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(Geneva, 1966)

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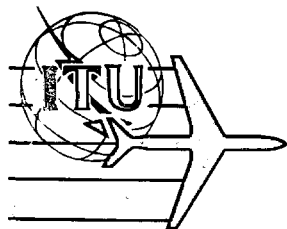
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AERONAUTICAL CONFERENCE

Document No. II/1-E
6 January 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

FEDERAL REPUBLIC OF GERMANY

NON-ALLOCATION OF SPECIFIC FREQUENCY SUB-BANDS

The Federal Republic of Germany proposes not to allocate a 3.5 kc/s frequency sub-band in each of the following bands:

3400 - 3500 kc/s
5480 - 5680 kc/s
8815 - 8965 kc/s
11275 - 11400 kc/s
13260 - 13360 kc/s
17900 - 17970 kc/s

These six frequency sub-bands, each having a width of 3.5 kc/s, shall be kept available so that they can be allocated to the "Ocean Data Service" *) by the next Ordinary Administrative Radio Conference.

Reasons :

In Resolution No. 16 of the 2nd Plenary Assembly of the Inter-Governmental Oceanographic Commission (I.O.C.) of the UNESCO (see I.F.R.B. Circular-Letter No. 60 of November 16, 1962) it is stated that decametric waves are required for the transmission of oceanic measured data (Ocean Data Service). According to the report of its study group, the I.O.C. aims at the allocation of 6 sub-bands, each having a width of 3.5 kc/s. In the Table of Frequency Allocations, Geneva, 1959, no frequencies are reserved for this purpose.

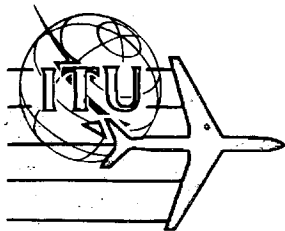
*) Ocean Data Service. A radiocommunication service used for automatic transmission of oceanographic, meteorological or other geophysical measured data from stations at sea.

Ocean Data Station. A station in the Ocean Data Service at sea or on shore used for transmitting, calling off or receiving measured data of this service.



Although the Federal Republic of Germany fully supports the frequency requirements notified by the I.O.C., it holds the view that the development of the Maritime Radio Service in the decametric wave band will be such that the number of frequencies in the bands allocated to this radio service cannot be reduced. It is therefore proposed to meet the decametric wave requirements for oceanic purposes by reducing the number of frequencies in the bands allocated to the Aeronautical Mobile Service (R), since air navigation is also likely to benefit considerably from the results of the Ocean Data Radio Service.

A final decision as to whether the transmission of oceanic data will be recognized as a radio service as defined by Article 1 of the Radio Regulations and whether frequency bands will be allocated to this radio service cannot be taken by the Aeronautical Extraordinary Administrative Radio Conference. The proposal concerning the non-allocation of the aforementioned 6 sub-bands, each having a width of 3.5 kc/s, shall be the basis for a final arrangement to be made by the next Ordinary Administrative Radio Conference.



AERONAUTICAL CONFERENCE

Document No. II/2-E
12 January 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

U.S.A. PROPOSALS

TO THE

SECOND SESSION OF THE I.T.U. AERONAUTICAL E.A.R.C.

FOR REVISION OF THE (R) BAND PLAN

I.T.U. APPENDIX 26

AND

ASSOCIATED RADIO REGULATIONS



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EXPLANATION OF U.S.A. PROPOSALS

The Frequency Allotment Plan for the Aeronautical Mobile Service (Appendix 26 to the Radio Regulations, Geneva, 1959) was originally engineered by two separate sessions of the I.T.U. Administrative Aeronautical Radio Conference (I.A.A.R.C.) held in 1948 and 1949. These two meetings had available 1920 kilocycles of spectrum space, which the I.T.U. had allocated exclusively on a world-wide basis, to the Aeronautical Mobile Route (R) and Off-Route (OR) services, plus 80 kilocycles of spectrum space which had been allotted on a regional basis to the Aeronautical Mobile (R) Service.

The I.A.A.R.C. divided these bands into 154 (R) channels, 92 (OR) channels, and 2 channels common to both the (R) and (OR) services, and engineered a world-wide plan for the use of these frequencies in air-ground communications.

This was the first time in the history of radio frequency management that such a plan had been engineered for any radio service. The plan was adopted by the Extraordinary Administrative Radio Conference in December, 1951. Implementation of the (R) portion of the plan for international routes (MWARA) was completed in 1955 and for regional and domestic routes in 1956. The plan was incorporated in the Radio Regulations as Appendix 26 by the action of the I.T.U. Ordinary Administrative Radio Conference, Geneva, 1959.

The I.T.U. Administrative Radio Conference, Geneva, 1959, resolved that when the Administrative Council deemed it appropriate and timely, an Extraordinary Administrative Radio Conference (E.A.R.C.) should be convened to review Appendix 26 to the Radio Regulations. In 1963 the Council decided that there was urgent need to review and revise that portion of Appendix 26 relating to the allotment of frequencies for the Aeronautical Mobile (R) Service. Provision was not made for consideration of that portion of that plan that was restricted to the Aeronautical Mobile (OR) Service.

The First Session of the E.A.R.C. convened in Geneva, January - February, 1964 and agreed that actual revision of Appendix 26 for the (R) service should be considered at a second session based on aircraft operation statistics to be furnished by the various countries for both international and domestic air operations.

U.S.A. proposals contained herein, are either in accord with agreements of the First Session or are the logical evolution of these agreements.

The Second Session is scheduled to convene in Geneva, Switzerland, 14 March, 1966. The United States has as an objective in its participation in the Conference, preparation of a modified Aeronautical Mobile (R) High Frequency Allotment Plan which will meet the aviation requirements, particularly with respect to international air operations. The proposals that follow provide that the present Appendix 26 will be retained without change but that it will be applicable only in so far as it refers to the Aeronautical Mobile (OR) Service.

A new or modified plan directed to the Aeronautical Mobile (R) Service is referred to generally herein as Appendix 27, although some other designation may be adopted. This division of the (R) and (OR) Plans into separate appendices to the Radio Regulation permits a more satisfactory approach to be taken in the revision of the (R) Service Plan and is less likely to effect undesirable changes in the provisions with respect to the (OR) Plan in the remaining Appendix 26.

The U.S.A. proposals are in an order and format designed to parallel parts of Appendix 26 which it is to amend or replace. The strike out and underline method of showing proposed changes has been adopted as a logical method which is easily understood. An item stricken indicates that it is to be deleted. The underlined portion indicates a proposed revision or addition. Reasons for the proposals are interspersed throughout the paper.

Tables showing allotment of high frequencies to routes and areas have been omitted from the U.S.A. proposals. This portion of the new plan will be engineered by the conference to meet the known operational requirements and on the basis of the statistical reports submitted by the various Administrations.

The report of U.S.A. aircraft operation statistics with respect to the domestic use of aeronautical mobile (R) high frequencies has been completed and was submitted to the International Frequency Registration Board (I.F.R.B.) in accordance with provision of Resolution Number 9 of the First Session.

A report of the use of international high frequencies by U.S.A. civil aircraft during the week of 2 August-8 August, 1965, has been prepared. It was submitted in accordance with agreement of the First Session in Resolution Number 11.

Interference range contour charts together with their overlays are included herein. The Polar maps and transparencies in reproduced form are contained at the end of this document as pages 75 through 97. They are identical to those previously submitted for consideration of the First Session and as they were adopted.

Recent developments in the field of space radiocommunications techniques give indication that the use of such techniques in the Aeronautical Mobile (R) Service may be feasible within the next few years. Attachment B provides information relating to this subject.

ATTACHMENT A

APPENDIX ~~26~~ 27
to the Radio Regulations
Geneva, 1959

FREQUENCY ALLOTMENT PLAN
FOR THE AERONAUTICAL MOBILE (R) SERVICE
AND RELATED INFORMATION

(See Article 7 of the Radio Regulations, Geneva, 1959)

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NOTE : The proposed Table of Contents contained herein and the new system of numbering is substantially the same as that previously prepared by the United States for the consideration of the First Session. No action was taken by that Session as it was deemed more appropriate for consideration of the Second Session.

PART I

GENERAL PROVISIONS

Section I. Definitions

1. Frequency Allotment Plan : A plan which shows the frequencies to be used in particular areas or by particular countries, without specifying the stations to which the frequencies are to be assigned.
2. The terms to express the different methods of frequency distribution as used in this Appendix have the following meanings :

Frequency distribution to :	French	English	Spanish
Services	Attribution (attribuer)	Allocation (to allocate)	Atribución (atribuir)
Areas	Allotissement (allotir)	Allotment (to allot)	(Adjudicación (adjudicar)
Stations	Assignation (assigner)	Assignment (to assign)	(Asignación) (asignar)

3. A Major World Air Route is considered to be a long-distance route, made up of one or more segments, essentially international in character extending through more than one country and requiring long-distance communication facilities.
4. A Major World Air Route Area (MWARA) is an area embracing a certain number of Major World Air Routes, which generally follow the same traffic pattern and are so related geographically that the same frequency families may logically be applied.
5. Regional and Domestic Air Routes are all those using the Aeronautical Mobile (R) Service not covered by the definition of Major World Air Routes in paragraph 4 above.
6. A Regional and Domestic Air Route (RDARA) is one embracing a certain number of the air routes defined in the foregoing paragraph.

7. Family of Frequencies in the Aeronautical Mobile Service : A group of frequencies selected from different aeronautical mobile bands in such a way as to permit communication, at any time and over any distance, between aircraft in flight and appropriate aeronautical stations.

Section II. Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) and (OR) Services Service

Reason : Change necessary in the proposed format of the new Appendix 27 for (R) service.

A. Determination of Channel Width

8. Frequency Separation : The frequency separations adopted are adequate to permit high capacity means of communication, as indicated in the following table :

Band (kc/s)	Separation (kc/s)	Band (kc/s)	Separation (kc/s)
2 850 - 3 155 <u>3 025</u>	7	8 815 - 9 040 <u>8965</u>	8.5
3 400 - 3 500	7	10 005 - 10 100	9 8
3 900 - 3 950	7	<u>11 275</u> 11 175 - 11 400	9.5 8
4 650 - 4 750 <u>4 700</u>	7	<u>13 260</u> 13 200 - 13 360	10 8
5 450 - 5 480	7.5	15 010 - 15 100	10
5 480 - 5 730 <u>5 680</u>	7.5	17 900 - 18 030 <u>17 970</u>	10 8
6 525 - 6 765 <u>6 685</u>	7.5		

9. Particulars relating to assignment

a) 9.1 It is assumed that A3 modulation frequencies will be limited to 3 000 cycles per second and that the sideband radiation of other authorized emissions will not exceed that of A3 emissions.

b) 9.2 The use of channels ~~as derived from the above table~~, for the various classes of emission ~~(A1, A2, A3 and F1)~~ (see paragraph "Classes of emission") will be subject to special arrangements by the administrations concerned in order to avoid the interference which may result from the simultaneous use of the same channel for several classes of emission. No inherent priority is given to any particular class of emission.

Reason : To provide for emissions other than those deleted.

9.3 Technical provisions relating to the use of single sideband emissions :

9.3.1 Tolerance for levels of SSB emission outside the necessary bandwidth.

9.3.1.1 When using single sideband (A3A, A3H, or A3J) transmission, the mean power of emission of aeronautical and aircraft stations shall be attenuated below the mean power output of the transmitter in accordance with the following :

9.3.1.2 On any frequency removed from the assigned frequency by more than 50 per cent up to and including 150 per cent of the occupied bandwidth : at least 25 decibels.

9.3.1.3 On any frequency removed from the assigned frequency by more than 150 per cent up to and including 250 per cent of the occupied bandwidth : at least 35 decibels.

9.3.1.4 On any frequency removed from the assigned frequency by more than 250 per cent of the occupied bandwidth : (a) aircraft stations : 40 decibels; (b) land stations : $43 + 10 \log_{10}$ (mean output power in watts) decibels.

Reason : Existing I.T.U. regulations are impracticable to achieve in practice within 250 per cent of the occupied bandwidth. This is to ensure that the technical operating standards set forth in the treaties provide for efficient use of the radio spectrum and in so far as practicable to provide protection from harmful interference by operations in this band.

9.3.2 Modes of operation.

9.3.2.1 A single sideband transmitter shall be capable of operation in, at least, both of the following modes :

9.3.2.2 With the carrier suppressed at least 26 db below peak envelope power (A3J); and

9.3.2.3 With the carrier transmitted at a level between 0 and 6 db below peak envelope power (A3H).

Reason : To establish a common reference to provide for orderly transition from DSB and suppressed carrier SSB.

9.3.3 Modulation requirements

9.3.3.1 Only the sideband on the higher frequency side of the carrier frequency (upper sideband) shall be transmitted.

9.3.3.2 The highest modulation frequency shall not exceed 3000 CPS.

Reason : To limit the modulation to the necessary bandwidth.

9.3.4 Channel availability.

9.3.4.1 Aeronautical station and aircraft station transmitters shall provide at least the capability for operation on frequencies at 1.0 kc/s increments in the exclusive aeronautical mobile (R) bands between 2850 and 17 970 kc/s; maximum capability may be provided for operation on increments of 0.1 kc/s.

Reason : To provide minimum design and operating criteria where crystal synthesis is employed.

9.3.5 Frequency tolerance.

9.3.5.1 The carrier frequency shall be maintained within the following number of cycles per second of the specified carrier frequency :

9.3.5.2 Aeronautical stations : 10 CPS

9.3.5.3 Aircraft stations : 20 CPS

Reason : To meet the frequency tolerance achievable. This is consistent with Report 181 of the Xth Plenary Assembly of the C.C.I.R.

9.3.6 Definitions of carrier modes.

9.3.6.1 Full Carrier (A3H). Carrier transmitted at a level between 0 db and 6 db, inclusive, below peak envelope power.

9.3.6.2 Reduced Carrier (A3A). Carrier transmitted at a level more than 6 db but less than 26 db below peak envelope power.

9.3.6.3 Suppressed Carrier (A3J). Carrier transmitted at a level 26 db or more below peak envelope power.

9.3.7 Frequency to be used.

9.3.7.1 Assignments to stations utilizing single sideband shall be considered to be in accordance with the Table if the necessary bandwidth does not extend beyond the upper limit of the bandwidth provided for double sideband emissions in accordance with the Table.

9.3.7.2 Stations using single sideband single channel emissions (A3A, A3H, or A3J) shall operate :

9.3.7.2.1 in the upper half of the channels designated by the centre frequencies in the Table;

9.3.7.2.2 with the carrier frequency at a value listed in the Table; its assigned frequency would then be 1400 cycles per second higher than that listed in the Table; or

9.3.7.2.3 where necessary due to equipment limitations, a value of 0.5 kilocycles per second lower than that listed in the Table when the allotted frequency terminates in 0.5 kilocycles per second; its assigned frequency would then be 900 cycles per second higher than that listed in the Table.

9.3.7.3 Stations employing double sideband emissions (A3) shall operate with assigned frequencies at the values listed in the Table

Reason : Upper half of the channel only is used to provide for an orderly transition to a world-wide system utilizing SSB techniques so that at an appropriate time, the lower half of the channels may be allotted in an orderly manner.

9.4 Frequency to be notified

9.4.1 For any notification under Nos. 486 or 487 of Article 9, the following procedure shall be employed :

9.4.1.1 In the case of assignments under 9.3.7.3 and 9.3.7.2.2, the carrier frequency shall be notified.

9.4.1.2 In the case of assignments under 9.3.7.2.3, a value listed in the Table (0.5 kilocycles per second higher than the carrier frequency) shall be notified.

9.4.1.3 In the case of assignments under 9.3.7.2, the carrier (reference) frequency also shall be supplied as Supplementary Information.

Reason : To provide a procedure whereby the frequency entered in the International Frequency List, column 1, is the same as that shown in the Frequency Allotment Plan.

9.5 Where the necessary bandwidth permits, it is recognized that two or more ~~At~~ channels can be derived from each of the channels provided under this frequency separation plan.

~~d The grouping of adjacent channels derived from the above table to permit the satisfaction of particular requirements, will be subject to special arrangements by the Administrations concerned.~~

Reason : This provision has never been applied within the (R) service and is not expected to be required in the future. This is in accordance with the conclusion of the First Session.

9.6 The special arrangements contemplated in ~~b)-c)-d)~~ 9.2. and 9.5 above should be made under the provisions of Article 43 (Special Agreements) of the International Telecommunication Convention and Articles 4 and 9 of the Radio Regulations.

Reason : These editorial changes are in accordance with conclusions of the First Session.

9.7 The International Civil Aviation Organization (I.C.A.O.) co-ordinate aeronautical (R) communications with international air operations for a large part of the world and this organization should be consulted in appropriate cases, particularly in the operational use of the frequencies in the Plan.

Reason : This is an important paragraph in the existing Appendix 26 which is applicable to both the (R) and (OR) services. It is therefore inserted here in accordance with the agreements of the First Session.

10. Frequencies to be allotted

10.1 The list of frequencies to be allotted in the exclusive aeronautical mobile (R) bands, on the basis of the frequency separation provided for under paragraph 8 above, will be found in the table opposite.

Reason : To indicate the table applies to (R) Service bands only. This is pursuant to the provisions of Report of the First Session, page 51, paragraph 6.

11. Classes of emission

11.1 In the Aeronautical Mobile (R) Service the use of emissions such as listed below is permissible, provided that such use :

- a) complies with the applicable provisions of Nos. 9 through 14;
- b) does not cause harmful interference to other users of the frequency.

11.1.1 Telephony - Amplitude Modulated :

- 11.1.1.1 Double sideband (A3)
- 11.1.1.2 Single sideband, reduced carrier (A3A)
- 11.1.1.3 Single sideband, full carrier (A3H)
- 11.1.1.4 Single sideband, suppressed carrier (A3J)
- 11.1.1.5 Single sideband, two independent sidebands. (A3B)

11.1.2 Telegraphy (including automatic data systems) :

11.1.2.1 Amplitude modulation

- a) without the use of a modulating frequency (by on-off keying). (A1)
- b) on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission (A2)
- c) multichannel voice frequency telegraphy, single sideband, reduced carrier (A7A)

kc/s

2 850 - 3-155 3 025		4 650 - 4-750 4 700		6 525 - 6-765 6 685		
2 854	(R) 24 channels	4 654.5	(R) 7 channels	6 529.5	(R) 21 channels	
2 861		4 661.5		6 537		
2 868		4 668.5		6 544.5		
2 875		4 675.5		6 552		
2 882		4 682.5		6 559.5		
2 889		4 689.5		6 567		
2 896		4 696.5		6 574.5		
2 903		5 450 - 5 480		6 582		
2 910		Region 2		6 589.5		
2 917		5 454 5 461.5 5 469 5 476.5	(R) 4 channels	6 597		
2 924				6 604.5		
2 931				6 612		
2 938				6 619.5		
2 945		5 480 - 5-750 5 680		6 627		
2 952		5 484 5 491.5 5 499 5 506.5 5 514 5 521.5 5 529 5 536.5 5 544 5 551.5 5 559 5 566.5 5 574 5 581.5 5 589 5 596.5 5 604 5 611.5 5 619 5 626.5 5 634 5 641.5 5 649 5 656.5 5 664 5 671.5 5 680	(R) 26 channels	6 634.5		
2 959				6 642		
2 966				6 649.5		
2 973				6 657		
2 980				6 664.5		
2 987				6 672		
2 994				6 679.5		
3 001				8 815 - 9 949 8 965		
3 008				(R) 18 channels		
3 015						
3 023.5 (R) & (OR)						
3 400 - 3 500						
3 404.5	(R) 14 channels					8 820
3 411.5						8 828.5
3 418.5						8 837
3 425.5						8 845.5
3 432.5						8 854
3 439.5						8 862.5
3 446.5				8 871		
3 453.5				8 879.5		
3 460.5				8 888		
3 467.5				8 896.5		
3 474.5				8 905		
3 481.5				8 913.5		
3 488.5				8 922		
3 495.5				8 930.5		
	8 939					
	8 947.5					
	8 956					
	*/**8 961.5					
	(R) & (OR)					

* Available for A1 emission only.

** It is necessary that only equipment having a high degree of stability be used on this channel.

See note page 17

kc/s

10 005 - 10 100	13 260 13-200 - 13 360
<u>10 008.5 1/</u> <u>10 016</u> <u>10 024</u> <u>10 032</u> <u>10 040</u> <u>10 048</u> (R) <u>10 056</u> 11 10 channels <u>10 064</u> <u>10 072</u> <u>10 080</u> <u>10 088</u> <u>10 096</u> <u>1/ = Restricted Channel of 7 kc/s</u>	<u>13 265</u> <u>13 273</u> <u>13 281</u> <u>13 289</u> <u>13 297</u> (R) <u>13 305</u> 12 10 Channels <u>13 313</u> <u>13 321</u> <u>13 329</u> <u>13 337</u> <u>13 345</u> <u>13 353</u>
11-175 - 11 400 11 275	17 970 17 900 - 18-030
<u>11 281</u> <u>11 289</u> <u>11 297</u> <u>11 305</u> (R) <u>11 313</u> 15 13 channels <u>11 321</u> <u>11 329</u> <u>11 337</u> <u>11 345</u> <u>11 353</u> <u>11 361</u> <u>11 369</u> <u>11 377</u> <u>11 385</u> <u>11 393</u>	<u>17 904</u> <u>17 912</u> <u>17 920</u> <u>17 928</u> (R) <u>17 936</u> 8 7 channels <u>17 944</u> <u>17 952</u> <u>17 960</u> <u>17 967 2/</u> <u>2/ = Restricted Channel of 6 kc/s</u>

Reason : To remove the (OR) service frequencies from the (R) service plan. To indicate the new frequencies made available as a result of reduced channel separation 10, 11, 13 and 17 Mc/s

- d) multichannel voice frequency telegraphy, single sideband, full carrier (A7H)
- e) multichannel voice frequency telegraphy, single sideband, suppressed carrier (A7J)

11.1.2.2 Frequency modulation

- a) frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)
- b) by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency-modulated emission (F2)

11.1.2.3 Facsimile

with modulation of the main carrier either directly or by a frequency-modulated sub-carrier (A-4)

Reason : Items 11.1.1 through 11.1.2.3 are presented here to detail the permissible parameters per provisions 9 through 14.

3- 12. Channels common to (R) and (OR) Services

12.1 The channels common to the (R) and (OR) services, centred at 3 023.5 and 5 680 kc/s, are authorized for use world-wide as shown in Part II of this Appendix.

12.2 Notwithstanding those provisions of the Allotment Plan set forth in Part II hereof, the frequency 5 680 kc/s may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized aeronautical uses.

Reason : Renumbering necessary as a result of other changes.

5- 13. Adaption of Allotment Procedure

13.1 It is recognized that all the sharing possibilities have not been exhausted in the allotment plan contained in this Appendix. Therefore, in order to satisfy particular operational requirements which are not otherwise met by ~~these~~ this allotment plan, Administrations may assign frequencies from the HF aeronautical mobile (R) bands in areas other than those to which they are allotted in ~~the said~~ this plan. However, the use of the frequencies so assigned must not decrease the protection to the same frequencies in the areas where they are allotted by the plan below that determined by the application of the procedure defined in Part I, and Section II B ~~and Part III, Section II, paragraph 4-(d)~~ of this Appendix for the (R) ~~and (OR)~~ Service respectively.

Reason : Renumbered as necessary to proposed format. Editorial changes to remove reference to the (OR) Service.

6- ~~When necessary to satisfy the needs of international air operations Administrations may adapt the allotment procedure for the assignment of aeronautical mobile (R) frequencies, which assignments shall then be the subject of prior agreement between Administrations affected.~~

Reason : This provision was added at the Administrative Radio Conference, Geneva, 1959, to provide for the satisfaction of requirements not included in the Plan. With revision of the Plan, those requirements are expected to be satisfied. Accordingly, this provision will no longer be required. Refer to Appendix 26, item IA6, page 12.

7- 13.2 Resort to the co-ordination described in paragraph ~~4-9.7~~ shall be made where appropriate and desirable for the efficient utilization of the frequencies in question.

Reason : Proper numbering.

8- ~~In addition to the extensions provided for in this Appendix for certain frequencies of MWARA's EU and ME to cover the requirements of international aircraft flights to and from U.S.S.R. territory, this Administration may use, for the same purpose, the frequencies allotted to RDARA's 2 and 3 and sub-RDARA's thereof. Such uses, however, must not decrease the protection below the standards mentioned in paragraph 5 above for all stations of the aeronautical mobile services.~~

Reason : No longer required. Refer to Appendix 26, item IA8, page 12.

B. Interference Range Contours

1- 14. Definition of Contours

14.1 The transparencies inserted in the pocket at the end of this Appendix show contours which indicate the minimum acceptable distance separating two ~~ground~~ aeronautical stations each having an effective radiated power of 1.0 kW radiated-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. This limit is generally assumed to be at the boundary of the area concerned.

NOTE : The charts and transparencies that will be associated with the Plan are non-controversial technical material that was adopted by the First Session. For information purposes, reproductions of the Polar transparencies have been included here as pages 75 through 97.

14.2 Two types of transparencies are provided for use respectively with the Mercator projection world maps and 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. This over-lap is included to provide continuity between transparencies of the two projections.

Reason : To provide for the addition of polar maps and transparencies.
~~The service range is not included in the contour.~~

Reason : In accordance with the Report of the First Session.

Reason : Since there was previously no item 14, each of the succeeding items has been advanced one number.

2- 15. Type of Maps Used

15.1 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.

Reason : To provide for the addition of polar maps and transparencies.

3- 16. Change of Scale or Projection

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

Reason : To provide for the addition of polar maps and transparencies.

16.2 When 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.

16.3 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- 17. Sharing conditions between areas

17.1 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:-~~

Reason : In accordance with the Report of the First Session

Areas	Bands between : Mc/s	Sharing Conditions
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 considered 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

17.2 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 First Session of the Aeronautical E.A.R.C. (Geneva, 1964), reviewed the conclusions drawn from this material and found them to have continuing validity.

Reason : In accordance with the Report of the First Session.

6- 18. Methods of Use

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

18.2 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.

18.3 Place the centre 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.

18.4 A transmitter located at any point outside the contour will result, as defined in paragraph ± 14.1 above, in a protection ratio of better than 15 db.

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

18.6 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.

18.7 Gnomonic projection : For 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.

Reason : In accordance with the Report of the First Session. The tables and charts herein are as presented to - and accepted by - the First Session.

6- 19. Data for tracing interference contours

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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.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	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.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	56,3	180,0	66,3	180,0	76,3	180,0	86,3	Toutes longitudes All Longitudes Todas longitudes	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	160,9	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

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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	30°		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	65,6	103,3	69,8	75,9	69,7	53,8	65,4		58,5
	126,0	60,3	108,7	65,0	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	139,9	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

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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	00°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Aleance-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	-6,0	180,0	4,0

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Aleance-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	0,0	84,0	0,0	74,0	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	39,2	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

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Latitude	30°		10°		20°		30°		40°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia	N.S. +10.8°	E.W. +10.8°			N.S. +10.8°	E.W. +11.5°			N.S. +10.8°	E.W. +14.0°
	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

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

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

Latitude	50°		60°		70°		80°		90°	
Portée-de-brouillage Interference-Range Alcance-de-interferencia			N.S. +10.8°	E.W. +11.6°						
	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

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

Toutes longitudes
All longitudes
Todas longitudes

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PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

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

Toutes longitudes
All longitudes
Todas longitudes

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PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

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 17,6°
	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	165,1	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	165,1	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	Toutes longitudes All longitudes Todas longitudes	75,5
	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

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PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

5, f 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°		30°		40°	
Perte-de-brouillage Interference-Range Atenuacao-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°	
Perte-de-brouillage Interference-Range Atenuacao-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

Toutes longitudes
All Longitudes
Todas longitudes

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PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

Latitude			10°		20°		30°		40°	
Portée-de-bruitage 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	158,1	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

Latitude	50°		60°		70°		80°		90°	
Portée-de-bruitage 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

6,6 MHz, jour - ELEMENTS POUR LE TRACE 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

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Latitude	0°		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	All Longitudes	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	39.5	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	1.1	173.3	26.1	173.1	36.0	171.9	45.9		55.8
	180.0	15.8	180.0	25.8	180.0	35.3	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

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Latitude			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 71°
	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
	166,6	-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 85°	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	22,6	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
									Toutes longitudes All longitudes Todas longitudes	

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

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C. Power

20. Power

20.1 Unless otherwise indicated in Part II ~~and IV~~, of Appendix 27 to the Radio Regulations (Geneva, 1959), the maximum peak envelope power supplied to the antenna transmission line ~~are~~ is assumed to be in accordance with the following :

Class of emission	Stations	Maximum Peak Envelope Power
A1 <u>F1</u>	Land- <u>Aeronautical Stations</u> <u>Aircraft Stations</u>	1- <u>1.5 kW</u> 50- <u>75 W</u>
A3 <u>A3H</u>	Land- <u>Aeronautical Stations</u> <u>Aircraft Stations</u>	4- <u>6 kW</u> 200- <u>300 W</u>
<u>Other classes of emission</u>	<u>Aeronautical Stations</u> <u>Aircraft Stations</u>	<u>6 kW</u> <u>300 W</u>

20.1.1 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 sine-wave oscillation modulating the emission at 100%.

20.2 Aeronautical stations serving MWARA's may, when necessary, employ directional antennas and a transmitter power, in association with such directional antennas, greater than that specified in 2.1 above, in order to provide satisfactory communication with aircraft. In each such case, the administration having jurisdiction over the transmitting station shall ensure :

20.2.1 that harmful interference is not caused to stations using frequencies in accordance with the applicable provisions of the Allotment Plan;

20.2.2 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;

20.2.3 that the radiation pattern of the directional antenna be known, or that the antenna is of a type for which a typical radiation pattern is available;

20.2.4 that the directional characteristics of the antenna is such as to minimize radiation in unnecessary directions, particularly into other MWARA's or RDARA's which have been allotted the same frequencies.

20.3 It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified in paragraph 2.1 above. However, the use of such increased power shall not cause harmful interference to stations using frequencies in conformity with the Allotment Plan.

Reason :

PART II

PLAN FOR THE ALLOTMENT OF FREQUENCIES FOR THE
AERONAUTICAL MOBILE (R) SERVICE IN THE
EXCLUSIVE BANDS BETWEEN 2850 AND
17 970 kc/s

Note : U.S. proposals on this and other subjects are contained in Attachment C.

The allotment of frequencies to routes and areas has been omitted from this proposal. This portion of the new plan will be engineered by the conference to meet the known operational requirements on the basis of statistical reports.

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ATTACHMENT B

PART III

IN THE MATTER OF UTILIZATION OF SPACE RADIOCOMMUNICATION TECHNIQUES

BY THE AERONAUTICAL MOBILE (R) SERVICE

(See Resolution No. 5, First Session)

The First Session, I.T.U. Aeronautical E.A.R.C., Geneva 1964, in adopting Resolution No. 5, noted the activity of administrations in regard to development of communication systems intended to improve the Aeronautical Mobile (R) Service, including extended range VHF, long range VHF, space radiocommunication techniques and other systems including automatic data transmission, the implementation of which could have a significant impact on the requirements for high frequencies. Administrations having plans to meet the requirements of the Aeronautical Mobile (R) Service by such means were requested to submit their plans to the Second Session, I.T.U. Aeronautical (Space) E.A.R.C., Geneva-1966, and to indicate their anticipated implementation dates.

The nature of space radiocommunication techniques, as envisaged for application to needs of the Aeronautical Mobile (R) Service, cannot be a unilateral action. Thus, it is not appropriate to submit anticipated implementation dates. Dates for such an effort could only follow a decision to implement, which would follow formulation of system configuration and method of working, which could only be developed by an appropriate international body.

This paper, therefore :

1. Briefly reviews the over-all continuing I.T.U. effort to relieve congestion in the high frequency spectrum;
2. Summarizes the current situation in regard to the need for obtaining substantial improvement in communications on long-distance over-water, or inter-continental, air routes in the Aeronautical Mobile (R) Service;
3. Comments on tests conducted by the U.S.A. into the utilization of aircraft-to-ground and ground-to-aircraft communications relayed via 24-hour synchronous orbit satellite;
4. Summarizes the state of the art in regard to various system parameters which are currently obtainable on satellites.

Past Actions Regarding Reducing Congestion in the High Frequency Spectrum

Within the past two decades the countries Members of the International Telecommunication Union (I.T.U.) have given detailed, frequent and lengthy consideration to measures for reducing congestion in the high frequency spectrum :

- | | |
|--------------------|---|
| 1947-Atlantic City | - Provided for the engineering of high frequency assignments for all services on a world-wide basis; and for the review (I.F.R.B.) of notifications filed subsequent thereto. |
| 1951-Geneva | - Numerous measures to reduce or eliminate interference (see Chapter VII, Resolution No. 1, et al.). |
| 1959-Geneva | - Numerous measures to reduce or eliminate interference. (Provided for a study by a Panel of Experts - see Resolution No. 3, et al.) |
| 1963-Geneva | - Panel of Experts provided numerous recommendations (see Final Report). |

Depending upon the findings in regard to feasibility (see above), the potentiality exists that the requirements for and utilization of aeronautical mobile (R) service high frequencies by aircraft operating long-distance over-water, or intercontinental, air routes may be substantially reduced with implementation, as outlined herein, of space radiocommunication techniques. With implementation of these techniques, use of high frequencies by the aeronautical mobile (R) service on long-distance over-water, or intercontinental, air routes could be relegated to the purpose of providing back-up communications in event of outage of the satellite(s).

Summary of Current HF Communications - Need for Substantial Improvement

a) Air-ground-air

It is clear that during the approximate 40 years that high frequencies have been used for communications between aircraft and aeronautical stations, they have filled a need which, practicably, could not have been filled by any other media. On a percentage of time basis, particularly with slower aircraft of the past, high frequencies have provided satisfactory communications. With higher speed aircraft and with increase in numbers of aircraft over a route - with the consequential requirement to progressively reduce the air space separation between aircraft - the deficiencies of transmission via ionospheric media accent the need for a more reliable and substantially improved communications medium.

The vagaries and uncertainties of communicating via an ionospheric medium are well known. In its efforts to compensate for the shortcomings of, or to optimize communications via the HF medium, the aeronautical mobile (R) service has, over the years, tested and employed many means in search of improvement, including :

- a. Use of directional transmitting antennas and diversity receiving systems;
- b. When the east-west path fails, relay via a north-south path;
- c. Increasing or decreasing the frequency during propagation difficulties;
- d. Use of other types of emission, selective calling and single sideband;
- e. Use of noise limiters and noise suppressors;
- f. Continuous monitoring and amendment of operating procedures;
- g. Continuing efforts to encourage maximum cooperation between operating personnel of intra-network stations to provide "fill-in" of message text;
- h. Where other means fail, to the extent practicable, relay via inter-connecting land-lines of air-ground traffic between intra-network stations.

In addition to its search for means for substantial improvement of ionospheric media communications, aviation has developed advanced techniques for application of VHF communications to the needs for aeronautical mobile (R) service. Through inter-connection via land-lines, VHF has been extended to meet the operational control and air traffic control communications needs of the United States (within the 48 contiguous States). Application of this approach throughout the world, where practicable, has substantially reduced the need for high frequencies.

In addition to use of VHF over land masses, very detailed technical investigations have been made into extensions of the usable range of VHF, as a means of reducing the requirement for high frequencies on over-water routes. The success of these investigations is indicated by the airline operations New York-Bermuda on VHF only. On long distance over-water, or intercontinental, air routes, however, there continues to be a need for an alternative system (to the ionospheric medium) by which to substantially improve aeronautical mobile (R) service communications.

b) Point-to-point

In addition to use of point-to-point facilities to inter-connect VHF facilities, the aviation service, through aeronautical fixed networks, makes world-wide use of record communication facilities on microwave, cable and high frequencies to provide rapid point-to-point handling of traffic essential to the support of aircraft operations. This connecting system between terminals must afford a high degree of reliability and circuit continuity, particularly where automatic routing of traffic to destination is a major factor.

It has been and continues to be the practice of the United States, where economically and technically feasible to do so, to employ communication common carrier facilities to fulfill the needs of the aviation services for point-to-point facilities. It should be noted that, notwithstanding the increasing number of point-to-point facilities provided by aviation, the percentage of such facilities obtained from the communication common carriers has steadily increased.

In its preparatory material for the I.T.U. Panel of Experts, the United States recommended adoption by that Panel of a recommendation along the above lines, as a means of reducing congestion in the high frequency (4-27.5 Mc/s) bands. The final Report of that Panel, in Recommendation No. 31, states :

- "1. Wherever it is economically and technically feasible, Administrations shall conduct operations in the aeronautical fixed service over existing common carrier communication facilities, commensurate with the ability of such facilities to provide the required quality and reliability of such service."

There are, however, many terminals in the world where facilities, meeting the above quoted criteria and satisfactory to meet the needs of aviation, do not exist and probably will not exist for many years.

Comments on Tests Conducted by the U.S.A. on the Utilization of Aircraft-to-Ground and Ground-to-Aircraft Communications, etc.

A VHF aircraft satellite-relay project was established in mid-1964 to develop and complete arrangements preliminary to conducting tests between an aircraft, SYNCOM III, and a ground station in California. Tests were conducted with the aircraft enroute San Francisco to Honolulu and Hong Kong to Tokyo in late January 1965.

Tables I and II, Attachment 2, point out the magnitude of the communication problem. These figures were derived from the above tests and

confirmed by measured signal to noise ratio in the airborne tests. The major sources of link gain variation are: multipath effects, signal polarization rotation, and antenna gain variation due to the orientation of the aircraft with respect to the satellite. The link calculations between ground and satellite (Tables III and IV, Attachment 2) are given for reference and show that the system margin in both cases is in excess of the 10 db due to the available antenna gain and transmitter power.

The programme objectives of the above tests were :

1. To demonstrate air-ground-air communications relayed via satellite.
2. To evaluate the aircraft environment from a radio frequency interference and noise standpoint.
3. To look for the unexpected while working with extremely weak signals.
4. To evaluate modulating techniques within the confines of the satellite characteristics.
5. To work and plan toward an operating system which would eventually solve the aviation long haul requirements.

In the above tests, all of the programme primary objectives were achieved. These tests demonstrated that frequencies in the VHF region are usable with small, simple ground terminals; and the easy adaptability of satellite-relay to communications between an aircraft in flight and a ground station(s) thousands of miles away. The programme was useful in defining the problem areas. Further investigation is planned in regard to development of practical solutions in these problem areas.

Summary of the current state of the art in regard to various system parameters which are currently obtainable on satellites

Attachment 3 sets forth various technical parameters which are technically feasible, obtainable within the present state of the art, and which may be incorporated into a satellite. The indicated effective radiated power(ERP) on VHF frequencies can have a configuration such that ten channels are available with 300 watts ERP on each frequency, or fifteen channels with an ERP of 225 watts each. In regard to UHF and SHF point-to-point communications, a satellite configuration can be provided which permits the operation of from 600 to 1700 voice circuits between ground terminals. The number of circuits will depend on the activity factor and whether automatic switching equipment is provided to attain maximum utilization of satellite power.

It is the view of the United States, based on experience with other satellites, the tests referred to above, etc., that it appears technically feasible to adapt space radiocommunication techniques to fulfill the communications needs of the Aeronautical Mobile (R) Service on long-distance over-water, or intercontinental, air routes. It would be premature, however, to state that it is economically feasible to do this in advance of detailed technical consideration, as proposed herein.

It is apparent that with a signal transmitted from a satellite at a power level such that it is usable at an aircraft, such signal would also be heard at ground stations on receivers, tuned to that frequency, within all countries which were "illuminated" by the satellite. In view of this, a conventional air-ground network could not be expected to operate on the same frequency, free from the transmissions (interference) of the satellite. Thus, within the framework of the I.T.U. Frequency Allocation Table, coordination between countries will be required in regard to use of aeronautical mobile (R) frequencies, where the transmitted signal from the satellite is of sufficient intensity to be usable aboard the aircraft.

Further, it is the long established philosophy and procedure that aeronautical mobile (R) service frequencies shall be available to all aircraft traversing a common route. On this basis, it is necessary, to effect coordination in regard to the usage of aeronautical mobile (R) service frequencies where one use may preclude a second use, for example, such as between a conventional system and a satellite system. It may develop that arrangements to avoid conflict between the two types of systems may be required (sub-allocation within the aeronautical mobile (R) service).

Accordingly, further information is needed with respect to the following :

1. The technical parameters of the satellite and aircraft receiving and transmitting system;
2. The number and location of satellites;
3. Technical performance requirements of aeronautical (R) stations;
4. Possible methods of operation and locations of aeronautical (R) stations;
5. Provision for handling aeronautical point-to-point communications among ground terminals; and
6. Estimated costs of a model satellite system to include: satellite(s), aircraft, and ground terminal(s).
7. Operational aspects.

Annex 1 to Attachment 1 sets forth self-explanatory details to provide amplification, or a fuller understanding of, the above.

ATTACHMENT 1PART IV~~DRAFT~~ RECOMMENDATION

Relating to a study on utilization of space radiocommunication techniques by the Aeronautical Mobile (R) Service.

The Aeronautical Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

- a) the continuing efforts of the aeronautical mobile (R) service to obtain improvements in communications on long-distance over-water, or intercontinental, air routes, commensurate with increases in number, size and speed of aircraft operated; and,
- b) noting the efforts of the Union to reduce congestion in the bands between 4 and 27.5 Mc/s;

realizing

- a) that successful application of space radiocommunication techniques to the communication needs of international aviation offers the possibility of substantially improving aeronautical mobile (R) service communications and of reducing congestion in the bands between 4 and 27.5 Mc/s;
- b) that the state of the art in space radiocommunication techniques, and its capability to provide improved service, is rapidly advancing;
- c) that the ability of administrations to undertake such a programme is intimately linked to the economic implications involved; and
- d) that before administrations will be willing to undertake a programme to implement space radiocommunication techniques they will need a comprehensive technical investigation into those techniques and a statement of the measures that need to be taken;
- e) that the International Civil Aviation Organization is the international body primarily concerned with the establishment of standards and recommended practices governing communication systems and techniques used to support international civil aviation; and
- f) that I.C.A.O. has scheduled a Communications/Operations Divisional Meeting for September 1966, which includes the subject of space communications on its Agenda.

recommends that

Administrations be guided by the foregoing in their consideration of utilization of space radiocommunication techniques by the aeronautical mobile (R) service.

TABLE I

SATELLITE TO AIRCRAFT (50 WPM TTY)

Satellite transmitter power	+ 33 dbm
Diplexer gain	- 3 db
Satellite antenna gain	- 3.5 db
Effective radiated power	+ 26.5 dbm
Free space gain	-167.5 db
Aircraft antenna gain	+ 8.0 db
Effective received power	-133.5 dbm
Antenna noise level (sky)	800° K
Receiver noise figure	3.5 db
Receiver noise density	-168 dbm/cps
Carrier suppression (M = 1.2)	- 3.5 db
Limiter suppression	- 1.4 db
Carrier loop noise bandwidth (10 cps)	10 db-cps
Carrier loop S/N	19.9 db
Subcarrier suppression (M = 1.2)	- 3.0 db
Noise BW - 54 cps	17.3 db-cps
Data S/N	13.1 db

TABLE II

AIRCRAFT TO SATELLITE

Aircraft transmitter power	+ 56 dbm
Aircraft cable gain	- 1 db
Antenna gain	+ 8 db
Effective radiated power	+ 63.0 dbm
Free space gain	-168 db
Satellite antenna gain	- 3.0 db
Duplex gain	- 3.0 db
Polarization gain	- 3.0 db
Satellite RF gain	- 2.0 db
Effective received power	-116 dbm
Receiver noise density (1250°K system)	-167.7 dbm/cps
Noise bandwidth	47.8 db-cps
Noise power	-119.9 dbm
Carrier/Noise	- 3.9 db
Detector gain	- 1.8 db
Modulation factor M = 0.8	- 5 db
Bandwidth improvement factor (60 kc/300 cps)	23 db
Tone S/N	+ 20.1 db

TABLE III

SATELLITE TO GROUND TERMINAL (60 WPM TTY)

Satellite transmitter power	+ 33 dbm
Diplexer gain	- 3 db
Satellite antenna gain	- 3.5 db
Effective radiated power	+ 26.5 dbm
Free space gain	-167.5 db
Ground station antenna gain	+ 20.0 db
Effective received power	-121.0 dbm
Antenna noise level (sky)	800° K
Receiver noise figure	2.7 db
Receiver noise density	-168.4 dbm/cps
Carrier suppression (M = 1.2)	- 3.5 db
Carrier loop noise bandwidth	15 db/cps
Carrier loop S/N	29.0
Subcarrier suppression (M = 1.2)	- 3.0 db
FSK Domed bandwidth factor	18.5 db
Data S/N	+ 25.9 db

TABLE IV

GROUND TERMINAL TO SATELLITE

Ground transmitter power	+ 64.7 dbm
Cable and RF gain	- 3 db
Antenna gain	+ 11 db
Effective radiated power	+ 72.7 dbm
Free space gain	-168 db
Satellite antenna gain	- 3 db
Diplexer gain	- 3 db
Polarization gain	- 3 db
Satellite RF gain	- 2 db
Effective received power	-106.3 dbm
Receiver noise density (1250°K Syst)	-167.7 dbm/cps
Noise bandwidth	47.8 db-cps
Noise power	-119.9 dbm
Carrier/noise	+ 13.6 dbm
Detector loss	- 1.0 db
Modulation factor (M=.8)	- 5.0 db
Bandwidth improvement factor (60 kc/300 cps)	23.0 db
Tone S/N	30.6 db

WEIGHT BREAKDOWN

Electronics	04.3 lbs
Harness	0.0
Power supply	205.0
Structure	135.4
Miscellaneous	23.1
Res N ₂ Spin-up system 10.9)	
H ₂ O ₂ system (2))	78.9
H ₂ O system (2))	
Apogee motor	74.0
Final orbit condition	011.7
Reaction control propellants H ₂ O ₂ -109.8 lbs)	
H ₂ O - 44.5 lbs)	154.3
Total at apogee motor burnout	700.0
Apogee engine propellant	760.0
Apogee engine inert expendables	8.0
Apogee engine prefire condition	1534.0 lbs
Spin-up nitrogen	4.5
Spacecraft at separated condition	1538.5 lbs

POWER BUDGET

	<u>Ampères</u>	<u>Power</u> <u>24.5v</u>
Continuous loads	1.24	31.0
Keyed loads		
TWT and regulator (16)	8.00	215.6
TWT driver	0.42	10.0
VHF transmitters (16)	8.46	200.0
Nominal load	10.62	456.6
Water rocket		
Electrolysis		
on mode	0.18	4.4
off mode	0	0.001
Ignition		
peak	0.75	10.4
average	0.40	9.7
Control solenoid valves	0.45	11.0
Initial power	546 watts	22.3 amps
Power after 5 yrs.	465 watts	19.0 amps

CHARACTERISTICS

General

Diameter	100 in.
Length	140 in.
Weight	1538 lbs.
Prime power	546 watts
6 yr station keeping	
Eclipse operation	

Performance-UHF

Antenna gain	17 db.)	
Transmit frequency	1.6 Gc)	
Transmit power	36 W)	ERP = 1800 watts
Receive frequency	5 Gc)	

Performance-VHF

Antenna gain (total)	16 db)	
Transmit frequency	135-136 Mc)	
Transmit power	100 W)	ERP = 3000 watts
Receive frequency	128-129 Mc)	

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PART V

ANNEX 1

REGARDING UTILIZATION OF SPACE RADIOCOMMUNICATION TECHNIQUES
BY AERONAUTICAL MOBILE (R) SERVICE

To consider :

(NOTE : In listing details, it is not intended to limit consideration of any or all aspects pertinent to development of recommendations contributing to application of space radiocommunication techniques to needs of the Aeronautical Mobile (R) Service at the earliest practicable date. It is believed probable, however, that investigation into this field is likely to develop subjects which should be pursued, but which are not specifically included below. The detailed listings under each of the following subjects are included with intent to facilitate understanding of the general area of interest.)

1. The technical parameters of the satellite and aircraft receiving and transmitting system, including :
 - a) Required received (carrier) power at the satellite (from the aircraft).
 - b) Required received (carrier) power at the aircraft (from the satellite).
 - c) Satellite effective radiated power (per channel).
 - d) Aircraft effective radiated power (per channel).
 - e) Type of emission which should be employed.
 - f) Bandwidth of each channel.
 - g) Channelling arrangement.
 - h) Polarization requirements.
 - i) Need for omni-directional aircraft antenna; sea/ground reflections.
 - j) Required separation between transmit and receive frequencies on the satellite.
 - k) Requirement on the satellite for capability of aircraft to independently use each channel (multiple/random access).
 - l) Other considerations.

2. The number and location of satellites, including :

- a) In regard to provision of service, tabulate air routes and number of flights over each air route.
- b) Group of air routes which may be served via a common satellite.
- c) Number of satellites needed to provide service to each group of air routes.
- d) Location of each of the satellites.
- e) Number of channels needed aboard each satellite.
- f) Other considerations.

3. Technical performance requirements of aeronautical (R) stations, including :

- a) Suitable transmitting and receiving antenna characteristics : gain, beamwidth, siting, etc.
- b) Minimum effective radiated power.
- c) Development and utilization of low-cost aeronautical (R) station (terminal) facilities.
- d) Other considerations.

4. Method of operation and location of aeronautical (R) stations, including :

- a) The method of operation : where multiple frequencies are provided on the satellite, the need, or absence of need, to continue the present practice of providing route separation by use of different/separate frequencies; that is,
 - i) should all (R) frequencies on the satellite be available at all aeronautical (R) stations; or
 - ii) should the communication load be distributed between available frequencies, each of which is limited to a specific geographic area; or
 - iii) some other arrangement.
- b) As appropriate, to list (by frequency) each of the aeronautical (R) stations which should employ each satellite frequency.
- c) Other considerations.

5. Provisions for handling aeronautical point-to-point communications among ground terminals :
 - a) Technical system performance parameters of the ground equipment.
 - b) Technical system performance parameters of the satellite equipment.
 - c) Requirement on the satellite for capability of ground terminals to have independent access to relay-channels through the satellite (multiple/random access).
 - d) Frequency bands to be used.
 - e) Required separation between transmit and receive frequencies on the satellite.
 - f) Development and utilization of low-cost ground terminal facilities.
 - g) The entity or entities which should provide, own or operate the satellites and ground terminal facilities as well as the extent to which aeronautical point-to-point communications should be handled.
 - h) Other considerations.
6. Estimated costs of a model satellite system to include : satellite(s), aircraft, and ground terminal(s).
7. Operational aspects, including a study of :
 - a) One or more models of an operational environment.
 - b) A specific time period; and
 - c) the evolutionary process involved in implementation of the satellite system.

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PART VI

ATTACHMENT C

REVISED U.S. PROPOSALS OF THE RADIO REGULATIONS

ASSOCIATED WITH APPENDIX 26

PROPOSAL No. 1

That Appendix 1 to the Radio Regulations, Geneva, 1959, be amended as follows :

Amend Section E, II, Column 1 of Appendix 1 by the addition of a (new) second footnote, so that "Column 1", as amended, would read :

"Column 1 Assigned frequency

1. Indicate the assigned frequency as defined in Article 1*) **), in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.
2. This information is a basic characteristic.

*) For television broadcasting stations in Region 1, the frequencies to be notified are those of the sound and vision carriers.

**) For stations in the aeronautical mobile (R) service, the frequencies to be notified are those of the (R) allotment plan (see Part II, Section II of Appendix 27)."

Reasons : Consequential change necessary to implement the provision set forth in No. 18 of Appendix 27.

PROPOSAL No. 2

That Article 7 of the Radio Regulations, Geneva, 1959, be amended as follows :

"431 para. 5. Frequencies in the bands allocated to the aeronautical mobile (OR) service between ~~2850~~ 3025 and 18 030 kc/s (see Article 5) shall be assigned in conformity with the provisions of Appendix 26 and the other relevant provisions of these Regulations. "

Reasons : Consequential change resulting from separation of the allotment plans for the aeronautical mobile (R) and (OR) services.

"431a para. 5a. Frequencies in the bands allocated to the aeronautical mobile (R) service between 2850 and 17 970 kc/s (see Article 5) shall be assigned in conformity with the provisions of Appendix 27 and the other relevant provisions of these Regulations. "

Reasons : Consequential change resulting from separation of the allotment plans for the aeronautical mobile (R) and (OR) services.

PROPOSAL No. 3

That the following Resolution, entitled "Relating to the Applicability of Appendix 26 to the Aeronautical Mobile Service" be adopted by the main session of the Aeronautical E.A.R.C., Geneva, 1966.

Reasons : Consequential change resulting from separation of the allotment plans for the aeronautical mobile (R) and (OR) services.

RESOLUTION No.

RELATING TO THE APPLICABILITY OF APPENDIX 26

TO THE AERONAUTICAL MOBILE SERVICE

The Second Session of the Aeronautical E.A.R.C. (Geneva, 1966) :

recognizing

a) that under its terms of reference, changes to the Aeronautical Mobile (OR) Plan and its associated provisions are outside the competence of the Aeronautical E.A.R.C.

- b) that Part I. General Provisions, of Appendix 26 of the Radio Regulations (Geneva, 1959) applies to both the Aeronautical Mobile (R) and (OR) Services;
- c) that Part II of Appendix 26 comprises the present Plan for the Aeronautical Mobile (R) Service;
- d) that Parts III and IV of Appendix 26 pertain exclusively to the Aeronautical Mobile (OR) Service;

considering

that the Second Session of the Aeronautical E.A.R.C. to clearly distinguish in the Radio Regulations the high frequency allotment plan for the (R) service from the allotment plan for the (OR) service, and to avoid making any modification of the allotment plan for the (OR) service, has prepared a new and complete high frequency allotment plan for the (R) service and the provisions relating thereto, which has been designated Appendix 27 to the Regulations;

resolves

that upon the date of coming into force of Appendix 27 to the Radio Regulations,

- 1) those provisions of Part I of Appendix 26 to the Radio Regulations now applicable only to the Aeronautical Mobile (R) Service, and all of Part II of Appendix 26, shall be abrogated;
- 2) those provisions of Part I of Appendix 26 now applicable to both the Aeronautical Mobile (R) and (OR) Services shall be applicable only to the Aeronautical Mobile (OR) Service.

directs the Secretary-General

to inform the Members of the Union accordingly.

ARTICLE 9

RADIO REGULATIONS - GENEVA, 1959

Comment : In its proposals for amendment of Article 9, the U.S.A. sets forth procedures to be applied by the I.F.R.B. in processing of Notices of assignments in the aeronautical mobile (R) service (a) during the interim period between the date of signing of the revised Appendix 26 (Appendix 27) and the entry into force of that Appendix; and (b) after the entry into force of that Appendix. Following the precedent of other Administrative Radio Conferences, those interim procedures would be contained in a Resolution for adoption by the Aeronautical E.A.R.C., Geneva, 1966. The procedure set forth in the proposed Resolution parallels, in substance, the details of the final procedure, but differs in the matter of dates to be recorded. On the effective date of the revised Appendix 26 (Appendix 27), a procedure is provided for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with dates as specified by the final procedure.

PROPOSAL No. 4

That Article 9 of the Radio Regulations, Geneva, 1959, be amended as follows :

552 para. 21. (1) Examination of Notices concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands allocated exclusively to that Service between 2850 and 17 970 kc/s (see No. 500).

553 (2) The Board shall examine each notice covered by No. 552 to determine whether :

554 a) the frequency corresponds to one of the frequencies specified in Column 1 of the Allotment Plan for the aeronautical mobile (R) service contained in Part II, Section II, Article 2 of Appendix 27; or the assignment is the result of a permissive change from one class of emission to another and the occupied bandwidth is within the channelling arrangement provided for in Appendix 27. ~~(Part I, Section IIA, paragraph 1).~~

- 555 b) the limitations of use set forth in Column 3 of
the Plan have been appropriately observed;
- 556 c) ~~the class of station, class of emission, power,
and hours of use are in accordance with the General
Notes which constitute the heading for the Plan;~~

the notice is in conformity with the Plan technical
principles set forth in Appendix 27;
- 557 d) the area of use is within the boundaries of the
Air Route Areas as set forth in Column 2 of the
Plan.

558 (3) In the case of a notice in conformity with the pro-
visions of Nos. 554 to 556, but not with those of No. 557, the Board
shall examine whether the protection specified in Appendix 26 27
(Part I, Section IIA, paragraph 5 13.1) is afforded to the allotments
in the Plan. In doing so, the Board shall assume that the frequency
will be used in accordance with the "Sharing conditions between areas"
specified in Appendix 26 27 (Part I, Section IIB, paragraph 4 18).

559 ~~(4) The technical criteria to be employed by the Board in
its examination of these notices shall be those in Appendix 26 (Part I).~~

Reasons : Unnecessary since the provisions of No. 559 have been
included within the amended No. 556 above.

560 (5) [no change]

589 (1) Frequency Bands allocated exclusively to the Aero-
nautical Mobile (R) Service between 2850 and 17 970 kc/s

590 (2) If the finding is favourable with respect to Nos. 554
to 557 the date of 3 December, 1951 (date of signing of the E.A.R.C.
Agreement, Geneva, 1966) shall be entered in Column 2a.

Reasons : To provide a uniform procedure for the Recording of Dates
and Findings by the Board after the effective date of Appendix 27.

591 (3) If the finding is favourable with respect to No. 558, the date of ~~3-December-1951~~ (date of signing of the E.A.R.C. Agreement, Geneva, 1966) shall be entered in Column 2b.

Reasons : To provide a uniform procedure for the Recording of Dates and Findings by the Board after the effective date of Appendix 27.

592 (4) In all other cases covered by No. 552, the date of receipt of the notice by the Board shall be entered in Column 2b.

Comment : No change.

593 (5) For assignments to stations other than aeronautical stations in the aeronautical mobile (R) service, the relevant date shall be entered in Column 2b (see Nos. 525, 526, 530 and 631).

PROPOSAL No. 5 :

That the following Resolution, entitled "Relating to the Treatment of Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands Allocated Exclusively to that Service Between 2 850 and 17 970 kc/s" be adopted by the main session of the Aeronautical E.A.R.C., Geneva, 1966.

Note : With the revision of Appendix 26, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (I.F.R.B.) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the 1959 Plan. Further, an interim procedure is necessary to facilitate transition from the 1959 to the 1966 (R) Plan.

RESOLUTION No.

RELATING TO THE TREATMENT OF FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2 850 AND 17 970 kc/s

The Aeronautical Extraordinary Administrative Radio Conference, Geneva, 1966

resolves

1. that in the interim between (the date of signing) and (the date of coming into force of the E.A.R.C. Agreement, Geneva, 1966) :

- 1.1 the provisions of Nos. 553 to 559 of the Radio Regulations, Geneva, 1959, shall continue to be applied in the examination of frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2 850 and 17 970 kc/s;
 - 1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B.;
 - 1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows :
 - a) if the finding is favourable with respect to Nos. 554 to 557, the date of 3 December 1951 shall be entered in Column 2a;
 - b) if the finding is favourable with respect to No. 558, the date of 3 December 1951 shall be entered in Column 2b;
 - c) for all other such assignments (including those which may be in conformity with the Aeronautical Mobile (R) Frequency Allotment Plan, Geneva, 1966, but not in conformity with the Aeronautical Mobile (R) Frequency Allotment Plan, Geneva, 1959) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;
 - 1.4 any assignment which is in accordance with the Aeronautical Mobile (R) Frequency Allotment Plan, Geneva, 1966, shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register;
2. that those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2 850 and 17 970 kc/s which are contained in the Master International Frequency Register on (the date of coming into force of the E.A.R.C. Agreement, Geneva, 1966) shall be examined by the I.F.R.B. for conformity with the Aeronautical Mobile (R) Frequency Allotment Plan, Geneva, 1966, following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, Geneva, 1959, as modified by the E.A.R.C. Agreement, Geneva, 1966, and shall be recorded in the Master International Frequency Register with a date in Column 2a or 2b as follows :

- 2.1 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the E.A.R.C. Agreement, Geneva, 1966) entered in Column 2a;
- 2.2 assignments found favourable with respect to No. 558 shall have (the date of signing of the E.A.R.C. Agreement, Geneva, 1966) entered in Column 2b;
- 2.3 all other assignments shall have (the day after the date of signing of the E.A.R.C. Agreement, Geneva, 1966) entered in Column 2b.

PART VII

Note : The following pages (75-97) contain reduced reproductions of the transparencies for Interference Range Contours-Polar Areas, which will be added to the other material in the Pocket of the finalized Appendix 27. These were adopted by the First Session and are included here for information only.

ATTACHMENT D

Gnomonic Projections

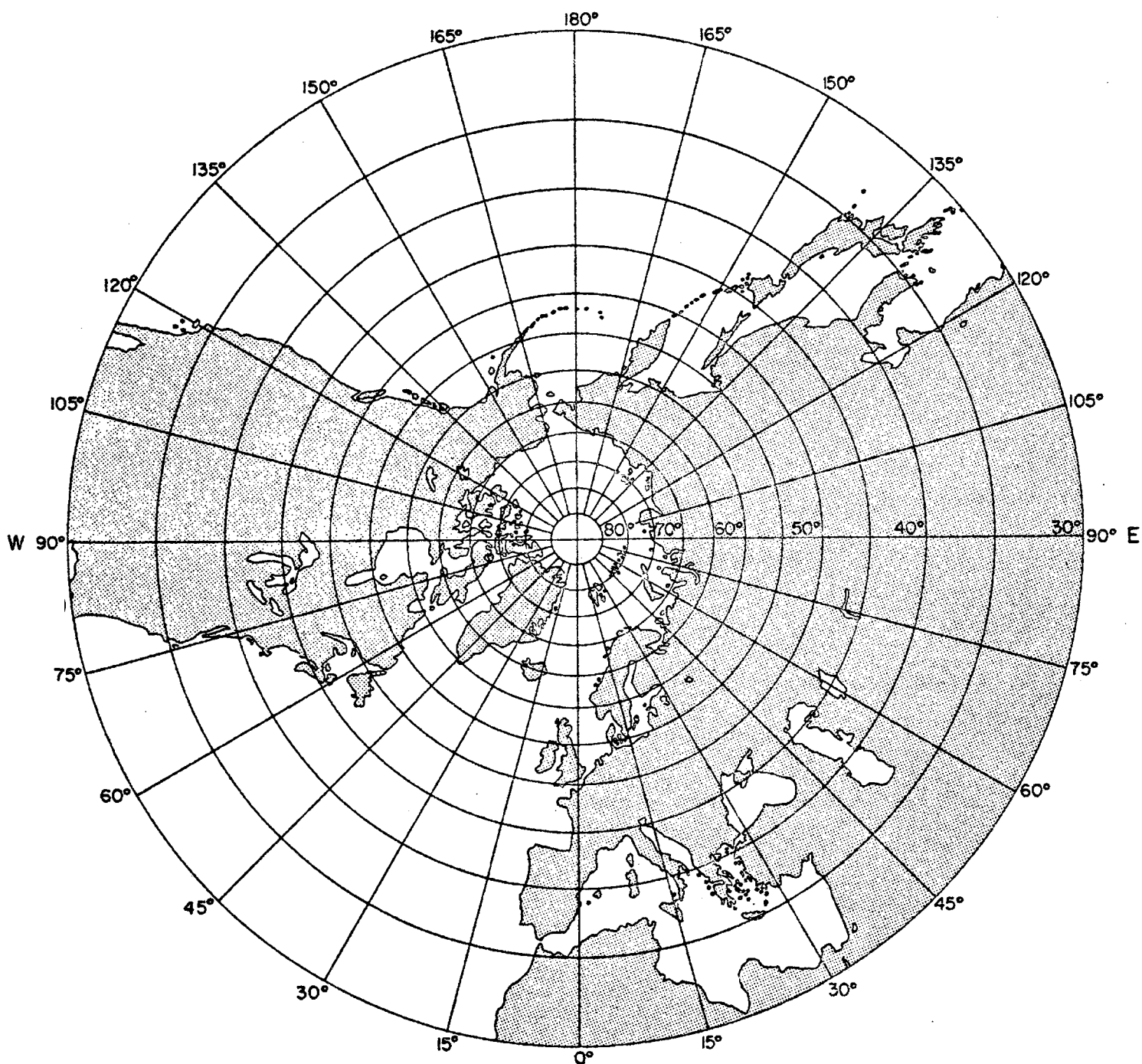
Interference Range Contours - Polar Areas

(Refer to item 14 page 20)

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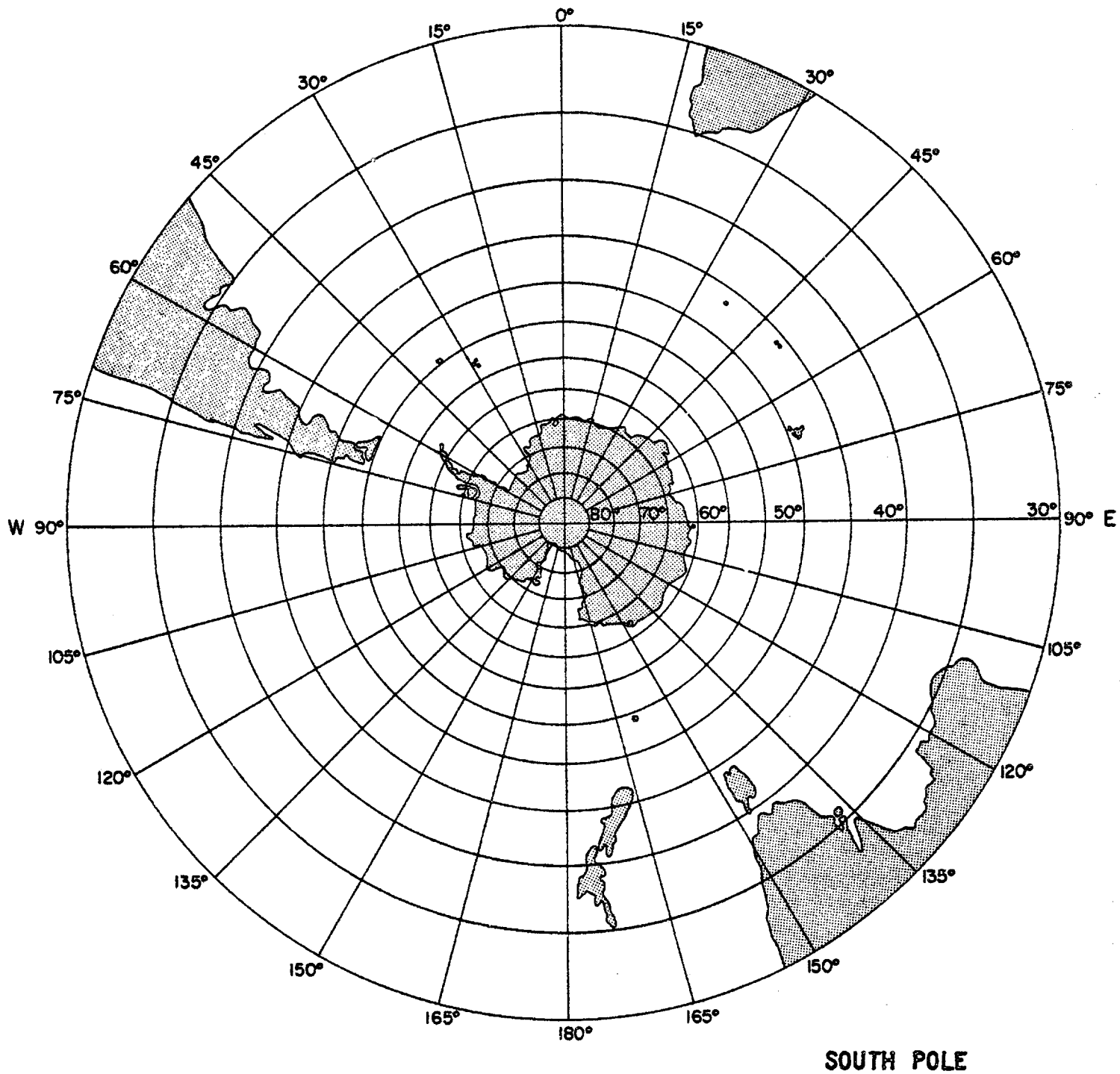


NORTH POLE

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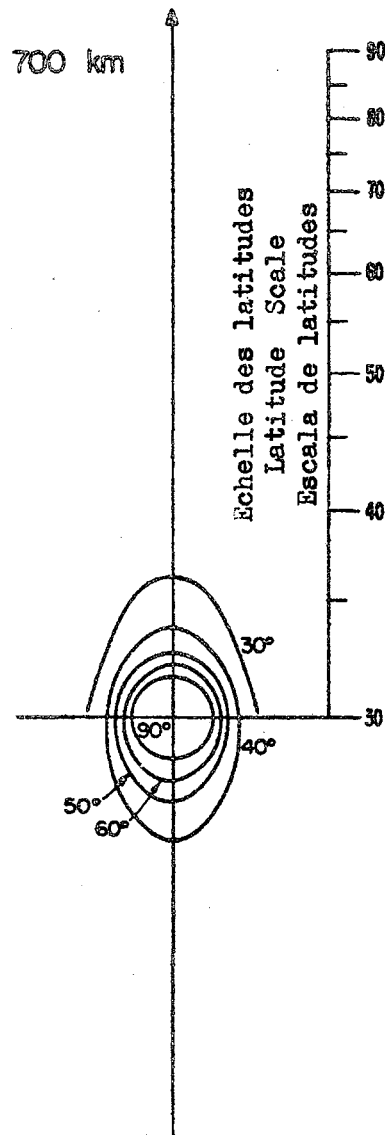
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Pôle Sud - South Pole - Polo Sur



