



Documents of the Extraordinary Administrative Radio Conference for the preparation of a revised allotment plan for the aeronautical mobile (R) service (1st session) (EARC-64)
(Geneva, 1964)

To reduce download time, the ITU Library and Archives Service has divided the conference documents into sections.

- This PDF includes Document DT No. 1 - 33.
- The complete set of conference documents includes Document No. 1 - 183, DT No. 1 - 33.

This electronic version (PDF) was scanned by the International Telecommunication Union (ITU) Library & Archives Service from an original paper document in the ITU Library & Archives collections.

La présente version électronique (PDF) a été numérisée par le Service de la bibliothèque et des archives de l'Union internationale des télécommunications (UIT) à partir d'un document papier original des collections de ce service.

Esta versión electrónica (PDF) ha sido escaneada por el Servicio de Biblioteca y Archivos de la Unión Internacional de Telecomunicaciones (UIT) a partir de un documento impreso original de las colecciones del Servicio de Biblioteca y Archivos de la UIT.

(ITU) للاتصالات الدولي الاتحاد في والمحفوظات المكتبة قسم أجراه الضوئي بالمسح تصوير نتاج (PDF) الإلكترونية النسخة هذه والمحفوظات المكتبة قسم في المتوفرة الوثائق ضمن أصلية ورقية وثيقة من نقلاً

此电子版（PDF版本）由国际电信联盟（ITU）图书馆和档案室利用存于该处的纸质文件扫描提供。

Настоящий электронный вариант (PDF) был подготовлен в библиотечно-архивной службе Международного союза электросвязи путем сканирования исходного документа в бумажной форме из библиотечно-архивной службы МСЭ.

COMMITTEE 4

DRAFT

FIRST REPORT OF COMMITTEE 4 (Technical)

"Basic Principles for the Allotment of Frequencies"

Following a study by Committee 4 of proposals by Administrations to the Conference and of the reports of studies by the I.F.R.B., the following conclusions were reached.

1. Principles of frequency allotment

In any revision of the Frequency Plan for the Aeronautical Mobile (R) Service in the exclusive bands between 2850 and 17970 kc/s the basic principle of the allotment of frequencies to geographic areas (defined as MWARA's and RDARA's in Part 1, Section I of Appendix 26) should be retained.

The review to be carried out should be made on the basis of statistics and data designed to reveal the extent to which the number, shape or disposition of such areas need to be changed.

J.T. PENWARDEN

Chairman



AERONAUTICAL CONFERENCE

Geneva, 1964

Document No. DT/I-2-E

30 January 1964

Original : English

COMMITTEE 4

DRAFT

SECOND REPORT OF COMMITTEE 4 (TECHNICAL)

Channels common to R and OR Services

Following a study of proposals by Administrations and of a report of studies by the I.F.R.B., Committee 4 unanimously reached the conclusions which appear in the Annex attached hereto.

J.T. PENWARDEN
Chairman

Annex : 1



A N N E X

CHANNELS COMMON TO R AND OR SERVICES

In any revision of the Frequency Plan for the Aeronautical Mobile R Service in the exclusive bands between 2850 and 17,970 Kc/s, the provision of channels common to the R and OR Services, as foreseen in paragraph 3 of Section II A in Part I of Appendix 26, should be retained.

Note : Minor amendments to paragraph 3, page 38, and paragraph 3, page 41 of Appendix 26 are attached hereto.

[Amend the particulars of use of 3023.5 kc/s, appearing on page 38 of Appendix 26, as follows] :

Frequency kc/s 1	Authorized area of use 2	Remarks 3
3023.5	World-wide	<p>Authorized for world-wide use for the (R) and (OR) services as follows :</p> <ol style="list-style-type: none"> 1) aboard aircraft for : <ol style="list-style-type: none"> a) communications with approach and aerodrome control; b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2) at aeronautical stations for aerodrome and approach control under the following conditions: <ol style="list-style-type: none"> a) for approach control with power limited to a value that will produce 20 μV/m at 100 km and in any case no more than 20 watts in the antenna circuit, b) for aerodrome control with the power limited to a value that will produce 20 μV/m at 40 km and in any case no more than 20 watts in the antenna circuit, c) special attention must be given in each case to the type of antenna used in order to avoid harmful interference, d) the power of aeronautical stations which use this frequency and which operate under the conditions prescribed above may be increased through I.T.U. and/or I.C.A.O. regional agreements to the extent necessary to meet certain operational requirements; 3) for intercommunication between mobile stations <u>in the mobile services engaged</u> in co-ordinated search and rescue operations at the scene of the disaster; 4) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences; 5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be subdivided.

[Amend the particulars of use of 5680 Kc/s, appearing on page 41 of Appendix 26, as follows]:

Frequency Kc/s 1	Authorized area of use 2	Remarks 3
5680	World-wide	<p>Authorized for world-wide use for the (R) and (OR) services as follows :</p> <ol style="list-style-type: none"> 1) aboard aircraft for: <ol style="list-style-type: none"> a) communications with approach and aerodrome control, b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2) at aeronautical stations for aerodrome and approach control under the following conditions: <ol style="list-style-type: none"> a) for approach control with power limited to a value that will produce 20 μV/m at 100 km and in any case no more than 20 watts in the antenna circuit, b) for aerodrome control with the power limited to a value that will produce 20 μV/m at 40 km and in any case no more than 20 watts in the antenna circuit, c) special attention must be given in each case to the type of antenna used in order to avoid harmful interference, d) the power of aeronautical stations which use this frequency and which operate under the conditions prescribed above may be increased through I.T.U. and/or I.C.A.O. regional agreements to the extent necessary to meet certain operational requirements; 3) for intercommunication between mobile stations <u>in the mobile services engaged</u> in co-ordinated search and rescue operations at the scene of the disaster; 4) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences; 5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be subdivided.

AERONAUTICAL CONFERENCE

Geneva, 1964

Document No. DT/I-3-E

30 January 1964

Original : English

COMMITTEE 4

D R A F T

THIRD REPORT OF COMMITTEE 4 (TECHNICAL)

Use of VHF for Meteorological Broadcasts in the
Aeronautical Mobile (R) Service

Following a study of a proposal by one Administration Committee 4 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

J. T. PENWARDEN
Chairman

Annex : 1



A N N E X

RESOLUTION No. _____

RELATING TO THE USE OF VHF FOR METEOROLOGICAL
BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical Extraordinary Administrative Radio Conference,
(Geneva, 1964),

considering

- a) that the number of channels available for the Aeronautical Mobile (R) Service in its frequency bands between 2850 and 17970 kc/s is limited;
- b) that the need for frequencies for aeronautical mobile (R) communications and for meteorological broadcasts to civil aircraft is increasing;
- c) that the propagation characteristics of high frequencies make them essential for satisfaction of civil aviation requirements for transmission of necessary information over long distance;
- d) that Recommendation No. 13 of the International Administrative Aeronautical Radio Conference (Geneva, 1949) and Resolution No. 14 of the Administrative Radio Conference (Geneva, 1959) urge Administrations "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";
- e) that substantial technical progress has been made by civil aviation during the interim since 1949 in extending the useful range of very high frequencies (VHF) to meet the needs for communication by the Aeronautical Mobile (R) Service;
- f) that this extension of the useful range of VHF offers the potential of satisfaction of a portion of the increasing needs for meteorological broadcasts to civil aircraft;

resolves

that Administrations, to the maximum extent feasible, employ VHF frequencies for the satisfaction of their requirements for meteorological broadcasts to civil aircraft.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-4-E (Rev.)

3 February 1964

Original : English

COMMITTEE 4

DRAFT

FOURTH REPORT OF COMMITTEE 4

(TECHNICAL)

Relating to the use of VHF by the Aeronautical Mobile (R) Services

Following a study of a proposal by one Administration, Committee 4 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

Committee 4 recognizes that the inclusion of this resolution in the final document of this session of the Conference must depend upon prior further consideration by Committee 5 as to its efficacy.

The Committee expressed its appreciation to Mr. E.B. POWELL (Canada) and the members of the Ad Hoc Working Group for their success in reconciling conflicting points of view.

J.T. PENWARDEN
Chairman

Annex : 1



A N N E X

RESOLUTION No.

RELATING TO THE USE OF VHF BY THE
AERONAUTICAL MOBILE (R) SERVICES

The Aeronautical Extraordinary Administrative Radio Conference
(Geneva, 1964),

considering

- a) that from an aeronautical viewpoint, VHF provides a more reliable and more noise-free communication system than HF;
- b) that from a technical, operational and economic viewpoint the use of VHF by aviation has progressed appreciably since conception of the HF plan in Appendix 26 to the Radio Regulations;
- c) that the use of VHF in its several modes could appreciably alleviate the requirements for aeronautical mobile high frequencies;

resolves

- a) that Administrations, to the maximum extent feasible, employ VHF frequencies for the satisfaction of their requirements for Aeronautical Mobile (R) Service;
 - b) that Administrations, when submitting statistical data concerning aircraft operations, shall take into account the possibilities of meeting the demands of the Aeronautical Mobile (R) Service by means of VHF techniques after due consideration of economic, technical and operational factors.
-

AERONAUTICAL CONFERENCE
GENEVA, 1964

Document No. DT/I-4-E
31 January 1964
Original: English

COMMITTEE 4

DRAFT

FOURTH REPORT OF COMMITTEE 4

(TECHNICAL)

Relating to the use of VHF by the Aeronautical Mobile (R) Services

Following a study of a proposal by one Administration, Committee 4 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

Committee 4 recognizes that the inclusion of this resolution in the final document of this session of the Conference must depend upon prior further consideration by Committee 5 as to its efficacy.

J T. PENWARDEN
Chairman

Annex: 1



A N N E X

RESOLUTION No

RELATING TO THE USE OF VHF BY THE
AERONAUTICAL MOBILE (R) SERVICES

The Aeronautical Extraordinary Administrative Radio Conference
(Geneva, 1964),

considering

- a) that from an aeronautical viewpoint, VHF provides a more reliable and more noise free communication system than HF;
- b) that from a technical, operational and economic viewpoint the use of VHF by aviation has progressed appreciably since conception of the HF plan in Appendix 26 to the Radio Regulations;
- c) that the use of VHF in its several modes could appreciably alleviate the requirements for aeronautical mobile high frequencies.

resolves

- a) that the main Aeronautical E.A.R.C. 1965 examine each requirement for high frequencies to determine the feasibility from an operational and technical point of view of satisfying the requirement by use of VHF;
- b) that Administrations, when submitting statistical data concerning aircraft operations, should take into full consideration economic, technical and operational possibilities of meeting the demands of the Aeronautical Mobile R Service by means of VHF techniques.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-5
31 January, 1964
Original: English

COMMITTEE 4

DRAFT

FIFTH REPORT OF COMMITTEE 4

(TECHNICAL)

Relating to plans for the future which may affect the use of HF

Following a study of a proposal by one Administration, Committee 4 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

J.T. PENWARDEN
Chairman

Annex : 1



A N N E X

RESOLUTION No.

RELATING TO PLANS FOR THE FUTURE WHICH MAY
AFFECT THE USE OF HIGH FREQUENCIES

The Aeronautical Extraordinary Administrative Radio Conference
(Geneva, 1964),

considering

- a) that several administrations are actively engaged in the development of communication systems making use of either HF or VHF or in other work intended to improve the Aeronautical Mobile (R) Service;
- b) that among the systems under consideration are : extended VHF, long range VHF, space radiocommunication techniques and other systems including automatic (data) communication;
- c) that by the time of the main session of the Aeronautical E.A.R.C. some of the techniques and plans may have progressed to the point where actual operational plans will have been made for implementation of the new techniques within the time frame allotted for the new HF aeronautical mobile plan;
- d) that such implementation could have a significant impact on the requirements for high frequencies during the time span of the new plan.

resolves

- a) that administrations which have plans to meet the requirements of the Aeronautical Mobile (R) Service by means either of improved techniques or by the use of other than high frequencies be requested to submit these to the main session of the Aeronautical E.A.R.C. (1965) indicating their anticipated implementation dates;
- b) that such plans be taken into consideration in the writing of the new aeronautical mobile HF Allotment Plan.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-6-E

3 February 1964

Original : English

COMMITTEE 4

Draft

SIXTH REPORT OF COMMITTEE 4

(TECHNICAL)

Relating to the Use of Frequencies in the HF bands allocated exclusively to the Aeronautical Mobile (R) Service

Following a study of a proposal by one Administration, Committee 4 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

J.T. PENWARDEN
Chairman

Annex : 1



A N N E X

DRAFT RESOLUTION No.
RELATING TO THE USE OF FREQUENCIES IN THE HF BANDS
ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical Extraordinary Administrative Radio Conference,
Geneva, 1964,

considering

- a) that monitoring observations on the use of frequencies in the bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17970 kc/s, show that a number of frequencies in these bands are being used by stations of services other than the Aeronautical Mobile (R) Service, causing harmful interference to Aeronautical Mobile (R) Communications conducted on some international air routes;
- b) that the Aeronautical Mobile (R) Service is a safety service, to which exclusive frequency bands are specially allocated in order to ensure the safety and regularity of the national and international civil air transportation (RR 429);
- c) that in order to protect the security of life and property in the air, and to develop aeronautical transportation services in a regular and effective manner, it is indispensable to have the aeronautical mobile communication channels kept free from harmful interference;

resolves

that all administrations, recognizing that the Aeronautical Mobile (R) Service is a safety service, shall abstain from the use of frequencies in the bands allocated exclusively to this service by stations of services other than the Aeronautical Mobile (R) Service, except under the express conditions prescribed in No. 115 or No. 415 of the Radio Regulations.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-7-E

3 February 1964

Original : English

WORKING GROUP 4A

Draft

FIRST REPORT OF WORKING GROUP 4A TO COMMITTEE 4

Number of aircraft which can be served on a frequency or family of frequencies

Following a study of proposals by Administrations and a Report by the I.F.R.B., Working Group 4A reached the conclusion which appears in the Annex attached hereto.

George W. HAYDON
Chairman
Working Group 4A

Annex : 1



PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

NUMBER OF AIRCRAFT WHICH CAN BE SERVED ON A HIGH FREQUENCY
OR A FAMILY OF HIGH FREQUENCIES

1. In Major World Air Route Areas (MWARA's) :
 - a family of high frequencies may be expected to serve a maximum number of 12 aircraft in one hour
 - a single frequency may be expected to serve a maximum number of 10 aircraft in one hour
2. In Regional and Domestic Air Route Areas (RDARA's) :
 - the maximum number of aircraft which can be served on a family of high frequencies or a single high frequency may be highly variable, hence the figures in respect of MWARA's may not be applicable in all RDARA's.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-8-E

3 February 1964

Original : English

WORKING GROUP 4A

AGENDA

FOR THE SECOND MEETING OF WORKING GROUP 4A

4 February, 1964 at 3 p.m. in Room XI

1. Adoption of draft First Report of Working Group 4A to Committee 4

Number of aircraft which can be served on a frequency or family of frequencies - Document No. DT/I-7

2. Consideration of Item 1, paragraph 4, Document No. I-37, entitled :

Propagation criteria

- a) for use in temperate latitudes
- b) for use in polar areas

Background documentation :

Document No. I-1 (USA) page 24

" No. I-14 (IFRB) page 1

" No. I-31 (G) page 1

Volume II, C.C.I.R. Xth Plenary Assembly

C.C.I.R. Atlas of propagation

3. Any other business.

George W. HAYDON

Chairman

Working Group 4A



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-9-E

4 February, 1964

Original : English

COMMITTEE 5

DRAFT

FIRST REPORT OF COMMITTEE 5

(OPERATING STATISTICS)

Relating to the Grouping of International Air Routes (MWARA's)

Committee 5 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

Maurice CHEF
Chairman

Annex : 1



A N N E X

DRAFT

RESOLUTION NO. ...

RELATING TO THE GROUPING OF INTERNATIONAL AIR ROUTES (MWARA's)

The First Session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964),

having considered

- a) Resolutions No. 13 and 14 of the Administrative Radio Conference, Geneva, 1959, relating to
 - i) the Preparation of Revised Allotment Plans for the Aeronautical Mobile Service;
 - ii) the use of Frequencies of the Aeronautical Mobile (R) Service;
- b) Recommendation No. 2/1 of the I.C.A.O. Special Communications Meeting (1963), Document No. 8329, COSP/II, relating to the Adjustment of MWARA Boundaries;
- c) proposals and reports of studies by Members of the I.T.U. submitted to the First Session of the Aeronautical E.A.R.C. (Geneva, 1964), Document Nos. I-1, I-3, I-7, I-8, I-11, I-27, I-52, I-53;
- d) the probability of a greater representation of Members and Associate Members of the Union being present at the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965);
- e) that aircraft operational statistics for International Air Routes are to be submitted by Members and Associate Members of the Union for consideration by the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965);
- f) that until statistics referred to in e) above are available, it would not be desirable to make any revision of the grouping of International Air Routes into MWARA's or, to establish new MWARA's to meet operational requirements;

resolves

1. not to recommend at this time any modifications to the existing MWARA boundaries as defined in Appendix 26 of the Radio Regulations (Geneva, 1959) or the establishment of boundaries for additional MWARA's;
2. that the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965) should examine in detail all known factors, taking into account a), b), c), d), e), f) above to determine appropriate revisions to the MWARA boundaries and/or the establishment of additional MWARA's.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-10-E

4 February 1964

Original : English

COMMITTEE 5

DRAFT

SECOND REPORT OF COMMITTEE 5

(OPERATING STATISTICS)

Relating to the grouping of Regional and Domestic Air Routes (RDARA's)

Committee 5 unanimously adopted the draft Resolution which appears in the Annex attached **hereto**.

Maurice CHEF
Chairman

Annex : 1



A N N E X

DRAFT

RESOLUTION NO.....

RELATING TO THE GROUPING OF REGIONAL AND DOMESTIC
AIR ROUTES (RDARA's)

The First Session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964),

having considered

- a) Resolution No. 14 of the Administrative Radio Conference, (Geneva, 1959), relating to the Use of Frequencies of the Aeronautical Mobile (R) Service;
- b) Recommendations 2/8 and 2/9 of the I.C.A.O. Special Communications Meeting (1963), Document No. 8329, COSP/II, relating to changes to RDARA's;
- c) proposals and reports of studies submitted by Members of the I.T.U. to the First Session of the Aeronautical E.A.R.C. (Geneva, 1964), Document Nos. I-1, I-7, I-8, I-11;
- d) that, until any revision of the grouping of International Air Routes into MWARA's or, the establishment of any new MWARA's has been completed, it would not be desirable to make any revision to RDARA boundaries;
- e) that aircraft operational statistics for Regional and Domestic Air Routes are to be submitted by Members and Associate Members of the Union for consideration by the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965);

resolves

- 1. not to recommend, at this time, any modifications to the existing RDARA boundaries as defined in Appendix 26 of the Radio Regulations (Geneva, 1959);
- 2. that the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965) should examine in detail all of the above items as a basis for making revisions to the RDARA boundaries.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-11-E

4 February 1964

Original : English

COMMITTEE 5

DRAFT

THIRD REPORT OF COMMITTEE 5

(OPERATING STATISTICS)

Relating to HF requirements for supersonic aircraft

Committee 5 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

Mauric CHEF
Chairman

Annex : 1



A N N E X

DRAFT

RESOLUTION NO.....

