
SERVICE AREA/POL.+ -	GUFM +3	USAC +3	BR6 +3	USAE +3	BR4 +3	----	GRD +3
SERVICE AREA/POL.+ -	GRL -4	USAC -4	BR8 -4	USAE -4	BR4 -4	FLK -4	GUY -4
SERVICE AREA/POL.+ -	SPM2 +5	USAC +5	BR6 +5	USAE +5	BR2 +5	BER +5	GRD +5
SERVICE AREA/POL.+ -	ATN -6	USAC -6	BR7 -6	USAE -6	BR4 -6	----	----
SERVICE AREA/POL.+ -	GUFM +7	USAC +7	BR6 +7	USAE +7	BR4 +7	----	GRD +7
SERVICE AREA/POL.+ -	GRL -8	USAC +8	BR8 -8 (BR5,6,7,8)	USAE -8	BR4 -8 (BR1,2,3,4)	----	----

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
ARG	ARGINSU2/261	-93.5	2:31	3.1	14.4	3.10
ARG	ARGNORT2/262	-93.5	2:31	32.5	49.9	-2.92
ARG	ARGSURO2/263	-93.5	2:31	22.1	39.3	-1.09
ATG	ATGSJNO1/264	-82.0	0:45	59.2	59.6	1.94
B	BOOCE312/235	-33.0	-1:31	69.5	85.5	.35
B	BOOCE412/236	-33.0	-1:31	52.2	71.8	.35
B	BOOSU112/234	-33.0	-1:31	46.4	59.6	.35
B	BOOSU212/238	-33.0	-1:31	59.2	76.0	.35
B	BOOCE512/237	-47.0	-0:35	76.6	88.7	.85
B	BOONO612/240	-47.0	-0:35	64.4	75.3	.85
B	BOONO712/241	-47.0	-0:35	66.3	76.6	.85
B	BOONO812/242	-47.0	-1:35	58.6	69.0	.85
B	BOOSU111/226	-83.0	1:49	40.1	47.5	-.10
B	BOOSU211/227	-83.0	1:49	28.5	46.4	.66
B	BOOCE311/228	-64.0	0:33	53.0	70.6	-.80
B	BOOCE411/229	-64.0	0:33	60.5	70.7	.24
B	BOOCE511/230	-64.0	0:33	71.2	82.8	.24
B	BOONO611/231	-74.0	1:13	61.1	76.6	-.28
B	BOONO711/232	-74.0	1:13	64.4	81.0	-.09
B	BOONO811/233	-74.0	0:13	75.9	84.0	.31
B	BOOSE911/239	-112.0	3:45	8.2	18.9	.29
BAH	BAHIFRB1/115	-92.0	0:25	54.5	58.0	-1.15
BLZ	BLZ00001/ 97	-128.0	1:49	43.0	44.8	-.61
BOL	BOLIFRB2/252	-102.0	2:05	36.0	49.7	.02
BOL	BOLAND01/219	-100.0	1:57	37.9	51.8	1.21
BRB	BRB00001/ 63	-108.0	2:29	32.5	33.1	-3.00
CAN	CAN00101/284	-142.0	0:45	9.9	31.8	-2.51
CAN	CAN00201/286	-142.0	1:45	9.2	27.8	-2.51
CAN	CAN00102/285	-132.0	0:05	11.0	31.2	-2.32
CAN	CAN00202/287	-132.0	1:15	10.5	31.2	-2.32

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
CAN	CAN00302/289	-132.0	2:05	7.2	26.6	-2.32
CAN	CAN00203/288	-78.0	-2:31	6.1	29.5	-2.76
CAN	CAN00303/290	-78.0	-1:31	7.2	31.4	-2.76
CAN	CAN00403/292	-78.0	-0:31	10.5	41.6	-2.76
CAN	CAN00304/291	-88.5	-1:00	9.2	33.4	-1.19
CAN	CAN00404/293	-88.5	1:05	11.2	41.5	-1.19
CAN	CAN00504/295	-88.5	-1:00	10.1	36.5	-1.19
CAN	CAN00405/294	-98.0	0:49	10.4	39.3	-2.44
CAN	CAN00505/296	-98.0	0:49	8.5	33.5	-2.44
CAN	CAN00605/298	-98.0	1:49	15.8	30.4	-2.44
CAN	CAN00506/297	-73.0	-0:51	11.3	38.2	-2.81
CAN	CAN00606/299	-73.0	-0:09	20.9	39.4	-2.81
CHL	CHLCONT4/210	-109.0	2:33	35.4	41.3	-.92
CHL	CHLCONT5/211	-109.0	2:33	28.6	37.2	-1.57
CHL	CHLCONT6/212	-109.0	2:33	3.8	31.8	1.62
CHL	CHLPAC02/200	-109.0	2:33	39.5	45.6	2.35
CHL	PAOPAC01/204	-109.0	-0:27	57.3	60.8	3.50
CLM	CLM00001/ 11	-115.0	1:57	34.6	49.0	-1.40
CLM	CLMAND01/220	-100.0	0:57	51.4	64.7	3.27
CTR	CTR00201/257	-130.0	1:57	34.6	38.4	2.33
CUB	CUB00001/ 12	-101.0	1:01	51.2	58.8	-1.95
DMA	DMAIFRB1/118	-82.0	0:45	59.8	60.5	.42
DNK	GRLDNK01/ 13	-56.0	0:01	3.1	21.4	5.72
DOM	DOMIFRB2/259	-84.0	-0:07	61.3	65.0	1.60
EQA	EQAC0001/ 98	-126.0	2:41	30.7	37.1	3.22
EQA	EQAG0001/ 99	-126.0	2:41	45.6	49.7	3.19
EQA	EQACAND1/221	-100.0	0:57	61.0	67.7	2.21
EQA	EQAGAND1/222	-100.0	0:57	76.7	80.9	2.21
F	GUFMGG01/ 16	-56.0	0:01	67.2	86.8	1.61
F	SPMFRAN3/ 17	-56.0	0:01	30.7	36.0	.02