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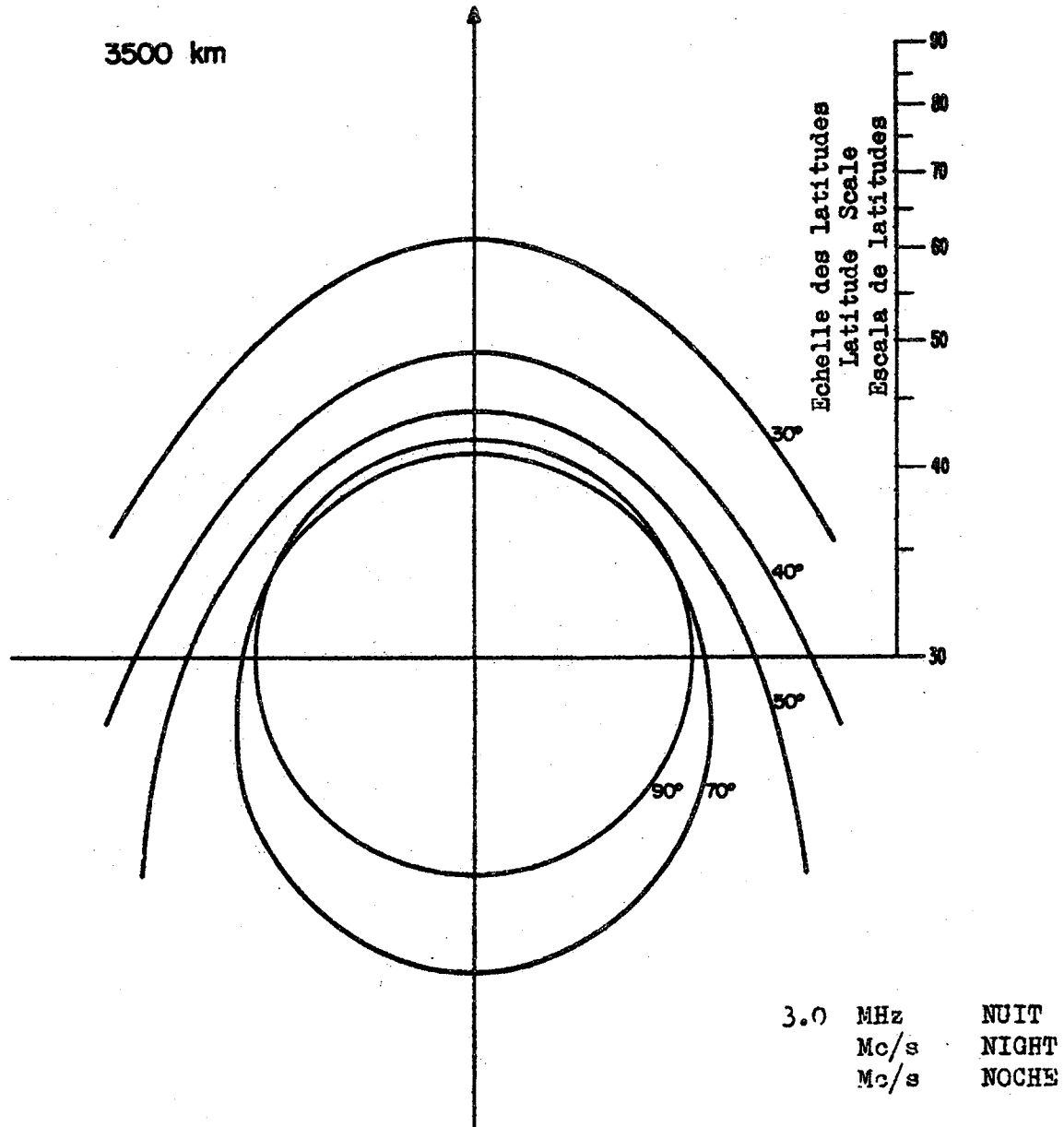
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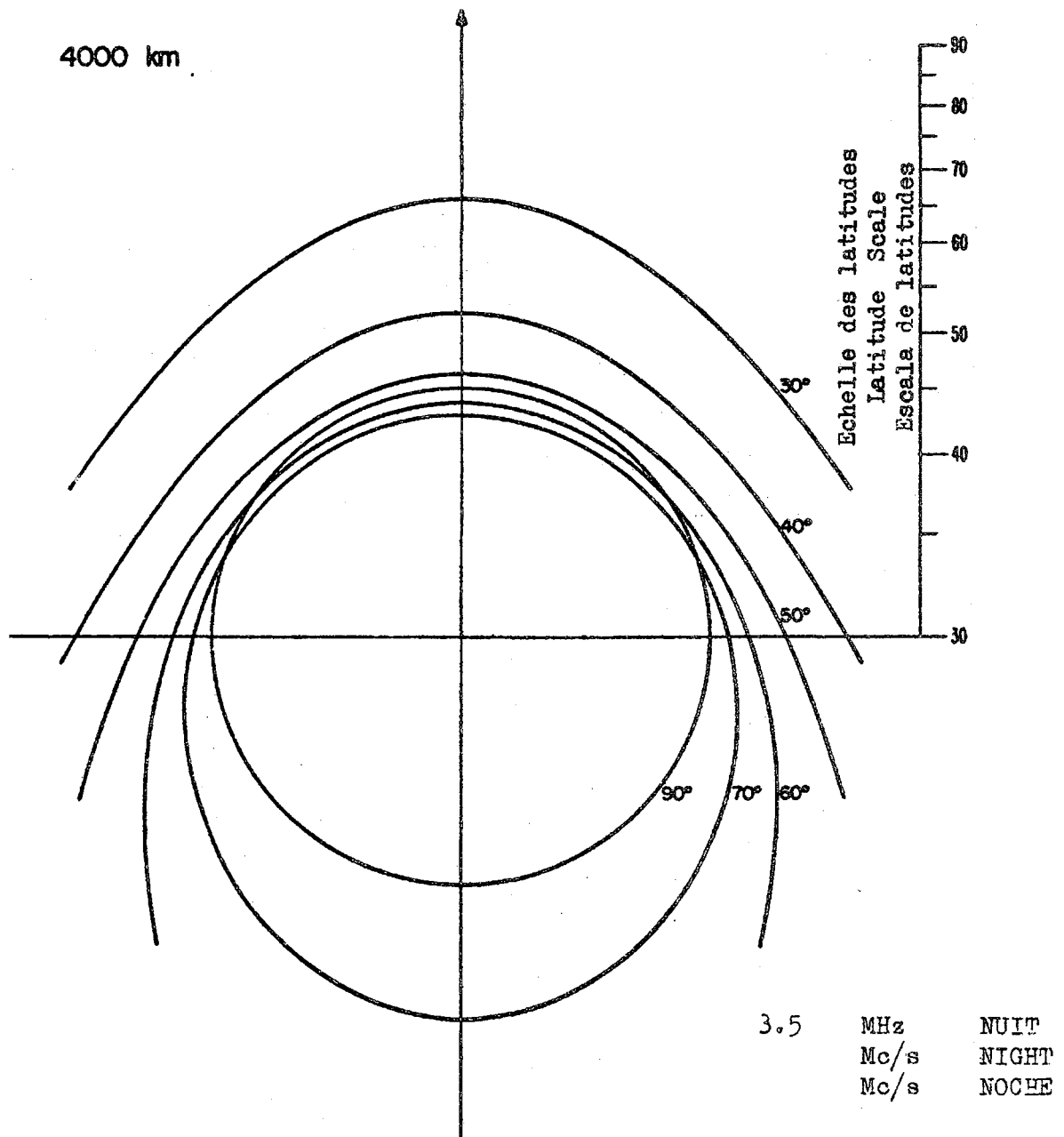
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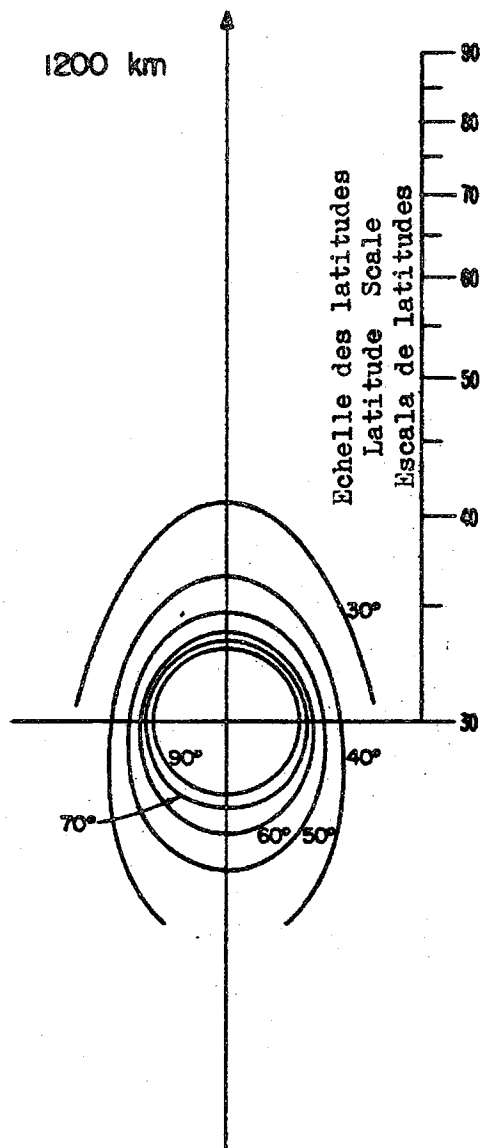
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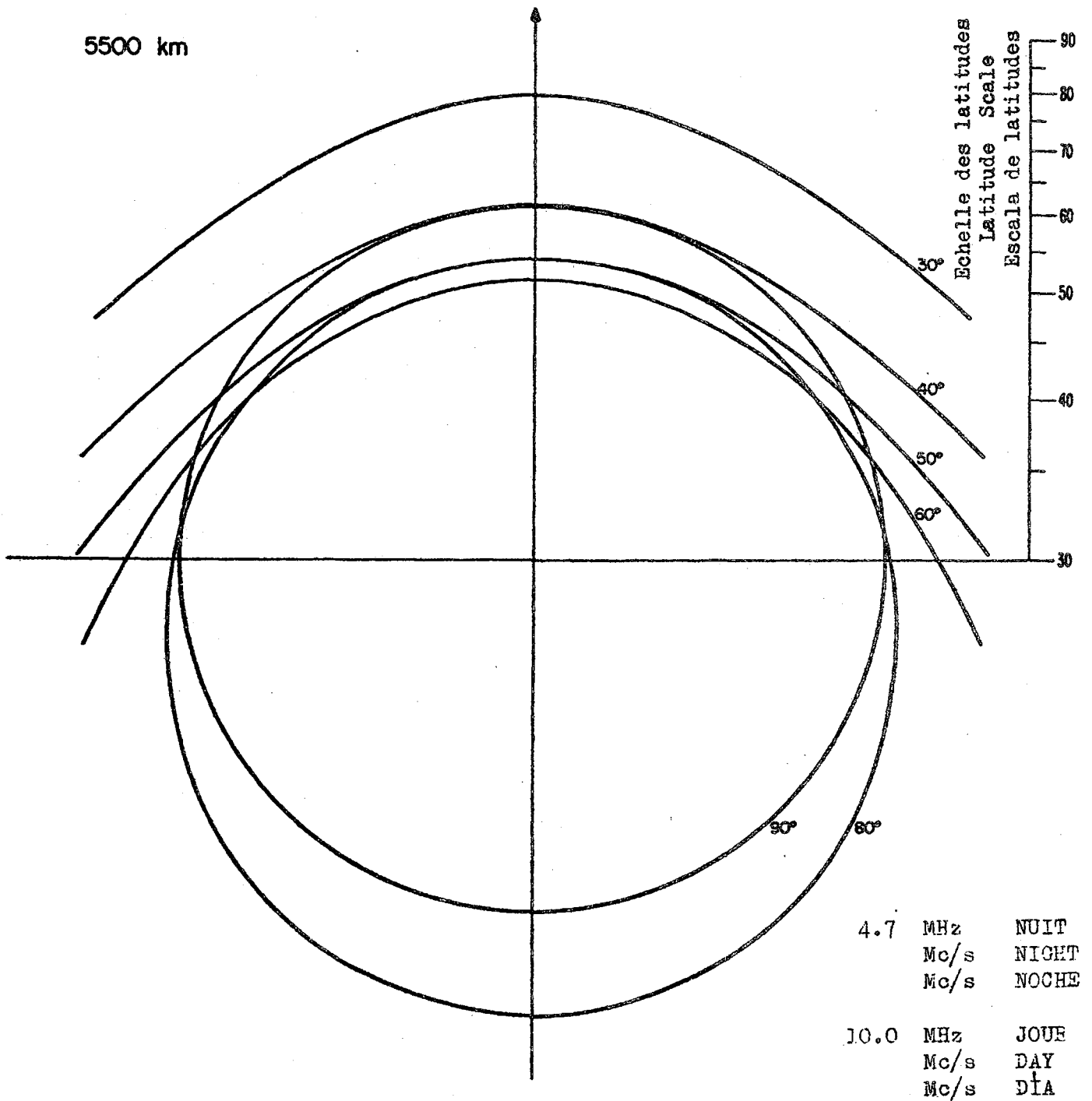
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MHz
Mc/s
Mc/s

JOUR
DAY
DÍA

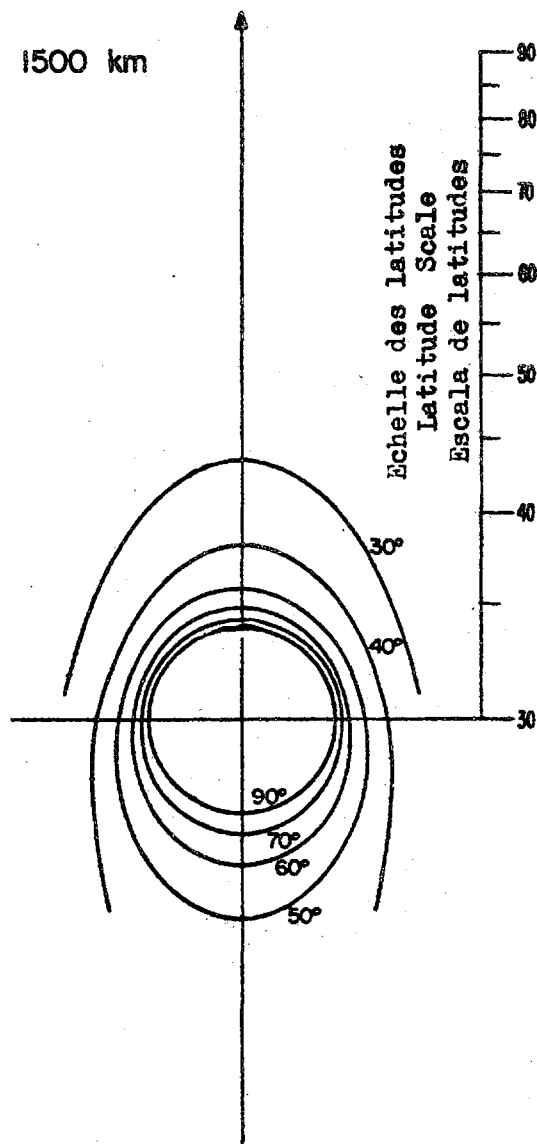
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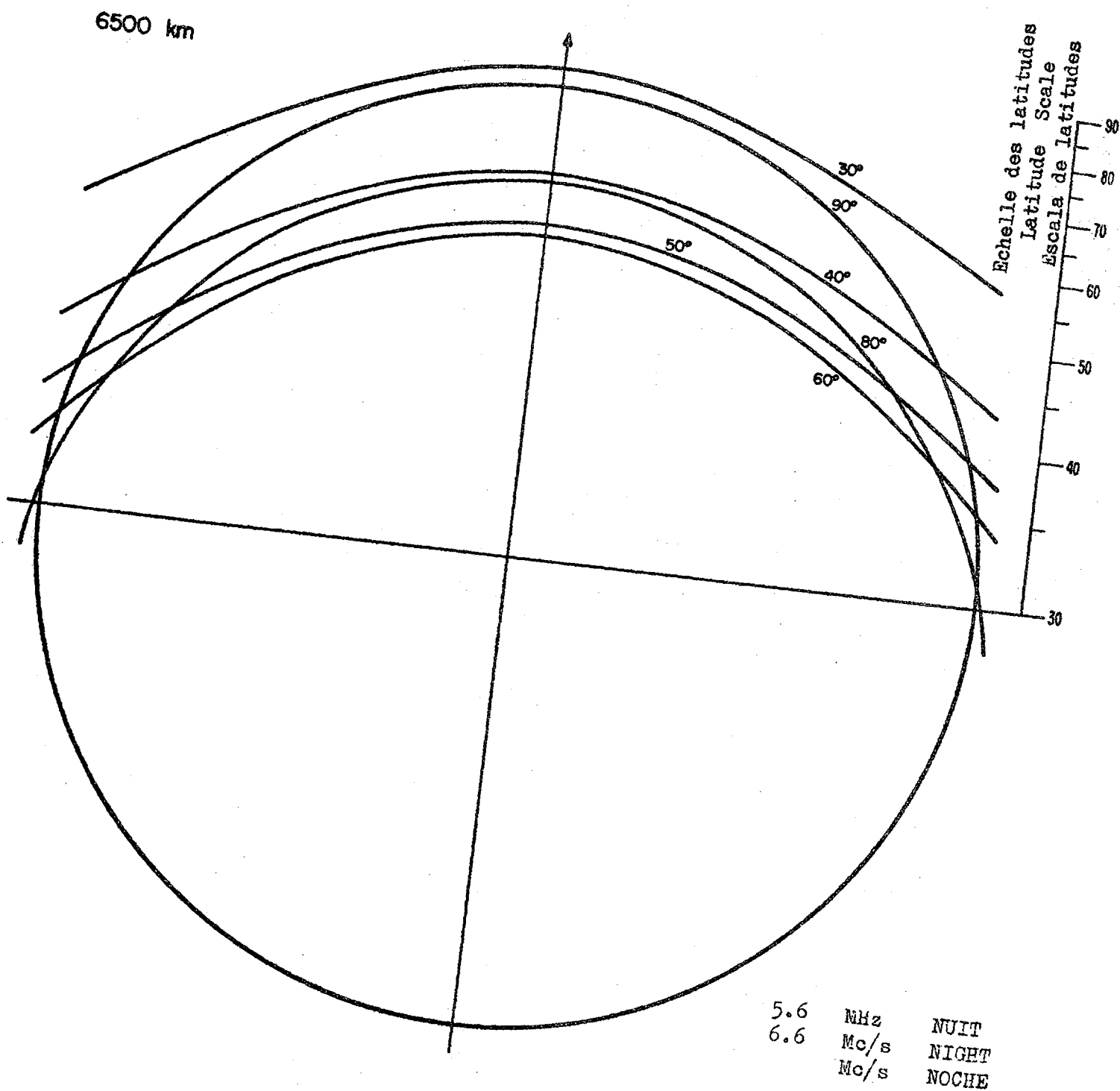
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5.6 MHz JOUR
Mc/s DAY
Mc/s DIA

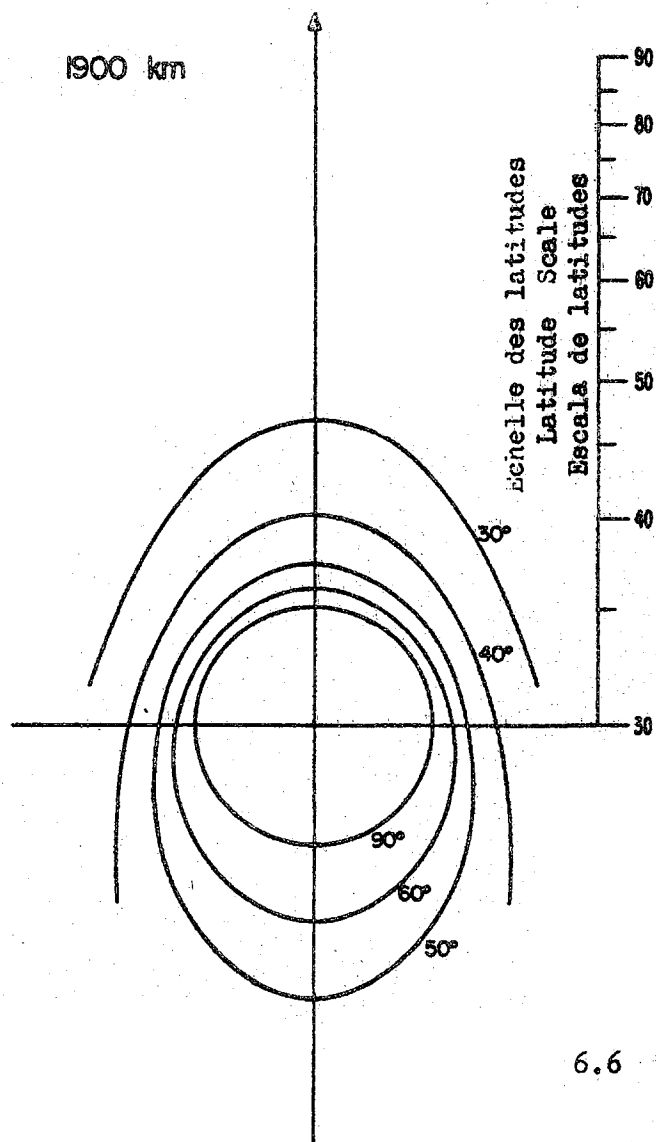
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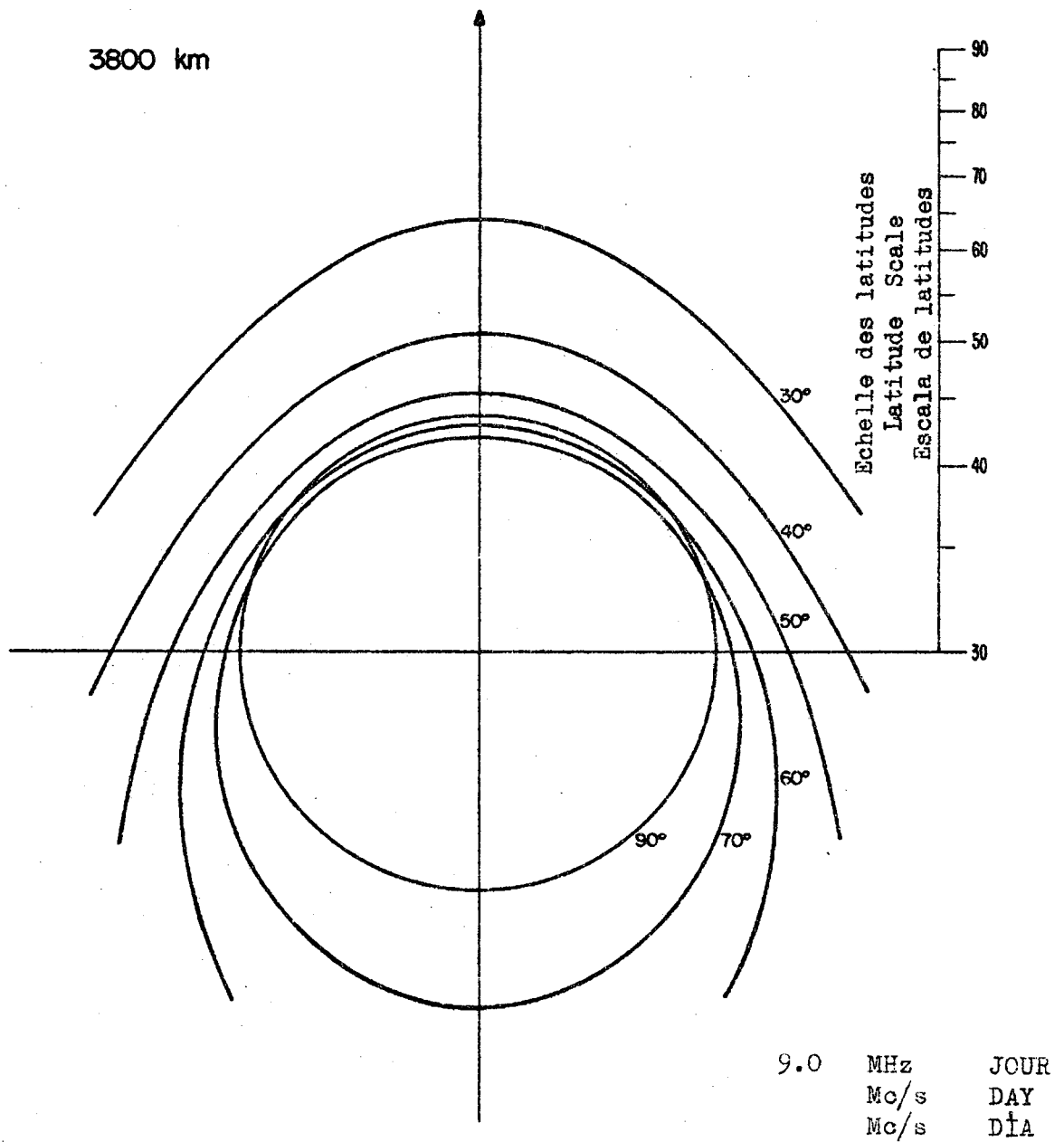
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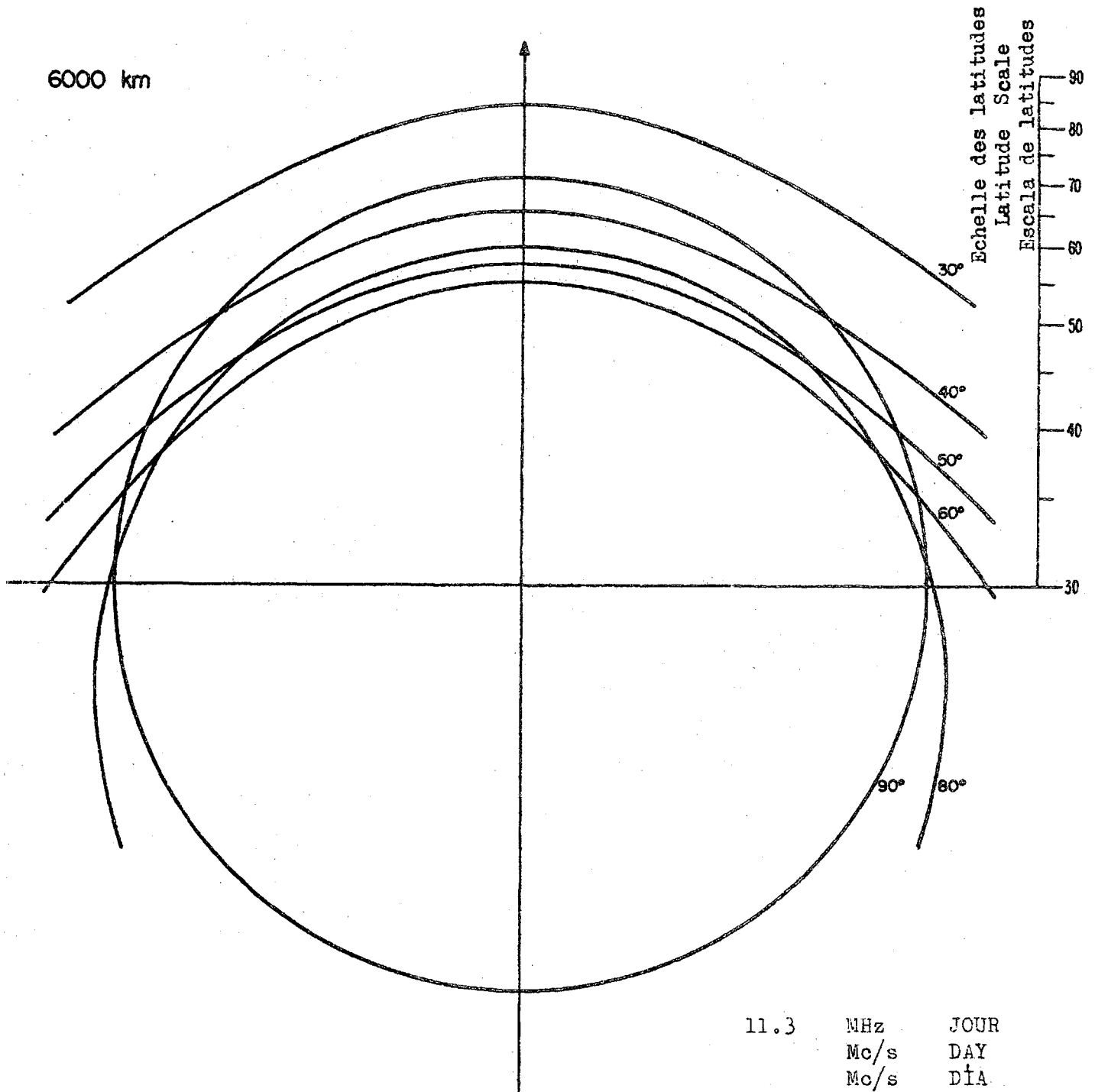
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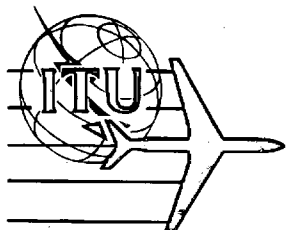
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AERONAUTICAL CONFERENCE

Addendum No. 1 to
Document No. II/3-E
8 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

JAPAN

APPENDIX TO THE JAPANESE PROPOSAL No. 6 RELATING TO
"RECOMMENDATION ON INTERNATIONAL MONITORING WITH A VIEW TO
ELIMINATING THE EMISSION ON FREQUENCIES IN THE BANDS
ALLOCATED EXCLUSIVELY TO THIS SERVICE BY STATIONS OF
SERVICES OTHER THAN THE AERONAUTICAL MOBILE (R) SERVICE"

Condition of interference obtained from radio monitoring

This appendix shows the results of the investigation, conducted by the Japanese monitoring stations, on the actual state of distribution characteristics of frequency spectrum and conditions of interference to the frequencies in the frequency bands for aeronautical mobile (R) service.

1. Monitoring stations participated in the investigation

<u>Name</u>	<u>Location</u>
Tokyo	35° 12' 14" N 139° 39' 14" E
Osaka	34° 42' 28" N 134° 57' 15" E
Fukuoka	33° 43' 23" N 130° 29' 29" E
Sapporo	43° 05' 12" N 141° 18' 47" E
Toyama	36° 44' 39" N 137° 11' 15" E
Miyakonojo	31° 44' 01" N 131° 02' 45" E
Sendai	38° 27' 05" N 141° 14' 50" E

2. Duration of investigation

From 10 January 1966 through 25 January 1966.



3. Frequency bands under investigation

<u>Frequency band</u>	<u>Fig. No.</u>
2850 - 3025 kc/s	1-1
3400 - 3500	1-2
4650 - 4700	1-3
6525 - 6685	1-4
8815 - 8965	1-5
10005 - 10100	1-6
11275 - 11400	1-7
13260 - 13360	1-8
17900 - 17970	1-9
21850 - 22000	1-10
5480 - 5680	(1-11)
	(1-12)

<u>Area</u>	<u>Frequency</u>	<u>Fig. No.</u>
MWARA-CWP	2966	3-4
	5506.5	3-12
	5536.5	3-15
	8862.5	3-24
	13354.5	3-32
	17906.5	3-33
MWARA-NP	2987	3-6
	5521.5	3-14
	8939	3-26
	13274.5	3-30
	17906.5	3-33
MWARA-FE2	2868	3-1
	5611.5	3-18
	8871	3-25
	13284.5	3-31
	17966.5	3-34
RDARA-6B	2889	3-2
	2910	3-3
	2973	3-5
	3418.5	3-8
	3467.5	3-9
	3495.5	3-10
	5514	3-13
	5544	3-16
	5589	3-17

<u>Area</u>	<u>Frequency</u>	<u>Fig. No.</u>
	6559.5	3-20
	6574.5	3-21
	6664.5	3-23
	8956	3-27
	8961.5	3-28
RDARA-6	2973	3-5
	3411.5	3-7
	3495.5	3-10
	5491.5	3-11
	5634	3-19
	6582	3-22
	8961.5	3-28
	11337.5	3-29

4. Method of Investigation

The frequency spectrum was continuously recorded for 24 consecutive hours by automatic radio frequency spectrum recording equipment. The measurements of the field strength (the values at 50% per time in db relative to 1 μ V/m) and the bearings for the principal recorded frequency spectrum were carried out especially by the field strength measuring equipment and the direction finder respectively.

5. Explanations on Figures

(1) re Fig. 1-1 - Fig. 1-12

These Figures show the summarized results of the state of distribution of frequency spectrum for aeronautical mobile (R) service in the frequency bands 2850 kc/s - 22 000 kc/s in accordance with the preceding item 3. Frequency (in scale of 10 kc/s separation) is shown on abscissa and hour (in scale of at the intervals of 2 hours) is denoted on ordinate, the left-side denoting GMT and the right-side local time JST.

In these Figures, various trails recorded vertically denotes the radio wave conditions at reception, and the recorded position enables one to read the time of reception on ordinate and the frequency on abscissa. The transversal width of them shows approximately occupied frequency bandwidth.

For example, the frequency 5506.5 kc/s, recorded as a chain of group of points, shows that the aircraft station or aeronautical station is

conducting communications on an occupied frequency bandwidth of 6 kc/s with type of emission A3 and being suffered from a F1 emission of the occupied frequency of 800 c/s bandwidth.

Furthermore, in these Figures, in particular regarding the frequencies to which harmful interference is being experienced, the record of the state of emission on which our investigation was made at the time of compilation in 1965, has always been prepared for further information.

It is noted that in Figures from 1-1 to 1-10, the swept frequency range was made at the 500 kc/s, in Figures 1-11 and 1-12, the range was at 100 kc/s.

(2) re Fig. 3-1 - Fig. 3-36

The above Figures show the results of our investigation in the emission on the adjacent frequencies of each frequency allocated to MWARA-NP, CWP, FE2 and RDARA-6,6B.

Abscissa denotes time (GMT and local time JST) and ordinate denotes the difference of assigned frequency.

Moreover, since these Figures aimed at the investigation of interfered frequencies for its object, the frequencies for use for air/ground communications for aeronautical mobile (R) service are not recorded on them as a rule.

6. Comments on the results of the investigation

(1) Viewed from the foregoing Figures, it is identified that in the above-mentioned bands for aeronautical mobile (R) service, a number of radio waves emitted by the stations for other services are recorded in the frequency bands for aeronautical mobile (R) service and these radio waves are the source of harmful interference.

In particular,

- a) in the bands 5 Mc/s, 6 Mc/s and 11 Mc/s, powerful HF broadcast is identified continuously for long times,
- b) in the bands 8 Mc/s - 10 Mc/s, frequencies with type of emission A2 is identified for long times and the frequencies with type of emission A3 emitted by the station for other service are identified intermittently, and

- c) even in the other frequency band, the emission of multiplex frequencies with type of emission A9 are identified with considerable field intensity. In view of the foregoing, there is a very fair possibility of these frequencies causing harmful interference to aeronautical mobile communications.

(2) The frequencies 5521.5 kc/s allocated to MWARA-NP and 5536.5 kc/s in use by MWARA-CWP have been experiencing harmful interference from HFBC on 5525 kc/s and 5535 kc/s since about 1962, and interference to MWARA-NP on the frequency 5521.5 kc/s is still continuing now, proving such severe hindrance as recorded in Fig. 1-11. However, the interference to MWARA-CWP on 5536.5 kc/s has been eliminated since December 1965. (See Figures 2.1 - 2.3)

The frequencies 5544 kc/s and 6559.5 kc/s which are allocated to RDARA-6B, are experiencing interference by HFBC on 5545 kc/s and 6560 kc/s.

7. Instruments used for the investigation

- (1) Automatic Radio Frequency Spectrum Recording Equipment:

- a) Frequency range: 500 kc/s - 30 Mc/s (Uniform scale)
- b) Minimum recording field intensity: more than -10 db
- c) Frequency resolution: 200 c/s (Swept frequency range 100 kc/s)
1 kc/s (Swept frequency range 500 kc/s)
- d) Antenna used: Vertical Omnidirectional Loaded Antenna.

- (2) Field Intensity Measuring Equipment:
(Visual type for measurements of interference)

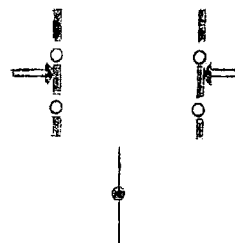
- a) Frequency range: 500 kc/s - 30 Mc/s
- b) Measurable field intensity and accuracy: 0.2 μ V/m - 300 mV/m \pm 1 db
- c) Antenna used: Vertical antenna, satisfied C.C.I.R. Rec. 378, Geneva, 1963.

(3) Direction Finding Equipment:

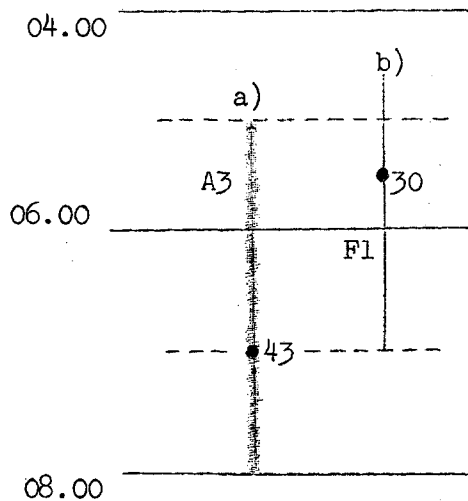
- a) Antenna used: Adcock antenna of U type
- b) Indication: Direct visual indication
- c) Automatic direction recorder: Fluctuated bearings be able to record automatically. Recording width can be changed to $\pm 180^\circ$ or $\pm 90^\circ$

Method of reading

- (1) Swept frequency range 100 kc/s in Fig. 1-11 - Fig. 1-12
 500 kc/s in Fig. 1-1 - Fig. 1-10
 Recorded on abscissa scale for
 frequency (10 kc uniform scale)
- (2) Time scale 2 hours uniform scale
 Recorded on ordinate scale for
 G.M.T. and J.S.T.
- (3) Aeronautical mobile service Shown with
 (R) band symbol
- (4) Time of measurement of Shown with symbol
 field strength
- (5) The symbols and values for the figures are given in the following example.



(G.M.T.)



a) Received during: 05.00 - 08.00 h

Class of emission: A3

Field strength at
50% time percentage
in db: 43 db

Time of measurement
of field strength: 07.00 (G.M.T.)

b) Received during: 04.20 - 07.00 h

Class of emission: F1

Field strength at
50% time percentage
in db: 30 db

Time of measurement
of field strength: 05.45 (G.M.T.)

Fig.1-1

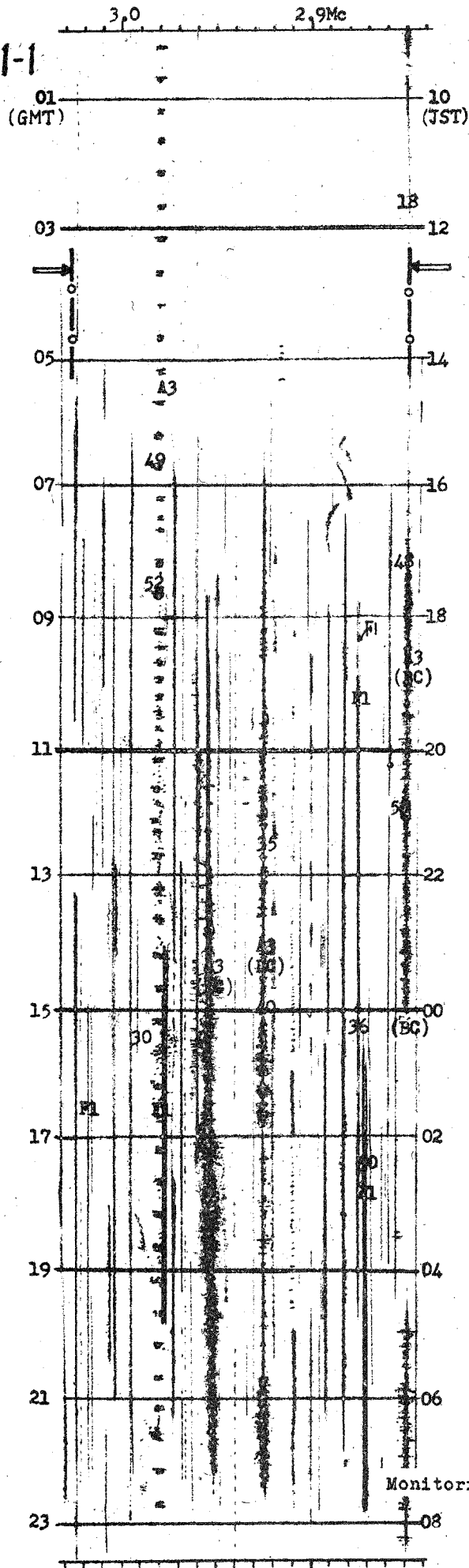
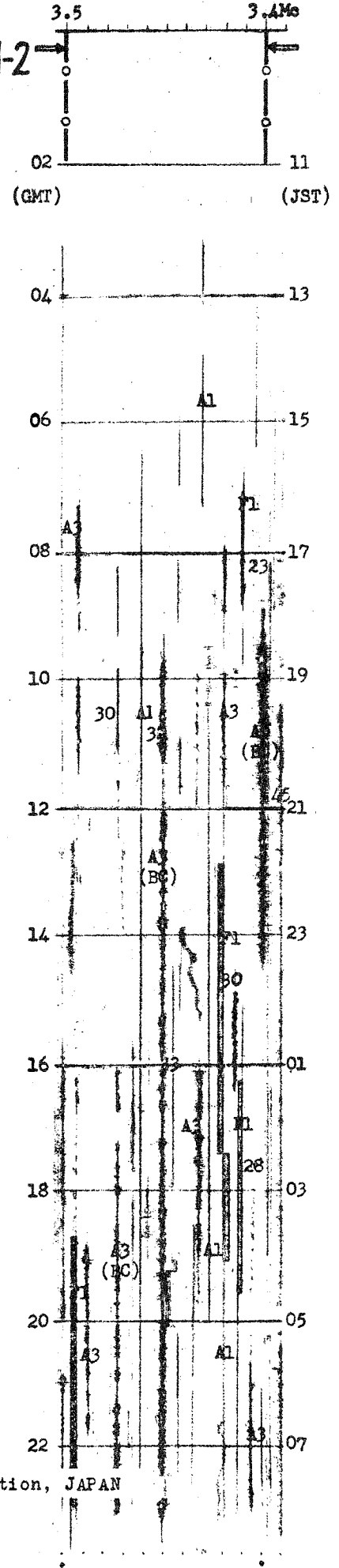
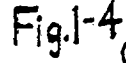
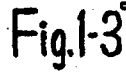


Fig.1-2



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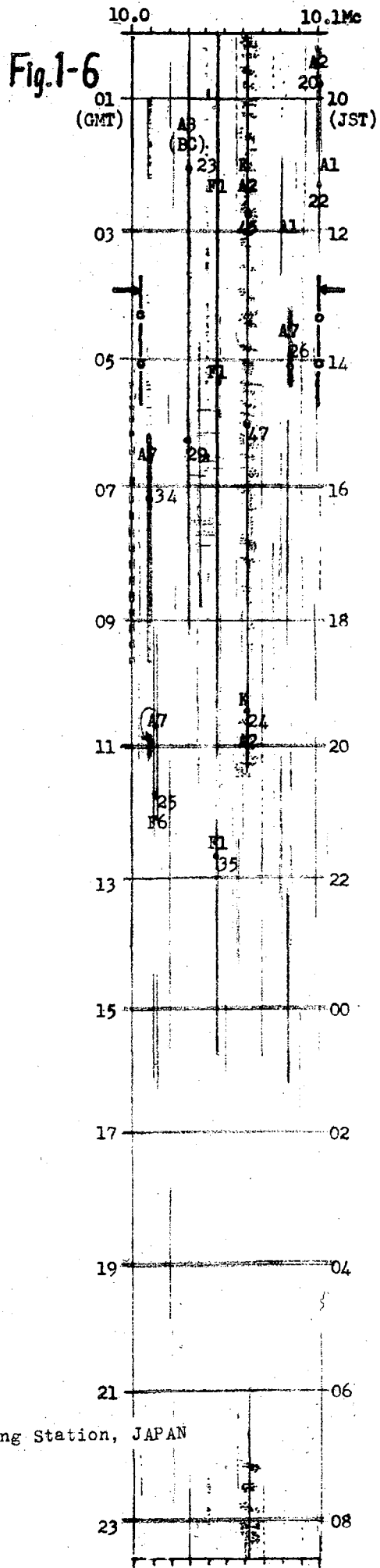
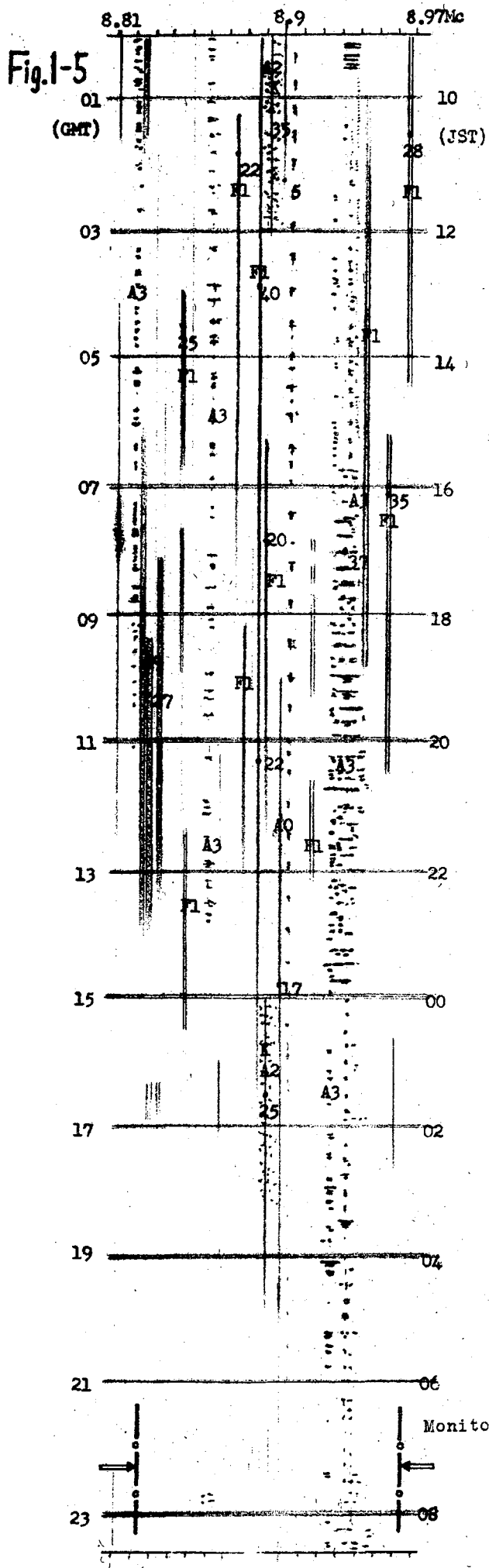
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Monitoring Station, JAPAN

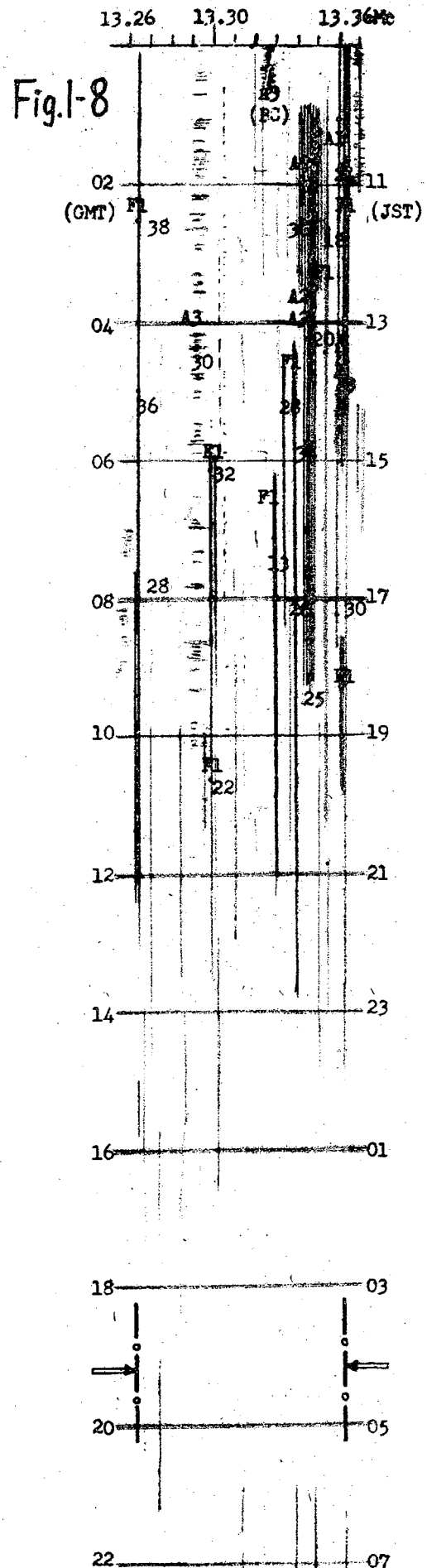
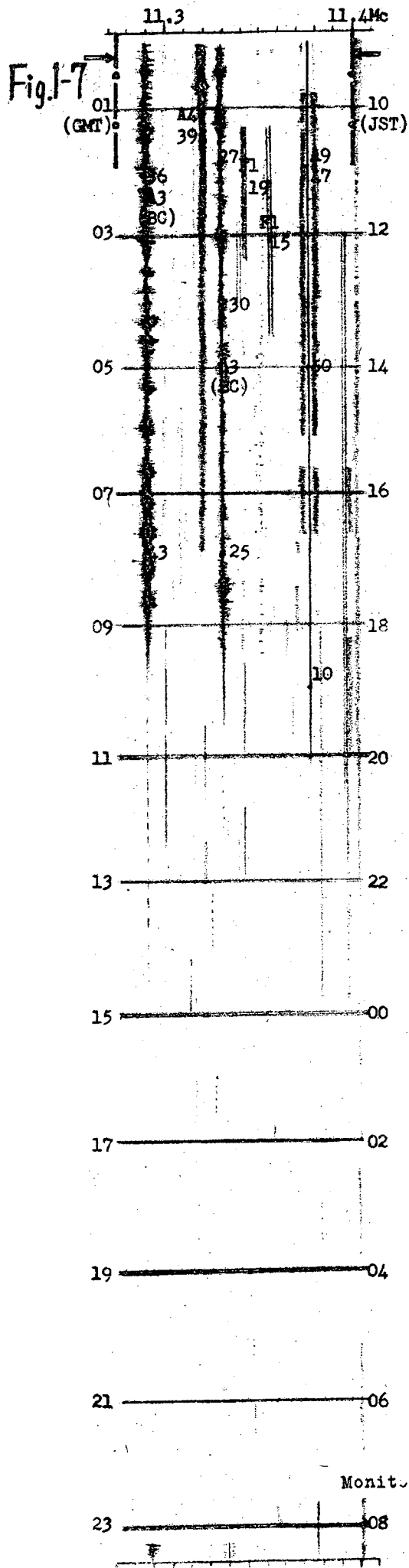
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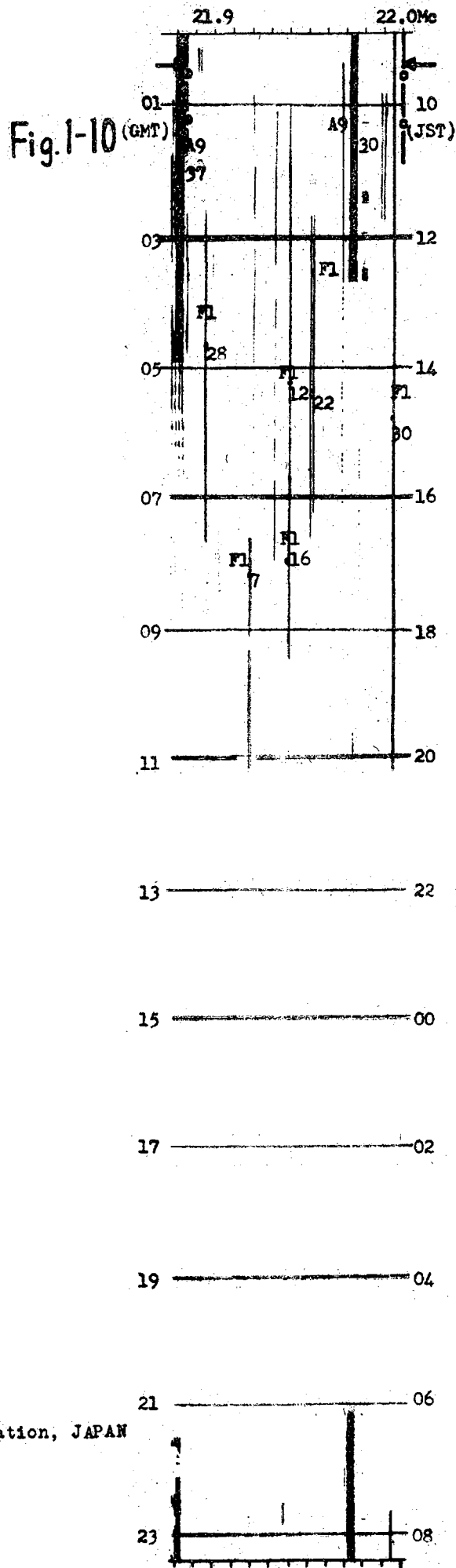
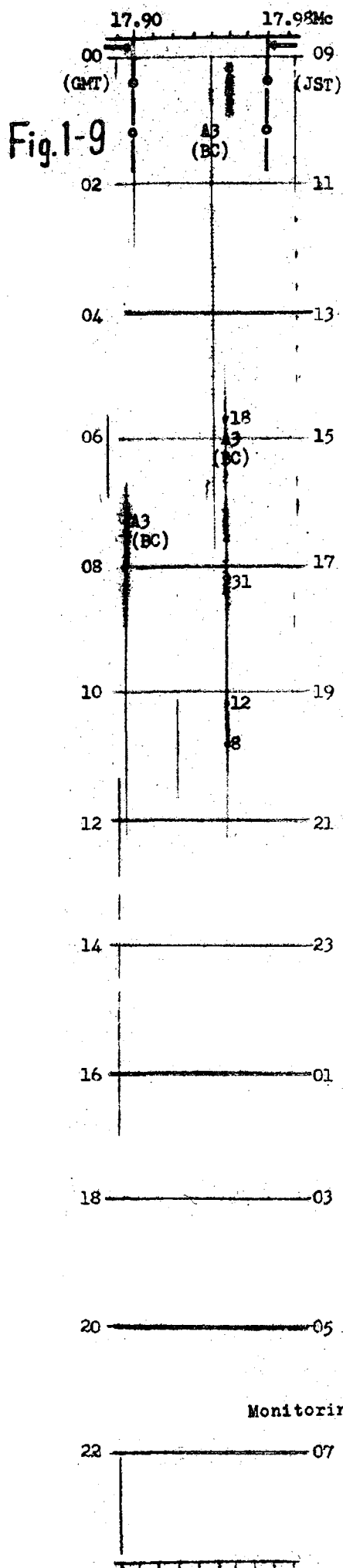
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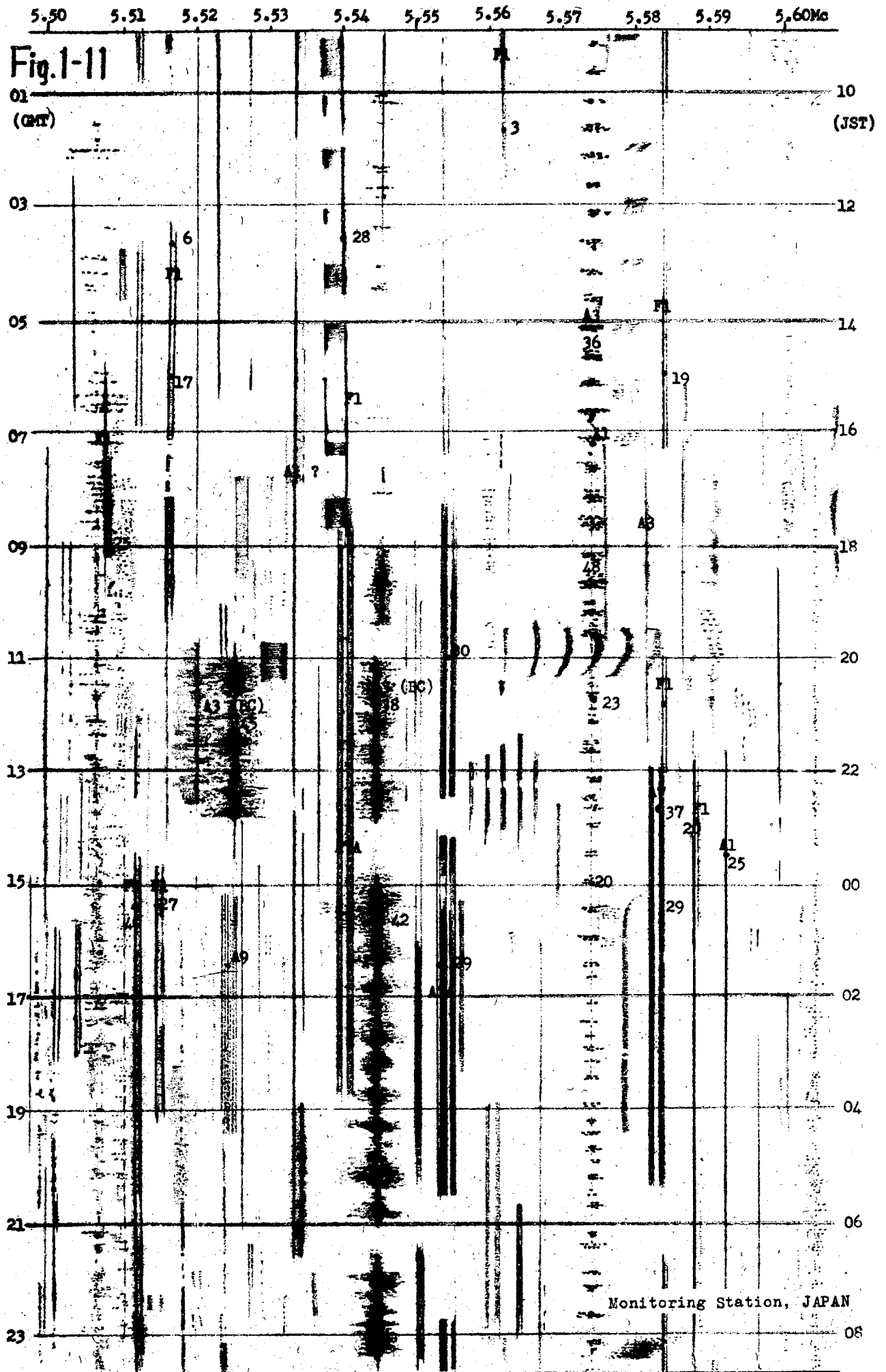
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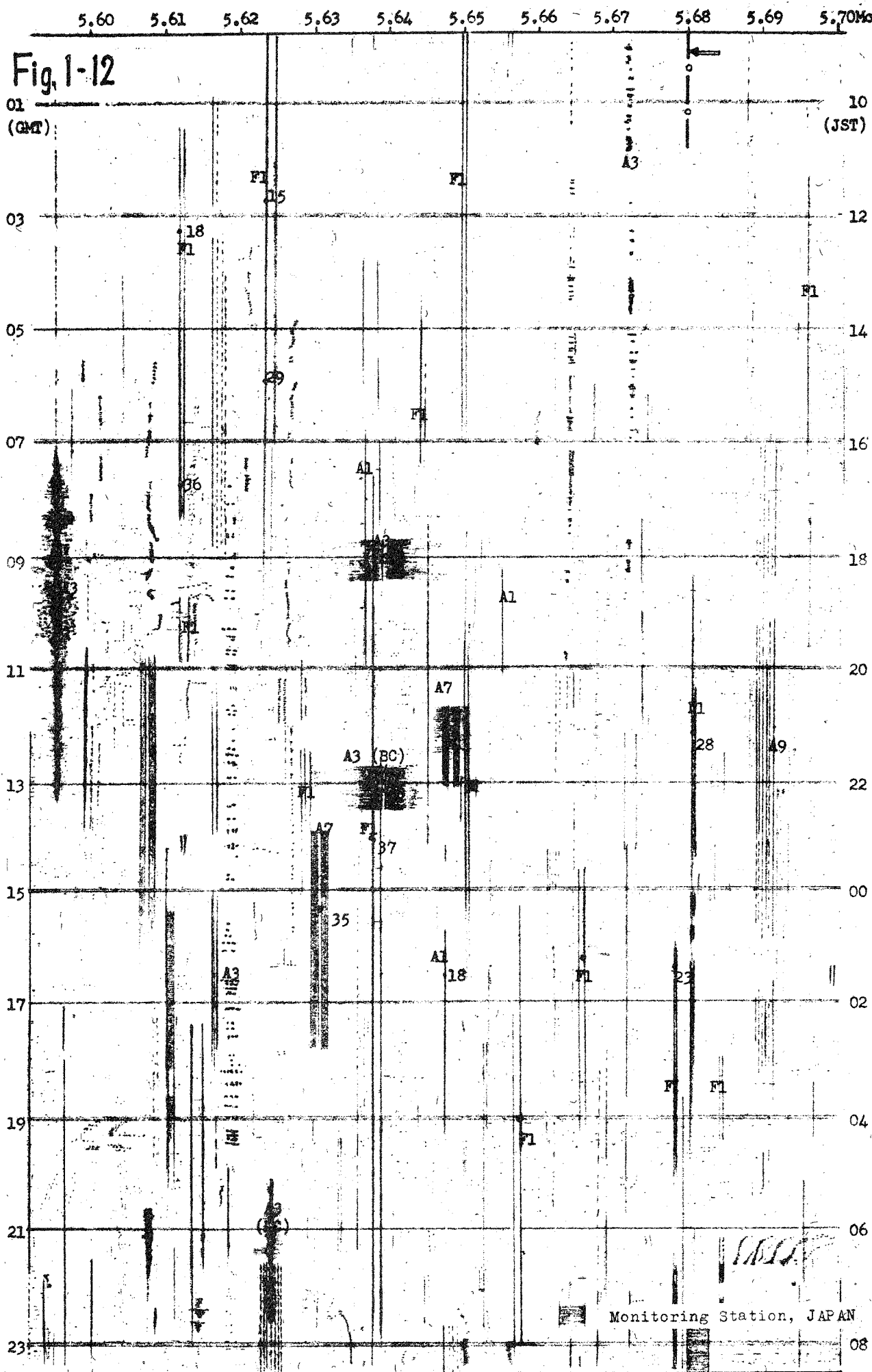
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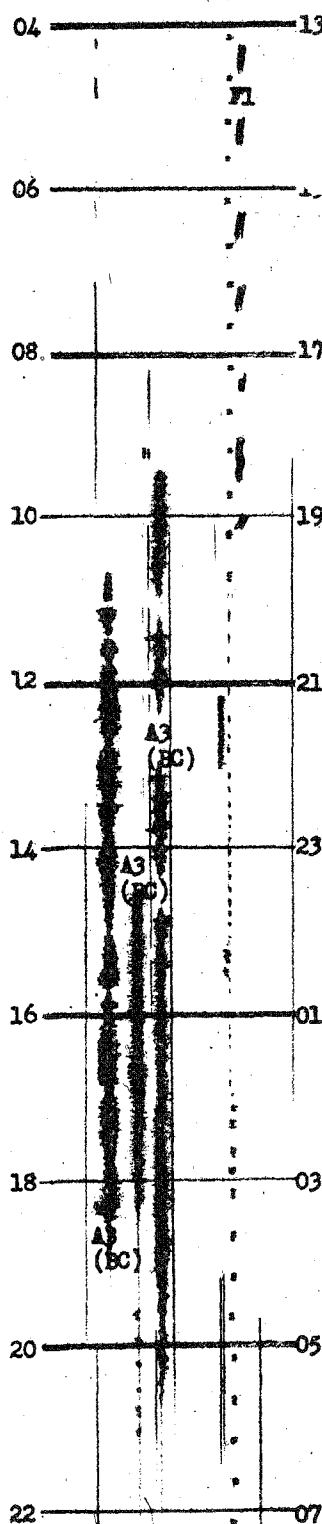
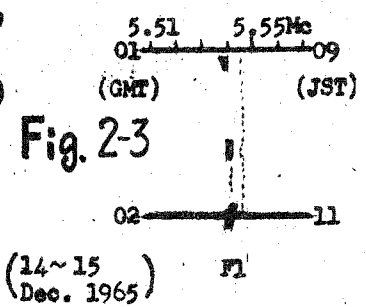
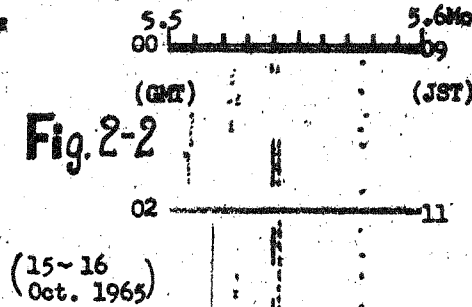
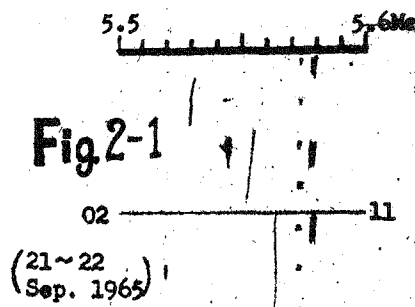
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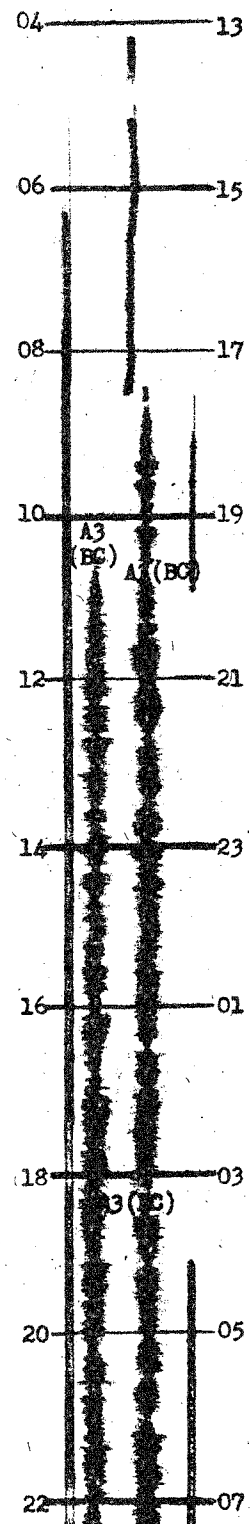
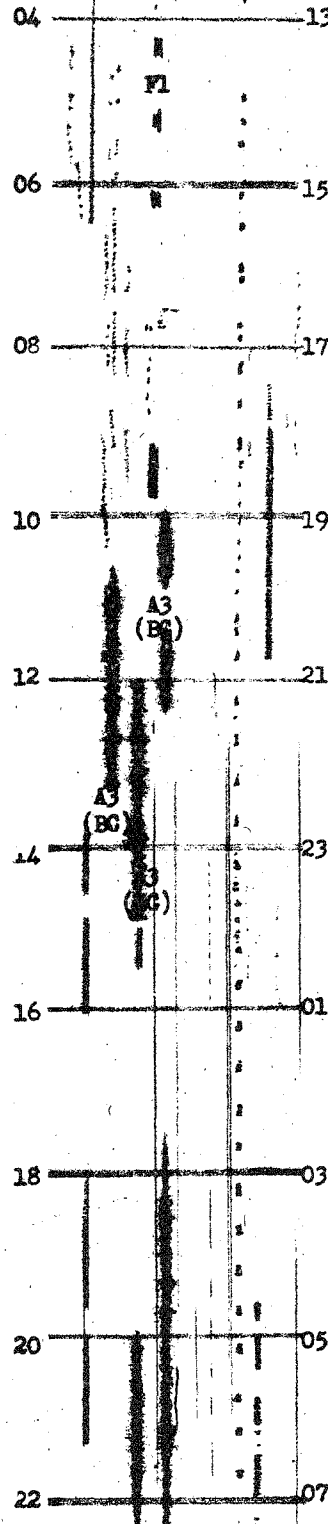


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Monitoring Station, JAPAN



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Fig. 3 Frequencies of appearance of interfering waves in MWARA - CWP, NP, FE-2 areas and RDARA - 6B, 6 areas.

(Jan. 1966)

1. MWARA - CWP: 2966 kc, 5506.5 kc, 5536.5 kc, 8862.5 kc, 13354.5 kc, 17906.5 kc.
2. MWARA - NP: 2987 kc, 5521.5 kc, 8939 kc, 13274.5 kc, 17906.5 kc.
3. MWARA - FE-2: 2868 kc, 5611.5 kc, 8871 kc, 13284.5 kc, 17966.5 kc.
4. RDARA - 6B: 2889 kc, 2910 kc, 2973 kc, 3418.5 kc, 3467.5 kc, 3495.5 kc, 5514 kc, 5544 kc, 5589-kc, 6559.5 kc, 6574.5 kc, 6664.5 kc, 8956 kc, 8961.5 kc.
5. RDARA - 6: 2973 kc, 3411.5 kc, 3495.5 kc, 5491.5 kc, 5634 kc, 6582 kc, 8961.5kc, 11337.5kc.

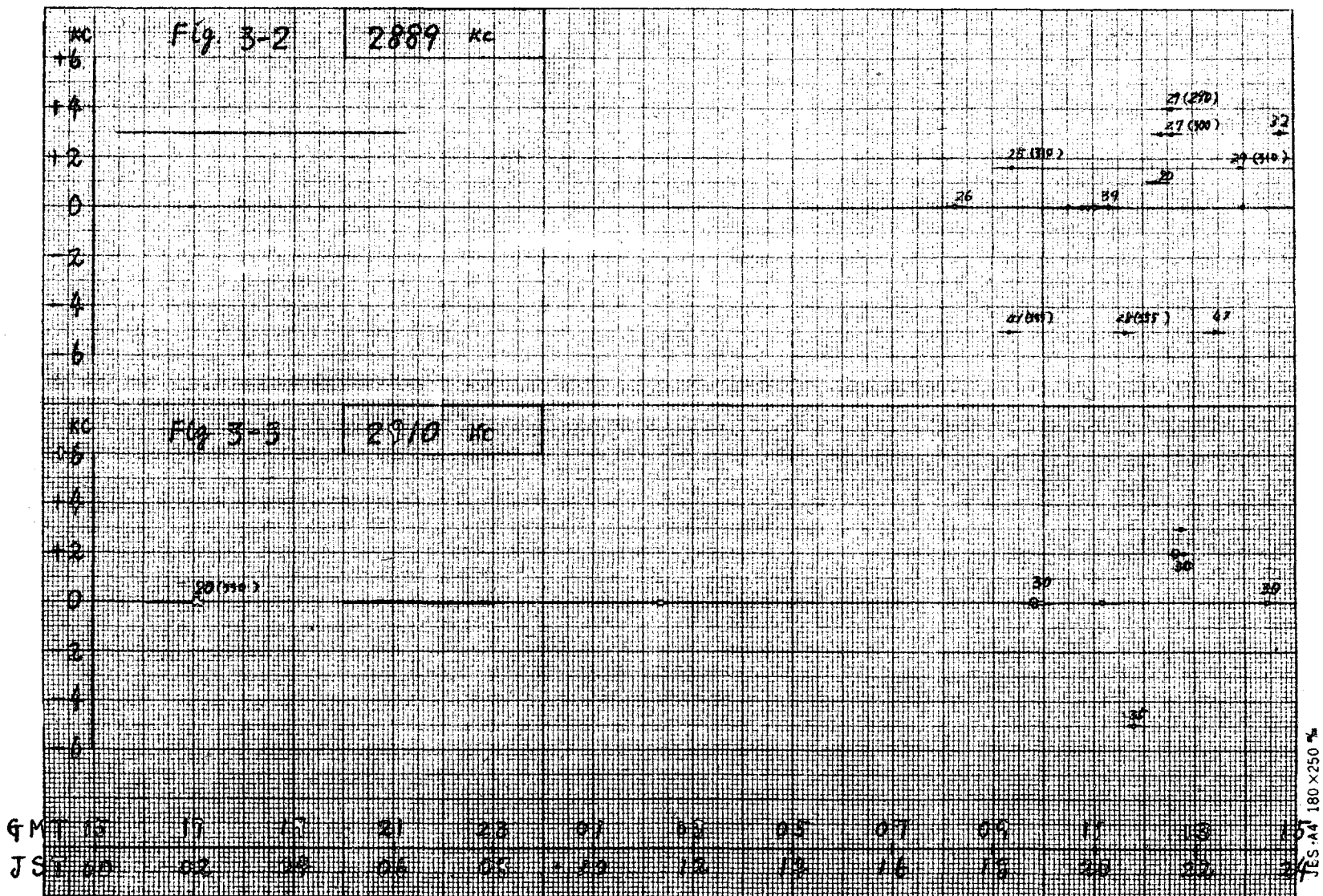
Note: \odot Telephony $\text{---}\text{---}\text{---}$ Continuous
 \diamond Telegraphy 37 (230) \leftarrow Bearings obtained (degree)
 \ast Others \uparrow Field intensity ($1\mu\text{V}/\square = 0\text{ db}$)

(Operating frequencies excepted.)