RELATING TO HF REQUIREMENTS FOR SUPERSONIC

AIRCRAFT

The First Session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964),

having considered

- a) Recommendation No. 6A of the Extraordinary Administrative Radio Conference, (Geneva, 1963), relating to the frequency requirements in the HF bands exclusively allocated to the Aeronautical Mobile (R) Service;
- b) Recommendation 3/2 of the I.C.A.O. Special Communications Meeting (1963) relating to the Revision of HF Allotment Plan to provide for supersonic transport aircraft use of frequencies and which noted that there was no requirement, at that time, for the allotment of high frequencies exclusively for communications with supersonic aircraft;
- c) the proposals and recommendations by Members of the I.T.U. submitted to the First Session of the Aeronautical E.A.R.C. (Geneva, 1964), Documents Nos. I-1, I-4, I-30;

resolves

- 1. that at this time there is no known requirement for the allotment of high frequencies exclusively for communications with supersonic aircraft;
- 2. to refer the subject to the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965) for further and more detailed study.

CONFERENCE AERONAUTIQUE

GENEVE, 1964

Document No. DT/I-12/F-E-S
11 février, 1964

Ce document n'a pas été publié.

This document has not been issued.

Este documento no ha sido publicado.

Document No. DT/I-13/F-E-S
11 février 1964

Ce document n'a pas été publié.

This document has not been issued.

Este documento no ha sido publicado.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-14-E

5 February 1964

Original: English

COMMITTEE 5

DRAFT

FOURTH REPORT OF COMMITTEE 5

(OPERATING STATISTICS)

RELATING TO THE DISSEMINATION OF METEOROLOGICAL INFORMATION

Committee 5 unanimously adopted the draft Resolution which appears in the Annex attached hereto.

Maurice CHEF
Chairman

Annex : 1



A N N E X

DRAFT

RESOLUTION No.

RELATING TO THE DISSEMINATION OF METEOROLOGICAL INFORMATION

The First Session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964),

having considered

- a) the report and recommendations of the I.C.A.O. Special Communications Meeting (1963), Document No. 8329, COSP/II (Agenda Item 5);
- b) the proposals by Members of the I.T.U. submitted to the First Session of the Aeronautical E.A.R.C. (Geneva, 1964), Documents Nos. I-1, I-3, I-9, I-11, I-23, I-78;

resolves

to refer the subject to the Second Session of the Aeronautical E.A.R.C. (Geneva, 1965) for consideration when aircraft operation statistics provided by Member countries and Associate Member countries of the Union are studied.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-15-E

6 February 1964

Original : English

WORKING GROUP 4A

DRAFT

SECOND REPORT OF WORKING GROUP 4A TO COMMITTEE 4

PROPAGATION CRITERIA

PROTECTION RATIO AND INTERFERENCE RANGES

FREQUENCY SHARING BETWEEN AREAS

(Items 1, 2 and 7 of paragraph 4, Document No. I-37)

Background documentation :

Document No. I-1	U.S.A.
Document No. I-7	I.F.R.B.
Document No. I-13	I.F.R.B.
Document No. I-14	I.F.R.B.
Document No. I-15	C.C.I.R.
Document No. I-31	G
Volume II C.C.I.R. Xth Plenary Assembly	
C.C.I.R. Atlas of Propagation	

Following a study of the above documents, Working Group 4A reached the conclusion which appears in the Annex attached hereto.

George W. HAYDON
Chairman
Working Group 4A

Annex : II



A N N E XPROPAGATION CRITERIASERVICE RANGESINTERFERENCE RANGESPROTECTION RATIOSFREQUENCY SHARING BETWEEN AREAS

It is recommended :

1. that conclusions drawn from the basic technical criteria employed by I.A.A.R.C. in developing the present Mobile (R) Service H.F. Allotment Plan should continue to be used, i.e.

a) Service and Interference Ranges

Frequency band kc/s	Service range		Interference range	
	Day	Night	Day	Night
	km		km	
2850 - 3025	100	500	700	3500
3400 - 3500	100	800	700	4000
4650 - 4700	350	1400	1200	5500
5450 - 5480	450	1800	1500	6500
5480 - 5680	450	1800	1500	6500
6525 - 6685	650	2200	1900	8000
8815 - 8965	1000	3400	3800	11000
10005 - 10100	1250	-	5500	-
11275 - 11400	1500	-	6000	-
13260 - 13360	1900	-	7700	-
17900 - 17970	2600	-	> 10000	-

Interference ranges used in the establishment of the present allotment plan should continue to be used in the establishment of a revised plan, but some reduction could perhaps be made in the interference ranges in the 8, 10, 11, 13 and 17 Mc/s bands by day and in the 6 and 8 Mc/s by night, should it be found essential to obtain additional sharing on these frequencies.

- b) A protection ratio of 15 db is satisfactory. (The interference ranges in paragraph a) above attempt to afford 15 db protection when the aircraft is at the limit of its service range, consequently under more typical conditions, the protection ratio is actually much higher.)
 - c) Sharing conditions between areas, as shown in Section B, para. 4 of Appendix 26, are satisfactory.
2. that the interference range contours for latitudes between 60°N and 60°S which were included in Appendix 26 should be retained without revision;
3. that interference range contours and charts for the Polar areas should be developed, and the charts for these areas should be based on a Polar gnomonic projection;
4. that the above recommendations be implemented by the Revision of Appendix 26 as follows :

B. Interference Range Contours

1. 15. Definition of Contours

15.1 The transparencies inserted in the pocket at the end of this Appendix show contours which indicate the minimum acceptable distance separating two ground stations of 1.0 kW power (unmodulated) for the frequencies stated and for producing a protection ratio of 15 db of desired signal to interfering signal on the same frequency at an aircraft operating at the limit of the service range of the desired ground transmitter.

15.2 Two types of transparencies are provided. Those for use with (a) the Mercator projection world maps and those for use with (b) the Gnomonic projection for the polar areas. The Mercator projection transparencies encompass the area between latitude 60° North and 60° South. The Gnomonic projection transparencies encompass the areas north of Latitude 30° North and south of Latitude 30° South. The Gnomonic projection overlaps the Mercator projection between Latitudes 30° - 60° North and 30° - 60° South. Over-lap is included to provide continuity between transparencies of the two projections.

15.3 The service range is not included in the contour.

2- 16. Type of Maps Used

16.1 These transparencies can be used only on a ~~Mercator's-projection~~ world or polar map of the projection and scales given on each transparency, and will not be suitable for use on any other scale ~~of-Mercator's-projection~~ or any other projection. The world and polar maps accompanying this Appendix, depicting RDARA and MWARA boundaries, are to the correct scale and the transparencies carrying the interference range contours can be directly used on these maps.

3- 17. Change of Scale or Projection

17.1 Should any other ~~Mercator~~ scale be desired, then, by using the co-ordinates given in the tables shown below, new interference range contours can be drawn to fit the new scales.

17.2 It must be remembered that when the new transparencies are constructed, the intersection of the vertical line of symmetry, i.e. the meridian of longitude and the horizontal line of latitude should be at 00° latitude for the 00° contour, 20° N for the 20° contour, 40° N for 40° contour, etc.

17.3 The co-ordinates shown in the above-mentioned tables are given with reference to the 180° meridian taken as the axis of symmetry for the construction of the contours.

4- 18. Sharing Conditions Between Areas

18.1 The transparencies ~~were~~ are constructed on the basis of the following sharing conditions: ~~agreed-at-the-International-Administrative Aeronautical-Radio-Conference-(I.A.A.R.C.)-of-1948-1949,-namely:~~

Areas	Bands between:	Sharing Conditions
	Mc/s	
MWARA to MWARA	3 - 6.6 9 - 11.3 13 - 18	night propagation day propagation time separation Note : 6.6 Mc/s and 5.6 Mc/s sharing conditions con- sidered the same
MWARA to RDARA	3 - 5.6 6.6 - 11.3 13 - 18	night propagation day propagation time separation
RDARA to RDARA	3 - 4.7 5.6 - 11.3 13 - 18	night propagation day propagation time separation

18.2 The additional contours for day included for 3 Mc/s, 3.5 Mc/s and 4.7 Mc/s are for determining daylight sharing possibilities.

NOTE : The material in "Minimum and Maximum Range Charts for Use as a Guide to the Allotment of Frequencies" Annex 1 to Volume 1 of the Report of the First Session of the I.A.A.R.C. (Geneva, 1948) was used in the preparation of the allotment plan. The aero-nautical EARC, Geneva-1965, reviewed the conclusions drawn from this material and found them to have continuing validity.

5- 19. Method of Use

19.1 Take the MWARA or the RDARA maps accompanying this Appendix and select the transparency for the frequency order and sharing conditions under consideration.

19.2 The Gnomonic projections are applicable in the polar areas north of 60° N and south of 60° S; and the Mercator projections are applicable between 60° N and 60° S.

19.3 Place the center of the transparency (i.e. the intersection of the axis of symmetry and the latitude line) over the boundary of the area or at the location of the transmitter. Note the latitude of this point and select the contour corresponding to this latitude.

19.4 A transmitter at any point outside the contour will result, as defined in paragraph 15.1 above, in a protection ratio of better than 15 db.

19.5 Any transmitter located at a point inside the contour will result in a protection ratio of less than 15 db.

19.6 Mercator projection : For the Northern Hemisphere, the contours should be used in their natural position as published, but for the Southern Hemisphere, the transparency should be inverted. This point should be carefully observed when following the boundaries of the areas which involve the transition of the equator.

19.7 Gnomonic projection : In the case of either the north or south polar areas, the transparency should be positioned so that the north-south line (terminated with an arrow) is parallel to the meridian of longitude, with the arrow pointing towards the pole.

6. 20. Data for tracing interference contours

3,0 et 3,5 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 700 km
 3,0 & 3,5 Mc/s, day - DATA FOR PLOTTING 700 km INTERFERENCE CONTOURS
 3,0 y 3,5 Mc/s, día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 700 km

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 6,3°	E-W 6,3°			N-S 6,3°	E-W 6,7°			N-S 6,3°	E-W 8,5°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	6,3	180,0	16,3	180,0	26,3	180,0	36,3	180,0	46,3
	178,9	6,2	173,9	16,2	178,8	26,2	178,6	36,2	178,4	46,2
	177,8	5,9	177,8	15,9	177,6	25,9	177,3	35,9	176,9	45,9
	176,8	5,5	176,7	15,4	176,5	25,4	176,1	35,4	175,5	45,4
	175,9	4,8	175,8	14,8	175,5	24,8	175,1	34,7	174,3	44,7
	175,2	4,0	175,0	14,0	174,7	24,0	174,2	33,9	173,3	43,9
	174,5	3,1	174,4	13,1	174,1	23,0	173,5	33,0	172,5	42,9
	174,1	2,2	173,9	12,1	173,6	22,0	173,0	32,0	172,0	41,9
	173,8	1,1	173,7	11,0	173,4	21,0	172,8	30,9	171,8	40,8
	173,7	0,0	173,6	9,9	173,3	19,9	172,7	29,8	171,8	39,7
	173,8	-1,1	173,7	8,8	173,4	18,8	172,9	28,7	172,0	38,6
	174,1	-2,2	174,0	7,8	173,8	17,7	173,3	27,7	172,5	37,6
	174,5	-3,1	174,5	6,8	174,3	16,8	173,9	26,7	173,2	36,6
	175,2	-4,0	175,2	5,9	175,0	15,9	174,6	25,8	174,1	35,8
	175,9	-4,8	175,9	5,2	175,8	15,1	175,5	25,1	175,1	35,1
	176,8	-5,5	176,8	4,5	176,8	14,5	176,5	24,5	176,2	34,5
	177,8	-5,9	177,8	4,1	177,8	14,1	177,6	24,1	177,4	34,0
	178,9	-6,2	178,9	3,8	178,9	13,8	178,8	23,8	178,7	33,8
	180,0	-6,3	180,0	3,7	180,0	13,7	180,0	23,7	180,0	33,7
Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia			N-S 6,3°	E-W 12,6°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	56,3	180,0	66,3	180,0	76,3	180,0	86,3		83,7
	178,0	56,2	177,3	66,2	175,4	76,2	163,9	86,1		83,7
	176,2	55,9	174,7	65,8	171,2	75,8	152,2	85,4		83,7
	174,5	55,3	172,5	65,3	167,7	75,1	145,2	84,5		83,7
	173,0	54,6	170,6	64,5	164,9	74,3	141,9	83,4		83,7
	171,8	53,8	169,1	63,6	162,9	73,4	140,8	82,4		83,7
	171,0	52,8	168,1	62,7	161,6	72,3	141,3	81,3		83,7
	170,4	51,8	167,5	61,6	161,3	71,2	142,8	80,2		83,7
	170,2	50,7	167,3	60,5	161,5	70,1	144,9	79,2		83,7
	170,3	49,6	167,5	59,4	162,1	69,1	147,6	78,2		83,7
	170,6	48,5	168,1	58,3	163,2	68,0	150,5	77,3		83,7
	171,2	47,5	169,0	57,4	164,6	67,1	153,8	76,5		83,7
	172,1	46,6	170,1	56,4	166,4	65,2	157,3	75,8		83,7
	173,1	45,7	171,4	55,6	168,3	65,5	160,8	75,2		83,7
	174,3	45,0	172,9	55,0	170,4	64,9	164,6	74,6		83,7
	175,6	44,5	174,6	54,4	172,7	64,4	168,4	74,2		83,7
	177,0	44,0	176,3	54,0	175,1	64,0	172,2	73,9		83,7
	178,5	43,8	178,2	53,8	177,5	63,8	176,1	73,8		83,7
	180,0	43,7	180,0	53,7	180,0	63,7	180,0	73,7		83,7
									Toutes longitudes All Longitudes Todas longitudes	

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 31,5°	E-W 31,5°			N-S 31,5°	E-W 33,6°			N-S 31,5°	E-W 41°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	31,5	180,0	41,5	180,0	51,5	180,0	61,5	180,0	71,5
	173,9	31,0	173,1	40,9	171,7	50,8	169,3	60,7	164,3	70,4
	168,2	29,4	166,7	39,2	164,2	48,9	160,1	58,4	152,1	67,5
	163,0	26,9	161,1	36,4	158,0	45,8	153,0	54,9	144,2	63,5
	158,5	23,6	156,4	32,8	153,2	41,9	148,0	50,6	139,7	58,7
	154,9	19,6	152,9	28,6	149,8	37,4	144,9	45,8	137,5	53,6
	152,0	15,1	150,3	23,9	147,6	32,5	143,3	40,7	137,0	48,4
	150,1	10,3	148,7	18,9	146,4	27,4	142,9	35,5	137,6	43,2
	148,9	5,2	148,0	13,7	146,3	22,1	143,4	30,3	139,1	38,1
	148,5	0,0	148,1	8,5	146,9	17,0	144,7	25,2	141,3	33,2
	148,9	-5,2	149,0	3,4	148,3	11,9	146,7	20,9	144,1	28,6
	150,1	-10,3	150,6	-1,6	150,3	7,1	149,3	15,8	147,4	24,3
	152,0	-15,1	152,9	-6,3	153,1	2,6	152,5	11,5	151,1	20,4
	154,9	-19,6	156,0	-10,5	156,4	-1,4	156,2	7,8	155,3	16,9
	158,5	-23,6	159,7	-14,2	160,3	-4,8	160,3	4,6	159,8	14,0
	163,0	-26,9	164,1	-17,3	164,7	-7,7	164,8	2,0	164,5	11,6
	168,2	-29,4	169,1	-19,6	169,6	-9,8	169,7	0,1	169,5	9,9
	173,9	-31,0	174,4	-21,0	174,7	-11,1	174,8	-1,1	174,7	8,9
	180,0	-31,5	180,0	-21,5	180,0	-11,5	180,0	-1,5	180,0	8,5

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 31,5°	E-W 49°	N-S 31,5°	E-W 64°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	81,5	0,	88,5	0,	78,5	0,	68,5	Toutes longitudes All Longitudes Todas longitudes	58,5
	149,5	79,7	78,0	84,7	25,3	77,7	14,2	68,3		58,5
	133,9	75,6	90,4	79,7	46,5	75,7	28,0	67,7		58,5
	127,6	70,7	97,5	74,7	62,9	72,9	41,3	66,7		58,5
	125,7	65,5	103,3	59,8	75,9	69,7	53,8	65,4		58,5
	126,0	60,3	108,7	55,0	86,6	66,4	65,5	63,9		58,5
	127,6	55,2	118,9	60,3	95,8	62,9	76,4	62,3		58,5
	129,9	50,2	118,9	55,9	104,1	59,6	86,7	60,5		58,5
	132,9	45,4	124,1	51,6	111,9	56,3	96,5	58,8		58,5
	136,4	40,8	129,2	47,6	119,2	53,2	105,8	57,1		58,5
	140,2	36,5	134,5	43,9	126,2	50,4	114,8	55,5		58,5
	144,4	32,6	139,8	40,5	133,1	47,7	123,4	54,0		58,5
	148,8	29,0	145,3	37,4	139,3	45,4	131,9	52,6		58,5
	153,6	25,9	150,8	34,8	146,6	43,3	140,1	51,4		58,5
	158,5	23,3	156,5	32,6	153,3	41,6	148,2	50,4		58,5
	163,7	21,2	162,3	30,8	160,0	40,3	156,2	49,6		58,5
	169,1	19,7	168,1	29,5	166,6	39,3	164,2	49,0		58,5
	174,5	18,8	174,1	28,8	173,3	38,7	172,1	48,6		58,5
	180,0	18,5	180,0	28,5	180,0	38,5	180,0	48,5		58,5

3,0 MHz, nuit - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 3500 km
3,0 Mc/s night- DATA FOR PLOTTING 3500 km INTERFERENCE CONTOURS
3,0 Mc/s noche- DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 3500 km

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 36°	E-W 36°			N-S 36°	E-W 38°			N-S 36°	E-W 47°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	36,0	180,0	46,0	180,0	56,0	180,0	66,0	180,0	76,0
	172,8	35,4	171,7	45,3	169,7	55,1	166,1	64,9	157,6	74,5
	166,0	33,5	164,0	43,2	160,6	52,7	154,7	62,0	142,8	70,6
	160,0	30,6	157,5	39,9	153,4	49,0	146,6	57,7	134,9	65,5
	155,0	26,8	152,3	35,7	148,1	44,4	141,5	52,6	131,2	59,9
	150,9	22,2	148,4	30,8	144,5	39,2	138,7	47,0	129,9	54,0
	147,8	17,1	145,7	25,5	142,3	33,6	137,4	41,2	130,2	48,2
	145,7	11,6	144,1	19,8	141,4	27,7	137,4	35,4	131,6	42,4
	144,4	5,9	143,4	13,9	141,4	21,9	138,3	29,5	133,8	36,7
	144,0	0,0	143,6	8,1	142,3	16,1	140,0	23,9	136,5	31,3
	144,4	-5,9	144,6	2,3	143,9	10,4	142,4	18,4	139,8	26,2
	145,7	-11,6	146,4	-3,3	146,3	5,0	145,4	13,3	143,6	21,5
	147,8	-17,1	149,0	-8,6	149,4	0,0	149,0	8,6	147,8	17,2
	150,9	-22,2	152,4	-13,4	153,1	-4,5	153,2	4,4	152,4	13,3
	155,0	-26,8	156,6	-17,6	157,5	-8,4	157,8	0,8	157,4	10,1
	160,0	-30,6	161,6	-21,2	162,5	-11,6	162,9	-2,1	162,8	7,5
	166,0	-33,5	167,3	-23,8	168,0	-14,0	168,4	-4,2	168,3	5,6
	172,8	-35,4	173,5	-25,4	173,9	-15,5	174,1	-5,6	174,1	4,4
	180,0	-36,0	180,0	-26,0	180,0	-16,0	180,0	-5,0	180,0	4,0