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
G	BERBERMU/ 18	-95.0	1:37	40.1	40.4	.23
G	BERBER02/244	-31.0	-2:39	37.7	37.8	-.02
G	FLKFALKS/ 19	-31.0	-2:39	24.2	25.8	4.05
G	FLKANT01/243	-57.0	0:05	13.7	25.3	8.50
G	IOBBVIRG/ 21	-82.0	0:45	60.2	60.7	.23
G	IOBKN001/245	-82.0	0:45	59.5	60.1	1.10
G	IOBMONTE/ 24	-82.0	0:45	59.1	60.1	1.30
G	IOBCAYMA/ 22	92.0	0:25	63.0	64.3	-1.15
G	IOBTURCA/ 26	-92.0	0:25	55.5	56.4	-1.03
GRD	GRD00002/ 58	-28.0	-2:51	48.4	49.1	7.26
GRD	GRD00003/ 59	-108.0	2:29	34.8	35.8	-4.20
GRD	GRD00059/272	-82.0	0:45	61.7	62.8	-2.03
GTM	GTMIFRB2/255	-128.0	1:37	44.1	49.0	-2.59
GUY	GUY00201/267	-90.0	2:17	51.2	56.0	1.80
GUY	GUY00302/274	-28.0	-1:51	51.7	56.8	5.31
HND	HNDIFRB2/253	-128.0	1:49	36.3	43.1	.23
HOL	ATNBEAM1/283	-56.0	-1:07	66.8	69.4	2.82
HTI	HTI00002/258	-84.0	-0:07	62.7	66.1	-.44
JMC	JMC00002/246	-28.0	2:51	27.4	29.9	1.46
JMC	JMC00005/273	-92.0	0:25	62.2	63.6	-.03
JMC	CRBBAH01/	-92.0	0:25	54.5	58.0	-1.71
JMC	CRBBLZ01/	-92.0	-0:35	67.8	70.8	-1.71
JMC	CRBBER01/251	-92.0	1:25	42.1	42.4	-1.71
JMC	CRBJMC01/	-92.0	0:25	62.2	63.6	-1.71
JMC	CRBEC001/250	-92.0	1:25	46.5	53.7	-1.71
LCA	LCAIFRB1/117	-82.0	0:45	60.6	61.2	.31
MEX	MEX01NTE/215	-80.0	-2:23	35.1	54.2	-1.02
MEX	MEX01SUR/216	-58.0	-3:53	33.7	52.6	-3.20
MEX	MEX02NTE/217	-147.0	2:05	27.6	42.9	-3.15
MEX	MEX02SUR/218	-137.0	1:25	28.1	47.6	-2.29

.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
NCG	NCG00003/256	-128.0	1:49	36.3	41.6	.12
PNR	PNRIFRB2/254	-130.0	2:57	29.1	35.4	1.57
PRG	PRG00002/265	-124.0	3:29	10.7	19.1	-1.54
PRU	PRU00002/225	-86.0	0:01	62.1	82.4	4.37
PRU	PRUAND01/223	-100.0	0:57	50.1	67.5	2.21
SLV	SLVIRFB2/260	-128.0	1:49	41.3	44.1	-.41
SUR	SURINAME/ 61	-90.0	2:49	37.7	51.7	3.68
TRD	TRD00001/ 78	-90.0	1:17	53.3	55.4	1.00
URG	URG00001/ 32	-71.5	1:05	49.6	58.2	.03
USA	ALS00002/ 73	-175.0	0:57	8.1	26.7	****
USA	ALS00003/ 74	-166.0	0:21	9.8	27.5	****
USA	HWA00002/ 75	-175.0	0:57	57.2	59.7	****
USA	HWA00003/ 76	-166.0	0:21	54.7	64.9	****
USA	PTRVIR01/ 77	-111.0	0:41	65.2	66.8	****
USA	USAWH003/277	-175.0	2:57	8.1	20.6	-.03
USA	USAWH004/278	-166.0	2:35	13.7	27.7	-3.12
USA	USAWH001/275	-157.0	3:03	10.1	30.5	-1.86
USA	USAWH002/276	-70.0	-3:03	18.9	47.2	-2.78
USA	USAEH003/281	-121.0	2:27	17.2	39.8	-.12
USA	USAEH004/282	-111.0	1:51	22.4	47.5	-4.29
USA	USAEH001/279	-49.0	-1:27	27.5	53.0	-.71
USA	USAEH002/280	-40.0	-2:35	19.6	38.9	-2.25
VCT	VCT00001/271	-82.0	0:45	61.3	61.5	-1.26
VEN	VEN11VEN/270	-106.0	2:21	36.4	50.8	.43
VEN	VEN02VEN/ 57	-106.0	2:21	36.4	50.8	.43
VEN	VENAND02/269	-100.0	1:57	42.9	57.3	2.21

PLAN FONDE SUR DES ANTENNES D'ENGIN SPATIAL A COUPURE BRUSQUE ET LES RECOMMANDATIONS DE LA COMMISSION 4 POUR LES AUTRES PARAMETRES TECHNIQUES

PLAN BASED ON FAST-ROLLOFF SPACECRAFT ANTENNAS AND RECOMMENDATIONS OF COMMITTEE 4 FOR THE OTHER TECHNICAL PARAMETERS

PLAN BASADO EN EL EMPLEO DE ANTENAS DE SATÉLITE CON RÉGIMEN DE CAÍDA RÁPIDA Y EN LAS RECOMENDACIONES DE LA COMISIÓN 4 CON RESPECTO A LOS DEMÁS PARÁMETROS TÉCNICOS