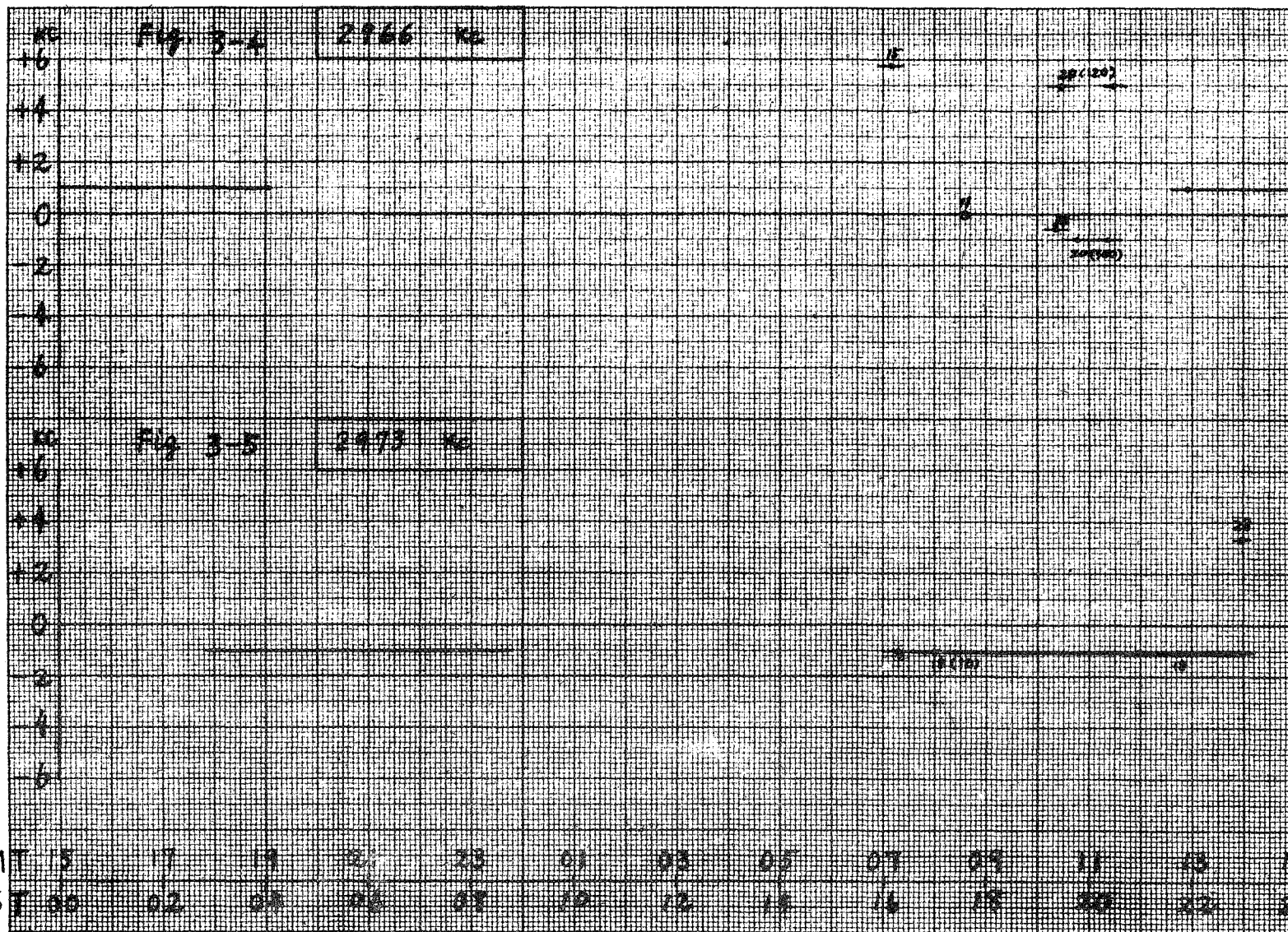
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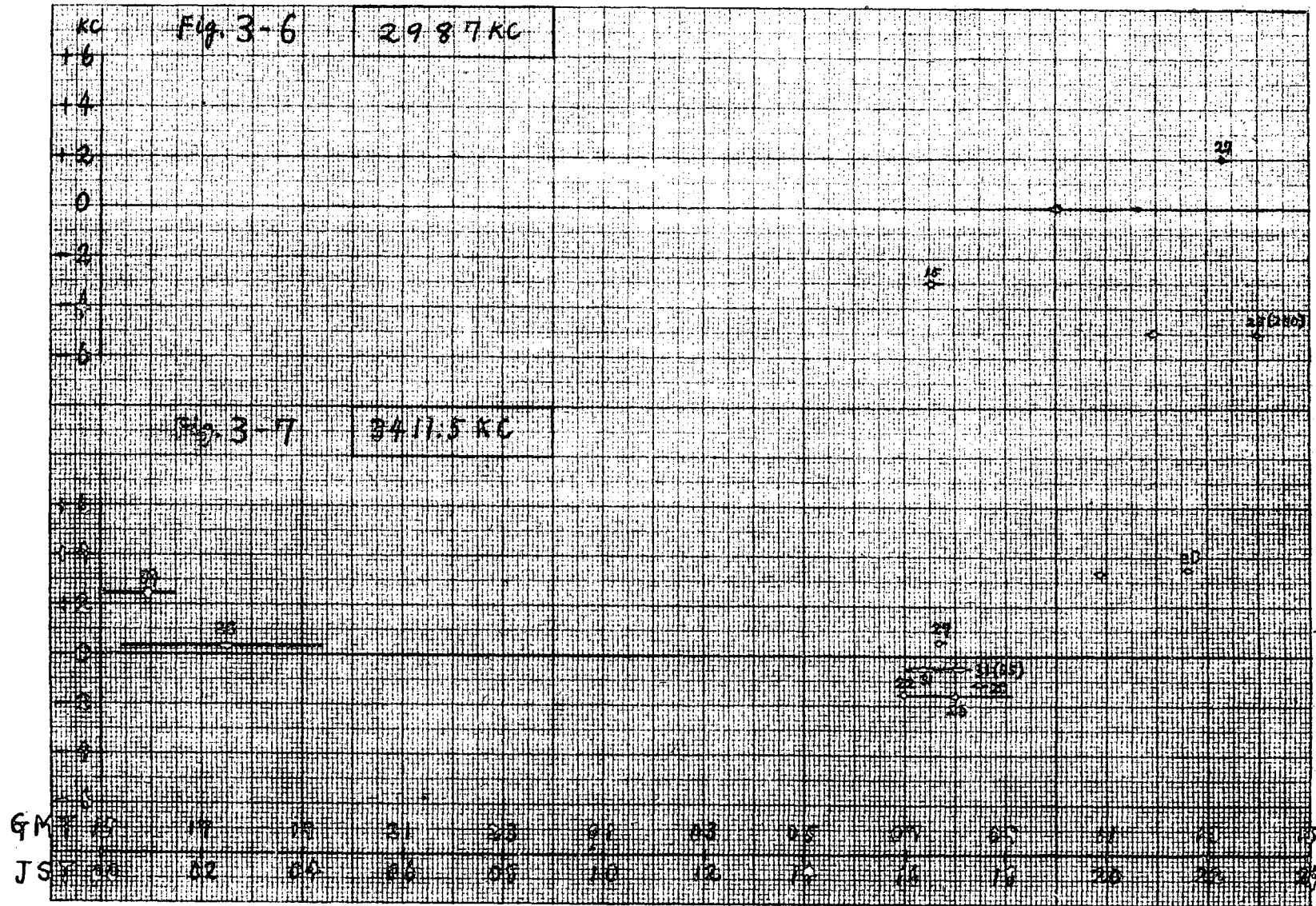


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JST	00	02	04	06	08	10	12	14	16	18	20	22	24

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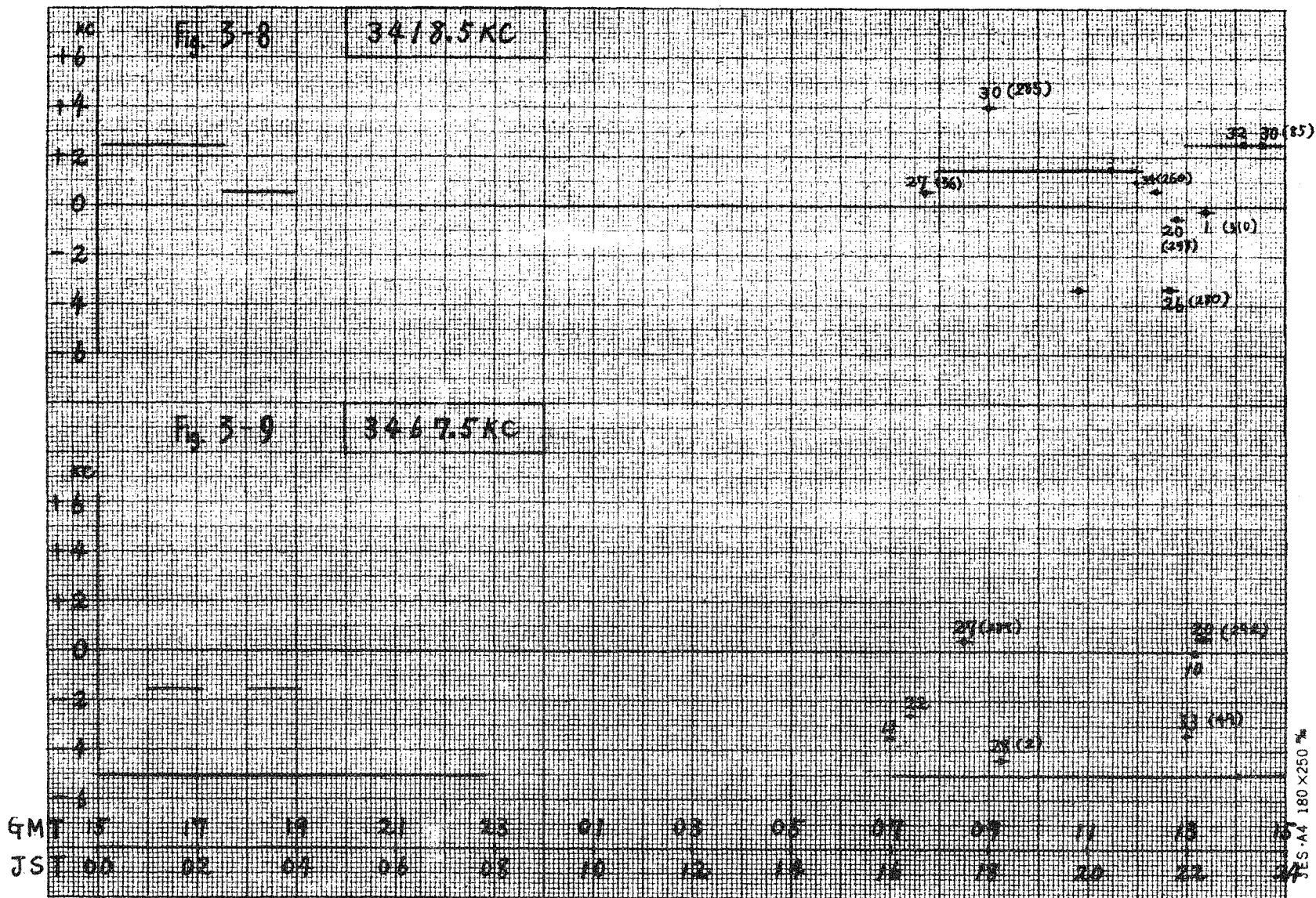
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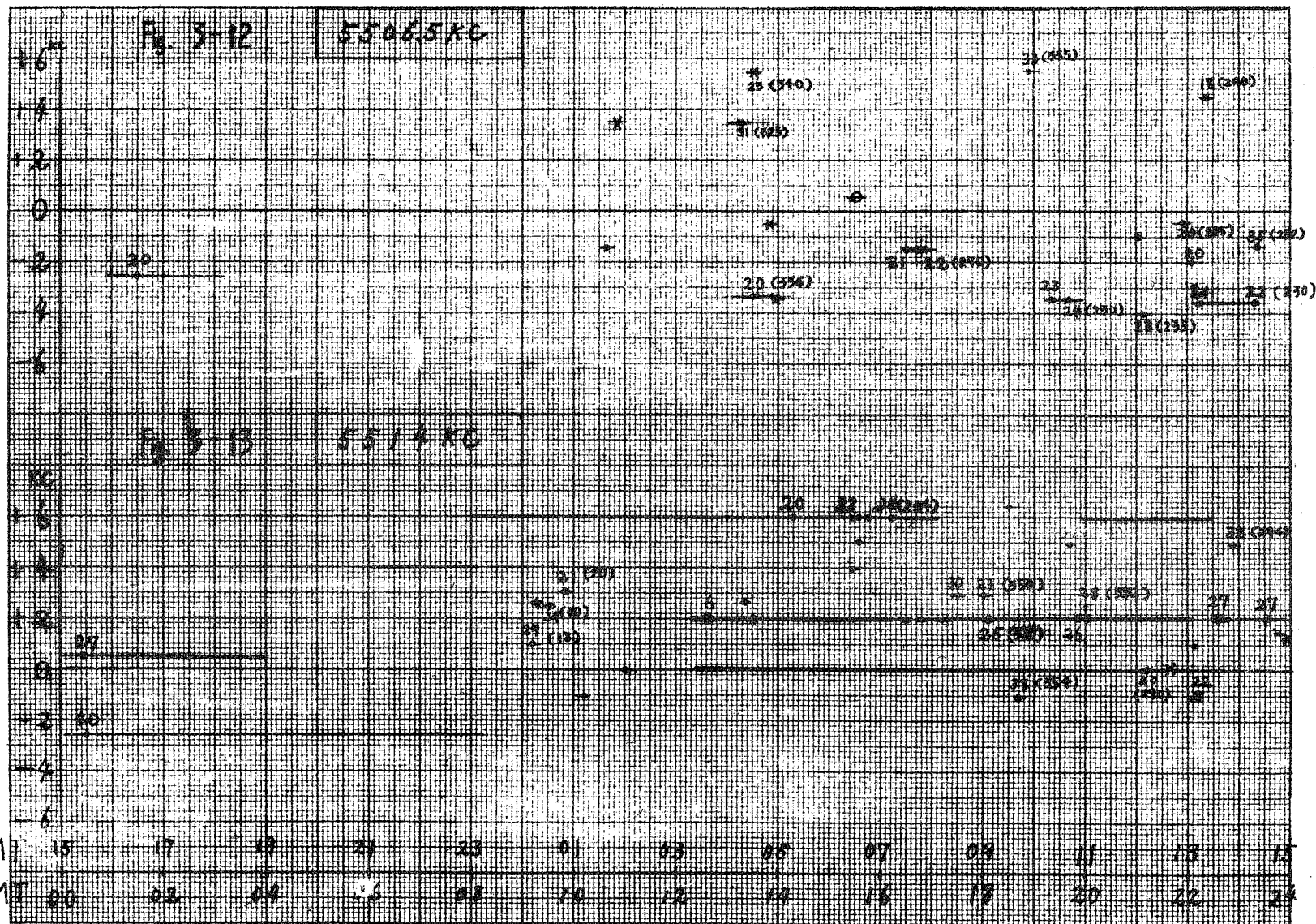


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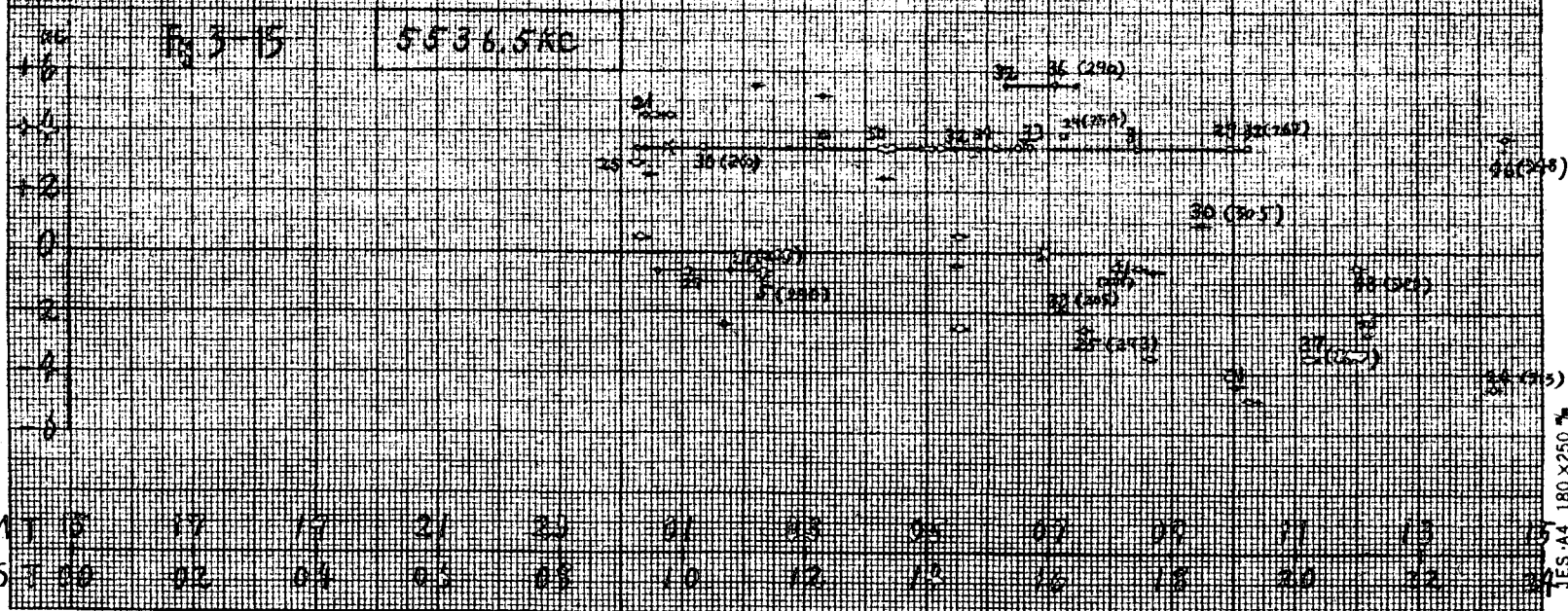
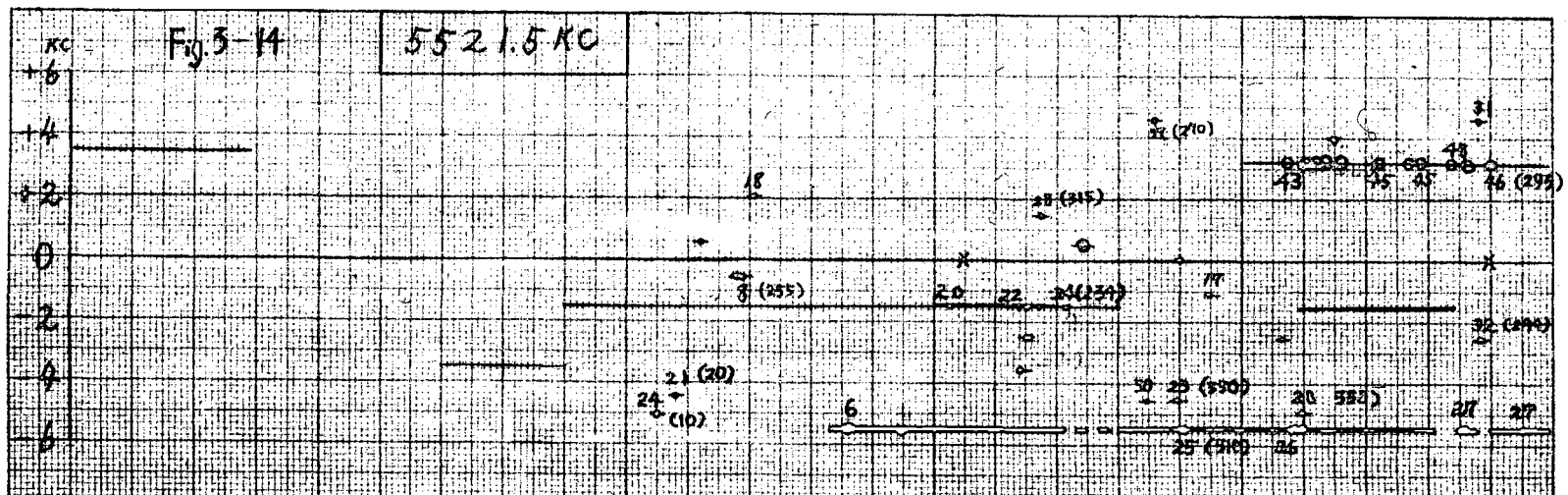
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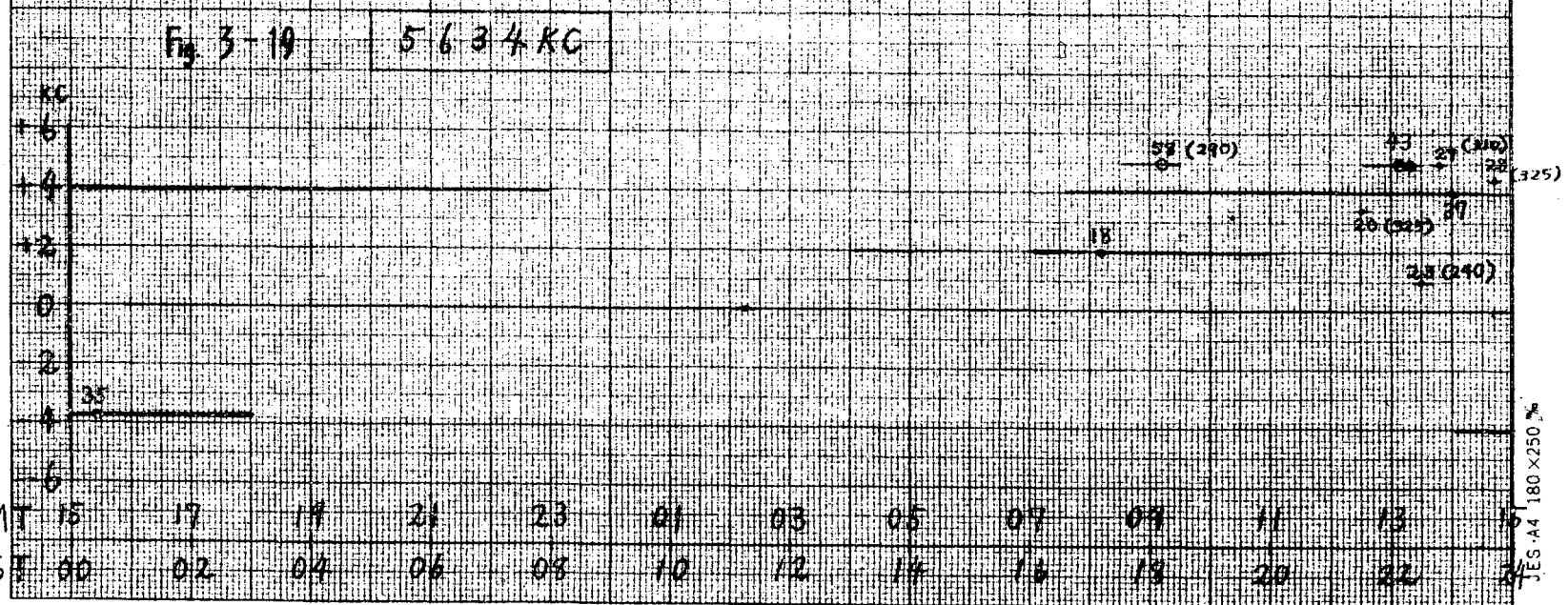
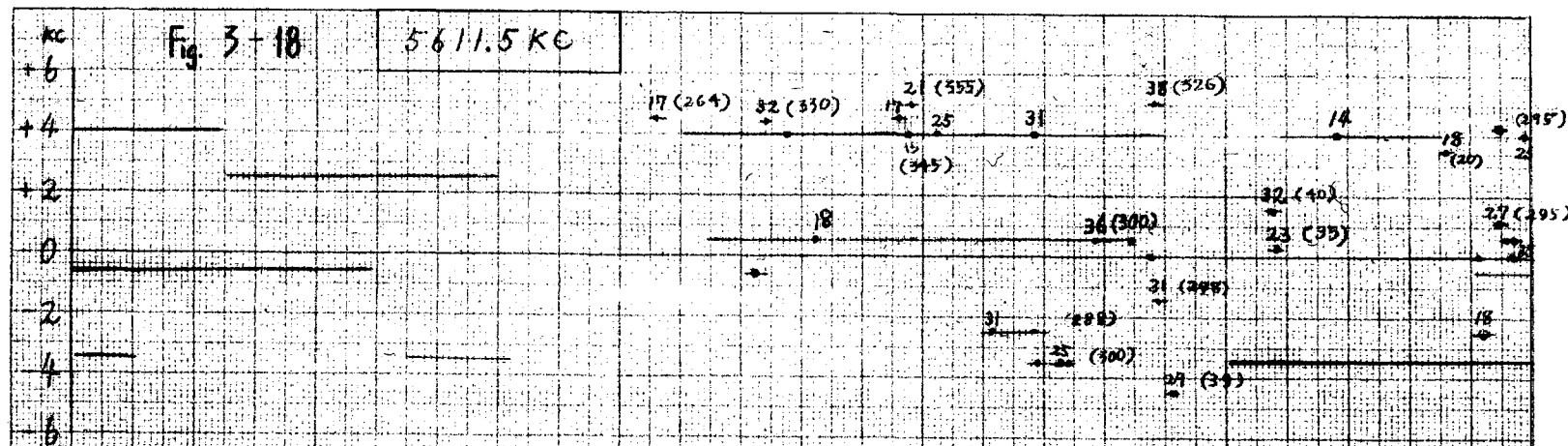
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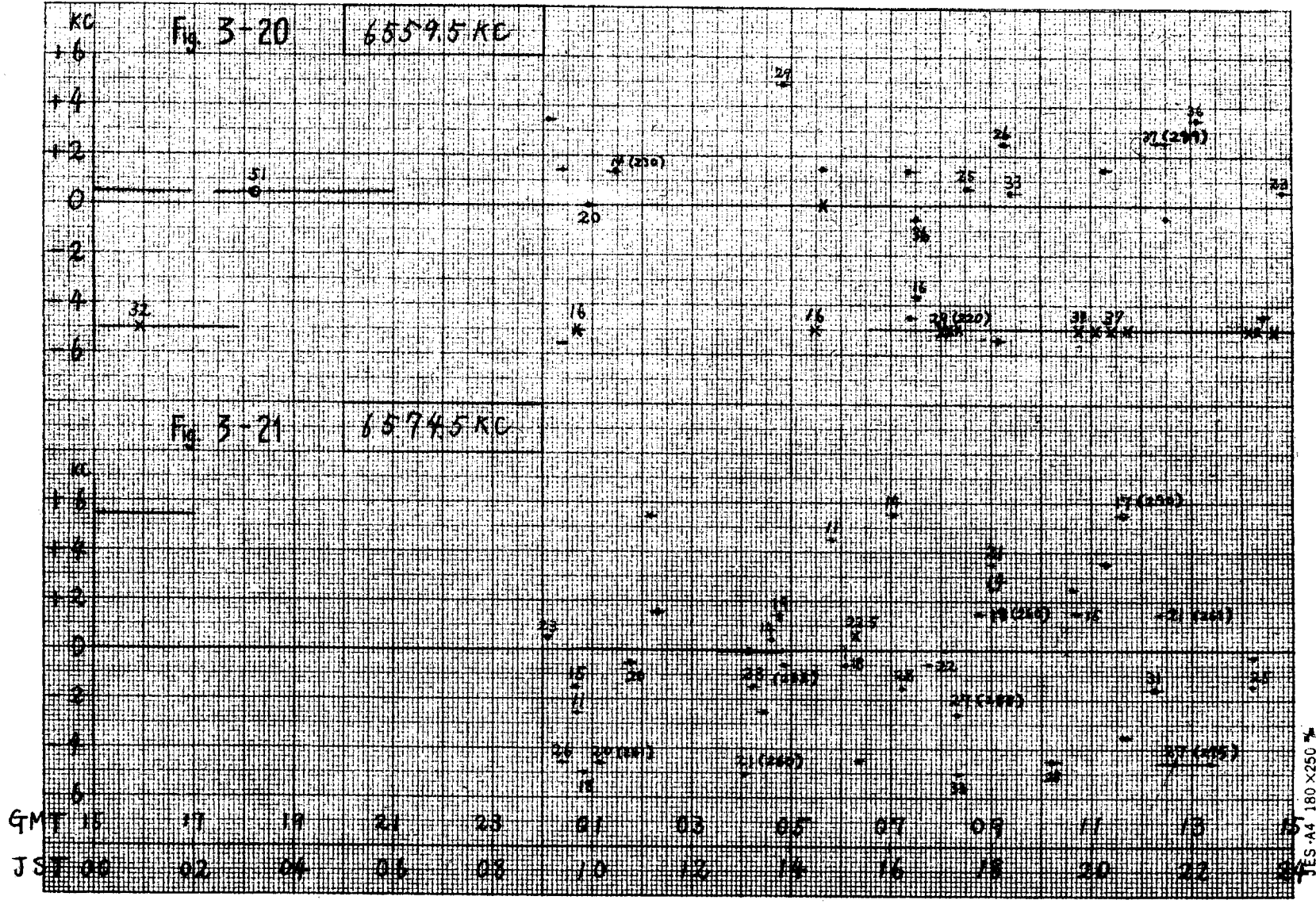
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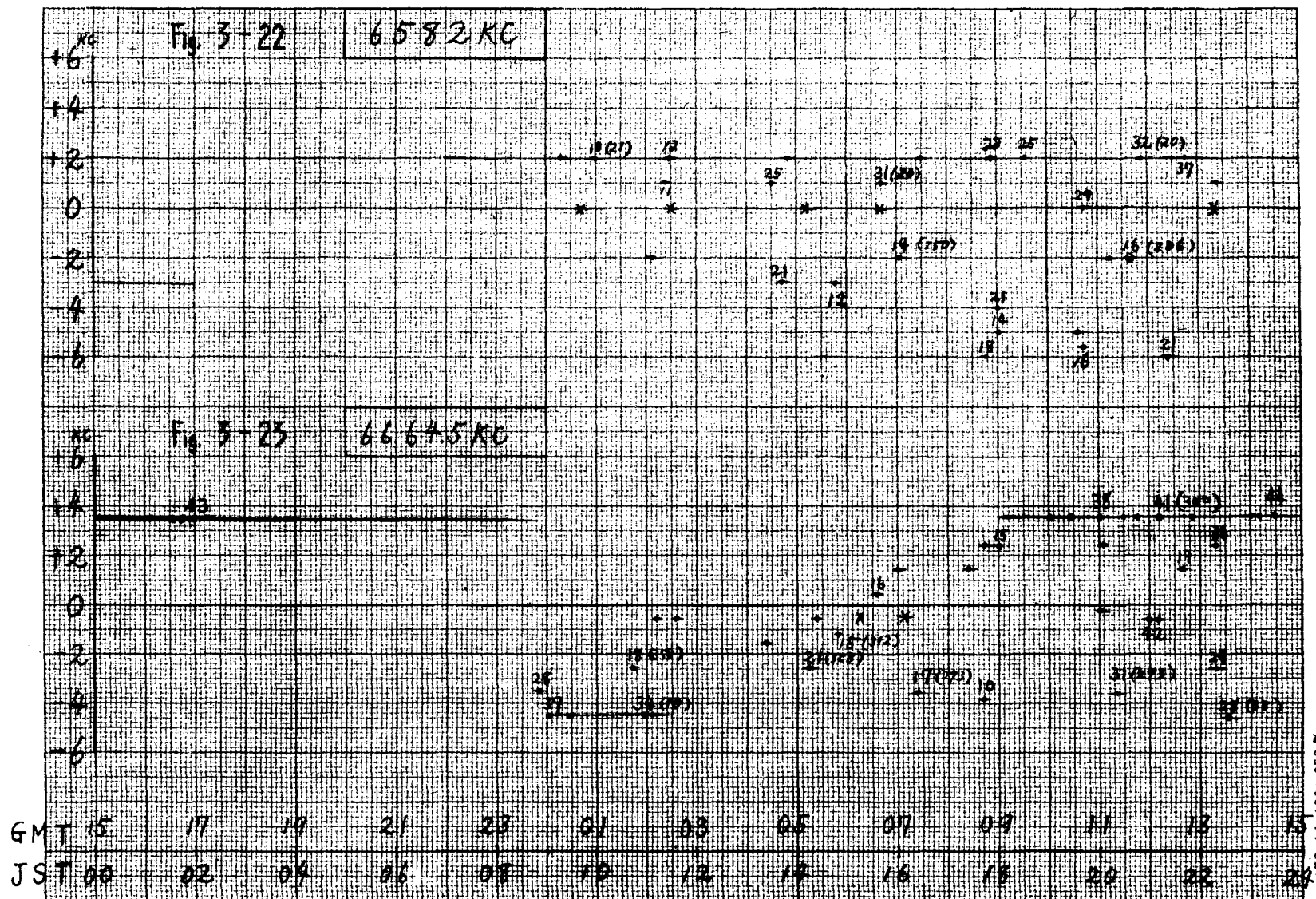
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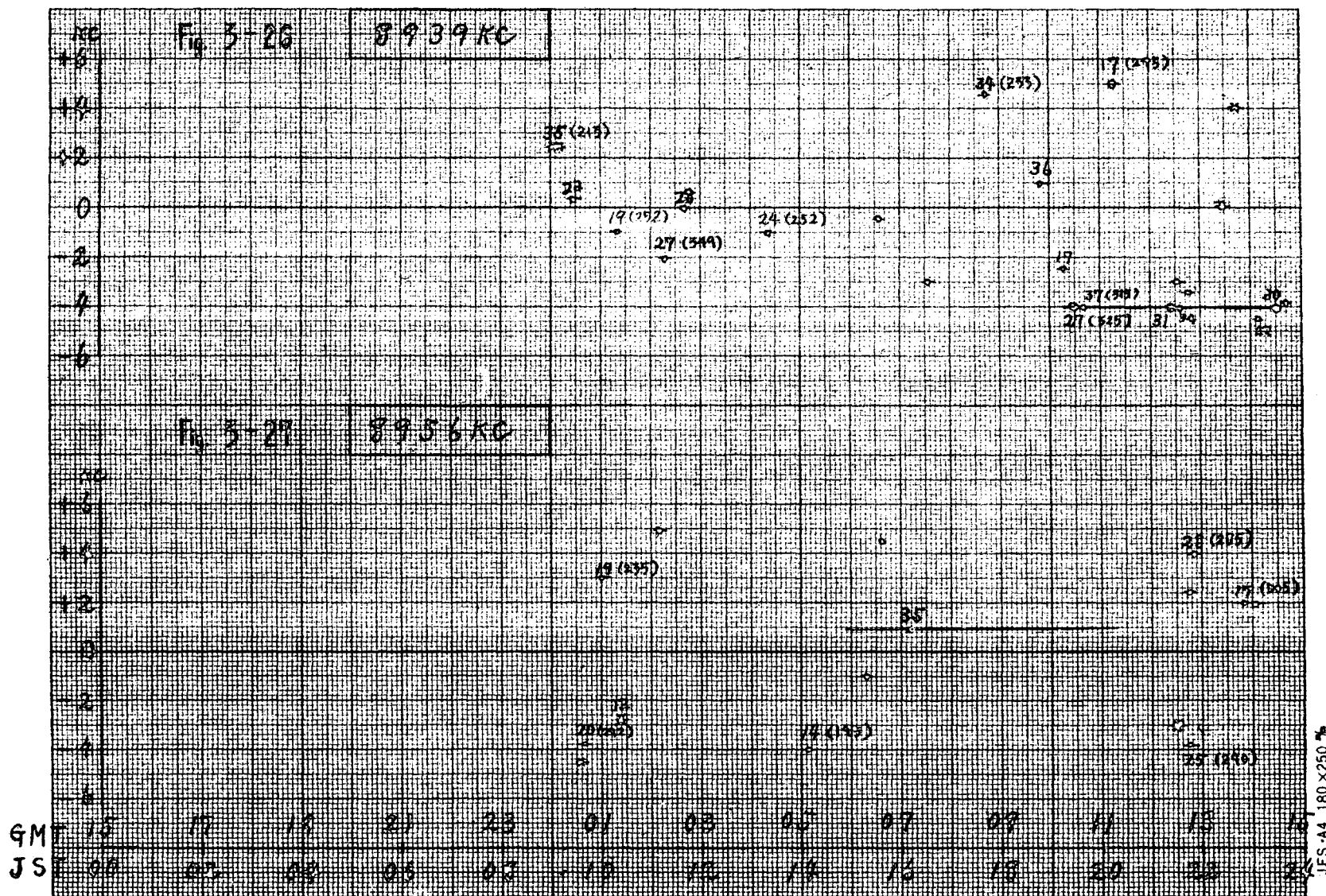


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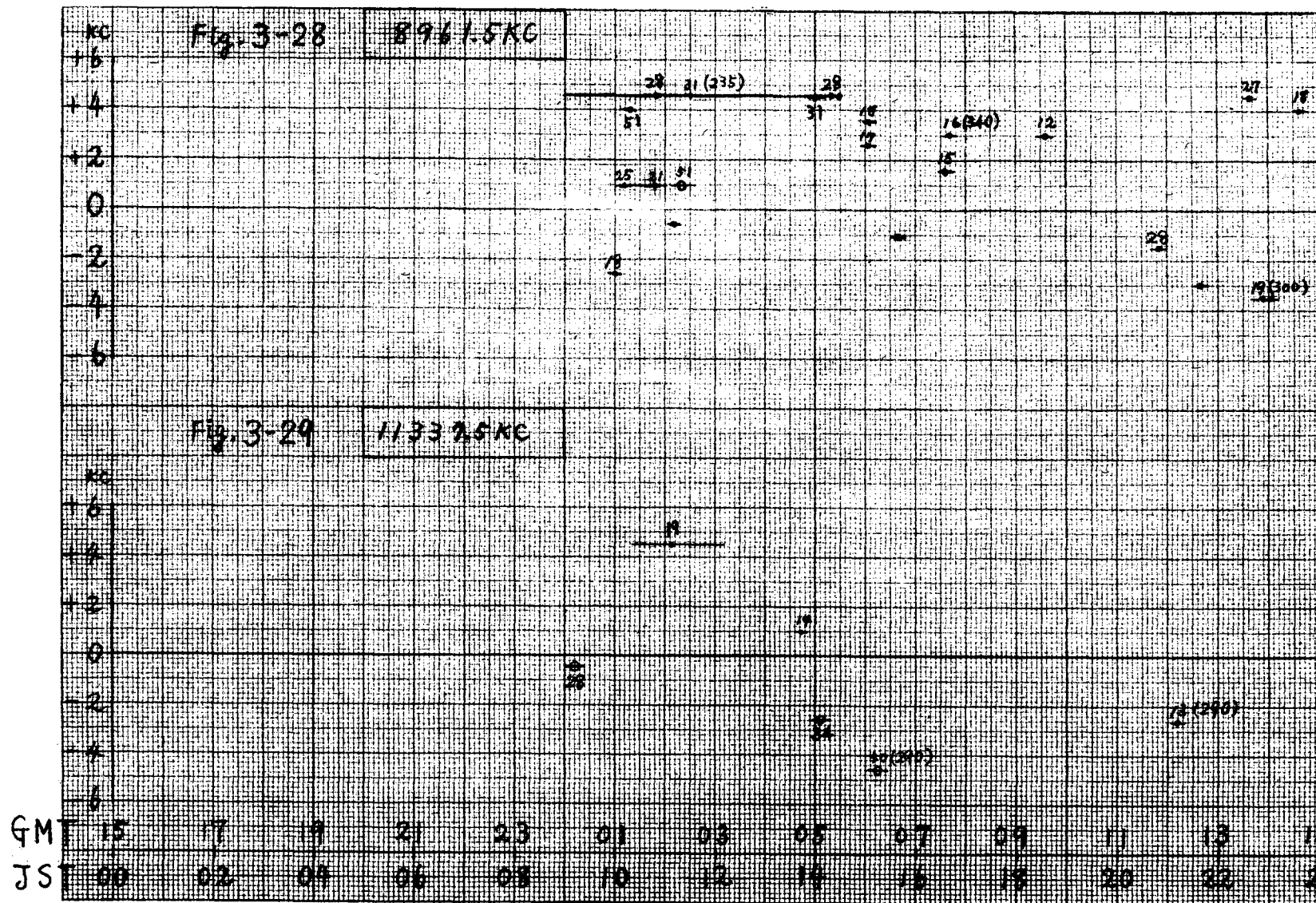
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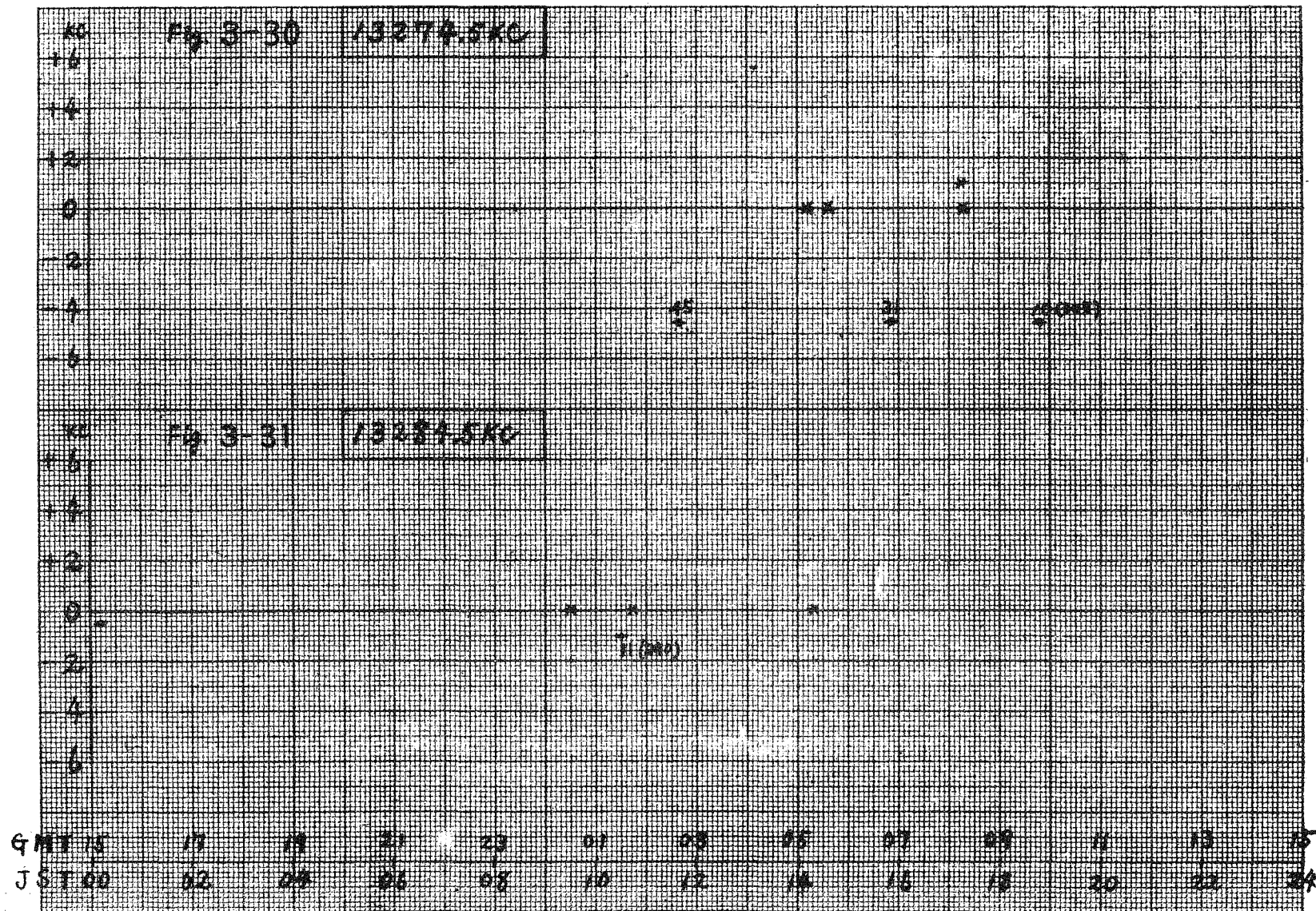
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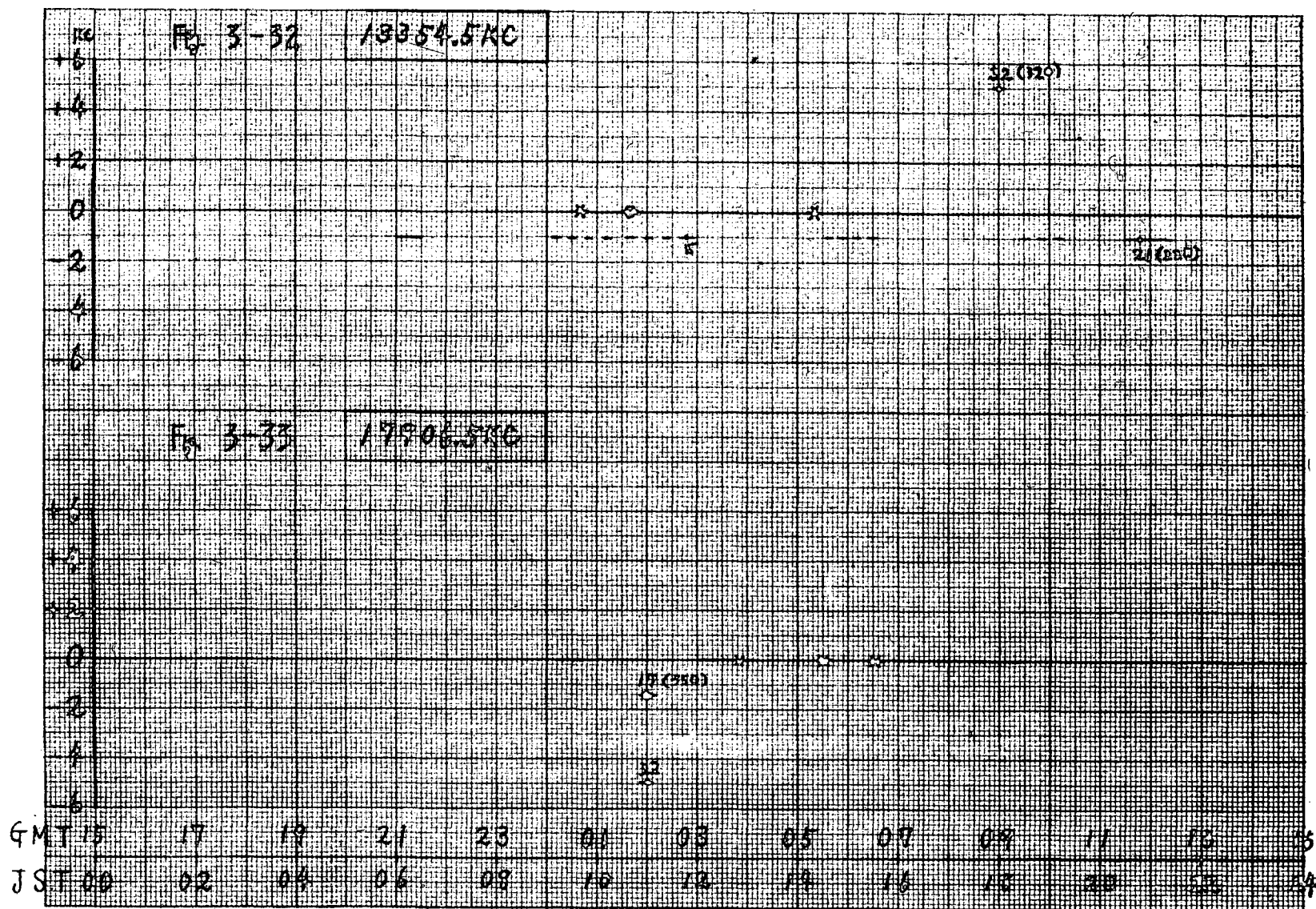
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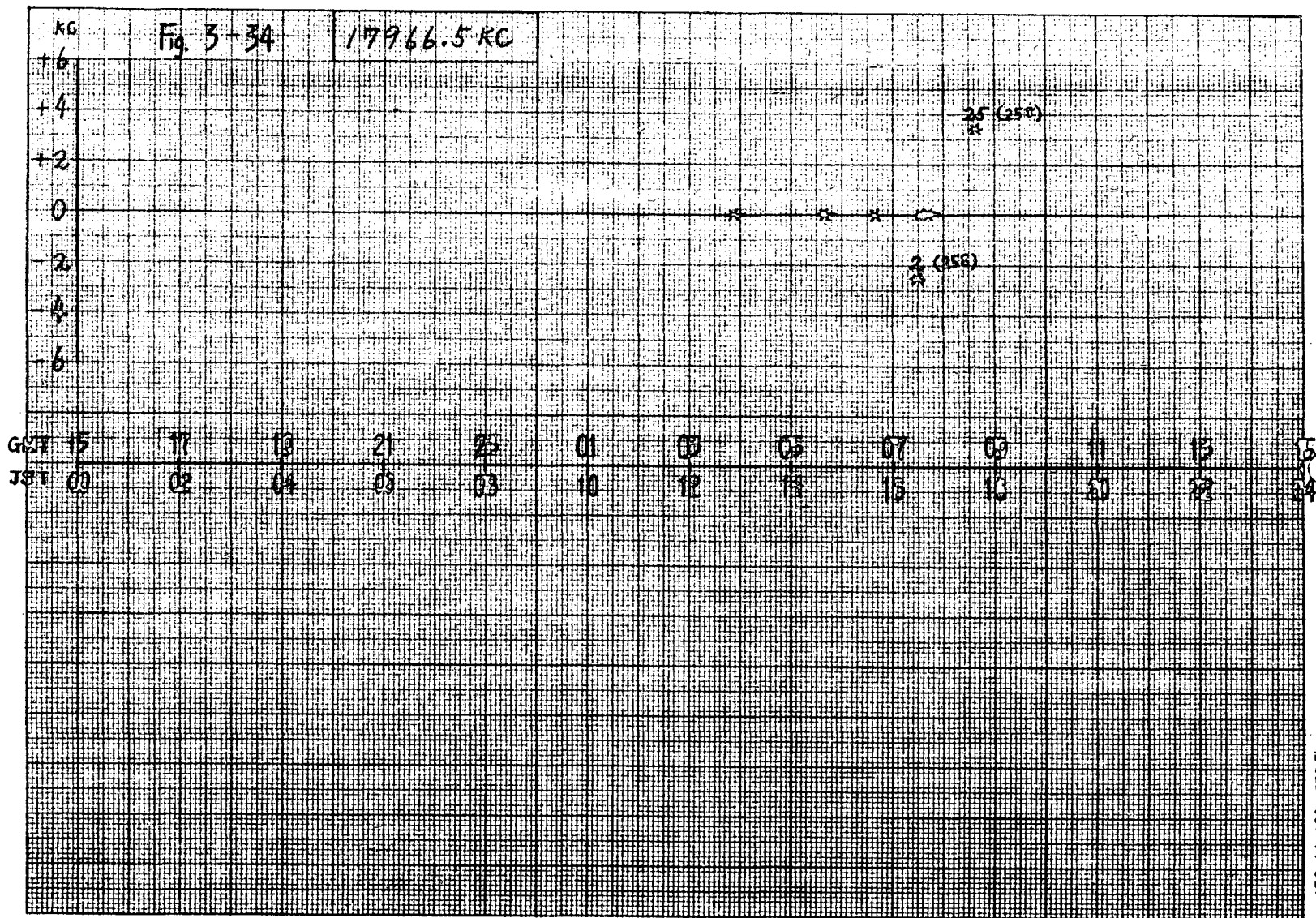
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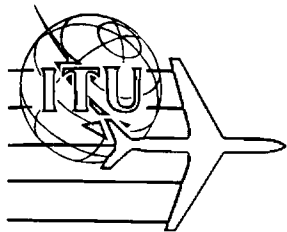
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AERONAUTICAL CONFERENCE

Document No. II/3-E

6 January 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

JAPAN

PROPOSALS FOR THE SECOND SESSION OF THE
EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE FOR THE PREPARATION
OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

PROPOSAL No. 1 : PROPOSAL FOR REQUIREMENT OF ALTERNATE FREQUENCY FOR
INTERFERED ONE

Proposal :

Since the frequency 5,521.5 kc/s allotted to the MWARA-NP has been experiencing harmful interference, it is proposed that the frequency be changed to another one which is anticipated to have no interference.

Reasons :

The frequency 5,521.5 kc/s allotted to the MWARA-NP has been, since around June 1962, experiencing harmful interference by high frequency broadcast, which proved a considerable hindrance to communications. Therefore, it is necessary to eliminate the interference by taking such measures as to replace the frequency 5,521.5 kc/s with one of the frequencies allotted to other areas at this time of reviewing the Frequency Allotment Plan.

PROPOSAL No. 2 : PROPOSAL FOR CHANGE OF AREA FOR FREQUENCY ALLOTMENT

Proposal :

It is proposed that the present allotment area for the frequency 5,536.5 kc/s be transferred from the RDARA Sub-Area 6C to the MWARA-CWP.

Reasons :

The frequency 5,536.5 kc/s allotted to the RDARA Sub-Area 6C has been in use in the MWARA-CWP, since the additional use of this frequency



in the MWARA-CWP was approved as one of the measures to reduce the congestion of traffic in the MWARA-CWP at the I.C.A.O. Pacific Regional Air Navigation Meeting which was held in October/November 1955 in Manila (see Recommendation No. 21). It is necessary to change the allotment area of the frequency 5,536.5 kc/s to the MWARA-CWP so as to cope with the recent increase in traffic in this area.

PROPOSAL No. 3 : PROPOSAL FOR REQUIREMENT OF FREQUENCIES FOR METEOROLOGICAL BROADCASTS TO AIRCRAFT

Proposal :

It is proposed that a frequency in the 13 Mc/s band be added to the Pacif.-MET.

Reasons :

1. A family of frequencies consisting of 2,980 kc/s, 5,574 kc/s and 8,905 kc/s is allotted to the Pacific-MET at present. The maximum communication range of the frequency 8,905 kc/s in summer daytime is approximately 800 nautical miles in case the sunspot number is 0, and approximately 540 nautical miles in case the sunspot number is 125.
2. To meet the increasing demand for obtaining the earliest meteorological information at such a long distance as about 1,100 nautical miles in keeping with the rapid increase of aircraft velocity recently, it is earnestly desired that a frequency in the 13 Mc/s band, which has more extensive communication range, be added.

PROPOSAL No. 4 : PROPOSAL FOR ADDITION OF A FAMILY OF FREQUENCIES TO THE MWARA-CWP

Proposal :

It is proposed that one more family of frequencies be allotted to the MWARA-CWP additionally.

Reasons :

1. A family of frequencies consisting of 2,966 kc/s, 5,506.5 kc/s, 8,862.5 kc/s, 13,354.5 kc/s and 17,906.5 kc/s is allotted to the MWARA-CWP at present. And, in addition to these frequencies, as one of the measures to reduce congestion in communication caused by the increase of traffic, it

was approved at the I.C.A.O. Pacific Regional Air Navigation Meeting in 1955 that the frequency 5,536.5 kc/s allotted to the RDARA-6C should be used in the MWARA-CWP in order to increase the use in the latter of frequencies in the 5 Mc/s band which are of high utility. Accordingly, this frequency has been in use in the MWARA-CWP.

2. However, even if more extensive use of VHF long range communication system in the future be taken for granted, the future demand for HF will remain, and traffic will continue to increase because the MWARA-CWP is a vast area over the sea. Taking such trend of increase in traffic into consideration, it is necessary to secure the additional allotment of one more family of frequencies to the MWARA-CWP.

PROPOSAL No. 5 : PROPOSAL RELATING TO CARRIER (REFERENCE) FREQUENCIES IN THE SSB SYSTEM

Proposal :

1. Carrier (reference) frequencies in the SSB system shall be integral multiples of 1 kc/s.
2. With respect to the use of SSB emissions in the upper half of the channel in the bands below 8 Mc/s, in the case of centre frequencies having fractions of 0.5 kc/s, the carrier (reference) frequencies shall be 0.5 kc/s lower than those centre frequencies.
3. With respect to the use of SSB emissions in the lower half of the channel in the bands below 8 Mc/s, in the case of centre frequencies of integral multiples of 1 kc/s, the carrier (reference) frequencies shall be 3 kc/s lower than those centre frequencies.
4. The centre frequencies of channels in the bands above 10 Mc/s shall be arranged by integral multiples of 1 kc/s.

Reasons :

1. In order to contribute to the early solution of the problem of world-wide shortage of high frequencies and to the improvement in quality of communications, it is necessary to take appropriate measures in the forthcoming Second Session for making the use of the SSB system feasible.
2. According to the decision on frequency separation adopted in the First Session, there will be, in the bands below 8 Mc/s, an inter-mixture of the frequencies having fractions of 0.5 kc/s and those of integral

multiples of 1 kc/s. And therefore, the same as the above would be presented in carrier (reference) frequencies in the SSB system in both cases where the upper half is in use and where the lower half is in use. In consequence, equipments designed for integral multiples of 1 kc/s would not be usable in either case, eventually resulting in unfavourable channelling efficiency.

3. In case the DSB system and the SSB system in use of the upper half of the channel be used in common, the compatibility between both systems would not be hindered even though there might be 0.5 kc/s difference in the carrier (reference) frequencies. However, the 0.5 kc/s difference would prove hindrance to the mutual communications between SSB equipments.

4. With respect to SSB equipments, the problem - which frequency should be adopted, as carrier (reference) frequencies, from among those of integral multiples of 1 kc/s, 0.5 kc/s and 0.1 kc/s - has not yet come to a conclusion. However, as it is a predominant trend that equipments designed for integral multiples of 1 kc/s should be developed from technical and economic point of view, it is desirable that appropriate steps be taken attaching importance to the foregoing trend.

PROPOSAL No. 6 : PROPOSAL RELATING TO RECOMMENDATION ON INTERNATIONAL MONITORING WITH A VIEW TO ELIMINATING THE EMISSION ON FREQUENCIES IN THE BANDS ALLOCATED EXCLUSIVELY TO THIS SERVICE BY STATIONS OF SERVICES OTHER THAN THE AERONAUTICAL MOBILE (R) SERVICE

Explanatory Memorandum

1. Pursuant to Resolution No. 2 in the Report of the First Session of the Aeronautical E.A.R.C. in 1964, the special programme for radio monitoring was carried out on a world-wide scale twice, namely from 28 September to 4 October 1964 and from 2 to 8 August 1965. As a result of the monitoring on the emissions by stations of other classes of service operating in the bands allocated exclusively to the Aeronautical Mobile (R) Service, the I.F.R.B. suggested, with respect to the emissions of the stations which were positively identified, to the Administrations having jurisdiction over the stations to take possible steps to transfer the stations to frequencies in bands appropriate to the class of service concerned. However, with respect to the emissions which were not positively identified, no measures have been taken.

2. According to the monitoring data obtained by the monitoring stations of Japan under the foregoing special programme, the emissions which were observed but not identified amount to as much as 70 per cent of the observed. Judging from the above, it is presumed that there are, in the frequency bands allocated exclusively to the Aeronautical Mobile (R) Service, a considerable number of emissions world-widely, which are out-of-band and not identified.

Such being the case, it is also presumed that the foregoing emissions are proving a considerable hindrance to the aeronautical mobile service which is vital to the protection of safety of human life and property in the air on domestic as well as international air routes.

3. In view of the foregoing it is necessary that those harmful emissions should be expelled immediately from the frequency bands allocated exclusively to the Aeronautical Mobile (R) Service. For this purpose, it is necessary to take such appropriate measures as to carry out direction finding on a world-wide scale to identify, and suppress, all sources of interference.

Annex : 1

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A N N E X

DRAFT RECOMMENDATION No.

RELATING TO INTERNATIONAL MONITORING WITH A VIEW TO
ELIMINATING THE EMISSION ON FREQUENCIES IN THE BANDS ALLOCATED
EXCLUSIVELY TO THIS SERVICE BY STATIONS OF SERVICES OTHER
THAN THE AERONAUTICAL MOBILE (R) SERVICE

The Second Session of the Aeronautical Extraordinary Administrative Radio Conference, Geneva, 1966,

considering

- a) that the Aeronautical Mobile (R) Service is a safety service and the emissions by stations of other classes of service operating in this band proved to be hindrance to a safety of human life and property in the air;
- b) that, as a result of the special programme for radio monitoring conducted pursuant to Resolution No. 2 of the First Session of the Aeronautical Extraordinary Administrative Radio Conference, Geneva, 1964, a considerable number of emissions by out-of-band stations were observed in this band; and,
- c) that a considerable number of emissions, the sources of which could not positively be identified, were observed in this band;

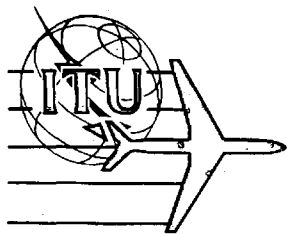
recommends to the I.F.R.B.

- 1. that it should continue to plan international monitoring by the Administrations operating international monitoring stations, with a view to eliminating the emissions by out-of-band stations operating in the bands allocated exclusively to the Aeronautical Mobile (R) Service;
- 2. that the foregoing international monitoring should be so planned as to include the following matters, with a view to identify such emissions likely to cause interference as long emissions with wide occupied bandwidths

- 1) To use, if available, automatic monitoring recording equipments in order to ensure the identification of sources of interference;
- 2) to carry out direction finding, and
- 3) to make measurement of field intensity, and

requests the Administrations

to collaborate as much as possible in this plan with the intent to facilitate the performance of the above-mentioned international monitoring and to bring about desired results.



AERONAUTICAL CONFERENCE

Document No. II/4-E
6 January 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

CANADA

PROPOSALS FOR THE
I.T.U. AERONAUTICAL EXTRAORDINARY
ADMINISTRATIVE RADIO CONFERENCE

Having considered the recommendations of the I.C.A.O. Special Communications Meeting (1963) and the first session of the I.T.U. E.A.R.C. (1964) the following changes to Appendix 26 are submitted for the consideration of the Conference. It is proposed that the existing provisions of Appendix 26 which are exclusive to the Aeronautical Mobile (OR) Service will be retained in Appendix 26 while those provisions relating exclusively to the Aeronautical Mobile (R) Service will be included in an Appendix 26 bis. The proposed Appendix 26 bis would consist of Parts I and II of the existing Appendix 26 as revised by the Conference. Parts III and IV relate to the Aeronautical Mobile (OR) Service and would be retained as Appendix 26. It is also proposed that provisions common to both services will be maintained in the two appendices.

These proposals have been prepared in conformity with the Convention and the reasons given have been kept as brief as possible with all amendments and additions underlined. It will be necessary to make certain changes in associated Regulations and where it is considered appropriate separate proposals will be submitted to the Conference.



APPENDIX 26 bis

Part I, Section I - Definitions - No change.

Section II - Replace by the following:

"Section II. Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service."

A. Factors affecting the Plan

1. Frequency separation

The frequency separations indicated in the following table are adequate to permit high capacity means of communication.

Band (kc/s)	Separation (kc/s)	Band (kc/s)	Separation (kc/s)
2850 - <u>3025</u>	7	8815 - <u>8965</u>	<u>7</u>
3400 - <u>3500</u>	7	10005 - 10100	<u>8</u>
4650 - <u>4700</u>	7	<u>11275</u> - 11400	<u>8</u>
5450 - <u>5480</u> (Reg 2)	<u>7</u>	<u>13260</u> - 13360	<u>8</u>
5480 - <u>5680</u>	<u>7</u>	17900 - <u>17970</u>	<u>8</u>
6525 - <u>6685</u>	<u>7</u>		

- a) It is assumed that A3 modulation frequencies will be limited to 3000 cycles per second and that the sideband radiation of other authorized emissions will not exceed that of A3 emissions.
- b) The use of channels as derived from the above table, for the various classes of emissions will be subject to special arrangements by the administrations concerned in order to avoid the interference which may result from the simultaneous use of the same channel for several classes of emission, no inherent priority being given to any particular class of emission.
- c) It is recognized that two or more channels can be derived from each of the channels provided under this frequency separation plan.

- d) The grouping of adjacent channels derived from the above table to permit the satisfaction of particular requirements, will be subject to special arrangements by the administrations concerned.
- e) The arrangements contemplated in b) c) and d) above should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled "Special Agreements".

2.

Frequencies to be allotted.No change in text. Table to be revised as follows:

2850 - 3025	5450 - 5480	6525 - 6685	10005 - 10100	17900 - 17970
2854	Region 2	6531	10010	17905
2861	5454	6538	10018	17913
2868	5461 4 chan-	6545	10026	17921
2875	5469 nels	6552	10034	17929 8 chan-
2882	5476 7 kc/s	6559	10042 11 chan-	17937 nels
2889	separa-	6566	10050 nels	17945 8 kc/s
2896	tion	6573	10058 8 kc/s	17953 separa-
2903		6580	10066 separa-	17961 tion
2910	5480 - 5680	6587	10074 tion	
2917		6594 22 chan-	10082	
2924 24 chan-	5484	6601 nels	10090	
2931 nels	5491	6608 7 kc/s	11275 - 11400	
2938 7 kc/s	5498	6615 separation	11280	
2945 separa-	5505	6622	11288	
2952 tion	5512	6629	11296	
2959	5519 28 chan-	6636	11304	
2966	5526 nels	6643	11312	
2973	5533 7 kc/s	6650	11320	
2980	5540 separa-	6657	11328 15 chan-	
2987	5547 tion	6664	11336 nels	
2994	5554	6671	11344 8 kc/s	
3001	5561	6678	11352 separa-	
3008	5568		11360 tion	
3015	5575	8815 - 8965	11368	
3023.5 (R) & (OR)	5582		11376	
3400 - 3500	5589	8820	11384	
	5596	8827	11392	
3404	5603	8834	13260 - 13360	
3411	5610	8841	13266	
3418	5617	8848	13274	
3425	5624	8855	13282	
3432 14 chan-	5631	8862	13290	
3439 nels	5638	8869	13298	
3446 7 kc/s	5645	8876 21 chan-	13306 12 chan-	
3453 separa-	5652	8883 nels	13314 nels	
3460 tion	5659	8890 7 kc/s	13322 8 kc/s	
3467	5666	8897 separa-	13330 separa-	
3474	5673	8904 tion	13338 tion	
3481		8911	13346	
3488	5680 (R) & (OR)	8918	13354	
3495		8925		
4650 - 4700		8932		
		8939		
4654		8946		
4661 7 chan-		8953		
4668 nels		8960		
4675 7 kc/s				
4682 separa-				
4689 tion				
4696				

Reasons:

This proposed channeling arrangement conforms to Appendix "D" to paragraph 9.10 of the COSP II report based on the use of DSB while providing flexibility for logical evolution of SSB on a channel splitting basis and also catering to the possible introduction of any systems such as facsimile, data transmission, etc.

This arrangement will also provide an additional 12 DSB channels, six of which will be between 5480 and 8965 kc/s or that part of the spectrum where additional channels are needed most for aeronautical purposes.

At the first session of the Aeronautical EARC the limitations of existing SSB equipment presented some difficulty in the utilization of channel frequencies ending in .5 kc/s. Under the proposed arrangement this difficulty would be eliminated. Adoption of this proposed channeling arrangement would enable SSB equipment limited to operation on 1 kc/s increments to operate in the upper half of each channel. In addition this proposed plan will facilitate the work of I.C.A.O. in developing system characteristics required for full implementation of SSB on a world-wide basis.

Add the following new paragraphs:

"Classes of emission

In the Aeronautical Mobile (R) Service the use of emissions such as listed below is permissible, provided that such use:

- complies with the applicable provisions of Part , paragraphs and ;
- does not cause harmful interference to other users of the frequency.

Telephony - Amplitude modulated

- double sideband (A3)
- single sideband, reduced carrier (A3A)
- single sideband, full carrier (A3H)
- single sideband, suppressed carrier (A3J)
- two independent sidebands (A3B)

Telegraphy (including automatic data systems)

Amplitude modulation

- without the use of a modulating frequency (by on - off keying) (A1)
- on - off keying of an amplitude - modulating audio frequency or audio frequencies, or by the on - off keying of the modulated emission (A2)
- multi-channel voice frequency telegraphy, single sideband, reduced carrier (A7A)
- multi-channel voice frequency telegraphy, single sideband, full carrier (A7H)
- multi-channel voice frequency telegraphy, single sideband, suppressed carrier (A7J)

Frequency modulation

- frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1).
- by the on - off keying of a frequency modulating audio frequency or by the on - off keying of a frequency - modulated emission (F2)

Facsimile

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

Reasons:

In accordance with the decisions of the first session of this Conference.

Add the following new paragraphs:

Power

Unless otherwise indicated in Part II of this Appendix, 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 <u>F1</u>	<u>Aeronautical Stations</u> <u>Aircraft Stations</u>	<u>1.5 kW</u> <u>75 W</u>
A3 <u>A3H</u> (100% modulated)	<u>Aeronautical Stations</u> <u>Aircraft Stations</u>	<u>6 kW</u> <u>300 W</u>
<u>Other classes of emission</u>	<u>Aeronautical Stations</u> <u>Aircraft Stations</u>	<u>6 kW</u> <u>300 W</u>

It is assumed that the maximum peak envelope power of 1.5 kW specified above for aeronautical stations will produce the effective radiated power of 1 kW (unmodulated) used as a basis for the Interference Range Contours. Aeronautical stations serving MWARA's may exceed the power limits specified above in order to provide satisfactory communication with aircraft. In each such case, the administration having jurisdiction over the aeronautical station shall ensure:

- a) that co-ordination is effected with the administrations concerned when there is any possibility of interference;
- b) that harmful interference is not caused to stations using frequencies in accordance with the applicable provisions of the Allotment Plan.
- c) that the power transmitted into other MWARA's or RDARA's allotted the same frequency(ies) is not greater than that permitted under the technical criteria on which the Allotment Plan is based.
- d) that the directional characteristics of the antenna are such as to minimize radiation in unnecessary directions, particularly into other MWARA's or RDARA's which have been allotted the same frequency (ies).
- e) that full details of the assignment(s) shall be notified to the I.F.R.B. including the transmitting antenna characteristics.

It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified above. However, the use of such increased power shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.

When notifying the use of frequencies in the Aeronautical Mobile (R) Service the mean power will be considered equal to 0.375 of the peak envelope power in the case of A3 emissions and equal to 0.5 of the peak envelope power in the case of A3H emissions, based on a single sine wave oscillation modulating the emission at 100%. In the case of A1 and F1 emissions the mean power and the peak envelope power are of equal value. For the conversion factor to be applied to all other emissions, reference should be made to C.C.I.R. Recommendation 326.

Reasons:

Generally in accordance with the decisions reached at the first session but expanded for clarification purposes.

Add the following new paragraphs:

"Technical Provisions for Single Sideband Amplitude Modulated Telephony. The following modes of single sideband telephony may be employed:

- a) Full carrier (A3H) with the carrier emitted at a power level of 6 db or less below the peak envelope power;
- b) Reduced carrier (A3A) with the carrier emitted at a power level between 16 db and 26 db below the peak envelope power;
- c) Suppressed carrier (A3J) with the carrier restricted to a power level more than 32 db below the peak envelope power.

Spurious emissions, as defined in No. 92 of the Radio Regulations shall be attenuated at least 40 db below the desired emissions.

Single sideband radiotelephone equipment operating in the Aeronautical Mobile (R) bands between 2850 and 17970 kc/s shall be capable of operating at integral multiples not greater than 0.5 kc/s. Equipment limited to integral multiples of 1 kc/s operation may continue to operate provided that such operation in the 7 kc/s channels is restricted to the upper halves of the channels shown in the Allotment Plan.

Reasons:

To conform with C.C.I.R. Recommendation 326 and the Radio Regulations, Geneva 1959.

A station using single sideband emissions shall be considered to be operating in accordance with the Allotment Plan if the necessary bandwidth is confined respectively within the upper or the lower half of the channel provided for double sideband emissions.

Subject to the provisions of paragraph a station using single side-band emissions may operate either in the upper half or in the lower half of the double sideband channels designated by the center frequency in the Allotment Plan;

- a) when using the upper half of the channel, the station shall use upper sideband emissions with the carrier at the channel frequency listed in the Allotment Plan;
- b) when using the lower half of the channel, the station shall use upper sideband emissions with the carrier at the following value below the channel frequency listed in the Allotment Plan:

Band	Carrier (reference) Frequency Relative to Center Frequency of Channel
<u>2, 3, 4, 5, 6 and 8 Mc/s</u>	<u>3500 c/s below</u>
<u>10, 11, 13 and 16 Mc/s</u>	<u>4000 c/s below</u>

The assigned frequency for single sideband radiotelephone emissions shall be at a value 1500 cycles above the carrier (reference) frequency.

Reasons:

In accordance with the decisions reached at the first session but modified to conform with the amended frequency separation table.

3. Channels Common to (R) and (OR) Services

No change.

4. No change.

5. Adaptation of Allotment Procedure Sixth line - replace the word "plans" by "plan".

Seventh line - replace by the following "Part I, Section II B of this Appendix".