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 36°	E-W 36°	N-S 36°	E-W 73°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	86,0	0	84,0	0	74,0	0	64,0	Toutes longitudes All longitudes Todas longitudes	54,0
	126,9	82,7	46,5	81,9	20,9	73,4	13,4	63,8		54,0
	115,7	77,1	69,8	77,6	39,7	71,6	26,5	63,2		54,0
	113,9	71,3	83,0	72,8	55,5	69,1	39,2	62,3		54,0
	114,9	65,4	92,2	67,8	68,8	66,1	51,3	61,0		54,0
	117,1	59,6	99,7	62,8	80,1	62,8	62,8	59,6		54,0
	120,1	54,0	106,4	57,9	90,1	59,4	73,7	58,0		54,0
	123,5	48,5	112,6	53,2	99,0	56,0	84,1	56,3		54,0
	127,4	43,3	118,6	48,7	107,3	52,7	93,9	54,5		54,0
	131,5	38,3	124,5	44,5	115,2	49,5	103,4	52,8		54,0
	135,9	33,7	130,4	40,5	122,8	46,5	112,6	51,2		54,0
	140,7	29,4	136,3	36,9	130,1	43,7	121,5	49,6		54,0
	145,7	25,5	142,3	33,6	137,4	41,3	130,2	48,2		54,0
	150,9	22,1	148,4	30,8	144,5	39,1	138,7	47,0		54,0
	156,4	19,3	154,6	28,4	151,6	37,3	147,1	45,9		54,0
	162,1	17,0	160,8	26,5	158,7	35,9	155,4	45,1		54,0
	168,0	15,3	167,2	25,1	165,8	34,8	163,6	44,5		54,0
	174,0	14,3	173,6	24,3	172,9	34,2	171,8	44,1		54,0
	180,0	14,0	180,0	24,0	180,0	34,0	180,0	44,0		54,0

3,5 MHz, nuit - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 4000 km
 3.5 Mc/s night - DATA FOR PLOTTING 4000 km INTERFERENCE CONTOURS
 3,5 Mc/s noche - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 4000 km

Latitude			10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	-N-S- +0-80	E-W- +0-80			-N-S- +0-80	-E-W- +1-50			-N-S- +0-80	-E-W- +1-40
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180.0	10.8	180.0	20.8	180.0	30.8	180.0	40.8	180.0	50.8
	178.1	10.6	178.0	20.6	177.8	30.6	177.5	40.6	177.1	50.6
	176.3	10.1	176.1	20.1	175.8	30.1	175.2	40.1	174.3	50.0
	174.6	9.3	174.3	19.3	173.8	29.2	173.1	39.2	171.8	49.1
	173.0	8.3	172.7	18.2	172.2	28.1	171.2	38.0	169.7	47.8
	171.7	6.9	171.4	16.8	170.3	26.7	169.7	36.5	168.0	46.4
	170.6	5.4	170.3	15.2	169.7	25.1	168.6	34.9	166.8	44.7
	169.8	3.7	169.6	13.5	168.9	23.3	167.9	33.1	166.1	42.9
	169.4	1.9	169.1	11.7	168.6	21.5	167.5	31.3	165.8	41.0
	169.2	0.0	169.0	9.8	168.5	19.6	167.6	29.4	166.0	39.2
	169.4	-1.9	169.3	8.0	168.8	17.8	168.0	27.6	166.6	37.3
	169.8	-3.7	169.8	6.2	169.4	16.0	168.7	25.8	167.5	35.6
	170.6	-5.4	170.6	4.5	170.4	14.4	169.8	24.2	168.7	34.0
	171.7	-6.9	171.7	3.0	171.5	12.9	171.0	22.8	170.2	32.6
	173.0	-8.3	173.1	1.7	172.9	11.6	172.6	21.5	171.9	31.4
	174.6	-9.3	174.6	0.6	174.5	10.6	174.3	20.5	173.8	30.5
	176.3	-10.1	176.3	-0.2	176.3	9.8	176.1	19.8	175.8	29.8
	178.1	-10.6	178.1	-0.6	178.1	9.4	178.0	19.3	177.9	29.3
	180.0	-10.8	180.0	-0.8	180.0	9.2	180.0	19.2	180.0	29.2

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia			-N-S- +0-80	-E-W- 21-60						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180.0	60.8	180.0	70.8	180.0	80.8	0.	89.2		79.2
	176.2	60.6	174.4	70.6	168.7	80.5	71.1	88.0		79.2
	172.6	60.0	169.3	69.8	159.4	79.5	87.5	86.3		79.2
	169.5	59.0	165.0	68.7	152.9	78.1	96.6	84.6		79.2
	167.0	57.6	161.8	67.3	149.1	76.4	103.6	82.9		79.2
	165.1	56.1	159.6	65.6	147.2	74.6	109.9	81.2		79.2
	163.8	54.4	158.4	63.8	146.8	72.8	115.8	79.6		79.2
	163.2	52.5	158.0	62.0	147.4	70.9	121.4	78.1		79.2
	163.1	50.7	158.3	60.1	148.9	69.1	126.9	76.7		79.2
	163.5	48.8	159.1	58.3	150.8	67.4	132.3	75.3		79.2
	164.3	47.0	160.4	56.6	153.3	65.8	137.7	74.1		79.2
	165.5	45.3	162.1	54.9	156.0	64.3	143.0	73.0		79.2
	167.0	43.8	164.2	53.5	159.1	63.0	148.3	72.0		79.2
	168.3	42.5	166.4	52.2	162.3	61.9	153.6	71.2		79.2
	170.3	41.3	168.9	51.2	165.7	60.9	158.9	70.5		79.2
	172.9	40.4	171.6	50.3	169.1	60.2	164.2	69.9		79.2
	175.8	39.7	174.3	49.7	172.7	59.6	169.4	69.5		79.2
	177.6	39.3	177.1	49.3	176.3	59.3	174.7	69.3		79.2
	180.0	39.2	180.0	49.2	180.0	59.2	180.0	69.2		79.2

4,7 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 1200 km
 4,7 Mc/s day - DATA FOR PLOTTING 1200 km INTERFERENCE CONTOURS
 4,7 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 1200 km

4,7 MHz, nuit et 10,0 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 5500 km
 4,7 Mc/s night & 10,0 Mc/s day -- DATA FOR PLOTTING 5500 km INTERFERENCE CONTOURS
 4,7 Mc/s noche y 10,0 Mc/s, día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 5500 km

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N.S. 50°	E.W. 50°			N.S. 50°	E.W. 53°			N.S. 50°	E.W. 65°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	49,5	180,0	59,5	180,0	69,5	180,0	79,5	178,7	89,5
	168,5	48,5	165,5	58,2	159,6	67,8	144,9	76,7	97,0	82,4
	158,2	45,6	153,2	54,7	144,6	63,3	128,3	70,7	98,4	74,8
	149,7	41,2	144,1	49,6	135,4	57,2	121,5	63,5	101,0	67,2
	143,0	35,6	137,8	43,3	130,1	50,3	119,0	56,0	104,1	59,7
	138,1	29,3	136,6	36,5	127,3	43,0	118,6	48,4	107,5	52,4
	134,6	22,3	131,1	29,2	126,1	35,4	119,5	40,8	111,0	45,1
	132,3	15,1	129,8	21,6	126,1	27,8	121,2	33,4	114,8	38,1
	130,9	7,6	129,5	14,1	127,0	20,3	123,5	26,0	118,9	31,2
	130,5	0,0	130,1	6,5	128,7	12,8	126,5	18,9	123,2	24,7
	130,9	-7,6	131,5	-1,0	131,2	5,6	130,0	12,1	127,9	18,4
	132,3	-15,1	133,8	-8,2	134,4	-1,3	134,1	5,7	132,9	12,6
	134,6	-22,3	137,0	-15,2	138,3	-7,8	138,8	-0,3	138,4	7,3
	138,1	-29,3	141,2	-21,6	143,2	-13,7	144,2	-5,7	144,3	2,5
	143,0	-35,6	146,6	-27,4	148,9	-19,0	150,2	-10,4	150,7	-1,6
	149,7	-41,2	153,2	-32,4	155,5	-23,4	156,9	-14,2	157,6	-5,0
	158,2	-45,6	161,2	-36,2	163,1	-26,7	164,2	-17,1	164,8	-7,5
	168,5	-48,5	170,3	-38,7	171,3	-28,8	172,0	-18,9	172,3	-9,0
	180,0	-49,5	180,0	-39,5	180,0	-29,5	180,0	-19,5	180,0	-9,5

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N.S. 50°	E.W. 77°	N.S. 50°	E.W. 100°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	0,	80,5	0,	70,5	0,	60,5	0,	50,5		40,5
	40,2	78,2	22,2	69,5	15,3	60,0	11,9	50,3		40,5
	63,5	73,1	41,5	66,9	30,1	58,7	23,8	49,8		40,5
	77,1	67,0	57,1	63,1	43,8	56,7	35,4	48,9		40,5
	86,6	60,7	69,8	58,6	56,4	54,0	46,7	47,8		40,5
	94,2	54,3	80,4	53,8	67,8	51,0	57,7	46,4		40,5
	100,8	47,9	89,6	48,8	78,4	47,8	68,3	44,9		40,5
	107,0	41,7	97,9	43,8	88,2	44,4	78,7	43,2		40,5
	112,9	35,6	105,7	38,9	97,5	41,0	88,7	41,5		40,5
	118,8	29,8	113,1	34,2	106,3	37,6	98,4	39,8		40,5
	124,7	24,4	120,4	29,8	114,8	34,4	108,0	38,1		40,5
	130,8	19,3	127,6	25,6	123,1	31,4	117,3	36,5		40,5
	137,1	14,7	134,8	21,9	131,3	28,7	126,5	35,0		40,5
	143,7	10,6	142,1	18,5	139,5	26,3	135,6	33,7		40,5
	150,5	7,1	149,5	15,7	147,6	24,3	144,5	32,6		40,5
	157,6	4,3	157,0	13,5	155,7	22,6	153,5	31,7		40,5
	164,9	2,2	164,6	11,8	163,8	21,5	162,3	31,0		40,5
	172,4	0,9	172,3	10,8	171,9	20,7	171,2	30,6		40,5
	180,0	0,5	180,0	10,5	180,0	20,5	180,0	30,5		40,5

5,6 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 1500 km

5,6 Mc/s day - DATA FOR PLOTTING 1500 km INTERFERENCE CONTOURS

5,6 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 1500 km

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S- 13,6°	E-W- 13,6°			N-S- 13,6°	E-W- 14,5°			N-S- 13,6°	E-W- 14,6°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	13,5	180,0	23,5	180,0	33,5	180,0	43,5	180,0	53,5
	177,6	13,3	177,5	23,3	177,2	33,3	176,8	43,3	176,1	53,2
	175,3	12,7	175,0	22,6	174,6	32,6	173,8	42,5	172,5	52,5
	173,2	11,7	172,8	21,6	172,1	31,5	171,0	41,4	169,3	51,3
	171,2	10,3	170,8	20,2	170,0	30,0	168,7	39,9	166,6	49,6
	169,6	8,6	169,1	18,5	168,3	28,3	166,9	38,0	164,6	47,7
	168,3	6,7	167,8	16,5	167,0	26,2	165,5	36,0	163,2	45,6
	167,3	4,6	166,9	14,3	166,1	24,1	164,7	33,7	162,4	43,3
	166,7	2,3	166,4	12,1	165,7	21,8	164,4	31,4	162,3	41,0
	166,5	0,0	166,3	9,7	165,7	19,4	164,5	29,1	162,6	38,7
	166,7	-2,3	166,6	7,4	166,1	17,1	165,1	26,8	163,4	36,4
	167,3	-4,6	167,3	5,2	166,9	14,9	166,0	24,6	164,6	34,3
	168,3	-6,7	168,3	3,1	168,0	12,9	167,3	22,6	166,1	32,4
	169,6	-8,6	169,7	1,2	169,5	11,0	169,0	20,9	168,0	30,7
	171,2	-10,3	171,4	-0,4	171,2	9,5	170,8	19,3	170,1	29,2
	173,2	-11,7	173,3	-1,7	173,2	8,2	172,9	18,1	172,4	28,0
	175,3	-12,7	175,4	-2,7	175,4	7,3	175,2	17,2	174,8	27,2
	177,6	-13,3	177,7	-3,3	177,7	6,7	177,6	16,7	177,4	26,7
	180,0	-13,5	180,0	-3,5	180,0	6,5	180,0	16,5	180,0	26,5
Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia			-N-S- 13,6°	-E-W- 27,2°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	63,5	180,0	73,5	180,0	83,5	0,	86,5		76,5
	174,8	63,2	172,0	73,1	160,8	82,9	35,2	86,0		76,5
	170,1	62,4	164,9	72,1	147,7	81,4	59,4	84,7		76,5
	166,1	61,0	159,4	70,6	140,7	79,4	75,5	83,1		76,5
	162,9	59,3	155,6	68,7	137,6	77,1	87,2	81,4		76,5
	160,7	57,3	153,3	66,5	137,0	74,8	96,7	79,6		76,5
	159,3	55,1	152,3	64,2	137,8	72,5	104,9	77,9		76,5
	158,7	52,8	152,3	61,9	139,6	70,2	112,4	76,3		76,5
	158,8	50,4	153,0	59,6	142,0	68,1	119,3	74,7		76,5
	159,5	48,1	154,4	57,4	144,9	66,0	125,9	73,3		76,5
	160,7	46,0	156,2	55,3	148,2	64,1	132,2	71,9		76,5
	162,3	43,9	158,4	53,3	151,7	62,4	138,4	70,7		76,5
	164,2	42,1	161,0	51,6	155,4	60,9	144,5	69,6		76,5
	166,4	40,4	163,8	50,1	159,3	59,6	150,5	68,7		76,5
	168,9	39,0	166,8	48,8	163,3	58,5	156,5	67,9		76,5
	171,5	37,9	170,0	47,8	167,4	57,6	162,4	67,3		76,5
	174,3	37,1	173,3	47,1	171,6	57,0	168,3	66,9		76,5
	177,1	36,7	176,6	46,6	175,8	56,6	174,1	66,6		76,5
	180,0	36,5	180,0	46,5	180,0	56,5	180,0	66,5		76,5
									Toutes longitudes All Longitudes Todas longitudes	

Latitude	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N=S= 58°	E=W= 56°			N=S= 58°	E=W= 63°			N=S= 58°	E=W= 76°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	58,5	180,0	68,5	180,0	78,5	180,0	88,5	0	81,5
	164,2	57,1	158,1	66,6	144,0	75,4	102,4	81,3	46,7	78,3
	150,8	53,2	142,2	61,6	126,6	68,7	100,1	72,8	68,5	71,7
	140,8	47,6	132,2	54,9	119,2	60,8	101,1	64,3	80,1	64,4
	133,6	40,8	126,2	47,2	116,0	52,4	102,9	55,8	88,0	56,7
	128,7	33,2	122,7	39,1	114,9	43,9	105,3	47,4	94,2	49,1
	125,3	25,2	120,8	30,7	115,1	35,4	108,0	39,1	99,7	41,5
	123,1	17,0	120,1	22,2	116,0	26,9	110,9	30,9	104,9	34,0
	121,9	8,5	120,2	13,7	117,7	18,5	114,3	22,9	110,0	26,7
	121,5	0,0	121,1	5,2	119,9	10,3	118,0	15,1	115,1	19,6
	121,9	-8,5	122,8	-3,2	122,8	2,3	122,1	7,6	120,5	12,9
	123,1	-17,0	125,2	-11,3	126,4	-5,5	126,8	0,5	126,3	6,5
	125,3	-25,2	128,6	-19,2	130,8	-12,8	132,0	-6,2	132,4	0,5
	128,7	-33,2	133,0	-26,7	136,1	-19,7	138,0	-12,3	139,0	-4,8
	133,6	-40,8	138,9	-33,5	142,5	-25,8	144,9	-17,7	146,2	-9,5
	140,8	-47,6	146,4	-39,5	150,2	-31,0	152,6	-22,2	154,0	-13,3
	150,8	-53,2	156,0	-44,3	159,1	-35,0	161,1	-25,6	162,3	-16,1
	164,2	-57,1	167,4	-47,4	169,2	-37,6	170,4	-27,8	171,0	-17,9
	180,0	-58,5	180,0	-48,5	180,0	-38,5	180,0	-28,5	180,0	-18,5

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N=S= 58°	E=W= 92°	N=S= 58°	E=W= 116°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	0	71,5	0	61,5	0	51,5	0	41,5		31,5
	25,7	70,1	17,6	60,7	13,6	51,1	11,4	41,3		31,5
	46,4	66,2	34,0	58,6	26,9	49,9	22,7	40,8		31,5
	61,7	61,0	43,4	55,3	39,6	48,0	33,8	40,0		31,5
	73,3	55,1	61,0	51,2	51,6	45,6	44,8	38,9		31,5
	82,7	48,8	71,9	46,6	62,8	42,7	55,5	37,6		31,5
	90,7	42,4	81,7	41,7	73,3	39,6	66,0	36,1		31,5
	98,0	36,0	90,6	36,7	83,2	36,2	76,2	34,4		31,5
	104,8	29,7	99,0	31,8	92,7	32,8	86,2	32,7		31,5
	111,6	23,6	107,0	26,9	101,8	29,4	96,1	31,0		31,5
	115,1	17,8	114,9	22,2	110,7	26,1	105,7	29,3		31,5
	124,9	12,3	122,7	17,9	119,5	23,0	115,3	27,6		31,5
	131,8	7,3	130,5	13,8	128,1	20,2	124,7	26,1		31,5
	139,2	2,7	138,4	10,3	136,7	17,7	134,0	24,9		31,5
	146,8	-1,1	146,5	7,2	145,3	15,5	143,3	23,6		31,5
	154,7	-4,3	154,7	4,8	154,0	13,8	152,5	22,7		31,5
	162,9	-6,6	163,0	3,0	162,6	12,5	161,7	22,1		31,5
	171,4	-8,0	171,5	1,9	171,3	11,8	170,8	21,6		31,5
	180,0	-8,5	180,0	1,5	180,0	11,5	180,0	21,5		31,5

5,6 et 6,6 MHz, nuit - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 6500 km
 5.6 & 6.6 Mc/s night - DATA FOR PLOTTING 6500 km INTERFERENCE CONTOURS
 5,6 y 6,6 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 6500 km

Latitude	00°		10°		20°				40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S-	E-W-			N-S-	E-W-			N-S-	E-W-
	17,20	17,20			17,20	18,30			17,20	22,40
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	17,1	180,0	27,1	180,0	37,1	180,0	47,1	180,0	57,1
	176,9	16,8	176,7	26,8	176,3	36,8	175,7	46,8	174,7	56,7
	174,0	16,0	173,6	26,0	172,9	35,9	171,7	45,8	169,7	55,7
	171,3	14,8	170,7	24,6	169,7	34,5	168,1	44,3	165,5	54,0
	168,8	13,0	168,2	22,8	167,0	32,6	165,2	42,3	162,2	51,9
	166,7	10,9	166,1	20,6	164,9	30,3	162,9	39,9	159,8	49,4
	165,1	8,5	164,5	18,1	163,3	27,7	161,3	37,2	158,2	46,6
	163,9	5,8	163,3	15,4	162,3	24,9	160,4	34,4	157,5	43,7
	163,1	2,9	162,7	12,5	161,8	22,0	160,2	31,5	157,5	40,8
	162,9	0,0	162,7	9,6	161,9	19,1	160,4	28,5	153,1	37,9
	163,1	-2,9	163,1	6,6	162,4	16,2	161,3	25,7	159,3	35,1
	163,9	-5,8	163,9	3,8	163,5	13,4	162,5	23,0	160,9	32,5
	165,1	-8,5	165,2	1,2	165,0	10,9	164,2	20,5	162,9	30,1
	166,7	-10,9	167,0	-1,2	166,8	8,6	166,3	18,3	165,2	28,0
	168,8	-13,0	169,1	-3,2	169,0	6,6	168,6	16,4	167,8	26,2
	171,3	-14,8	171,5	-4,9	171,5	5,0	171,2	14,9	170,7	24,8
	174,0	-16,0	174,2	-6,1	174,2	3,9	174,1	13,8	173,7	23,7
	176,9	-16,8	177,1	-6,8	177,1	3,1	177,0	13,1	176,8	23,1
	180,0	-17,1	180,0	-7,1	180,0	2,9	180,0	12,9	180,0	22,9