SATELLITE LONGITUDE:	-175.0	-166.0	-158.0	-149.0	-140.0	-137.0	-131.0	-128.0	-121.0	-119.0
SERVICE AREA/POL.+ -	USAP +1	USAP +1	USAM +1	USAM +1	CAN1 +1	MEX1 +1	CAN2 +1	MEX1 +1	CLM +1	USAC +1
SERVICE AREA/POL.+ -	USAP -2	USAP -2	USAM -2	USAM -2	CAN1 -2	MEX2 -2	CAN2 -2	MEX2 -2	CLM -2	USAC -2
SERVICE AREA/POL.+ -	USAP +3	USAP +3	USAM +3	USAM +3	CAN1 +3	MEX1 +3	CAN2 +3	MEX1 +3	CLM +3	USAC +3
SERVICE AREA/POL.+ -	USAP -4	USAP -4	USAM -4	USAM -4	CAN1 -4	MEX2 -4	CAN2 -4	MEX2 -4	CLM -4	USAC -4
SERVICE AREA/POL.+ -	USAP +5	USAP +5	USAM +5	USAM +5	CAN1 +5	MEX1 +5	CAN2 +5	MEX1 +5	CLM +5	USAC +5
SERVICE AREA/POL.+ -	USAP -6	USAP -6	USAM -6	USAM -6	CAN1 -6	MEX2 -6	CAN2 -6	MEX2 -6	CLM -6	USAC -6
SERVICE AREA/POL.+ -	USAP +7	USAP +7	USAM +7	USAM +7	CAN1 +7	MEX1 +7	CAN2 +7	MEX1 +7	CLM +7	USAC +7
SERVICE AREA/POL.+ -	USAP -8	USAP -8	USAM -8	USAM -8	CAN1 -8	MEX2 -8	CAN2 -8	MEX2 -8	CLM -8	USAC -8

SATELLITE LONGITUDE:	-114.0	-112.0	-110.0	-108.0	-106.0	-104.0	-102.0	-100.0	-98.5	-97.0
SERVICE AREA/POL.+ -	PRG +1	GTM +1	USAE +1	AND +1	-----	CHL2 +1	BR9 +1	-----	CAN4 +1	JMC +1
SERVICE AREA/POL.+ -	-----	HND -2	USAE -2	PNR -2	CAY -2	CHL1 -2	BR9 -2	-----	CAN4 -2	CRB -2
SERVICE AREA/POL.+ -	PRG +3	SLV +3	USAE +3	AND +3	-----	CHL2 +3	BR9 +3	-----	CAN4 +3	BAH +3
SERVICE AREA/POL.+ -	-----	-----	USAE -4	CTR -4	TUR -4	CHL3 -4	BR9 -4	-----	CAN4 -4	CRB -4
SERVICE AREA/POL.+ -	PRG +5	-----	USAE +5	AND +5	-----	CHL2 +5	BR9 +5	CUB +5	CAN4 +5	-----
SERVICE AREA/POL.+ -	-----	-----	USAE -6	CTR -6	-----	CHL1 -6	BR9 -6	-----	CAN4 -6	CRB -6
SERVICE AREA/POL.+ -	PRG +7	-----	USAE +7	AND +7	HNB +7	CHL2 +7	BR9 +7	CUB +7	CAN4 +7	-----
SERVICE AREA/POL.+ -	-----	NCG -8	USAE -8	-----	-----	CHL3 -8	BR9 -8	-----	CAN4 -8	CRB -8

SATELLITE LONGITUDE:	-95.0	-93.0	-90.0	-88.5	-87.0	-85.5	-83.7	-82.0	-80.0	-77.0
SERVICE AREA/POL.+ -	EQAM +1	ARGN +1	VEN +1	CAN5 +1	HTI +1	MEX1 +1	PRU +1	BR2 -1	BER -1	VCT +1
SERVICE AREA/POL.+ -	EQAG -2	ARGS -2	BOL -2	CAN5 -2	BRB -2	MEX2 -2	SUR -2	BR1 +2	-----	BMONT -2
SERVICE AREA/POL.+ -	EQAM +3	ARGN +3	VEN +3	CAN5 +3	DOM +3	MEX1 +3	PRU +3	BR2 -3	BER -3	BKITS +3
SERVICE AREA/POL.+ -	EQAG -4	ARGA -4	-----	CAN5 -4	BRB -4	MEX2 +4	SUR -4	BR1 +4	-----	BVIRG -4
SERVICE AREA/POL.+ -	EQAM +5	ARGN +5	VEN +5	CAN5 +5	-----	MEX1 +5	PRU +5	BR2 -5	BER -5	LCA +5
SERVICE AREA/POL.+ -	EQAG -6	ARGS -6	BOL -6	CAN5 -6	GUY -6	MEX2 -6	-----	BR1 +6	-----	ATG -6
SERVICE AREA/POL.+ -	EQAM +7	ARGN +7	VEN +7	CAN5 +7	-----	MEX1 +7	PRU +6	BR2 -7	BER -7	DMA +7
SERVICE AREA/POL.+ -	EQAG -8	ARGA -8	-----	CAN5 -8	-----	MEX2 -8	-----	BR1 +8	-----	GRD -8

SATELLITE LONGITUDE:	-75.5	-74.0	-71.0	-67.0	-65.5	-64.0	-62.5	-60.0	-57.0	-55.0
SERVICE AREA/POL.+ -	USAC +1	BR6 +1	URG +1	TRD +1	CAN6 +1	BR3 +1	MEX1 +1	CAN3 +1	FLK2 +1	SPM2 +1
SERVICE AREA/POL.+ -	USAC -2	BR7 -2	-----	GRD -2	CAN6 -2	BR5 -2	MEX2 -2	CAN3 -2	-----	GUFN -2
SERVICE AREA/POL.+ -	USAC +3	BR6 +3	URG +3	BRB +3	CAN6 +3	BR4 +3	MEX1 +3	CAN3 +3	FLK2 +3	GRL +3
SERVICE AREA/POL.+ -	USAC -4	BR8 -4	-----	HTI -4	CAN6 -4	BR3 -4	MEX2 -4	CAN3 -4	-----	ATN -4
SERVICE AREA/POL.+ -	USAC +5	BR6 +5	URG +5	DOM +5	CAN6 +5	BR4 +5	MEX1 +5	CAN3 +5	-----	SPM2 +5
SERVICE AREA/POL.+ -	USAC -6	BR7 -6	-----	-----	CAN6 -6	BR5 -6	MEX2 -6	CAN3 -6	-----	GUFN -6
SERVICE AREA/POL.+ -	USAC +7	BR6 +7	URG +7	-----	CAN6 +7	BR4 +7	MEX1 +7	CAN3 +7	-----	GRL +7
SERVICE AREA/POL.+ -	USAC -8	BR8 -8 (BR6,7,8)	-----	-----	CAN6 -8	BR5 -8 (BR3,4,5)	MEX2 -8	CAN3 -8	-----	ATN -8