6. No change.

7. No change.

8. No change.

B. Interference Range Contours

1. Second line - replace the words "radiated power" with "effective radiated power".

Add the following new paragraph:

"Two types of transparencies are provided for use respectively with the Mercator projection world maps and 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. This over-lap is included to provide continuity between transparencies of the two projections."

2. Type of Maps used

Replace by the following:

"These transparencies can be used only on a world or polar map of the projection and scales given on each transparency, and will not be suitable for use on any other scale 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. Change of Scale or Projection

First line - delete the word "Mercator".

4. Sharing Conditions Between Areas

Replace by the following:

"The transparencies are constructed on the basis of the following sharing conditions:

Areas	Bands between Mc/s	Sharing Conditions
MWARA TO MWARA	3 - 6.6 9 - 11.3 13 - 18	night propagation day propagation time separation <u>Note:</u> 6.6 Mc/s and 5.6 Mc/s sharing conditions considered 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

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 first Session of the Aeronautical E.A.R.C. (Geneva 1964) reviewed the conclusions drawn from this material and found them to have continuing validity.

5. Method of Use

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

Add the following new paragraph:

"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."

Place the centre 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.

A transmitter located at any point outside the contour will result, as defined in paragraph 1 above, in a protection ratio of better than 15 db.

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

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.

Add the following new paragraph:

"Gnomonic projection: For 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."

Reasons:

In accordance with the decisions reached at the first session.

6. Data for tracing interference contours

The data and tables for plotting interference contours which were agreed to by the first session of the E.A.R.C. are acceptable.

C. Radiated Powers

Delete this subsection.

Reasons:

Provisions relating to power are contained on page 6 of these proposals.

Part II

Plan for the Allotment of Frequencies for the Aeronautical Mobile (R) Service in the Exclusive Bands between 2850 and 17970 kc/s.

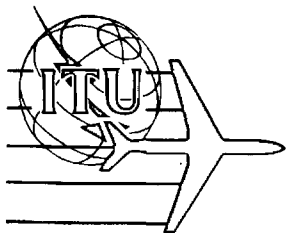
Section I

Description of the MWARA, RDARA and Sub-RDARA Boundaries

In so far as MWARA boundaries are concerned, these should be developed by the second session. The RDARA boundaries are a matter of national concern and Canada does not anticipate any changes in areas 10B, 10C, 10D or 10E.

Section II

Allotment of Frequencies to the Aeronautical Mobile (R) Service. To be decided by the second session of the E.A.R.C.



AERONAUTICAL CONFERENCE

Document No. II/5-E
6 January 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

CANADA

Draft Resolution

INTRODUCTION OF SINGLE-SIDEBAND SYSTEMS INTO THE AERONAUTICAL MOBILE (R) SERVICES

Considering

- a) that the revised channelling arrangement in the Aeronautical Mobile (R) bands between 2850 and 17 970 kc/s provides in part for the use of compatible single-sideband emissions;
- b) that Recommendation No. 4 of the Panel of Experts Final Report (Geneva, 1963), urges this Conference to give consideration to the possibility of an early and progressive conversion to single-sideband operation in these bands;

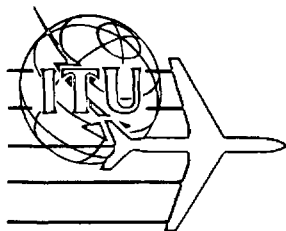
realizing

- a) that a substantial increase in the number of Aeronautical Mobile (R) channels will be realized when the use of double-sideband systems is discontinued;
- b) that unless a specific date is set, the full implementation of single-sideband systems in the Aeronautical Mobile (R) Service will be delayed indefinitely;

resolves

- 1) that prior to January 1, 1976, Administrations should strongly encourage that in so far as possible all systems in the Aeronautical Mobile (R) Service should employ single-sideband emissions capable of compatible operation with double-sideband systems;
- 2) that double-sideband systems in the Aeronautical Mobile (R) Service shall be replaced by single-sideband systems by January 1, 1976.





AERONAUTICAL CONFERENCE

Document No. II/6-E
18 January 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

DENMARK, NORWAY AND SWEDEN

FREQUENCY BANDS FOR OCEAN DATA RADIOCOMMUNICATION

A working group on communications of the Intergovernmental Oceanographic Commission (I.O.C.) at its Paris meeting 2 to 6 September 1963 formed a recommendation to the effect that, as an interim procedure, a 3.5 kc/s band within each of the bands allocated exclusively to the Maritime Mobile Service between 4 and 23 Mc/s might be used for the transmission of oceanographic measured data on a secondary basis. This recommendation was annexed to I.F.R.B. Circular No. 88 of 30 December 1963. It should be realized that this requirement does not fall within any of the defined services in the Table of Frequency Allocation of the Radio Regulations, and consequently operation of stations for such transmissions can only take place under No. 115 of the Radio Regulations.

Although recognizing the frequency requirement presented by the I.O.C., objections were made by a number of Administrations to the use of frequencies within the maritime mobile bands for this purpose, because of the congestion therein and of the developments of the maritime mobile services in the HF bands now taking place.

At a recent meeting of the I.O.C. Working Group on communications a report was agreed that urges Administrations to support the inclusion of the consideration of frequency requirements for oceanographic communications in the Agenda of an appropriate Administrative Radio Conference.

The frequency requirement for Ocean Data Radiocommunication is stated to be 6 channels, each having a width of 3.5 kc/s, suitably distributed in the HF spectrum. In the opinion of the Administrations of Denmark, Norway and Sweden it would be extremely difficult, if not impossible, to relinquish frequencies for allocation to this Special Service in the existing bands for Maritime Mobile Service, as well as for Fixed Service, as these bands are likely to remain congested, and possibly to be further loaded in the future. In view of this congestion and the explanation given above, Denmark, Norway and Sweden would like to propose



that the 2nd Session of the Aeronautical Extraordinary Administrative Radio Conference should consider this request and refrain from allotting a sub-band of 3.5 kc/s in each of the following bands :

3 400 - 3 500 kc/s

5 480 - 5 680 kc/s

8 815 - 8 965 kc/s

11 275 - 11 400 kc/s

13 260 - 13 360 kc/s

17 900 - 17 970 kc/s

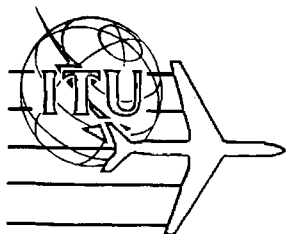
These six sub-bands should be kept available for allocation to Ocean Data Radiocommunication by the next Ordinary Administrative Radio Conference.



**Documents of the Extraordinary Administrative Radio Conference for the preparation of a revised
allotment plan for the aeronautical mobile (R) service (2nd session) (EARC-66)
(Geneva, 1966)**

Document No. II/7

The report referred to in Document No. II/7, point 1, – The Statistical Analyses of International Flights and of Regional and Domestic Flights, sections I-VI – is not available electronically. A paper copy is available in the ITU Archives for consultation.



AERONAUTICAL CONFERENCE

Document No. II/7-E
2 February 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Memorandum by the International Frequency Registration Board

STATISTICAL ANALYSES OF INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

1. Pursuant to Resolutions No. 13 and No. 14 of the First Session of the Extraordinary Administrative Radio Conference for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service, Geneva, 1964, the I.F.R.B. analysed the statistics of International Flights and of Regional and Domestic Flights which it received from Administrations of Members of the Union in response to its Circular-letter No. 122 of 10 March 1965. The Board circulated a Report on these analyses to Administrations on 15 December 1965, that is, on the revised date established by the Administrative Council on the basis of the decisions of the First Session of the Conference. This Report, which contained all information relating to International Flights received from Administrations up to 1 November 1965 and all information on Regional and Domestic Flights received from Administrations up to 1 December 1965, was issued in four sections bearing the following titles:

- Section I : International Flights - Master List by Countries.
- Section II : International Flights - Numerical Square Master List and Numerical Square Flight Density List.
- Section III : International Flights - List of Flights by Zones of Analysis.
- Section VI : Regional and Domestic Flights - Master List by Countries and Master List by Reporting Areas.

2. It was explained in I.F.R.B. Circular No. 143 dated 3 December 1965, copies of which were also enclosed with the Report that Section IV entitled "International Flights - Flight Density Charts" would be forwarded to Administrations at a later date. This Section of the Report was dispatched to Administrations on 31 January 1966.



3. With the dispatch of Sections I, II, III, IV and VI of the Report, the mandate given to the Board by the First Session of the Conference was fulfilled.

4. Amendments to Statistics of International Flights

As mentioned in I.F.R.B. Circular-letter No. 143 (paragraph 3.1), however, not all data concerning International Flights had been received from all Administrations by the date prescribed for their submission, although this date had been extended by one month. The Board had, therefore, made provisions to issue a Supplement to the Master List by Countries (Section I) which would constitute Section V of the Report. Apart from a number of additional statistics from some Administrations which had not previously furnished the required data, the amendments in this Supplement mainly resulted from the transfer of the particulars of certain flights from the statistics of International Flights (Section I of the Report) to those of Regional and Domestic Flights (Section VI of the Report). This Supplement, containing all new and amended information on International Flights received from Administrations up to 15 January 1966, was dispatched to Administrations as Section V of the I.F.R.B. Report on 31 January 1966.

5. Amendments to Statistics of Regional and Domestic Flights

As mentioned in the preceding paragraph, a substantial part of the amendments received from Administrations by the Board after the "closing dates" for the receipt of the data, concerned the transfer of information from the statistics for International Flights to those for Regional and Domestic Flights. Taking advantage of the possibilities offered by the use of the electronic computer, all the amended statistics for the Regional and Domestic Flights were re-established on the basis of the information available up to 15 January 1966 and revised Tables, replacing the substantive parts of Section VI of the Report (pages VI/1 and VI/5), were dispatched to Administrations on 31 January 1966.

6. Statistics and Analyses which will be available to the Conference

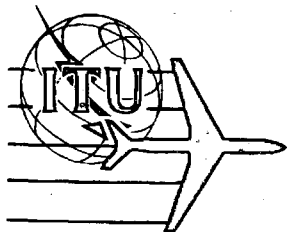
While a limited stock of the complete Report by the I.F.R.B. containing the full lists of statistics (notably Sections I, II and III) will be available for the use of the Conference, there will not be sufficient supplies for a general distribution to all participants. Delegates are therefore invited kindly to bring their copies of the Report to the Conference for their own personal use.

7. The I.F.R.B. is preparing the following additional documentation:

- 1) Three copies of complete revised tabulations, produced by the electronic computer, of Sections I, II and III of the Report incorporating all new and amended information and the analyses thereof, received from Administrations up to 1 March 1966. These three copies will be available to the Conference for consultation by delegates and for the use of the Committee and Working Groups which will deal with the analyses.
- 2) For general distribution to all delegates at the opening of the Conference:
 - a) a new Recapitulative Supplement and Corrigendum to the Master List by Countries, based on information received up to 1 March 1966, to replace Section V of the Report;
 - b) a revised Summary of the Numerical Square Master List, based on information received up to 1 March 1966, to replace pages XIII, XV and XVII of Section II of the Report;
 - c) a revised Numerical Square Flight Density List, based on information received up to 1 March 1966, to replace pages II/133-II/136 inclusive, of Section II of the Report;
 - d) a revised Table of Flight Densities by Zones of Analyses, based on information received up to 1 March 1966, to replace page XI of Section III of the Report. It is hoped to expand this Table by sub-dividing the statistics according to a) Types of Flight and b) Aircraft speeds;
 - e) new Tables of the Master List by Countries, and the Master List and Summary by Reporting Areas, of Regional and Domestic flights, based on information received from Administrations up to 1 March 1966, to replace pages VI/1 and VI/5 of Section VI of the Report.

8. Conclusion

The Board hopes that the publications described in paragraphs 1-5 above will have proved helpful to Administrations; and that the additional material described in paragraph 7, in particular the up-dated summaries of the analyses of the statistical data, will enable the Conference to proceed expeditiously with its work.



AERONAUTICAL CONFERENCE

Document No. II/8-E
8 February 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA
PLENARY MEETING

Memorandum by the Secretary-General

COMMITTEE STRUCTURE

1. In accordance with Administrative Council Resolution No. 563, the Agenda of the Second Session of the Aeronautical Conference is as follows :

"On the basis of the decisions taken by the preparatory session of the Conference and the preparatory work undertaken by the I.F.R.B., to review and, to the extent considered necessary, revise the Frequency Allotment Plans for the Aeronautical Mobile (R) Service contained in Appendix 26 to the Radio Regulations, and the Radio Regulations associated therewith."

2. I have examined with the I.F.R.B. the committee structure necessary in order to carry out in an efficient manner the work of the Second Session, and submit the suggestions contained in Annex 1 to this document. It is essentially the same as that adopted by the First Session - except that the terms of reference of the Technical and Operational Committee and of the Aircraft Operation Statistics Committee have been modified to meet present circumstances - with, of course, the addition of a Plan Committee.

3. The possibility of setting up a further committee to deal with the revision of the Radio Regulations associated with the Plan and the procedures for the change-over to the revised Plan (points b) and c) of the suggested terms of reference of the Plan Committee) was considered. However, they appeared so closely related to the basic task of the Plan Committee that we finally concluded they could be effectively handled, at the appropriate time, by working groups of that Committee.

M.B. SARWATE
Secretary-General

Annex : 1



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A N N E X

1. Steering Committee

(Comprising the Chairman and Vice-Chairman of the Conference and the Chairmen of Committees).

Terms of Reference : To co-ordinate the work of the Committees and arrange the programme of meetings.

2. Credentials Committee

Terms of Reference : To verify the credentials of each delegation (cf. Number 535 of the Convention).

3. Budget Control Committee

Terms of Reference : To determine the organisation and the facilities available to the delegates, and to examine and approve the accounts for expenditure incurred (cf. Number 572 of the Convention).

4. Technical and Operational Committee

Terms of Reference : To adjust, if necessary, the technical and operational principles established by the First Session of the Conference.

5. Aircraft Operation Statistics Committee

Terms of Reference : To examine the analyses of flight information compiled by the I.F.R.B. and to recommend the extent to which, and the manner in which, statistics of air operations should be used for planning purposes.

6. Plan Committee

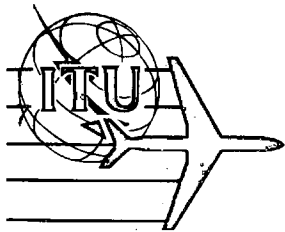
Terms of Reference : a) to review and to the extent considered necessary, revise the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 26 to the Radio Regulations;

- b) to review the Radio Regulations associated therewith and prepare any modifications or additions considered essential;
- c) to establish procedures for the change-over to the revised Plan.

7. Editorial Committee

Terms of Reference :

To perfect the form of texts for inclusion in the Final Acts of the Conference (cf. Number 657 of the Convention).



AERONAUTICAL CONFERENCE

Document No. II/9-E
15 February 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

KINGDOM OF SAUDI ARABIA

PROPOSAL

The Kingdom of Saudi Arabia proposes the following changes in the limits of the major world air route and Regional air route areas.

- 1) The southern line of the M.E. Region, to be redrawn as indicated in the enclosed chart I.
- 2) The eastern line of area 5A which is at present at longitude 50° to be shifted east to 55° as indicated in the enclosed chart II.

Reasons:

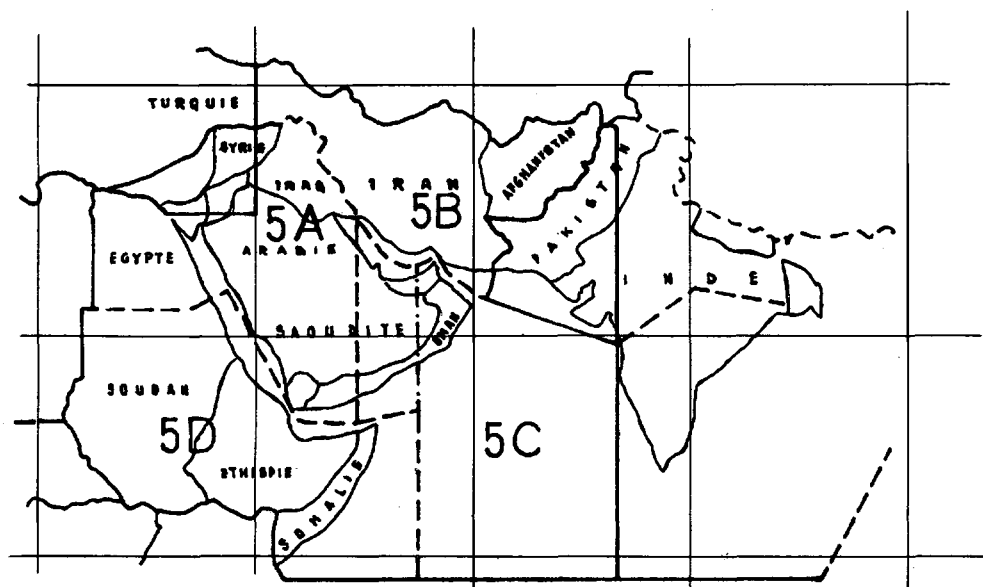
The changes in the air route areas are recommended to cover more adequately the air operations in Saudi Arabia according to present flight conditions.



Carte II

Chart II

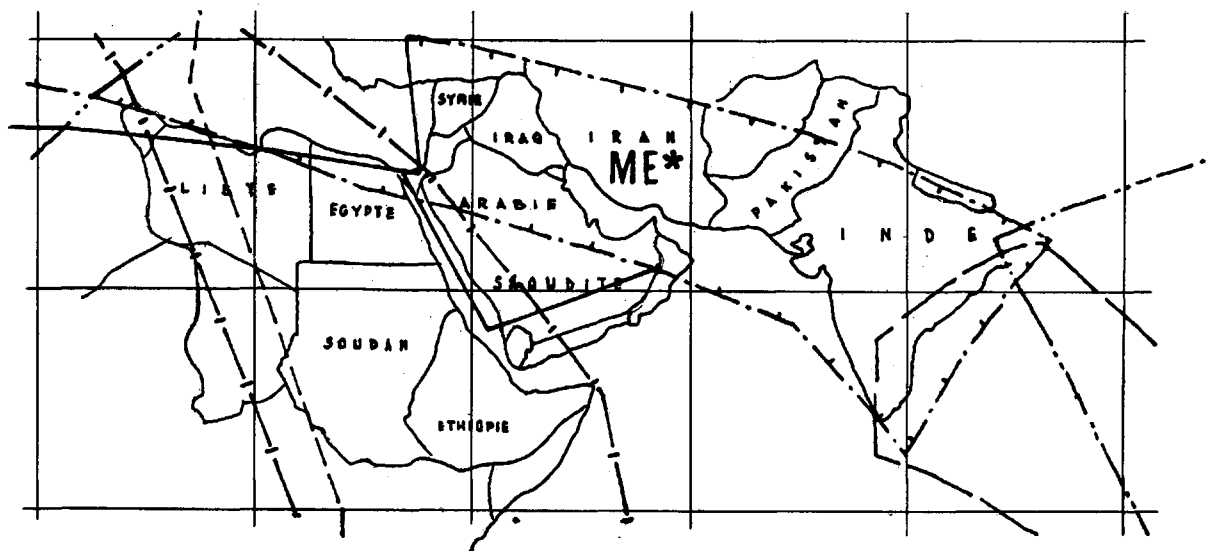
Gráfico II



Modification de la limite de la subdivision
de ZLARN 5A indiquée par un trait mixte

Change in boundary of region indicates by (chain)

Cambio en los límites de zona



Modification de la limite de la ZLAMP ME
indiquée par un trait plein

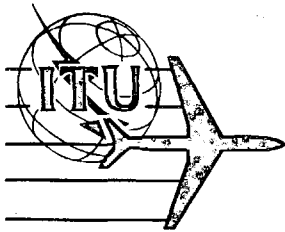
Change in boudary of M. E. region indicates by (firm)

Cambio en los límites de la región del Oriente medio

Carte I

Chart I

Gráfico I



AERONAUTICAL CONFERENCE

Document No. II/10-E
22 February 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

UNITED KINGDOM

REVIEW OF THE ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

1. The task for the Second Session of the E.A.R.C. is defined by its Agenda as follows :

"On the basis of the decisions taken by the preparatory session of the Conference and the preparatory work undertaken by the I.F.R.B. to review and, to the extent considered necessary, revise the Frequency Allotment Plan for the Aeronautical Mobile (R) service in Appendix 26 to the Radio Regulations, and the Radio Regulations associated therewith."

In preparing the United Kingdom proposals for the Second Session of the E.A.R.C. due regard has therefore been paid to the report of the First Session and the work of the I.F.R.B.

2. The United Kingdom fully supports the view reflected in Recommendation No. 4 of the First Session that the revised plan for the Aeronautical Mobile (R) Service and provisions related thereto should be dissociated from the Plan for the Aeronautical Mobile (OR) Service to which the relevant provisions of Appendix 26 could continue to apply.

With Recommendation No. 4 in mind a draft proposal for Part I of a new Appendix to the Radio Regulations which will be applicable to the Aeronautical Mobile (R) Service only has been prepared and is incorporated at Proposal No. 1. Those parts of Part II of the new Appendix which were dealt with by the First Session are the subject of Proposal No. 2.

Proposal No. 3 outlines proposed changes to Radio Regulations Nos. 431, 554, 558, 559, 590, 591 and part of Appendix 1 to the Radio Regulations which also relate to the Aeronautical Mobile (R) Service.

Proposal No. 4 concerns HF requirements for supersonic transport aircraft and aerospace transport vehicles.



The following explanatory notes support the provisions contained in the proposed new Appendix. References to Proposal No. 1 and the work of the First Session of the E.A.R.C. are made where appropriate.

3. The proposed new Appendix - Frequency Allotment Plan for the Aeronautical Mobile (R) Service

References

3.1 A Frequency Allotment Plan shows frequencies to be used in particular areas or by particular countries without specifying the stations to which the frequencies are to be assigned.

Proposal No. 1
Part 1
Section I
Paragraph 1

The frequencies available for allotment depend on the channel spacing adopted which in turn depends among other things on the class of emission to be accommodated.

The First Session of the E.A.R.C. resolved that the Second Session should draw up the new frequency plan on the basis of the present usage of double sideband radio telephony with a view to permitting the introduction of single sideband radio-telephony without excluding the use of other types of emission.

Report of First
Session Resolution
No. 1

This resolution was formulated and adopted in recognition of the two factors detailed in the "considering clauses". These are, the necessity to ensure that the Aeronautical Mobile (R) Service should continue to operate without interruption and with maximum efficiency and at the same time adequate provision should be made to permit the smooth introduction of types of emission most likely to replace those in current use.

Provision for the use of various classes of emission is therefore incorporated in the proposed new Appendix.

Proposal No. 1
Part I
Section IIA
Paragraph 1

The necessity for such provision was recognised and agreed by the First Session of the E.A.R.C.

Report of First
Session Chapter 1
Paragraph 1

3.2 Channel spacing

The question of channel spacing is a complex one and has been the subject of lengthy discussion at the I.C.A.O. Special Communications Meeting 1963 and at the First Session of the E.A.R.C. Document I/5 submitted by the I.F.R.B. at the First Session of the E.A.R.C. sets out the salient features of possible arrangements.

Clearly the arrangements and provisions adopted must be fully consistent with the requirement to cater for the continued operation of DSB radiotelephony. At the same time they must incorporate sufficient flexibility to permit the introduction of SSB radio-telephony and other types of emission for the improvement of the Aeronautical Mobile (R) Service when it is economically and technically feasible to do so.

With regard to the necessity to accommodate DSB, the First Session of the E.A.R.C. agreed that the present channel separation of 7 kc/s should be maintained in bands 2850-3025 kc/s, 3400-3500 kc/s and 4650-4700 kc/s.

Report of First Session
Chapter 1
Paragraph 6.1

It noted that a reduction in channel widths in bands between 5480 kc/s (5450 kc/s, Region 2) and 8965 kc/s could create a number of supplementary channels but considered that such reduction would not be feasible for operational and economic reasons at the time the Revised Plan would be brought into force. Therefore the First Session of the Aeronautical E.A.R.C. recommended no change in the present channeling arrangements in these bands.

Report of First Session
Chapter 1
Paragraph 6.2

In bands above 10 Mc/s a uniform channel spacing of 8 kc/s was recommended for adoption, the spare space resulting therefrom being used at the top end of the 17 Mc/s band and the lower end of the 10 Mc/s 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 Second Session of the Aeronautical E.A.R.C.

Report of First Session
Chapter 1
Paragraph 6.3

Provision for the use of the above channel-
ling arrangements is included in the proposed new
Appendix.

Proposal No. 1
Part I
Section IIA
Paragraph 2.3

An alternative channelling arrangement is also
proposed which will provide additional channels. In
this connection it is to be noted that the First
Session of the E.A.R.C. was confronted with the dilemma
of having to decide on planning principles without know-
ing the full extent of the requirement for which the
planning arrangements must cater. This clearly applies
most forcibly to the number of channels needed.

Proposal No. 1
Part I
Section IIA
Paragraph 2.3

If the statistics submitted by states show
that there is likely to be a shortage of channels to
meet all requirements the conference may wish to consi-
der the alternative channelling arrangement proposed.

The alternative arrangement provides for a
uniform channel spacing of 7 kc/s below 10 Mc/s and a
uniform spacing of 8 kc/s in bands 10 Mc/s and above.
The advantage of such an arrangement is, it creates
an additional 6 channels in the 5, 6 and 8 Mc/s bands
where demand is likely to be greatest, but avoids the
complexity of 0.1 kc/s tuning multiples, a feature of
the plan which would have to be employed to obtain the
maximum number of additional DSB channels. Although
the "0.1 kc/s Plan" would be the ultimate that could
be achieved in terms of additional channels it is to
be noted that in the bands 5, 6 and 8 Mc/s it only
creates a further 2 channels over and above the extra
6 which accrue from the use of 7 kc/s spacing in these
bands.

Document I/5
Annexes 3 and 6

Although the First Session of the E.A.R.C.
rejected changes in the 5, 6 and 8 Mc/s bands because such
change would "not be feasible for operational and
economic reasons at the time the Revised Plan is to
be brought into force", it must be borne in mind that
even if the present channelling arrangements are subs-
tentially retained extensive re-crystallisation will
still be necessary if frequency allotments to areas
have to be changed which they may have to be in order
to comply with the protection criteria and at the
same time satisfy all requirements. In which case
the cost and operational upheaval involved in imple-
menting plans with existing and revised channelling
arrangements may not be all that different.

It is envisaged that other permitted emissions will be accommodated within the same channelling arrangements as those specified for DSB.

Proposal No. 1
Part I
Section IIA
Paragraphs 2.6
and 2.7. (RR 554
also applies)

However to cater for special requirements provision is made so that adjacent DSB channels may be grouped e.g. three 4 kc/s channels plus one 2 kc/s channel may be created by combining two 7 kc/s channels or seven 4 kc/s channels may be derived from four 7 kc/s channels.

Proposal No. 1
Part I
Section IIA
Paragraph 2.8

In order to coordinate the implementation of various permitted emissions with the object of avoiding harmful interference and ensuring the continued efficient operation of the Aeronautical Mobile (R) Service, certain procedures will have to be followed. These are defined.

Proposal No. 1
Part I
Section IIA
Paragraphs 2.5,
2.9 and 2.10

It is to be noted that frequencies 3023.5 kc/s and 5680 kc/s which are common to both the (R) and (OR) Services are retained in both the channelling arrangements which have been proposed. Provision is however included to permit stations using the common (R) and (OR) channel centred at 3023.5 kc/s to operate with their carrier frequency at 3023 kc/s subject to appropriate coordination.

Proposal No. 1
Part I
Section IIA
Paragraph 3.2

It is to be noted that all stations employing 3023.5 and 5680 kc/s for search and rescue operations must be capable of operating in a DSB environment.

Proposal No. 1
Part I Section IIA
Paragraph 3.3

Other provisions relating to 3023.5 kc/s and 5680 kc/s which appear in Appendix 26 are also included in the new proposed Appendix.

Proposal No. 1
Part I Section IIA
Paragraph 3.1

To facilitate the satisfaction of particular operational requirements not otherwise met by the allotment plans provision is included for the adaptation of the allotment procedure.

Proposal No. 1
Part I Section IIA
Paragraphs 4, 5
and 6

3.3 Allotment areas

"In any revision of the Frequency Allotment 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 geographical areas (defined as MWARAs and RDARAs in Part I, Section I of Appendix 26 to the Radio Regulations, Geneva, 1959) should be retained."

Report of First
Session Chapter I
Paragraph 5.1

The United Kingdom fully supports the concept of MWARAs and RDARAs but believes that such areas may not necessarily be the optimum for defining reception areas for HF volmet broadcasts.

It is to be noted in this connection that in paragraph 5.7 of the I.C.A.O. Special Communications (1963) Report mention is made of the desirability of catering for the reception of EU Met broadcasts in adjacent areas.

The United Kingdom therefore proposes that consideration be given to the introduction of two new concepts - The Volmet Allotment area and the Volmet Reception area. These are defined in the proposed new Appendix.

Proposal No. 1
Part I
Section I
Paragraphs 7 and 8

Based on current I.C.A.O. planning and Recommendations 5/1, 5/2 and 5/3 of the Report of the I.C.A.O. Special Communications Meeting (1963) it is suggested that Volmet Reception and Allotment areas should be defined for the following:

Africa
Atlantic
Europe
Middle East
Pacific
South America
South East Asia.

For the efficient operation of an HF Volmet Service based on the above principles a family of frequencies must be allocated which will cater for reception over a range equal to the maximum distance between any point in the Allotment area and any point in its associated Reception area.

In order to achieve optimum use of the frequency spectrum, the same frequency may be allotted to two allotment areas provided the minimum distance between the boundary of one and the boundary of the reception area associated with the other is not less than the interference range defined in the interference range contours.

As a basis for discussion, suggestions for boundaries of reception areas are incorporated at Attachment 1 to this proposal. As regards the boundaries of allotment areas it is for consideration that these could be defined as the boundaries of I.C.A.O. regions.

3.4 Interference range contours

The First Session of the E.A.R.C. thoroughly reviewed all criteria involved in the development and use of the Interference range contours.

Report of First Session Chapter I Paragraphs 3.1 and 3.2

A number of changes and additions were recommended and were incorporated in a revised version of the relevant parts of Appendix 26.

Report of First Session Chapter I Paragraph 3.2

The recommended revision is incorporated in the proposed new Appendix.

Proposal 1 Part I Section IIB

3.5 Power

Amendments under this heading have been made to cater for the requirement of Appendix 1 of the Radio Regulations that power should be notified in terms of that supplied to the antenna transmission line as opposed to the radiated power specified in Appendix 26.

In accordance with the recommendation of the First Session the specified powers have been increased by 50% as compared with those stated in Appendix 26 in order to cater for loss in the Antenna transmission line.

Report of First Session Chapter 1 Paragraph 2.

Other provisions catering for the increase in power in specific circumstances subject to certain safeguards as regards interference have also been incorporated in accordance with the Report of the First Session.

Proposal No. 1 Part I Section IIC

PROPOSAL No. 1

APPENDIX ...
to the Radio Regulations
Geneva, 1959

Frequency Allotment Plan
for the Aeronautical Mobile (R) Service
and Related Information

(see Article 7 of the Radio Regulations, Geneva, 1959)

I.T.U.

General Secretariat of the
International Telecommunication Union
GENEVA

APPENDIX
to the Radio Regulations

Geneva, 1959

Frequency Allotment Plan
for the Aeronautical Mobile (R) Service
and Related Information

(See Article 7)

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PART II

Plan for the Allotment of Frequencies for the
Aeronautical Mobile (R) Service in the
Exclusive Bands between 2850 and 17970 kc/s

PART IGeneral ProvisionsSection I - Definitions1. Frequency Allotment Plan

A plan which shows the frequencies to be used in particular areas or by particular countries, without specifying the stations to which the frequencies are to be assigned.

2. The terms to express the different methods of frequency distribution as used in this Appendix have the following meanings:

Frequency distribution to	French	English	Spanish
Services	Attribution (attribuer)	Allocation (to allocate)	Atribución (atribuir)
Areas	Allotissement (allotir)	Allotment (to allot)	Adjudicación (adjudicar)
Stations	Assignation (assigner)	Assignment (to assign)	Asignación (asignar)

3. A Major World Air Route is considered to be a long-distance route, made up of one or more segments, essentially international in character, extending through more than one country and requiring long-distance communications facilities.

4. A Major World Air Route Area (MWARA) is an area embracing a certain number of Major World Air Routes, which generally follow the same traffic pattern and are so related geographically that the same frequency families may logically be applied.

5. Regional and Domestic Air Routes are all those using the Aeronautical Mobile (R) Service not covered by the definition of Major World Air Routes in paragraph 4 above.

6. A Regional and Domestic Air Route Area (RDARA) is one embracing a certain number of the air routes defined in the foregoing paragraph.
7. A Volmet Allotment Area embraces all points where an HF broadcast facility might be required to operate on a family of frequencies common to the area.
8. A Volmet Reception Area is associated with each Volmet Allotment Area and encompasses all points at which aircraft flying to destinations within the allotment area might require reception of one or more of the relevant broadcasts.
9. Family of Frequencies in the Aeronautical Mobile Service.

A group of frequencies selected from different aeronautical mobile bands in such a way as to permit communication, at any time and over any distance, between aircraft in flight and appropriate aeronautical stations.

Section II - Technical and Operational Principles used for the
Establishment of the Plan of Allotment of Frequencies
in the Aeronautical Mobile (R) Service

A. Determination of Channel Width

1. Classes of emission

In the Aeronautical Mobile (R) Service the use of emissions such as listed below is permissible, provided that such use:

- complies with the applicable provisions of Part I, Section IIA, paragraph 2;
- does not cause harmful interference to other users of the frequency.

1.1 Telephony - Amplitude modulated

- Double sideband (A3)
- Single sideband, reduced carrier (A3A)
- Single sideband, full carrier (A3H)
- Single sideband, suppressed carrier (A3J)
- Two independent sidebands (A3B)

1.2 Telegraphy (including automatic data systems)

1.2.1 Amplitude modulation

- without the use of a modulation frequency
(by on-off keying) (A1)
- on-off keying of an amplitude-modulating audio
frequency or audio frequencies, or by the
on-off keying of the modulated emission (A2)
- multi-channel voice frequency telegraphy,
single sideband, reduced carrier (A7A)
- multi-channel voice frequency telegraphy,
single sideband, full carrier (A7H)
- multi-channel voice frequency telegraphy,
single sideband, suppressed carrier (A7J)

1.2.2 Frequency modulation

- frequency shift keying without the use of a
modulating audio frequency, one of two
frequencies being emitted at any instant (F1)
- by the on-off keying of a frequency modulating
audio frequency or by the on-off keying of a
frequency-modulated emission (F2)

1.3 Facsimile

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

2. Frequency separations

- 2.1 The frequency separations adopted are adequate to accommodate
double sideband amplitude modulated radiotelephony (A3).
- 2.2 It is assumed that A3 modulation frequencies will be limited
to 3000 cycles per second and that the sideband radiation of
other authorised emissions will not exceed that of A3 emissions.
- 2.3 Channel arrangements shall be in accordance with those specified
in Table 1 on Page 16 (alternatively Table 2 on Page 18).

- 2.4 Equipment specifically designed for channel spacings listed in Table 1 (or Table 2 if adopted) shall be safeguarded with respect to its suitability for the Aeronautical Mobile (R) Service until at least 1 January, 1973.
- 2.5 The use of channels as derived from the Tables for the various class of emission (see paragraph 1) will be subject to special arrangements by the administrations concerned in order to avoid the interference which may result from the simultaneous use of the same channel for several classes of emission, no inherent priority being given to any particular class of emission.
- 2.6 It is recognised that two or more narrow bandwidth emissions may be accommodated in the channels defined in Tables 1 (or 2).
- 2.7 The occupied bandwidth of permitted emissions should fall within the channelling arrangements provided for in Tables 1 (or 2).
/See Radio Regulation No. 554/
- 2.8 Adjacent channels derived from the tables may also be grouped to permit the satisfaction of particular requirements e.g. seven 4 kc/s channels may be derived by combining four 7 kc/s channels.
- 2.9 The arrangements contemplated in 2.5, 2.6 and 2.8 should be made under provisions of Article 43 (Special Arrangements) of the International Telecommunications Convention and Article 4 of the Radio Regulations.
- 2.10 The International Civil Aviation Organisation (I.C.A.O.) co-ordinates aeronautical (R) communications with international air-operations for a large part of the world and this organisation should be consulted in appropriate cases, particularly in the operational use of frequencies in the plan.

3. Channels Common to (R) and (OR) Services

- 3.1 The channels common to the (R) and (OR) services, centred at 3023.5 and 5680 kc/s are authorized for use world-wide as shown in Part II of this Appendix. (See Proposal No. 2).

Notwithstanding those provisions of the Allotment Plan set forth in Part II hereof, the frequency 5680 kc/s may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized aeronautical uses.

- 3.2 Subject to appropriate co-ordination stations using the common (R) and (OR) channel centred at 3023.5 kc/s may operate with their carrier frequency at 3023 kc/s.
- 3.3 All stations using 3023.5 kc/s and 5680 kc/s for search and rescue purposes and equipped for SSB shall transmit a carrier at a level sufficient to permit reception on a DSB receiver and shall be able to receive DSB.

4. Adaptation of Allotment Procedure

It is recognized that all the sharing possibilities have not been exhausted in the allotment plans contained in this Appendix. Therefore, in order to satisfy particular operational requirements which are not otherwise met by these allotment plans, Administrations may assign frequencies from the HF aeronautical mobile (R) bands in areas other than those to which they are allotted in this plan. However, the use of the frequencies so assigned must not decrease the protection to the same frequencies in the areas where they are allotted by the plans below that determined by application of the procedure defined in Part I, Section IIB of this Appendix.

5. When necessary to satisfy the needs of international air operations Administrations may adapt the allotment procedure for the assignment of aeronautical mobile (R) frequencies, which assignments shall then be the subject of prior agreement between Administrations affected.

6. Resort to the co-ordination described in paragraph 2.10 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question.

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TABLEAU 1 - TABLE 1 - CUADRO 1

Bande Band Banda (kHz - kc/s)	Largeur de canal Channel width Anchura de canal (kHz - kc/s)	Bande Band Banda (kHz - kc/s)	Largeur de canal Channel width Anchura de canal (kHz - kc/s)
2850-3025	7	8815-8965	8.5
3400-3500	7	10005-10100	8
4650-4700	7	11275-11400	8
5450-5480 (Reg.2)	7.5	13260-13360	8
5480-5680	7.5	17900-17970	8
6525-6685	7.5		

La liste des fréquences à allouer dans les bandes exclusives réservées au service mobile aéronautique (R) sur la base des largeurs de canal prévues au Tableau 1 ci-dessus figure à la page suivante.

The list of frequencies to be allotted in the exclusive aeronautical mobile (R) bands on the basis of channel widths specified in Table 1 above will be found opposite (page 17).

En la página siguiente se da una lista de las frecuencias adjudicables en las bandas exclusivas del servicio móvil aeronáutico (R) según la anchura de canales especificada en el Cuadro 1.

- *) Cette fréquence ne doit être utilisée que pour des émissions de classe A1.
- **) Cette fréquence ne doit être utilisée que pour des émissions dont la fréquence est très stable.
 - 1) Canal de largeur limitée à 7 kHz. 2) Canal de largeur limitée à 6 kHz.
- *) Available for A1 emission only.
- **) It is necessary that only equipment having a high degree of stability be used on this channel.
 - 1) Channel width restricted to 7 kc/s. 2) Channel width restricted to 6 kc/s.
- *) Solamente para emisiones de clase A1.
- **) Es necesario que en este canal se empleen solamente equipos de gran estabilidad.
 - 1) Anchura de canal limitada a 7 kc/s. 2) Anchura de canal limitada a 6 kc/s.

kHz - kc/s

2850 - 3025	3400 - 3500 (cont.)	(5480 - 5680)(cont.)	8815 - 8965	11275-11400(cont.)
2854	3467.5	5589	8820	11297
2861	3474.5 (R)	5596.5	8828.5	11305
2868	3481.5 14	5604	8837	11313
2875	3488.5 channels	5611.5	8845.5	11321
2882	3495.5	5619 (R)	8854	11329 (R)
2889		5626.5 26	8862.5	11337 15
2896	4650 - 4700	5634 channels	8871 (R)	11345 channels
2903	4654.5	5641.5	8879.5 18	11353
2910	4661.5	5649	8888 channels	11361
2917	4668.5 (R)	5656.5	8896.5	11369
2924 (R)	4675.5 7	5664	8905	11377
2931 24	4682.5 channels	5671.5	8913.5	11385
2938 bandes	4689.5	5680 (R) & (OR)	8922	11393
2945 channels	4696.5	6525 - 6685	8930.5	13260 - 13360
2952 canales		6529.5	8939	13266
2959	5450 - 5480	6537	8947.5	13274
2966	5454 (R)	6544.5	8956	13282
2973	5461.5 4	6552	8961.5*)/(**)	13290 (R)
2980	5469 channels	6559.5	10005 - 10100	13298 12
2987	5476.5	6567		13306 channels
2994	5480 - 5680	6574.5	10008.5	13314
3001		6582	10016	13322
3008	5484	6589.5 (R)	10024	13330
3015	5491.5	6597 21	10032 (R)	13338
3023.5(R) & (OR)	5499	6604.5 channels	10040 12	13346
	5506.5	6612	10048 channels	13354
3400 - 3500	5514 (R)	6619.5	10056	17900 - 17970
3404.5	5521.5 26	6627	10064	17904
3411.5	5529 channels	6634.5	10072	17912
3418.5	5536.5	6642	10080	17920 (R)
3425.5	5544	6649.5	10088	17928 9
3432.5 (R)	5551.5	6657	10096	17936 channels
3439.5 14	5559	6664.5	11275 - 11400	17944
3446.5 channels	5566.5	6672		17952
3453.5	5574	6679.5	11281 (R) 15	17960
3460.5	5581.5		11289 channels	17967 (2)

Voir les notes sur la page précédente.

See notes on previous page.

Véanse las notas en la página anterior.

TABLEAU 2 - TABLE 2 - CUADRO 2

Bande Band Banda (kHz - kc/s)	Largeur de canal Channel width Anchura de canal (kHz - kc/s)	Bande Band Banda (kHz - kc/s)	Largeur de canal Channel width Anchura de canal (kHz - kc/s)
2850-3025	7	8815-8965	7
3400-3500	7	10005-10100	8
4650-4700	7	11275-11400	8
5450-5480 (Reg.2)	7	13260-13360	8
5480-5680	7	17900-17970	8
6525-6685			

La liste des fréquences à allotir dan les bandes exclusives réservées au service mobile aéronautique (R) sur la base des largeurs de canal prévues au Tableau 2 ci-dessus figure à la page suivante.

The list of frequências to be allotted in the exclusive aeronautical mobile (R) bands on the basis of channel widths specified in Table 2 above will be found opposite (page 19).

En la página siguiente se da una lista de las frecuencias adjudicables en las bandas exclusivas del servicio móvil aeronáutico (R) según la anchura de canales especificada en el Cuadro 2.

- 1) Canal de largeur limitée à 7 kHz. 2) Canal de largeur limitée à 6 kHz.
1) Channel width restricted to 7 kc/s. 2) Channel width restricted to 6 kc/s.
1) Anchura de canal limitada a 7 kc/s. 2) Anchura de canal limitada a 6 kc/s.

kHz - kc/s

2850 - 3025	3400 - 3500(cont.)	5480 - 5680(cont.)	6525-6685 (cont.)	11275 - 11400
2854	3467	5582	6671 (R) 22	11281
2861	3474 (R)	5589	6678 channels	11289
2868	3481 14	5596	8815 - 8965	11297
2875	3488 channels	5603	8820	11305
2882	3495	5610 (R)	8827	11313 (R)
2889	4650 - 4700	5617 28	8834	11321 15
2896		5624 channels	8841	11329 channels
2903	4654	5631	8848	11337
2910	4661	5638	8855	11345
2917 (R)	4668 (R)	5645	8862	1135.3
2924 24	4675 7	5652	8869 (R)	11361
2931 bandes	4682 channels	5659	8876 21	11369
2938 channels	4689	5666	8883 channels	11377
2945 canales	4696	5673	8890	11385
2952	5450 - 5480	5680 (R) & (OR)	8897	11393
2959		6525 - 6685	8904	13260 - 13360
2966	5454 (R)	6531	8911	13266
2973	5461 4	6538	8918	13274
2980	5468 channels	6545	8925	13282
2987	5475	6552	8932	13290
2994	5480 - 5680	6559	8939	13298 (R)
3001		6566	8946	13306 12
3008	5484	6573 (R)	8953	13314 channels
3015	5491	6580 22	8960	13322
3023.5(R) & (OR)	5498	6587 channels	10005 - 10100	13330
3400 - 3500	5505	6594	10008.5 (1)	13338
	5512 (R)	6601	10016	13346
3404	5519 28	6608	10024	13354
3411	5526 channels	6615	10032	17900 - 17970
3418	5533	6622	10040 (R)	17904
3425 (R)	5540	6629	10048 12	17912
3432 14	5547	6636	10056 channels	17920 (R)
3439 channels	5554	6643	10064	17928 9
3446	5561	6650	10072	17936 channels
3453	5568	6657	10081	17944
3460	5575	6664	10096	17952
				17960
				17967 (2)

Voir les notes sur la page précédente.

See notes on previous page.

Véanse las notas en la página anterior.

B. Interference Range Contours

1. Definition of Contours

The transparencies inserted in the pocket at the end of this Appendix show contours which indicate the minimum acceptable distance separating two aeronautical stations each having an effective radiated power of 1 kW (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. This limit is generally assumed to be at the boundary of the area concerned and the service range is not included in the contour.

Two types of transparencies are provided for use respectively with the Mercator projection world maps and the Gnomonic projection maps of 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. This overlap is included to provide continuity between transparencies of the two projections.

2. Type of Maps used

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

3. Change of scale

Should any other 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.

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 line of latitude should be at 00° latitude for the 00° contour, 20° N for the 20° contour, 40° N for 40° contour, etc.

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. Sharing conditions between areas

The transparencies are constructed on the basis of the following sharing conditions :

Areas	Bands between (Mc/s)	Sharing conditions
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 considered 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

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.

5. Method of use

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

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.

Place the centre 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.

A transmitter located at any point outside the contour will result, as defined in paragraph 1 above, in a protection ratio of better than 15 db.

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

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.

Gnomonic projection: For 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. Data for tracing interference contours

Date for plotting interference contours, Gnomonic projection maps of polar areas, and interference range contours.

These are as specified in the report of the First Session.

C. Radiated Powers

Unless otherwise indicated in Part II of Appendix 26 to the Radio Regulations (Geneva, 1959), 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 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 in the case of A3 emissions and equal to 0.5 peak envelope power in the case of A3H emissions, based on a single sine-wave oscillation modulating the emission at 100%.

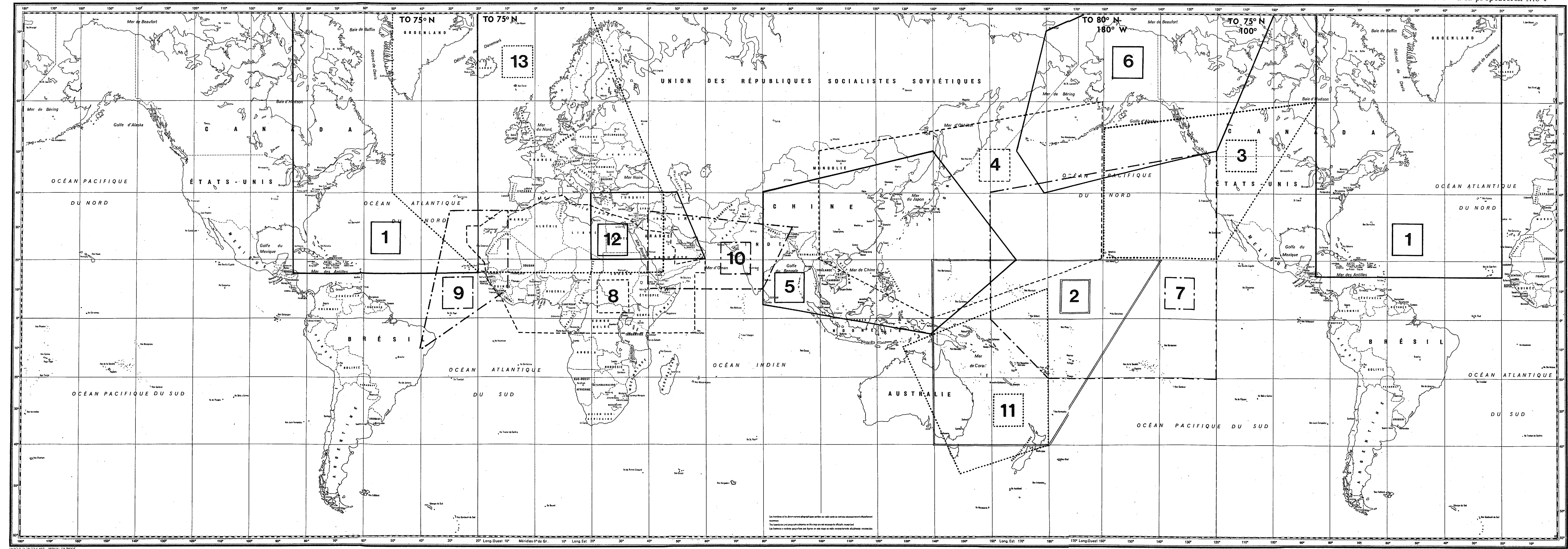
Aeronautical stations serving MWARAS may, when necessary, employ directional antennae and a transmitter power in association with such directional antennae, greater than that specified above, in order to provide satisfactory communication with aircraft. Whenever this is so, the administration having jurisdiction over the transmitting station shall ensure :

- 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 MWARAS RADARAS or VOLMET area allotted the same frequency(s) is not greater than that permitted under the technical criteria on which the plan is based;
- c) that the radiation pattern of the directional antenna be known, or that the antenna is of a type for which a typical radiation pattern is available;
- d) that the directional characteristics of the antenna is such as to minimize radiation in unnecessary directions, particularly into other MWARAS RDARAs or VOLMET Area which have been allotted the same frequencies.

It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified above. However, the use of such increased power shall not cause harmful interference to stations using frequencies in conformity with the Allotment Plan.

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LEGENDE : N.º1 Atlantique - N.ºs 2-7 Pacifique - N.ºs 8-9 Afrique - N.ºs 10-11 Asie S.E. - N.º12 Moyen Orient - N.º13 Europe. **KEY** : No. 1 Atlantic - Nos. 2-7 Pacific - Nos. 8-9 Africa - Nos. 10-11 S.E. Asia - No. 12 Middle East - No. 13 Europe. **LEYENDA** : N.º1 Atlántico - N.º 2-7 Pacífico - N.º 8-9 África - N.º10-11 S.E. Asia - N.º12 Medio Oriente - N.º13 Europa.

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PROPOSAL No. 2

RELATING TO THE USE OF 3023.5 kc/s AND 5680 kc/s

AUTHORISED IN COLUMN 3, PART II, SECTION II

ARTICLE 2 OF APPENDIX 26

The authorized use of frequencies 3023.5 kc/s and 5680 kc/s which are common to the (R) and (OR) services includes coordinated search and rescue operations at the scene of a disaster. In this connection the relevant paragraph in column 3, Part II, Section II, Article 2 of Appendix 26 reads as follows:

"(3) for intercommunication between mobile stations engaged in coordinated search and rescue operations at the scene of a disaster."

The First Session of the E.A.R.C. were of the opinion that this provision should be amended so as not to exclude land stations.

The United Kingdom supports this view and an appropriate amendment is incorporated in Attachments 1 and 2 to this proposal.

It is to be noted that the phrase "between stations in the mobile services" which appears in the amendment proposed by the First Session has been changed to "for intercommunication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations".

The reason for the change is to specifically exclude the use of the frequencies for communication between land stations which it is considered would overload the channels.

Attachments: 2

Attachment 1

Proposed amendment to page 38 of Appendix 26 to the
Radio Regulations (Geneva, 1959)

Frequency kc/s	Authorised area of use	Remarks
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 in the conditions mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to the coordination between the Administrations.

Attachment 1 (contd.)

Frequency kc/s	Authorised area of use	Remarks
3023.5 (contd.)	World-wide (contd.)	<p>3) for intercommunication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations;</p> <p>4) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;</p> <p>5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be subdivided.</p>

Attachment 2

Proposed amendment to page 41 of Appendix 26 to the
Radio Regulations (Geneva, 1959)

Frequency kc/s	Authorised area of use	Remarks
5680	World-wide	<p>Authorised 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 $\mu\text{V/m}$ 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 $\mu\text{V/m}$ 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 in the conditions mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to coordination between the administrations directly concerned and those whose services may be adversely affected.

Attachment 2 (contd.)

Frequency kc/s	Authorised area of use	Remarks
5680 (contd.)	World-wide (contd.)	<p>3) for intercommunication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations;</p> <p>4) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;</p> <p>5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be subdivided.</p>

PROPOSAL No. 3

PROPOSED REVISION OF RADIO REGULATIONS
ASSOCIATED WITH APPENDIX 26

Radio Regulation 431

Delete and insert the following :

- 431 5 Frequencies in the bands allocated to the Aeronautical Mobile (OR) service between 3025 and 18030 kc/s (see Article 5) shall be assigned in conformity with the provisions of Appendix 26 and other relevant provisions of these regulations.
- 431A 5A Frequencies in the bands allocated to the Aeronautical Mobile (R) Service between 2850 and 17970 kc/s (see Article 5) shall be assigned in conformity with provisions of Appendix ... and the other relevant provisions of these regulations.

Radio Regulations 554, 558, 559

Delete references to Appendix 26 in these regulations and insert appropriate references to new proposed Appendix

Radio Regulations 590 and 591

In these regulations delete "3 December 1951" and insert date of signing of the E.A.R.C. agreement 1966.

Radio Regulations Appendix 1

Amend Section E, II Column 1 by the addition of a second footnote as follows :

Column 1 Assigned frequency :

- 1) Indicate the assigned frequency as defined in Article 1*) **) in kc/s up to 30 000 kc/s inclusive and in Mc/s above 30 000 kc/s.
- 2) This information is a basic characteristic.

*) For the television broadcasting stations in Region 1, the frequencies to be notified are those of the sound and vision carriers.

**) For stations in the Aeronautical Mobile (R) Service using permitted emissions other than DSB, the reference frequency together with the appropriate centre frequency of the channel listed in the frequency Plan in Appendix shall be supplied as supplementary information.

PROPOSAL No. 4

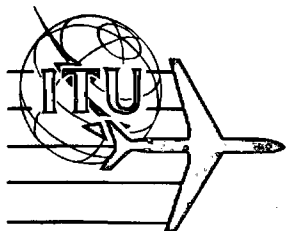
RELATING TO HF REQUIREMENTS FOR SUPERSONIC TRANSPORT
AIRCRAFT AND AEROSPACE TRANSPORT VEHICLES

(Reference: Report of First Session, Resolution No. 15)

United Kingdom views on this requirement are stated in Document No. I/30 of the First Session.

As expressed therein it is unlikely that a final assessment of communication requirements for this type of aircraft can be made until actual experience has been gained of its operation in an ATC environment.

The United Kingdom accordingly proposes that no special provisions be made for supersonic transport aircraft or aerospace transport vehicles in the revised HF allotment plan for the Aeronautical Mobile (R) Service. It is further proposed that the terms of paragraph 4, Section II of Part I (contained in United Kingdom Proposal No. 1) be deemed adequate to meet any special operational requirements which, in the light of experience with these craft, may arise during the currency of the plan.



AERONAUTICAL CONFERENCE

Document No. II/11-E
22 February 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

COMMONWEALTH OF AUSTRALIA

PROPOSAL RELATING TO THE AMENDMENT OF BOUNDARIES OF THE AREA 9 SUB-R.D.A.R.A.'s

It is proposed

- (a) that the Sub-R.D.A.R.A. boundaries of Area 9 be amended as shown on the attached map.
- (b) that Appendix 26 to the Radio Regulations be amended accordingly as follows :

Part II, Section I, Article 2, Regional and Domestic Air Route Area -9,
delete description of Sub-Areas 9A, 9B, 9D and 9E and replace by the
following :

Sub-Area 9A

From the point 10°S 110°E to the South Pole. Then along the 139°E meridian to 24°S. Then through the points 24°S 131°E, 10°S 131°E to 10°S 110°E.

Sub-Area 9B

From the point 00° 141°E and through the points 10°S 141°E, 10°S 131°E, 24°S 131°E, 24°S 139°E, 27°S 139°E, 27°S 170°W, 00° 170°W to 00° 141°E.

Sub-Area 9C

Unaltered.

Sub-Area 9D

From the South Pole along the 139°E meridian to 27°S. Then through the point 27°S 170°W and along the 170°W meridian to the South Pole.

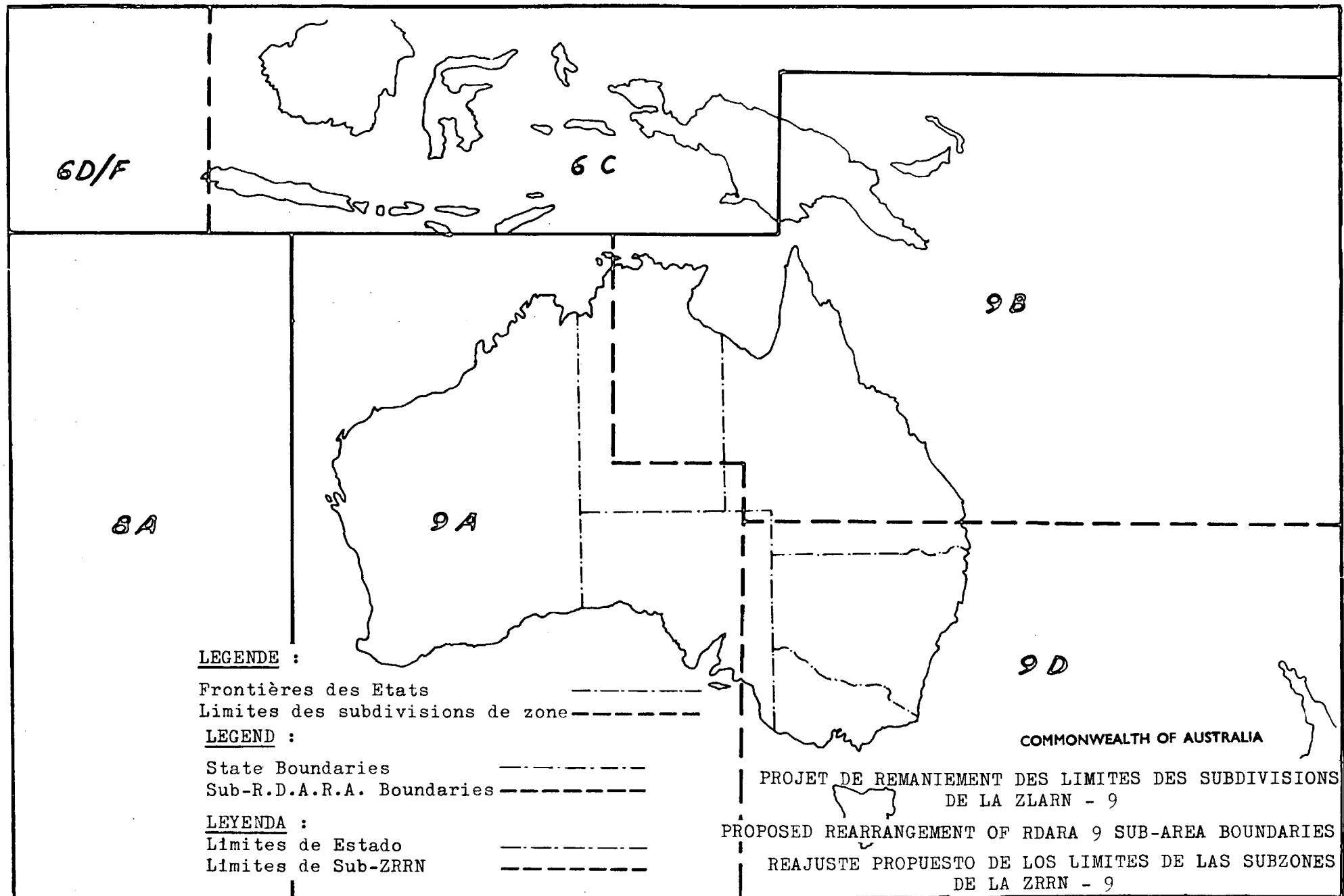
(Sub-Area 9E is absorbed in the newly-defined Sub-Area 9A.)

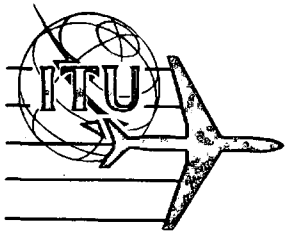


Reason :

In planning the Aeronautical Mobile H.F. communication families in Australia, it has been found necessary that different frequency networks should overlap major centres such as Darwin, Brisbane and Adelaide. It has therefore been impossible to employ frequencies allotted to particular Sub-R.D.A.R.A.'s wholly within their areas of primary allotment and frequency registrations have reflected this situation.

By minor adjustment of Sub-R.D.A.R.A. boundaries to coincide with Darwin and Brisbane, allotment areas can now be made to correspond with areas of frequency usage.





AERONAUTICAL CONFERENCE

Document No. II/12-E
22 February 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

COMMONWEALTH OF AUSTRALIA

PROPOSAL RELATING TO THE AUTHORIZATION OF CERTAIN FREQUENCIES FOR APPROACH AND AERODROME CONTROL COMMUNICATIONS

It is proposed that Appendix 26 to the Radio Regulations, (Geneva, 1959) Part II; Section II, Article 2, Frequency Allotment Plan, Column 3 (Remarks), be amended as follows :

Frequencies 2973 kc/s, 3023.5 kc/s, 3495.5 kc/s and 5680 kc/s, Clause 2. Delete preamble, clause (a) and clause (b) and replace by the following :

- "2. at aeronautical stations for approach and aerodrome control under the following conditions :
- a) for approach control with power limited to a value that will produce a field strength of 20 μ V/m at a distance of 60 km.
 - b) for aerodrome control with power limited to a value that will produce a field strength of 20 μ V/m at a distance of 20 km."

Reasons :

1. The existing provisions for the use of these frequencies at aeronautical stations for approach and aerodrome control purposes are inconsistent because, under average propagation conditions, the application of a power limit of 20 watts in the antenna circuit results in the field strength at the limit of the specified service ranges being significantly below the minimum required value as used in the formulation of the Frequency Allotment Plan.

2. The Annex to this proposal presents the technical justification for the amendment.



3. The implied limits of 100 km for the approach control function and 40 km for the aerodrome control function in the existing Regulations, have no practical significance in the Australian Air Traffic Control System. The amendment of these to 60 km and 20 km respectively brings the limits into line with current A.T.C. procedures, and at the same time renders them more consistent with the service ranges obtainable in practice.

4. The terms approach control and aerodrome control used in the preamble have been transposed to make it compatible, editorially, with other clauses.

A N N E X

ANOMALIES IN CONDITIONS PRESCRIBED FOR THE USE OF 3023.5 kc/s
AND 5680 kc/s IN APPENDIX 26 TO THE RADIO REGULATIONS

Summary - Conditions prescribed for the use of 3023.5 kc/s and 5680 kc/s are examined from technical and operational aspects and it is concluded that anomalies exist which may be minimised by deletion of the power limit clauses currently applicable and the revision of distance and field strength limitations.

1. Introduction

Recommendation No. 5 of the First Session of the I.T.U. E.A.R.C. (Aeronautical) Geneva, 1964, states 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 to the Radio Regulations (Geneva, 1959) pages 38 and 41 respectively. The Recommendation urges Administrations to establish their position with respect to possible changes to these provisions in order to permit further consideration of the matter at the Second Session of the Aeronautical E.A.R.C.

The clauses under consideration state that the frequencies, which are authorised for world-wide use for the (R) and (OR) Services, shall be subject to certain restrictions when employed at aeronautical stations for approach and aerodrome control. The restrictions to which this Recommendation applies are :

- a) When used for approach control, power shall be limited to a value that will produce 20 μ V/m at 100 km and in any case, no more than 20 watts in the antenna circuit.
- b) When used for aerodrome control, power shall be limited to a value that will produce 20 μ V/m at 40 km and in any case, no more than 20 watts in the antenna circuit.

An additional clause stipulates that the power of aeronautical stations which use these frequencies and which operate under the conditions prescribed under 2 a) and 2 b), may be increased through I.T.U. and/or I.C.A.O. regional agreements to the extent necessary to meet certain operational requirements. The I.T.U. E.A.R.C., First Session proposed, as an amendment to this clause, that such increases in power would be "subject to co-ordination between the administrations directly concerned and those whose services may be adversely affected".

The technical principles and standards governing the use of frequencies of the Aeronautical Mobile Service are contained in the Grey (Geneva, 1949) edition of the Frequency Allotment Plan for the Aeronautical Mobile Service, Article 2, page 16. The relevant sections for purposes of this study are :

a) Noise level

Local noise level at the aircraft assumed to be $5\mu\text{V/m}$.

b) Accepted signal-to-noise and signal-to-interference ratios

A3 : 15 db signal-to-noise or signal-to-interference ratio.

c) Required field intensity

A3 : $28\mu\text{V/m}$ for 15 db above $5\mu\text{V/m}$. As in the future with new aircraft and with properly serviced used aircraft it will be possible to reduce the noise level below $5\mu\text{V/m}$, a value of $20\mu\text{V/m}$ was therefore accepted.

d) Propagation characteristics

Skywave was assumed at all times.

2. Technical considerations

It will be noted that the above technical principles and standards state that throughout the plan, skywave propagation is assumed at all times. However, it can be readily shown by reference to propagation data (Reference 4) that with powers limited to a maximum of 20 watts in the aerial circuit, daytime skywave communication on 3023.5 kc/s would be impossible under most circumstances. Furthermore, the specification of distances at which particular field strengths are not to be exceeded for 3023.5 kc/s and 5680 kc/s would cease to have any practical value since for skywave propagation, variation of field strength with distance is negligible over the first few hundred kilometers. It should be accepted therefore that the 3023.5 and 5680 kc/s authorizations are exceptions to the general plan and are based on ground-wave propagation conditions.

The effects of night-time skywave propagation cannot be neglected however. When absorption in the ionospheric is negligible, a power of 20 watts in the antenna circuit may produce a median skywave signal strength of $5\mu\text{V/m}$ at distances of up to 3,000 km, thus representing a potential source of widespread interference.

In order to assess the reasonableness of specifying a maximum permissible aerial power of 20 watts for the aeronautical station, calculations were made of the field strength which may be expected at distances of 20 km, 40 km, 60 km and 100 km using a vertical aerial less than one quarter wavelength in height, a radiated power of 10 watts (thus allowing for a nominal 3 db loss in the aerial system), over four typical propagation media ranging from sea water to poor soil. Results are shown in Table 1. A height-gain improvement factor (Table 2) was applied to cover the case of an aircraft at a height of 1,000 ft. (300 m.). Table 3 shows the conditions under which a minimum of 20 μ V/m signal is obtainable at the aircraft and it will be seen for example, that over average soil, the specified minimum field strength is not obtainable at 100 km at 3 Mc/s. Furthermore, at 5 Mc/s with aircraft at a distance of only 40 km, insufficient signal will be received at ground level.

At this stage, it is not necessary to examine the performance of the air-to-ground portion of the circuit in any detail. It has already been shown that in the ground-to-air direction, the field strengths obtainable at the aircraft will restrict severely the range of the facility. If the air-to-ground portion of the circuit is the limiting factor, this can only place further restrictions on the range. In other words, the performance of the circuit cannot be better than that calculated in this paper for the ground-to-air direction. It could be worse.

To summarise, a set of conflicting circumstances exist at the present time, namely :

- a) Because of extremely high skywave attenuation, daytime communication on 3.0 Mc/s must be by means of ground-wave propagation. The present power restriction of a maximum of 20 watts in the aerial circuit does not permit adequate signal strength to be obtained under many operational situations. A power increase of 44 db would be necessary, for example, to provide a signal of 20 μ V/m at a distance of 100 km at ground level over a poor soil propagation medium.
- b) Night-time skywave propagation with power restriction as prescribed at present can account for interference at distances of up to 3,000 km.

3. Discussion

Since 3023.5 kc/s and 5680 kc/s are allotted world-wide to both Route and Off-Route services, it is most necessary that interference on these frequencies be kept to a minimum. When it is realised that the night-time interference range of a 3023.5 kc/s installation may be up to 3,000 km even with a power of 20 watts in the aerial circuit, the need to restrict operating powers to an absolute minimum will be appreciated.

It is noted that the First Session of I.T.U. E.A.R.C. has made further proposals for the amendment of the conditions governing the use of 3023.5 kc/s and 5680 kc/s. These are contained in Chapter II, Section 4 of the Final Report and provide for the power of aeronautical stations to be increased to the extent necessary to meet certain operational requirements, subject to co-ordination between the administrations concerned. Hence, theoretically, where difficulty is experienced in maintaining communication on these frequencies when operating under the prescribed conditions, it is possible to arrange for a power increase by negotiation. It might be argued, therefore, that there is no need for further changes in the existing provisions, even though some technical anomalies remain. In practice, negotiation for a power increase would have to be undertaken quite frequently and would prove lengthy and sometimes involved, particularly where a number of services are concerned. Furthermore, it is not sound practice to specify a power limitation which, under average conditions, would not permit efficient operation of the facility. Such a situation exists at the moment, because 20 watts in the aerial is at least 20 db below that necessary to permit ground-wave communication at 100 km over soil of average conductivity.

The frequencies 2973 and 3495.5 kc/s, although not covered by Recommendation No. 5 of the I.T.U. E.A.R.C., are nevertheless subject to field strength and power limitations identical with those applying to 3023.5 kc/s and 5680 kc/s. In revising Appendix 26 to the Radio Regulations, the Second Session of the E.A.R.C. should therefore give consideration to the amendment of power limitations to all four frequencies quoted above.

4. Conclusion

Because of the limitations imposed by the ground-wave propagation characteristics of the frequencies in the range 3 to 5 Mc/s, a completely satisfactory solution to this problem does not seem possible. The retention of some restrictive clauses appears warranted in order to minimise the occurrence of interference problems particularly during night hours. On the other hand, the existing restrictions and the performance obtainable in practice are so much at variance that some effort should be made to bring them closer into line. In the light of Australian A.T.C. procedures, it is necessary to specify a ground-wave communications range of 60 km, although this may not always be attainable over soil of poor conductivity.

The proposed amendment of the implied service limits for approach control and aerodrome control to 60 km and 20 km respectively, serves to reduce the gap between regulations and the practical situation. The removal of the limitation of maximum permissible power in the aerial circuit will provide for the use of higher aerial power where this is

dictated by adverse propagation characteristics without the need for introducing lengthy co-ordination procedures which are required at present. Nevertheless, the retention of distance/field strength limitations places accent on the need for the use of powers no greater than necessary to ensure a satisfactory service (Radio Regulation No. 694) and provides an engineering basis for the determination of required transmitter power.

References

1. Appendix 26 to the Radio Regulations, Geneva, 1959. Frequency Allotment Plan for the Aeronautical Mobile Service and Related Information.
2. Frequency Allotment Plan for the Aeronautical Mobile Service and Final Agreement, Geneva, 1948-1949 (Grey Book).
3. C.C.I.R. Recommendation 368, Ground-Wave Propagation Curves for Frequencies Below 10 Mc/s.
4. Ionospheric Radio Propagation, National Bureau of Standards, Circular 462, United States Government Printing Office.
5. K.A. Norton, The Propagation of Radio Waves over the Surface of the Earth and in the Upper Atmosphere, Part 2, Proceedings of the Institution of Radio Engineers (U.S.) September 1937.

TABLE 1TYPICAL FIELD STRENGTHS IN db ABOVE 1 μ V/m AT VARIOUS DISTANCES

Vertical polarisation at ground level.

Vertical aerial less than $\frac{1}{4}$ wavelength in height.