Coordonnées pour le tracé des courbes
Coordinates for plotting of contours
Coordenadas para el trazado de las curvas

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia			N-S-	E-W-						
			17,20	34,40						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	67,1	180,0	77,1	180,0	87,1	0,	82,9		72,9
	172,6	66,7	167,3	76,5	137,0	85,7	23,2	82,5		72,9
	166,0	65,5	157,1	75,0	123,8	83,1	43,5	81,6		72,9
	160,7	63,6	150,3	72,8	120,8	80,1	60,0	80,2		72,9
	156,8	61,3	146,2	70,1	121,4	77,2	73,5	78,6		72,9
	154,4	58,6	144,4	67,3	123,5	74,3	84,9	76,9		72,9
	153,1	55,8	144,0	64,3	126,5	71,5	94,8	75,2		72,9
	152,8	52,8	144,7	61,4	130,1	68,8	103,6	73,5		72,9
	153,3	49,9	146,3	58,6	133,9	66,3	111,8	71,8		72,9
	154,4	47,1	148,4	55,9	138,0	63,9	119,4	70,3		72,9
	156,1	44,4	151,0	53,3	142,3	61,7	126,8	68,8		72,9
	158,2	41,9	153,9	51,0	146,7	59,7	133,8	67,5		72,9
	160,7	39,6	157,2	49,0	151,3	58,0	140,7	66,3		72,9
	163,5	37,6	160,7	47,2	155,9	56,5	147,4	65,3		72,9
	166,5	36,0	164,3	45,7	160,7	55,2	154,0	64,4		72,9
	169,7	34,6	168,1	44,5	165,4	54,2	160,6	63,8		72,9
	173,1	33,7	172,0	43,6	170,3	53,5	167,1	63,3		72,9
	176,5	33,1	176,0	43,1	175,1	53,0	173,5	63,0		72,9
	180,0	32,9	180,0	42,9	180,0	52,9	180,0	62,9		72,9

Coordonnées pour le trace des courbes
Coordinates for plotting of contours
Coordenadas para el trazado de las curvas

6,6 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 1900 km
6,6 Mc/s day - DATA FOR PLOTTING 1900 km INTERFERENCE CONTOURS
6,6 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 1900 km

Latitude	00°		10°		20°		30°		40°	
Portée de brouillage Interference-Range Alcance de interferencia	N-S 34.3°	E-W 34.3°			N-S 34.3°	E-W 36.5°			N-S 34.3°	E-W 44.8°
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180.0	34.2	180.0	44.2	180.0	54.2	180.0	64.2	180.0	74.2
	173.3	33.6	172.3	43.5	170.6	53.4	167.5	63.2	160.6	72.9
	166.9	31.9	165.1	41.6	162.1	51.2	157.0	60.6	146.8	69.4
	161.2	29.1	158.9	38.5	155.3	47.8	149.3	56.6	138.8	64.8
	156.4	25.5	154.0	34.6	150.2	43.4	144.2	51.9	134.6	59.5
	152.5	21.2	150.2	30.0	146.6	38.5	141.2	46.6	133.0	53.9
	149.5	16.3	147.6	24.9	144.4	33.2	139.8	41.1	132.9	48.3
	147.4	11.1	145.9	19.4	143.4	27.6	139.6	35.5	134.0	42.8
	146.2	5.6	145.2	13.9	143.3	22.0	140.3	29.9	135.9	37.3
	145.8	0.0	145.4	8.3	144.1	16.4	141.9	24.4	138.4	32.1
	146.2	-5.6	146.3	2.7	145.7	11.0	144.1	19.2	141.5	27.2
	147.4	-11.1	148.1	-2.6	147.9	5.9	147.0	14.3	145.1	22.6
	149.5	-16.3	150.6	-7.7	150.9	1.1	150.4	9.8	149.1	18.4
	152.5	-21.2	153.9	-12.3	154.5	-3.2	154.4	5.8	153.6	14.8
	156.4	-25.5	157.9	-16.3	158.7	-7.0	158.8	2.3	158.4	11.6
	161.2	-29.1	162.6	-19.6	163.4	-10.1	163.7	-0.5	163.5	9.1
	166.9	-31.9	168.0	-22.1	168.7	-12.3	168.9	-2.5	168.8	7.3
	173.3	-33.6	173.9	-23.7	174.2	-13.7	174.4	-3.8	174.4	6.2
	180.0	-34.2	180.0	-24.2	180.0	-14.2	180.0	-4.2	180.0	5.8
Latitude	50°		60°		70°		80°		90°	
Portée de brouillage Interference-Range Alcance de interferencia	N-S 34.3°	E-W 53.5°	N-S 34.3°	E-W 69°						
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180.0	34.2	0.	85.8	0.	75.8	0.	65.8	Longitudes All	55.8
	137.8	81.6	56.0	83.2	22.4	75.1	13.7	65.6		55.8
	123.5	76.7	77.1	73.6	42.0	73.3	27.0	65.0		55.8
	119.5	71.2	88.4	73.7	58.2	70.7	39.9	64.0		55.8
	119.2	65.6	96.4	68.7	71.4	67.6	52.2	62.8		55.8
	120.6	60.0	103.2	63.8	82.5	64.3	63.8	61.3		55.8
	123.0	54.5	109.3	59.0	92.2	60.8	74.7	59.7		55.8
	126.0	49.2	115.1	54.3	101.0	57.5	85.1	58.0		55.8
	129.5	44.1	120.7	49.9	109.1	54.2	94.9	56.2		55.8
	133.4	39.3	126.3	45.7	116.7	51.0	104.3	54.5		55.8
	137.6	34.8	132.0	41.9	124.1	48.1	113.4	52.9		55.8
	142.1	30.7	137.7	38.3	131.3	45.4	122.2	51.4		55.8
	146.9	26.9	143.5	35.2	138.3	42.9	130.8	50.0		55.8
	152.0	23.7	149.3	32.4	145.3	40.8	139.2	48.7		55.8
	157.2	20.9	155.3	30.1	152.3	39.0	147.5	47.7		55.8
	162.7	13.7	161.4	28.2	159.2	37.6	155.7	46.9		55.8
	168.4	7.1	167.6	26.9	166.1	36.6	163.8	46.3		55.8
	174.2	1.6	173.3	26.1	173.1	36.0	171.9	45.9		55.8
	180.0	15.8	180.0	25.8	180.0	35.8	180.0	45.8		55.8

9,0, MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 3800 km
 9,0 Mc/s day - DATA FOR PLOTTING 3800 km INTERFERENCE CONTOURS
 9,0 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 3800 km

Latitude	00°		10°		20°		30° -		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 54°	E-W 54°			N-S 54°	E-W 58°			N-S 54°	E-W 74°
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	54,0	180,0	64,0	180,0	74,0	180,0	84,0	0	86,0
	166,6	52,3	162,3	62,5	153,3	71,9	128,2	79,7	66,2	81,2
	154,8	49,5	148,2	58,3	136,6	66,3	115,0	72,2	82,1	73,8
	145,5	44,5	138,5	52,4	127,7	59,3	111,4	64,2	90,0	66,1
	138,5	39,3	132,2	45,4	123,2	51,6	111,0	58,2	95,7	58,5
	133,5	31,3	128,2	37,9	121,1	43,6	111,9	48,1	100,6	50,9
	130,0	23,9	126,0	30,0	120,6	35,5	113,6	40,1	105,2	43,4
	127,7	16,1	124,9	22,0	121,1	27,5	116,0	32,2	109,7	36,1
	126,4	8,1	124,8	13,9	122,3	19,5	118,8	24,6	114,3	29,0
	126,0	0,0	125,6	5,9	124,3	11,6	122,2	17,1	119,1	22,2
	126,4	-8,1	127,1	-2,1	127,0	4,0	126,0	9,9	124,2	15,7
	127,7	-16,1	129,5	-9,8	130,4	-3,4	130,4	3,1	129,6	9,5
	130,0	-23,9	132,8	-17,2	134,6	-10,3	135,4	-3,2	135,4	3,9
	133,5	-31,3	137,2	-24,2	139,7	-16,7	141,1	-9,0	141,7	-1,2
	138,5	-38,3	142,9	-30,5	145,8	-22,4	147,6	-14,1	148,5	-5,6
	145,5	-44,5	150,0	-36,0	152,9	-27,2	154,8	-18,2	155,8	-9,1
	154,8	-49,5	158,7	-40,3	161,2	-30,9	162,7	-21,4	163,6	-11,8
	160,6	-52,8	163,9	-43,0	170,3	-33,2	171,2	-23,3	171,7	-13,4
	180,0	-54,0	180,0	-44,0	180,0	-34,0	180,0	-24,0	180,0	-14,0

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N-S 54°	E-W 95°	N-S 54°	E-W 100°						
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	0	75,0	0	66,0	0	56,0	0	46,0		36,0
	31,1	74,2	19,5	65,1	14,4	55,6	11,6	45,8		36,0
	53,5	69,9	37,2	62,8	28,3	54,3	23,2	45,3		36,0
	68,6	64,2	52,3	59,2	41,5	52,4	34,5	44,5		36,0
	79,4	58,1	65,0	55,0	53,7	49,8	45,7	43,4		36,0
	88,1	51,7	75,8	50,3	65,1	46,9	56,5	42,0		36,0
	95,5	45,3	85,4	45,3	75,7	43,7	67,1	40,5		36,0
	102,3	38,9	94,1	40,3	85,6	40,3	77,4	38,3		36,0
	108,7	32,7	102,2	35,4	95,0	36,9	87,4	37,1		36,0
	115,0	26,3	110,0	30,6	104,0	33,5	97,2	35,4		36,0
	121,4	21,1	117,5	26,0	112,7	30,3	106,8	33,7		36,0
	127,8	15,8	125,1	21,8	121,2	27,2	115,2	32,1		36,0
	134,5	11,0	132,6	17,9	129,7	24,5	125,5	30,6		36,0
	141,4	6,7	140,2	14,4	138,1	22,0	134,7	29,2		36,0
	148,6	3,0	148,0	11,5	146,4	19,9	143,9	23,1		36,0
	156,1	-0,0	155,8	9,1	154,8	18,2	152,9	27,2		36,0
	163,9	-2,2	163,8	7,4	163,2	17,0	162,0	26,5		36,0
	171,0	-3,5	171,9	6,4	171,6	16,3	171,0	26,1		36,0
	180,0	-4,0	180,0	6,0	180,0	16,0	180,0	26,0		36,0

11,3 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE SUR 6000 km.
 11,3 Mc/s day - DATA FOR PLOTTING 6000 km INTERFERENCE CONTOURS
 11,3 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 6000 km

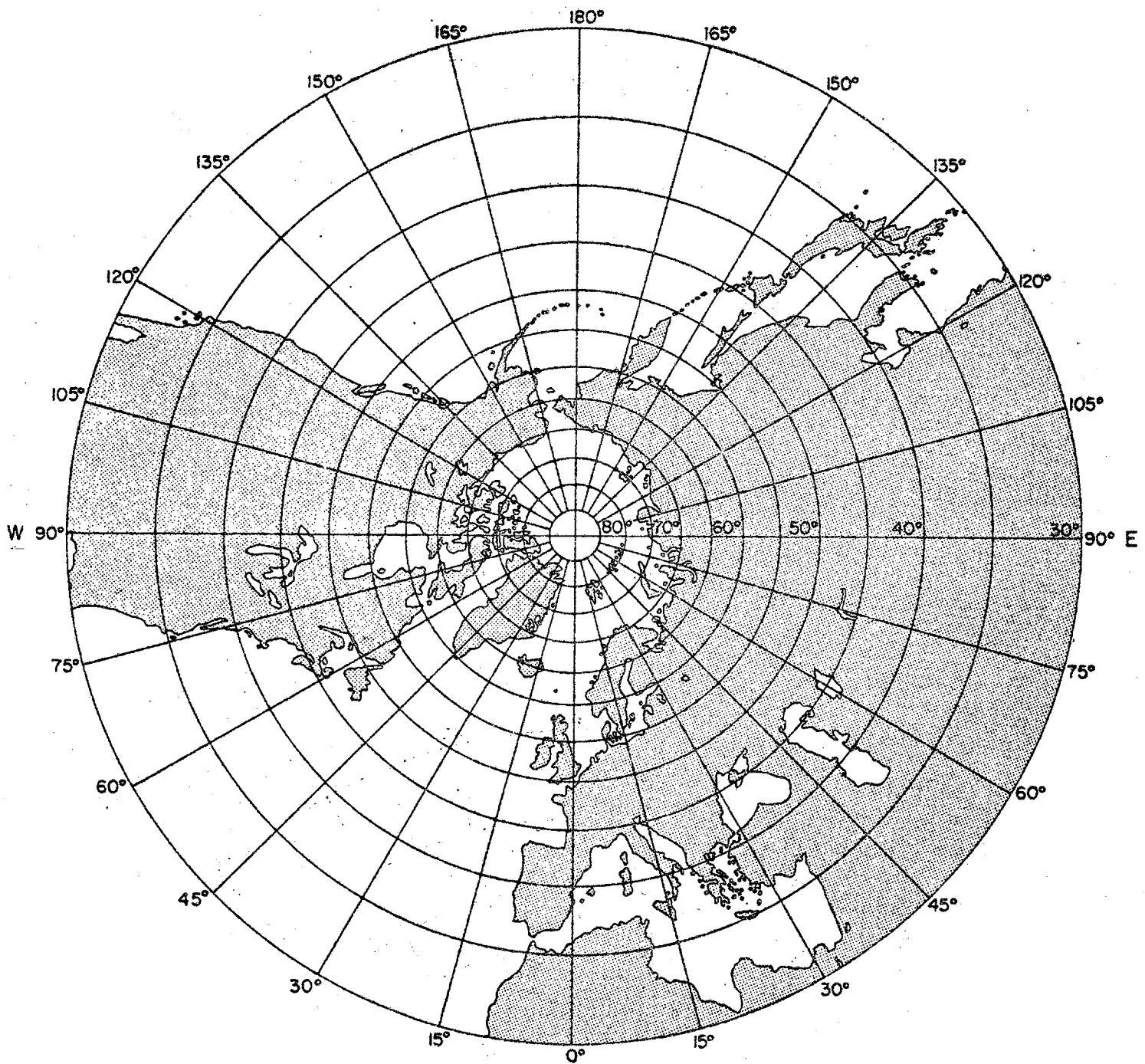
5. that the Interference Range Contours and Gnomonic polar area maps, applicable at latitudes north of 60° N and south of 60° S, attached hereto, form a part of Appendix 27. These contours and maps are described as follows:

<u>Frequency Band</u>	<u>Day or Night</u>	<u>Frequency Band</u>	<u>Day or Night</u>
3.0)	Day	5.6	Day
3.5)	Day		
3.0	Night	5.6)	
3.5	Night	6.6)	Night
4.7	Day	6.6	Day
4.7)	Night	9.0	Day
10.0)	Day	11.3	Day

Note by the Secretariat

In the interests of expediting the reproduction and distribution of the present working document, the original page numbering of the following pages has been left unchanged.