SATELLITE LONGITUDE:	-45.0	-43.5	-37.0	-33.0	-31.0
SERVICE AREA/POL.+ -	BR5 +1	USAE +1	GUY +1	BR1 +1	FLK +1
SERVICE AREA/POL.+ -	BR6 -2	USAE -2	GRD -2	BR2 -2	BER -2
SERVICE AREA/POL.+ -	BR7 +3	USAE +3	JMC +3	BR3 +3	FLK +3
SERVICE AREA/POL.+ -	BR8 -4	USAE -4	GRD -4	BR4 -4	BER -4
SERVICE AREA/POL.+ -	BR5 +5	USAE +5	-----	BR1 +5	-----
SERVICE AREA/POL.+ -	BR6 -6	USAE -6	GRD -6	BR2 -6	-----
SERVICE AREA/POL.+ -	BR7 +7	USAE +7	-----	BR3 +7	-----
SERVICE AREA/POL.+ -	BR8 -8 (BR5,6,7,8)	USAE -8	GRD -8	BR4 -8 (BR1,2,3,4)	-----

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
ARG	ARGINSU2/261	-93.0	2:29	3.3	14.5	2.44
ARG	ARGNORT2/262	-93.0	2:29	32.8	50.4	2.19
ARG	ARGSUR02/263	-93.0	2:29	22.3	39.6	-.14
ATG	ATGSJN01/264	-77.0	0:25	63.2	63.6	1.91
B	BOOCE312/235	-33.0	-1:31	69.5	85.5	.71
B	BOOCE412/236	-33.0	-1:31	51.0	71.0	.71
B	BOOSU112/234	-33.0	-1:31	45.9	59.1	.71
B	BOOSU212/238	-33.0	-1:31	58.0	76.0	.71
B	BOOCE512/237	-45.0	-0:43	74.7	86.4	1.46
B	BOONO612/240	-45.0	-0:43	62.3	74.2	1.46
B	BOONO712/241	-45.0	-0:43	64.0	75.1	1.46
B	BOONO812/242	-45.0	-1:43	56.4	66.7	1.46
B	BOOSU111/226	-82.0	1:45	40.9	48.3	1.50
B	BOOSU211/227	-82.0	1:45	29.6	47.4	1.19
B	BOOCE311/228	-64.0	0:33	53.0	70.6	1.33
B	BOOCE411/229	-64.0	0:33	60.5	70.7	1.33
B	BOOCE511/230	-64.0	0:33	71.2	82.3	1.33
B	BOONO611/231	-74.0	1:13	61.1	76.6	1.30
B	BOONO711/232	-74.0	1:13	64.4	81.0	.45
B	BOONO811/233	-74.0	0:13	75.9	84.0	.45
B	BOOSE911/239	-102.0	3:05	18.1	28.6	.10
BAH	BAHIFRB1/115	-97.0	0:45	51.6	55.0	.91
BLZ	BLZ00001/ 97	-106.0	0:21	60.2	62.7	3.30
BOL	BOLIFRB2/252	-90.0	1:17	47.8	62.2	4.80
BOL	BOLAND01/219	-108.0	2:29	30.0	43.3	1.93
BRB	BRB00001/ 63	-87.0	1:05	54.3	55.0	-.89
CAN	CAN00101/284	-140.0	0:37	10.2	32.4	-3.55
CAN	CAN00201/286	-140.0	1:37	9.5	28.5	-3.55
CAN	CAN00102/285	-131.0	0:01	11.1	34.1	-2.06
CAN	CAN00202/287	-131.0	1:01	10.7	31.5	-2.06

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
CAN	CAN00302/289	-131.0	2:01	10.7	31.5	-2.06
CAN	CAN00203/288	-60.0	-3:03	1.2	21.4	.29
CAN	CAN00303/290	-60.0	-2:43	2.6	24.5	.29
CAN	CAN00403/292	-60.0	-1:43	7.7	36.9	.29
CAN	CAN00304/291	-98.5	-0:09	10.6	33.7	-2.47
CAN	CAN00404/293	-98.5	0:51	10.4	39.2	-2.47
CAN	CAN00504/295	-98.5	0:51	8.4	33.3	-2.47
CAN	CAN00405/294	-88.5	0:11	11.2	41.5	-2.50
CAN	CAN00505/296	-88.5	0:11	10.1	36.5	-2.50
CAN	CAN00605/298	-88.5	1:11	18.4	34.9	-2.50
CAN	CAN00506/297	-65.5	-1:21	10.8	37.8	-.98
CAN	CAN00606/299	-65.5	-0:21	21.3	39.9	-.98
CHL	CHLCONT4/210	-104.0	2:13	42.6	49.4	-1.65
CHL	CHLCONT5/211	-104.0	2:13	31.5	41.2	-1.71
CHL	CHLCONT6/212	-104.0	2:13	5.0	34.2	1.81
CHL	CHLPAC02/200	-104.0	2:13	39.6	46.1	1.81
CHL	PAQPAC01/204	-104.0	-0:47	56.6	60.7	1.81
CLM	CLM00001/ 11	-121.0	2:21	28.1	42.7	1.06
CLM	CLMAND01/220	-108.0	1:29	42.4	56.3	1.93
CTR	CTR00201/257	-108.0	0:29	58.3	61.9	1.33
CUB	CUB00001/ 12	-100.0	0:57	52.1	59.4	1.99
DMA	DMAIFRB1/118	-77.0	0:25	64.1	64.8	2.35
DNK	GRLDNK01/ 13	-55.0	-0:03	3.1	21.4	7.02
DOM	DOMIFRB2/259	-87.0	0:05	59.1	62.9	2.21
EQA	EQAC0001/ 98	-95.0	0:37	66.8	73.5	1.86
EQA	EQAG0001/ 99	-95.0	0:37	82.5	86.7	5.93
EQA	EQACAND1/221	-108.0	1:29	51.8	58.5	1.93
EQA	EQAGAND1/222	-108.0	1:29	67.4	71.5	1.93
F	GUFMGG01/ 16	-55.0	-0:03	66.8	87.3	2.71
F	SPMFRAN3/ 17	-55.0	-0:03	30.5	36.0	.38