Radiated power : 10 watts. Ground-wave propagation.

PROPAGATION MEDIUM			3.0 Mc/s				5.0 Mc/s			
Description	Conductivity	Permittivity	20 km	40 km	60 km	100 km	20 km	40 km	60 km	100 km
	mho/m		db	db	db	db	db	db	db	db
Sea Water	4	80	62	56	53	47	62	55	52	46
Good Soil	3×10^{-2}	4	51	38	30	19	41	28	19	8
Average Soil	10^{-2}	4	40	26	18	6	30	17	8	-3
Poor Soil	10^{-3}	4	20	8	0	-12	15	2	-6	-18

Based on curves published in C.C.I.R. Recommendation 368, (Geneva, 1963)

TABLE 2

HEIGHT-GAIN IMPROVEMENT FACTORS

Aircraft at 1,000 ft (300 m) Altitude

Ground-wave Propagation

Vertical Polarisation

Medium	3.0 Mc/s	5.0 Mc/s
	db	db
Sea Water	0	0
Good Soil	0	6
Average Soil	6	13
Poor Soil	17	22

Based on formulae developed by K.A. Norton

(Reference No. 5)

TABLE 3

CONDITIONS UNDER WHICH MINIMUM OF $20 \mu\text{V/m}$ ($26 \text{ db} > 1 \mu\text{V/m}$) IS OBTAINED AT AIRCRAFT

Vertical aerial less than $1/4$ wavelength : 10 watts radiated

(Ground Wave Propagation Assumed)

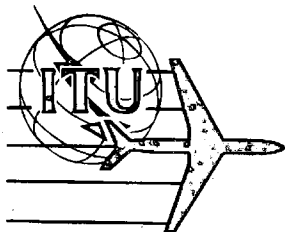
Medium	3 Mc/s				5 Mc/s			
	20 km	40 km	60 km	100 km	20 km	40 km	60 km	100 km
Sea Water	X	X	X	X	X	X	X	X
Good Soil	X	X	X	-	X	X	-	-
Average Soil	X	X	-	-	X	0	-	-
Poor Soil	0	-	-	-	0	-	-	-

LEGEND : X Obtainable at all altitudes

0 Obtainable at 1,000 ft (300 m) but not at ground level

- Not obtainable at 1,000 ft (300 m) or less

(Derived from Tables 1 and 2)



AERONAUTICAL CONFERENCE

Corrigendum to
Document No. II/13-E
14 March 1966
Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

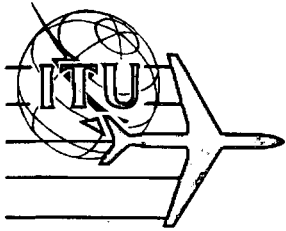
Note by the Secretary-General

CONVENING OF THE CONFERENCE

The following corrections should be made in Document No. II/13:

Member	Invitation accepted	Invitation declined
10. Burma (Union of)		X
75. Morocco (Kingdom of)		X
77. Mexico	X	
96. Portuguese Oversea Provinces	X	
103. Roumania (Socialist Republic of)	X	
123. Union of Soviet Socialist Republics	X	





AERONAUTICAL CONFERENCE

Document No. II/13-E
8 March 1966
Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Note by the Secretary-General

CONVENING OF THE CONFERENCE

It will be recollected that the 19th Session of the Administrative Council (1964) decided, after consulting the Members of the Union, to postpone the Second Session of the Administrative Aeronautical Radio Conference to 1966. At its 20th Session (1965), the Council fixed 14 March 1966 as the opening date, after considering all the relevant factors.

In accordance with Chapter 3 of the General Regulations annexed to the International Telecommunication Convention (Geneva 1959), the Secretary-General - in the absence of an inviting Government - took the necessary steps to convene and organize the Second Session of the Extraordinary Administrative Radio Conference for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service, after agreement with the Government of the Swiss Confederation.

1. Invitations to Members and Associate Members

On 8 June 1965, invitations (see Annex 1) were sent to the Administrations of Members and Associate Members of the Union. By 7 March, replies to this invitation had been received as shown in Annex 2.

2. Invitations to the United Nations and the specialized agencies

In accordance with Chapter 1 of the General Regulations annexed to the Convention, the United Nations and the following specialized agencies were invited to send observers in an advisory capacity:

International Civil Aviation Organization (I.C.A.O.)
United Nations Educational, Scientific and Cultural
Organization (UNESCO)
Inter-Governmental Maritime Consultative Organization (I.M.C.O.)
World Meteorological Organization (W.M.O.)



By 7 March 1966, the following agencies had announced that they would participate:

I.C.A.O.,
UNESCO

The other organizations declined the invitation.

3. Notification of international organizations

The International Air Transport Association (I.A.T.A.) was informed that the Conference would be convened and it submitted a request to participate.

In addition, the International Broadcasting and Television Organization (O.I.R.T.), Prague, after learning that the Conference was being convened, announced its desire to be represented by observers in order to continue the work commenced at the First Session, at which this organization was represented.

It should be noted that the Administrative Council has exempted these two organizations from any share in the expenses of I.T.U. conferences, in accordance with number 212 of the Convention.

M.B. SARWATE
Secretary-General

A N N E X 1

No. 3941/II/R

Geneva, 8 June 1965

REGISTERED

Subject: Extraordinary Administrative
Radio Conference for the
Preparation of a Revised
Allotment Plan for the
Aeronautical Mobile (R)
Service (2nd Session)

Dear Sir,

1. At its 20th Session, the Administrative Council proposed that the 2nd Session of the Extraordinary Administrative Radio Conference for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service, which had been postponed until 1966 by decision of the 19th Session, should be held in Geneva as from 14 March 1966 for a period of eight weeks, and that the agenda should be as follows:

"On the basis of the decisions taken by the preparatory session of the Conference and the preparatory work undertaken by the I.F.R.B., to review and, to the extent considered necessary, revise the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 26 to the Radio Regulations, and the Radio Regulations associated therewith;"

As those proposals were approved by a majority of Members of the Union, the Administrative Council adopted Resolution No. 563 (see Annex 1).

2. In accordance with Chapters 2 and 3 of the General Regulations annexed to the International Telecommunication Convention, Geneva, 1959, I therefore have pleasure in inviting your Government to send a delegation to the 2nd Session of the Extraordinary Administrative Radio Conference for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service.

If you wish, you may inform the private operating agencies recognized by your Administration of this invitation.

I should be obliged if you would kindly let me know, at your earliest convenience, preferably by 1 October 1965, whether you accept this invitation. If so, I should be grateful to have details concerning each of the members of your delegation, in the form shown in Annex 2 *) hereto, by 15 February 1966 at the latest. This would greatly facilitate the organization of the Conference.

3. I should also be glad if you would send me your proposals for the work of the Conference as soon as possible, in conformity with Chapter 4 of the General Regulations annexed to the Convention.

4. I would draw your attention to Article 16 of the Convention on the languages used at Union conferences.

5. I would refer you also to Chapter 5 of the General Regulations annexed to the Convention concerning the credentials with which delegations must be furnished when they are sent by Members of the Union to take part in conferences.

Yours faithfully,

For the Secretary-General



M.B. SARWATE
Deputy Secretary-General

Annex : 1

*) Registration form which is not enclosed herewith.

Annex

to circular letter No. 3941/II/R of 8 June 1965

R No. 563

SECOND SESSION OF THE E.A.R.C. FOR THE PREPARATION OF
A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE
(R) SERVICE

The Administrative Council,

having examined

the report by the Secretary-General contained in
Document No. 3349/CA20;

noting that

the International Civil Aviation Organization is planning
to convene its 5th European Mediterranean Regional Air Navigation Meeting
on 8 February 1966;

considering that

a majority of the Members of the Union have approved the
proposals of the Administrative Council contained in Circular Telegram
No. 16/23 of 23 April 1965;

resolves

1. that the Second Session of the Aeronautical Conference
shall open in Geneva on 14 March 1966 with a duration of eight weeks;

2. that the agenda of this session shall be as follows:

"on the basis of the decisions taken by the preparatory
session of the Conference and the preparatory work under-
taken by the I.F.R.B., to review and, to the extent
considered necessary, revise the Frequency Allotment
Plan for the Aeronautical Mobile (R) Service contained
in Appendix 26 to the Radio Regulations, and the Radio
Regulations associated therewith;"

invites the I.F.R.B.

to prepare the documents referred to in Resolution No. 13
of the First Session of the Conference with a view to their despatch to
Administrations not later than 15 December 1965;

instructs the Secretary-General

1. to take the necessary steps to convene and organize the Conference after agreement with the Government of the Swiss Confederation;
2. to send a copy of this Resolution to the Secretary-General of I.C.A.O.

This Resolution replaces Resolutions Nos. 525 and 548.

A N N E X 2

MEMBERS AND ASSOCIATE MEMBERS OF THE UNION

Member	Invitation accepted	Invitation declined
1. Afghanistan		
2. Albania (People's Rep. of)		
3. Algeria (Algerian Democratic & Pop. Rep.)	x	
4. Saudi Arabia (Kingdom of)	x	
5. Argentine Republic	x	
6. Australia (Commonwealth of)	x	
7. Austria	x	
8. Belgium	x	
9. Bielorussian (Sov. Soc. Rep.)		
10. Burma (Union of)		
11. Bolivia		
12. Brazil	x	
13. Bulgaria (People's Rep. of)	x	
14. Burundi (Kingdom of)		
15. Cambodia (Kingdom of)		
16. Cameroon (Fed. Rep. of)	x	

Member	Invitation accepted	Invitation declined
17. Canada	x	
18. Central African Republic		
19. Ceylon		x
20. Chile		
21. China	x	
22. Cyprus (Republic of)		x
23. Vatican City State		
24. Colombia (Republic of)	x	
25. Congo (Democratic Rep. of the)		
26. Congo (Rep. of the) (Brazzaville)	x	
27. Korea (Republic of)		
28. Costa Rica		x
29. Ivory Coast (Republic of the)		x
30. Cuba	x	
31. Dahomey (Republic of)		x
32. Denmark	x	
33. Dominican Republic		
34. El Salvador (Republic of)		

Member	Invitation accepted	Invitation declined
35. Group of Territories represented by the French Overseas Post and Telecommunication Agency	x	
36. Ecuador	x	
37. Spain	x	
38. United States of America	x	
39. Ethiopia	x	
40. Finland		x
41. France	x	
42. Gabon Republic		
43. Ghana	x	
44. Greece		x
45. Guatemala		x
46. Guinea (Republic of)	x	
47. Haiti (Republic of)		
48. Upper Volta (Republic of)		
49. Honduras (Republic of)		
50. Hungarian People's Republic	x	
51. India (Republic of)	x	

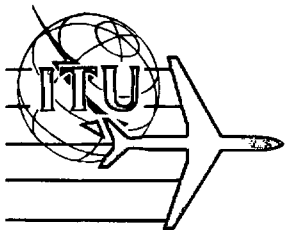
Member	Invitation accepted	Invitation declined
52. Indonesia (Republic of)		
53. Iran		x
54. Iraq (Republic of)		x
55. Ireland	x	
56. Iceland		x
57. Israel (State of)		
58. Italy	x	
59. Jamaica	x	
60. Japan	x	
61. Jordan (Hashemite Kingdom of)	x	
62. Kenya		x
63. Kuwait (State of)	x	
64. Laos (Kingdom of)		
65. Lebanon		
66. Liberia (Republic of)		
67. Libya (Kingdom of)		
68. Liechtenstein (Principality of)		
69. Luxembourg	x	

Member	Invitation accepted	Invitation declined
70. Malaysia	x	
71. Malawi		x
72. Malagasy Republic		x
73. Mali (Republic of)		x
74. Malta	x	
75. Morocco (Kingdom of)		
76. Mauritania (Islamic Republic of)		x
77. Mexico		
78. Monaco	x	
79. Mongolian People's Republic		
80. Nepal		
81. Nicaragua		
82. Niger (Republic of the)		x
83. Nigeria (Federal Republic of)		
84. Norway	x	
85. New Zealand	x	
86. Uganda		x

Member	Invitation accepted	Invitation declined
87. Pakistan		
88. Panama		
89. Paraguay		
90. Netherlands (Kingdom of the)	x	
91. Peru		
92. Philippines (Republic of the)		x
93. Poland (People's Republic of)	x	
94. Portugal	x	
95. Spanish Provinces in Africa		
96. Portuguese Oversea Provinces		x
97. Syrian Arab Republic		x
98. United Arab Republic		x
99. Federal Republic of Germany	x	
100. Ukrainian Soviet Socialist Republic		
101. Somali Republic		
102. Rhodesia		x
103. Roumania (Socialist Republic of)		
104. United Kingdom of Great Britain and Northern Ireland	x	

Member	Invitation accepted	Invitation declined
105. Rwanda (Republic of)		
106. Senegal (Republic of the)	x	
107. Sierra Leone		
108. Singapore	x	
109. Sudan (Republic of the)		x
110. South Africa (Republic of) and Territory of South-West Africa	x	
111. Sweden	x	
112. Switzerland (Confederation of)	x	
113. Tanzania (United Rep. of)		x
114. Chad (Republic of the)		x
115. Czechoslovak Socialist Republic	x	
116. Territories of the United States of America	x	
117. Overseas Territories for the inter- national relations of which the Govern- ment of the United Kingdom of Great Britain and Northern Ireland are responsible.	x	
118. Thailand	x	
119. Togolese Republic		x

Member	Invitation accepted	Invitation declined
120. Trinidad and Tobago		
121. Tunisia	x	
122. Turkey		x
123. Union of Soviet Socialist Republics		
124. Uruguay (Oriental Republic of)		
125. Venezuela (Republic of)		
126. Viet-Nam (Republic of)		x
127. Yemen		
128. Yugoslavia (Fed. Socialist Rep. of)	x	
129. Zambia (Rep. of)		x



AERONAUTICAL CONFERENCE

Document No. II/14-E

7 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Note by the Secretary-General

POSITION OF CERTAIN COUNTRIES

WITH REGARD TO THE CONVENTION

1. Number 233 of the International Telecommunication Convention (Geneva 1959) stipulates that :

"After the end of a period of two years from the date of entry into force of this Convention, a signatory government which has not deposited an instrument of ratification in accordance with the provisions of number 231 shall not be entitled to vote at any conference of the Union, or at any session of the Administrative Council or at any meeting of any of the permanent organs of the Union until it has so deposited such an instrument."

Attention is drawn to the fact that the following countries, which are signatories to the Geneva Convention, have not yet ratified it :

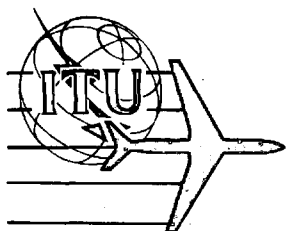
El Salvador (Republic of)
Greece
Libya (Kingdom of)
Uruguay (Oriental Republic of).

2. Furthermore, the following countries which were Members of the Union under the preceding Convention, have not yet acceded to the Geneva Convention :

Honduras (Republic of)
Yemen.

M.B. SARWATE
Secretary-General





AERONAUTICAL CONFERENCE

Document No. II/15-E

7 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

HEADS OF DELEGATION

AGENDA OF THE

MEETING OF THE HEADS OF DELEGATION

Monday, 14 March 1966, at 11 a.m.

1. Preparation of the agenda for the 1st Plenary Meeting (see annex)
2. Any other business

Annex : 1



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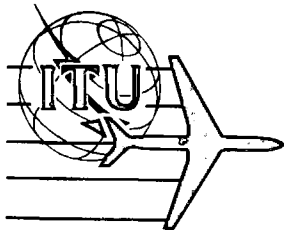
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A N N E X

DRAFT AGENDA
OF THE
1st PLENARY MEETING

Monday, 14 March 1966, at 4 p.m.

1. Opening of the 2nd Session of the Conference (No. 560 of the Convention)
2. Election of the Chairman of the 2nd Session of the Conference (No. 562 of the Convention)
3. Election of the Vice-Chairmen (No. 563 of the Convention)
4. Statement by the Secretary-General
5. Steps taken to convene the Conference (Document No. II/13)
6. Structure of Committees (No. 564 of the Convention) (Document No. II/8)
7. Election of Committee Chairmen and Vice-Chairmen (No. 564 of the Convention)
8. Constitution of the Conference Secretariat (No. 565 of the Convention) (Document No. II/17)
9. Date by which the Credentials Committee must reach its conclusions (No. 535 of the Convention)
10. Admission of international organizations (No. 519 of the Convention) (Document No. II/13, paragraph 3)
11. Apportionment of proposals among the Committees
12. Working hours of the Conference
13. Any other business



AERONAUTICAL CONFERENCE

Document No. II/16-E

12 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

AGENDA

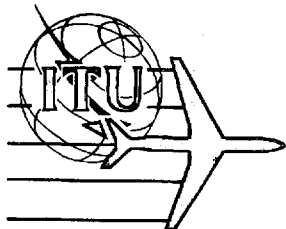
OF THE

1st PLENARY MEETING

Monday, 14 March 1966, at 4 p.m.

1. Opening of the 2nd Session of the Conference (No. 560 of the Convention)
2. Election of the Chairman of the 2nd Session of the Conference
(No. 562 of the Convention)
3. Election of the Vice-Chairmen (No. 563 of the Convention)
4. Statement by the Secretary-General
5. Steps taken to convene the Conference (Document No. II/13)
6. Structure of Committees (No. 564 of the Convention) (Document No. II/8)
7. Election of Committee Chairmen and Vice-Chairmen (No. 564 of the
Convention)
8. Constitution of the Conference Secretariat (No. 565 of the Convention)
(Document No. II/17)
9. Date by which the Credentials Committee must reach its conclusions
(No. 535 of the Convention)
10. Admission of international organizations (No. 519 of the Convention)
(Document No. II/13, paragraph 3)
11. Apportionment of proposals among the Committees
12. Working hours of the Conference
13. Any other business





AERONAUTICAL CONFERENCE

Document No. 11/17-E

14 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Note by the Secretary-General

SECRETARIAT OF THE CONFERENCE

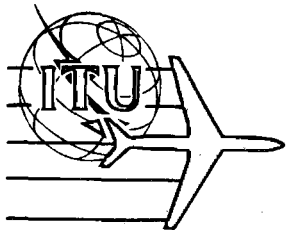
In accordance with No. 565 of the Convention, one of the tasks of the First Plenary Meeting is to constitute the Secretariat of the Conference. In this connection, I have the honour to submit the following proposal :

<u>Secretary of the Conference</u>	: Mr. J. Kunz
assisted by	: Mr. B. Roig
Delegates' Services	: Mrs. L. Jeanmonod
<u>Technical Division</u>	: Mr. J. Millot
assisted by	: Mr. A.A. Matthey
	: Mr. A. Maqbool
	: Mrs. B. Arnold
<u>Administrative services</u>	: Mr. R. Prélaz
<u>Conference and Document Services</u>	: Mr. U. Petignat
Interpretation	: Mr. C. Vonwiller
Translation :	
French section	: Mr. J. Revoy
English section	: Mr. R. Rees
Spanish section	: Mr. F. Moreno
Typing	: Mrs. S. Jentzer
Reproduction	: Mr. E. Burge
Document distribution	: Mr. W. Gantert
<u>Public Relations Officer</u>	: Mr. C. Mackenzie

These services will be manned by officials detached from I.T.U. Headquarters and by personnel recruited as necessary outside the Union.

M.B. SARWATE
Secretary-General





AERONAUTICAL CONFERENCE

Document No. II/18-E

8 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

REPUBLIC OF INDIA

PROPOSALS FOR THE REVISION OF THE RADIO REGULATIONS GENEVA 1959 AND THE FREQUENCY ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

Appendix 26

1. The revised plan for allotment of frequencies to Aeronautical Mobile (R) Service may be incorporated in a new Appendix 26 bis.

Reasons :

To facilitate reference.

2. Article 7

Amend Radio Regulation 431 to read as follows :

"Frequencies in the bands allocated to the Aeronautical Mobile Service between 2850 and 18030 kc/s (see Article 5) shall be assigned in conformity with the provisions of Appendix 26 in respect of Aeronautical Mobile (OR) Service and Appendix 26 bis in respect of Aeronautical Mobile (R) Service and the other relevant provisions of these Regulations."

Reasons:

Consequential to 1 above.

3. Article 9

References to Appendix 26 in Radio Regulations 554, 558 and 559 may be suitably modified to refer to the corresponding provisions of the proposed Appendix 26 bis.

Reasons :

Consequential to 1 above.



4. Article 15

The Conference may like to prescribe a special procedure for resolving cases of harmful interference to Aeronautical Mobile (R) Service, by which the I.F.R.B. would be entrusted with the task of establishing the identity of interfering station(s) and clearance of interference.

Reasons :

Frequencies in the Allotment Plan are not assigned to specific Administrations. Besides, experience has shown that a single Administration is not effective in establishing interference identity. A coordinated procedure organised by the I.F.R.B. is likely to be speedy and more fruitful in clearance of interference.

5. The title of Appendix 26 bis may read as follows :

"Frequency Allotment Plan for the Aeronautical Mobile (R) Service.

Using frequencies between 2850 - 17970 kc/s and related information

(See Article 7 of the Radio Regulations, Geneva, 1959)."

In the same way the title of Appendix 26 may be suitably altered.

Reasons :

The underlined text is added to reflect the actual position.

6. The provisions of the new Appendix 26 bis should be suitably numbered to facilitate reference to the various individual provisions.

Reasons :

Clarity.

7. With reference to paragraph 6.3, page 51 of "Report of the First Session", it is proposed that channels in the bands allocated to the Aeronautical Mobile (R) Service which are rendered surplus may be recommended for use by the undermentioned services in the order specified below :

- i) to meet the demands for exclusive channels for meteorological broadcasts;

- ii) to aeronautical fixed telecommunication circuits for which suitable channels cannot be found in the appropriate bands.

Reasons :

With the adoption of the technical criteria used in I.A.A.R.C. 1949 for drawing up the revised plan, the possible means of accommodating increased demands of Aeronautical Mobile (R) Service appear to be as follows :

- i) use of SSB;
- ii) use of VHF and other means of communication other than HF;
- iii) reduced channel spacing in bands above 10 Mc/s. If, even with this limited scope, the conference finds that some spare channels are available, then the conference may recommend that these can then be made available to meteorological broadcasts and aeronautical fixed telecommunication circuits which are the supporting services for Aeromobile (R) Service.

8. Reference Resolution No. 3, paragraph 2, page 54 of the Report of the First Session :

Following revisions may be made to the existing MWARA boundaries :

8.1 MWARA - ME.

- 8.1.1 Eastern boundary may be moved to the West to exclude Calcutta, Colombo and Madras.
- 8.1.2 The Northern boundary may be moved to the North to include routes from Tashkent, Moscow and Kiev to the Middle East and India.
- 8.1.3 The Western boundary may be moved East of the line joining Kuwait, Baghdad, Damascus and Nicosia.

Reasons :

- 8.1.1 To remove interference between the East and West extremities of the MWARA - ME.
- 8.1.2 To cater for direct flights between U.S.S.R. and India.
- 8.1.3 To reduce congestion and overloading on the ME frequencies in the Western region.

8.2 MWARA - FE 1

The existing Western boundaries of this MWARA may be retained.

Reasons :

To avoid congestion and overloading of FE 1 frequencies.

9. Reference Resolution No. 4, paragraph 2, page 54 of the Report of the First Session :

The present boundaries of sub-RDARAS 6A and 6E may be maintained.

Reasons :

The present demarcation of the boundary between 6A and 6E is satisfactory.

10. Reference Resolution No. 8, page 59 of the Report of the First Session :

Two channels each in 3, 6 and 11 Mc/s bands and one channel in 13 Mc/s band may be made available for meteorological broadcasts for the South East Asian and ME - Met areas.

Reasons :

The presently available channels in these areas are not adequate to meet the demands of meteorological broadcasts.

11. The Conference may like to recommend that even for international flights the use of MWARA set of frequencies may be restricted to such flights whose total route lengths exceed a certain minimum such as 1000 km.

Reasons :

The short length international flights, which appear to be more numerous as reflected by the statistics for MWARAs, presently use MWARA frequencies. Sometimes two or three network stations operate on the same frequencies in the adjacent areas which causes congestion on MWARA frequencies adversely affecting the long distance flights. Hence such a restriction of route length appears necessary.

12. The MWARA frequencies should be uniformly distributed to all aeronautical stations in the concerned MWARA. Each aeronautical station may keep watch on specific families of frequencies which are not repeated at adjacent aeronautical stations.

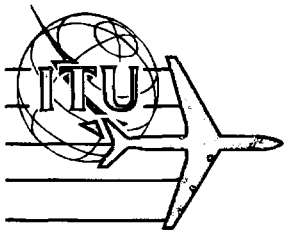
Reasons :

Such a recommendation, though it reflects an operational aspect, would highlight the need for effective planning and maximum usage of the frequencies made available to the MWARAs.

13. The Conference may like to recommend that information regarding developments of techniques which would help reduce the congestion in Aeronautical Mobile (R) Service bands in HF - such as extended range VHF, long range VHF, space radio communication techniques - may be periodically collected from the administrations and circulated by the I.T.U. Secretariat to all its Members and Associate Members.

Reasons :

To keep all the Members and Associate Members abreast of the technical advances in the field in order to induce them to use these techniques and release the HF channels for such more important uses which cannot be provided for elsewhere in the spectrum.



AERONAUTICAL CONFERENCE

Document No. II/19-E

2 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

BUDGET CONTROL COMMITTEE

Note by the Secretary-General

BUDGET OF THE CONFERENCE

The budget of the Aeronautical Conference as approved by the 20th Session of the Administrative Council, Geneva 1965, is annexed to the present document for the information of the Budget Control Committee. This Annex is supplemented by a revised budget which includes additional credits amounting to 30,000 Swiss francs to cover the increase in salary scales for supernumerary staff in the General Services category which took effect from 1 January 1966. In Document No. 3484/CA21 it has been proposed that the Administrative Council approve these additional credits, in accordance with Additional Protocol I to the International Telecommunication Convention (Montreux 1965).

As regards the apportionment of the expenses of the Conference, these expenses form part of the normal budget of the Union and are covered by the annual contributions by Members of the Union for 1966. Hence, no additional bills concerning the expenses of the Conference will be sent to the Members of the Union.

M.B. SARWATE
Secretary-General

Annex : 1



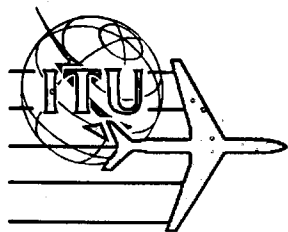
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A N N E X

Details of expenditure in Section 7.6 EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL SERVICE (Second Session)

		First Session		Second Session	
		Budget 1964	Accounts 1964	Budget 1966	Budget 1966 incl. add. credits
- <u>Swiss francs</u> -					
<u>I. Staff</u>					
7.601	Administration	70,000	30,947.80	89,000	95,900
7.602	Language services	315,000	245,548.35	594,000	607,800
7.603	Reproduction	27,000	39,645.75	87,000	93,800
7.604	Insurance	2,000	9,264.80	6,000	6,300
<u>II. Premises and equipment</u>					
7.605	Premises, furniture, machines	75,000	17,841.20	74,000	74,000
7.606	Document production	45,000	24,202.90	72,000	72,000
7.607	Office supplies and overheads	30,000	21,155.11	29,000	29,000
7.608	Simultaneous interpretation and other technical equipment	15,000	5,088.20	1,000	1,000
7.609	Unforeseen	11,000	125.45	5,000	5,000
<u>III. Preparatory Work</u>					
7.610	I.F.R.B. preparatory work	50,000	29,618.75	43,000	45,200
		640,000	423,438.31	1,000,000	1,030,000



AERONAUTICAL CONFERENCE

Corrigendum to
Document No. II/20-E
15 March, 1966
Original : English

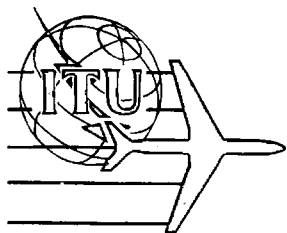
E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

Replace page (42) of Document No. II/20 by the revised page annexed herewith.

Annex : 1





AERONAUTICAL CONFERENCE

Document No. II/20-E

8 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Memorandum by the International Frequency Registration Board

STATISTICAL ANALYSES OF INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Further to the Memorandum by the I.F.R.B. contained in Document No. II/7, and in particular paragraph 7 thereof, the material listed below is distributed herewith in a form which permits its ready insertion in the appropriate places in the various Sections of the Report by the I.F.R.B., (Sections I, II, III and VI of the Report in question were mailed to Administrations on 15 December 1965 and Sections IV and V on 31 January 1966):

- a) a new Recapitulative Supplement and Corrigendum to the Master List by Countries, based on information received up to 1 March 1966, to replace Section V of the Report (pages 3 to 31 inclusive of the present document);
- b) a revised Summary of the Numerical Square Master List, based on information received up to 1 March 1966, to replace pages XIII, XV and XVII of Section II of the Report (pages 33, 34 and 35 of the present document);
- c) a revised Numerical Square Flight Density List, based on information received up to 1 March 1966, to replace pages II/133-II/136 inclusive, of Section II of the Report (pages 37, 38, 39 and 40 of the present document);
- d) a revised Table of Flight Densities by Zones of Analyses, based on information received up to 1 March 1966, to replace page XI of Section III of the Report (page 42 of the present document). The statistics appearing in this Table have been expanded by sub-division according to a) Types of Flight and b) Aircraft Speeds, the resultant Expanded Table appears on pages 44, 45, 46 and 47 of the present document;
- e) new Tables of the Master List by Countries, and the Master List and Summary by Reporting Areas, of Regional and Domestic Flights, based on information received from Administrations up to 1 March 1966, to replace pages VI/1 and VI/5 of Section VI of the Report (pages 49 and 50 of the present document).



Enclosures : 5

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

Section V - VOLS INTERNATIONAUX - Supplément et Corrigendum à
la Section I contenant des renseignements additionnels
et corrections reçus entre le 1er novembre 1965 et le
1er mars 1966

REVISE le 1er mars 1966

Pour des raisons d'ordre pratique, les Tableaux révisés ont été imprimés de telle sorte que les pages ci-jointes numérotées de V/I (Rev. 1/3/66) à V/29 (Rev. 1/3/66) inclus puissent être insérées dans la Section V du Rapport en remplacement des pages V/1 à V/24 inclus.

THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

Section V - INTERNATIONAL FLIGHTS - Supplement and Corrigendum
to Section I containing additional information and
corrections received between 1 November 1965 and
1 March 1966

REVISED 1 March 1966

For the sake of convenience, the revised Tables have been printed in such a manner that the enclosed pages, numbered from V/1 (Rev. 1/3/66) to V/29 (Rev. 1/3/66) inclusive, may be inserted in Section V of the Report to replace pages V/1 - V/24 inclusive.

ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

Sección V - VUELOS INTERNACIONALES - Suplemento y Corrigendum
a la Sección I, que comprende información adicional y las
correcciones recibidas entre el 1.º de noviembre de 1965
y el 1.º de marzo de 1966.

REVISADO el 1.º de marzo de 1966

Por razones de orden práctico, los cuadros revisados se han imprimido de manera que las adjuntas páginas V/I (Rev. 1/3/66) a V/29 (Rev. 1/3/66) inclusive puedan insertarse en la Sección V del Informe en sustitución de las páginas V/I a V/24 inclusive.

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
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Saudi Arabia (Kingdom of)																																
Arabia Saudita (Reino de)																																
SV302	11	566F5																												691	687F	
SV303	11	667F5																												691	566F	
SV304	11	566F1	185	545F1		393	546F1	210	547F1	96	547F1																			270	444G	
SV305	11	444G2	98	547F2		210	546F2	393	545F2																					185	566F	
SV306	11	566F1	158	667F1		379	689F1	379	667F1																					158	566F	
SV308	11	566F4	158	667F4																										275	688F	
SV309	11	688F4	275	667F4																										158	566F	
SV314	11	566F5	465	546F5		210	547F5																							216	444F	
SV315	11	444F6	216	547F6		210	546F6	393	545F6																					185	566F	
SV338	11	566F2	185	545F2		282	446F2																							361	426G	
SV339	11	426G3	358	446F3		282	545F3																							185	566F	
SV340	11	566F4	185	545F4		498	447F4																							487	427G	
SV341	11	427G5	487	447F5		500	545F5																							185	566F	
SV604	11	566F7	185	545F7		282	446F7		218	447F7																				102	426G	
SV605	11	426G7	597	545F7																										185	566F	
SV608	11	566F4	185	545F4		597	426G4	102	447F4																					569	566F	
SV610	11	566F2	185	545F2		393	546F2	210	547F2																					855	426G	
SV611	11	426G3	855	547F3		210	546F3																							465	566F	
SV700	13	566F1																												809	426G	
	13	566F4																												809	426G	
SV701	13	426G4																												809	566F	
SV702	13	566F3																												809	426G	
	13	566F6																												809	426G	
SV703	13	426G4																												809	566F	
	13	426G6																												809	566F	
SV710	13	566F2																												680	447F	
	13	566F4																												680	447F	
SV711	13	447F4																												680	566F	
SV712	13	566F7																												680	447F	
SV713	13	447F7																												680	566F	
SV720	13	566F1	465	546F1		210	547F1																							898	426G	
	13	566F3	465	546F3		210	547F3																							898	426G	
SV721	13	426G1																												809	566F	
SV722	13	566F5	465	546F5		210	547F5	832	447F5																					145	426G	
SV723	13	426G5	898	547F5		210	546F5																							465	566F	
SV730	13	566F2	465	546F2		210	547F2																							1035	447F	
	13	566F6	465	546F6		210	547F6																							1035	447F	
SV731	13	447F2																												680	566F	
	13	447F6	1035	547F6																										675	566F	
SV740	13	566F4	670	547F4																										938	550G	
SV770	13	566F7	465	546F7																										865	426G	
SV771	13	426G7	865	546F7																										465	566F	[42]
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GF581	12	2300R	2979	412N6		802	526N6	1248	643N6	164	643N6	3593	1208L7	1881	1213L7															1710	1456I	
GF736	12	2300R	779	3210R		1159	447F4	1918	550G5	2000	678H5	778	860I5																	3400	1456I	[03]
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	12	951R2																												394	828Q	
	12	828Q5																												982	525N	
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	12	828Q7																												1343	525N	
AC21	12	525N2																												1343	828Q	
	12	525N7																												1343	828Q	
AC31	12	525N6																												1131	828Q	
AC40	12	951R4																												394	828Q	
	12	1135R6																												1343	525N	
AC50	12	828Q4N																												2201	3100	
	12	828Q6																												2201	828Q	
	12	828Q7																												2201	3100	
AC80	12	828Q2	414	769N2																										1373	643N	
	12	828Q6	414	769N6																										1373	643N	
	12	828Q7	414	769N7																										1373	643N	
AC184	21	828Q2																												605	771N	
	21	771N2																												759	890R	
AC724	22	649N2																												976	828Q	
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Cyprus (Republic of)																																
Chipre (República de)																																
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VA755	13			310N3		1700	648N3																								200	771N	
VA756	13			770N2		480	769N2																								1220	643N	
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VA757	13			643N3		1220	769N3																								480	770N	
	13			643N5		1220	769N5																								480	770N	
VA988	13			771N6																												3310	536N
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	21			770N5																												1050	525N
LEBCALBR	21			525N2		650	647N2																								680	771N	
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	21			525N6		650	647N6																								680	771N	
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LV291	21			769N5																												480	770N
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	21			771N6																												1200	525N
	21			525N7		650	647N7																								1200	771N	
RNER1	21			771N1																												1300	525N
	21			771N2																												1300	525N
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RNERI	21			771N6																												1200	525N
RNERJ	21			525N1																												1300	771N
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	21			525N7		650	647N7																								680	771N	
VA621	21			525N6		650	647N6																								680	771N	

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PART B DELETIONS

PARTE B ANULACIONES

[033

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LH338	12	23001																												468	2530	
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LH339	12	25301																												468	2300	
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	12	32102	504	23102																										325	2300	
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	12	32107	504	23107																										325	2300	
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LH351	12	31902																												887	2310	
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	12	31906																												887	2310	
LH352	12	23101																												661	3190	
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LH353	12	31901																												661	2310	
	12	31903																												661	2310	
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	12	31907																												661	2310	
LH362	12	23102																												725	3460	
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LH371	12	32301	360	34301	911	23101																								185	2310	
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DF008	21	23107																												745	3460	
DF009	21	34607																												745	2310	
DF010	21	23102																												745	3460	
	21	23103																												745	3460	
	21	23104																											</			

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DF082	21	23103																													745	3460
DF083	21	34603																													745	2310
DF092	22	23103																													931	3230
DF093	22	32303																													931	2310
DF098	22	23102																													1712	4260
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DF1022	21	23106																													688	3190
DF1023	21	31907																													688	2310
DF110	21	17006																													949	3460
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	21	34607																													949	1700
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	21	17007	60	17007																											939	3460
DF113	21	34603																													949	1700
	21	34604																													949	1700
	21	34607	939	17007																											60	1700
DF114	21	17003																													949	3460
DF115	21	34603																													949	1700
DF116	21	17005																													949	3460
DF117	21	34605																													949	1700
DF122	21	17001																													879	3190
DF123	21	31901																													879	1700
DF170	21	17002	365	23102																											790	3230
DF171	21	32302	790	23102																											365	1700
DF180	22	17005																													949	3460
DF181	22	34605																													949	1700
DF210	21	23004																													857	3460
	21	23006																													857	3460
	21	23007																													857	3460
DF211	21	34604																													857	2300
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	21	34607																													857	2300
DF212	21	23003																													837	3460
	21	23005																													857	3460
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DF213	21	23007																													857	3460
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DF242	21	34604																													857	2300
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DF271	22	32304																													1035	2300
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DF287	21	34302	87																													

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SAFCA03321	21			32102		504	23102																							325	2310	
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	22			32301		1122	17001																							174	2300	
LT2073	21			23002																										832	3210	
	21			32102																										832	2300	
LT2100	22			23002		914	34602																							250	3450	
	22			34502																										1164	2300	
LT2120	21			23002		781	32002																							260	3440	
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LT3073	21			23003																										773	3220	
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LT345	22			23003		138	23103																							955	3450	
	22			34503		955	23103																							138	2300	
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	22			31904																										734	2300	
LT5070	22			23005																										801	3460	
	22			34605																										801	2300	
LT5073	22			23005																										801	3460	
	22			34605																										801	2300	
LT5203	22			23005																										801	3460	
LT5213	22			23005																										801	3460	
	22			34605																										801	2300	
LT5430	22			23005																										801	3460	
	22			34605																										801	2300	
LT5800	22			23005																										801	3460	
	22			34605																										801	2300	
LT6070	21			23006																										801	3460	
	21			34606																										801	2300	
LT6071	21			23006																										801	3460	
	21			34606																										801	2300	
LT6153	21			23006																												

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				a	b		a	b		a	b		a	b		a	b		a	b		a	b		a	b		a	b		a	b		
LBSPL	22			1194R6																										9151314Q				
	22			1314Q6																										9151194R				
LVGR1	22			1314Q6																										15661315R				
LVIG	22			1314Q2			9701140Q2																							1637 771N				
LVIGS	22			1314Q2																										6671434Q				
	22			1434Q4			6541314Q4			2557 771N4																				1364 525N				
LVSP1	22			1314Q4			15661135R4			991 771N4																				1364 525N				
	22			1434Q8			6541314Q8																							15661135R				
LVTCD	23			1314Q3																										6791382R				
PPQRT	22			1262Q6			6921314Q6																							9741436R				
T41	21			1314Q6																										5231314Q				
	21			1314Q6																										5231314Q				
USAF1383	23			1434Q4			6671314Q4			6021262Q4																				2281263Q				
	23			1434Q4			6671314Q4																							9201263Q				
	23			1263Q4			9201314Q4																							6541434Q		[24]		
Roumanie (République Socialiste de) Roumania (Socialist Republic of) Rumania (República Socialista de)																																		
R0203	12			251D1			185 322D1																							480 343D				
R0204	12			343D2			480 322D2																							190 251D				
R0219	11			251D2																										190 322D				
R0220	11			322D2																										190 251D				
R0227	12			251D5			189 322D5																							480 343D				
R0228	12			343D5			480 322D5																							189 251D				
R0235	12			251D5																										975 321D				
R0236	12			321D5																										975 251D				
ROCHA	22			251D4																										1070 321D				
	22			321D4																										1070 251D				
	22			251D4																										1070 321D				
	22			321D4																										1070 251D				
	22			251D6																										1130 250D				
	22			426D6																										966 426D				
ROSPE	22			321D5																										718 250D				
	22																													1198 250D		[15]		
Suède Sweden Suecia																																		
SK955	12			152D2			351 231D2			316 253D2			945 347D2			1985 818E3			26101263Q3			2911262Q3			8771434Q3				1461434Q3			7061381R		[01]
Suisse (Confédération) Switzerland (Confederation) Suiza (Confederación)																																		
BB5595	21			389H6																										1183 499H		[01]		
Surinam																																		
KL947	13			707N4			460 772N4			311 826S4																				186 825S				
	13			707N6			460 772N6			311 826S6																				186 825S				
KL948	13			825S4			186 826S4			311 772N4																				460 707N				
	13			825S6			186 826S6			311 772N6																				460 707N				
2400	21			772N3																										1050 946S				
2405	21			772N3																										1050 946S				
2409	21			946S7																										1580 649N				
FRHMA	21			649N2																										902 825S				
	21			649N6																										902 825S		[09]		
Syrienne (République Arabe) Syrian Arab Republic Siria (República Árabe)																																		
RB341	11			42662																										651 444G				
	11			42664																										651 444G				
	11			42666																										651 444G				
	11			42667																										651 444G				
RB342	11			44462																										651 426G				
	11			44464																										651 426G				
	11			44466																										651 426G				
	11			44467																										651 426G				
RB351	11			42663																										407 427G				
RB352	11			42763																										407 426G				
RB401	11			42666			1324 321D7			467 231D7																				512 230D				
RB402	11			321D1																										1324 426G				
	11			230D7			619 231D7																							467 321D				
RB403	11			42663			1790 231D4																							619 230D				
RB404	11			230D4			619 231D5																							1790 426G				
RB501	11			42665			843 547F5			300 548G5																				617 550G				
RB502	11			550G6			617 548G6			300 547F6																				843 426G				
RB503	11			42661			940 547F1			209 548G1																				617 550G				
RB504	11			550G2			617 548G2			209 547F2																				940 426G		[19]		
Tchécoslovaque (République Socialiste) Czechoslovak Socialist Republic Checoeslovaca (República Socialista)																																		
OK507	13			231D1																										510 230D				
	13			231D4																										510 230D				
	13			231D6																										510 230D				

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21628	21			739H2																										510	678H	
24126	22			739H2																										2481	389H	
24129	22			739H4																										510	678H	
28432	21			739H4																										911	735H	
	21			739H6																										911	735H	
30024	21			739H7																										911	735H	
30027	21			739H7																										911	735H	
30044	21			739H3																										911	735H	
30047	21			739H3																										911	735H	
	21			739H4																										911	735H	
30051	21			739H4																										911	735H	
31573	21			739H6																										911	735H	
31604	21			737H6																										1282	500H	
321	22			739H5																										2407	389H	
	21			739H7																										911	735H	
323	21			739H3																										911	735H	
	22			739H7																										911	735H	
324	22			739H3																										911	735H	
	21			739H7																										1569	500H	
33284	21			739H7																										510	678H	
37791	21			739H6																										1561	500H	
	21			739H7																										1569	500H	
37793	21			739H4																										911	735H	
37811	21			739H6																										1569	500H	
37812	21			739H7																										1569	500H	
37817	21			739H1																										1580	500H	
37828	21			739H6																										1569	500H	
37891	21			739H6																										1569	500H	
37894	21			739H4																										2421	389H	
39815	21			739H2																										2323	389H	
40159	21			739H2																										911	735H	
	21			739H5																										911	735H	
40614	22			739H7																										2421	389H	
49106	21			739H2		427	737H1																							548	614H	
49115	21			739H6		427	737H6																							548	614H	
	21			739H7		427	737H7																							548	614H	
49122	21			739H4																										1103	613H	
49792	21			737H1																										780	735H	
	21			737H1																										780	735H	
49801	21			737H5																										1329	500H	
49809	21			739H7																										780	735H	
50106	21			739H1		427	737H1																							975	614H	
50834	21			739H2																										780	735H	
50950	21			739H5																										510	678H	
56042	23			739H5																										911	735H	
52009	21			739H6																										911	735H	
76558	21			739H2																										645	738H	
90524	21			739H5																										911	735H	
90525	21			739H2																										911	735H	
90528	21			739H2																										2408	378H	
90530	21			739H6																										1569	500H	
90764	21			739H6																										510	678H	
90784	21			739H7																										911	735H	
97208	21			739H5																										424	860H	
ALGER40	21			739H3																										1100	613H	
ALLOOF75	21			737H3																										772	735H	
B138	21			737H3																										872	613H	
BAWDY33	22			739H3																										320	738H	
BAWDY35	22			739H6																										911	735H	
BAWDY50	21			739H6																										911	735H	
BAWDY53	21			739H6																										911	735H	
BONY10	22			739H6																										911	735H	
BONY17	22			739H2																										911	735H	
BONY73	22			739H2		396	738H2																							259	678H	
BONY75	22			739H2		396	738H2		259	678H2																				427	739H	
	22			739H3		398	738H3		198	737H3																				427	739H	
BRO697	21			737H4																										1498	500H	
COT95	22			739H4																										911	735H	
CRACK88	22			739H7																										911	735H	
DALA39	21			739H5																										911	735H	
DHC4A	21			617H4		423	737H4																							548	614H	
DURAN48	21			739H2																										277	735H	
EATER55	21			739H2																										911	735H	
EFFEND1	21			737H1																										786	614H	
GALA22	21			739H7</																												

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
VN680	22			73945		100	73944		287	67844		287	73944																	100	7394	
WALL28	21			73943																										510	6784	
WALL37	21			73947																										911	7354	
WALL44	21			73941																										772	7354	
WALL44	21			73942																										510	6784	
WALL59	21			73943																										911	7354	
WALL94	21			73941																										911	7354	
WE	21			73745																										570	7364	
WEEK01	22			73945																										510	6784	
WHISKEY	21			73942																										680	6784	
XVFMF	21			73944		205	73744																							781	7354	
XVFNO	21			73944		205	73744																							781	7354	[173]
Yougoslavie (République Socialiste Fédérative de) Yugoslavia (Federal Socialist Republic of) Yugooslavia (República Federativa Socialista de)																																
DANUN	21			230D5																										765	321D	
DBEBE	22			231D1																										467	321D	
HAMAB	21			321D3																										567	251D	
OKMAC	22			231D7		411	252D7																							627	321D	
OKMCH	21			232D1		411	252D1																							627	321D	
OKMCK	22			231D2																										411	252D	
OKMCK	22			322D6		205	251D6																							627	231D	
OKNOD	22			231D1																										615	322D	
OKNDL	22			231D3																										615	322D	
OKQAC	22			252D7																										216	321D	
OKPAN	22			231D6		604	322D6																							1154	343D	
OKWDE	22			231D7		411	252D7																							627	321D	
YUAFF	21			252D1		265	251D1																							1525	172D	[13]

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

Section II PARTIE A VOLS INTERNATIONAUX - RESUME DE LA
LISTE DE REFERENCE PAR CASES NUMEROTEES

REVISE le 1er mars 1966

Pour des raisons d'ordre pratique, les tableaux révisés ont été imprimés de telle sorte que les pages ci-jointes numérotées XIII (Rev. 1/3/66), XV (Rev. 1/3/66) et XVII (Rev. 1/3/66) puissent être insérées dans la Section II du rapport en remplacement des pages XIII, XV et XVII.

THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

Section II PART A INTERNATIONAL FLIGHTS - SUMMARY OF THE
NUMERICAL SQUARE MASTER LIST

REVISED 1 March 1966

For the sake of convenience, the revised Tables have been printed in such a manner that the enclosed pages, numbered XIII (Rev. 1/3/66), XV (Rev. 1/3/66) and XVII (Rev. 1/3/66), may be inserted in Section II of the Report to replace pages XIII, XV and XVII respectively.

ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

Sección II PARTE A VUELOS INTERNACIONALES - RESUMEN DE LA
LISTA DE REFERENCIA POR CUADROS NUMERADOS

REVISADO el 1.º de marzo de 1966

Por razones de orden práctico, los cuadros revisados se han imprimido de manera que las adjuntas páginas XIII (Rev. 1/3/66), XV (Rev. 1/3/66) y XVII (Rev. 1/3/66) puedan insertarse en la Sección II del Informe en sustitución de las páginas XIII, XV y XVII respectivamente.

NÚMERO DE LA CASE	NOMBRE DE VOLS.
1	2

NUMBER OF THE SQUARE	NUMBER OF FLIGHTS
1	2

NÚMERO DEL CUADRO	NÚMERO DE VUELOS
1	2

1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1		2		3		4		5		6		7		8		9		10		11		12	
13		14		15		16		17		18		19		20	09	21		22		23		24	
25		26		27		28		29		30		31		32		33		34		35		36	
37		38		39		40	01	41		42		43		44		45		46		47		48	
49		50		51	04	52	02	53		54		55		56		57	06	58		59		60	
61		62		63		64		65		66		67		68		69		70		71		72	
73		74		75		76		77	09	78		79		80		81		82		83		84	
85	14	86		87	37	88		89		90		91		92		93		94		95		96	
97		98		99		100		101		102		103	11	104		105	09	106	03	107		108	
109	03	110		111		112		113		114		115		116		117		118	77	119		120	01
121		122		123		124		125		126		127		128		129		130		131		132	
133		134		135		136	03	137		138	24	139		140		141		142	02	143		144	
145		146		147		148		149		150	12	151	32	152	76	153	05	154	02	155		156	
157		158		159		160		161		162		163	07	164	01	165		166		167	155	168	07
169	522	170	484	171	171	172	98	173		174		175		176		177		178	09	179		180	
181		182		183		184	13	185		186	20	187		188		189		190	33	191	01	192	
193	05	194		195		196		197		198		199		200	08	201		202		203		204	
205		206		207		208		209		210		211		212		213		214		215	12	216	06
217		218	09	219		220	02	221		222	01	223	43	224		225		226		227		228	
229	25	230	1412	231	728	232	31	233	22	234		235		236		237		238		239		240	
241		242		243	01	244		245		246		247		248		249		250	72	251	200	252	121
253	286	254	22	255		256		257		258		259		260		261		262	02	263	126	264	17
265		266		267		268		269	114	270		271		272		273		274		275		276	
277		278		279		280		281		282		283		284		285		286	01	287		288	
289		290		291		292		293		294		295		296		297		298		299		300	
301		302		303		304		305		306		307		308	58	309	92	310	877	311		312	
313		314		315		316		317		318	03	319	192	320	226	321	370	322	46	323	169	324	06
325		326		327		328	15	329		330	01	331		332		333		334		335		336	
337		338		339	04	340	52	341	26	342	15	343	234	344	05	345	33	346	91	347	138	348	
349	01	350	25	351	01	352	01	353		354		355		356		357	126	358		359		360	
361		362		363	05	364	247	365		366		367		368		369		370		371		372	
373		374		375		376		377		378	04	379		380	26	381	01	382		383		384	
385		386		387		388	15	389	230	390		391		392		393		394		395		396	
397		398		399		400		401		402	01	403		404	212	405	07	406		407	23	408	
409	12	410	18	411		412	67	413		414		415		416		417		418		419	03	420	98
421	47	422	04	423	76	424	53	425	04	426	333	427	23	428	96	429		430		431	29	432	
433		434		435		436		437		438		439		440	110	441	12	442	06	443		444	54
445		446	03	447	197	448		449	02	450		451		452	02	453	20	454	01	455	12	456	
457		458		459	01	460		461		462		463	04	464		465		466	08	467		468	48
469	11	470		471	14	472	14	473		474		475		476		477		478		479		480	
481		482	15	483		484		485		486		487		488		489		490		491		492	02
493		494		495		496		497		498	01	499	46	500	70	501		502	02	503		504	01
505		506		507		508		509	01	510		511		512	02	513		514		515		516	
517		518		519		520	15	521	20	522	26	523		524		525	217	526	91	527		528	
529		530		531		532		533		534		535		536	60	537		538		539	17	540	
541		542		543		544	01	545	11	546	14	547	93	548	03	549		550	183	551		552	
553	03	554		555		556		557	99	558	73	559	03	560		561		562		563		564	
565		566	48	567		568		569		570		571		572	10	573		574	03	575	01	576	
577		578		579		580		581		582		583		584		585	12	586	05	587		588	17
589		590	79	591		592		593		594		595		596		597		598		599	379	600	
601		602		603		604		605		606		607		608		609		610		611		612	
613		614	163	615		616		617		618		619		620		621		622		623		624	
625		626		627	85	628	03	629		630	01	631	04	632		633		634	02	635		636	
637		638		639		640		641		642		643	156	644		645		646		647	150	648	44
649	381	650		651		652		653		654		655		656		657	11	658	07	659		660	
661		662		663		664		665		666		667	04	668		669		670		671		672	

NÚMERO DE LA CASE	NOMBRE DE VOLS
1	2

NUMBER OF THE SQUARE	NUMBER OF FLIGHTS
1	2

NÚMERO DEL CUADRO	NÚMERO DE VUELOS
1	2

1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
673	89	674		675		676		677	22	678	147	679		680		681	07	682		683		684	
685		686		687	46	688	20	689	36	690		691		692	10	693	24	694	10	695	11	696	07
697	56	698		699		700		701		702		703		704		705	41	706		707	46	708	
709		710	104	711		712		713		714		715		716		717		718		719		720	
721		722		723		724	04	725		726		727		728		729		730		731	54	732	
733	02	734		735	123	736		737		738	01	739	83	740		741		742	17	743		744	
745	08	746		747		748	04	749	07	750		751		752		753		754		755		756	
757		758		759		760		761		762		763		764		765		766		767		768	18
769	156	770	32	771	91	772	65	773		774		775		776		777		778		779		780	24
781	01	782	02	783		784		785		786		787		788		789	25	790	08	791		792	
793		794		795		796		797		798		799		800	14	801		802		803	15	804	
805		806		807		808		809		810		811		812		813	05	814		815	17	816	103
817	29	818	21	819		820		821		822		823		824		825	37	826	13	827		828	42
829		830		831		832		833		834		835		836		837		838		839		840	
841		842		843		844		845		846		847		848	06	849		850		851		852	
853		854		855		856		857	05	858		859	13	860	86	861		862		863		864	
865		866		867		868		869		870		871		872		873		874		875		876	
877		878		879		880		881		882		883		884		885		886		887		888	
889		890	09	891	06	892		893	01	894		895		896		897		898		899		900	
901		902		903		904		905	03	906	02	907		908		909	27	910		911	02	912	
913		914		915		916		917		918		919		920	18	921		922		923	01	924	
925	08	926		927		928		929		930		931	02	932	66	933	02	934		935		936	
937	02	938		939		940		941		942		943		944		945		946	05	947		948	
949		950	03	951	71	952		953		954		955		956		957		958		959		960	
961		962		963		964		965		966		967		968		969		970	01	971		972	
973		974	03	975		976		977		978		979		980		981		982	14	983		984	
985		986		987		988	04	989	02	990	02	991		992		993		994		995		996	
997		998		999		1000		1001		1002		1003		1004		1005		1006		1007		1008	
1009		1010		1011	02	1012		1013		1014		1015		1016		1017		1018	02	1019		1020	
1021		1022	02	1023		1024		1025		1026		1027	31	1028		1029		1030		1031	25	1032	
1033		1034		1035		1036		1037		1038		1039		1040		1041		1042		1043		1044	
1045		1046		1047		1048		1049		1050		1051		1052		1053		1054		1055	04	1056	
1057	24	1058		1059		1060		1061		1062	07	1063		1064		1065		1066	30	1067		1068	
1069		1070		1071		1072		1073		1074		1075		1076		1077		1078		1079		1080	
1081		1082		1083		1084		1085		1086		1087		1088		1089		1090		1091		1092	
1093		1094	01	1095	02	1096		1097		1098		1099		1100	01	1101		1102		1103		1104	
1105		1106		1107		1108		1109	23	1110		1111		1112		1113		1114		1115		1116	
1117		1118	01	1119	09	1120		1121		1122		1123		1124		1125		1126		1127		1128	
1129		1130		1131		1132		1133		1134		1135	114	1136		1137		1138		1139		1140	06
1141		1142		1143		1144		1145		1146		1147		1148		1149		1150		1151		1152	
1153	10	1154	02	1155	11	1156	05	1157		1158		1159		1160		1161		1162		1163		1164	04
1165		1166		1167		1168		1169		1170		1171		1172		1173	10	1174		1175		1176	23
1177		1178		1179		1180		1181		1182		1183		1184		1185		1186		1187		1188	
1189		1190		1191		1192	02	1193	05	1194	13	1195		1196		1197		1198		1199		1200	
1201		1202		1203		1204		1205		1206		1207		1208	08	1209		1210	02	1211		1212	
1213	44	1214		1215	04	1216		1217		1218		1219		1220		1221		1222		1223		1224	
1225		1226		1227		1228		1229		1230		1231		1232		1233		1234		1235		1236	
1237		1238	09	1239		1240		1241	02	1242		1243	01	1244		1245		1246		1247		1248	
1249		1250		1251		1252		1253		1254		1255		1256		1257		1258	08	1259	03	1260	24
1261	05	1262	70	1263	100	1264		1265		1266		1267		1268		1269		1270		1271		1272	
1273		1274		1275		1276		1277		1278		1279		1280	17	1281		1282		1283		1284	
1285		1286		1287		1288		1289		1290		1291		1292		1293		1294		1295		1296	
1297		1298		1299	02	1300	33	1301		1302		1303		1304		1305		1306		1307		1308	
1309		1310		1311		1312		1313	05	1314	123	1315	05	1316		1317		1318		1319		1320	
1321		1322		1323		1324		1325		1326		1327		1328		1329		1330		1331		1332	
1333		1334		1335	01	1336		1337		1338		1339		1340	07	1341		1342		1343		1344	

NUMERO DE LA CASE	NOMBRE DE VOLS
1	2

NUMBER OF THE SQUARE	NUMBER OF FLIGHTS
1	2

NÚMERO DEL CUADRO	NÚMERO DE VUELOS
1	2

1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2
1345		1346		1347		1348		1349		1350		1351	10	1352		1353		1354		1355		1356	
1357		1358		1359		1360	02	1361		1362		1363		1364		1365		1366		1367		1368	
1369		1370		1371		1372		1373		1374		1375		1376		1377		1378		1379		1380	
1381	01	1382		1383		1384	16	1385		1386		1387		1388		1389		1390		1391		1392	
1393		1394		1395		1396		1397		1398		1399		1400		1401		1402		1403		1404	
1405		1406		1407		1408		1409		1410		1411		1412		1413		1414		1415		1416	
1417		1418		1419		1420		1421		1422		1423		1424		1425		1426		1427		1428	
1429		1430		1431		1432		1433		1434	144	1435	01	1436	56	1437		1438		1439		1440	
1441		1442		1443		1444		1445		1446		1447		1448		1449		1450		1451		1452	
1453		1454		1455		1456	82	1457		1458		1459		1460		1461		1462		1463		1464	
1465		1466		1467		1468		1469	06	1470	03	1471		1472		1473		1474	38	1475		1476	
1477		1478		1479		1480		1481		1482		1483		1484		1485		1486		1487		1488	
1489		1490		1491		1492		1493		1494		1495		1496		1497		1498		1499		1500	
1501		1502		1503		1504		1505		1506		1507		1508		1509		1510		1511		1512	
1513		1514		1515		1516		1517		1518		1519		1520		1521		1522		1523		1524	
1525		1526		1527		1528		1529		1530		1531		1532		1533		1534		1535		1536	
1537		1538		1539		1540		1541		1542		1543		1544		1545		1546		1547		1548	
1549		1550		1551		1552	08	1553	11	1554		1555		1556		1557		1558		1559		1560	

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

Section II PARTIE B VOLS INTERNATIONAUX - LISTE DES CASES NUMEROTEES
INDIQUANT LA DENSITE DE VOL

REVISE le 1er mars 1966

Pour des raisons d'ordre pratique, les tableaux révisés ont été imprimés de telle sorte que les pages ci-jointes numérotées II/133 (Rev. 1/3/66), II/134 (Rev. 1/3/66), II/135 (Rev. 1/3/66) et II/136 (Rev. 1/3/66) puissent être insérées dans la Section II du Rapport en remplacement des pages II/133 à II/136 inclus.

THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

Section II PART B INTERNATIONAL FLIGHTS - NUMERICAL SQUARE
FLIGHT DENSITY LIST

REVISED 1 March 1966

For the sake of convenience, the revised Tables have been printed in such a manner that the enclosed pages, numbered II/133 (Rev. 1/3/66), II/134 (Rev. 1/3/66), II/135 (Rev. 1/3/66) and II/136 (Rev. 1/3/66), may be inserted in Section II of the Report to replace pages II/133 - II/136 inclusive.

ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

Sección II PARTE B VUELOS INTERNACIONALES - LISTA DE DENSIDAD DE
VUELOS POR CUADROS NUMERADOS

REVISADO el 1.º de marzo de 1966

Por razones de orden práctico los cuadros revisados se han imprimido de manera que las adjuntas páginas II/133 (Rev. 1/3/66), II/134 (Rev. 1/3/66), II/135 (Rev. 1/3/66) y II/136 (Rev. 1/3/66), pueden insertarse en la Sección II del Informe en sustitución de las páginas II/133 a II/136 inclusive.

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20 85	4
20 118	1
20 178	1
20 184	2
20 193	1
20 231	1
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77 269	16
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85 230	6
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407 522	14
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423 424	27
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423 426	3
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1135 1262	7
1135 1263	9
1135 1314	8
1135 1434	10
1135 1436	30
1140 1262	1
1140 1263	4
1140 1314	1
1153 1153	2
1153 1176	4
1154 1176	1
1155 1155	6
1155 1156	2
1155 1299	1
1156 1173	5
1164 1280	4
1164 1351	4
1173 1280	8
1176 1300	16
1192 1193	4
1193 1193	2
1193 1314	1
1193 1434	1
1194 1314	5
1194 1434	4
1194 1436	2
1208 1213	6
1210 1243	2
1213 1238	4
1213 1456	27
1213 1474	23
1215 1215	1
1215 1238	4
1238 1456	6
1238 1474	2
1250 1314	1
1258 1434	2
1258 1436	4

1	2
1259 1314	6
1260 1260	2
1260 1314	43
1261 1314	11
1262 1263	63
1262 1313	5
1262 1314	9
1262 1364	13
1262 1434	34
1263 1314	2
1263 1364	2
1263 1434	31
1280 1200	8
1280 1300	4
1313 1314	4
1313 1304	1
1314 1314	50
1314 1315	0
1314 1382	1
1314 1434	35
1314 1436	4
1315 1434	2
1335 1436	1
1340 1456	4
1340 1474	4
1340 1553	2
1351 1456	6
1351 1469	2
1360 1456	4
1360 1474	2
1381 1434	2
1384 1434	17
1434 1434	35
1434 1435	1
1434 1436	60
1435 1436	1
1456 1469	2
1456 1474	30
1486 1552	12
1486 1553	16
1469 1474	2
1469 1553	4
1470 1474	2
1470 1552	4

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

Section III PARTIE A VOLS INTERNATIONAUX - TABLEAU INDIQUANT LA
DENSITE DE VOL PAR ZONES D'ANALYSE (ZA)

REVISE le 1er mars 1966

Pour des raisons d'ordre pratique, le tableau révisé a été imprimé de telle sorte que la page ci-jointe numérotée XI (Rev. 1/3/66) puisse être insérée dans la Section III du Rapport en remplacement de la page XI.

THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

Section III PART A INTERNATIONAL FLIGHTS - TABLE OF FLIGHT
DENSITIES BY ZONES OF ANALYSIS (ZA)

REVISED 1 March 1966

For the sake of convenience, the revised Table has been printed in such a manner that the enclosed page, numbered XI (Rev. 1/3/66), may be inserted in Section III of the Report to replace page XI.

ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

Sección III PARTE A VUELOS INTERNACIONALES - CUADRO DE LA DENSIDAD
DE VUELOS POR ZONAS DE ANALISIS (ZA)

REVISADO el 1.º de marzo de 1966

Por razones de orden práctico el cuadro revisado se ha imprimido de manera que la adjunta página XI (Rev. 1/3/66), pueda insertarse en la Sección III del Informe en sustitución de la página XI.

PARTIE A - TABLEAU INDIQUANT LA DENSITÉ DE VOL PAR ZONES D'ANALYSE (ZA)

PART A - TABLE OF FLIGHT DENSITIES BY ZONES OF ANALYSIS (ZA)

PARTE A - CUADRO DE LA DENSIDAD DE VUELO POR ZONAS DE ANALISIS (ZA)

[illegible]

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

ADDENDUM A LA SECTION III PARTIE A VOLS INTERNATIONAUX -

TABLEAU ETENDU INDIQUANT LA DENSITE DE VOL
PAR ZONES D'ANALYSE (ZA)

Il faut remarquer que dans ce tableau les vols sont indiqués séparément pour chaque direction.

Pour des raisons d'ordre pratique, le tableau étendu a été imprimé de telle sorte que les pages ci-jointes numérotées (43) à (47) inclus puissent être insérées dans la Section III du Rapport immédiatement après la page XI (Rev. 1/3/66).



THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

ADDENDUM TO SECTION III PART A INTERNATIONAL FLIGHTS -

EXPANDED TABLE OF FLIGHT DENSITIES BY
ZONES OF ANALYSIS (ZA)

It is to be noted that in this Table flights are shown separately in each direction.

For the sake of convenience, the expanded Table has been printed in such a manner that the enclosed pages, numbered (43) to (47) inclusive, may be inserted in Section III of the Report following immediately after page XI (Rev. 1/3/66).



ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

ADDENDUM A LA SECCION III PARTE A VUELOS INTERNACIONALES

CUADRO AMPLIADO DE DENSIDADES DE VUELOS POR
ZONAS DE ANÁLISIS (ZA)

Adviértase que en este cuadro los vuelos se indican separadamente para cada dirección.

Por razones de orden práctico el cuadro ampliado se ha imprimido de manera que las adjuntas páginas (43) a (47) inclusive, pueden insertarse en la Sección III del Informe inmediatamente a continuación de la página XI (Rev. 1/3/66).

Zones d'analyse (de - à)	Totaux		Vols réguliers		Vols non réguliers		Subdivision par vitesse des aéronefs					
	Nombre de vols	Distance en milles	Nombre de vols	Distance en milles	Nombre de vols	Distance en milles	Catégorie 1		Catégorie 2		Catégorie 3	
							Nombre de vols	Distance en milles	Nombre de vols	Distance en milles	Nombre de vols	Distance en milles
1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b

Zones of Analysis (from - to)	Totals		Scheduled Flights		Non-scheduled Flights		Sub-division by Aircraft Speeds					
	Number of Flights	Mileage Flown	Number of Flights	Mileage Flown	Number of Flights	Mileage Flown	Category 1		Category 2		Category 3	
							Number of Flights	Mileage Flown	Number of Flights	Mileage Flown	Number of Flights	Mileage Flown
1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b

Zonas de análisis (de - a)	Totales		Vuelos regulares		Vuelos no regulares		Subdivisión por velocidades de las aeronaves					
	Número de vuelos	Distancia en millas	Número de vuelos	Distancia en millas	Número de vuelos	Distancia en millas	Categoría 1		Categoría 2		Categoría 3	
							Número de vuelos	Distancia en millas	Número de vuelos	Distancia en millas	Número de vuelos	Distancia en millas
1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b

1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b
B-B	10	10383	10	10383			04	02900	06	07483		
B-D	04	05020	04	05020			01	01255	03	03765		
B-J	03	03202	03	03202					03	03202		
C-C	135	65355	101	40115	34	25240	10	12828	34	17195	91	35332
C-D	46	156617	35	116826	11	39791	04	09274	36	125961	06	21382
C-J	18	55441	13	39404	05	16037	02	06637	06	18756	10	30048
C-K	24	34814	14	21732	10	13082	06	09858	13	11121	05	13835
C-H	38	58370	23	33796	15	24574	06	07912	24	39413	08	11045
C-N	63	74480	52	55116	11	19364	02	01310	30	45832	31	27338
C-O	229	587794	159	412895	70	174899	39	95353	96	272002	94	220439
D-B	04	05653	04	05653			01	01255	03	04398		
D-C	54	183059	40	136512	14	46547	06	19829	42	142164	06	21062
D-D	4015	2124075	3057	1490158	958	633917	1763	811494	1874	1099623	378	212958
D-E	232	271057	171	213526	61	58331	71	65495	149	176242	12	30120
D-F	225	312510	173	235904	52	76606	74	93714	119	172108	32	46688
D-G	115	164624	95	123207	20	41417	33	47093	48	61783	34	55748
D-I	07	12231	05	10366	02	01065	02	01865	02	03530	03	06836
D-N	07	26192	03	13646	04	12546			06	22562	01	03630
D-O	409	836703	341	714281	68	122422	34	51811	228	558462	147	226430
D-Q	27	59377	23	51727	04	07650	06	11616	13	25781	08	21980
D-S	02	02244	02	02244					02	02244		
E-D	239	289235	180	227998	59	61237	71	73775	156	185524	12	29936
E-E	423	264185	302	191879	121	72306	220	111523	148	114238	55	38424
E-F	45	46257	38	38073	07	08184	15	15319	26	28092	04	02846
E-G	01	00976	01	00976			01	00976				
E-O	11	21412	07	15984	04	05428	05	06750	02	04453	04	10209
E-Q	15	28431	12	23201	03	05230	07	11951	08	16480		
E-S	01	01260			01	01260			01	01260		
F-D	227	313457	182	249264	45	64193	69	82638	126	185299	32	45520
F-E	52	54344	41	41514	11	12830	19	20503	29	30981	04	02860
F-F	496	353393	419	274051	77	79342	234	151833	191	153753	71	47807
F-G	118	116726	95	96348	23	20378	38	23284	52	58229	28	35213
F-I	07	14396	06	12547	01	01849	05	10170	01	01849	01	02377
F-O	01	02746			01	02746	01	02746				
G-D	123	155358	101	113771	22	41587	37	49211	53	62728	33	43419
G-F	126	126340	106	105392	20	20948	37	22956	49	58636	40	44748
G-G	301	191676	280	170055	21	21621	183	77598	76	70058	42	44020
G-H	18	37690	16	32815	02	04875	02	04875	09	18832	07	13983
G-I	113	138112	98	110814	15	27298	35	43645	42	54570	36	39897
G-Q	02	03593	02	03593					02	03593		
H-G	12	21916	12	21916					05	08379	07	13537
H-H	412	375934	346	307232	66	68702	90	51066	232	220771	90	104097
H-I	70	61910	65	55924	05	05986	27	06791	28	33601	15	21518
H-J	90	153131	20	27548	70	125583	19	29201	55	75785	16	48145
H-K	01	04088	01	04088					01	04088		
H-M	04	14592	01	04575	03	10017			02	09209	02	05383
I-D	04	09556	04	09556					01	02719	03	06837
I-F	08	18219	06	13710	02	84509	06	13994	01	01849	01	02376

1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b
I-G	120	152011	103	122178	17	29833	36	44830	47	63390	37	43791
I-H	79	94435	68	79279	11	15156	34	09067	31	64357	14	21011
I-I	278	298728	255	265920	23	32808	105	66727	64	91753	109	140248
I-J	29	49223	19	34390	10	14833	03	05334	12	21284	14	22605
I-L	59	77761	58	76601	01	01160	14	16083	38	50310	07	11368
I-M	01	01575	01	01575							01	01575
J-B	02	02257	02	02257					02	02257		
J-C	13	41446	06	18326	07	23120			09	29434	04	12012
J-H	81	134853	07	11108	74	123745	26	31327	46	62171	09	41355
J-I	41	88918	25	58656	16	30262	07	14054	19	47598	15	27266
J-J	432	686810	181	255409	251	431401	153	238368	169	223071	110	225371
J-K	29	109132	21	84856	08	24276			09	26630	20	82502
J-L	17	43601	15	38107	02	05494	02	03793	09	24895	06	14913
J-M	160	416680	105	273520	55	143160	17	36746	35	89979	108	289955
J-N	93	208357	89	197469	04	10888			01	02105	92	206252
K-C	21	28886	13	21674	08	07212	04	04650	13	12220	04	12016
K-H	12	35176	01	04088	11	31088			12	35176		
K-J	44	89838	24	35665	20	54173	01	02470	21	58145	22	29223
K-K	42	84658	41	84325	01	00333	10	02351	12	02768	20	79539
K-M	22	19913	19	13791	03	06122	08	06828	14	13085		
K-N	01	02133	01	02133					01	02133		
K-O	01	04168	01	04168					01	04168		
L-I	60	88346	58	85413	02	02933	13	15622	40	53253	07	19471
L-J	16	41295	14	36262	02	05033	02	05033	08	22040	06	14222
L-L	58	53766	54	50553	04	03213	26	16378	24	27068	08	10320
L-N	04	14383	04	14383					01	03593	03	10790
M-C	55	78958	36	50140	19	28818	10	13374	26	40829	19	24755
M-H	05	18581	02	09150	03	09431			03	13198	02	05383
M-J	175	374766	92	193593	83	181173	31	67070	48	104872	96	202824
M-K	49	74368	23	21540	26	52828	07	06463	39	62097	03	05808
M-M	71	115899	47	77374	24	38525	01	00610	12	25355	58	89934
M-N	15	04410	14	04116	01	00294					15	04410
M-O	07	23516	07	23516					07	23516		
M-R	01	00540	01	00540			01	00540				
N-C	65	68316	57	57475	08	10841	02	01310	27	40464	36	26542
N-D	12	41896	06	22614	06	19282			09	31006	03	10890
N-I	01	00489	01	00489							01	00489
N-J	96	212165	96	212165							96	212165
N-K	02	04266	01	02133	01	02133			02	04266		
N-L	04	14383	04	14383					01	03593	03	10790
N-M	20	06535	19	06318	01	02217	01	01026	01	02217	18	05292
N-N	2000	1453949	1787	1302312	213	151637	464	185116	665	604761	871	664072
N-O	82	197817	57	140231	25	57586	03	07505	34	72857	45	117455
N-Q	11	22128	08	16446	03	05682	01	02046	09	16772	01	03310
N-R	67	74325	62	68863	05	05462	11	05434	21	23250	35	45641
N-S	68	110361	54	89237	14	21124	12	12770	24	40286	32	57305
O-C	215	577026	148	401922	67	175104	31	74966	103	310711	81	191349
O-D	412	728147	345	616581	67	111566	32	58132	232	470123	148	199892
O-E	12	22995	07	14771	05	08224	05	07316	03	05470	04	10209
O-F	07	23134	06	18214	01	04920			07	23134		

1	2a	2b	3a	3b	4a	4b	5a	5b	6a	6b	7a	7b
O-G	01	00951	01	00951					01	00951		
O-K	03	09287			03	09287	03	09287				
O-M	10	35984	10	35984					07	23516	03	12468
O-N	77	165592	56	112227	21	53365	05	13124	27	58695	45	93773
O-O	1072	2259941	818	1816645	254	443296	152	204213	417	859228	503	1196500
O-Q	43	50545	35	41807	08	08738	20	21683	23	28862		
O-S	04	14673	03	12156	01	02517	01	02517	03	12156		
Q-D	25	52489	20	42299	05	10190	07	14173	10	16200	08	22116
Q-E	14	22732	10	19688	04	03044	05	04828	09	17904		
Q-F	01	03118	01	03118					01	03118		
Q-G	01	01041	01	01041					01	01041		
Q-N	17	30825	09	14372	08	16453	05	08935	12	21890		
Q-O	50	69809	41	59508	09	10301	21	23271	29	46538		
Q-Q	416	278173	374	244922	42	33251	187	64600	191	176103	38	37470
Q-R	15	16234	08	08817	07	07417			14	15555	01	00679
Q-S	11	12885	05	03541	06	09344	07	09932	04	02953		
R-N	77	87663	72	79936	05	07727	12	05718	25	28434	40	53511
R-Q	12	08778	08	04408	04	04370			12	08778		
R-R	143	112227	129	100343	14	11884	25	16660	46	29459	72	66108
R-S	45	48418	42	46637	03	01781	02	01172	13	14408	30	32838
S-C	01	04255			01	04255	01	04255				
S-D	01	01122	01	01122					01	01122		
S-E	01	01260			01	01260			01	01260		
S-N	66	110322	55	93906	11	16416	11	11862	23	38116	32	60344
S-O	04	14680	03	12163	01	02517	01	02517	03	12163		
S-Q	14	18655	05	03961	09	14694	09	13810	05	04845		
S-R	47	47959	44	45903	03	02056	02	01447	11	08903	34	37609
S-S	79	51452	72	45781	07	05671	29	11319	17	17617	33	22516

L'ANALYSE STATISTIQUE
DES VOLS INTERNATIONAUX ET DES VOLS REGIONAUX ET NATIONAUX

Rapport du Comité international d'enregistrement des fréquences

Section VI - VOLS REGIONAUX ET NATIONAUX - LISTE DE REFERENCE
PAR PAYS, LISTE DE REFERENCE PAR ZONES ET
RESUME PAR ZLARN

REVISE le 1er mars 1966

Pour des raisons d'ordre pratique, les tableaux révisés ont été imprimés de telle sorte que les pages ci-jointes numérotées respectivement VI/1 (Rev. 1/3/66) et VI/3 (Rev. 1/3/66) puissent être insérées dans la Section VI du Rapport en remplacement des pages VI/1-FES(Rev) et VI/5-FES(Rev).