Pôle Nord - North Pole - Polo Norte

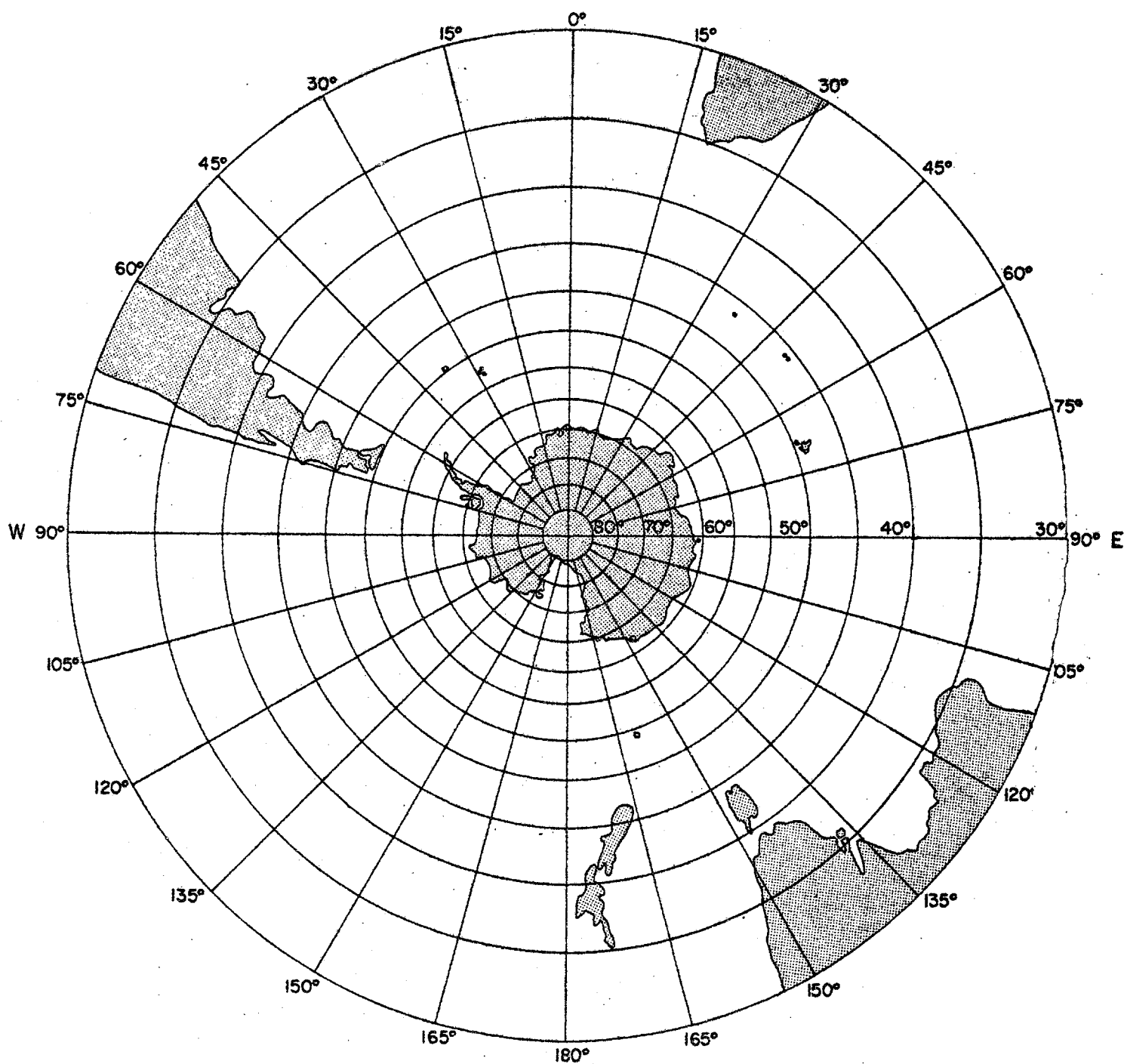


NORTH POLE

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

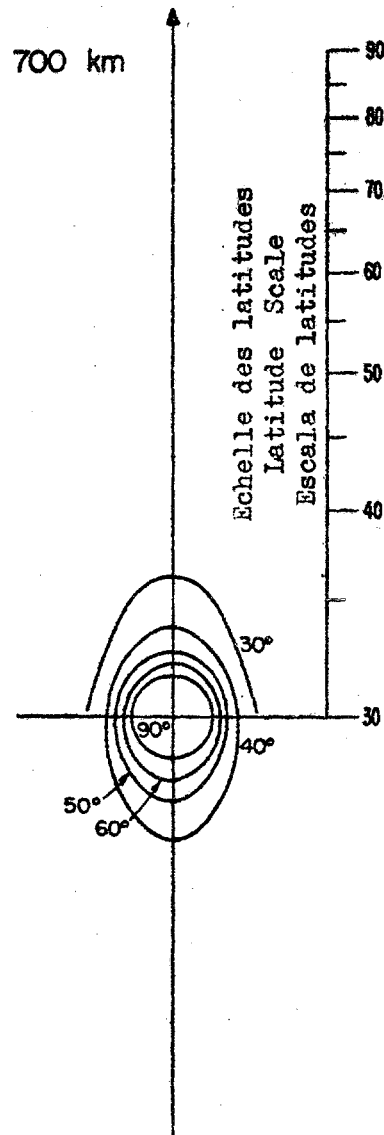
Pôle Sud - South Pole - Polo Sur



SOUTH POLE

PAGE INTENTIONALLY LEFT BLANK

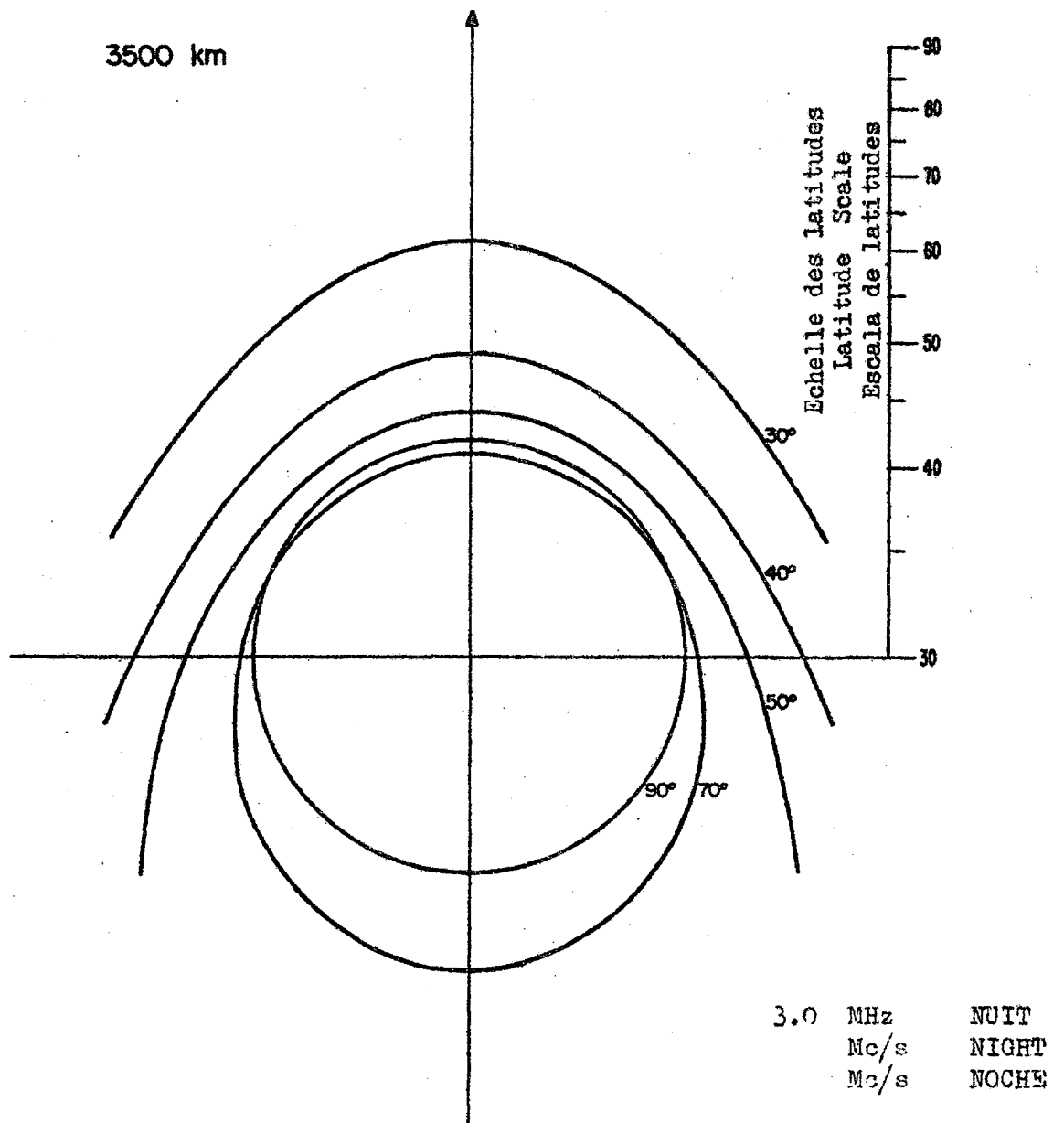
PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



3.0	3.5	MHz	JOUR
		Mc/s	DAY
		Mc/s	DIA

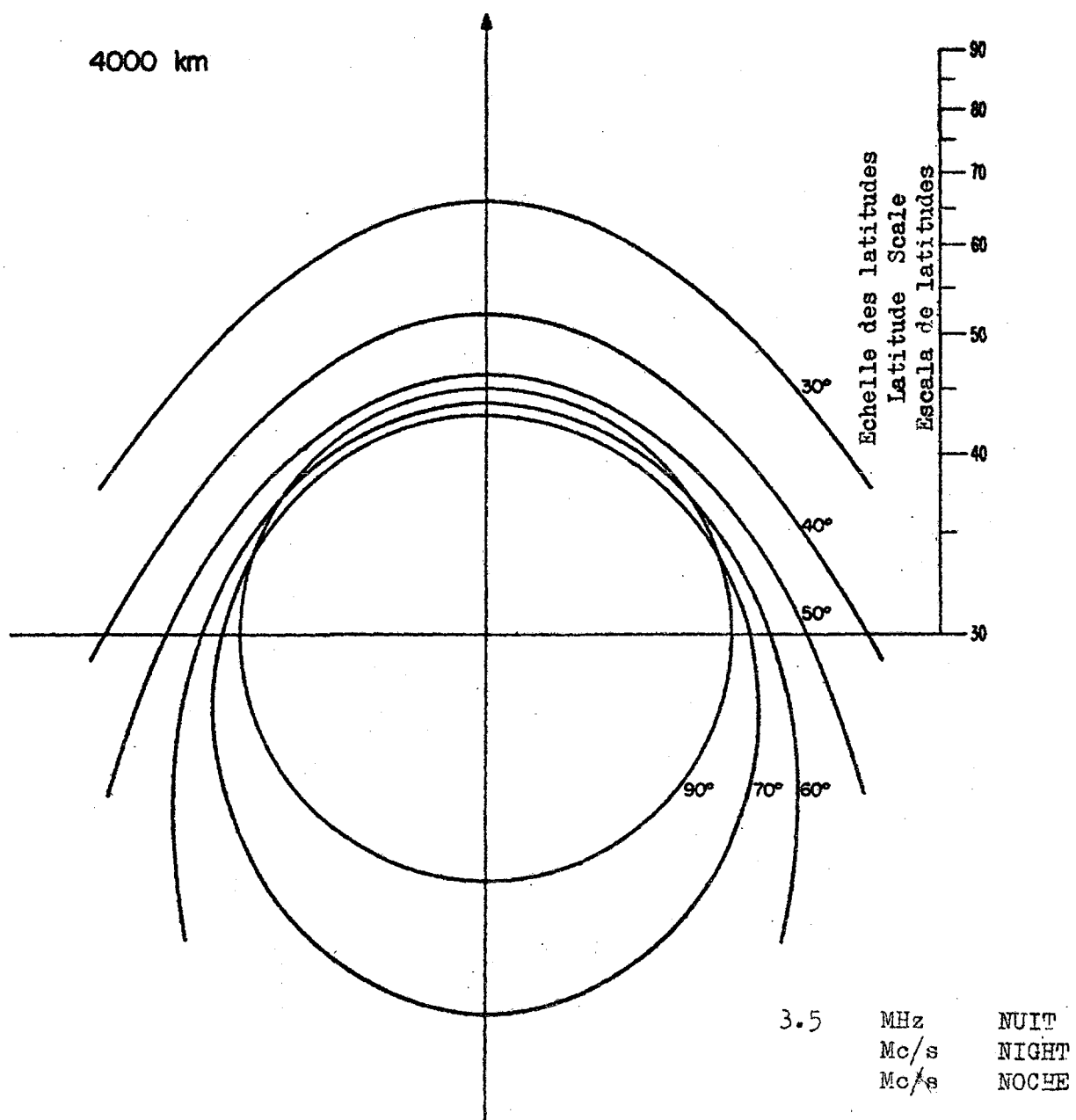
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



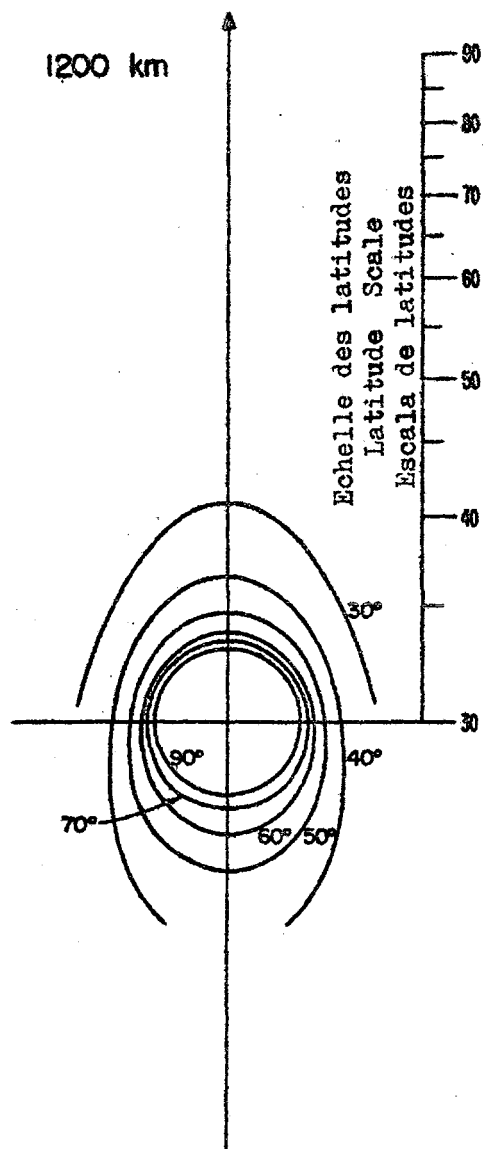
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



PAGE INTENTIONALLY LEFT BLANK

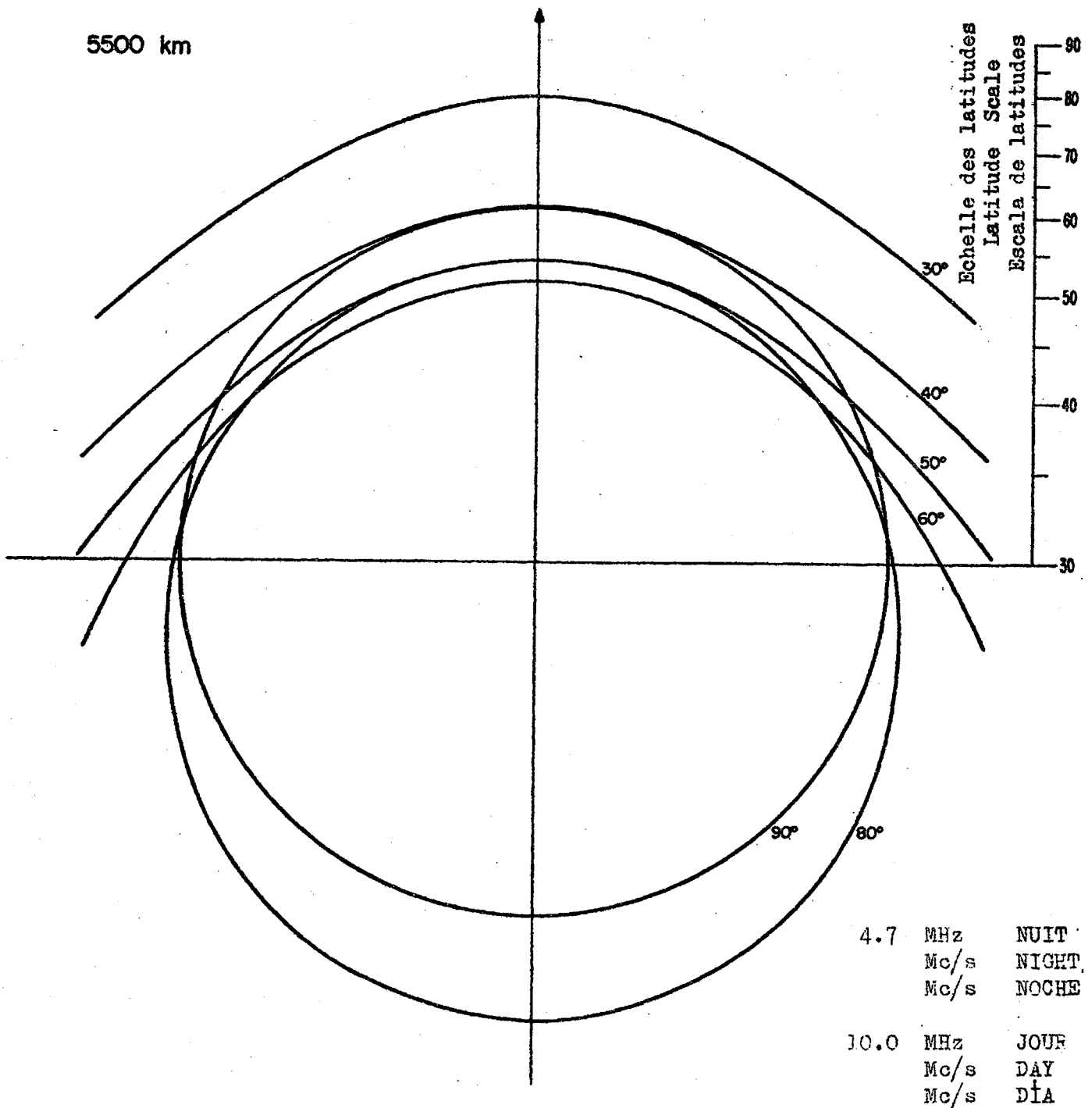
PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



4.7 MHz JOUR
 Mc/s DAY
 Mc/s DÍA

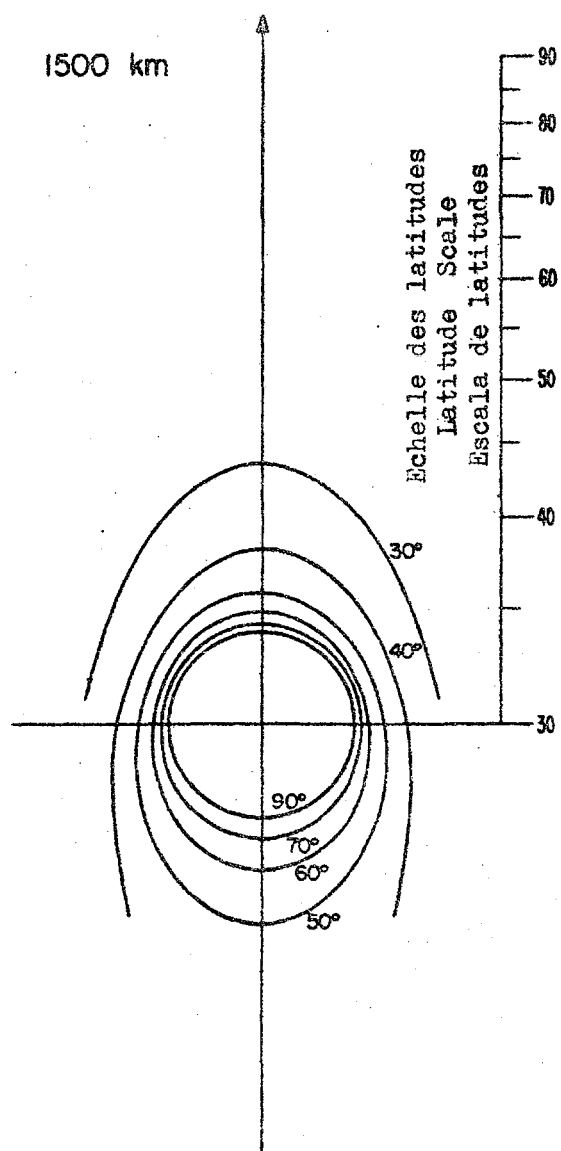
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



PAGE INTENTIONALLY LEFT BLANK

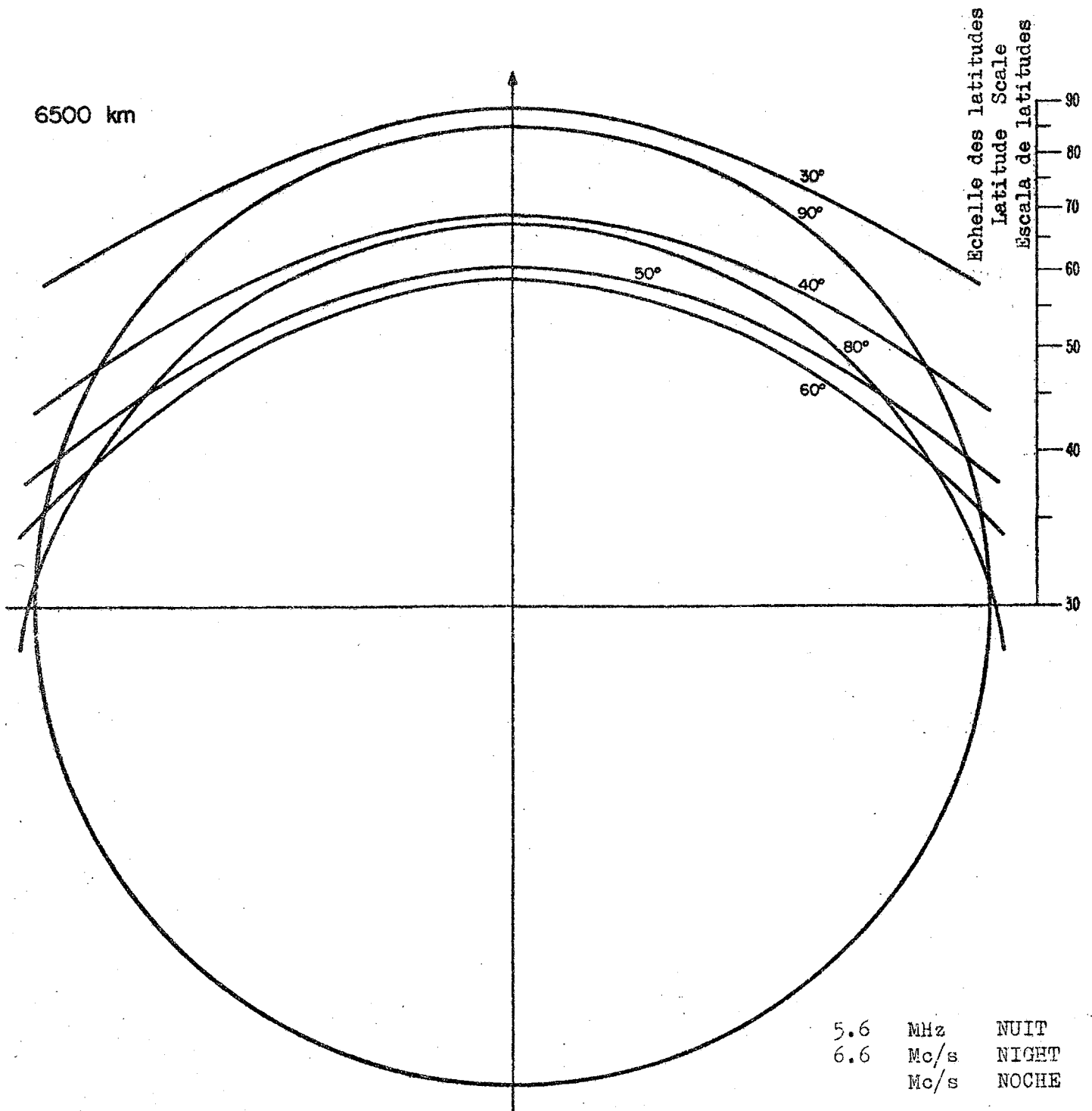
PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