ADMIN.	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
G	BERBERMU/ 18	-80.0	0:37	48.8	49.1	7.16
G	BERBER02/244	-31.0	-2:39	27.7	37.8	1.95
G	FLKFALKS/ 19	-31.0	-3:39	24.2	25.8	1.30
G	FLKANT01/243	-57.0	0:05	13.7	25.3	1.20
G	IOBBVIRG/ 21	-77.0	0:25	63.3	64.1	1.95
G	IOBKN001/245	-77.0	0:25	63.2	64.1	1.23
G	IOBMONTE/ 24	-77.0	0:25	63.7	64.2	2.48
G	IOBCAYMA/ 22	-106.0	1:21	52.3	54.0	1.49
G	IOBTURCA/ 26	-106.0	1:21	43.5	44.7	2.96
GRD	GRD00002/ 58	-37.0	-2:15	57.8	58.3	1.90
GRD	GRD00003/ 59	-67.0	-0:15	73.7	74.7	.41
GRD	GRD00059/272	-77.0	0:25	66.4	67.6	2.12
GTM	GTMIFRB2/255	-112.0	0:45	56.6	61.7	1.07
GUY	GUY00201/267	-87.0	2:05	54.5	59.3	1.20
GUY	GUY00302/274	-37.0	-1:15	60.7	65.9	1.83
HND	HNDIFRB2/253	-112.0	0:45	52.5	59.0	1.98
HOL	ATNBEAM1/283	-55.0	-1:03	66.8	69.4	9.90
HTI	HTI00002/258	-87.0	0:05	60.8	64.4	2.01
JMC	JMC00002/246	-97.0	0:45	58.2	60.0	1.21
JMC	JMC00005/273	-37.0	-3:15	38.1	41.0	1.58
JMC	CRBBAH01/	-97.0	0:45	51.6	55.0	.72
JMC	CRBBLZ01/	-97.0	-0:15	66.0	69.0	.72
JMC	CRBBER01/251	-97.0	1:45	38.7	39.0	.72
JMC	CRBJMC01/	-97.0	0:45	58.2	60.0	.72
JMC	CRBEC001/250	-97.0	1:45	40.9	48.2	.72
LCA	LCAIFRB1/117	-77.0	0:25	65.2	65.7	2.03
MEX	MEX01NTE/215	-85.5	-2:01	39.1	57.1	-.87
MEX	MEX01SUR/216	-62.5	-3:33	36.1	54.9	-.59
MEX	MEX02NTE/217	-137.0	1:25	35.7	49.7	-1.20
MEX	MEX02SUR/218	-128.0	0:21	35.8	54.7	.16

	BEAM/ IFRB NO.	ORBIT LOC'N.	ECLIPSE TIME	MIN./MAX. ELEVATION		WORST MARGIN
NCG	NCG00003/256	-112.0	0:45	52.6	58.0	7.10
PNR	PNRIFRB2/254	-108.0	1:29	53.0	59.3	.21
PRG	PRG00002/265	-114.0	2:43	19.1	27.7	4.87
PRU	PRU00002/225	-83.7	-0.08	63.7	84.3	2.20
PRU	PRUAND01/223	-108.0	1:29	49.3	58.4	1.93
SLV	SLVIRFB2/260	-112.0	0:45	57.5	60.2	3.05
SUR	SURINAME/ 61	-83.7	2:23	44.6	58.8	2.50
TRD	TRD00001/ 78	-67.0	-0:15	74.5	76.7	3.10
URG	URG00001/ 32	-71.0	1:01	45.9	51.9	3.20
USA	ALS00002/ 73	-175.0	0:57	8.1	26.7	****
USA	ALS00003/ 74	-166.0	0:21	9.8	27.5	****
USA	HWA00002/ 75	-175.0	0:57	57.2	59.7	****
USA	HWA00003/ 76	-166.0	0:21	54.7	64.9	****
USA	PTRVIR01/ 77	-75.5	-0:41	65.2	66.8	****
USA	USAWH003/277	-175.0	2:57	8.1	20.6	.04
USA	USAWH004/278	-166.0	2:21	13.7	27.7	-3.52
USA	USAWH001/275	-158.0	2:49	10.1	30.5	-2.72
USA	USAWH002/276	-149.0	2:13	15.6	37.3	-1.73
USA	USAEH003/281	-119.0	1:13	27.9	52.0	-1.03
USA	USAEH004/282	-110.0	1:37	22.4	47.5	-1.50
USA	USAEH001/279	-75.5	-1:41	27.5	53.0	-.36
USA	USAEH002/280	-43.5	-2:49	19.6	38.9	1.14
VCT	VCT00001/271	-77.0	0:25	65.8	66.1	1.61
VEN	VEN11VEN/270	-90.0	1:17	53.8	67.8	5.20
VEN	VEN02VEN/ 57	-90.0	1:17	54.1	73.1	5.20
VEN	VENAND02/269	-108.0	2:29	34.3	48.6	1.93

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 195-E
8 July 1983
Original : English

COMMITTEE 3

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Friday, 1 July 1983, at 0930 hrs.

Chairman : Mr H. BALDUINO (Federative Republic of Brazil)

Subjects discussed :	Document No.
1. Summary record of the 1st meeting of Committee 3	58
2. Statement of the accounts of the Conference	DT/35
3. Budget of the Conference - Final Acts	8 (pages 7-8)
4. Other business	

1. Summary record ot the 1st meeting of Committee 3 (Document No. 58)

1.1 Approved with no comment.

2. Statement of the accounts of the Conference (Document No. DT/35)

2.1 The Secretary gave some explanations concerning the statement of the accounts of the Conference at 22 June 1983, drawing attention in particular to the differences between the budget and the estimated expenditure.