THE STATISTICAL ANALYSES OF
INTERNATIONAL FLIGHTS AND OF REGIONAL AND DOMESTIC FLIGHTS

Report of the International Frequency Registration Board

Section VI - REGIONAL AND DOMESTIC FLIGHTS - MASTER LIST BY
COUNTRIES, MASTER LIST BY REPORTING AREAS
AND SUMMARY BY RDARAS

REVISED 1 March 1966

For the sake of convenience, the revised Tables have been printed in such a manner that the enclosed pages, numbered respectively VI/1 (Rev. 1/3/66) and VI/3 (Rev. 1/3/66), may be inserted in Section VI of the Report to replace pages VI/1-FES(Rev) and VI/5-FES(Rev).

ANÁLISIS ESTADÍSTICO
DE LOS VUELOS INTERNACIONALES Y DE LOS VUELOS REGIONALES Y NACIONALES

Informe de la Junta Internacional de Registro de Frecuencias

Sección VI - VUELOS REGIONALES Y NACIONALES - LISTA DE REFERENCIA
POR PAISES, LISTA DE REFERENCIA POR ZONAS Y
RESUMEN POR ZRRN

REVISADO el 1.º de marzo de 1966

Por razones de orden práctico, los cuadros revisados se han imprimido de manera que las adjuntas páginas VI/1 (Rev. 1/3/66) y VI/3 (Rev. 1/3/66) pueden insertarse en la Sección VI del Informe en sustitución de las páginas VI/1-FES(Rev) y VI/5-FES(Rev).

Établi sur la base des renseignements reçus par le Comité international d'enregistrement des fréquences jusqu'au 1er mars 1966

Based on information received by the International Frequency Registration Board up to 1 March 1966

Basado en la información recibida por la Junta Internacional de Registro de Frecuencias hasta el 1.º de marzo 1966

PARTIE A

PART A

PARTE A

VOLS REGIONAUX ET NATIONAUX
LISTE DE REFERENCE PAR PAYS

(Voir paragraphes 1.2. et 3 de la Préface)

REGIONAL AND DOMESTIC FLIGHTS
MASTER LIST BY COUNTRIES

(See paragraphe 1.2. and 3 of the Preface)

VUELOS REGIONALES Y NACIONALES
LISTA DE REFERENCIA POR PAISES

(Véase puntos 1.2 y 3 del Prefacio)

TITRE DES COLONNES

COLUMN HEADINGS

TITULOS DE LAS COLUMNAS

SYMBOLE DU PAYS	NOMBRE TOTAL D'HEURES DE VOL
1	2

COUNTRY SYMBOL	TOTAL NUMBER OF HOURS FLOWN
1	2

SIMBOLO DES PAIS	NUMERO TOTAL DE HORAS VOLADAS
1	2

[illegible]

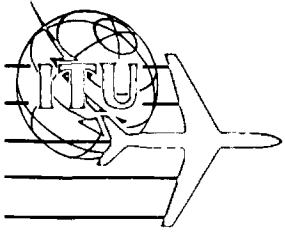
Basado en la información recibida por la Junta Internacional de Registro de Frecuencias hasta el 1.º de marzo 1966

CUADRO N.º 1 - LISTA DE REFERENCIA POR ZONAS

ZONE AREA ZONA	T a	N	ZONE AREA ZONA	T a	N	ZONE AREA ZONA	T a	N
1	21407	7,0	6D	13198	4,3	13E	50590	19,3
1A	005	0,0	6E	185	0,0	13F	77990	25,7
1B	16533	5,4	6F	44232	14,5	13G	190800	62,9
1C	121238	40,0	7	19674	6,4	13H	126381	41,7
1D	145237	47,9	7B	5835	1,9	13I	162405	53,5
1E	119772	39,5	7D	33765	11,1	13L	43410	14,3
2A	875164	288,8	7E	33589	11,0	> ALS	220540	72,7
2B	1623000	535,5	9A	23013	7,5	> GRL	5127	1,6
2C	2822552	931,4	9B	109482	36,1	> IND	259406	85,6
3A	570042	188,1	9C	12000	3,9	> NGR	647	0,2
3B	620000	204,6	9D	160174	52,8	> PAK (W)	28000	9,2
3C	800030	264,0	9E	58728	19,3	> PNR	9360	3,0
4	3284	1,0	10E	1146	0,3	> TUN	3964	1,3
4A	7048	2,3	11	020	0,0	> USA	155718	51,3
4B	34681	11,4	12	532678	175,7	■ B1	86747	28,6
5	52685	17,3	12C	503	0,1	■ B2	189026	62,3
5A	3596	1,1	12D	32575	10,7	■ B3	220401	72,7
5B	43843	14,4	12E	471	0,1	■ CAN1	48450	15,9
5C	6935	2,2	12F	135283	44,6	■ CAN2	390349	128,8
5D	7630	2,5	12G	13502	4,4	■ CAN3	106864	35,2
6	684212	225,7	12H	4852	1,6	■ CAN4	107444	35,4
6A	24024	7,9	12J	12807	4,2	■ CAN5	128316	42,3
6B	51359	16,9	13D	49275	16,2	■ CAN6	207090	68,3

TABLEAU N° 2 - RESUME PAR ZLARN = TABLE No. 2 - SUMMARY BY RDARAS = CUADRO N.º 2 - RESUMEN POR ZRRN

ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN			ZLARN/RDARA/ZRRN		
	Ta	N		Ta	N		Ta	N		Ta	N		Ta	N		Ta	N		Ta	N
1	424192	140	2	5320716	1756	3	1990072	657	4	45013	15	5	114689	38	6	817210	270	7	92863	31
8		0	9	363397	120	10	1146	0	11	020	0	12	732671	242	13	708851	234			



AERONAUTICAL CONFERENCE

Document No. II/21-E

9 March 1966

Original: French, English
and Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

MEMORANDUM BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD

SPECIAL PROGRAMMES FOR MONITORING THE BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 kc/s AND 17 970 kc/s

1. The First Session of the Extraordinary Administrative Radio Conference for the preparation of a revised Allotment Plan for the Aeronautical Mobile (R) Service, Geneva, 1964, noted with concern that some of the frequencies available to the Aeronautical Mobile (R) Service under the Table of Frequency Allocations in Article 5 of the Radio Regulations were subject to harmful interference, in certain areas of the world, from stations of other classes of service.
2. The Conference in its Resolution No. 2, considered, inter alia, that "in order to protect the safety of human 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 channels kept free from harmful interference"; and it resolved "that the Administrations should abstain from the use of frequencies in the bands allocated exclusively to the Aeronautical Mobile service by stations of other types of service, except under the express conditions prescribed in No. 115 or No. 415 of the Radio Regulations". In its Report, the Conference also recommended that "Administrations and the Union should apply all means available to ensure the elimination of this interference".
3. In this connection, it should be noted that from the beginning of 1962 until the end of 1965, only 22 cases of harmful interference to Aeronautical Mobile (R) Services from stations of other classes of service operating in the high frequency bands concerned, were reported to the I.F.R.B. Investigation of these cases revealed that, although some of the out-of-band stations had been observed by monitoring centres to be in operation and had been included in the monthly Summaries of monitoring information compiled and published by the I.F.R.B., none of the stations which were reported to be



causing the interference was recorded in the Master International Frequency Register. However, 425 stations of other classes of service were recorded in the Master Register as operating in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) service, under the provisions of No. 115 of the Radio Regulations, that is, on the express condition that harmful interference is not caused to the Aeronautical Mobile (R) Service.

4. It should be explained in this connection that, whenever the I.F.R.B. receives information, from monitoring or other sources, of the operation of a station of another class of service in the exclusive high frequency Aeronautical Mobile Service bands, it immediately approaches the Administration which is believed to have jurisdiction over the station in question, pointing out the danger of harmful interference to radiocommunications in the Aeronautical Mobile service which might involve safety of life; and it requests the Administration concerned to take all possible steps to transfer the station to a frequency in a band appropriate to the class of service concerned. A similar practice is, of course, followed should a complaint of actual harmful interference to an Aeronautical Mobile service, from the operation of an out-of-band station, be received from an Administration or, through the International Civil Aviation Organisation, from an Aircraft Operating Agency. These approaches have usually produced effective results in cases where the out-of-band station could be identified, except in cases where the station concerned was operated under the jurisdiction of an authority with which the I.F.R.B. cannot initiate direct communication under the provisions of Administrative Council Resolution No. 88 (amended). Moreover, in cases where actual harmful interference has been reported but the source of the interference cannot be identified, the I.F.R.B. requests a number of Administrations of countries which are geographically suitably located, to undertake special monitoring observations with a view to obtaining a positive identification of the station concerned. However, there still remains a number of cases where the potentiality of harmful interference from such stations exists, although no harmful interference has actually been reported, and it has not been possible to identify the stations in question.

5. Considering, therefore, that a more systematic effort should be made, within the framework of Resolution No. 2 of the First Session of the Aeronautical Conference, to identify, and suppress, all sources of likely interference to radiocommunications in the Aeronautical Mobile (R) service, the Board organized a special monitoring programme covering the frequency bands between 2850 kc/s and 17 970 kc/s allocated exclusively to the Aeronautical Mobile (R) service, during the period 28 September - 4 October, 1964 (I.F.R.B. Circular-letter No. 104, of 27 July, 1964). As the usefulness of

the programme was necessarily dependent on the extent to which the monitoring coverage was of a world-wide character, the I.F.R.B. invited the cooperation of all Administrations and Organizations which operate monitoring centres and, particularly, monitoring stations established close to international airports.

6. A second special programme for monitoring the bands exclusively allocated to the Aeronautical Mobile (R) service was held (I.F.R.B. Circular-letter No. 131, dated 2 July, 1965) during the period 0001 G.M.T. 2 August until 2400 G.M.T. 8 August, 1965. This period was chosen by the Board because it was the week set for the compilation, and submission to the I.F.R.B. by all Administrations, of operational statistics in respect of aircraft flying international routes. The Board felt that it would be useful to have a check on potential causes of interference covering the same period.

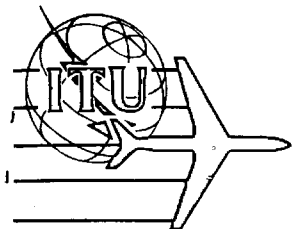
7. A summary of the results of these programmes is given in the Annex to this report. In all cases, efforts were made to trace the source of the transmissions from the reported call signs and from comparison of the reported characteristics with those of assignments recorded in the Master International Frequency Register; and letters were sent to the Administrations which appeared to have jurisdiction over the stations concerned, requesting them urgently to take the necessary steps to cease the transmissions or to have them transferred to a frequency band appropriate to the class of service concerned. It appears that the majority of the observed transmissions were of a sporadic nature; and it would seem, from the small number of reports of actual harmful interference to the Aeronautical Mobile (R) Service and from the fact that the transmissions were frequently observed by only a single monitoring station, that the power of the majority of the transmissions was very low. However, it was noted, from a comparison of the transmissions observed during the first and second programmes that 96 transmissions, presumably from the reported call signs to be under the jurisdiction of 32 different Administrations, were observed during both programmes. Of these 96 transmissions, it appears that 60 are transmissions of the Fixed Service; 7 are transmissions of the Broadcasting Service; 7 are transmissions of the Maritime Mobile Service; and 22 are transmissions for which the Monitoring reports do not indicate the Class of Service. Every endeavour will continue to be made to secure the suppression of these transmissions except in cases where the operations are being conducted under the provisions of No. 115 of the Radio Regulations and no harmful interference is actually caused to the Aeronautical Mobile (R) Service.

8. A copy of the complete tabulations of the monitoring information received by the I.F.R.B. following the two special programmes will be available to the Conference for the convenience of delegates who would wish to consult them, in order that these delegates may be able to approach their respective national telecommunications Administrations in cases where these Administrations would appear to be responsible for the out-of-band transmissions. In such cases, copies of the letters sent by the I.F.R.B. to the Administrations believed to be concerned will also be made available to the delegates.

A N N E X

TABLE SUMMARIZING RESULTS OBTAINED BY THE SPECIAL PROGRAMMES FOR
MONITORING THE BANDS EXCLUSIVELY ALLOCATED TO THE
AERONAUTICAL MOBILE (R) SERVICE

	Programme 1 28 September - 4 Oct 1964	Programme 2 2 - 8 August 1965
1. Administrations participating in the special monitoring programmes	42	52
2. Monitoring stations participating in the special programme	90	107
3. Observations received by the I.F.R.B.	6100	10 450
4. Out-of-band transmissions observed	2800	3600
5. Administrations approached with a view to ceasing these transmissions or having them transferred to an appropriate band	107	99
6. Out-of-band transmissions concerned in this inquiry	2120	2480
7. Administrations which have replied to the I.F.R.B.	44	(The data concerning the action being taken by the Administrations concerned are not yet fully available)
8. Transmissions for which replies have been received	670	
9. Transmissions for which the presumed Administration could not identify the station concerned as being under its jurisdiction	462	
10. Transmissions for which appropriate steps were being taken by the Administration concerned to remove the operation concerned from the Aeronautical Mobile (R) band	187	
11. Transmissions for which the Administrations concerned are conducting investigations	47	
12. Administrations which have requested additional information	4	
13. Transmissions for which additional information has been requested by the Administrations	34	



AERONAUTICAL CONFERENCE

Document No. II/22-E

11 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

Memorandum by the Secretary-General

APPORTIONMENT OF PROPOSALS AMONG THE COMMITTEES

In the Annex to the present document suggestions are made as to the distribution to Committees of :

- proposals received from Administrations, and
- other material,

number 580 of the Convention refers.

It is understood that, in accordance with normal practice, a Committee may, if it so desires, refer specific points to another Committee for advice.

M.B. SARWATE
Secretary-General

Annex : 1



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A N N E X

A. Technical and Operational Committee

Terms of reference (suggested in Document No. II/8)

To adjust, if necessary, the technical and operational principles established by the First Session of the Conference.

1. Report of the First Session, Chapter I (pages 3-51 inclusive)
2. do Chapter II, paragraphs 1 to 5 inclusive
and paragraph 8 (pages 53-57
inclusive and 59)
3. do Chapter VI, paragraphs 3 and 4 (pages
134 and 135)
4. Document No. II/2 (USA), Part I, Section II of Appendix 26 (pages 10-46
inclusive)
5. do Part III (pages 49-54 inclusive)
6. do Part IV (pages 55-59 inclusive)
7. do Part V (pages 61-63 inclusive)
8. do Part VII (pages 73-97 inclusive)
9. Document No. II/3 (J), Proposal No. 5 (pages 3 and 4)
10. do Proposal No. 6 and Annex (pages 4-8 inclusive)
11. Addendum to Document No. II/3 (J)
12. Document No. II/4 (CAN) "Appendix 26 Part I, A, B and C" (pages 1-13
inclusive)
13. Document No. II/5 (CAN). Draft Resolution
14. Document No. II/10 (G) Proposal No. 1 "Appendix 26, Part I,
Section II, A, B and C"
(pages 11-26 inclusive)
15. do Proposal No. 2 (pages 27-31 inclusive)
16. do Proposal No. 4 (page 33).

17. Document No. II/12 (AUS) (pages 1-10 inclusive)
18. Document No. II/18 (IND) Proposal No. 7 (pages 2 and 3)
19. do Proposal No. 10 (page 4)
20. do Proposal No. 12 (pages 4 and 5)
21. do Proposal No. 13 (page 5)
22. Document No. II/21 (IFRB)

B. Aircraft operation statistics committee

Terms of reference (suggested in Document No. II/8)

To examine the analyses of flight information compiled by the I.F.R.B. and to recommend the extent to which, and the manner in which, statistics of air operations should be used for planning purposes.

23. Report of the First Session, Chapter II, paragraphs 1 to 5 inclusive and paragraph 8 (pages 53-57 inclusive and 59)
24. do Chapter III (pages 61-63 inclusive)
25. Report of the I.F.R.B. Sections I, II, III and VI (mailed to Administrations 15 December 1965)

Sections IV and V (mailed to Administrations 31 January 1966)

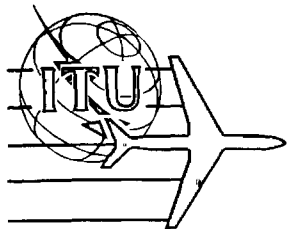
Documents Nos. II/7 and II/20
26. Document No. I/3 (J), Proposal No. 2 (pages 1 and 2)
27. Document No. I/4 (CAN) "Appendix 26, Part II, Section I" (page 13)
28. Document No. I/9 (ARS)
29. Document No. I/11 (AUS)
30. Document No. II/18 (IND) Proposal No. 8 (pages 3 and 4)
31. do Proposal No. 9 (page 4)
32. do Proposal No. 11 (page 4)

C. Plan Committee

Terms of reference (suggested in Document No. II/8)

- a) to review and to extent considered necessary, revise the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 26 to the Radio Regulations;
 - b) to review the Radio Regulations associated herewith and replace any modifications or additions considered essential;
 - c) to establish procedures for the change-over to the revised Plan.
- 33. Report of the First Session, Chapter VI, paragraph 2 (page 134)
 - 34. Document No. II/I (D) *)
 - 35. Document No. II/2 (USA), Part I "Section I of Appendix 26"
(paragraphs 1-7, pages 9 and 10)
 - 36. do Part II (page 47)
 - 37. do Part VI (pages 65-72 inclusive)
 - 38. Document No. II/3 (J), Proposal No. 1 (page 1)
 - 39. do Proposal No. 3 (page 2)
 - 40. do Proposal No. 4 (pages 2 and 3)
 - 41. Document No. II/4 (CAN) "Appendix 26, Part II, Section II" (page 13)
 - 42. Document No. II/6 (DNK, NOR, S) *)
 - 43. Document No. II/10 (G) Proposal No. 1 "Appendix 26, Part I, Section I"
(pages 8-11 inclusive)
 - 44. do Proposal No. 3 (page 32)
 - 45. Document No. II/18 (IND) Proposals Nos. 1-6 inclusive (pages 1 and 2)

*) After preliminary examination by the Plenary Meeting.



AERONAUTICAL CONFERENCE

Document No. II/23-E

12 March 1966

Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

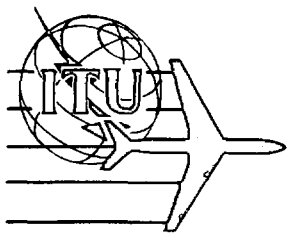
MEXICO

OPINION ON FACTORS TO BE TAKEN INTO ACCOUNT IN ALLOTTING FREQUENCIES TO THE VARIOUS AREAS OF THE WORLD UNDER THE NEW PLAN

1. The Mexican Administration considers that, when the new Plan is prepared, the following two considerations, among others, should be borne in mind :
 - a) the need to satisfy the requirements of new countries which have become Members of the Union since the present Plan was adopted;
 - b) the need to satisfy the true requirements of the various regions or areas in the light of statistical data submitted by Administrations and taking into account any increase or decrease in operations by aircraft using high frequencies.
2. It is most probable that, to meet the above-mentioned requirements, an adjustment of some of the frequency allotments in the present Plan will be necessary as the Conference will be unable to provide new frequency bands or to widen existing bands.
3. Since any change of frequency (particularly those used by a large number of stations) has financial and other implications, the Mexican Delegation believes that, in the new Plan, the same frequencies should, so far as possible, be allotted to the same areas as at present.

Jose J. HERNANDEZ
Head of the Mexican Delegation





AERONAUTICAL CONFERENCE

Document No. II/24-E
12 March 1966
Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

MEXICO

PROPOSAL CONCERNING THE USE OF SINGLE SIDEBAND TECHNIQUES IN THE BANDS ALLOTTED TO THE AERONAUTICAL MOBILE "R" SERVICE BETWEEN 2850 AND 17 970 kc/s

Preamble

1. The first session of the Aeronautical E.A.R.C. (Geneva, 1964) decided that the second session should draw up a new frequency allotment plan on the basis of the present usage of double sideband (DSB) radio-telephony with a view to permitting the introduction of single sideband (SSB) radiotelephony, without excluding the use of other classes of emission (Resolution No. 1). Also, it was considered premature to decide that the Aeronautical Mobile "R" Service must convert its operations to SSB, but it was assumed that SSB would be required at some future date. The first session therefore decided that the question of fixing a date for the systematic use of SSB emissions was one to which the second session of the Aeronautical E.A.R.C. should give detailed consideration.
2. The Mexican Administration has studied this question carefully to prepare its viewpoints for discussion at the second session, bearing in mind :
 - a) Recommendation 3/4 of the Special COM meeting of I.C.A.O. (Montreal, 1963);
 - b) The Final Report of the I.T.U. Group of Experts, particularly paragraph 29;
 - c) C.C.I.R. Recommendation No. 258 (see the Annex to Document No. I-15 of the First Session), particularly point 2;
 - d) The financial implications of converting this service from DSB to SSB.
3. Between the first and second sessions, the situation has hardly changed at all, and so it would be premature for the Conference to fix even a tentative date for the compulsory use of SSB by the Aeronautical



Mobile "R" Service. Nor would it be advisable for Administrations to commit themselves to the systematic use of SSB in the absence of specific technical standards recommended by the C.C.I.R. and adopted by an Administrative Conference, since C.C.I.R. Recommendation No. 258 is intended for the Maritime Mobile Service.

4. In the opinion of the Mexican Administration and in the light of the foregoing, the following might be a practical solution :

a) First, the C.C.I.R. should be asked to continue its studies to enable it to recommend technical standards for amplitude-modulated SSB radiotelephony equipment in the Aeronautical Mobile "R" Service in the bands between 2850 and 17 970 kc/s, and to co-operate as required with I.C.A.O. The progress and conclusions of the C.C.I.R. should be periodically forwarded to the Administrative Council.

b) At its annual sessions, the Administrative Council should study the relevant C.C.I.R. reports (and other reports on practical experience gained in the matter, for instance, from the I.F.R.B. and administrations and other bodies), with a view to holding at a suitable time a World Administrative Conference to study the possibility of fixing a date for the compulsory use of SSB in this service. Before the conference is held, the technical standards referred to should be available and administrations should be kept fully informed.

c) To give sufficient time for the technical standards to be devised and to gain practical experience in the use of SSB techniques in the Aeronautical Mobile "R" Service, the conference should not be held before 1970.

The following Draft Resolution is therefore submitted for consideration by the Second Session.

THE HEAD OF THE MEXICAN DELEGATION

(Signed) JOSE J. HERNANDEZ

Annex : 1

A N N E X

DRAFT RESOLUTION

CONCERNING THE CONVENING OF A CONFERENCE TO STUDY THE FIXING
OF A DATE FOR THE SYSTEMATIC USE OF SSB FOR AMPLITUDE-MODULATED
RADIOTELEPHONY EQUIPMENT IN THE AERONAUTICAL MOBILE "R" BANDS
BETWEEN 2850 AND 17 970 kc/s

The Aeronautical E.A.R.C. Geneva, 1966,

Considering

- a) that the amplitude-modulated radiotelephony stations in the Aeronautical Mobile "R" bands mostly use double sideband (DSB) equipment;
- b) that the various aspects of DSB-to-SSB equipment conversion, as well as raising technical and operating problems, require a financial outlay which is beyond most administrations at present;

Noting

- a) Recommendation 3/4 of the Special COM Meeting of I.C.A.O. (Montreal, 1963) and paragraph 29 of the Final Report of the I.T.U. Panel of Experts;
- b) the opinions of the various administrations about the use of SSB;
- c) the probability that a World Administrative Conference may find it impossible to assign new frequency bands for this service or to increase the existing bands;

Recognizing

- a) the spectrum saving that would be achieved by using SSB instead of DSB;
- b) the possibility that SSB will have to replace DSB radiotelephony at some future date, to meet the increasing demand for facilities in the particular bands concerned;

Resolves

1. That a World Administrative Conference lasting for weeks or less, to study the questions of using SSB techniques in the bands allotted to the Aeronautical Mobile "R" Service between 2850 and 17 970 kc/s, should be convened at Geneva for 1970 or later;
2. That the aim of the conference should be to study the provisions of the Radio Regulations concerning the Aeronautical Mobile "R" Service, especially the following points :
 - a) The use of SSB techniques by the Aeronautical Mobile "R" Service in the proposed bands between 2850 and 17 970 kc/s;
 - b) The relevant C.C.I.R. reports and recommendations on the technical standards required for SSB radiotelephony equipment for use by the Aeronautical Mobile "R" Service in such bands;
 - c) The advisability of fixing a date for ~~the~~ compulsory use of SSB systems in the Aeronautical Mobile "R" Service by equipment using such bands, and
 - d) Devising a procedure for use in the interim period between the beginning and the completion of DSB-to-SSB conversion, along the lines which the conference considers necessary;

Requests the C.C.I.R.

1. To speed up its studies with a view to recommending technical standards for SSB equipment operating in the bands of the Aeronautical Mobile "R" Service between 2850 and 17 970 kc/s, bearing in mind the view-points of I.C.A.O.;
2. To report periodically to the Administrative Council on the progress of the studies mentioned in point 1;

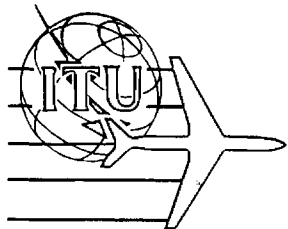
Invites the Administrative Council

1. To study the C.C.I.R. reports on the matter at its annual meetings;

2. At some appropriate time, to fix a definite date and duration and prepare a detailed agenda for the Conference in the light of the study mentioned in point 1., and
3. to take the necessary financial steps;

Instructs the Secretary-General

To take the necessary action for holding the Conference in accordance with the decisions of the Administrative Council.



AERONAUTICAL CONFERENCE

Document No. 25-E
14 March 1966
Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

MEXICO

USE OF CHANNELS COMMON TO THE AERONAUTICAL MOBILE "R" AND "OR" SERVICES

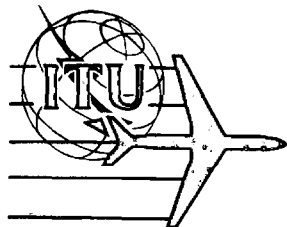
1. The First Session recommended that the present Session, when revising Appendix 26 and the associated provisions pertaining to the Aeronautical Mobile "R" Service, should ensure that the new Appendix and provisions were separate from and independent of those pertaining to the Aeronautical Mobile "OR" Service (Recommendation No. 4). In that way, the relevant provisions of Appendix 26 could continue to apply to the latter service.
2. The First Session admitted that some anomalies appeared to exist in the conditions prescribed for the use of the frequencies 3023.5 and 5680 kc/s, which are common to both services, and that the Aeronautical E.A.R.C. was not competent to make alterations in the above-mentioned provisions which might adversely affect the use by the Aeronautical Mobile "OR" Service of the channels concerned. It therefore recommended that Administrations should establish their position with respect to possible changes in these provisions in order to permit further consideration of the matter at the Second Session (Recommendation No. 5).
3. To establish its position on this point, the Mexican Administration examined the agenda of the present conference and arrived at the conclusion that the Aeronautical E.A.R.C. is indeed not competent to introduce the amendments in question. However, if it is evident during the conference discussions that such amendments are essential, the following procedure might be adopted :
 - a) The amendments might be made applicable to the Aeronautical Mobile "R" Service only (this would be possible under Recommendation No. 4);
 - b) The conference might instruct the General Secretariat to consult administrations by correspondence on the advisability of applying to the Aeronautical Mobile "OR" Service the amendments adopted for the Aeronautical Mobile "R" Service with respect to the use of common channels;



c) If the response of administrations was favourable, the amendments could be applied to both services; if not, they would be introduced in respect of the Aeronautical Mobile "R" Service only.

Consultation by correspondence is considered essential in order to ascertain the views of all administrations not represented at the conference.

4. Should the present conference consider that such alterations are not indispensable, the wisest course would be to leave the conditions governing the use of common channels unchanged.



AERONAUTICAL CONFERENCE

Document No. II/26-E

14 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

CHAIRMEN AND VICE-CHAIRMEN OF COMMITTEES

(Approved by the first Plenary Meeting)

COMMITTEE 1 : Steering Committee

Chairman of the Conference : Mr. A.L. LEBEL (United States)

Vice-Chairmen of the Conference: Mr. R. MONNAT (Switzerland)

Mr. A. JAROV (U.S.S.R.)

COMMITTEE 2 : Credentials Committee

Chairman: Mr. S.C. BOSE (India)

Vice-Chairman : Mr. J.J. HERNÁNDEZ (Mexico)

COMMITTEE 3 : Budget Control Committee

Chairman : Mr. U. MOHR (Federal Republic of Germany)

Vice-Chairman : (Ghana)

COMMITTEE 4 : Technical and Operational Committee

Chairman : Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman : Dr. CHITTI WACHARASINDHU (Thailand)

COMMITTEE 5 : Aircraft Operation Statistics Committee

Chairman : Mr. M. CHEF (Group of Territories represented by the
French Overseas Post and Telecommunication
Agency)

Vice-Chairman : Mr. J. RUTKOWSKI (Poland)



COMMITTEE 6 : Plan Committee

Chairman : Mr. E.B. POWELL (Canada)

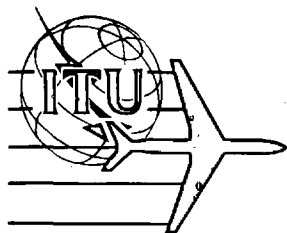
Vice-Chairman : Mr. A.O. PLANAS (Argentina)

COMMITTEE 7 : Editorial Committee

Chairman : Mr. P.C.M. BOUCHIER (Belgium)

Vice-Chairmen : Mr. J.D. CAMPBELL (Australia)

Mr. P. MARIN (Spain)



AERONAUTICAL CONFERENCE

Document No. II/27-E
15 March 1966
Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

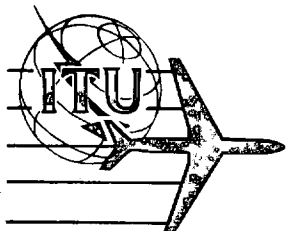
AGENDA
OF THE
FIRST MEETING OF THE
AIRCRAFT OPERATION STATISTICS COMMITTEE

Tuesday, 15 March 1966 at 3 p.m.

1. Appointment of rapporteurs (No. 578 of the Convention)
2. Programme of work
3. Preliminary examination of air traffic statistics
(international flights)
4. Other business

Maurice CHEF
Chairman





AERONAUTICAL CONFERENCE

Document No. II/28-E
15 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

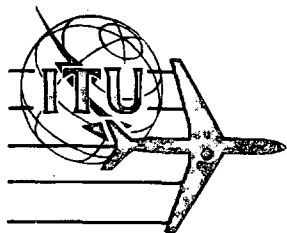
FOR THE FIRST MEETING OF THE TECHNICAL COMMITTEE

15 March 1966, at 16.45 in Room B

1. Appointment of rapporteur
2. Preliminary consideration of subjects to be studied -
Document No. II/22, Section A refers
3. Preparation of work programme
4. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/29-E
15 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 6

AGENDA

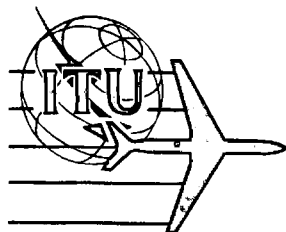
FOR THE FIRST MEETING OF THE PLAN COMMITTEE

Wednesday, 16 March 1966, at 3.00 p.m. in Room B

-
1. Appointment of rapporteur
 2. Preliminary consideration of subjects to be studied -
Document No. II/22, Section C refers
 3. Preparation of work programme
 4. Any other business

E.B. POWELL
Chairman





AERONAUTICAL CONFERENCE

Document No. II/30-E

15 March 1966

Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

PROPOSAL No. 1

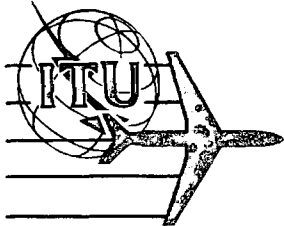
Subject: Amendments in boundaries of MWARA SA
(Appendix 26, Part II, Section I, Article 1).

That the Extraordinary Administrative Radio (Aeronautical) Conference should amend the present boundaries of the MWARA SA as they appear in Appendix 26, Part II, Section I, Article 1, in accordance with the recommendation of I.C.A.O. COSP-II, a note being added to the effect that the frequencies entered for SA in the new Allotment Plan may be used in Buenos Aires when operations so require.

That the frequency complement should be calculated on the basis of the maximum length of the area as far as Buenos Aires.

Reasons: To take account of Recommendations 2/1 and 2/7 of the I.C.A.O. COSP-II Special Meeting, and to make satisfactory provision for present, impending and future operations in this MWARA.





AERONAUTICAL CONFERENCE

Document No. II/31-E
15 March 1966
Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

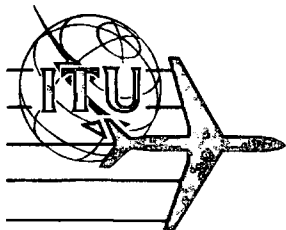
PROPOSAL No.2

Subject : Amendment of the boundaries and designation of the MWARA
NSAM-1 and NSAM-2 (Appendix 26, Part II, Section I, Article 1).

That the E.A.R.C. (1966) should adopt the new boundaries of the Major World Air Route Areas NSAM-1 and NSAM-2 as shown in Appendix A to Part 2 of I.C.A.O. Document No.8329, COSP II, and that the designations of the routes should be changed to SAM-1 and SAM-2, respectively.

Reasons : In view of the studies made by the I.C.A.O. Special Communication Meeting (1963) and Recommendations Nos.2/1 and 2/10 (I.C.A.O. Document No.8239 COSP II). The First Session of the E.A.R.C. referred this point to the present Session (Resolution No.3).





AERONAUTICAL CONFERENCE

Document No. II/32-E

15 March 1966

Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

PROPOSAL No. 3

Subject: Amendment of the boundaries of RDARA Sub-Area 13G

Replace the description of Sub-Area 13G in Appendix 26 to the Radio Regulations, Part II, Section I, Article 2 (Description of the Regional and Domestic Air Route Area (RDARA) Boundaries) by the following:

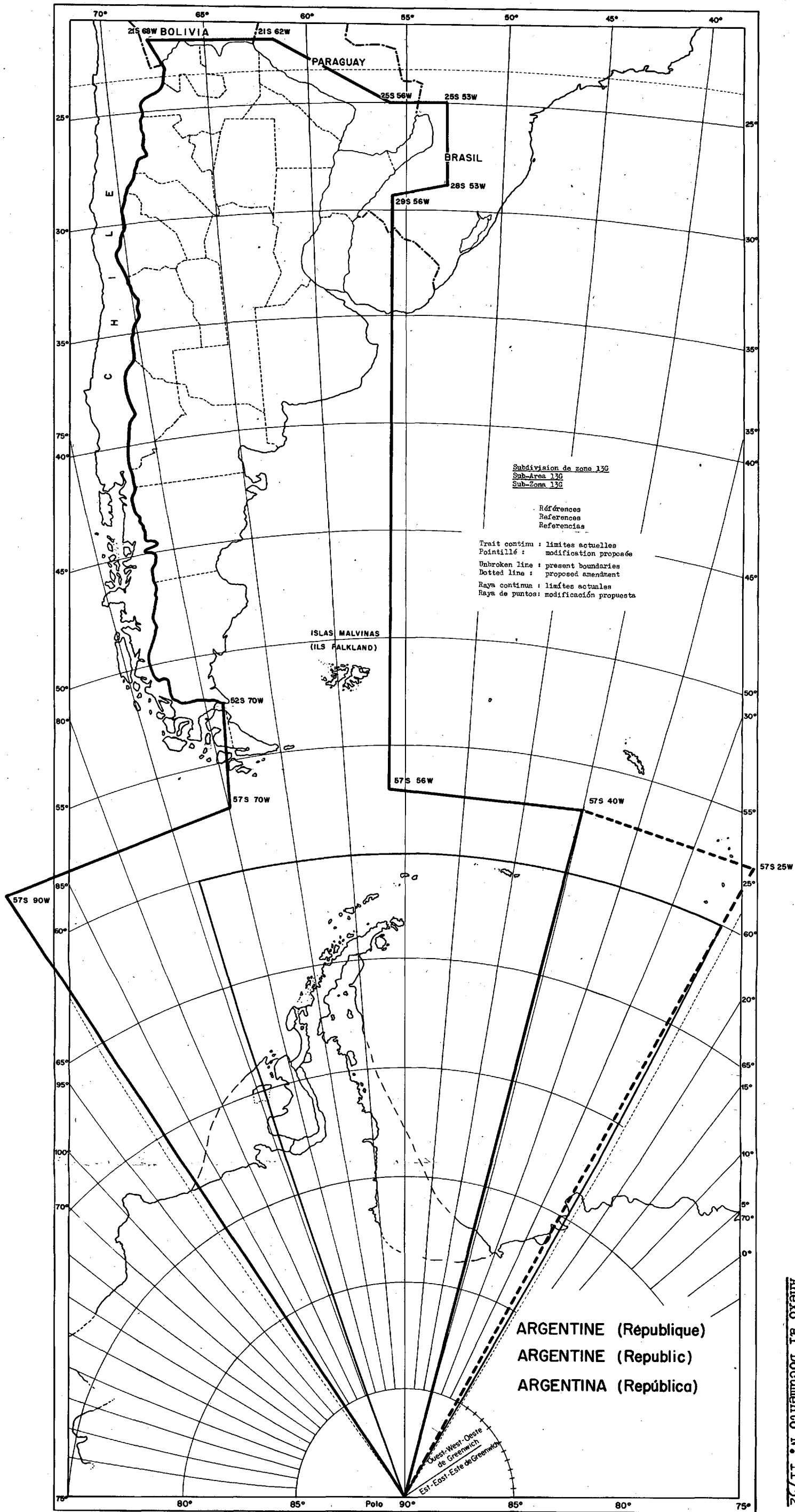
Sub-Area 13G

From the point 57°S 90°W, and through the points 57°S 70°W, 52°S 70°W. Then along the frontier between Argentina and Chile to 21°S 68°W, 21°S 62°W, 25°S 56°W, 25°S 53°W, 28°S 53°W, 29°S 56°W, 57°S 56°W, 57°S 25°W, to the South Pole. Then along the 90° W meridian to close the sub-area at 57°S 90°W.

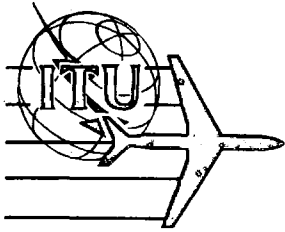
Reason: To take account of the amended boundaries proposed for Sub-Area 13H and to extend coverage in the southern sector.

Annex: 1





Annexe au Document N° II/32
Annex to Document No. II/32
Anexo al Documento N° II/32



AERONAUTICAL CONFERENCE

Document No. II/33-E

15 May 1966

Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

PROPOSAL No. 4

Subject: Change in the boundaries of sub-area RDARA 13H.

The existing description of sub-area 13H in Appendix 26 to the Radio Regulations, Part II, Section I, Art. 2 (Regional and domestic air route area boundaries) is replaced by the following:

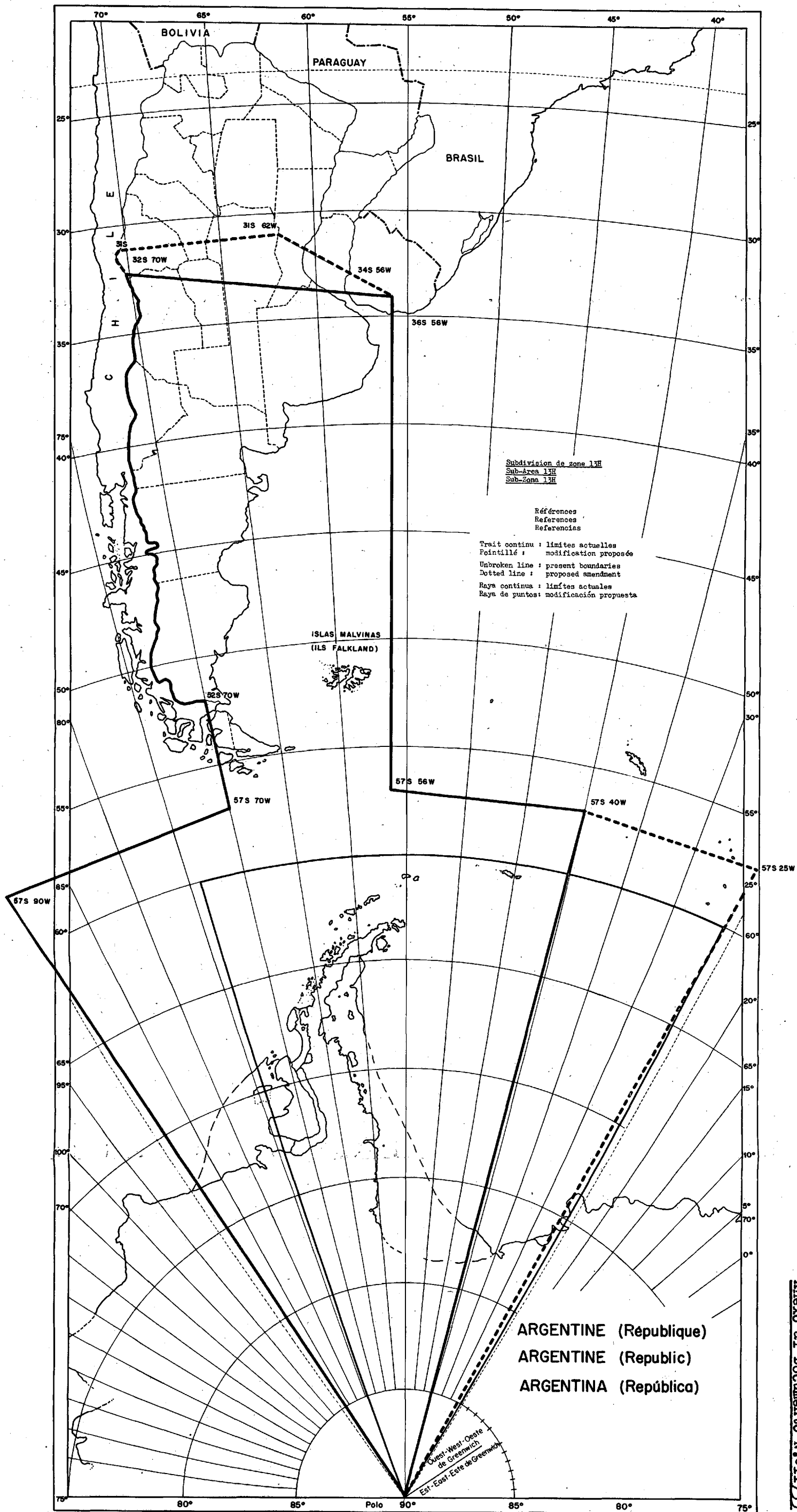
Sub-area 13H

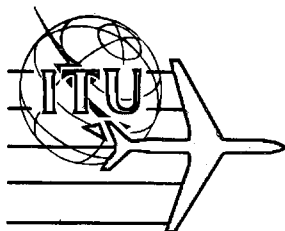
From the point $57^{\circ}\text{S } 90^{\circ}\text{W}$, through the points $57^{\circ}\text{S } 70^{\circ}\text{W}$, $52^{\circ}\text{S } 70^{\circ}\text{W}$, and along the frontier between Argentina and Chile to intersect the 31°S parallel, thence through the points $31^{\circ}\text{S } 62^{\circ}\text{W}$, $34^{\circ}\text{S } 56^{\circ}\text{W}$, $57^{\circ}\text{S } 56^{\circ}\text{W}$, $57^{\circ}\text{W } 25^{\circ}\text{W}$ to the South Pole, to close the sub-area at $57^{\circ}\text{S } 90^{\circ}\text{W}$.

- Reasons:
- a) To take the sub-area one degree more to the North (from the point 32°S to the point 31°S) so as to include FIR Cordoba in the frequencies used by air routes to the south.
 - b) To join up through this point to 13G, covering 15° to the West in the Southern sector.

Annex: 1







AERONAUTICAL CONFERENCE

Document No. II/34-E
15 March 1966
Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

PROPOSAL No. 5

Subject: Allotment of a family of frequencies for meteorological broadcasts in South America

1. Considerations:

1.1 The present Frequency Plan makes no provision for a family of frequencies for meteorological broadcasts from South America for that area and the adjacent areas.

1.2 The need to have such means has been increasing progressively in recent years and it is essential that such broadcasts should be established for the safety of international flights, and in particular to satisfy the operational requirements of aircraft flying in the Upper Regions, and the imminence of flights at greater heights, which emphasize the need to have a knowledge of meteorological conditions in the terminal areas.

1.3 At its preparatory meeting (COSP-II, 1963), I.C.A.O. recognized the need for such broadcasts and issued Recommendation No. 5/3 requesting the E.A.A.R.C. to make every effort to allot a family of high frequencies for the exclusive use of meteorological broadcasts.

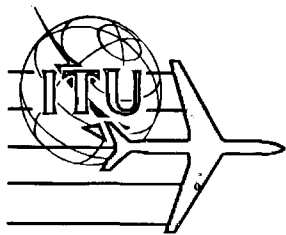
1.4 Proposal

The Argentine delegation proposes:

PROPOSAL No. 5

1. That the Extraordinary (Aeronautical) Administrative Radio Conference, when preparing the revised provisions of Appendix 26, should consider the allotment of a family of frequencies for the exclusive use of meteorological information broadcasts for aircraft flying in the NSAM-1, NSAM-2 and SA areas, in the first two areas as far as their boundaries with the projected CAR (COSP-II, I.C.A.O.) and in the whole of the third area as far as Buenos Aires.





AERONAUTICAL CONFERENCE

Document No. II/35-E
15 March 1966
Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

ARGENTINA

PROPOSAL No. 6

CONCERNING THE ARRANGEMENT OF APPENDIX 26 TO THE RADIO REGULATIONS

It would be convenient if the provisions pertaining to the Aeronautical Mobile (R) Service were assembled in one document. Consultation would be facilitated and the provisions should be separated from those relating to the OR Service for future revision purposes. The repetition of information common to both Services, moreover, is neither practical nor logical, and the proposed rearrangement would avoid substantial amendment for the time being.

The Argentine Delegation therefore proposes :

1. that the EARC should adopt the following division of Appendix 26 to the Radio Regulations:

APPENDIX 26 - Aeronautical Mobile Service

PART I - General provisions for the Aeronautical Mobile Service - Technical and operational principles;

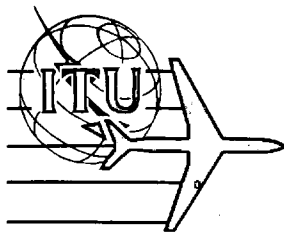
PART II (R) - Provisions relating to the Aeronautical Mobile(R) Service - Frequency Plan;

PART III (OR)- Provisions relating to the Aeronautical Mobile (OR) Service - Frequency Plan;

2. that the EARC should prepare Parts I and II, in accordance with Resolution No. 13 of the Geneva Conference, 1959, through the Drafting Committee and on the basis of approved provisions;

3. that the next Administrative Radio Conference should be advised finally to adopt Appendix 26, as rearranged and incorporating any other amendments required, and to arranged for its publication in three separate booklets, one for each Part, or in two booklets, one for Parts I and II and the other for Parts I and III.





AERONAUTICAL CONFERENCE

Document No. II/36-E

15 March 1966

Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

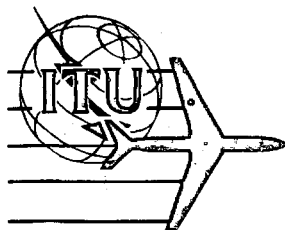
PEOPLE'S REPUBLIC OF POLAND

FLIGHT DENSITY MAPS

To facilitate the work of Committee 5 (particularly the analysis of flight density statistics), the People's Republic of Poland proposes that the I.F.R.B. Secretariat prepare flight density maps for the Conference in the form shown in the annex hereto. This map has been prepared by way of example for the territory of Europe, the shading density corresponding to the different classes of flight density. The number of flights from the territories marked by the numbered boxes should be entered in each box.

Annex : 1





AERONAUTICAL CONFERENCE

Document No. II/37-E

15 March 1966

Original : English/
Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

PROPOSALS REFERRED BY THE FIRST SESSION OF THE
CONFERENCE FOR EXAMINATION BY THE SECOND SESSION



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PROPOSALS BY THE UNITED STATES OF AMERICA

(Doc. I-1, pages 55, 56, Proposals Nos. 4, 5, 6 and 7)

PROPOSAL No. 4 :

That in the revision of Appendix 26 provision be continued for the allotment of one family of frequencies for meteorological broadcast to aircraft in the area "Atlantic-MET" and, further, that a higher megacycle order frequency in the 13260-13360 Mc/s (R) band be added to the present complement of frequencies.

Reason : To bring the revised (R) allotment plan into accord with current operational requirements under which the routinely broadcast weather information would be available to aircraft at distances beyond the normal propagation range of frequencies of the order of 8 Mc/s.

PROPOSAL No. 5 :

That in the revision of Appendix 26 provision be continued for the allotment of one family of frequencies for meteorological broadcast to aircraft in the area "Pacific-MET" and, further, that a higher megacycle order frequency in either the 11275-11400 or 13260-13360 Mc/s (R) bands, with preference to the latter, be added to the present complement of frequencies.

Reason : To bring the revised (R) allotment plan into accord with current operational requirements under which the routinely broadcast weather information would be available to aircraft at distances beyond the normal propagation range of frequencies of the order of 8 Mc/s.

PROPOSAL No. 6 :

That in the revision of Appendix 26 provision be included for the allotment of one family of frequencies for meteorological broadcast to aircraft in that portion of MWARA's NSA-1 and NSA-2 which, generally defined, corresponds to the continent of Africa; that this family of frequencies be designated "African-MET"; and that this family of frequencies include one frequency each from the following (R) bands : 3400-3500, 5480-5680, and 8815-8965 kc/s.

Reason : To more adequately meet the operational requirements of international civil aviation in that area.

PROPOSAL No. 7 :

That in the revision of Appendix 26 provision be included for the allotment of one family of frequencies for meteorological broadcast to aircraft in the geographical area of south-eastern Asia which, generally defined, corresponds to MWARA FE-1; that this family of frequencies be designated "South-east Asia-MET"; and that this family of frequencies include one frequency each from the following (R) bands : 3400-3500, 5480-5680, and 8815-8965 kc/s.

Reason : To more adequately meet the operational requirements of international civil aviation in that area.

PROPOSALS BY JAPAN

(Doc. I-3, pages 1, 2, 3, 4, Proposals Nos. I, III, IV)

Japan

PROPOSALS FOR THE PREPARATORY SESSION OF THE
EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE
FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN
FOR THE AERONAUTICAL MOBILE (R) SERVICE

I. Creation of MWARA-Arctic

PROPOSAL :

1. To newly establish the MWARA for the Arctic Polar Air Route;
2. The boundary of this MWARA will be from the North Pole to the point 60°N 169°W, then to the point 60°N 40°W along the latitude 60°N; and then through the points 52°N 10°E and 60°N 20°E, to the North Pole;
3. The frequencies to be allotted to this MWARA shall be one frequency family consisting of the frequencies in the bands 3 Mc/s, 4 Mc/s, 5 Mc/s, 6 Mc/s, 9 Mc/s, 10 Mc/s and 13 Mc/s.

Reasons :

At present, the Arctic Polar Air Route is covered by the extension of the MWARA-NP and MWARA-NA. However, as this route is one of the important international air routes connecting the Pacific and the European countries, it is desirable that a new MWARA be established.

The propagation of radio wave in the Arctic Area has the characteristics different from those in other areas. It is necessary, according to our study, to allot the proposed frequencies to the Arctic Area taking into account the seasonal variations of ionosphere and sunspot cycle.

III. HF VOLMET Frequencies

PROPOSAL :

Allotment of an appropriate frequency family to meteorological broadcasting should be reviewed in every area taking into account the new aviation requirements.

Reasons :

1. Frequency families in the bands below 9 Mc/s are allotted to the Pacific-MET, Atlantic-MET, EU-MET and ME-MET by the Frequency Allotment Plan in Appendix 26.

2. The I.C.A.O. Special Communications Meeting, 1963, adopted a recommendation to newly allot one frequency family respectively to the South East Asian, the African and the South American areas. The recommendation has been based upon the demand of the international civil aviation; accordingly, it is deemed necessary to allot appropriate frequencies to these areas.
3. With rapid increase in aircraft speed, early reception of meteorological information even at a long distance is earnestly desired. Therefore, the high order frequencies having longer communication range than the frequencies in the 8 Mc/s band should be allotted. For example, there is a strong demand for the meteorological information at such a long distance as about 1,100 nautical miles in the Pacific-MINT. For this purpose, a frequency in the 13 Mc/s band is indispensable in the Pacific Area.
4. As to the problem of the harmful interference caused by the allotment of the same frequency family to two areas, it is necessary to examine at the time of reviewing the allotment of frequency families to new areas mentioned in 2 above, such measures as to allot such frequencies to the areas where there is no possibility of interference.

IV. Additional Allotment of Frequency Family to MWARA-CWP

PROPOSAL :

It is necessary to allot one more frequency family to the MWARA-CWP.

Reasons :

1. It was decided at the 1948/1949 I.A.A.R.C. that the number of aircraft per hour that can be accommodated on a frequency family in the MWARA shall be 12 at the maximum. This number was confirmed valid at I.C.A.O. Special Communications Meeting, 1963.
2. At present, in accordance with the Frequency Allotment Plan in Appendix 26, one frequency family consisting of 2966 kc/s, 5506.5 kc/s, 8862.5 kc/s, 13 354.5 kc/s and 17 906.5 kc/s is allotted to and used in the MWARA-CWP. Furthermore, as one of the measures to reduce congestion in communication caused by the increase of traffic, and for the purpose of increasing the frequencies in the 5 Mc/s band which are of high utility, it was decided at the I.C.A.O. Pacific Air Navigation Meeting, 1955, that 5536.5 kc/s of RDARA-6C should be transferred to the MWARA-CWP. This frequency is in use to date since then.
3. The number of aircraft handled with one frequency family in the Tokyo F.I.R. sometimes exceeds 15 per hour, reaching to the utmost operational limits.

4. The future demand for HF in the MWARA-CWP will remain, and the traffic will increase, as the MWARA-CWP is a vast maritime area, even the increased use of the long distance VHF air-ground communication is taken into account. Considering such tendency of increase, additional allotment of one more frequency family to the MWARA-CWP is necessary.

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD

(Doc. I-8)

REPORT ON STUDIES RELATING TO THE BASIC CONCEPTS
OF ALLOTMENTS IN A REVISED FREQUENCY ALLOTMENT PLAN
FOR THE AERONAUTICAL MOBILE R SERVICE

1. The I.C.A.O. Special Communications Meeting, (1963), considered that the existing Allotment Plan for the Aeronautical Mobile R Service, based on the concepts of Major World Air Route Areas (MWARA's) and Regional and Domestic Air Route Areas (RDARA's) had proved to be satisfactory during the period since the plan was developed in 1949, and that nothing had occurred in practice to suggest the need for basing the plan on new concepts. The Meeting considered, however, that some changes in operational requirements had occurred which might permit some simplification of the Plan particularly in regard to overlap areas; also that some new air routes not covered by the existing MWARA's had been established since the Plan was adopted. The Meeting therefore recommended, inter alia, that some amendments should be made to the boundaries of existing MWARA's, including the establishment of a new MWARA for the Caribbean region and extension of the North Atlantic MWARA to include Arctic polar routes.
2. The above-mentioned I.C.A.O. Meeting did not propose any specific changes to RDARA's but recommended that changes to existing RDARA boundaries should be considered by the countries concerned, in consultation with adjacent countries if necessary, with a view to improving the present HF Allotment Plan; and that, when studying changes in RDARA boundaries, the following factors should be taken into consideration.
 - a) the extent of implementation of VHF in the area concerned;
 - b) improvements in ground-to-ground-communications;
 - c) changes in the operational use of MWARA and RDARA frequency allotments;
 - d) recommendations for changes in the MWARA boundaries.
3. The I.F.R.B., while it believes that the distinction between Major World Air Route operations and Regional and Domestic Air operations is now less marked than was the case when the present Allotment Plan was established (since in many cases the same airports and communications

facilities are now used by aircraft flying international, regional and domestic routes and in fact, a number of RDARA frequencies are now used for MWARA operations), considers that the present Allotment Plan has proved to be very flexible in readily providing for changes in operational requirements, in providing for the establishment of additional aeronautical and aircraft stations associated with increased air traffic, and has led to a very effective use of the high frequency spectrum insofar as the use of the same frequencies by a large number of aeronautical and aircraft stations is concerned. The Board therefore supports the I.C.A.O. conclusions that the revised Allotment Plan for the Aeronautical Mobile R Service should continue to be based on the concept of allotments to Major World Air Route Areas and Regional and Domestic Air Route Areas.

4. The I.F.R.B. is of the opinion that the final establishment of Area boundaries, both in respect of MWARA's and RDARA's, should be made only when an analysis of up-to-date flying statistics has been made and presented to the Second Session of the Aeronautical Conference. However, it seems desirable that the First Session of the Conference should endeavour to take some account of any additional Areas which the Conference might ultimately wish to establish, as this will have a bearing on the number of families of frequencies which may have to be made available and hence on the channel widths to be adopted in the revised Allotment Plan.
5. The I.F.R.B. is of the opinion that the question of possible simplification of the Allotment Plan by a reduction in the overlap between the present MWARA boundaries should be studied by the Extraordinary Administrative Aeronautical Radio Conference. In regard to changes in RDARA boundaries, the I.F.R.B. hopes that the revised Allotment Plan will provide for simplification of the RDARA boundaries in I.T.U. Region 2, i.e., RDARA's 10, 11, 12 and 13 with their existing sub-divisions 10A - 10E, 11A - 11I, 12A - 12J and 13A - 13M. The very considerable overlap between these sub-areas makes it very difficult, if not impossible, to identify the particular sub-Area in which an aeronautical station, using a given frequency, is situated; and the Board would hope that in the revised Allotment Plan, a simplified layout of the RDARA's in Region 2, for example on lines of that adopted in Africa or Asia, could be introduced. This question is also of importance in regard to the form in which flying statistics, in respect of Regional and Domestic Air operations, are to be presented and analysed.

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD

(Doc. I-9)

REPORT ON STUDIES ON FACILITIES FOR HIGH FREQUENCY
METEOROLOGICAL BROADCASTS IN A REVISED ALLOTMENT
PLAN FOR THE AERONAUTICAL MOBILE R SERVICE

1. The I.C.A.O. Special Communication Meeting (1963) recommended that VHF should be used for the satisfaction of all local and regional meteorological broadcast requirements, whenever technically, operationally and economically feasible; that use should be made of VHF facilities to satisfy new requirements for meteorological broadcast to the extent that adequate coverage could be provided to meet operational needs and when the use of VHF is technically and economically feasible; and that studies should be made of the extent, if any, to which existing meteorological broadcasts on high frequencies could be transferred to VHF to reduce demands for high frequency allotments within the Aeronautical Mobile R Service frequency bands.
2. The I.F.R.B. strongly supports the I.C.A.O. recommendations in paragraph 1 above, which are in conformity with the general recommendations of the I.T.U. Panel of Experts that the use of high frequencies should be avoided in all cases where the required service can be technically and economically provided by other means of communication.
3. The I.C.A.O. Special Communications Meeting (1963), however, made the following additional recommendations in regard to high frequency facilities for meteorological broadcasts :
 1. "that the existing allotments of high frequencies to the Atlantic-MET, Pacific-MET and EU-MET areas, for meteorological broadcasts exclusively, be maintained by the I.T.U. Aeronautical E.A.R.C. (1964/1965) and that these frequency families be supplemented by :
 - Atlantic-MET - Allotment of a 13 Mc/s frequency for meteorological broadcasts exclusively.
 - Pacific-MET - Allotment of a higher order of frequency, preferably in the 13 Mc/s band, or, if this is not feasible, in the 11 Mc/s band.
 - EU-MET - Allotment of an 11 Mc/s or 13 Mc/s frequency.

2. "that the I.T.U. Aeronautical E.A.R.C. (1964/1965) examine the possibility of allotting a separate high frequency family for meteorological broadcasts exclusively to the ME-MET area, to replace the frequency family now shared with the Atlantic-MET area, and thereby resolve existing operational difficulties.
3. "that the I.T.U. Aeronautical E.A.R.C. (1964/1965) make every endeavour to allot appropriate high frequency families for meteorological broadcasts exclusively in the African, South East Asian and South American areas."
4. In regard to the I.C.A.O. recommendations in paragraph 3 above, the I.F.R.B. believes that the establishment of an effective system of long-range meteorological broadcasts in certain areas, such as the North Atlantic area, has very greatly reduced the loading on the normal ground-air channels which formerly carried a considerable amount of "request-reply" meteorological traffic. It seems quite probable, therefore, that the establishment of long-range meteorological broadcasting systems in other areas where they do not at present exist, while involving the allotment of special families of frequencies to these areas for such broadcasts, would not necessarily involve a total increase in the number of high frequencies to be allotted to the areas concerned due to the resulting more effective use of the ground-air channels for Air Traffic Control purposes.
5. The allotment of frequencies to afford the above-mentioned facilities for meteorological broadcasts will, of course, be a matter for the Second Session of the Aeronautical Conference. However, it would appear desirable that the First Session of the Aeronautical Conference should take account of the I.C.A.O. recommendations that the additional high-frequency facilities, described in paragraph 3 above, should be provided, as this may have a bearing on the total number of families of frequencies which should be made available in the revised Allotment Plan and hence on the channel widths and number of channels to be established by the First Session of the Conference.

PROPOSAL BY ARGENTINA

(Doc. I-23)

ARGENTINA

PROPOSAL No. 4

Allotment of a family of frequencies for meteorological
broadcasts in South America

1. General Considerations

1.1 The present Frequency Plan makes no provision for a family of frequencies for meteorological broadcasts from South America for that area and the adjacent areas.

1.2 The need to have such means has been increasing progressively in recent years and it is essential that such broadcasts should be established for the safety of international flights, and in particular to satisfy the operational requirements of aircraft flying in the Upper Regions, and the imminence of flights at greater heights, which emphasize the need to have a knowledge of the terminal areas.

1.3 The case of Buenos Aires and other South Atlantic terminals where critical conditions (Atlantic crossings and flights over extensive forest areas) calls for continuous information whose transmission should not, whenever possible, be subjected to transmission by fixed circuits.

1.4 At its preparatory meeting (COSP-II, 1963), I.C.A.O. recognized the need for such broadcasts for South America and issued Recommendation No. 5/3 requesting the E.A.A.R.C. (1964-1965) to make every effort to allot a family of high frequencies for the exclusive use of meteorological broadcasts.

2. Arguments

2.1 It is considered that a single suitably selected family of frequencies will be sufficient to answer the needs of meteorological broadcasts for MWARA in South America, through co-ordinated and shared use within the area by agreement at I.C.A.O. Regional meetings in which all the countries concerned have had past experience of an excellent and exemplary co-operation in aeronautical matters.

2.2 It would be sufficient for the Buenos Aires transmissions to be limited to 15 minutes per hour, an arrangement which would make it possible to have 4 transmissions on the region of the same frequency.

2.3 Metereological broadcasts should cover the areas NSAM-1 and NSAM-2, as far as their boundaries with the projected CAR area, in accordance with Appendix A of the Final Report of the COSP-II, I.C.A.O. (Montreal 1963), as regards the continental part.

2.4 For the Atlantic (SA), where metereological information must be available (whenever operationally required) from the start in Europe and as far as Buenos Aires, for present and future flights, high frequencies must be envisaged within the allotted set of frequencies to satisfy this requirement efficiently.

2.5 Finally, the Argentine delegation deems it necessary that the Extraordinary Aeronautical Administrative Radio Conference should consider the allotment of a family of frequencies for metereological broadcasting in South America and that this family should be calculated in such a way as to cover, 24 hours a day, the abovementioned continental areas (2.3) and the furthest point of the area the Europe-Buenos Aires flight area over the whole extent of the SA area as far as Buenos Aires.

2.6 Proposal

The Argentine delegation proposes:

PROPOSAL No. 4

1. That the Extraordinary (Aeronautical) Administrative Radio Conference, when preparing the revised provisions of Appendix 26, should consider the allotment of a family of frequencies for the exclusive use of metereological information broadcasts for aircraft flying in the NSAM-1, NSAM-2 and SA areas, in the first two areas as far as their boundaries with the projected CAR (COSP-II, I.C.A.O.) and in the whole of the third area as far as Buenos Aires.

2. That the E.A.A.R.C. should recommend to the Conference in 1965 the inclusion of such broadcasts in the revised regulations and that the allotted family of frequencies should afford satisfactory coverage for the areas mentioned in 1.

PROPOSAL BY ARGENTINA

(Doc. I-27)

ARGENTINA

PROPOSAL No. 8

Amendment of the boundaries and description of MWARA NSAM-1 and NSAM-2

(Part II, Article I, Section I of Appendix 26)

That the Aeronautical E.A.R.C. (1964) should recommend the adoption of the new boundaries for the Major World Air Route Areas NSAM-1 and NSAM-2 as shown in Appendix A to Part 2 of Document No. 8329, COSP II of I.C.A.O., and amend the designation to SAM-1 and SAM-2 respectively.

Reason : Result of study by the Special Communication Meeting of I.C.A.O. (1963) and its Recommendation No. 2/10.

PROPOSAL BY BRAZIL

(Doc. I-52)

BRAZIL

PROPOSAL

Revision to the Appendix 26 to International
Telecommunication Union Radio Regulations

PART II

Plan for the Allotment of Frequencies for the Aeronautical Mobile
(R) Service in Exclusive Bands between 2850 and 17970 kc/s.

Section I

Description of the Major World Air Route Areas (MWARA) and
Regional and Domestic Air Route Areas (RDARA) and Sub-RDARA Boundaries.

1. Inclusion of CAMPO GRANDE in the MWARAS SAM-I and SAM-2

The Brazilian Administration is planning to establish an Air
Traffic Control Centre (ACC) at CAMPO GRANDE (Lat. 20°28'S 54°40'W) and so
supports Recommendation 2/1 (I.C.A.O. Document No. 8329, COSP-II) with
respect to the description of the MWARA SAM-1 and MWARA SAM-2 boundaries.

PROPOSAL BY BRAZIL

(Doc. I-53)

BRAZIL

PROPOSAL

Revision to the Appendix 26 to International
Telecommunication Union Radio Regulations

PART II

Plan for the Allotment of Frequencies for the Aeronautical
Mobile (R) Service in Exclusive Bands between 2850 and 17970 kc/s.

Section I

Description of the Major World Air Route Areas (MWARA) and
Regional and Domestic Air Route Areas (RDARA) and sub-RDARA Boundaries.