5.6 MHz JOUR
Mc/s DAY
Mc/s DIA

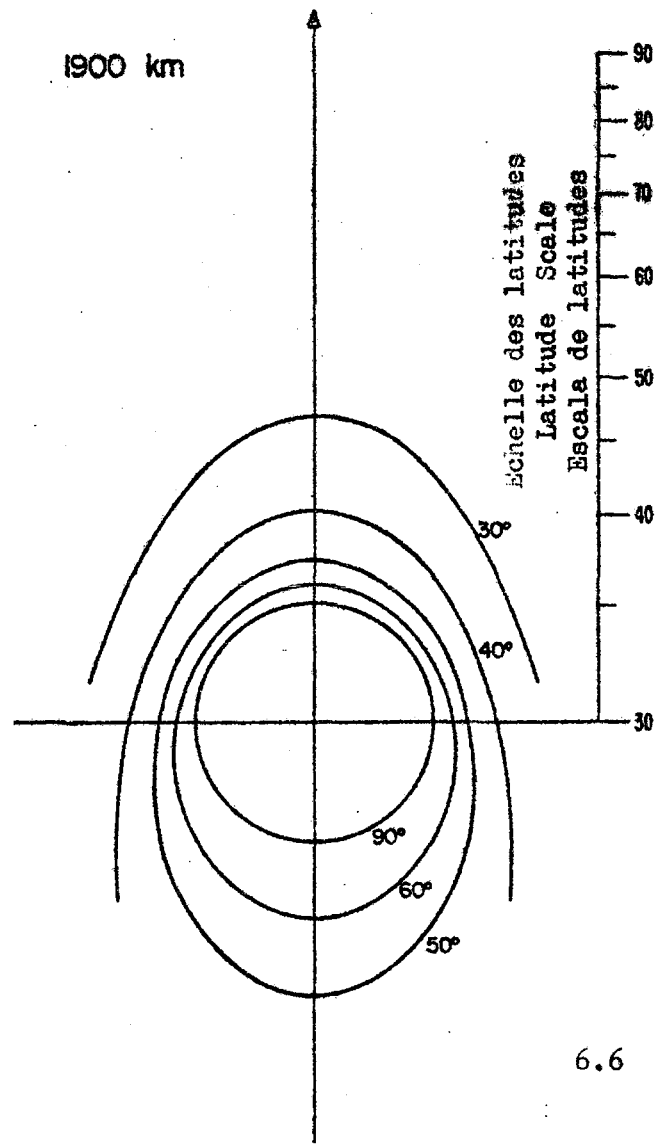
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



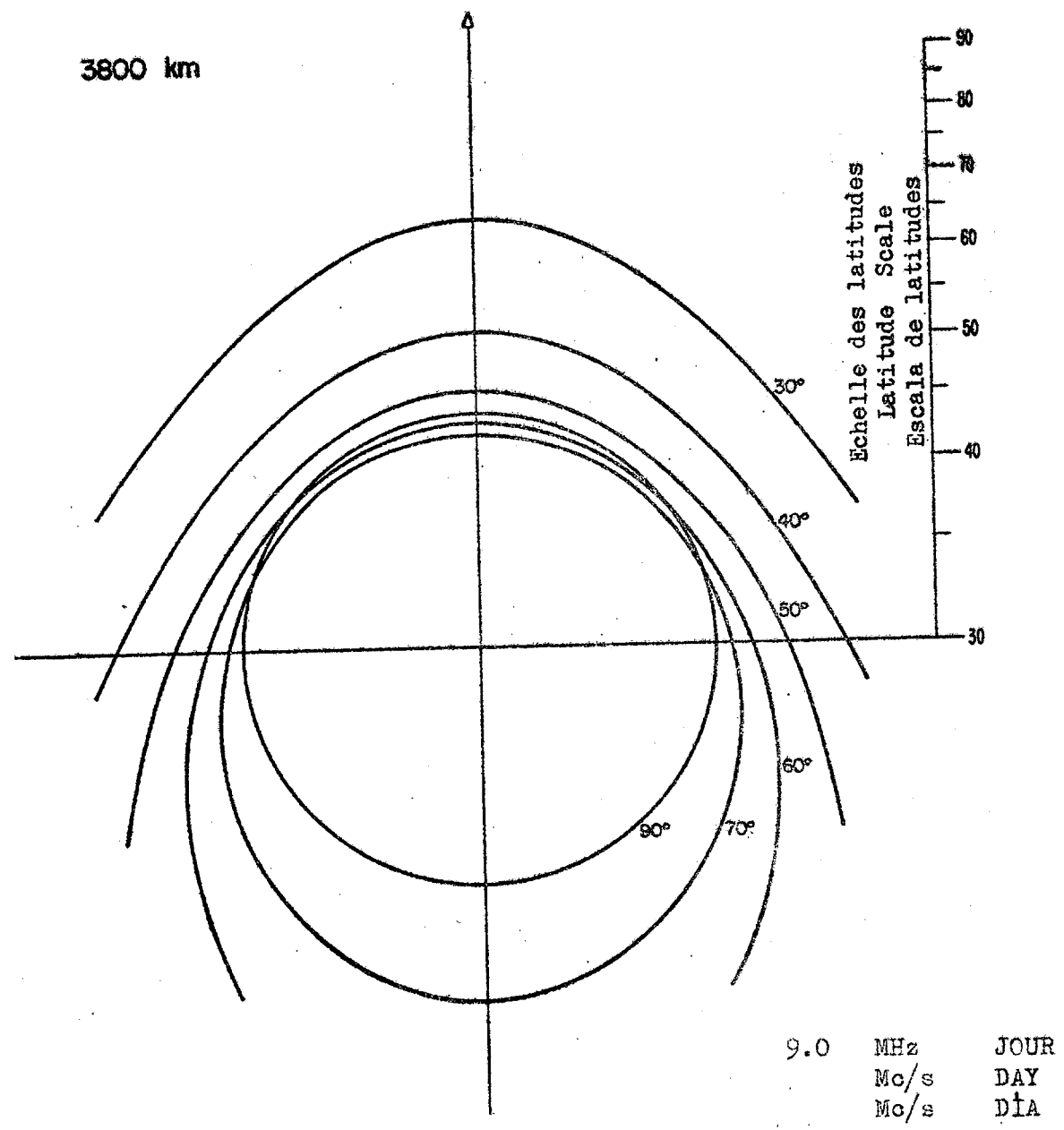
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



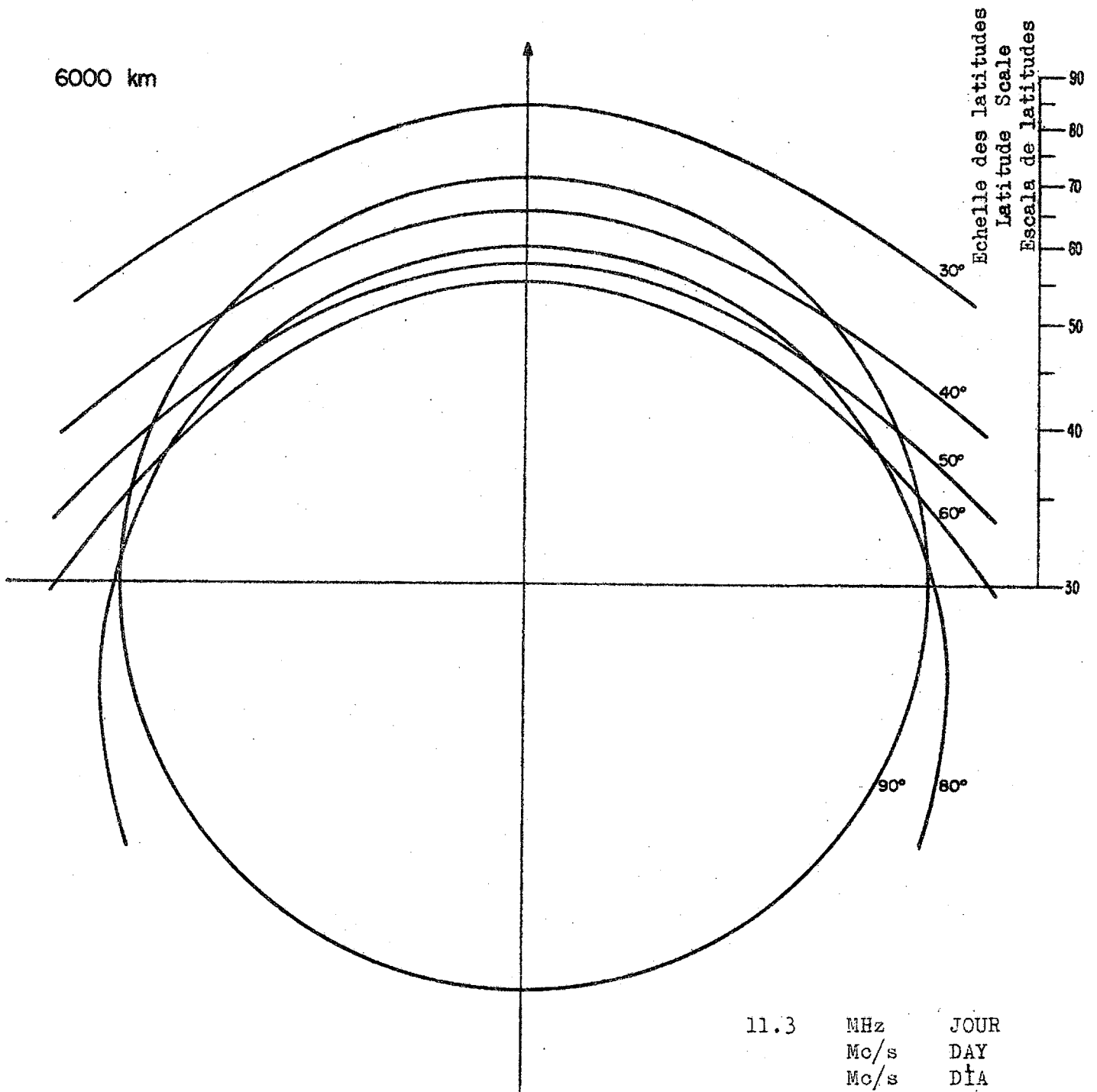
PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT



GENEVA, 1964

WORKING GROUP 4A

AGENDA

THIRD MEETING OF WORKING GROUP 4A

Monday, 10 February, 1964, at 3 p.m., Room XI

1. To consider and adopt draft Second Report of Working Group 4A to Committee 4

Propagation criteria

Protection ratios and interference ranges

Frequency sharing between areas

Document No. DT/I-15

(Document No. DT/I-15 will be distributed as soon as available on Friday, 7 February 1964)

2. Any other business

George W. HAYDON
Chairman
Working Group 4A



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-17-E

7 February 1964

Original : English

COMMITTEE 4

DRAFT

REPORT OF WORKING GROUP 4 AD HOC TO COMMITTEE 4

Determination of the Requirements in RDARA Operations

An ad hoc Working Group in which the Delegates of Australia, Brazil, Canada, France, U.S.A. and the U.S.S.R. participated has reached conclusions which are set out in the Annex attached hereto.

J.T. PENWARDEN
Chairman
Committee 4

Annex : 1



A N N E X

FORMULA PROPOSED FOR ASSESSMENT OF FREQUENCY REQUIREMENTS
FOR RDARA OPERATIONS

Introduction

A number of proposed formulae were examined in detail. It became obvious that, because of the differing types of flight operations existing in different areas of the world, only a very simple and general formula could be used. The simplicity of the formula finally adopted should facilitate the collection of statistics by administrations.

It was agreed that since information on the hours flown by registered aircraft was generally available from all administrations, that this should form the basis of a simple formula.

Suggested Formula

N, the number of aircraft requiring HF service in a particular area at the peak hour may be expressed by :

$$N = \frac{T_a}{52 \times 7 \times 24} \times K \quad \text{[equation (1)]}$$

where : T_a = Annual total of hours flown by HF-equipped aircraft carrying a Certificate of Airworthiness.

K = a correction factor relating the peak hour activity to the annual average

$$52 \times 7 \times 24 = \text{number of hours in a year}$$

Obviously the factor K could be expanded as $K = k_a \times k_b \times k_c$

where : k_a = a concentration factor relating the peak weekly activity to the average activity over the year

and k_b = a concentration factor relating the peak daily activity to the average daily activity over the week

k_c = a concentration factor relating the peak hourly activity to the average over the day.

Discussion

It was recognised that the requirements for HF channels submitted by Administrations to the second Session of the E.A.R.C. could exceed the number of channels available in the Plan. Accuracy in the value assigned to factor K therefore was not believed to be of prime importance. There was general agreement that, although this factor may vary considerably from area to area, a uniform constant value for K should be adopted in order to maintain paramount the equitable distribution of frequencies between areas. The specific value of K therefore was not considered to be critical and a value of 2.9 was tentatively adopted as being a reasonable average figure for all areas. Furthermore it was concluded that the assignment of specific values to k_a , k_b and k_c was therefore unnecessary.

In its final form, equation (1) may be written as

$$\begin{aligned} N &= \frac{2.9 \text{ Ta}}{8736} \\ &= \frac{\text{Ta}}{3000} \quad (\text{approximately}) \end{aligned}$$

COMMITTEE 5
WORKING GROUP 1

DRAFT

REPORT OF WORKING GROUP 1 TO COMMITTEE 5

1. The Working Group 1 was established by Committee 5 on 5 February, 1964, with the following terms of reference :
 1. To determine the method for collection of statistics by administrations;
 2. to specify the manner in which these statistics will be recorded.
2. The Working Group has terminated the task entrusted to it and the Notification Form as established, along with the Instructions specifying the manner in which the statistics will be recorded, is attached hereto.

William A.E. NIELSON
Convenor

Annexes : 6



NOTIFICATION FORM

Period selected : G.M.T. 0001 2 August 1964 to 2400 8 August 1964 inclusive

Survey No.				Country				Serial Number				Flight Identification				Type of Flight		Aircraft Speed		Line Code		Origin		Stage		Stop		Stage		Stop		Stage		Stop		Stage		Stop		Terminal	

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X 2

AIRCRAFT OPERATION STATISTICS

MAJOR WORLD AIR ROUTES

Instructions for completing the Notification Form

1. General Remarks

1.1 In view of the great volume of data which will have to be processed and, possibly, the short time which may be available for such processing, a form has been devised which would enable the information to be punched directly on to 80 Column Data Cards without any intermediate processing. It is, therefore, very important that extreme care be exercised to avoid the entering of information in a faulty or inaccurate way.

1.2 The form is divided into 80 columns to correspond with the 80 Column Data Card to be used for data input to an Electronic Data Processing System. The columns are numbered from 1 to 80 and guide lines are provided for correct inclusion of the information to be furnished.

1.3 The form for notifying the aircraft operation over Major World Air Routes (see Annex 1) which use high frequency communication can be broadly divided into four sections from the standpoint of the information to be provided :

- the first section, Columns 1 to 20, is meant for inclusion of the information of a general and administrative nature;
- the second section, Columns 21 to 26, is provided for the details concerning the point of origin of the flight;
- the third section, Columns 27 to 75, seeks the information regarding any intermediate stops and Major World Areas or World Flight Zones overflowed;
- the fourth section, Columns 76 to 80, seeks the information regarding the termination of the flight.

1.4 Aircraft flights should be reported by the Administration to which the aircraft belong; except in the case of leased aircraft where the Administration authorizing the operation or operating the aircraft is different than the Administration under which the aircraft is registered, the Administration operating or authorizing the operation shall be responsible for supplying aircraft operation statistics.

2. Explanation of the titles and subtitles used in the Notification Form

2.1 COUNTRY - This part on the form is provided for the country symbol of the country submitting the Notification Form. A copy of the Table of Country symbols from the Preface to the International Frequency List, is given in Annex 4.

2.2 SERIAL NO. - indicates the sequential number of all flights pertaining to one country.

2.3 FLIGHT IDENTIFICATION - for airline flights, consists of the two letter airline designator followed by the flight number. Annex 5 to this document enlists such designations. If the name of an airline does not appear in Annex 5, the administrations should indicate an appropriate national flight identification. Where a flight number is not available, administrations shall provide a flight identification with not more than eight characters.

2.4 TYPE OF FLIGHT - Flights are grouped into two categories :

- scheduled flights;
- non-scheduled flights (including general aviation and military transports flying along international civil air routes).

2.5 AIRCRAFT SPEED - Aircraft have been grouped into three categories :

- speeds of less than 350 knots;
- speeds from 350 knots to 500 knots;
- speeds greater than 500 knots.

2.6 LINE CODE - This column is provided for entering the number of line or lines on the form which contain information concerning one flight.

2.7 ORIGIN - indicates the commencement of a flight if it takes place during the week of record; if, however, the flight commenced before 0001 G.M.T., 2 August, 1964, in this case the ORIGIN for the record will be the first departure of the aircraft which occurs after the beginning of the week of record.

2.8 NUMBER OF THE SQUARE - refers to one of the 1818 numbered subdivisions shown on the World Map in Annex 1.

2.9 MWARA - is the abbreviation for Major World Air Route Area, as defined in Appendix 26 of the Radio Regulations, Geneva 1959,
or

WFZ - is the abbreviation for World Flight Zone, A to Y, as shown on the World Map in Annex 1.

2.10 DAY OF FLIGHT (G.M.T.) - indicates the day of the week on which each stage of the flight commences.

2.11 OVERFLOWN MWARA OR WFZ, - indicates flight over a MWARA or a WFZ without a stop.

2.12 STAGE LENGTH - indicates the distance of each stage of flight in nautical miles (N.M.).

2.13 TERMINAL - indicates the end of a flight if it takes place during the week of record; if, however, the flight ended after 2400 G.M.T., 8 August, 1964, in this case the TERMINAL for the record will be the first stop of the aircraft which occurs after the end of the week of record.