2.2 The credit margin in relation to the budget was 195,000 Swiss francs.

2.3 In reply to a query, he said that the estimated credits would be sufficient to cover the additional expenditure arising from meetings held on Saturdays.

The Committee took note of the document.

3. Budget of the Conference - Final Acts (Document No. 8, pages 7-8)

3.1 The Secretary drew the Committee's attention to the fact that expenditure relating to data capture for the storage of the texts would be charged to the ordinary budget owing to the regularization of jobs decided by the Administrative Council. The sum that may have to be charged to the supplementary publications budget was therefore reduced to 2/3 of 15,000 Swiss francs.

The proposal put forward in the budget was accepted.

4. Other business

4.1 The Delegation of the United States drew the Committee's attention to the provisions of Resolution No. 48 and Article 79 A of the Nairobi Convention, which were published in Document No. 25 of the Conference. Although the Nairobi Convention only came into effect on 1 January 1984, it would be useful if the Administrative Council could be provided with information by the Conference regarding the financial implications of implementing the decisions of the Conference.

4.2 The Representative of the IFRB said that information concerning supplementary work could not be supplied by the organs of the Union but should be based on information provided by Committees 4, 5 and 6.

4.3 The Chairman noted that the Committee was prepared to supply information in its report to the Plenary meeting concerning the supplementary tasks which the Conference might assign in future to the organs of the Union. He mentioned that accordingly the comments made by the Delegation of the United States of America and the representative of the Board, a note could be addressed to the Chairmen of Committees 4, 5 and 6 and to the Heads of the permanent organs of the Union, asking them to supply Committee 3 as soon as possible with information to enable the latter to decide what measures should be taken in the course of the year for the implementation of the decisions of the present Conference by the IFRB.

The meeting rose at 1030 hrs.

The Secretary :
R. PRELAZ

The Chairman :
H. BALDUINO

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 196-E
8 July 1983
Original : Spanish

PLENARY MEETING

NOTE BY THE CHAIRMAN

I herewith transmit to the Conference for information a copy of a telegram received from the Director-General of the National Telecommunication Board (CONATEL) of the Republic of Haiti :

"I have the honour to inform you that the Administration of the Republic of Haiti supports the proposal of the United States of America concerning the values to be adopted by RABC-SAT R2 power flux-density (-105 dBW/m^2) and G/T (8 dBK). In the event of a decision by vote, would request you to take account of the official position of the Republic of Haiti strictly concerning these two technical parameters."

L. VALENCIA
Chairman of the Conference

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 197-E
8 July 1983
Original : English

COMMITTEE 4

DRAFT

RECOMMENDATION No. COM4/[ ]A[ ]7

To the CCIR Relating to Protection Ratios Between
Television Systems of Different Standards and Different Bandwidths

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

considering

a) that in planning the broadcasting-satellite service and its associated feeder links, account must be taken of the protection ratios between television systems of different standards and different bandwidths;

b) the technical data required to enable the 1985 and 1987 World Administrative Radio Conferences 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 the protection ratios for television systems and, in particular, to provide further information on the protection ratios between television systems of different standards and different bandwidths;

2. to submit as much information as possible on this item to the 1985 and 1987 World Administrative Radio Conferences.

E. MILLER
Chairman of Working Group 4B

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 198-E
8 July 1983
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 5

(PLANNING)

Monday, 27 June 1983, at 1640 hrs

Chairman : Mr. P.D. CROSS (Jamaica)

Subjects discussed :	Document No.
1. Adoption of the Report of Working Group 5A	78
2. Draft Report from Working Group 5A	DT/31
3. Result from the First Planning Exercise	DT/32

1. Report of Working Group 5A to Committee 5 (Document No. 78)

The Committee adopted the Report of Working Group 5A, subject to replacement of "the Netherlands" in point 7 by "Denmark".

2. Draft Report from Working Group 5A (Document No. DT/31)

2.1 The Chairman of Working Group 5A introduced the report, designed to modify the planning principles in order to improve the preparation of the first draft Plan. It consisted of Document No. DT/31 (Report from Drafting Group 5A-1 to Working Group 5A) as amended by the Working Group.

At the Chairman's suggestion, it was agreed to examine the report paragraph by paragraph.

2.2 Introduction

2.2.1 The delegate of Argentina, drawing attention to the reference to Document No. 16(Rev.1), observed that the first planning exercise had been based on requirements which had been modified unilaterally without consulting his Administration, the implications of which were very important.

2.2.2 The delegate of the United Kingdom said that the entries in question had been deleted by the IFRB and it had been explained in Plenary Meeting that that action was in conformity with the Radio Regulations and the Convention.

The Committee took note of the above statements.

2.3 Paragraph 1

2.3.1 The Chairman of Working Group 5A said that the Working Group had decided to add the words "wherever it is found advantageous" at the end of the sentence.

2.3.2 The delegate of Grenada said that Grenada had close relations with a number of adjacent smaller islands with which it had virtually a common service area and had coordinated with those countries to the extent of wishing to share a common orbital position. Since the specification of polarization was now open, he hoped that the Committee would take into account that desire to share polarization with members of the Organization of Eastern Caribbean States, represented through the IFRB.

2.3.3 The Chairman said he observed no objection to that request which would be taken into account by Drafting Group 5A-1 in its future work.

2.4 Paragraph 2

2.4.1 The Chairman of Working Group 5A said the Group had decided to delete the paragraph entirely.

2.4.2 The delegate of Brazil referred to the suggestion to submit a preferred arc, which would be very useful to permit greater flexibility.

2.4.3 The Chairman of Working Group 5A said that those administrations which had indicated a preferred arc had usually chosen to match it with a 0001 hrs. eclipse, and in any case Group 5A-1 would no doubt start with a position which would allow that

eclipse, so long as the angle was not compromised. He saw no real need for any administration which had not already done so to propose an orbital arc, but if they wished to do so, it would pose no problems.

2.4.4 The Chairman of Drafting Group 5A-1 confirmed that statement. As delegate of Argentina he explained that it had not been possible to present an orbital arc for certain areas in the far south of the country, for which a position of 85°E had been requested. However, they would make an attempt to submit a preferred arc before the expiry of the deadline.