1. Inclusion of Brasilia, Trindade Island and Monrovia (Liberia) in the
MWARA South Atlantic (SA)

Considering that the Headquarters of the Brazilian Government
was transferred to Brasilia - the new Capital - in 1960;

considering that the aeronautical movement of this new capital
is one of the greatest in Brazil;

considering that the national plan will provide Brasilia
with an airport with adequate facilities for the operation of supersonic
aircrafts;

considering the necessity to provide an appropriate HF airground
communications coverage it is suggested that Brasilia (15°51'S 47°56'W)
be included in the MWARA SA; and still

considering Brazil's interest in aeronautical interconnection
with African continent;

considering that Trindade Island located away from Brazilian coast can be used to provide navigational and communication facilities to Brazil-Africa route;

considering that to take care of operational requirements - of new route already being flown and others projected for the near future, it seems highly essential that Monrovia (Liberia) be included in MWARA SA.

For the purposes mentioned above the following description of the MWARA SA is suggested:

From the point 23°S 43°W, through the point 15°S 49°W, 5°S 36°W, 10°N 30°W, 40°N 15°W, 40°N 7°W, 5°N 7°W, 20°S 20°W, to the point 23°S 43°W.

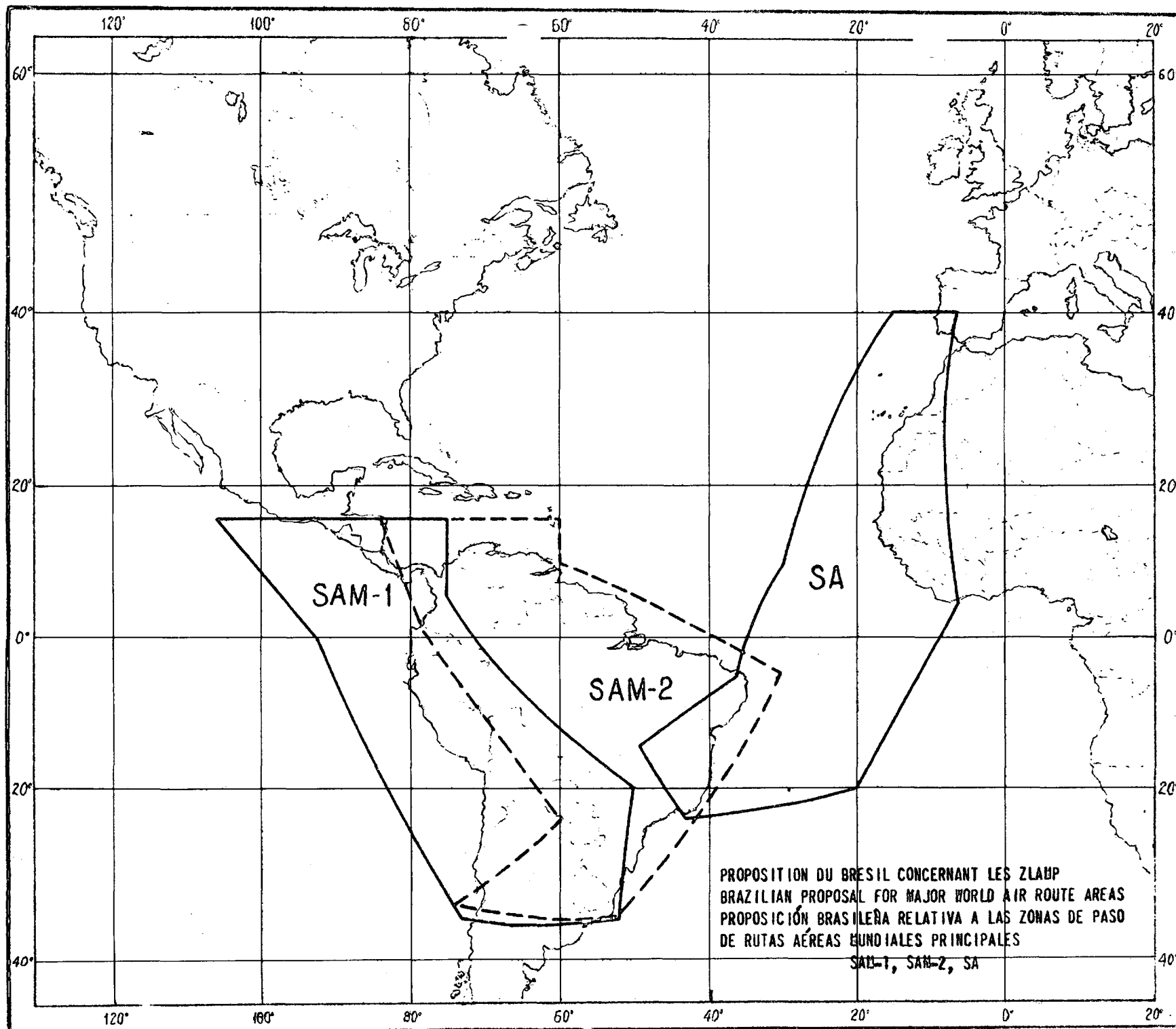
2. Use of SA frequencies at Buenos Aires

That a note should be appended to the MWARA SA in accordance with Recommendation 2/7 (I.C.A.O. Doc. 8329, COSP II).

Annex: 1

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ANNEXE

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PROPOSAL BY BRAZIL

(Doc. I-75)

BRAZIL

REVISION TO THE APPENDIX 26 TO INTERNATIONAL TELECOMMUNICATION
UNION RADIO REGULATIONS

Study of Proposition

PART II

Plan for the Allotment of Frequencies for the Aeronautical
Mobile (R) Service in Exclusive Bands between 2850 and 17970 kc/s.

Section I

Description of the Major World Air Route Areas (MWARA) and
Regional and Domestic Air Route Areas (RDARA) and sub-RDARA Boundaries.

Article 2

Description of the Regional and Domestic Air Route Area (RDARA)
12-H Boundaries.

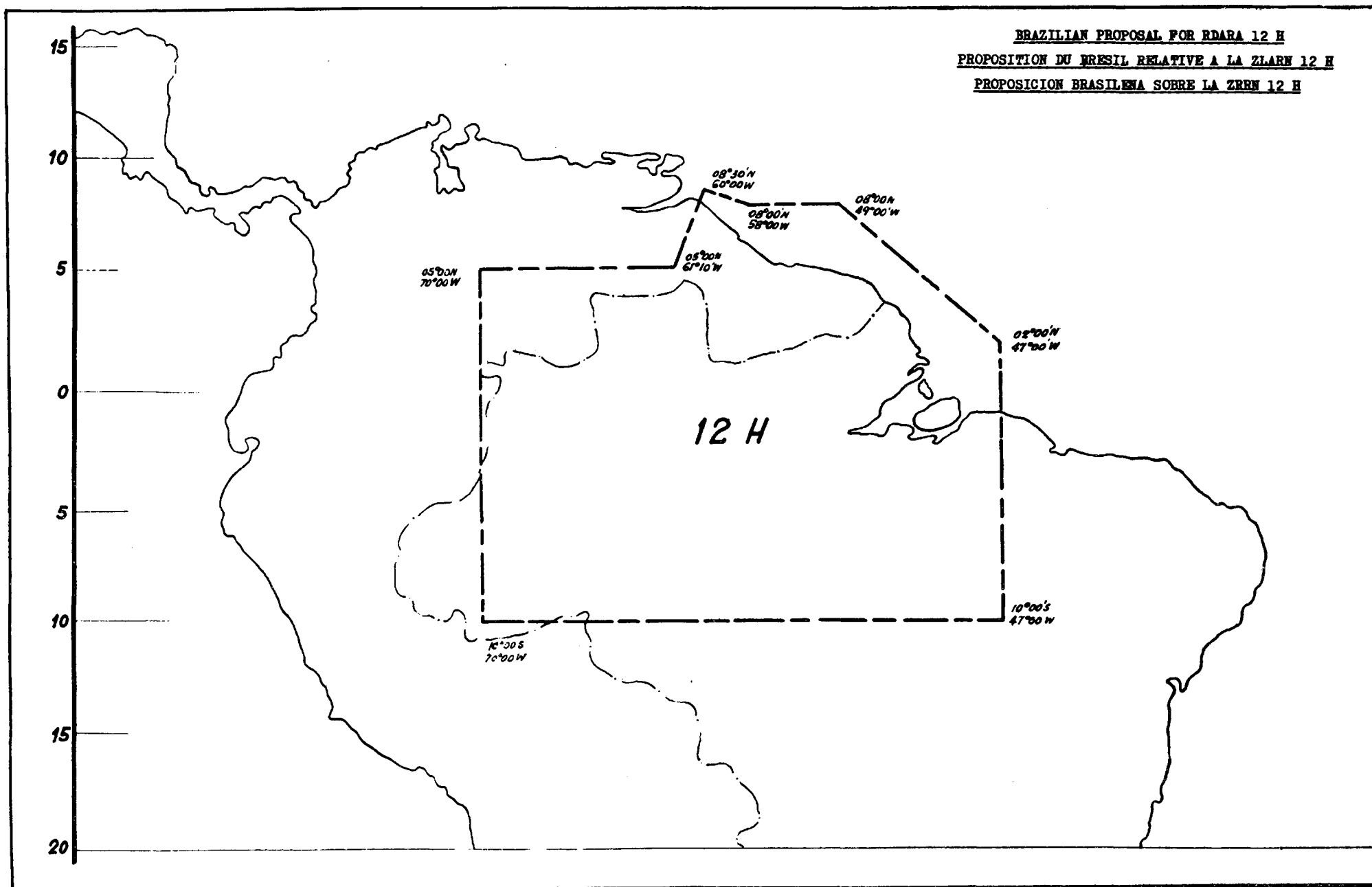
In reviewing the Regional and Domestic Air Route Areas (RDARA)
12-H, for the purpose of simplifying it and readjusting its limits to the
present air traffic pattern, examination of this particular sub-area was
made and the following observations made:

- a) remarkable development in the Amazon region has been observed,
with new airports being constructed for national airlines, some of them
being placed close to neighbouring countries located in the same sub-area
12-H (see attached drawing);
- b) the very air traffic growth in this region has required the
Brazilian administration to plan for the installation of two new Area
Control Centres (A.C.C.) at MANAUS and PORTO VELHO;

As a consequence of the above, Brazil considers of great importance that the present sub-area 12-H be modified, in order to meet the air traffic growth from its territory to neighbouring countries, and for this purpose suggests the study of the following proposition.

To amend the boundaries of sub-RDARA 12-H, to read: From the point 10°S 70°W, through the points 5°N 70°W, 5°N 61°10'W, 8°30'N 60°W, 8°N 58°W, 8°N 49°W, 2°N 47°W, 10°S 47°W to the point 10°S 70°W.

Annex: 1



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PROPOSAL BY ARGENTINA

(Doc. I-76)

ARGENTINA

PROPOSAL No. 9

concerning alterations of the boundaries of MWARA SA

(Appendix 26, Part II, Section I, Article 1)

That the Aeronautical Extraordinary Administrative Radio Conference should alter the present boundaries of MWARA SA as shown in Appendix 26, Part II, Sec. I, Art. 1 so as to coincide with the recommendations made in the report COSP-II of I.C.A.O., with the inclusion of Brasilia, Trinidad and Monrovia, and a note to indicate that the frequencies noted in SA in the new Allotment Plan could be used in Buenos Aires when required by operations; and

that the family of frequencies should be calculated on the basis of the maximum length of the area, as amended, as far as Buenos Aires.

Reason: In accordance with Recommendations 2/1 and 2/7 of the Special Meeting of I.C.A.O. (COSP-II) and the proposal by Brazil (Document I-53), so as to meet existing and impending or future operations in this MWARA.

PROPOSAL BY BRAZIL

(Doc. I-78)

BRAZIL

REVISION TO THE APPENDIX 26 TO INTERNATIONAL
TELECOMMUNICATION UNION RADIO REGULATIONS

Considering the necessity to meet the meteorological requirements of international aviation, operating over regions embraced by the MWARA South Atlantic (SA) and South America (SAM);

considering the improved use of high speed aircraft over the region, and the respective delays in obtaining such meteorological information by the present system of "request-and-reply" method;

considering that, notwithstanding the present recommendations, regarding the use of VHF transmission for that purpose, our nowadays operational conditions are unsatisfactory to attend such requirements;

it is suggested that, when reviewing Appendix 26 to Radio Regulations of I.T.U., provision should be made for the allotment of one HF family of frequency to be exclusively employed in broadcasting transmission of meteorological information to international aviation, in the portion of SA and SAM regions.

PROPOSAL BY CEYLON
(Doc. I-110 (Rev.))

CEYLON

CHANGE IN BOUNDARIES OF RDARAs

The Delegation of Ceylon wishes to offer the following comments on Proposal No. 10 (Addendum to Document No. I-11) made by the Republic of India :

The countries concerned must be duly consulted before any change can be made in the boundaries of RDARAs.

That being so, the Delegation of Ceylon can accept no change in the boundaries at present. As to the provision of statistics for RDARA's 6A and 6E, flight statistics concerning these two areas should be provided separately, unless agreed otherwise by the countries concerned.

PROPOSAL BY ARGENTINA, BRAZIL AND VENEZUELA

(Doc. I-115)

ARGENTINA, BRAZIL AND VENEZUELA

PROPOSAL

FOR THE ALLOCATION OF A GROUP OF FREQUENCIES

FOR THE DISSEMINATION OF WEATHER

INFORMATION IN SOUTH AMERICA

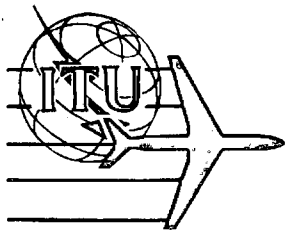
Draft Recommendation

The E.A.A.R.C. (Geneva, 1964), mindful that:

- a) the existing frequency allotment plan (Appendix 26) makes no provision for allotting a group of frequencies to the South American Region for the dissemination of weather information, although such transmissions are necessary for flights in the areas NSAM1, NSAM2, and SA;
- b) proposals I-23 and I-78, submitted by Argentina and Brazil respectively, in connection with this matter, have been referred to the E.A.A.R.C. (1965) in accordance with Resolution No.... of this meeting;
- c) acceptance of ten or twelve aircraft per frequency or group of frequencies in the South American Region by Argentina and Brazil has been made conditional by the delegations of these countries on the availability of VOLMET facilities, because of the increasing load in the HF channels, already observable and due to the absence of this essential service;

Recommends:

That the E.A.A.C. (1965), in reviewing Appendix 26, should allot a group of frequencies to the South American Region for the dissemination of weather data, and that the group be such as to provide satisfactory coverage for MWARAs NSAM1, NSAM2, and SA, the latter as far down as Buenos Aires.



AERONAUTICAL CONFERENCE

Document No. II/38-E

15 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

FOR THE SECOND MEETING OF THE TECHNICAL COMMITTEE

16 March 1966, at 09.30 in Room A

1. Consideration of propagation criteria, frequency sharing between areas:

Documentation

Report of the First Session, pages 6-45 and 73-97

Document No. II/2 (USA), pages 20-43

Document No. II/4 (CAN), pages 10-13

Document No. II/10 (G), pages 20-23 and paragraphs 3.4 and 3.5

2. Consideration of use for Common R and OR channels etc.

Documentation

Report of the First Session, pages 54-56

Document No. II/10 (G), pages 27-31

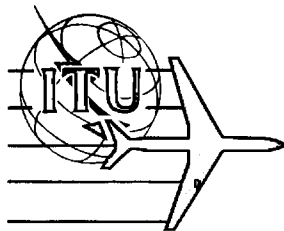
Document No. II/12 (AUS), pages 1-10

Document No. II/25 (MEX), pages 1 and 2

3. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/39-E
15 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Tuesday, 15 March 1966, 4.45 p.m.

Chairman : Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman : Dr. C. WACHARASINDU (Thailand)

The meeting adopted the Agenda (Document No. II/28) without amendment.

1. Appointment of Rapporteur

The Delegate of Canada undertook to provide the Committee's rapporteur.

2. Preliminary consideration of subjects to be studied

The Chairman invited consideration of the subjects listed in the Annex on page 3 of Document No. II/22 presented by the Secretary-General.

2.1 The Committee agreed with the suggestion that initial priority should be given to those subjects which could be disposed of quickly and would be of most use to Committee 6 in its task of Planning. Under this heading the Committee agreed to consider, at its next meeting, the questions of :

- a) propagation criteria and frequency sharing between areas;
- b) conditions of use for Common R and OR channels etc.



3. Preparations of work programme

3.1 In accordance with its decision above the Committee noted documents and proposals presented to the Conference containing material relevant to the subjects referred in 2.1 a) and b) above, viz :

3.1.1 Propagation criteria sharing

Report of the First Session, pages 6-45, 73-97.
Document No. II/2, pages 20-43 (USA).
Document No. II/4, pages 10-13 (CAN).
Document No. II/10, pages 20-23 (G), paragraphs 3.4 and 3.5.

The Delegates of Canada, United States and the United Kingdom expressed their willingness to discuss their proposals when appropriate. The representative of the C.C.I.R. offered the assistance of the C.C.I.R. Secretariat.

3.1.2 Common R and OR channels

Report of the First Session, pages 54-56.
Document No. II/10, pages 27-31 (G).
Document No. II/12, pages 1-10 (AUS).
Document No. II/25, pages 1-2 (MEX).

The Delegates of Australia, Mexico and the United Kingdom expressed their readiness to discuss their proposals when appropriate.

3.2 The Committee accepted the Chairman's offer to draft a more comprehensive list of subjects for the Work Programme for their consideration.

4. Any other business

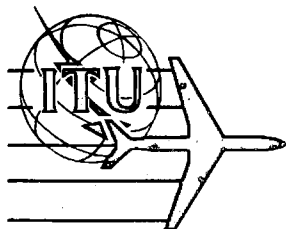
In the absence of other business the Meeting adjourned at 17.35 hours.

Rapporteur

E.H. LEAVER

Chairman

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/40-E
15 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

MINUTES

OF THE

FIRST MEETING OF THE HEADS OF DELEGATIONS

Monday, 14 March 1966, at 11 a.m.

Chairman : Dr. A. **LEBEL** (United States of America)

Subjects discussed :

1. Nomination of the Chairman of the meeting
2. Opening of the Second Session of the Conference (No. 560 of the Convention)
3. Nomination of the Chairman of the Second Session of the Conference (No. 562 of the Convention)
4. Nomination of the Vice-Chairmen of the Second Session of the Conference (No. 562 of the Convention)
5. Statement by the Secretary-General to be made at the First Plenary meeting (Item 4 of the Draft Agenda)
6. Steps taken to convene the Conference (Document No. II/13)
7. Structure of Committees (No. 564 of the Convention) (Document No. II/8)
8. Nominations of Committee Chairmen and Vice-Chairmen (No. 564 of the Convention) (Document No. II/8 - Annex)
9. Constitution of the Conference Secretariat (No. 565 of the Convention) (Document No. II/17)
10. Date by which the Credentials Committee must reach its conclusions (No. 535 of the Convention)
11. Admission of international organizations (Nos. 515 and 519 of the Convention) (Document No. II/13, paragraph 3)
12. Apportionment of proposals among the Committees (Document No. II/22)
13. Working hours of the Conference



Present :

The Heads of Delegation of the following countries :

Members :

Algeria (Algerian Democratic and Popular Republic); Kingdom of Saudi Arabia; Argentine Republic; Australia (Commonwealth of); Belgium; Brazil; Cameroon (Federal Republic of the); Canada; China; Cuba; Denmark; Group of Territories represented by the French Overseas Post and Telecommunication Agency; Ecuador; Spain; United States of America; Ethiopia; France; Hungarian People's Republic; India (Republic of); Ireland; Italy; Jamaica; Japan; Kuwait (State of); Malaysia; Mexico; Monaco; Norway; New Zealand; Netherlands (Kingdom of the); Poland (People's Republic of); Portugal; Portuguese Overseas Provinces; Federal Republic of Germany; United Kingdom of Great Britain and Northern Ireland; Singapore; South Africa (Republic of) and Territory of South-West Africa; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Union of Soviet Socialist Republics.

General Secretariat :

Dr. M.B. Sarwate, Secretary-General
Dr. M. Mili, Deputy Secretary-General

I.F.R.B. :

Mr. J. Ziolkowski, Chairman

C.C.I.R. :

Mr. Leslie W. Hayes, Director ad interim

1. Nomination of the Chairman of the meeting

The Secretary-General said that, in accordance with No. 560 (2) of the Convention, the Chairman of the meeting would be the oldest Head of Delegation. Preliminary enquiries had shown that Dr. Lebel, Head of the Delegation of the United States of America, was the oldest present and he therefore invited him to take the chair.

The meeting approved the designation of Dr. A. Lebel as Chairman of the meeting and he took the chair.

The Chairman thanked the Secretary-General and, as no one else claimed the honour, he was very happy that it fell to him to take the chair.

2. Opening of the Second Session of the Conference (No. 560 of the Convention)

The Secretary-General drew the attention of the meeting to the Annex of Document No. II/15), which gave the draft agenda of the First Plenary meeting to be held that afternoon. In accordance with the usual custom, the oldest Head of Delegation would open the conference.

3. Nomination of the Chairman of the Second Session of the Conference (No. 562 of the Convention)

Mr. Hernandez (Mexico) proposed Dr. Lebel as Chairman of the Conference, in view of his previous experience as Chairman of both the 1948 and 1964 Aeronautical Conferences held in Geneva, which would be invaluable on the present occasion in preparing the Plan.

Mr. Mohr (Federal Republic of Germany) supported the nomination of Dr. Lebel.

The Chairman thanked the meeting for having nominated him once more to receive that great honour and distinction and reserved any further remarks until the Plenary meeting had accepted that choice.

The meeting approved the nomination of Dr. Lebel by acclamation.

4. Nomination of the Vice-Chairmen of the Second Session of the Conference (No. 563 of the Convention)

Mr. Loevinger (United States of America) proposed the nomination of the same Vice-Chairmen who had served at the First Session of the Conference, namely the Heads of the Delegations of Switzerland and the U.S.S.R. : Mr. Monnat and Mr. Jarov respectively.

Mr. Rutkowski (People's Republic of Poland) supported both nominations.

The nominations for the posts of Vice-Chairmen of the Conference were approved by acclamation.

5. Statement by the Secretary-General to be made at the First Plenary Meeting (Item 4 of the Draft Agenda)

The Secretary-General remarked that any possible statements by the Chairman of the I.F.R.B. and the Directors of the C.C.I.s would also be included in that item in accordance with the practice followed at the First Session.

Item 4 was therefore approved.

6. Steps taken to convene the Conference (Document No. II/13)

The Secretary-General drew attention to page 2 of the document concerning the participation of I.A.T.A. and O.I.R.T. which had been exempted from sharing the expenses of the Conference on a reciprocal basis; very recently two other agencies, I.C.A.O. and UNESCO, had announced that they also wished to participate.

Mr. Vieira (Portugal) pointed out that on page 12 of the document (Annex 2), Portuguese Oversea Provinces had been marked as having declined the invitation; there must have been a misunderstanding as they were represented by the same delegation as Portugal.

It was agreed that the necessary rectification would be made to Annex 2 of the document.

7. Structure of Committees (No. 564 of the Convention) (Document No. II/8)

The structure of Committees was adopted without comment.

8. Nominations of Committee Chairmen and Vice-Chairmen (No. 564 of the Convention) (Document No. II/8 - Annex)

1. Steering Committee

The Chairman explained that, according to the rules, the selection for the posts of Chairman and Vice-Chairman was automatic.

2. Credentials Committee

Mr. Loevinger (United States of America) supported by Mr. Giraud (France) proposed that the same officers be nominated for the Committee as at the First Session, namely the Delegate of India as Chairman and the Delegate of Mexico as Vice-Chairman.

The proposal was approved unanimously.

3. Budget Control Committee

The Secretary-General explained that, at the First Session, the Conference had offered the Chairmanship to the Delegate of Ghana, but, as he was unfortunately unable to participate, the Vice-Chairman, Mr. Mohr (Federal Republic of Germany) had presided over the Committee. The same problem had arisen again although it had been announced that Ghana would attend.

Mr. Powell (Canada), supported by Mr. Bigi (Italy), said that, in view of the previous difficulty, he proposed as Chairman Mr. Mohr (Federal Republic of Germany), with the delegate of Ghana as Vice-Chairman.

The proposal was approved.

4. Technical and Operational Committee

The Secretary-General said that at the First Session the Committee had been presided over by the United Kingdom delegate with the delegate of Thailand as Vice-Chairman.

Mr. Mohr (Federal Republic of Germany), supported by Mr. Arthur (New Zealand), proposed the same nominations.

The nominations were approved unanimously.

5. Aircraft Operation Statistics Committee

The Secretary-General explained that, as the Committee had had an extremely important task at the First Session in deciding on the manner of obtaining statistics, it had had two Vice-Chairmen, namely the delegates of Argentina and Poland, with the delegate of the French Overseas Territories as Chairman. The present Committee would have less work to do so that one Vice-Chairman would suffice, thus leaving an experienced officer free to take over a post in one of the new Committees to be set up for the Second Session.

Mr. Marinsalda (Argentina) seconded by Mr. Denny (U.S. Territories), proposed Mr. Chef (French Overseas Territories) as Chairman and Mr. Rutkowski (People's Republic of Poland) as Vice-Chairman.

The nominations were approved unanimously.

6. Plan Committee

The Chairman explained that it was a new Committee established for the purposes of the Second Session and called for nominees.

On the proposal of Mr. Loevinger (United States of America), supported by the delegations of the Federal Republic of Germany, the Netherlands, Mexico and India, Mr. Powell (Canada) was nominated Chairman.

On the proposal of Mr. Hernandez (Mexico), supported by the delegations of India, the United Kingdom and China, the delegate of Argentina was nominated Vice-Chairman.

The nominations were approved.

7. Editorial Committee

The Secretary-General explained that, in choosing the Chairman and Vice-Chairmen, the three official languages of the Union had to be represented. The normal practice was to choose a French-speaking Chairman since French was the main language, with English- and Spanish-speaking Vice-Chairmen. At the First Session Mr. Bouchier (Belgium) had been Chairman with the delegates of Canada and Spain as Vice-Chairmen, but the representative of Canada had now been nominated for another important post.

The Chairman asked Mr. Bouchier if he was willing to continue as Chairman.

It was decided unanimously to propose Mr. Bouchier as Chairman, with Mr. Marin-Arenzana as Vice-Chairman for the Spanish language and Mr. Campbell (Australia) as Vice-Chairman for the English language.

9. Constitution of the Conference Secretariat (No. 565 of the Convention)
(Document No. II/17)

The Secretariat of the Conference, as listed in the document, was approved unanimously.

10. Date by which the Credentials Committee must reach its conclusions (No. 535 of the Convention)

The date proposed by the Secretary-General, 11 April 1966, giving a period of four weeks for the Committee to complete its work, was approved.

11. Admission of international organizations (Nos. 515 and 519 of the Convention) (Document No. II/13, paragraph 3)

The Secretary-General said that at the First Plenary meeting the Conference would have to agree formally to admit representatives from the two organizations (I.A.T.A. and O.I.R.T.) requesting participation.

It was so agreed.

12. Apportionment of proposals among the Committees (Document II/22)

It was agreed to submit Document No. II/22 with its annex for approval by the Plenary meeting.

13. Working hours of the Conference

The Secretary-General proposed that, to begin with, working hours be fixed as follows : 9.30 - 12.30 p.m. and 3.00 - 6.00 p.m., from Monday to Friday. It was agreed to propose that arrangement to the Plenary meeting.

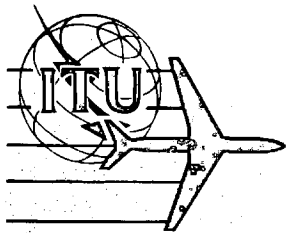
The meeting rose at 12 noon.

Secretary-General:

Dr. M.B. SARWATE

Chairman:

Dr. A. LEBEL



AERONAUTICAL CONFERENCE

Document No. II/41-E

16 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 7

AGENDA

OF THE

FIRST MEETING OF COMMITTEE 7

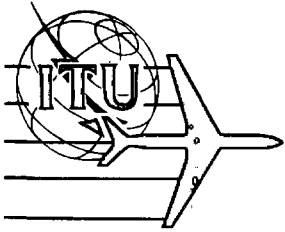
(EDITORIAL COMMITTEE)

Thursday 17 March 1966 at 3.00 p.m.

1. Appointment of rapporteurs, if required.
2. Membership of the Editorial Committee.
3. Organization of the Editorial Committee's work.
4. Other business

P.C.M. BOUCHIER
Chairman





AERONAUTICAL CONFERENCE

Document No. II/42-E

16 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

FOR THE THIRD MEETING OF THE TECHNICAL COMMITTEE

17 March 1966, at 09.30 in Room A

1. Approval of Summary Record of First Meeting (Document No. II/39)
2. Continued consideration of use for Common R and OR channels, etc.

Documentation

Report of the First Session, pages 54-56 and 134-135

Document No. II/10 (G), pages 27-31

Document No. II/12 (AUS), pages 1-10

Document No. II/25 (MEX), pages 1 and 2

3. The Study of frequency complementing supplied by the Delegation of the U.S.A.
4. Power of emission

Documentation

Report of the First Session, pages 4 and 5

Document No. II/2 (USA), pages 45 and 46

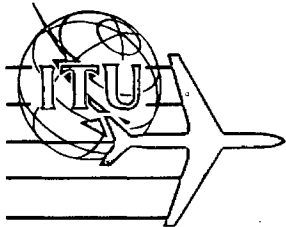
Document No. II/4 (CAN), pages 7 and 8

Document No. II/10 (G), pages 22 and 23

5. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/43-E
16 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Wednesday, 16 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. The Meeting adopted without comment the Agenda contained in Document No. II/38.
2. Propagation criteria, Frequency sharing
 - 2.1 The Delegate of the United States presented his Administration's proposal in Document No. II/2, pages 20-43, 73-97. The Delegate of Canada followed by the Delegate of the United Kingdom presented the relevant portions of their proposals in Documents Nos. II/4 and II/10 respectively.
 - 2.2 The Observers of I.A.T.A. suggested the need for an amendment to para. 14.1 of Document No. II/2 (page 20). Following discussion it was agreed to add the following to para. 14.1: "This limit is generally assumed to be at the boundary of the area concerned and the service range is not included in the contour".
 - 2.3 Subject to the inclusion of a few minor amendments, the Meeting adopted this material for inclusion in its final report.
 - 2.4 The Meeting took note of additional material offered by the Delegate of the United States relating to frequency complementing. The Committee agreed to defer consideration on this matter pending distribution of one copy per delegation.
 - 2.5 In conclusion the Delegate of Cuba corrected an error in the Spanish text.



3. Use of Common R and OR channels

3.1 The Delegate of Australia introduced his Administration's Document No. II/12. The Delegate of the United Kingdom followed by the Delegate of Mexico present their proposals in Documents Nos. II/10 and II/25 respectively.

3.2 In the absence of any other proposals the Chairman invited the Committee's view on the desirability of and its competence to change provisions applying to both R and OR services. In the ensuing discussion the Delegate of the Netherlands questioned the Meeting's competence to do so whilst other delegates emphasized the desirability of resolving obvious technical anomalies.

3.3 In the time available the Meeting was unable to reach a conclusion and agreed to defer the matter until its next session.

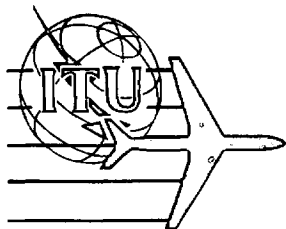
3.4 In the absence of other business the Meeting adjourned at 12.30 p.m.

Rapporteur:

E.H. LEAVER

Chairman:

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/44-E
16 March 1966
Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

REPORT
OF THE FIRST MEETING OF COMMITTEE 5
(Aircraft Operation Statistics Committee)

Tuesday 15 March 1966 at 3 p.m.

Chairman : Mr. M. CHEF (France)

Vice-Chairman : Mr. J. RUTKOWSKI (Poland)

1. The first meeting of Committee 5 began at 3 p.m. under the chairmanship of Mr. M. Chef (France). After again expressing his appreciation at being elected Chairman, Mr. Chef directed attention to the first item of the agenda of the meeting : appointment of rapporteur (No. 578 of the Geneva Convention).
2. The Steering Committee decided that, as provided in the new Convention, only one rapporteur, speaking the same working language as the Chairman, should in principle be appointed for each Committee. Mr. M. Reyniers (Belgium) was appointed Rapporteur of the Committee and Mr. Budge (United States of America) his alternate.
3. Before passing to Item 2 of the agenda, the Chairman thanked the I.F.R.B. for the preparatory work it had carried out on behalf of the Committee.

Item 2 was then considered.

4. Programme of work :

The Chairman proposed the following :

- a) Consideration of statistics :
 - 1) Area of analysis for international flights and application of criteria in determining the number of families of frequencies required.
 - 2) Regional and domestic flights, regional areas and sub-areas, and application of criteria in determining families of frequencies.



- b) Estimates of frequency requirements per area.
- c) Broadcasting of meteorological information (VOLMET)
- d) Boundaries of world and regional areas.

5. Reference was then made to the documentation which the Committee would require for its work :

- a) Documents, mentioned in Resolutions 3, 4 and 8 of the First Session (1964) which were not considered at that meeting.
- b) Summary of the various texts relating to VOLMET distribution in the world and regional areas.
- c) The documents listed in part B of Document II/22.

This working programme was approved unanimously.

6. The Chairman again thanked the I.F.R.B. and asked the Chairman of the Board to introduce the documents prepared for the 2nd Session.

The Chairman of the I.F.R.B. thereupon introduced the documents prepared by the I.F.R.B.

7. The delegates of Cuba, Overseas Territories (United Kingdom), Cameroon, Tunisia and Poland, and the I.C.A.O. observer asked for clarification of the information mentioned in the documents, sections I, II and III.

8. Further to the explanations given by the Chairman of the Committee and members of the I.F.R.B., it was decided that the aforementioned delegates should get in touch with the I.F.R.B. officials concerned to obtain the additional information they required.

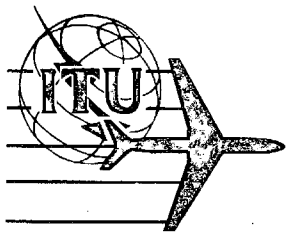
9. The meeting rose at 4.15 p.m., item 3 of the agenda being referred to the next meeting (Wednesday 16 March at 9.30 a.m.).

Rapporteur :

M. REYNIERS

Chairman :

M. CHEF



AERONAUTICAL CONFERENCE

Document No. II/45-E

16 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 6

SUMMARY RECORD
OF THE FIRST MEETING OF COMMITTEE 6
(PLAN COMMITTEE)

Wednesday, 16 March 1966, 3.00 p.m.

Chairman : Mr. E.B. POWELL (Canada)

Vice-Chairman : Mr. A.O. PLANAS (Argentina)

The meeting adopted the Agenda (Document No. II/29) without amendment.

1. Appointment of Rapporteur

The Delegate of U.S.A. undertook to provide the Committee's rapporteur in the person of Mr. George W. HAYDON.

2. Preliminary consideration of subjects to be studied

2.1 The Chairman invited consideration of the subjects listed in Section C of the Annex on page 5 of Document No. II/22 presented by the Secretary-General.

2.2 The Delegate of Mexico requested the adoption of Document No. II/23 to those apportioned to the Plan Committee.

2.3 The Delegate of Japan requested that Proposal No. 2 contained in Document No. II/3, which has been apportioned to the Statistics Committee, should also be considered by the Plan Committee.

2.4 The Chairman asked whether any other proposals were in preparation as contemplated. There were none.



3. Working arrangements

3.1 The Chairman noted that detailed working arrangements would depend upon material received from the Technical Committee and the Statistics Committee. However, he believed that at the next meeting a Working Group might be set up to examine the proposals concerning the associated Radio Regulations. The Committee agreed with the Chairman's suggestions.

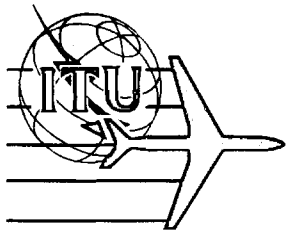
3.2 The Chairman agreed to prepare an annotated agenda for the next meeting and to ensure its distribution in good time.

Rapporteur :

George W. HAYDON

Chairman :

E.B. POWELL



AERONAUTICAL CONFERENCE

Document No. II/46-E
16 March 1966
Original:: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

AGENDA
OF THE
THIRD MEETING OF COMMITTEE 5
(OPERATION STATISTICS)

Thursday 17 March, at 9.30 a.m. and 3 p.m., Room B

1. Examination of VOLMET (Meteorological information to aircraft in flight) transmission requirements.

Documents:

- a) Report of the 1st Session:

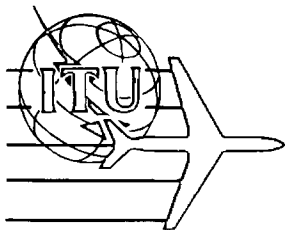
Resolution No. 8, page 59.
Documents 1st Session: I/1, 3, 9, 11, 23, 78 and 115
Summary appearing in II/37 (parts relating to VOLMETs)

- b) Document II/3 (Japan) - Proposal 3 (13 Mc/s to PAC/MET)
Document II/10 (United Kingdom) Part I, paragraphs 7 and 8
(VOLMET zones and Annex 1)
Document II/18 (India) paragraph 7
Document II/34 (Argentina) - Proposal 5 (SAM/SAT VOLMET
broadcasts)
- c) I.C.A.O. Report Document 8329/COSP II (pages 5-1 to 5-3
inclusive)
Recommendation 5/1 - VOLMET NAT, PAC and EU
Recommendation 5/2 - VOLMET MID
Recommendation 5/3 - VOLMET AFI, SEA, SAM
- d) I.C.A.O. Report - Fifth regional meeting EUM
Recommendation 18/4 - VOLMET EUM
Recommendation 18/5 - Frequencies for VOLMET/MID

2. Any other business.



Maurice CHEF
Chairman



AERONAUTICAL CONFERENCE

Document No. II/47-E
17 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Thursday, 17 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Summary Record (Document No. II/39)

The Meeting adopted the Summary Record of the first meeting without amendment.

2. Continued consideration of use for Common R and OR channels etc.

2.1 The Committee resumed discussion from the previous meeting which the Chairman summarized as indicating a need to resolve certain technical anomalies and operational conditions applicable to 3023.5 kc/s and 5680 kc/s. The Committee accepted the suggestion that any radical amendments having an impact on the (OR) Service would be outside its competence.

2.2 With respect to the technical problem the Delegate of the United States proposed an amendment based on that contained on pages 28 and 30 of Document No. II/10 tabled by the United Kingdom namely, delete sub-paragraph 2 a) and 2 b) and replace by the following:

"a) with power limited to a value not more than 20 watts in the antenna circuit".

Following a brief discussion the Committee adopted this proposal without dissent.

2.3 With respect to the operational problem the Delegate of the United Kingdom proposed an amendment contained in Document No. II/10, p. 29, para. 3 and p. 31, para. 3. Following a detailed discussion in which the following took part: the Delegates of France, Federal Republic of Germany, Ireland, New Zealand, Portugal, the United States and the member of the I.F.R.B., the Committee adopted the new text as follows:



- "3) for intercommunication between mobile stations engaged in co-ordinated search and rescue operations including communication between these stations and participating land stations;"

2.4 In addition, the Committee adopted a new text to replace the original para. 2 d) as follows:

- "c) the power of aeronautical stations which use this frequency in the condition mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to the co-ordination between the Administrations."

but agreed to defer consideration of para. 3.2 and 3.3 (p.14) Document No. II/10.

2.5 The Chairman drew attention to 2973 kc/s and 3495.5 kc/s. In response to a question from the member of the I.F.R.B. there was considerable support for the deletion of all the special conditions applying to these two frequencies. After a brief discussion, the Committee agreed that all the special conditions applying to these two frequencies should be deleted and the frequencies thus released for unrestricted allotment. The Chairman undertook to consult with the observer of I.C.A.O. on whether in practice none of these conditions applied in any of the regional plans of that organization.

3. A theoretical study of frequency complementing for the Aeronautical Mobile (R) Service

3.1 The Chairman invited the Committee's attention to the Report prepared by the Institute of Telecommunications Sciences and Aeronomy, Environmental Science Services Administration of the United States whose delegate had made copies available to each Delegation. Recalling the offer by the Delegate of the United States to present this document, the Chairman welcomed the opportunity for a free discussion preparatory to reaching conclusions at a later session.

3.2 The Delegate of the United States accordingly introduced Mr. George W. Haydon, co-author of the N.B.S. Report No. 9141, who outlined the assumptions on which it was based and the method of applying its results in the selection of frequency families for any particular route.

3.3 In the discussion which followed several members of the Committee sought clarification of Mr. Haydon and the Chairman of Committee 6 expressed his opinion that the material it contained would be of benefit as guidance for his Committee's work.

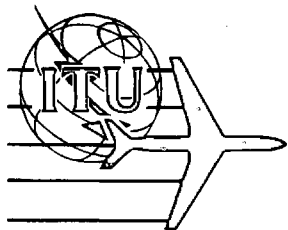
3.4 The Committee endorsed the Chairman's thanks to Mr. Haydon for his able presentation and in the absence of other business the meeting adjourned at 12.35 p.m.

Rapporteur

E. H. LEAVER

Chairman

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/48-E
17 March 1966
Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 5

(Operation Statistics)

Wednesday 16 March 1966, at 9.30 a.m. and 3 p.m.

Chairman: Mr. M. Chef (France)

Vice-Chairman: Mr. J. Rutkowski (Poland)

The agenda of the meeting was adopted without comment (Document No. II/27, point 3).

1. Preliminary examination of air traffic statistics (International Flights)

The Chairman invited the members of the Committee to examine the Documents, sections III and IV prepared by the I.F.R.B.

1.1 The Delegate of United Kingdom Overseas Territories asked for explanations concerning the procedure to be followed in determining the future MWARA.

1.2 The Chairman gave the necessary explanations and the Chairman of the I.F.R.B. offered the services of the I.F.R.B. secretariat for the calculations relative to the number of aircraft hourly peaks whose figures could be changed subsequently taking into account the VHF coverage zones

1.3 The Delegates of the United Kingdom, Australia, France, The Netherlands and the United States informed the Committee of the studies made by their respective administrations concerning VHF coverages.

1.4 The Delegate of Belgium inquired about which basis had been taken by the I.F.R.B. in determining the mean speed of aircraft. The I.F.R.B. representative gave the necessary explanations.

1.5 The Committee accepted a suggestion by the Chairman to entrust the I.F.R.B. with the determination of the calculations on the basis of a concentration factor of 2.4 for international flights, and with the submission of frequency requirements by analysis zones.

The meeting rose at 12.30 p.m.



2. Preliminary examination of air traffic statistics (Regional and National flights)

The second meeting resumed its work at 3 p.m.

2.1 The I.F.R.B. representative introduced the document, section IV, prepared by the Board.

2.2 The Chairman proposed that the Committee take, to start with, a figure of 20 for the number of aircraft which could be served by one frequency family for flights on regional and national lines. The proposal was accepted by the delegates of the United States and the U.S.S.R.

2.3 However, the proposal was not accepted by the delegates of Argentina and Australia. Finally, the Committee decided to entrust the I.F.R.B. with the task of preparing a table showing the frequency families necessary for each RDARA on the basis of 10 aircraft.

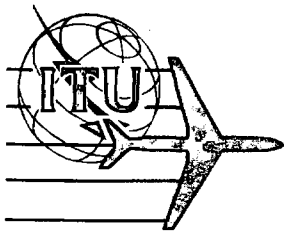
3. Miscellaneous

Nil.

The meeting rose at 4.20 p.m.

Rapporteur
M. REYNLIERS

Chairman
M. CHEF



AERONAUTICAL CONFERENCE

Document No. II/49-E

18 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

AGENDA
OF THE
FOURTH MEETING OF COMMITTEE 5
(OPERATION STATISTICS)

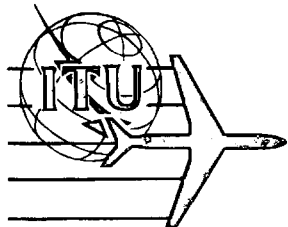
Friday 18 March at 3 p.m., Room B

1. Adoption of the report of the first meeting (Document No. II/44)
2. Examination of the report prepared by the I.F.R.B. technical group
(Doc. DT 2)
3. Summary record of the work of Sub-Group 5A (VOLMET)
4. Any other business

Maurice CHEF

Chairman





AERONAUTICAL CONFERENCE

Document No. II/50-E

21 March 1966

Original : French/English/
Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

LIST OF DOCUMENTS OF THE 2ND SESSION OF THE CONFERENCE

(Documents Nos. 1 to 50)

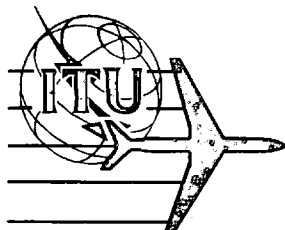
Document No.	Title	Origin	Destination
II/1	Non-allocation of specific frequency sub-bands	F.R. of Germany	Plenary Meeting
II/2	Proposals for revision of the (R) Band Plan	U.S.A.	Plenary Meeting
II/3 and Add.1	Proposals	Japan	Plenary Meeting
II/4	Proposals	Canada	Plenary Meeting
II/5	Draft resolution regarding the introduction of single-sideband systems into the aeronautical mobile (R) services	Canada	Plenary Meeting
II/6	Frequency bands for ocean data radiocommunication	Denmark, Norway and Sweden	Plenary Meeting
II/7	Statistical analyses of international flights and of regional and domestic flights	I.F.R.B.	Plenary Meeting
II/8	Committee Structure	S.G.	Plenary Meeting
II/9	Proposal	Saudi Arabia	Plenary Meeting
II/10	Review of the allotment plan for the aeronautical mobile (R) service	United Kingdom	Plenary Meeting



Document No.	Title	Origin	Destination
II/11	Proposal relating to the amendment of boundaries of the Area 9 Sub-RDARA's	Australia	Plenary Meeting
II/12	Proposal relating to the authorization of certain frequencies for approach and aerodrome control communications	Australia	Plenary Meeting
II/13 and Corr.	Convening of the Conference	S.G.	Plenary Meeting
II/14	Position of certain countries with regard to the Convention	S.G.	Plenary Meeting
II/15	Agenda of the Meeting of the Heads of Delegations		Heads of Delegations
II/16	Agenda of the 1st Plenary Meeting		Plenary Meeting
II/17	Secretariat of the Conference	S.G.	Plenary Meeting
II/18	Proposals for the revision of the radio regulations (Geneva 1959) and the frequency allotment plan for the aeronautical mobile (R) service	India	Plenary Meeting
II/19	Budget of the Conference	S.G.	Committee 3
II/20 and Corr.	Statistical analyses of international flights and of regional and domestic flights	I.F.R.B.	Plenary Meeting
II/21	Special programmes for monitoring the bands allocated exclusively to the aeronautical mobile (R) service between 2850 kc/s and 17 970 kc/s	I.F.R.B.	Plenary Meeting
II/22	Apportionment of proposals among the Committees	S.G.	Plenary Meeting

Document No.	Title	Origin	Destination
II/23	Opinion on factors to be taken into account in allotting frequencies to the various areas of the world under the new plan	Mexico	Plenary Meeting
II/24	Proposal concerning the use of single sideband techniques in the bands allotted to the aeronautical mobile (R) service between 2850 and 17 970 kc/s	Mexico	Plenary Meeting
II/25	Use of channels common to the aeronautical mobile (R) and (OR) services	Mexico	Plenary Meeting
II/26	Chairman and Vice-Chairman of Committees		Plenary Meeting
II/27	Agenda of the 1st Meeting of the Aircraft Operation Statistics Committee	Committee 5	Committee 5
II/28	Agenda of the 1st Meeting of the Technical Committee		Committee 4
II/29	Agenda of the 1st Meeting of the Plan Committee		Committee 6
II/30	Proposal No. 1 - Amendments in boundaries of MWARA SA	Argentina	Plenary Meeting
II/31	Proposal No. 2 - Amendment of the boundaries and designation of the MWARA NSAM-1 and NSAM-2	Argentina	Plenary Meeting
II/32	Proposal No. 3 - Amendment of the boundaries of RDARA Sub-Area 13 G	Argentina	Plenary Meeting
II/33	Proposal No. 4 - Change in the boundaries of Sub-Area RDARA 13 H	Argentina	Plenary Meeting
II/34	Proposal No. 5 - Allotment of a family of frequencies for meteorological broadcasts in South America	Argentina	Plenary Meeting
II/35	Proposal No. 6 - concerning the arrangement of Appendix 26 to the Radio Regulations	Argentina	Plenary Meeting

Document No.	Title	Origin	Destination
II/36	Flight Density Maps	Poland	Committee 5
II/37	Proposals referred by the First Session of the Conference for examination by the Second Session		Committee 5
II/38	Agenda of the 2nd Meeting of Committee 4		Committee 4
II/39	Summary Record of the 1st Meeting of Committee 4	Committee 4	Committee 4
II/40	Minutes of the 1st Meeting of the Heads of Delegations		Plenary Meeting
II/41	Agenda of the 1st Meeting of Committee 7		Committee 7
II/42	Agenda of the 3rd Meeting of Committee 4		Committee 4
II/43	Summary Record of the 2nd Meeting of Committee 4		Committee 4
II/44	Report of the 1st Meeting of Committee 5	Committee 5	Committee 5
II/45	Summary Record of the 1st Meeting of Committee 6	Committee 6	Committee 6
II/46	Agenda of the 3rd Meeting of Committee 5		Committee 5
II/47	Summary Record of the 3rd Meeting of Committee 4	Committee 4	Committee 4
II/48	Summary Record of the 2nd Meeting of Committee 5	Committee 5	Committee 5
II/49	Agenda of the 4th Meeting of Committee 5		Committee 5
II/50	List of documents of the Conference	Secretariat	Plenary Meeting



AERONAUTICAL CONFERENCE

Document No. II/51-E
17 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

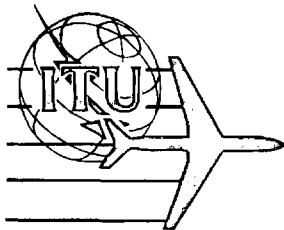
AGENDA
OF THE
FIFTH MEETING OF THE TECHNICAL COMMITTEE

Friday, 18 March 1966, at 9.30 a.m. in Room A

1. Consideration of a study of frequency complementing for the Aeronautical Mobile (R) Service
2. Draft First Report of Committee 4 (Document No.DT/II-3) (if available)
3. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/52-E
18 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Thursday, 17 March 1966, 3 p.m.

Chairman: J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Summary Record

The Meeting adopted the Summary Record of the second meeting of Committee 4 (Document No. II/43) without comment.

2. Power of emission

2.1 The Delegate of the United States presented his Administration's proposal in Document No. II/2 (Pages 45 and 46). The Delegate of Canada and the Delegate of the United Kingdom presented their proposals in Document No. II/4 (Pages 7 and 8) and Document No. II/10 (Pages 22 and 23) respectively.

2.2 After the presentation of the above Documents the Chairman proceeded to review each Document on an item by item basis and as a result of a protracted discussion in which the Delegates of Canada, Cuba, France, Ireland, Portugal, Republic of South Africa, Tunisia, the United Kingdom, the United States, the Member of the I.F.R.B. and the C.C.I.R. representative participated, it was proposed that the Chairman should produce a discussion Document for presentation at a future meeting. This proposal was accepted by the Committee.

3. Any other business

There being no further business the Meeting adjourned at 17.55.

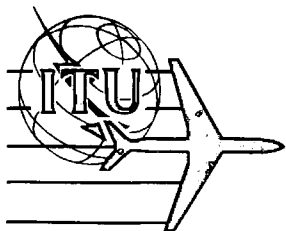


Rapporteur:

E.H. LEAVER

Chairman:

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/53-E

18 March 1966

Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 7

SUMMARY RECORD OF THE FIRST MEETING OF COMMITTEE 7 (EDITORIAL COMMITTEE)

Thursday 17 March 1966 at 3 p.m.

Chairman: Mr. P.C.M. BOUCHIER (Belgium)

Vice-Chairmen: Mr. J.D. CAMPBELL (Australia)
Mr. P. MARIN (Spain)

1. Rapporteurs

In view of the restricted number of summary records that the Committee would have to produce, it was decided not to appoint a rapporteur since the Chairman would assume those duties.

2. Composition of the Committee

2.1 The Committee noted that the delegates listed below would contribute to the work of the Committee:

Mr. J.S. WIGG (Australia)	Mr. L. SIGLER (Mexico)
Mr. M. JABALA GONZALES (Spain)	Mr. P.W. FRYER (United Kingdom)
Mr. Lee LOEVINGER (United States)	Mr. R. MONNAT (Switzerland)

Spanish-speaking delegates who would also assist would be nominated later.

2.2 The General Secretariat would make available to the Committee the following persons:

Mrs. MENZEL
Mr. A. MARQUES
Mr. BALFROID



2.3 Mr. B. Roig would be responsible for organising the Secretariat of the Editorial Committee.

3. Organisation of the work of the Editorial Committee

The Editorial Committee proposed the following organization:

3.1 To enable it to carry out its work expeditiously, the Editorial Committee considered it necessary to ask the Chairman of the other committees to send it the texts as soon as they are approved in committee.

3.2 Each document is to be submitted to the Secretariat of the Editorial Committee in the form in which it has been approved, in triplicate, in English, Spanish and French, bearing the signature of the Chairman of the relevant Committee.

3.3 The texts submitted for first reading to the Plenary Assembly are to be drawn up on the basis of the existing lay-out and numbering of the Radio Regulations (Geneva, 1959).

The Annex shows how, in the texts submitted to the Editorial Committee, the references and indications should refer to the various numbers. These indications will be placed in the margin, to the left of the text, in the following manner:

Symbol	English	Spanish	French
MOD	Modification	Modificación	Modification
SUP	Suppression	Supresión	Suppression
ADD	Addition	Adición	Adjonction
NOC	No change	No cambia	Pas de changement

Note: If a modification affects only the drafting of a number, without changing the substance, the symbol

(MOD)

will be used.

3.4 The texts are to be submitted for registration to the Secretariat of the Editorial Committee, Room 2.

4. Presentation to the Plenary Meeting of the documents reviewed by the Editorial Committee.

The Editorial Committee proposed that two successive readings be submitted to the Plenary Meeting. The first reading would be submitted in the form of blue documents, the second one as pink documents.

5. Submission of the Final Acts

After an exchange of views, the Committee agreed that its Chairman, through the good offices of the Steering Committee, would arrange for a meeting of the Chairman of Committees 4, 5, 6 and 7. After that meeting, the Chairman would submit to the Editorial Committee the draft of a document to be submitted to the next Plenary Meeting giving suggestions as to how the Final Acts of the Conference should be submitted.

Chairman
P. BOUCHIER

Annex: 1

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A N N E X

TO THE EDITORIAL COMMITTEE

Former
Reference

Source: Committee No. ...

Title (MOD)

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88 MOD

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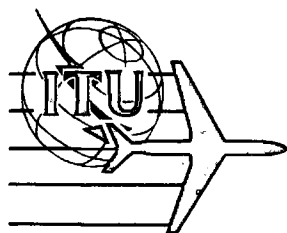
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AERONAUTICAL CONFERENCE

Document No. II/54-E

18 March 1966

Original : English/French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

MINUTES

OF THE

OPENING PLENARY MEETING

Monday, 14 March 1966, at 4 p.m.

Chairman : Dr. Arthur LEBEL (United States of America)

<u>Subjects discussed :</u>	<u>Document Nos.</u>
1. Opening of the Second Session of the Conference	-
2. Election of the Chairman of the Second Session of the Conference	-
3. Election of the Vice-Chairmen	-
4. Statements by the Secretary-General, the Chairman of the I.F.R.B. and the Acting Director of the C.C.I.R.	-
5. Steps taken to convene the Conference	II/13
6. Structure of Committees	II/8
7. Election of Committee Chairmen and Vice-Chairmen	-
8. Constitution of the Conference Secretariat	II/17
9. Date by which the Credentials Committee must reach its conclusions	-
10. Admission of international organizations	II/13
11. Apportionment of proposals among the Committees	II/22
12. Working hours of the Conference	-
13. Any other business	-



Present :

The delegations of the following countries :

Members :

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Belgium; Brazil; Cameroon (Federal Republic of); Canada; China; Cuba; Denmark; Group of Territories represented by the French Overseas Post and Telecommunication Agency; Ecuador; Spain; United States of America; Ethiopia; France; Hungarian People's Republic; India (Republic of); Ireland; Italy; Jamaica; Japan; Kuwait (State of); Malaysia; Mexico; Monaco; Norway; New Zealand; Netherlands (Kingdom of the); Poland (People's Republic of); Portugal; Portuguese Overseas Provinces; Federal Republic of Germany; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland; Singapore; South Africa (Republic of) and Territory of South-West Africa; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Union of Soviet Socialist Republics.

Specialized Agencies :

International Civil Aviation Organization
World Meteorological Organization

International Organizations :

International Air Transport Association
International Broadcasting and Television Organization

General Secretariat :

Dr. Manohar B. Sarwate, Secretary-General
Mr. Mohamed Mili, Deputy Secretary-General

I.F.R.B. :

Mr. J. Ziolkowski, Chairman

C.C.I.R. :

Mr. Leslie W. Hayes, Acting Director

C.C.I.T.T. :

Mr. Jean Rouvière, Director.

1. Opening of the Second Session of the Conference

In accordance with Number 560 of the Convention, Dr. Arthur Lebel (U.S.A.), the oldest Head of Delegation present, declared open the Second Session of the E.A.R.C. for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service.

2. Election of the Chairman of the Second Session of the Conference

The Acting Chairman said that the meeting of Heads of Delegations had unanimously proposed his election as Chairman of the Conference.

Dr. Lebel (United States of America) was elected Chairman of the Conference by acclamation.

The Chairman said that his election was one of the greatest distinctions conferred on him in his career and expressed his deep gratitude to the Conference for the honour thus done to his country and to himself.

He would do everything in his power to ensure that the work of the Conference proceeded smoothly and efficiently; he was sure that, as in the past, he could rely on the help, advice and co-operation of all members.

3. Election of Vice-Chairmen

The election of Mr. R. Monnat (Swiss Confederation) and Mr. Alexandre Jarov (U.S.S.R.), as proposed by the meeting of the Heads of Delegations, was approved by acclamation.

Mr. Monnat (Swiss Confederation) and Mr. Jarov (U.S.S.R.) thanked the Conference for the confidence it had shown in them and the honour it had done to their countries and themselves.

4. Statements by the Secretary-General, the Chairman of the I.F.R.B. and the Acting Director of the C.C.I.R.

a) The Secretary-General

"Mr. Chairman, distinguished delegates, ladies and gentlemen:

" Two years ago the Extraordinary Administrative Radio Conference for the Preparation of a Revised Allotment Plan for the Aeronautical Mobile (R) Service held its first session, Mr. Chairman, under your distinguished chairmanship and laid down the foundations for the main work of the Conference. A total of 53 Member countries participated in the work of the first session. The discussions of the first session clearly

brought out the complex nature of the problem of revision not only because a tremendous development in air traffic had taken place, but because new factors had to be taken into account in view of the extraordinary pace of technical progress in aircraft as well as in telecommunication.

" We are therefore indeed extremely fortunate in having you again as Chairman of the Second Session which will be facing the important task of revising the Plan.

" In carrying out this work, you will have the able assistance of Messrs. Monnat and Jarov, leaders of the Swiss and U.S.S.R. delegations respectively, your Vice-Chairmen, as well as the team of Committee Chairmen and Vice-Chairmen most of whom have served so well the first session. With such an experienced team the Conference is assured of success under your able leadership and I offer you all my sincere congratulations and best wishes for success.

" I have already stated that the first session laid the ground work for the main task which the present session is to carry out. This, however, was two years ago and even this short period has seen some spectacular developments in the application of new telecommunication techniques, particularly in aeronautical communication and aircraft operation.

" The First Session wisely decided to adhere to certain basic principles which had been proved through the passage of time; nevertheless, it recognised the importance of other forms of technical progress which may affect the future use of high frequencies for aeronautical mobile services and adopted for that purpose Resolution No. 5. It is therefore most encouraging to note in this connection the recent experiments carried out over the North Atlantic and the Pacific, using communication satellites of the synchronous type for aeronautical communication. These developments are bound to lead to further trials and thus open up a new era in the progress of aeronautical communication.

" While mentioning the use of synchronous satellites for aeronautical communication, I should like to refer to the already established use of navigation satellites for naval operations and the very clear possibility of using a somewhat similar technique for aircraft navigation. In keeping with trends in the development of modern technology, the ultimate objective perhaps would be to combine the communication and the position fixing requirements in a single system.

" There is no doubt however that many problems of a technical nature would have to be solved before such systems could be considered for adoption, and indeed it might be well that this Conference took into account the possibility of making suitable recommendations for study of some of these problems by appropriate organs of the International Telecommunication Union.

" While noting the encouraging developments in new techniques for application to aeronautical communication it is well to remember that very large areas of the world will continue to depend on conventional forms of

communication. I specifically refer here to taking into account the need of many areas in the world, especially those in Africa, Asia and Latin America, where new and developing countries are struggling to achieve a measure of economic progress. Air transport has proved to be an important factor in the economic development of a region and has therefore come to receive its due share in the planning for such development. Your Conference has therefore a special duty in ensuring that adequate provision is made in the revised plan of allotment for requirements which may arise now or in the near future in areas hitherto not well served by air transport, but areas which must achieve an adequate measure of economic progress to take their rightful place in the community of nations of the world.

" Before concluding these remarks I wish to stress once more the great responsibility which participants in the work of this Conference carry in preparing a plan which would ensure safety and regularity of air transport operations in the years to come. Nothing can emphasize more strongly the importance of the task than the recent tragic events which have resulted in the loss of so many lives in air disasters near and far away.

" On a personal note I would like to state that this is the first major Conference of the I.T.U. which I have the privilege to handle after taking over my new responsibilities as Secretary-General of the Union. Apart from this, many old friends from the international civil aviation field who are present here will remember that I started my interest in the international work with civil aviation. It therefore gives me a sense of added pleasure to have the opportunity of handling this Conference as one of my first duties.

" I am particularly happy to mention here that in this task I am ably assisted by my colleague Mr. Mili, the new Deputy Secretary-General, and by my colleagues on the Coordination Committee. As you already know, a tremendous amount of technical work has been carried out by the I.F.R.B., the details of which no doubt my colleague, the Chairman of the I.F.R.B., would be glad to explain.

" Mr. Chairman, I thank you once again in giving me the opportunity to welcome you all and to wish you success in your arduous task."

b) The Chairman of the I.F.R.B.

"I should like, on behalf of the I.F.R.B., to amplify a little the reference which the Secretary-General has made about the technical preparations for the Conference. As many of you will remember, the First Session of this Conference had decided that, in any revision to be made by this Second Session of the Frequency Allotment Plan for the Aeronautical Mobile (R) Service (i.e. Appendix 26 to the Radio Regulations), the requirements for high frequencies for communications should be determined on the basis of up-to-date statistics of aircraft operations in each of the various areas. The First Session prescribed the form in which such

statistics, for international and also for regional and domestic air route operations, should be submitted to the I.F.R.B.; and it charged the Board to analyse these statistics, using its electronic computer, and present the results in a form which could readily be used for the assessment of frequency requirements, prior to the Second Session of the Conference.

" The information furnished to the I.F.R.B. in response to the Board's circular letters, up to 1 November 1965 for the international flights and up to 1 December 1965 for the regional and domestic flights, was processed and analysed, and the Board prepared the lists called for by Resolutions Nos. 13 and 14 of the First Session. These were then incorporated in the Report which was circulated to Administrations on 15 December 1965, that is, on the date established by the Administrative Council on the basis of the decisions of the First Session of this Conference.

" Late submissions, additional information and corrections received up to 31 December in respect of international flights and up to 15 January in respect of regional and domestic flights have been incorporated in supplements to the Report which were despatched to Administrations on 31 January 1966. On the same date the section of the Report entitled "International Flights - Flight Density Charts" was also forwarded to Administrations.

" Thus, the mandate given to the Board by the First Session has been fulfilled within the time limits fixed by the First Session.

" As explained in Document No. II/7 of this Second Session of the Conference, additional documentation has been prepared for the convenience of delegations to this Conference, in particular up-dated summaries of the analysis of the statistical data, which, I should perhaps point out, are additional analyses to those which the I.F.R.B. was asked to prepare, in the hope that this will enable the Conference to proceed expeditiously with its work from the very beginning. Also, some technical material such as blank maps and tracings of propagation curves have been prepared in sufficient quantities and will be made available to the relevant committee and working groups.

" In connection with its technical preparatory work, the Board has invited all Administrations to participate in two programmes of systematic monitoring covering the frequency bands allocated exclusively to the Aeronautical Mobile (R) service, the first during the period 28 September-4 October 1964, the second during the period 2-8 August 1965 (the period set for the compilation and submission to the I.F.R.B. of operational statistics in respect of aircraft flying international routes).

" These two programmes have met with a wide response. More than 100 monitoring stations of 52 Administrations participated in the programme organized in August 1965. The information received has been analysed by the Board and the results are detailed in Conference Document No. II/21.

A copy of the complete tabulation of the monitoring observations received by the I.F.R.B. will be available for the convenience of delegates who would wish to consult them.

" The members of the Board, and its staff, will make every endeavour to assist the Conference, and I should like to wish to all delegates, not only complete success in their work but also a very pleasant stay in Geneva."

d) The Acting Director of the C.C.I.R.

The Acting Director of the C.C.I.R. said that, in addition to the C.C.I.R. technical volumes available to delegates, the specialized Secretariat of the C.C.I.R. was also at their disposal for any relevant technical information. In particular, Mr. Gadadhar, Senior Counsellor, Dr. Joachim, Counsellor, dealing especially with problems of wave propagation, both tropospheric and ionospheric (Study Groups V and VI), and Dr. Mao, specializing in space communications and mobile services (Study Groups IV and XII), were prepared to assist delegates in any way they could.

The Chairman thanked the Secretary-General, the Chairman of the I.F.R.B. and the Acting Director of the C.C.I.R. for their statements and offers of assistance. The Conference was indeed fortunate to have at its disposal the valuable technical aid of such able staff members.

5. Steps taken to convene the Conference (Document No. II/13)

The Secretary-General drew attention to Document No. II/13, which showed that 54 countries had accepted invitations to attend the Conference.

6. Structure of Committees (Document No. II/8)

7. Election of Committee Chairmen and Vice-Chairmen

The Chairman said that items 6 and 7 could conveniently be dealt with together. He read out the following unanimous recommendations of the meeting of the Heads of Delegations:

	<u>Chairman</u>	<u>Vice-Chairmen</u>
<u>Committee 1:</u> Steering Committee	Chairman of the Conference	Vice-Chairmen of the Conference and Committee Chairmen

Delegates from:

<u>Committee 2:</u> Credentials Committee	India	Mexico
<u>Committee 3:</u> Budget Control	Federal Republic of Germany	Ghana
<u>Committee 4:</u> Technical and Operational Committee	United Kingdom	Thailand
<u>Committee 5:</u> Aircraft Operation Statistics Committee	French Overseas Territories	Poland
<u>Committee 6:</u> Plan Committee	Canada	Argentina
<u>Committee 7:</u> Editorial Committee	Belgium	Spain Australia

It would be seen that the arrangements were practically identical with those made for the First Session, except for the establishment of the new Plan Committee.

The recommendations of the Heads of Delegations were approved unanimously.

8. Constitution of the Conference Secretariat (Document No. II/17)

The Secretary-General drew attention to Document No. II/17, containing his proposals for the Conference Secretariat, and pointed out that many of the persons concerned had worked for the First Session of the Conference. The Heads of Delegations had approved those proposals.

The constitution of the Conference Secretariat was approved unanimously.

The Chairman observed that the organizational pattern of the First Session had been virtually reproduced. It might be regarded as slightly misleading to say that the Conference had been divided into two sessions; in fact, the territory had been surveyed in 1964, and the Conference had merely adjourned for additional studies. Some participating Administrations were of the opinion that the work could be completed in

under eight weeks; it was true that the Conference had the immense advantage of having already prepared a Plan in 1948-1949 and of having operated it for some 18 years, and was therefore in a position to detect weaknesses and to remedy them expeditiously.

9. Date by which the Credentials Committee must reach its conclusions

The Chairman pointed out that it was customary to set a time-limit for the submission of the report of the Credentials Committee. That date must not be fixed too early, since some credentials might not be in due form, or too late, for validity of participation depended on the validity of credentials. The Heads of Delegations had therefore recommended the establishment of a date four weeks from 14 March for the submission of the report.

The recommendation of the Heads of Delegations was approved unanimously.

10. Admission of international organizations (Document No. II/13, paragraph 3)

The Secretary-General drew the attention of the Conference to Document No. II/13, which gave all the details concerning invitations to the Conference. He pointed out in particular that the International Air Transport Association (I.A.T.A.) and the International Broadcasting and Television Organization (O.I.R.T.) had asked for permission to attend as observers.

There being no objection, it was decided that those two organizations be invited to attend the Conference as observers.

11. Apportionment of proposals among the Committees (Document No. II/22)

The Secretary-General drew attention to Document No. II/22, which contained a provisional apportionment of proposals among the Committees. Section A listed the documents of interest to the Technical and Operational Committee, Section B, those concerning the Aircraft Operation Statistics Committee, and Section C, those to be dealt with by the Plan Committee. Naturally the apportionment might be changed if the Conference so desired.

The Chairman observed that the document contained suggestions only and that the Chairmen of the Committees concerned were quite free to discuss between them the documents assigned to their respective Committees and to suggest amendments to the allocation made in Document No. II/22.

Document No. II/22 was approved, subject to those remarks.

The Delegate of the French Overseas Territories said he would like to hear the views of the Conference on documents prepared during the First Session which had been referred to the current session without prior study. The question was whether to leave the symbols assigned to them at the First Session, or to bring them up to date and reissue them for the Second Session. He was thinking in particular of the documents allocated to Committee 5.

The Chairman said that the question was connected with that of apportionment of documents among the Committees and should therefore be settled by the Steering Committee.

It was so decided.

12. Working hours of the Conference

The following working hours, proposed by the Heads of Delegations, were approved unanimously:

9.30 a.m. to 12.30 p.m. and 3 p.m. to 6 p.m. daily, initially on the basis of a five-day week. That timetable would remain unchanged if the work of the Conference proceeded smoothly and if it seemed possible to shorten its duration. The question of holidays would be considered later.

13. Any other business

a) The Delegate of Belgium, speaking as Chairman of the Editorial Committee, thanked the Conference for the confidence it had shown in him in electing him and asked members to consider a practical question. At its conclusion, the Conference would adopt Final Acts which would represent a revision of part of the Radio Regulations. The question which arose was whether those Acts, which would be submitted during the closing Plenary Meetings, should be presented in printed form, or should simply be mimeographed; according to the decision the Conference might make, certain steps would have to be taken forthwith, such as, for instance, arrangements for printers.

The Secretary-General agreed with the previous speaker. Issuing texts in printed form was quite complicated, required much preparatory work and was relatively expensive. The printed form, admittedly, had the advantage of clarity and elegance, but he personally would prefer the Final Acts to be submitted in mimeographed form.

The Delegate of the Federal Republic of Germany, speaking as Chairman of the Budget Control Committee, said he shared the Secretary-General's view, which was approved unanimously.

b) The Secretary-General drew the attention of the Conference to the following points:

- i) Delegations should hand their credentials in to the Secretary of the Conference as soon as possible;
- ii) delegations which had agreed to provide Chairmen or Vice-Chairmen for the Committees should submit the names of the representatives concerned to the Secretary of the Conference in writing;
- iii) press releases would be published regularly by the Public Information Service. The head of that service, Mr. C. Mackenzie, would be at the disposal of the Conference for any questions relating to public information and to receive any material for inclusion in the press releases.

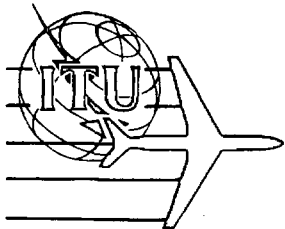
The meeting rose at 5.25 p.m.