3. Detailed Instructions concerning information to be entered in the specific columns of the form

Title	Column(s)	Instructions																									
SURVEY No.	1	This column should be left blank.																									
COUNTRY	2 to 4	<p>The country symbol (see Annex 4) of the notifying Administration should be entered in consecutive columns, commencing with Column 2. Any columns not required should be left blank.</p> <p><u>Example:</u> The country symbols of, for instance, Afghanistan, France and Sweden should be written as follows :</p> <div><div>Column numbers on the Notification Form</div><div>→</div><table><tr><th colspan="3">COUNTRY</th></tr><tr><td>2</td><td>3</td><td>4</td></tr><tr><td>A</td><td>F</td><td>G</td></tr><tr><td>F</td><td></td><td></td></tr><tr><td>S</td><td></td><td></td></tr></table></div>	COUNTRY			2	3	4	A	F	G	F			S												
COUNTRY																											
2	3	4																									
A	F	G																									
F																											
S																											
SERIAL No.	5 to 9	<p>The Serial number of each flight should be entered in these columns. The numbers should commence from 1 for the first flight recorded during the week of record and continue consecutively to the last flight recorded. Any columns not required should be left blank.</p> <p><u>Example:</u></p> <div><div>Column numbers on the Notification Form</div><div>→</div><table><tr><th colspan="5">SERIAL No.</th></tr><tr><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td></tr><tr><td></td><td></td><td></td><td>1</td><td>6</td></tr><tr><td></td><td></td><td>3</td><td>1</td><td>5</td></tr><tr><td></td><td>4</td><td>5</td><td>7</td><td>1</td></tr></table></div>	SERIAL No.					5	6	7	8	9				1	6			3	1	5		4	5	7	1
SERIAL No.																											
5	6	7	8	9																							
			1	6																							
		3	1	5																							
	4	5	7	1																							

Title	Column(s)	Instructions																																																
FLIGHT IDENTIFICATION	10 to 17	<p>Two letter designator and flight number should be entered in consecutive columns commencing with Column 10. (See Annex 5). Any columns not required should be left blank.</p> <p><u>Example :</u></p> <div><div>Column numbers on the Notification Form →</div><table><tr><th colspan="8">FLIGHT IDENTIFICATION</th></tr><tr><th>10</th><th>11</th><th>12</th><th>13</th><th>14</th><th>15</th><th>16</th><th>17</th></tr><tr><td>Sched.flight</td><td>Q</td><td>F</td><td>5</td><td>8</td><td>7</td><td></td><td></td></tr><tr><td>Sched.flight</td><td>R</td><td>K</td><td>3</td><td>0</td><td>0</td><td>0</td><td></td></tr><tr><td>Sched.flight</td><td>A</td><td>F</td><td>1</td><td>8</td><td>9</td><td></td><td></td></tr><tr><td>Non-sched. flight</td><td>B</td><td>H</td><td>D</td><td>C</td><td>C</td><td></td><td></td></tr></table></div>	FLIGHT IDENTIFICATION								10	11	12	13	14	15	16	17	Sched.flight	Q	F	5	8	7			Sched.flight	R	K	3	0	0	0		Sched.flight	A	F	1	8	9			Non-sched. flight	B	H	D	C	C		
FLIGHT IDENTIFICATION																																																		
10	11	12	13	14	15	16	17																																											
Sched.flight	Q	F	5	8	7																																													
Sched.flight	R	K	3	0	0	0																																												
Sched.flight	A	F	1	8	9																																													
Non-sched. flight	B	H	D	C	C																																													
TYPE OF FLIGHT	18	<p>The digit 1 or 2 should be entered here according to the type of flight.</p> <p>In case of a scheduled flight, the digit 1 should be entered.</p> <p>For non-scheduled flights (including general aviation and military transports flying along international civil air routes), the digit 2 should be entered.</p>																																																
AIRCRAFT SPEED	19	<p>The digits 1, 2 or 3 should be entered according to the aircraft speed category :</p> <p>1 - for speeds less than 350 knots</p> <p>2 - for speeds from 350 knots to 500 knots</p> <p>3 - for speeds greater than 500 knots.</p>																																																
LINE CODE	20	<p>Where the flight is entered on one line of the Form, the digit 1 should be shown in this column. Where the number of stages requires two or more lines for the flight, the digit 1 should be shown on the first line; the digit 2 on the second line and so on.</p>																																																
ORIGIN	21 to 26	<p>The information relevant to the origin of the flight should be entered in Columns 21 to 26 as explained below. (See 2.7 above)</p>																																																

Title	Column(s)	Instructions																				
NUMBER OF THE SQUARE	21 to 24	<p>The number of the square, in accordance with the world map in Annex 3 containing the airport from which the flight departs, should be entered in Columns 21 to 24. Any columns not required should be left blank.</p> <p><u>Example</u> : The number of the square for the flights originating, for instance, from London, Karachi and Capetown airports would be written respectively as follows :</p> <div style="display: flex; align-items: center; justify-content: center;"><div style="text-align: right; margin-right: 10px;">Column numbers on the Notification Form</div><div style="font-size: 2em; margin-right: 10px;">}</div><div style="font-size: 2em; margin-right: 10px;">→</div><table><tr><th colspan="4">NUMBER OF THE SQUARE</th></tr><tr><th>20</th><th>21</th><th>22</th><th>23</th></tr><tr><td></td><td>2</td><td>3</td><td>0</td></tr><tr><td></td><td>5</td><td>5</td><td>0</td></tr><tr><td>1</td><td>4</td><td>2</td><td>2</td></tr></table></div>	NUMBER OF THE SQUARE				20	21	22	23		2	3	0		5	5	0	1	4	2	2
NUMBER OF THE SQUARE																						
20	21	22	23																			
	2	3	0																			
	5	5	0																			
1	4	2	2																			
MWARA/WFZ	25	<p>The code for MWARA (See Annex 6) in which flight originates should be entered. As an example, a flight originating in MWARA EU would be shown by the letter A in Column 25.</p> <p style="text-align: center;">or</p> <p>The code for WFZ (see Annex 3) in which flight originates should be entered.</p>																				
DAY OF FLIGHT	26	<p>The day (G.M.T.) of the week on which the flight originates should be indicated by one of digits 1 to 7 corresponding respectively to the days of the week of survey as indicated below.</p> <p>1 - for the First day of the week of survey 2 - for the Second day of the week of survey 3 - for the Third day of the week of survey 4 - for the Fourth day of the week of survey 5 - for the Fifth day of the week of survey 6 - for the Sixth day of the week of survey 7 - for the Seventh day of the week of survey</p>																				

Title	Column(s)	Instructions																
OVERFLOWN MWARA/WFZ	27	The letter corresponding to the MWARA or the WFZ should be entered in this column whenever a MWARA or a WFZ is overflown between the ORIGIN and the first stop. This column should be left blank if there is no such overflight. If a second MWARA or WFZ is overflown without an intermediate in between, then the letter corresponding to this MWARA or WFZ should be entered in Column 38 and the Columns 28 to 37 should be left blank.																
STAGE LENGTH	28 to 31	<p>The distance, in nautical miles between two airports, corresponding to the stage under consideration, should be entered here. The columns not required should be left blank.</p> <p><u>Example</u> : The distances of 950 nautical miles and 6235 nautical miles will be shown as :</p> <div style="display: flex; align-items: center; margin-top: 10px;"><div style="margin-right: 10px;">Column number on the Notification Form</div><div style="font-size: 3em; margin-right: 10px;">}</div><div style="margin-right: 10px;">→</div><table border="1" style="border-collapse: collapse; text-align: center;"><thead><tr><th colspan="4">STAGE LENGTH</th></tr><tr><th>28</th><th>29</th><th>30</th><th>31</th></tr></thead><tbody><tr><td></td><td>9</td><td>5</td><td>0</td></tr><tr><td>6</td><td>2</td><td>3</td><td>5</td></tr></tbody></table></div>	STAGE LENGTH				28	29	30	31		9	5	0	6	2	3	5
STAGE LENGTH																		
28	29	30	31															
	9	5	0															
6	2	3	5															
STOP	32 to 37	These columns are meant to contain the flight particulars of an intermediate stop.																
NUMBER OF THE SQUARE	32 to 35	The number of the square of the intermediate stop, if any, should be entered here in a similar manner as explained for Columns 21 to 24.																
MWARA/WFZ	36	<p>The code of the Major World Air Route Area (see Annex 6) in which the stop takes place should be entered here.</p> <p style="text-align: center;">or</p> <p>The code of the World Flight Zone (See Annex 3) in which the stop takes place should be entered here.</p>																

Title	Column(s)	Instructions
DAY OF FLIGHT	37	The day (G.M.T.) of the week on which the flight departs after the first stop should be indicated here by one of the digits 1 to 7, as explained under Column 26.
OVERFLOWN MWARA/WFZ	38	The letter corresponding to the MWARA or the WFZ should be entered in this column whenever a MWARA or a WFZ is overflown between two consecutive stops. This column should be left blank if there is no such overflight.
STAGE LENGTH	39 to 42	The distance, in nautical miles, between two airports, corresponding to the stage of flight, originating in the square appearing in Columns 28 to 31 and terminating in Columns 42 to 45, should be entered here. If, however, the subsequent stop is not an intermediate stop, but is the termination of flight, the entries showing the stage length should be entered in Columns 72 to 75, and Columns 39 to 42 should be left blank.
STOP	43 to 48	The particulars of the second intermediate stop, if any, should be entered in Columns 43 to 48 in the same manner as for the preceding STOP.
OVERFLOWN MWARA/WFZ	49	The particulars of any overflight should be entered here in the same manner as for Column 38.
STAGE LENGTH	50 to 53	The distance, in nautical miles, between two airports corresponding to the stage of flight, should be entered here in the same manner as for Columns 39 to 42.
STOP	54 to 59	The particulars of the third intermediate stop, if any, should be entered in Columns 54 to 59 in the same manner as for the preceding STOP.
OVERFLOWN MWARA/WFZ	60	The particulars of any overflight should be entered here in the same manner as for Column 38.

Title	Column(s)	Instructions
STAGE LENGTH	61 to 64	The distance, in nautical miles, between two airports corresponding to the stage of flight, should be entered here in the same manner as for Columns 39 to 42.
STOP	65 to 70	The particulars of the fourth intermediate stop, if any, should be entered in Columns 65 to 70 in the same manner as for the preceding STOP.
OVERFLOWN MWARA/WFZ	71	The particulars of any overflight, should be entered in this column in the same manner as in Column 38.
STAGE LENGTH	72 to 75	The distance, in nautical miles, between two airports corresponding to the last stage of flight should be entered here.
TERMINAL	76 to 80	The information relevant <u>only</u> to the termination of the flight should be entered in Columns 76 to 80. If the flight consists of more than four intermediate stops, then Columns 72 to 80 on the first line should be left blank and the particulars of subsequent Stops should appear on the <u>second</u> and following lines, if necessary; the termination should appear on the last line only.

4. Instructions concerning flights with more than four intermediate stops

4.1 If the number of intermediate stops is more than four and the flight does not terminate on the first line, the particulars of subsequent stops should be entered on the second line in the following manner :

- the information contained in Columns 2 to 19 (inclusive) of the first line should be repeated in the same Columns of the second line;
- the digit 2 should be entered in Column 20 of the second line;
- the remainder of the flight information should be entered on the second line, commencing in Column 28;
- if the number of intermediate stops does not exceed eight, the information relevant to the termination of the flight should be entered in Column 76 to 80 of the second line.

4.2 If the number of intermediate stops is more than eight and the flight does not terminate on the second line, the remainder of the flight information should be entered on the third line in the following manner :

- the information contained in Columns 2 to 19 (inclusive) of the second line should be repeated in the same columns of the third line;
- the digit 3 should be entered in Column 20 of the third line;
- the remainder of the flight information should be entered on the third line, commencing with Column 28;
- the information relevant to the termination of the flight should be entered in Columns 76 to 80 of the third line.

A N N E X 3

PROPOSED WORLD MAP FOR THE
REPORTING OF AIRCRAFT OPERATION STATISTICS

A N N E X 4

COUNTRY SYMBOLS

A N N E X 5

AIRLINE DESIGNATORS

A N N E X 6

MWARA CONVERSION TABLE

MWARA	CODE
EU	A
EU Ext	B
NA	C
NA Ext	D
SA	E
NSAM-1	F
NSAM-2	G
NP	H
CEP	I
CWP	J
SP	K
FE-1	L
FE-2	M
ME	N
ME Ext	Ø
NSA-1	P
NSA-2	Q

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-19-E

10 February 1964

Original : English

WORKING GROUP 4B

AGENDA

FOR THE FIRST MEETING OF THE WORKING GROUP 4B

Tuesday, 11 February 1964 at 11.00 in Room XII

1. Detailed consideration of Documents Nos. I-37, Item 9 and DT/I-20 (use of single sideband)
2. Channel separations (Document No. I-37, Item 5),

Document No. I-1, pages 14-18, USA

" " I-3, pages 4-13, J

" " I-5, pages 8-10, I.F.R.B.

" " I-11, pages 2-3, IND

" " I-15 C.C.I.R.

" " I-47 G

" " I-48 CAN

3. Any other business

H.A. KIEFFER
Chairman
Working Group 4B



COMMITTEE 4

(TECHNICAL COMMITTEE)

ITEM 9 OF THE WORK PROGRAMME - USE OF SINGLE SIDEBAND

Committee 4 has engaged in a wide ranging discussion on the above subject. The aim is to reach agreement on a policy which will permit of clear guidance being given to the Second Session of the Conference on this important matter.

The purpose of this paper is to record the area of widest agreement so far reached as the basis for a decision of Committee 4 within which Working Group 4B can do its work particularly on Item No. 5 - Channel Separation.

Committee 4 is agreed that :

- a) this session of the Conference is in no position to decide that the Aeronautical Mobile (R) Service must convert its operations entirely to single sideband (SSB) on a planned basis;
- b) nevertheless the main session of the Conference should proceed on the assumption that at some future date SSB will be required by the Aeronautical Mobile (R) Service;
- c) as a consequence, planning principles must be prepared by this Session by means of which the Main Session is enabled to plan so as to ensure the continued operation of DSB and also to facilitate the introduction of SSB when it is required.

Furthermore, Committee 4 is of the unanimous opinion that the question of when SSB should be employed on a planned basis is one to which the Main Session should give further consideration in the light of the requirements which will emerge from the analysis of statistics to be submitted.

In presenting the foregoing, primarily as the means of permitting Working Group 4B to start its work, the Committee may wish to consider the need for a suitable Resolution or Recommendation to add force to its conclusions. It is suggested that an appropriate moment may be when the Report of Working Group 4B is considered by which time it is anticipated that proposals may be available.

J.T. PENWARDEN
Chairman
Committee 4

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-21-E

12 February 1964

Original : English

WORKING GROUP 4B

DRAFT

REPORT OF WORKING GROUP 4B TO COMMITTEE 4

Determination of the Frequency Channel Spacing
in the Aeronautical Mobile (R) Bands

Based on a report by an ad hoc Working Group in which the Delegates of Canada, Japan, the United Kingdom, the U.S.A., the U.S.S.R., the Observer of I.A.T.A. and the Member of the Board of the I.F.R.B. participated, Working Group 4B has reached the conclusions which are set out in the Annex attached hereto.

H.A. KIEFFER
Chairman
Working Group 4B

Annex : 1



A N N E X

CHANNEL SPACING OF FREQUENCIES IN THE AERONAUTICAL
MOBILE (R) BAND 2 850 kc/s TO 17 970 kc/s

1. The Working Group considered the following three proposals :
 - a) that of the U.S.A.;
 - b) that contained in Annex 5 of Document No. I-5-E;
 - c) that of the United Kingdom - progressive implementation of Scheme b).

2. Discussion

It was recognised that the adoption of 7 kc/s channel spacing in the bands 5 450 - 5 480 kc/s (Region 2 only), 5 480 - 5 680 kc/s, 6 525 - 6 685 kc/s and 8 815 - 8 965 kc/s, would give rise to considerable economic and operational difficulties in implementation at the time the Revised Plan was likely to be brought into force. However, it could be accepted that a channel spacing of 8 kc/s in the bands above 10 Mc/s could be adopted.

3. Conclusion

3.1 It was agreed that a channel spacing of 8 kc/s could be adopted for the bands above 10 Mc/s, and that the spare band space resulting therefrom in the 17 Mc/s band should be used at the top of the band, and in the 10 Mc/s band at the lower end of that band to provide two additional channels of restricted bandwidth to be used by the Aeronautical Mobile (R) Service for purposes to be decided by the Main Session.

3.2 It was agreed that the present channel separation of 7 kc/s should be maintained in the three lower bands.

3.3 In respect of the four bands between 5 480 and 8 965 kc/s the Working Group puts forward the following suggestion :

3.4 that this Session noted the desirability of continuing to provide the maximum economy in the use of the HF spectrum and further noted the potential of providing a limited number of additional channels by a reduction of channel width in some of the bands below 10 Mc/s, but considered that it would not be operationally or economically feasible at the time the Revised Plan is likely to be accepted and therefore recommended no change in the present channeling arrangements in these bands.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-22-E

11 February 1964

Original : English

COMMITTEE 5

DRAFT

RESOLUTION No.....

RELATING TO THE VHF USAGE

Considering

- a) the impact of the use of very high frequencies (VHF) on the requirement for the use of high frequencies (HF) to be allotted by the Main Session in 1965;
- b) that the data concerning VHF coverage of international air routes should be made available at the Second Session of the I.T.U. Aeronautical E.A.R.C. when the Conference is to examine the statistics concerning international air operations for the purpose of determining the HF requirement;
- c) the desirability for all Administrations to apply a uniform criteria in reporting the VHF en route coverage of facilities under their jurisdiction;

resolves

- 1) that during the early stages of the Second Session of the I.T.U. Aeronautical E.A.R.C. delegations shall be prepared to submit data for use of the Conference concerning the effective range of those VHF aeromobile facilities serving international air routes (ATC and OPN);
- 2) that the effective range shall be considered to be that distance at which VHF communications are available at least 90% of the time at a specified minimum en route altitude;
- 3) that the data supplied by Administrations be in the form of contours on charts or by diagrams, as appropriate, indicating the orientation of the coverage areas.



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-23-E

11 February, 1964

Original : English

WORKING GROUP 1

COMMITTEE 5

DRAFT

RESOLUTION No.

Relating to the forwarding of the results of
statistical analysis on international flights by
the International Frequency Registration Board to
the Administrations

The First Session of the Aeronautical Extraordinary Administrative
Radio Conference (Geneva, 1964),

having considered

the resolution of the Eighteenth Session of the Administrative
Council relative to the establishment of the operational principles on
which requirements for high frequencies for Aeronautical Mobile (R) Service
communications are to be assessed;

having established

the form in which actual operational statistics should be submitted
to the I.F.R.B.;

having agreed upon

that such operational statistics should be provided for the period
0001 GMT, 2 August, 1964, to 2400 GMT, 8 August, 1964;



resolves

1. that Administrations take the necessary steps to furnish the data on operational statistics of international flights on the prescribed form (see Annex 2/1) so as to reach the I.F.R.B. not later than 1 October, 1964;
2. that the I.F.R.B. process the data received from the Administrations and prepare the following documents :
 1. Master List by Countries (see Annex 2/1)
 2. Numerical Square Master List (see Annex 2/2)
 3. Numerical Square Flight Density List (see Annex 2/3)
 4. Flight Density Chart (see Annex 2/4)
 5. List of Flights by Zones of Analysis (see Annex 2/5)
3. that the I.F.R.B. should despatch these documents to the Administrations up to 15 December, 1964.