He had understood that Uruguay, which had indicated a preferred orbital position, would also try to specify a preferred arc, and perhaps other administrations in similar circumstances would endeavour to do the same in order to facilitate planning.

2.4.5 The representative of the IFRB said there were many entries in Document No. DT/16(Rev.) for countries with interests represented by the IFRB which had not specified the orbital arc, but the IFRB would try to present one by the following day.

2.4.6 In response to the delegate of Guyana who asked whether the 0001 hrs. eclipse related to longitude time or actual local time in the country concerned, the representative of the IFRB said that the longitude time was found in box 15 of the requirements form. It had been included at the request of the Panel of Experts and the values shown had been selected by the IFRB using a geographical map showing time zones. If the official time zone did not correspond to the geographical time zone, administrations should inform the Secretariat as soon as possible so that the data in box 15 could be changed to reflect the actual local situation. However, he did not think the IFRB could necessarily take account of daylight saving hours, etc.

2.4.7 The Chairman requested delegations to indicate by the following day the longitude time they wished to be included.

2.4.8 The delegate of the United Kingdom said that his administration had two requirements for which no orbital arc could be given but he asked that the position be maintained.

The Committee took note of the request.

2.5 Paragraph 3

2.5.1 The Chairman having invited one speaker to take the floor with regard to the Andean beam and the Caribbean beam respectively, the delegates of Colombia and of Guyana said they hoped to make the necessary clarifications available as soon as possible, and in any event by the deadline fixed for the following day.

2.6 Paragraph 4

2.6.1 The Chairman of Working Group 5A said the Working Group had decided to delete the final words "and four to five degrees for co-channel, cross-polarized coverage".

2.7 Paragraph 5

2.7.1 The Chairman requested countries which wished to propose pairing arrangements to inform Drafting Group 5A-1 accordingly.

2.8 Paragraph 6

2.8.1 The Chairman again indicated that clarification was required on the part of the Caribbean countries by the following day.

2.9 Paragraph 7

2.9.1 The delegate of Venezuela pointed out that as worded the paragraph was not clear and the delegate of Guyana asked how the information requested would affect the Caribbean beam.

2.9.2 The representative of the IFRB explained that in some cases administrations had indicated in their requirements two choices which were mutually exclusive, e.g. two orbital positions or different polarizations. What was required was for administrations to indicate one combination for the purposes of carrying out the analysis in a single programme run, although of course they would have flexibility at the implementation stage.

2.9.3 The Chairman suggested that the representatives of the Andean and Caribbean beam arrangements should meet the Chairman of Drafting Group 5A-1 and representatives of the IFRB in his office at 0930 and 1100 hrs. respectively the following day.

It was so agreed.

2.10 The Chairman of Working Group 5A said that the Working Group had decided to place the penultimate sub-paragraph in square brackets.

2.10.1 The delegate of the United Kingdom said that in some areas, e.g. the Caribbean, the additional test points were significant.

It was agreed to add words to the effect that special cases would be taken into consideration.

2.11 The Chairman of Working Group 5A said that a further point had been agreed upon by the Working Group, namely the reduction of the number of channels :

from 36 to 32, 18 to 16, 9 to 8 and 5 to 4.

2.11.1 The delegate of the United Kingdom said that some of the 5-channel requirements would have to stand.

The Chairman said that Drafting Group 5A-1 would take note of that remark.

The Report by Working Group 5A was approved, subject to the above comments and amendments.

3. Result from the First Planning Exercise (Document No. DT/32)

3.1 The Chairman said that it was clear from the above result that requirements were far in excess of possibilities and that administrations should examine them with a view to possible reductions at a later stage.

3.2 The delegate of the United States pointed out that the negative margins, very large in many cases, were a total of down-link and feeder link and included adjacent channel interference without any polarization.

The meeting rose at 1750 hours.

The Secretary :
M. GIROUX

The Chairman :
P.D. CROSS

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 199-E
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WORKING GROUP 6A

THIRD REPORT OF SUB-WORKING GROUP 6A-1 TO WORKING GROUP 6A

The Annex to this document contains the text for Article 4 of Part I of the Final Acts, drafted by the Sub-Working Group 6A-1. It is presented for the approval of Working Group 6A.

S. SELWYN
Chairman of Sub-Working Group 6A-1

Annex : As mentioned

ARTICLE 4

Procedure for Modifications to the Plan

4.1 When an administration intends to make a modification to the Plan, i.e. either:

a) to modify the characteristics of any of its frequency assignments to a space station[1] 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*

b) to include in the Plan a new frequency assignment to a space station in the broadcasting-satellite service; *or*

c) 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 Part).

[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.

4.1.1 Before an administration proposes to include in the Region 2 Plan under the provisions of 4.1 b), a new frequency assignment to a space station or to include in the Plan new frequency assignments to a space station whose orbital position is not designated in the Plan to this administration, all of the assignments to the service area involved should normally have been brought into service or have been notified to the Board in accordance with Article 5 of this Part. Should this not be the case, the administration concerned shall inform the Board of the reasons thereof.

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 conformity 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 in countries of Region 2 having a frequency assignment in the Region 2 Plan to a space station in the broadcasting-satellite service in the same channel or an adjacent channel, which is in conformity 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

4.3.1.2 in countries of Regions 1 and 3 having a frequency assignment to a space station in the broadcasting-satellite service with the necessary bandwidth, any portion of which falls within the necessary bandwidth of the proposed assignment, which is in accordance with the Plan contained in Appendix 30 or in respect of which modifications have been published by the Board in accordance with the provisions of that Appendix;

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

4.3.1.5 of Regions 1 and 3 having a frequency assignment in the band 12.2-12.7 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. 1060 of the Radio Regulations; or those of paragraph 7.2.1 of this Part;

4.3.1.6 having a frequency assignment to a space station in the broadcasting-satellite service in the band 12.5 to 12.7 GHz in Region 3 with the necessary bandwidth, and portion of which falls within the necessary bandwidth of the proposed assignment and which

- is recorded in the Master Register or
- has been coordinated or is being coordinated under the provisions of Resolution 33; or
- appears in a Region 3 plan to be adopted at a future administrative radio conference, taking account of modifications which may be introduced subsequently in accordance with the final acts of that conference;

4.3.1.7 **which are considered to be affected.**

4.3.1.8 **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 preferably not later than eighteen months before the date on which the assignment is to be brought into use, the relevant information listed in[Annex 2].

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 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 conformity with the Plan or any inclusion in the Plan of a new frequency assignment which would have the effect of exceeding the limits specified in [Annex 1] 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 that has not notified its comments either to the administration seeking agreement or to the Board within a period of four months following the date of the weekly circular referred to in 4.3.2.1 or 4.3.3 shall be understood to have agreed to the proposed assignment. This time limit may be extended by /~eighty days~/ /~up to three months~/ for an administration that has requested additional information under 4.3.7 or for an administration that 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 conformity 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 as 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 this Part 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, including the overall equivalent protection margins of each assignment, taking account of the application of the procedure specified in this Article. This master copy shall contain the overall equivalent protection margins derived from the Plan as established by the Conference and those derived from all modifications to the Plan as a result of the successful completion of modification procedure of this Article. The Board shall prepare a document listing the amendments to be made to the Plan as a result of modifications made in accordance with the procedure in this Article.

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.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING-SATELLITE CONFERENCE (REGION 2)

GENEVA, 1983

Document No. 200-E
13 July 1983

LIST OF DOCUMENTS
(Nos. 151 to 200)

C = Committee
PL = Plenary Meeting
WG = Working Group
SWG = Sub-Working Group

No.	Origin	Title	Destination
151	SWG/4B-3	Proposed note from Committee 4 to Committee 6 on the need for coordination between nominally co-located space stations of different administrations	WG/4B
152	C.6	Summary Record of the third meeting of Committee 6	C.6
153	C.4	First Report of Committee 4 to the Plenary	PL
154	C.4	First series of texts from Committee 4 to the Editorial Committee	C.7
155	SG	Interregional sharing	C.5, C.6
156	WG/6A	First Report of Working Group 6A to Committee 6	C.6
157 + Corr.1	WG/4C	Sharing criteria	C.4
158(Rev.1)	SWG/4B-3	Proposed new feeder link paragraph 3.5 of Section II of the Final Acts	WG/4B
159	WG/4C	Proposed note on the applicability of interregional criteria	C.4
160 + Corr.1	WG/4C	Problems relating to sharing between Region 2 Broadcasting Satellite Space Stations and certain terrestrial services in Region 2	C.4
161	WG/4A	Part V of the Final Acts	C.4
162	C.4	Second Report of Committee 4 to the Plenary	PL
163	C.4	Second series of texts from Committee 4 to the Editorial Committee	C.7
164	USA	Impact of using P.F.D. = -105 dBW/m^2 and G/T = 8 dB/K on the Plan and its implementation	C.4, C.5
165(Rev.1)	WG/4A	Part II, Annex 3 of the Final Acts - Radio propagation factors	C.4

N°	Origine	Titre	Destination
166	C.7	B.1	PL
167	C.7	B.2	PL
168	C.2	Second Report of the Working Group of Committee 2	C.2
169	C.6	Second Report of Committee 6 to the Plenary Meeting	PL
170	C.6	First series of texts from Committee 6 to the Editorial Committee	C.7
171	WG/4B	Proposed new feeder link Section 3.3 of Annex 3 of Section II of the Final Acts	C.4
172	WG/4B	Draft - Note from Committee 4 to Committee 6 on the possible need for coordination between feeder links	C.4
173	C.6	Note from Chairman Committee 6 to Chairman Committee 4	C.4
174 + Corr.1 + Corr.2	SWG/4B-2	Proposed modifications to paragraph 3.13.3 of Annex 8 of Appendix 30	WG/4B
175	SWG/4B-2	Proposed text from item 3.6.1 in Annex 3 of Section II of the Final Acts	WG/4B
176	SWG/4B-2	Proposed text for item 3.6.2 in Annex of Section II of the Final Acts	WG/4B
177	SWG/4B-2	Proposed text for item 3.6.3 in Annex 3 of Section II of the Final Acts	WG/4B
178(Rev.1)	SWG/4B-2	Proposed text for item 3.6.4 in Annex 3 of Section II of the Final Acts	WG/4B
179	SWG/5A-1	Result from the second Draft Plan	C.5
180	WG/6B	Second Report of Working Group 6B to Committee 6	C.6
181	USA	Satellite RF power requirements : planning VS. implementation	C.4

No.	Origin	Title	Destination
182	WG/6B	Third Report of Working Group 6B to Committee 6	C.6
183	C.6	Summary Record of the fourth meeting of Committee 6	C.6
184	B	Proposal for the work of Committee 6	C.6
185	USA	The effect of RF power requirements on space segment costs in the broadcasting-satellite service	C.4
186 + Corr.1	C.7	B.3	PL
187	WG/6A	Second Report of Working Group 6A to Committee 6	C.6
188	WG/4B	Proposed note from Committee 4 to Committee 5	C.4
189	WG/4B	Proposed note from Committee 4 to Committee 5 on the minimum separation between satellites not nominally co-located	C.4
190(Rev.1)	SWG/5A-1	Result from the third draft Plan	C.5
191 + Add.1	WG/4C	Consolidated text of annexes to Appendix 30 and the annexes of Part I of the Final Acts	C.4
192 + Add.1	WG/4B	Characteristics to be furnished in notices	C.4
193	B	Impact of rain attenuation in planning the BSS in tropical regions	C.4
194	CAN	A basis for development of a region-wide Plan	C.5
195	C.3	Summary Record of the second meeting of Committee 3	C.3
196	-	Note by the Chairman of the Conference	PL
197	WG/4B	Draft Recommendation No. COM4 /A/ to the CCIR relating to protection ratios between television systems of different standards and different bandwidths	C.4

No.	Origin	Title	Destination
198	C.5	Summary Record of the fifth meeting of Committee 5	C.5
199	SWG/6A-1	Third Report of Sub-Working Group 6A-1 to Working Group 6A	WG/6A
200	SG	List of documents	-