A N N E X 1

Document No. I-127

A N N E X 2/1

Master List by countries is the statistics of international flights, requiring the use of high frequencies, listed according to the country submitting the data. This list would serve as general information of the flights reported to the I.F.R.B. for the week of record and as a check by the Administrations concerned that the data submitted had been correctly recorded.

A N N E X 2/2

Numerical Square Master List is the statistics of international flights requiring the use of high frequencies listed according to the number of the square in which the flight or stage of flight commences. This list would provide information on flights commencing from the international airports in each country and would assist in the detailed analysis of the data.

A N N E X 2/3

Numerical Square Flight Density List is the statistics of international flights requiring the use of high frequencies listed according to the number of the squares in which the flight or stage of flight commences and terminates. The total number of flights in both directions between any two squares would be added together in order to provide the volume of air traffic between two squares.

A N N E X 2/4

Flight Density Chart is a graphical representation of the information shown in the Numerical Square Flight Density List and may consist of a number of charts in which the volume of flights is shown by means of lines joining the squares concerned, each line being endorsed with the number of flights made during the week.

A N N E X 2/5

List of Flights by Zones of Analysis is the statistics of international flights requiring the use of high frequencies grouped according to the Zone of Analysis. This list would serve as information on the broad grouping of flights which, together with operational information, would assist in the determination of any revision of existing boundaries of MWARA's, to create new MWARA's or adjust the boundaries of existing MWARA's and with the allotment of the frequencies that will be required in the area.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No.DT/I-24-E

11 February 1964

Original : English

WORKING GROUP 1

COMMITTEE 5

DRAFT

RESOLUTION NO.....

Relating to the information about actual
use of high frequencies on international flights

The first session of the Aeronautical Extraordinary Administrative
Radio Conference (Geneva, 1964),

considering

1. that the experience of administrations operating the international flights with respect to the use of high frequencies can be of value to other administrations;
2. that the availability of such information will be useful while considering the problems of high frequency allotment at the main session of Aeronautical E.A.R.C;

resolves

to propose that the Administrations shall provide available data based on their experience on the use of high frequencies for the Aeronautical Mobile (R) Service, at the main session of the Aeronautical E.A.R.C.



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-25-E

11 February 1964

Original : English

WORKING GROUP 4B

AGENDA

FOR THE SECOND MEETING OF THE WORKING GROUP 4B

Wednesday, 12 February 1964, 9 a.m. in Room XII

1. Channel spacing : Consideration of yellow Document, No. DL 8, if available
2. Types of emission : Item 3, Document No. I-37, Document No. 48 CAN, Document No. 51, Brazil
3. Power of emission : Item 4, Document I-37
4. Any other business

H.A. KIEFFER

Chairman

Working Group 4B



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-26-E
12 February 1964
Original : English

COMMITTEE 4

DRAFT

SECOND REPORT OF WORKING GROUP 4B

Relating to : Classes of emission - Annex 1

Power of emissions - Annex 2

After discussion of the relevant documents, Working Group 4B reached the conclusions which appear in the attached annexes hereto.

H. A. KIEFFER
Chairman of Working Group 4B

Annexes : 2



A N N E X 1

Classes of emission

The use of emissions such as listed below is permissible, provided that the use of the emission

- a) has been coordinated with the planned users;
- b) does not exceed the side band radiation which is likely to occur with A3 emissions whose modulating frequencies do not exceed 3000 c/s;
- c) does not cause harmful interference to other users of the frequency.

1. Telephony - Amplitude modulated

- Double side band (A3)
- single side band, reduced carrier (A3A)
- single side band, full carrier (A3H)
- single side band, suppressed carrier (A3J)
- two independent side bands (A3B)

2. Telegraphy (including automatic data systems)

- Without the use of a modulating frequency (by on-off keying) (A1)
- on-off keying of an DSB amplitude - modulating audio frequency or frequencies or by the on-off keying of the modulated emission (A2)
- frequency-shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)
- frequency modulated by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission (F2)
- SSB, amplitude modulated, reduced carrier, multichannel voice frequency (A7A)

- SSB, amplitude modulated, full carrier,
multichannel voice frequency (A7H)
- SSB, amplitude modulated, suppressed
carrier, multichannel voice frequency (A7J)

3. Facsimile

- Amplitude modulation of the main carrier
either directly or by a frequency
modulated sub-carrier (A4)

A N N E X 2

POWER OF EMISSIONS

1. Unless otherwise indicated in Part II, the maximum peak envelope power supplied to the antenna transmission line is assumed to be in accordance with the following :

Class of emission	Stations	Maximum Peak Envelope Power
A1 F1	Aeronautical Stations Aircraft Stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical Stations Aircraft Stations	6 kW 300 W
Other authorized classes of emission	Aeronautical Stations Aircraft Stations	6 kW 300 W

For the purpose of indicating mean power for notification of A3 and A3H emissions, used in the aeronautical mobile (R) service, mean power will be considered equal to 0.375 peak envelope power in the case of A3 emissions and equal to 0.5 peak envelope power in the case of A3H emissions, based on a single periodic time-wave oscillation modulating an emission at 100%.

2. Stations serving MWARA's may, where required to provide satisfactory communications with aircraft, employ directional antennas and a transmitter power, in association with such directional antennas, greater than that specified in 1. above. In all such cases, the administrations having jurisdiction over the transmitting station shall assure :

- a) that harmful interference is not caused to stations using frequencies in accordance with the applicable provisions of the allotment plan;
- b) that the power transmitted into other MWARA's or RDARA's allotted the same frequency(s) is not greater than that permitted under the technical criteria on which the plan is based;

- c) that the characteristics of the radiated pattern of the directional antenna employed be known, or that the directional antenna employed be of a type for which a typical radiation pattern is available;
- d) that the directional characteristics of the antenna employed will be such as to minimize radiation in unnecessary directions, particularly into other MWARA's or RDARA's which under the plan have been allotted the same frequencies.

AERONAUTICAL CONFERENCE
GENEVA, 1964

Document No.DT/I-27-E
12 February 1964
Original : English

WORKING GROUP 4B

AGENDA

FOR THE THIRD MEETING OF WORKING GROUP 4B.

Thursday, 13 February 1964, 3.00 p.m. Room XII

1. To close consideration on item 9, Document No.I-37 : single sideband.
2. Consideration of the second Draft Report of Working Group 4B,
Document No.DT/I-26.
3. Any other business.

H.A. KIEFFER

Chairman

Working Group 4B



COMMITTEE 4

CONSIDERATION BY WORKING GROUP 1 (COMMITTEE 5) OF DOCUMENT No. I-120

Continuous period of twelve months commencing on or after the 1 January 1963, the actual period selected to be at the discretion of each administration. The completed Notification Form to reach the I.T.U. not later than 1 November 1964.

The Working Group considered the formula proposed by Committee 4 for assessment of frequency requirements for RDARA operations and while agreeing in principle with the formula found that there was some ambiguity in the definition of N and Ta.

In the statement of the suggested formula :

N = the number of aircraft requiring HF service in a particular RDARA area at the peak hour

Ta = annual total of hours flown by HF equipped aircraft carrying a Certificate of Airworthiness.

The Working Group considered that the inclusion of the number of hours flown by HF equipped aircraft in areas where communication service could be given by VHF could result in statistics which would not reveal a sufficiently accurate picture for use at the Second Session.

The Working Group recommends that Committee 5 should advise Committee 4 that it is in agreement with the suggested formula with the amendment that :

Ta = annual total hours flown by HF equipped aircraft less the annual total hours during which service was given by VHF.



The Working Group considered that statistics, directly acquired or calculated, could be made available by administrations to meet the amended formula, either in the form of a figure representing the annual total hours flown by HF equipped aircraft during which service was given by HF or in the form of the total annual hours flown by HF equipped aircraft less an estimation of the annual total hours during which service could be given by VHF.

This matter was discussed later with the Chairman of Committee 4 and it was agreed that Ta, as contained in Document No. I-120, stands for the annual total hours flown by HF equipped aircraft requiring HF service.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-29-E (Rev.)

13 February 1964

Original: English

WORKING GROUP 1

COMMITTEE 5

DRAFT

RESOLUTION NO. ...

Relating to the forwarding of statistical analysis
on Regional and Domestic flights

The First Session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964)

having considered

the resolution of the Eighteenth Session of the Administrative Council relative to the establishment of the operational principles on which requirements for high frequencies for Aeronautical Mobile (R) Service communications are to be assessed;

having established

the form in which actual operational statistics should be submitted to the I.F.R.B.

having agreed

that such operational statistics should be provided for a continuous period of twelve months beginning not earlier than 1 January 1963

resolves

1. that Administrations take the necessary steps to furnish the data on operational statistics of regional and domestic flights on the prescribed form (see Annex 1/1) so as to reach the I.F.R.B. not later than 1 November 1964;



2. that the I.F.R.B. process the data received from the Administrations and prepare the following documents:
 - 1) Master list by countries (see Annex 2/1)
 - 2) Master List by reporting area (see Annex 2/2)
3. that the I.F.R.B. should despatch these documents to the Administrations before 15 December, 1964.

A N N E X 1/1

AIRCRAFT OPERATION STATISTICS
REGIONAL AND DOMESTIC AIR ROUTES
NOTIFICATION FORM

1. Administration providing data :
2. Twelve Months period of Record :
3. Operational information regarding the hours flown by the HF equipped aircraft carrying a Certificate of Airworthiness :

RDARA, sub-RDARA or area used as a basis of reporting	Total of hours flown during the twelve months period of record by HF equipped air- craft (in hours per year) (T _{total}) *)	Total of hours flown during the twelve months period of record when VHF communi- cation was used by HF-equipped air- craft (in hours per year) (T _{vhf})*	Total of hours flown during the twelve months period of record when high frequency communi- cation was required (in hour per year) (T _a)
1	2	3	4

*) In countries where statistics on T_a are directly determined, the columns for T_{total} and T_{vhf} may be left blank.

A N N E X 1/2

AIRCRAFT OPERATION STATISTICS
REGIONAL AND DOMESTIC AIR ROUTES

Instructions for completing the Notification Form

1. General Remarks

The form for notifying the aircraft operation over Regional and Domestic Air Routes (see Annex 1/1) in order to be able to determine the high frequency communication requirements can be divided into two sections from the standpoint of the information to be provided :

- the first section, Items 1 and 2, is meant for the information of an administrative nature;
- the second section, Item 3, seeks the information concerning the total time of high frequency communication required for operations.

Item	Instructions
1	The Administrations providing the data should be identified here.
2	<p>The twelve-month period selected by the reporting administration, for submitting operational statistics on the Regional and Domestic Air Routes should be entered here.</p> <p><u>Note</u> : The data on operational statistics is required for a continuous period of twelve months, beginning not earlier than 1 January 1963. The reporting administration should, thus choose the twelve-month period suitable to it, while also keeping in view the fact that the last date for submission of data to the I.F.R.B. is 1 November 1964.</p>

Item	Instructions
3	<p><u>Column 1</u> : The symbol of relevant RDARA or sub-RDARA, as shown on Map II, Appendix 26 to the Radio Regulations, Geneva, should be entered in this column. In the case where administrations find difficulty on account of the overlapping of two or more RDARA boundaries, they may choose any other suitable geographical area of reference for this purpose. Such administrations should furnish a chart showing the boundaries of selected area (s). More than one of such areas, however, should not be created in any country where the longest air route in the country does not exceed 1000 nautical miles.</p> <p><u>Column 2</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, should be entered here.</p> <p><u>Column 3</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, when VHF communication was used, should be entered here.</p> <p><u>Column 4</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, requiring high frequency communication should be entered here.</p> <p><u>Note</u> : If the reporting administration can directly provide the information requested under Column 4, the Columns 2 and 3 may be left blank at the discretion of the reporting administration.</p>

A N N E X 2/1

Master List by Countries is the tabulation of the total number of hours flown by Regional and Domestic flights requiring the use of high frequency communication during the twelve months period of record, listed according to the country submitting the data.

A N N E X 2/2

Master List by Reporting Area is the statistical record of Regional and Domestic flights during the twelve months period of record. This list shall contain the following information :

- the hours flown by aircraft, requiring HF communications, within any area of reporting, during the twelve months period of record;
- taking the formula for assessment of frequency requirement for RDARA operations, the number of aircraft requiring HF Service in a particular RDARA or area of reporting at the peak hour.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-29-E

13 February 1964

Original: English

WORKING GROUP 1

COMMITTEE 5

DRAFT

RESOLUTION No.

Relating to the forwarding of the results of statistical analysis
on regional and domestic flights
by the international frequency registration board to
the Administrations

The First Session of the Aeronautical Extraordinary Administrative
Radio Conference (Geneva, 1964)

having considered

the resolution of the Eighteenth Session of the Administrative
Council relative to the establishment of the operational principles on which
requirements for high frequencies for Aeronautical Mobile (R) Service commu-
nications are to be assessed;

having established

the form in which actual operational statistics should be submitted
to the I.F.R.B.

having agreed

that such operational statistics should be provided for a continuous
period of twelve months beginning not earlier than 1 January 1963

resolves

1. that Administrations take the necessary steps to furnish the data
on operational statistics of regional and domestic flights on the prescribed
form (see Annex 1/1) so as to reach the I.F.R.B. not later than 1 November
1964;



2. that the I.F.R.B. process the data received from the Administrations and prepare the following documents:

- 1) Master list by countries (see Annex 2/1)
- 2) Master List by reporting area (see Annex 2/2)

3. that the I.F.R.B. should despatch these documents to the Administrations before 15 December, 1964.

A N N E X 1/1

AIRCRAFT OPERATION STATISTICS
REGIONAL AND DOMESTIC AIR ROUTES
NOTIFICATION FORM

1. Administration providing data :
2. Twelve Months period of Record :
3. Operational information regarding the hours flown by the HF equipped aircraft carrying a Certificate of Airworthiness :

No.	RDARA, sub-RDARA or area used as a basis of reporting	Total of hours flown during the twelve months period of record by HF equipped aircraft (in hours per year) (T total)*	Total of hours flown during the twelve months period of record when VHF communication was used by HF-equipped aircraft (in hours per year) (Tvhf)*	Total of hours flown during the twelve months period of record when high frequency communication was required (in hours per year) (Ta)
1	2	3	4	5

* In countries where statistics on Ta are directly available, the columns for T total and Tvhf may be left blank.

A N N E X 1/2

AIRCRAFT OPERATION STATISTICS
REGIONAL AND DOMESTIC AIR ROUTES

Instructions for completing the Notification Form

1. General Remarks

The form for notifying the aircraft operation over Regional and Domestic Air Routes (see Annex 1/1) in order to be able to determine the high frequency communication requirements can be divided into two sections from the standpoint of the information to be provided :

- the first section, Items 1 and 2, is meant for the information of administrative nature;
- the second section, Item 2, seeks the information concerning the total time of high frequency communication required for operations.

Item	Instructions
1	The Administrations providing the data should be identified here.
2	<p>The twelve-month period selected by the reporting administration, for submitting operational statistics on the Regional and Domestic Air Routes should be entered here.</p> <p><u>Note</u> : The data on operational statistics is required for a continuous period of twelve months, beginning not later than 1 January 1963. The reporting administration should, thus choose the twelve-month period suitable to it, while also keeping in view the fact that the last date for submission of data to the I.F.R.B. is 1 November 1964.</p>

Item	Instructions
3	<p><u>Column 1</u> : The serial number of each entry should be inserted.</p> <p><u>Column 2</u> : The symbol of relevant RDARA or sub-RDARA, as shown on Map II, Appendix 26 to the Radio Regulations, Geneva, should be entered in this column. If, on account of overlapping of two or more RDARA boundaries, any Administration finds it difficult to enter the information as required, it may choose any other suitable geographical area of reference for this purpose. Such area, however, should not be created in any country where the longest air route in the country does not exceed 1000 nautical miles.</p> <p><u>Column 3</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, should be entered here.</p> <p><u>Column 4</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, requiring VHF communication, should be entered here.</p> <p><u>Column 5</u> : The total number of hours flown during the twelve-month period of record chosen by the Administration (see Item 2 above), by the HF-equipped aircraft, requiring high frequency communication should be entered here.</p> <p><u>Note</u> : If the reporting administration can directly provide the information requested under Column 5, the Columns 4 and 5 may be left blank at the discretion of the reporting administration.</p>

A N N E X 2/1

Master List by Countries is the tabulation of Regional and Domestic flights requiring the use of high frequency communication during the twelve months period of record, in Country order.

A N N E X 2/2

Master List by Reporting Area is the statistics of Regional and Domestic flights during the twelve months period of record. This list shall contain the following information :

- the hours flown by aircraft, requiring HF communications, within any area of reporting, during the twelve months period of record;
- taking the formula for assessment of frequency requirement for RDARA operations, the number of aircraft requiring HF Service in a particular RDARA or area of reporting at the peak hour.

AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-30-E

13 February 1964

Original : English

WORKING GROUP 4B

AGENDA

FOURTH AND LAST MEETING

WORKING GROUP 4B

Friday, 14 February 1964, 0930 - 1030 hours, Room XII

1. Consideration of draft Third and Last Report of Working Group 4B to Committee 4 (Document No. I-152)
2. Any other business

H.A. KIEFFER
Chairman
Working Group 4B



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-31-E

13 February 1964

Original: English

WORKING GROUP 1

COMMITTEE 5

DRAFT

RECOMMENDATION No....

Relating to the information on the Regional and Domestic Flight Operations
that Administrations could provide
to the Second Session of Aeronautical E.A.R.C.

The first session of the Aeronautical Extraordinary Administrative Radio Conference (Geneva, 1964),

considering

1. that the experience of administrations with respect to the use of high frequencies for the Regional and Domestic flights can be of value to the second session of the Aeronautical E.A.R.C.;
2. that the studies carried out by Administrations on the traffic density in their areas can be useful for assessing the correction factor K relating the peak hour activity to the average hourly activity throughout the year;

recommends

that the administrations shall continue to prosecute such studies with a view:

1. to the utility of such studies, in general, at the second session of the Aeronautical E.A.R.C.;
2. to the more effective use of high frequencies for Regional and Domestic flights;
3. to the assessment of an improved approximation of the correction factor K as defined above;
4. to the determination of the maximum number of aircraft which can be served on a frequency or a family of frequencies in one hour.



AERONAUTICAL CONFERENCE

GENEVA, 1964

Document No. DT/I-32-E

13 February 1964

Original : English

WORKING GROUP 1

COMMITTEE 5

DRAFT

REPORT OF WORKING GROUP 1 TO
COMMITTEE 5

The Working Group 1 on the basis of terms of reference, as established by Committee 5, has terminated the work and put for consideration by Committee 5 the following documents :

1. Draft Resolution No. DT/I-29
2. Draft Recommendation No. DT/I-31

William A.E. NIELSEN
Convenor

COMMITTEE 4

DRAFT

RECOMMENDATION No. ...

Relating to examination of technical conditions governing
the use of the frequencies 3023.5 kc/s and 5680 kc/s

The First Session of the Aeronautical E.A.R.C. (Geneva, 1964),

considering

that some anomalies appear to exist in the conditions prescribed for the use of the frequencies 3023.5 kc/s and 5680 kc/s as contained in column 3, clauses 2(a) and 2(b) of the frequency allotment plan in Appendix 26 pages 38 and 41 respectively;

noting

that the particular channels in question are also allotted to the (OR) Service and therefore this Conference is not competent to make substantial alterations to the above-mentioned provisions which might adversely affect the use by the (OR) Service of the channels concerned,

recommends

that administrations should establish their national position with respect to possible changes to these provisions, in order to permit further consideration of the matter at the Second Session of the Conference.