The Secretary of the Conference:

J. KUNZ

Chairman:

Arthur L. LEBEL



AERONAUTICAL CONFERENCE

Document No. II/55-E

18 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

IRELAND

AIRCRAFT STATISTICS - NA - MWARA

1. Statistical data, on the message traffic load carried by the NA - MWARA families of frequencies, and on the average, and peak, numbers of "inflight" aircraft, were presented at the first Session of the E.A.R.C. Aeronautical Conference, by this Administration, in Document No. I/77.
2. This information has been updated by surveys carried out in the interim period, and, together with further data, on daily average, and peak "inflight" aircraft loading, and on the geographical spread of "inflight" aircraft, during the busiest hour, is presented in three attachments to this document.

All the data are derived from studies conducted on operational circuits.

3. Attachment 1 - Air-ground-air frequency loading

This graph shows the number of message transactions, between aircraft and ground stations, on a half-hourly basis, over a twenty-four hour period, on a busy day.

It is apparent, from examination of the graph, that the total message load can be equitably shared between two frequencies of a family, at all times.

The principle accepted at the first session of E.A.R.C., Chapter III, para. 1.1, which states that a single high frequency may be expected to serve a maximum of ten aircraft, and a family of high frequencies may be expected to serve a maximum of twelve aircraft, in one hour is not consistent with the data presented in the graph.



4. Attachment 2 - Geographical distribution of "inflight" aircraft, during peak hour

From examination of this graph, it is apparent that during the peak aircraft movement period, flights are reasonably uniformly distributed along the length of the route segment. As the length of the route segment is such that use of two frequencies is required to provide communications coverage over its length (vide Service Range data para.3.1. Report of First Session) the automatic tendency, based on the use of the optimum frequency, for the distance and time, is for the aircraft load to distribute itself over two frequencies of a family. That this, in fact, occurs, is corroborated by the distribution of messages, by frequency, illustrated in Attachment 1.

5. Attachment 3 - Daily distribution of "inflight" aircraft load

The density of "inflight" aircraft, over a twenty-four hour period is presented in graphical form.

The average number of "inflight" aircraft was 28.

The maximum number of aircraft, simultaneously in flight was 55.

From these figures a concentration factor, $K = 2$, can be deduced.

6. The Irish Delegation presents these factual data, in the hope that they may assist the Conference to arrive at realistic figures for Frequency Family Loading, and for the Concentration Factor.

CHARGE DE FREQUENCES AIR-SOL-AIR 2 - 9 - '65

ECHELLE : $\frac{1''}{10}$ = UN CONTACT ENTRE UN AERONEF ET UNE STATION TERRESTRE QUELCONQUE DU RESEAU

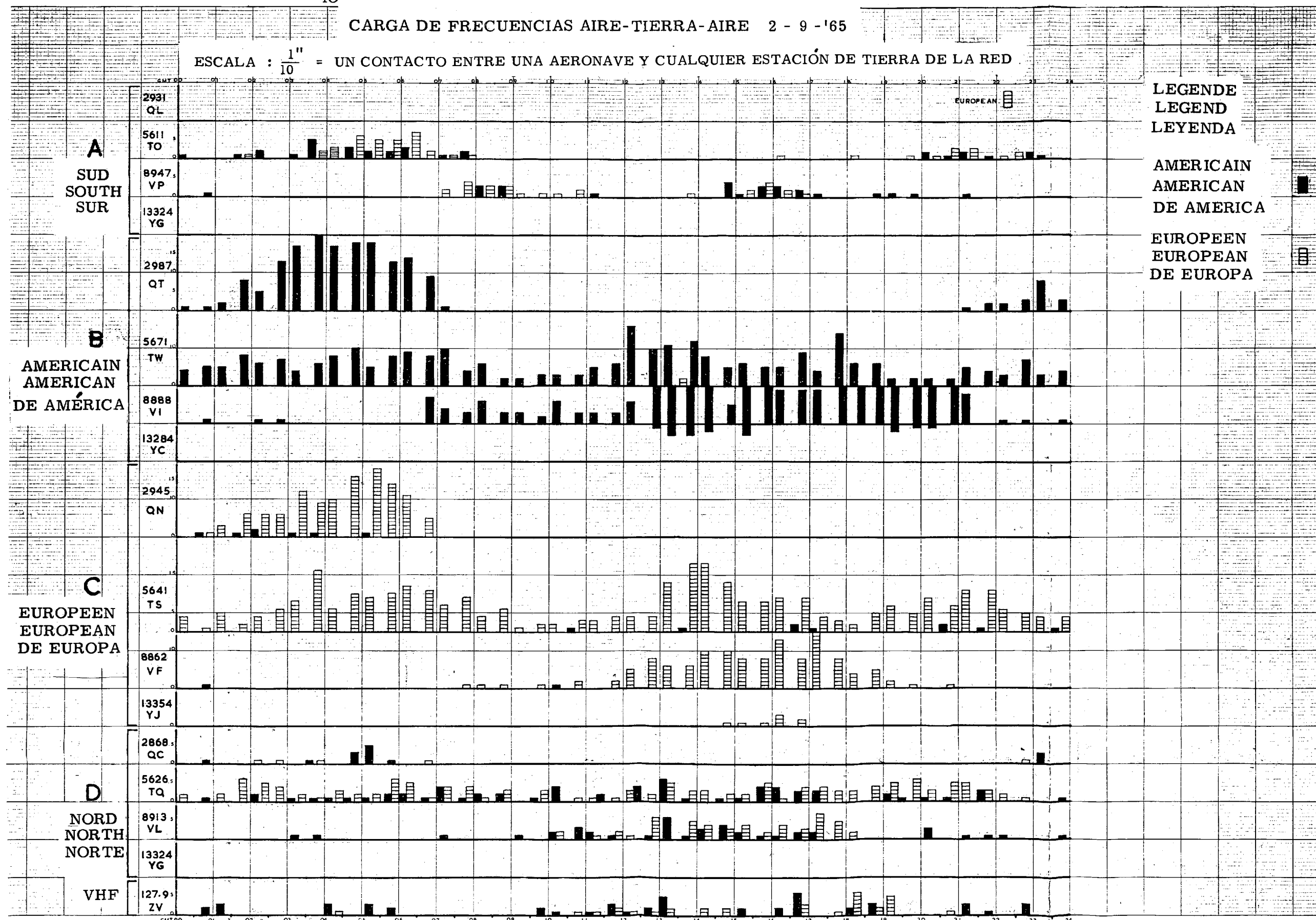
AIR-GROUND-AIR FREQUENCY LOADING 2 - 9 - '65

SCALE : $\frac{1''}{10}$ = ONE CONTACT BETWEEN AN ACFT AND ANY GROUND STN IN THE NETWORK

ANNEXE 1
ATTACHMENT 1
ANEXO 1

CARGA DE FRECUENCIAS AIRE-TIERRA-AIRE 2 - 9 - '65

ESCALA : $\frac{1''}{10}$ = UN CONTACTO ENTRE UNA AERONAVE Y CUALQUIER ESTACIÓN DE TIERRA DE LA RED



NOMBRE D'AERONEFS "EN VOL"
NUMBER OF "IN FLIGHT" AIRCRAFT
NUMERO DE AERONAVES "EN VUELO"

ZLAMP NA - REPARTITION DES AERONEFS AU COURS DE L'HEURE "LA PLUS CHARGEE"

NA MWARA - "BUSIEST HOUR" AIRCRAFT DISTRIBUTION

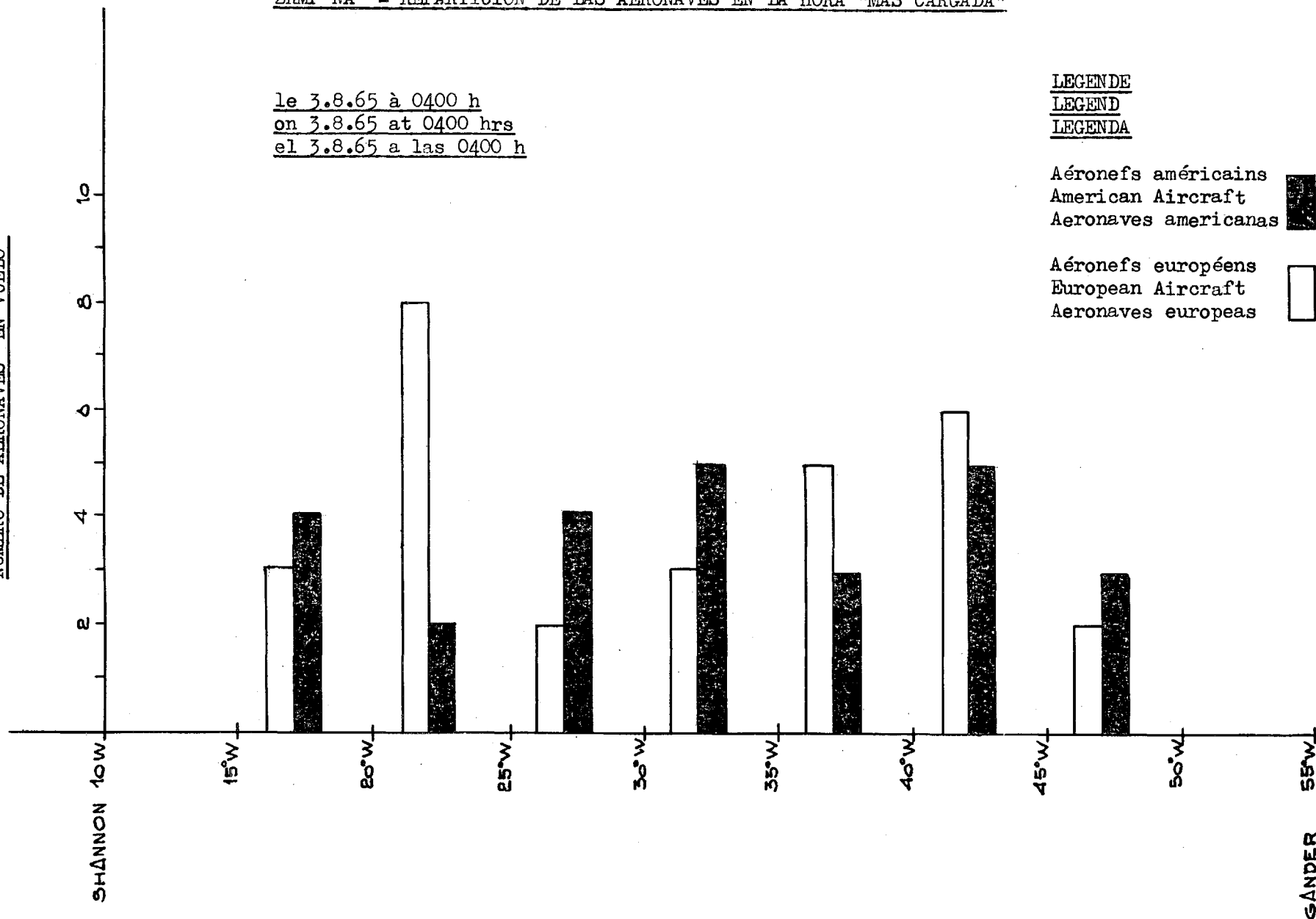
ZRMP NA - REPARTICIÓN DE LAS AERONAVES EN LA HORA "MAS CARGADA"

le 3.8.65 à 0400 h
on 3.8.65 at 0400 hrs
el 3.8.65 a las 0400 h

LEGENDE
LEGEND
LEGENDA

Aéronefs américains
American Aircraft
Aeronaves americanas

Aéronefs européens
European Aircraft
Aeronaves europeas



Nombre d'aéronefs sur la ligne SHANWICK/GANDER
Number of Aircraft in SHANWICK/GANDER OAC
Número de aeronaves en la línea SHANWICK/GANDER

ATLANTIQUE NORD - AERONEFS "EN VOL"

NORTH ATLANTIC - "IN FLIGHT" AIRCRAFT

ATLANTICO NORTE - AERONAVES "EN VUELO"

Annexe 3

Annex 3

Anexo 3

Date : 3.8.66

Date : 3.8.66

Fecha: 3.8.66

Nombre total de vols : 244

Total number of flights : 244

Número total de vuelos : 244

Nombre moyen d'aéronefs "en vol" : 28

Average number of "in flight" A/C : 28

Promedio de aeronaves "en vuelo" : 28

Nombre maximum d'aéronefs "en vol" : 55

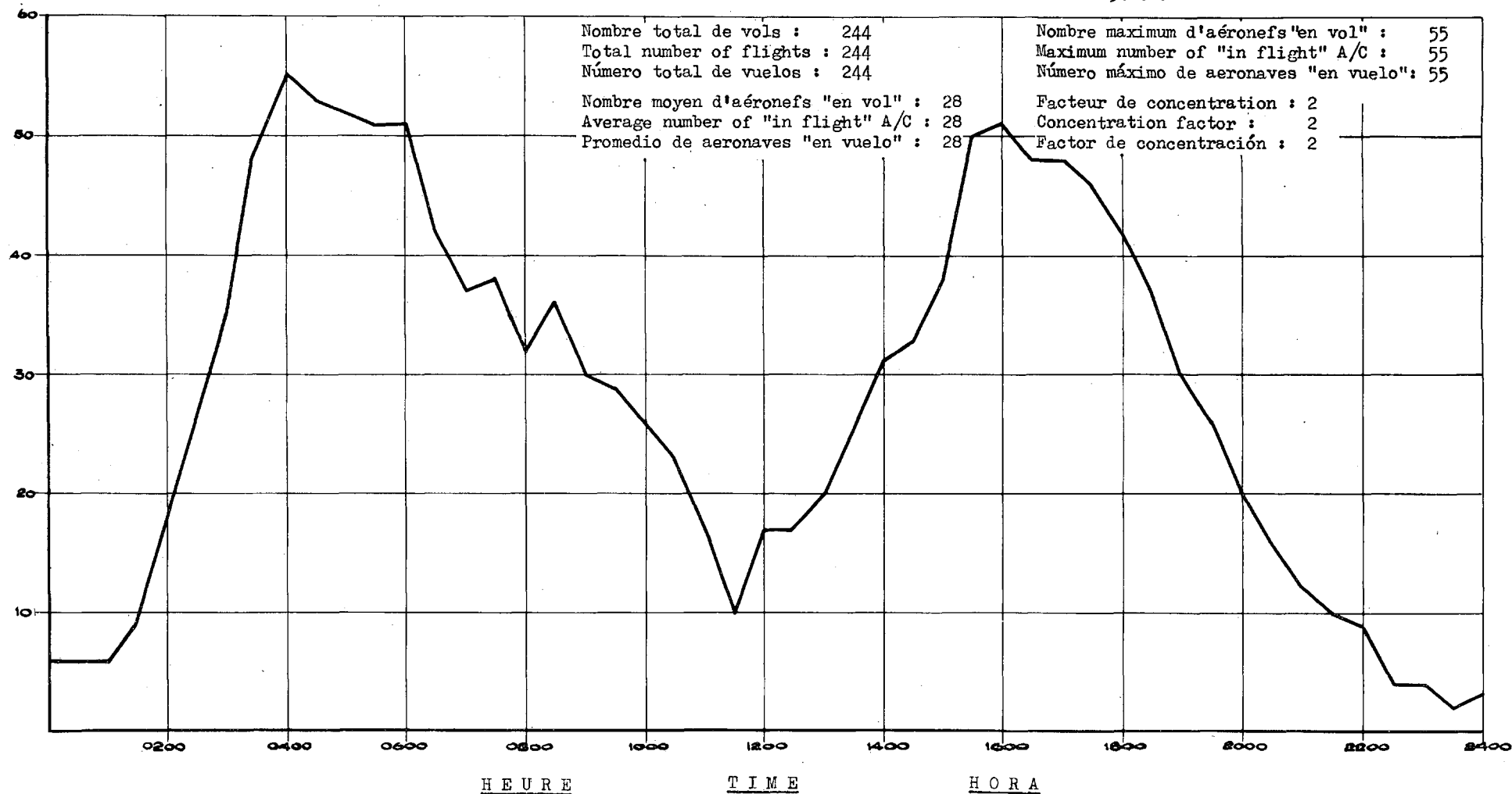
Maximum number of "in flight" A/C : 55

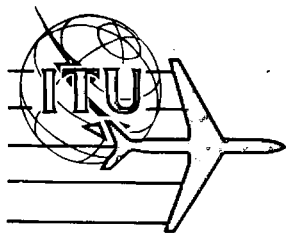
Número máximo de aeronaves "en vuelo": 55

Facteur de concentration : 2

Concentration factor : 2

Factor de concentración : 2





AERONAUTICAL CONFERENCE

Document No. II/56-E

18 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

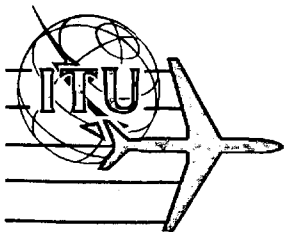
SIXTH MEETING OF THE TECHNICAL COMMITTEE

Monday, 21 March 1966, at 9.30 a.m. in Room A

1. Draft First Report of Committee 4 (Document No. DT/II-4)
2. Continued consideration of Power of emission (Document No. DT/II-3 Rev.)
3. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/57-E

21 March 1966

Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

AGENDA

OF THE

FIFTH MEETING OF COMMITTEE 5

(OPERATION STATISTICS)

Monday, 21 March, at 9.30 a.m., Room B

1. Adoption of the summary record of the 2nd meeting (Document No. II/48)
2. Adoption of the summary record of the 3rd meeting (Document No. II/58)
3. Revision of MWARA boundaries

Documentation: (cf. Document No. II/22)

Resolution No. 3 - Report of the First Session, page 53

MWARA:

Arctic Document No. II/37, page 5 (Japan): creation of a new MWARA

(Note: 20 flights have been registered in 1 week cf. DT II/2 - Annex 1, column 6)

I.C.A.O. Recommendation No. 2/5*

CAR Creation - I.C.A.O. Recommendation No. 2/3*

CEP I.C.A.O. Recommendation *

CWP Document No. II/37, page 6 (Japan): additional allotment of frequency family

(Note: at present, one frequency family is allotted - Appendix 26. The statistics show that N = 61)

EU I.C.A.O. Recommendation *

FE 1 Retention of Western boundaries (Document No. II/18) (India)

I.C.A.O. Recommendation *

FE 2 I.C.A.O. Recommendation *



- ME Change (Document No. II/9) (Saudi Arabia)
Change (Document No. II/18) (India)
I.C.A.O. Recommendation *
- NA I.C.A.O. Recommendation *
- NP I.C.A.O. Recommendation *
- NSA 1 I.C.A.O. Recommendation *
- NSA 2 I.C.A.O. Recommendation *
- NSAM 1 New designation of SAM 1
Document No. II/37, page 14 (Argentina)
Document No. II/31 (Argentina)

Inclusion of CAMPO GRANDE (Brazil)
Document No. II/37, page 15

I.C.A.O. Recommendation *
- NSAM 2 New designation of SAM 2
Document No. II/37, page 14 (Argentina)
Document No. II/31 (Argentina)

Inclusion of CAMPO GRANDE (Brazil)
Document No. II/37, page 15

I.C.A.O. Recommendation *
- SA Inclusion of BRASILIA - TRINIDAD ISLAND - MONROVIA in the MWARA SA boundaries

Definition of boundaries and note on BUENOS AIRES
Document No. II/37, pages 16 to 19 and Annex to Document No. I/53 (Brazil)
Document No. II/37, page 25 (Argentina - Proposal No. 9)
Document No. II/30 (Argentina)
I.C.A.O. Recommendation *
- SP I.C.A.O. Recommendation *

Reduction of overlapping between MWARAs - Document No. II/37, page 9, paragraphs 4 and 5 (I.F.R.B.)

* **Note:** The I.C.A.O. Recommendations appear in the Report of the Special Telecommunications Meeting (1963) - Document No. 8329 COSP-II, pages 2.1 to 2.14 inclusive.
All the new boundaries proposed by I.C.A.O. appear on the map on page 2.9 of the aforesaid document.

4. Revision of RDARA boundaries

Resolution No. 4 - Report of the First Session, page 54

RDARA:

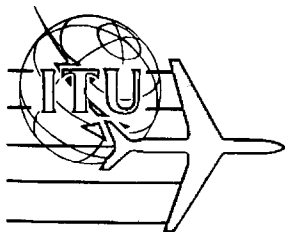
- 5A Change - Document No. II/9 (Saudi Arabia)
- 6A/6E Co-ordination between States (Ceylon) - Document No. II/37, page 27
Satisfactory delimitation - Document No. II/18 (India)
- 9A/B/C/D Change - Document No. II/11 (Australia)
- 10/B/C/
D/E No change - Document No. II/4 (Canada)
- 12H New boundaries - Document No. II/37, pages 21 to 23 (Brazil)
- 13G New boundaries - Document No. II/32 (Argentina)
- 13H New boundaries - Document No. II/33 (Argentina)
- Reduction of overlapping between RDARAs
Document No. II/37, page 9, paragraph 5 (I.F.R.B.)
I.C.A.O. Recommendations Nos. 2/8 (Agreement among States) and 2/9
(correlation with changes in MVARAs)

5. Establishment of Working Parties to prepare draft revisions:

- 5B MVARAs
- 5C RDARAs in I.T.U. Region 1
- 5D RDARAs in I.T.U. Region 2
- 5E RDARAs in I.T.U. Region 3

6. Any other business

Maurice CHEF
Chairman



AERONAUTICAL CONFERENCE

Document No. II/58-E

18 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

SUMMARY RECORD
OF THE
THIRD MEETING OF COMMITTEE 5
(OPERATION STATISTICS)

Thursday 17 March 1966, at 9.30 a.m.

Chairman : Mr. M. CHEF (France)

Vice-Chairman : Mr. J. RUTKOWSKI (Poland)

The agenda (Document No. II/46) was adopted without comment.

1. Examination of VOLMET transmission requirements (Meteorological information for aircraft in flight)
 - 1.1 The Chairman invited the delegates of countries which had prepared documents relating to VOLMET transmissions to present their proposals.
 - 1.2 The delegates of the United Kingdom, Japan, Argentina and Brazil and the I.F.R.B. representative briefly presented the proposals of their respective administrations. Those proposals were contained in the documents listed under point 1, paragraphs a) and b) of Document No. II/46.
 - 1.3 The delegate of India requested that Document No. II/18 be added to the list of documents submitted for examination by Committee 5.
 - 1.4 The delegate of the United Kingdom was invited by the Chairman to give more details about Document No. II/10 and its annex.
 - 1.5 The delegates of the P.R. of Poland and of India wondered which basic principles had been used in the preparation of the reception zones given in Annex I to the document presented by the United Kingdom. The explanations given by the delegate of the United Kingdom and the I.A.T.A. observer (about 3 hours of flight for aircraft flying at a speed of 500 km) did not however satisfy the delegate of the P.R. of Poland, who proposed that a working party be set up to prepare a new map of VOLMET reception zones.



1.6 A lengthy discussion ensued, in which the delegates of the U.S.S.R., the United States, Ethiopia, Argentina, the United Kingdom and Australia, and the I.A.T.A. observer took part.

1.7 The delegate of Norway was of the opinion that VOLMET transmissions on LF or MF would enable high frequencies to be economized. He also drew attention to the success of VOLMET transmissions on VHF in certain parts of the world.

1.8 The Chairman drew attention to the I.C.A.O. recommendations on the use of VOLMET transmissions on VHF and on that included in the report of the 1st Session.

1.9 A short discussion then followed a statement by the I.A.T.A. observer concerning interference to VOLMET transmissions. The I.C.A.O. observer took up the suggestion made by the delegate of Norway and gave the views of I.C.A.O. on the subject.

1.10 The Chairman summed up the discussions and proposed in conclusion that a working party be set up.

1.11 The Committee agreed to the setting up of the Working Party in question, to be composed of delegates of the following countries :

Brazil, United Kingdom, U.S.S.R. Argentina, Netherlands, India and Australia.

Mr. M.R.P. de ALBUQUERQUE was appointed rapporteur for sub-group 5A.

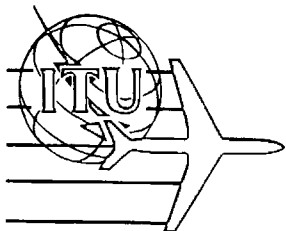
1.12 The terms of reference of the Working Party were as follows :

- a) To engineer VOLMET requirements on the basis of the various I.C.A.O. recommendations (Document No. DT/1 yellow).
- b) To plan broadcasts in the South American region.
- c) To define VOLMET reception areas.
- d) To prepare the requisite recommendations in the light of the necessity of extending VOLMET VHF broadcasts.

The meeting rose at 12.50 p.m.

Rapporteur :
M. REYNIERS

Chairman :
M. CHEF



AERONAUTICAL CONFERENCE

Document No. II/59-E
18 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Friday, 18 March 1966, 9.30 a.m.

Chairman : Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman : Dr. C. WACHARASINDHU (Thailand)

1. Consideration of a study of frequency complementing for the Aeronautical Mobile (R) Service

1.1 The Chairman commented on the importance of supplying Committee 6, information concerning frequency complementing, as soon as possible, and opened the discussion by inviting questions to be directed to the Delegate of the United States concerning his Administration's NBS Report 9141, which the United States had previously made available to the Conference.

1.2 Following a discussion in depth, in which the delegates of numerous Administrations participated, it was proposed by the Chairman, and adopted by the Meeting, that a working group be established for the purpose of advising the other Committees, e.g. 5 and 6, to what extent they should make use of NBS Report 9141.

1.3 The Delegate of the United States was asked to form this working group and the Delegates from Australia - Mr. A. Foxcroft; Republic of South Africa - Mr. W.L. Browne; and the Union of Soviet Socialist Republics - Mr. Vladimir Panagriev agreed to participate. The terms of reference of the working group would be "To prepare a draft paper under cover of which to convey the report under discussion to the other Committees of this Conference for their guidance in statistical analysis and frequency planning".

2. Draft First Report of Committee 4

The Chairman advised that this report was not available at this time but should be placed in the boxes this afternoon and be on the Agenda next week.



3. Summary Record

3.1 The meeting adopted the Summary Record of the third meeting of Committee 4 with the following amendment :

Replace that portion of para. 2.4 enclosed in quotations by the following :

"c) The power of aeronautical stations which use this frequency in the condition mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to the co-ordination between the Administrations directly concerned and those whose services may be adversely affected."

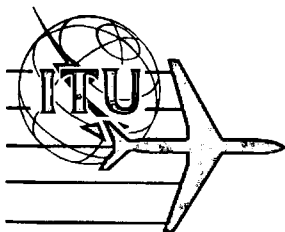
3.2 In the absence of any other business, the Meeting adjourned at 12.25 p.m.

Rapporteur:

E.H. LEAVER

Chairman:

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/60-E

21 March 1966

Original : Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

CUBA

CREATION OF A MWARA IN THE CARIBBEAN REGION

In view of

the large volume of air traffic from the Caribbean countries towards the North Atlantic Region and the East;

Considering

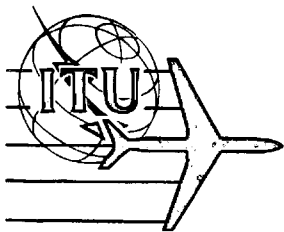
that the Special Telecommunications Meeting (Montreal 1963) agreed to create a MWARA-CAR with the following boundaries : from the point 20°N-120°W through the points 35°N-120°W, 35°N-85°W; 43°N-74°W, 40°N-60°W, 00°N-48°W, 00°N-80°W to the point 20°N-120°W (see I.C.A.O. Document No. 8329 COSP/II, Appendix B);

requests

the Second Session of the Aeronautical E.A.R.C. (Geneva 1966) to create a MWARA-CAR with the boundaries specified by I.C.A.O. in the aforementioned document.

J.A. VALLADARES
Head of the Delegation of Cuba





AERONAUTICAL CONFERENCE

Document No. II/61-E
21 March 1966
Original : French,
English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

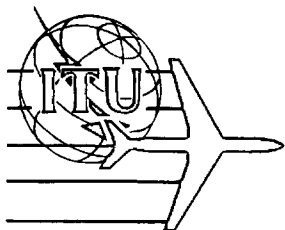
AGENDA
OF THE
FIRST MEETING OF COMMITTEE 2
(Credentials)

Wednesday, 23 March 1966, at 15 hours, Salle A

1. Adoption of the Agenda
2. Designation of a rapporteur
3. Organization of the work.
4. Miscellaneous

S. C. BOSE
Chairman of the Committee





AERONAUTICAL CONFERENCE

Document II/62-E
21 March 1966
Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

ARGENTINA

PROPOSAL No. 7

STUDY OF A FREQUENCY PLAN FOR THE RDARAs AND PROPOSALS FOR THE MOST PRACTICAL SOLUTIONS

1. Present situation

1.1 According to the statistics forwarded by the various Administrations and published in Document No. II/20, pages 49 and 50, annual flight hours come to more than 12 800 000 for the 83 countries taken together.

1.2 To meet these requirements, 420 frequency families would be necessary, whereas in the existing Plan for the RDARAs only about 130 families are available (Document No. DT/II-2), on the assumption that 10 aircraft use one family.

1.3 Hence, there is no prospect of meeting requirements even with 20 or 25 aircraft per family, if it is borne in mind:

- a) that many countries cannot cater for their minimum requirements under these conditions;
- b) that it does not seem possible to have many more frequency families than those fixed in the present Plan.

The Chairman of Committee 5 will set up working parties so that countries with large requirements which cannot be met may, in a spirit of cooperation and solidarity with other countries which likewise have requirements that cannot be met, try to arrive at a just solution with the good will expressed by various countries at the 3rd meeting of the Committee.

1.4 This document attempts to indicate various paths which would be taken by this working party to reach an agreement.

2. Statistical analysis of possibilities

2.1 The following approximate figures are taken from the table published by the I.F.R.B. on page 49 of Document No. II/20:



- a) 83 countries have declared a total of 12 800 000 hours per year, which would call for 420 frequency families. The average per country is 150 000 hours per year, which would correspond to 5 families per country.
- b) Taking the first 75 countries in increasing order of requirements (with less flight hours), the total is 2 000 000 hours, giving an average of 26 500 hours per country. Only 72 families of frequencies, i.e. almost 50% of the present Plan, would be needed to meet their requirements.
- c) If, in the same order, 80 countries were taken, the figure would come to 4 000 000 hours, giving an average of 50 000 per country. Even so the Plan is feasible, but it does not permit larger requirements in the total countries to be reasonably met.

2.2 The table in Annex II to Document DT/II-2 shows that whereas 6 areas have reduced frequency family requirements, as compared with the existing Plan, by percentages varying from 15 to 100%, the seven remaining ones have raised them between 40 and 2500%. For the 23 families saved there is an increase of 313.

2.3 Consideration must be given to some countries which have not sent statistics and for which frequency family reserves should exist, even if they constituted only a predictable minimum. This raises frequency requirements by 10%, to fix a degree of such a reserve.

3. General reduction possibilities

3.1 Any feasible solution should be based exclusively on the degree of cooperation offered by countries having greater requirements for the equitable distribution of the frequencies and on the fact that most countries should use the minimum number of frequency families to meet the most urgent requirements for flight protection on national and regional routes.

3.2 The basic parameters for a realistic allotment have been given. Requirements must be reduced to one third if the Plan is to be feasible. This can be done by either of two methods:

- a) By altering the correction factor of 2.9 adopted by the First Session.
- b) By raising the number of aircraft capable of being served by one frequency family.

3.3 Both factors must be determined by this Conference, in accordance with Recommendation 2 of the First Session. It would therefore be correct to adopt new values at this Session, in line with reality and actual possibilities.

3.4 The correction factor (relation between the peak traffic hour and the mean annual activity) of 2.9 indicates an average reserve of about 40 minutes per hour to reach peak activity at peak traffic times. This reserve can be reduced to 10 minutes by a factor:

$$K = 1.2$$

3.5 Taking 12 as the number of aircraft, we should have:

$$\text{number of families} = \frac{1.2 \text{ Ta}}{8736 \times 12}$$

$$\text{approximately: } N_{\text{fam}} = \frac{\text{Ta}}{90\,000} = \frac{\text{Ta (in thousands of hours)}}{90}$$

3.6 A new plan therefore appears feasible, for the total number of frequency families would be on the average:

$$N_{\text{f total}} = \frac{12\,800}{90} = 142 \text{ (approx)}$$

3.7 However, an indiscriminate general reduction would be unfair and disproportionate, bearing in mind that:

- a) 70 countries of the 83 considered in the statistics have less than 90 000 hours, and so 80% of present users would be unable to meet their minimum requirements.
- b) The remaining 20% (13 countries) would have 130 frequency families, or 90% of the possibilities, assigned to them - an unfair distribution of an international property for the safety of human life in the air, even though justified on the grounds of flight density, territorial size, nature, etc.
- c) On all or some of the grounds of aircraft density, economic and technical capacity, communications facilities etc., many countries can within a reasonable time meet all their communications requirements by greater use of various VHF techniques.
- d) The countries at the top end of the statistics table are very willing to collaborate in studying the problems with a view to devising more reasonable solutions.

3.8 As a trial, therefore, we have compiled a draft proportional distribution which is based on the statistical results given on page 50 of Document No. II/20, without any variation of correction factor and aircraft number but having as starting point:

- a) The maximum possibilities of 142 frequency families - the same figure as in 3.6.
- b) Progressive allocation starting from minimum requirements, with increasing differences for increasing frequency-family requirements.
- c) The possible adoption of a simple process easy to apply and likely to satisfy the greatest number of countries.
- d) The recognition of the possibilities and attitude mentioned in sub-sections c) and d) of paragraph 3.7.
- e) The possibility that some extra frequencies can be provided for larger countries by domestic repetition, less safeguards and other techniques to reduce any large deficit.

4. Tentative proportional distribution of frequency families

4.1 Progressive scales are prepared, on the basis of assigning a family of frequencies, to obtain an extra family, the scales being based on a minimum of $N_0 = 10$ and rising to $N_{14} = 140$ for maximum requirements.

4.2 The scale is in line with a value of N_1 corresponding to N between 10 and 19, the values reducing in order to be previously co-ordinated to determine their needs by being grouped with or added to some other area.

4.3 The subscript of N in this table (see Annex) corresponds to the corresponding number of frequency families and to the tens of N which differ from the previous one. Thus:

$N_0 = 9$ Frequency-family to coordinate (See 4.2)

$N_1 = N_0 + 10$ (between 10 and 19) - One frequency-family

$N_2 = N_1 + 20$ (between 20 and 39) - Two frequency-families

$(N_2 + 30)$ $N_3 = N_2 + 30$ (between 40 and 69) - Three frequency-families

$N_4 = N_3 + 40$ (between 70 and 109)

.....

.....

.....

$N_{13} = N_{12} + 130$ (between 790 and 919) - Thirteen frequency-families

$N_{14} = N_{13} + 140$ (more than 920) - Fourteen frequency-families.

4.4 The application of this scale of progressive differences to obtain an extra frequency family is effected above the number N given on page 50 of Document II/20 for each sub-zone, area or zone. The Annex to this document contains the areas within the limits of each scale and the number of families which would correspond to it and which is the same as the subscript indicating the particular scale concerned.

4.5 The required total of families is the same as is given by the formula in 3.6 but distribution is more fairly proportioned, as a comparison of the two results for each particular case will show.

5. Aim of this study

5.1 The aim of this study is to collaborate with the Ad-Hoc Working Party which will deal with the matter in Study Group 5 and to propose the adoption of a proportional system for allotting the number of frequency families in order to avoid delays and discussions of other solutions which seem completely unacceptable.

5.2 If this or some similar system is adopted, it will be thanks to the delegations of the countries having the greatest requirements, since these countries would benefit a majority by agreeing to sacrifice a considerable proportion of their needs.

5.3 The draft will need amending, particularly to satisfy countries having a number N not covering a whole frequency family (N_0), and so cannot be taken as a definite proposal, nor does the Argentine delegation submit it in this light.

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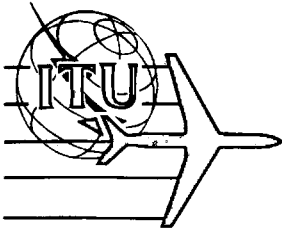
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A N N E X

PROPOSED TABLE

N_x	N	F_f	Sub-areas which are included (Document No. II/20, page 50)			Total F_f
N_0	< -10	-	Coordinated combination with sub-areas of the same or adjacent areas	1) 1/1A/1B 2) 4/4A/5A/5C/5D 3) 6A/6D/6E/6F	4) 7/7B/9A/9C 5) 10E/11/12C/12E-G-H and J/GRL-PKN-NGR-PNR and TUN must be added to the nearest sub-area	5
N_1	10-19	1	5 - 5B - 6B - 7D - 7E - 9E - 12D - 13D - 13E - 13L - CAN1 - 4B			12
N_2	20-39	2	1E - 9B - B1 - CAN3 - CAN4 - 13F			12
N_3	40-69	3	1C - 1D - 9D - 12F - 13G - 13H - 13I - USA - B2 - CAN5 - CAN6			33
N_4	70-109	4	IND - B3 - AL5			12
N_5	110-159	5	CAN2			5
N_6	160-219	6	3A - 3B - 12			18
N_7	220-289	7	2A - 3C - 6			21
N_8	290-369	8	-			-
N_9	370-459	9	-			-
N_{10}	460-559	10	2B			10
N_{11}	560-669	11	-			-
N_{12}	670-789	12	-			-
N_{13}	780-919	13	-			-
N_{14}	> -920	14	2C			14

Total F_f 142



AERONAUTICAL CONFERENCE

Document No. II/63-E
21 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 6

Note by the Secretary of the Conference

INTERGOVERNMENTAL OCEANOGRAPHIC COMMISSION

The Recommendation adopted at the Second Meeting of the Working Group on Ocean Data Stations (Paris, 28 February - 3 March 1966), the text of which is annexed herewith, is brought to the attention of the Conference.

J. KUNZ
Secretary of the Conference

Annex: 1



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A N N E X

UNESCO

Paris, 4 March 1966

Intergovernmental Oceanographic Commission

Recommendation adopted at the Second Meeting
of the Working Group on Ocean Data Stations
(Paris, 28 February - 3 March 1966)

Communication requirements

The Working Group, recognising that a network of Ocean Data Stations cannot function without adequate radio frequency allocations in the high frequency band,

Recommends that delegates to this Working Group accept responsibility for ensuring that their national delegates to the Aeronautical Extraordinary Administrative Radio Conference which is to be held in Geneva during March 1966 are fully briefed on I.O.C. frequency requirements and, where agreement can be reached, that these delegates support the proposal to be put forward at that conference by the Federal Republic of Germany, supported by Denmark, Norway and Sweden: i.e. that one 3.5 kc/s band in each of several wider bands allocated at present to the Aeronautical Mobile (R) Service be released as a first step towards the acquisition of the frequencies required for the use of the Ocean Data Service. To aid the delegates in this matter, Annex III has been prepared.

It is further recommended that the I.O.C. Secretariat be instructed to exercise any possible influence that will aid this cause and, as a first urgent step, despatch copies of this recommendation and Annex III to all the members of the Commission.

Annex: 1

Annex III

Technical basis for proposed Ocean Data Service

Many individuals have described the benefits which may accrue to mankind through the study of the oceans. These studies demonstrate that a better understanding of the oceans directly bears on economic benefits, navigation, fisheries, weather forecasting and storm warnings, as well as the occurrence of tidal waves.¹⁾

In the past, ships were the sole research tool available to the oceanographers. Unfortunately, ships are not adapted to obtaining continuous data and this is one of the reasons why oceanography has lagged behind meteorology. To solve this critical problem, it has been proposed to establish a network of anchored observing stations over the oceans of the world.

Even as the development of world-wide meteorology was dependent upon the wire telegraph, the development of oceanography is today dependent upon the use of radio telecommunications.²⁾ The knitting together of the world-wide network of ocean data stations by radio telecommunications will permit the collection of data for the construction of synoptic charts which are essential to answer the critical needs of fisheries, marine navigation and weather forecasting.

The production of synoptic charts requires essentially a continuous flow of data from the ocean data stations. Since radio circuits of several thousand kilometers are necessary, high frequency radio circuits are imperative. Further, since data must be obtained throughout the 24-hour period, a family of HF frequencies throughout the HF spectrum is required.³⁾

¹⁾ Draft of a General Scientific Framework for World Ocean Study, Chapter III, I.O.C./UNESCO

²⁾ Extract from Radio Frequencies for Oceanographic Communication by R. Wilson (G.P.O./U.K.) (attached)

³⁾ F. Dellamula: Oceanography's radio requirements, Telecommunication Journal, Vol. 31, No. 2, Feb. 1964, pp. 51-55

Due to the limited size of the ocean data stations, only low power radio transmitters can be used. Detailed computer studies of proposed system operations show that high reliability may be obtained providing frequency flexibility is maintained within the system and that interrogation and reception may be carried out from widely spaced stations. Frequency optimization and efficient system operation require computer direction. System operations will require a constantly changing operational mode. Therefore, the sharing of frequencies with other services appears both impracticable and inadvisable.

The use of low power and other system assumptions have been proved valid by computer studies and experiment. Certain Member States of the Intergovernmental Oceanographic Commission are even now operating limited ocean data station networks under Article 115 of the Radio Regulations.

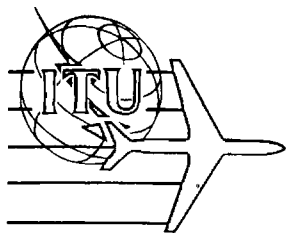
Radio frequencies for oceanographic communications

1. During 1960 the various scientific organizations concerned with the exploration of the sea throughout the world considered ways and means of extending man's knowledge of the natural phenomena of the sea, both on and below the surface. It has been said that the primary aim of these organizations is to investigate the world oceans in detail with a view to augmenting the yield of food from the sea, which, it has been estimated, could be increased five to ten times through better knowledge of marine biology. To coordinate these efforts, the Intergovernmental Oceanographic Commission was set up, and, so far, upwards of fifty countries have become members.
2. Part of the task with which the I.O.C. is charged is the encouragement of observations in lesser frequented parts of the oceans. Up to the present, research vessels have, and still do, carry out cruises in these areas, and their operations are assisted by the laying of buoys which observe and record oceanographic data. The recorded data can, however, only be acquired when the buoy is located and picked up again.
3. According to oceanographic scientists, regular, suitably spaced and properly organized observations are indispensable for the successful study of both the atmosphere and the ocean. This condition was generally satisfied for meteorology years ago by the establishment of an extensive network of meteorological stations on mainlands and islands all over the world. Only through the regular observations made by this network were regular weather forecasts made possible. Oceanography is far behind meteorology in establishing its own network of stations, the reason being that it is difficult and sometimes impossible to build an observation station in the open ocean. The problem of maritime meteorology was partly solved by placing weather ships in the ocean, but these do not provide oceanographers with a coverage approaching that obtained by meteorologists from their network of ground stations. Oceanographers and meteorologists started some time ago to look for a solution to this problem, and technical progress now points the way to the solution; automatic buoy stations equipped to make all kinds of meteorological and oceanographic observations.

4. These buoys would be equipped to record such data as changes in the ocean circulation, the distribution of ocean properties and phenomena, temperatures, current direction and velocity, transparency, salinity, oxygen and biological content at various depths, and, in addition, atmospheric data such as barometric pressure, wind direction, and velocity, solar radiation, etc. To facilitate collection of this data several times a day, it is proposed to equip the buoy with a radio transmitter which would be remotely controlled from a shore, ship or aircraft station. Upon interrogation the buoy transmitter would automatically transmit the stored information.
5. A Working Group on Communications set up by the I.O.C. to consider the problems involved met in Paris in August 1962. The form of message to be used was agreed, and it became clear that, as a world-wide service over varying distances was needed, a number of small bands of frequencies throughout the radio frequency spectrum between four and 27.5 Mc/s would be required.
6. As the question of frequency spectrum space for oceanographic communications has never been placed before an Administrative Radio Conference, the present Radio Regulations contain no allocations for this service. Moreover, it seems difficult to decide which is the correct place for the Ocean Data Service, so far as the existing types of service recognised by the Radio Regulations are concerned. Naturally, opinions differ widely on this point; in some quarters it is considered that the maritime mobile bands might well be the appropriate place, at least as an interim measure, while others are of the opinion that the fixed or aeronautical bands could accommodate the need.
7. The next step was that the I.O.C. sought the advice of the I.F.R.B., which resulted in the Board circularising all administrations with details of the request, and suggesting that the possibility of using one channel of each of the bands allocated to single-sideband radiotelephony in the maritime mobile service might be considered by administrations.
8. In the meantime, another meeting had been organised by the I.O.C. to consider the question of radio frequencies for oceanographic communications further. At this meeting, held in September, 1963, representatives of national telecommunications authorities and shipping interests (C.I.R.M., I.C.S., I.M.C.O., etc.) were present. Before the meeting, a paper was prepared and circulated which reaffirmed the principle that a firm allocation of radio frequency spectrum space for oceanography could only be made by a competent Administrative Radio Conference, and that, in the meantime, any use of frequencies for oceanographic communications must be subject to Radio Regulation 115.

9. Although there is a great weight of international scientific support for the aims of oceanography, there were many divergent views at this meeting on how the requirement for radio frequency spectrum space should be satisfied. It was held by some telecommunication representatives that the case for oceanography had not been fully made out, and also that there was no justification for wishing to use the maritime mobile bands in preference to any other, and that the fixed or aeronautical bands should be used instead of the maritime mobile bands. However, the meeting finally adopted a Recommendation with many reservations, suggesting that until the matter could be considered by a competent Administrative Radio Conference, oceanography might use one of two small bands of frequencies in the maritime mobile bands, either one which was allocated for ships' single-sideband radiotelephony, or one which was allocated for ships' wideband radiotelegraphy systems. This Recommendation has now been circulated by the I.F.R.B. for comment by administrations by 1st April 1964.

 10. In view of the affinity of the oceanographic service to the maritime mobile service, the low power and narrow bandwidth of the proposed oceanographic service would appear to possess small interference potential.
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AERONAUTICAL CONFERENCE

Document No. II/64-E
21 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

MALAYSIA

PROPOSAL No. 1

Frequency Allotment : COM/MET - HF RTF Sea Region -
VOLMET Broadcast

The present Volmet frequencies in the RADRA-6 region are as follows: 2924 kc/s, 6529.5 kc/s and 10 048 kc/s. It is proposed to replace these frequencies by the following frequencies: 3411.5 kc/s, 5634 kc/s and 11 337.5 kc/s for the following reasons.

The I.C.A.O. has pointed out to the administrations the harmful interference that exists on the present frequencies particularly on 2924 and 6529.5 kc/s. Efforts to clear the interference have not been fruitful.

This subject appears in the I.C.A.O. publication of September 1965 Document No. 7774/10 Appendix B, page E B3, extract as follows :

"VOLMET Broadcasts.

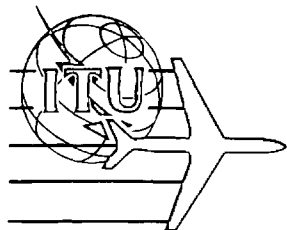
Broadcast from Sydney is planned to be implemented in early 1966. Despite energetic action, harmful interference continues to exist on the Volmet frequencies 2924 and 6529.5 kc/s. Additionally, owing to the fact that 6529.5 kc/s is in use for RADRA purposes in certain parts of Australia, Sydney cannot use this frequency for Volmet. For these reasons the possibility of replacing the present family by another family of frequencies is being investigated."

Further investigation has been carried out by the I.C.A.O.

The Administration of Malaysia therefore proposes that the frequencies 3411.5 kc/s, 5634 kc/s and 11 337.5 kc/s be allotted to the region for SEA VOLMET Broadcasts.

If a need for a frequency in the 6.6 Mc/s band be expressed, then 6582 kc/s is proposed in lieu of 5634 kc/s.





AERONAUTICAL CONFERENCE

Document No. II/65-E

21 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

REPUBLIC OF SINGAPORE

PROPOSAL No. 1

Volmet broadcasts in South East Asia Region

1. The I.C.A.O. had studied the case of Volmet broadcasts in South East Asia for some time and with a view to improving the Volmet broadcasts in this Region, the Regional I.C.A.O. office at Bangkok recommended to the Republic of Singapore and other I.C.A.O. contracting States of RDARA-6 in letter R10/5.1-0114 dated 24 January 1966 that the present existing South East Asia Volmet broadcast frequencies 2924, 6529.5 and 10 048 kc/s be replaced by 3411.5, 5634 and 11 337.5 kc/s, and that should a need be expressed for a frequency in the 6.6 Mc/s band, 6582 kc/s be proposed in lieu of 5634 kc/s.
2. This preliminary study undertaken by I.C.A.O. may facilitate discussion at this E.A.A.R.C. and simplify the selection of an appropriate high frequency family for S.E.A. Volmet broadcasts.
3. The Republic of Singapore concurs with the recommendation given in para. 1 above and

proposes

- a) that in the preparation of the revised provisions of Appendix 26, the Extraordinary (Aeronautical) Administrative Radio Conference should also take into consideration the above recommendation of I.C.A.O.;
- b) that frequencies 3411.5, 5634 and 11 337.5 kc/s be the replacement frequencies for S.E.A. Volmet broadcasts;
- c) that should a need be expressed for a frequency in the 6.6 Mc/s band, 6582 kc/s be proposed in lieu of 5634 kc/s.



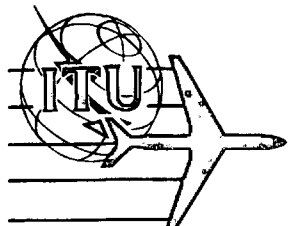
4. Reasons

4.1 The present frequency plan contained in Appendix 26 to the Radio Regulations (Geneva 1959) does not cater for the requirements of Volmet broadcasts in S.E.A. Region.

4.2 Investigations carried out by I.C.A.O. reveal

- a) that severe interference has been reported on 2924 and 6529.5 kc/s and despite the energetic action taken by all concerned, it is understood that no significant reduction in the level of interference has taken place;
- b) that the replacement frequencies will be able to provide better service than the existing frequencies in use.

4.3 According to I.C.A.O. publication of September 1965, Document No. 7774/10 Appendix B E, B-3 (Air navigation plan S.E.A.), broadcast from Sydney is planned to be implemented in early 1966. Owing to the fact that 6529.5 kc/s is in use for RDARA purposes in certain parts of Australia, Sydney cannot use this frequency for Volmet broadcast. For these reasons the replacement of the present family of frequencies by another family of frequencies is considered necessary.



AERONAUTICAL CONFERENCE

Document No. II/66-E

21 March 1966

Original : French .

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 7

AGENDA
OF THE
FIRST MEETING OF THE
SPECIAL WORKING PARTY OF COMMITTEE 7

(Meeting of the Chairmen of Committees 4, 5, 6 and 7)

Tuesday, 22 March 1966 at 3 p.m., Room 2

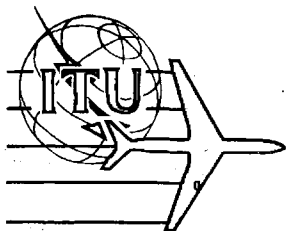
1. Discussion on the form the Final Acts of the Conference should take.

Documents : II/2 (U.S.A.), II/4 (Canada), II/10 (U.K.), II/18 (India),
II/25 (Mexico), II/35 (Argentine).

2. Any other business.

P.C.M. BOUCHIER
Chairman





AERONAUTICAL CONFERENCE

Document No. II/67-E
21 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

FIRST REPORT OF COMMITTEE 4 (TECHNICAL)

Interference Range Contours (Appendix 26, page 9 and following)

Following a study of proposals by Administrations to the Conference and of the Report of the First Session, Committee 4 unanimously agreed the texts which appear in the Annex attached hereto.

With respect to paragraph numbered 18.1 and entitled "Method of Use" and consequently paragraph 15, however, the Committee agreed that the text can be finalized only after further study of a proposal to include VOLMET area maps (Document No. II/10, page 21).

J.T. PENWARDEN
Chairman



Annex: 1

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A N N E X

B. Interference Range Contours

14. Definition of Contours

14.1 The transparencies inserted in the pocket at the end of this Appendix show contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW (for emissions such as A1, F1, F2, A3 and A3H 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. This limit is generally assumed to be at the boundary of the area concerned and the service range is not included in the contour.

14.2 Two types of transparencies are provided for use respectively with the Mercator projection world maps and 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. This overlap is included to provide continuity between transparencies of the two projections.

15. Type of Maps used

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

16. Change of Scale or Projection

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

16.2 When 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.

16.3 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.

17. Sharing conditions between areas

17.1 The transparencies are constructed on the basis of the following sharing conditions:

Areas	Bands between: Mc/s	Sharing Conditions
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 considered 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

17.2 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.

18. Method of use

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

18.2 The Gnomonic projections are applicable in the polar areas north of 60° North and south of 60° South; and the Mercator projections are applicable between 60° North and 60° South.

18.3 Place the centre 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.

18.4 A transmitter located at any point outside the contour will result, as defined in paragraph 14.1 above, in a protection ratio of better than 15 db.

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

18.6 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 areas which involve the transition of the equator.

18.7 Gnomonic projection: For 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.

19. Data for tracing interference contours

Latitude	-00°		10°		20°		30°		40°	
	6,3°	6,3°			6,3°	6,7°			6,3°	8,5°
	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	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°	
			6,3°	12,6°						
	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	56,3	180,0	66,3	180,0	76,3	180,0	86,3	Toutes longitudes All Longitudes Todas longitudes	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

3,0 at 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

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	30°		10°		20°		30°		40°	
	31,5°	31,5°			31,5°	33,6°			31,5°	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°	
	31,5°	49°	31,5°	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	65,6	103,3	69,8	75,9	69,7	53,8	65,4		58,5
	126,0	60,3	108,7	65,0	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	139,9	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	38,6	180,0	48,5		58,5

Latitude	00°		10°		20°		30°		40°	
	36°	36°			36°	38°			36°	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	-6,0	180,0	4,0

Latitude	50°		60°		70°		80°		90°	
	36°	36°	36°	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		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

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

Latitude	00°		10°		20°		30°		40°	
	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	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°	
	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	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, 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	0°		10°		20°		30°		40°	
	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	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	36,6	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°	
	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,	80,5	0,	70,5	0,	60,5	0,	50,5	Toutes longitudes All Longitudes Todas longitudes	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°	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	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

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

Latitude	50°		60°		70°		80°		90°	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
	180,0	63,5	180,0	73,5	180,0	83,5	0,	86,5		75,5
	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

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

Toutes longitudes
All Longitudes
Todas longitudes

Latitude	00°		10°		20°		30°		40°	
	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°	
	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
									Toutes longitudes All Longitudes Todas longitudes	

5, f 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°		30°		40°	
	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	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	158,1	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

Latitude	50°		60°		70°		80°		90°	
	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	67,1	180,0	77,1	180,0	87,1	0,	82,9	Toutes Longitudes All Longitudes Todas Longitudes	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

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

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°	
	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	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	35.2	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°	
	34.3°	53.5°	34.3°	69°						
	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	34.2	0.	85.8	0.	75.8	0.	65.8	Longitudes A11	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	39.5	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	1.1	173.3	26.1	173.1	36.0	171.9	45.9		55.8
	180.0	15.8	180.0	25.8	180.0	35.3	180.0	45.8		55.8

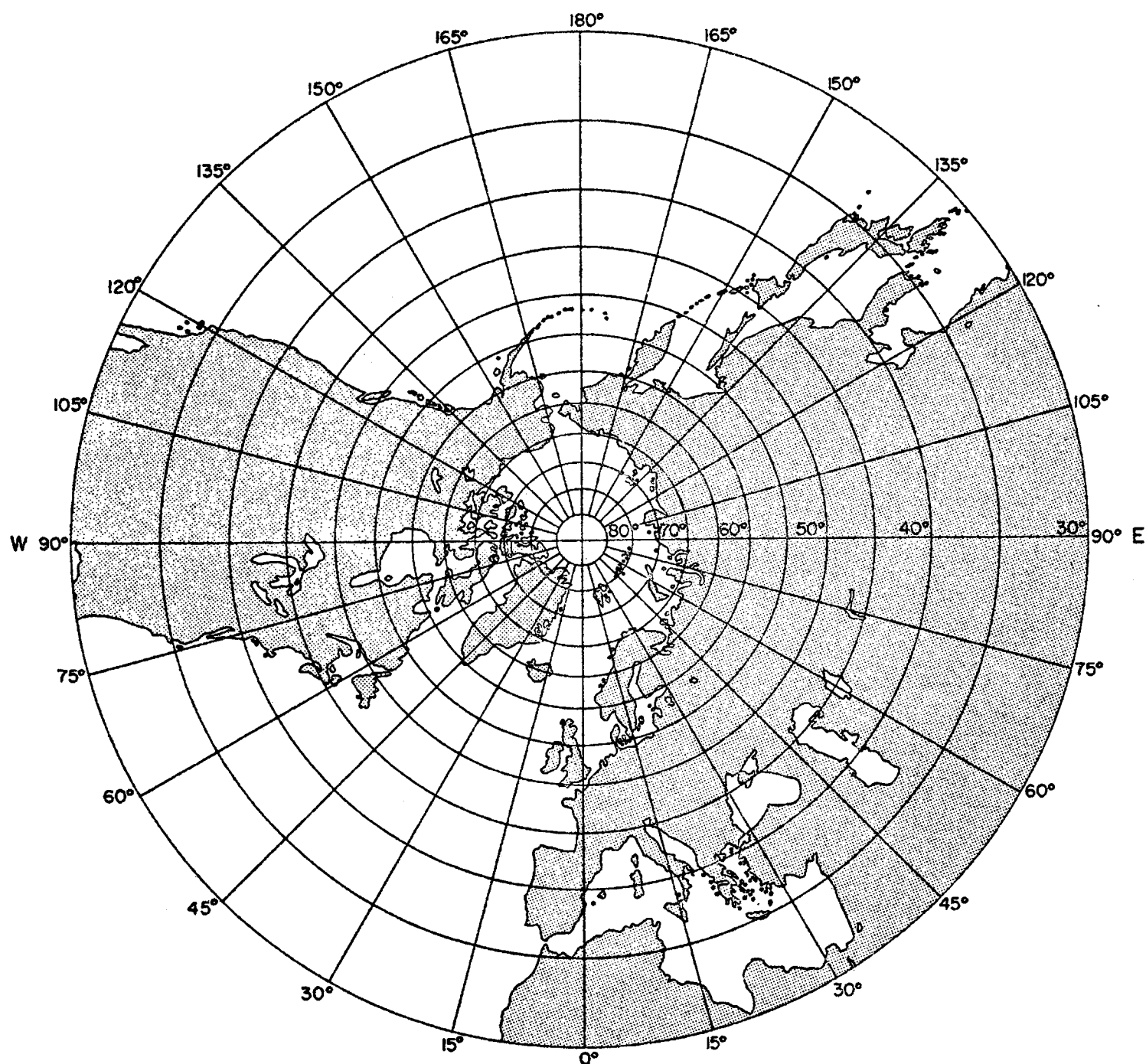
Latitude	00°		10°		20°		0°		40°	
	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.	Long.	Lat.
Coordonnées pour le tracé des courbes Coordinates for plotting of contours Coordenadas para el trazado de las curvas	180,0	54,0	180,0	64,0	180,0	74,0	180,0	84,0	0	86,0
	166,6	52,3	162,3	62,5	153,3	71,9	128,2	79,7	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	15,2
	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
	166,6	-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°	
	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

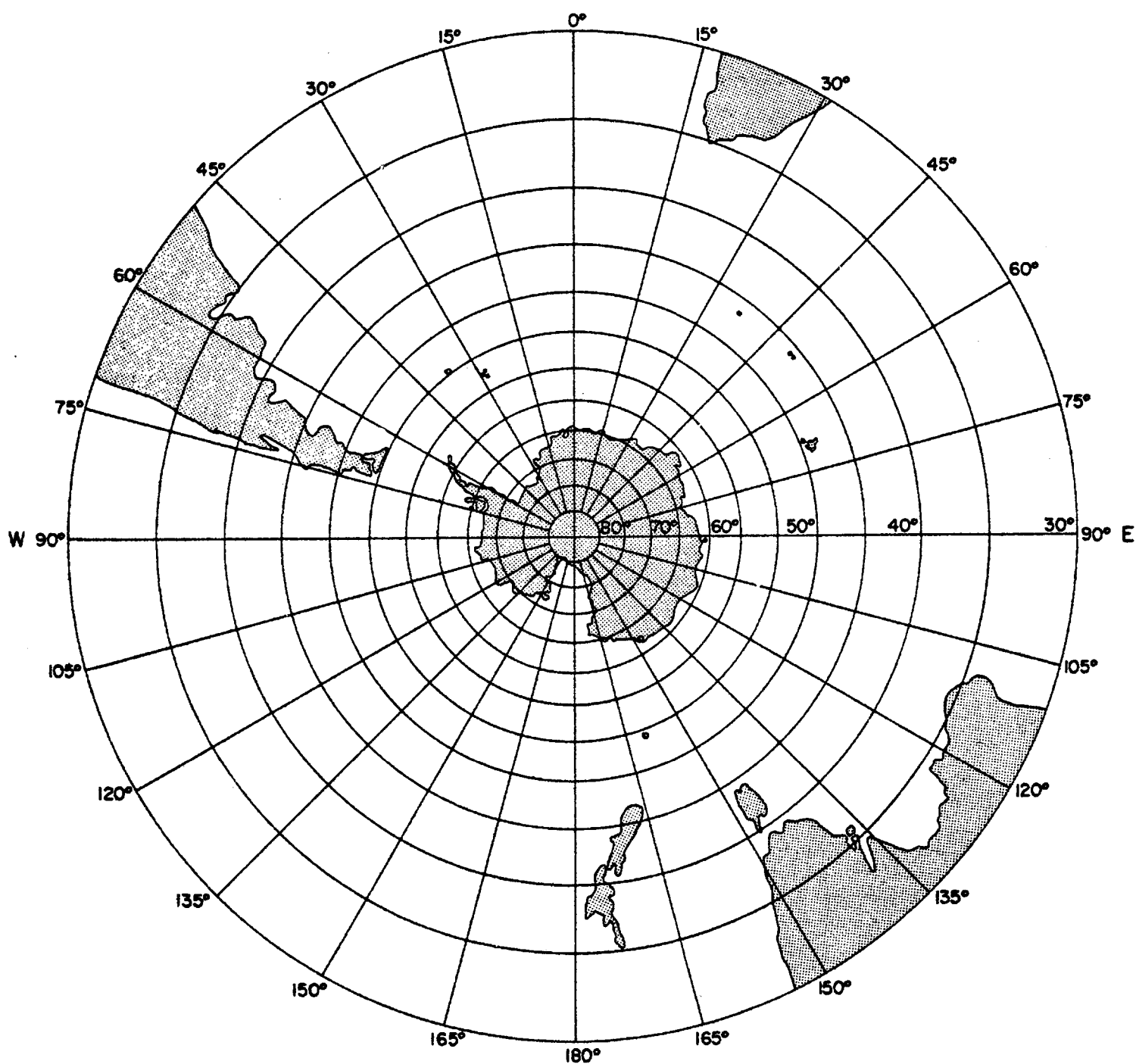
Note : The following are reduced reproductions of the transparencies for Interference Range Contours-Polar Areas, which will be added to the other material in the Pocket of the revised Appendix.

Pôle Nord - North Pole - Polo Norte

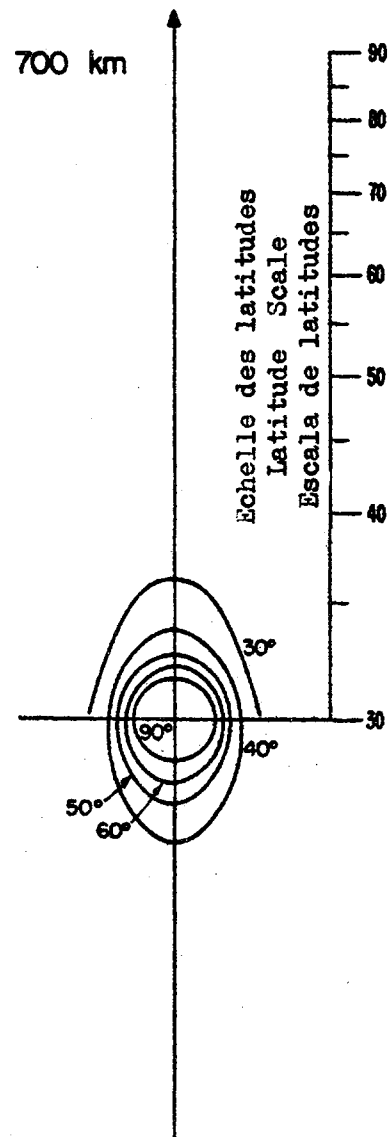


NORTH POLE

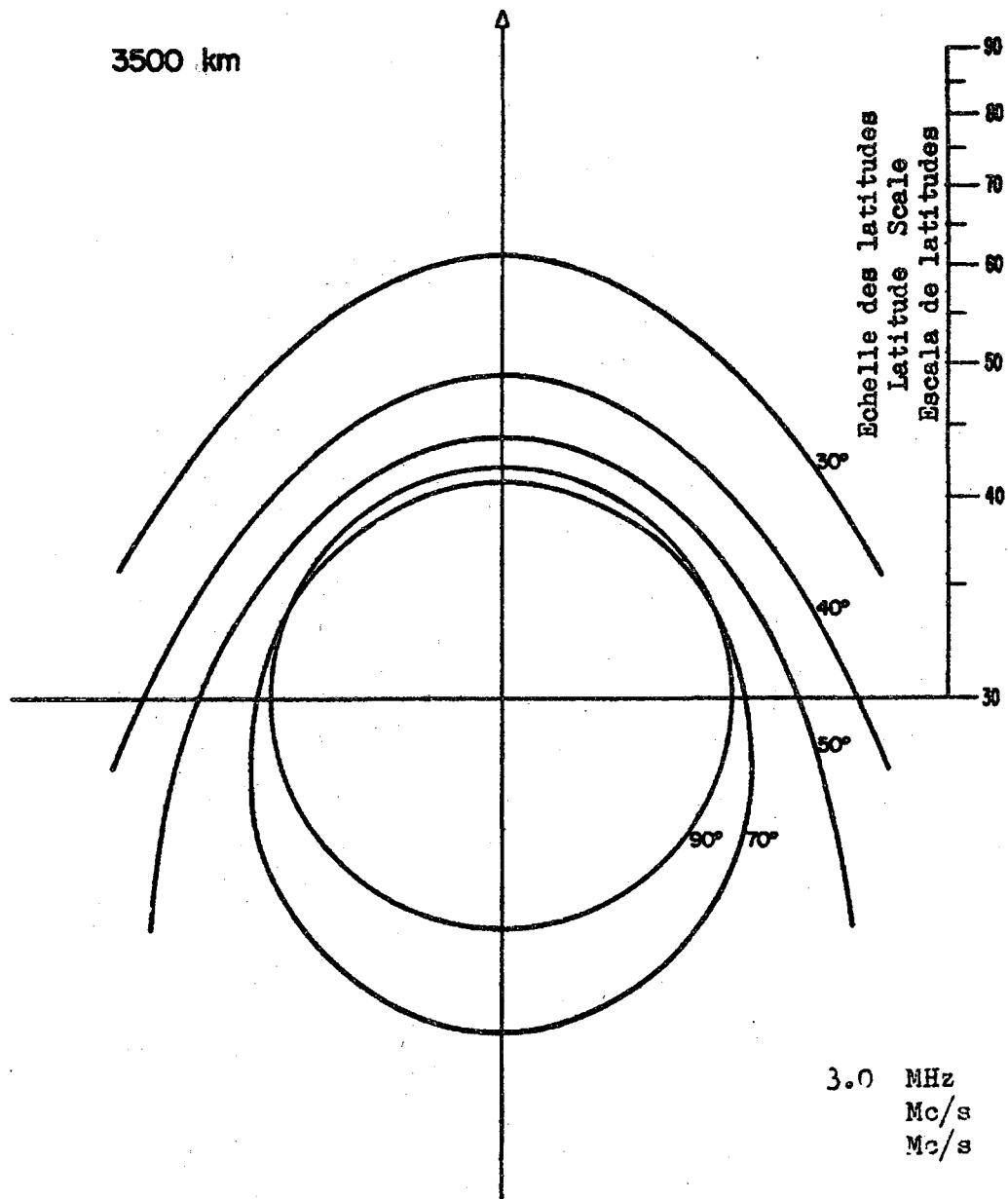
Pôle Sud - South Pole - Polo Sur

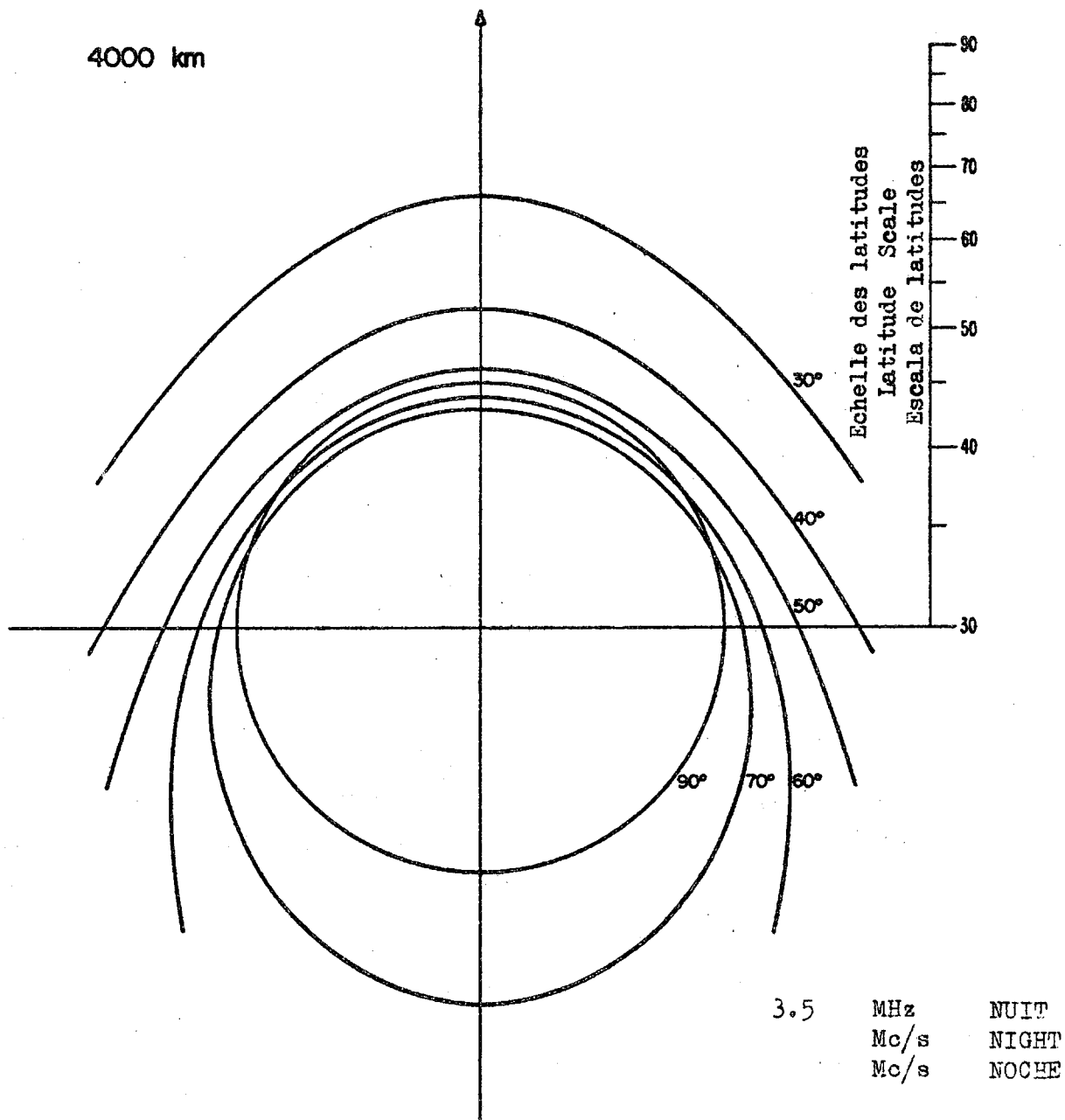


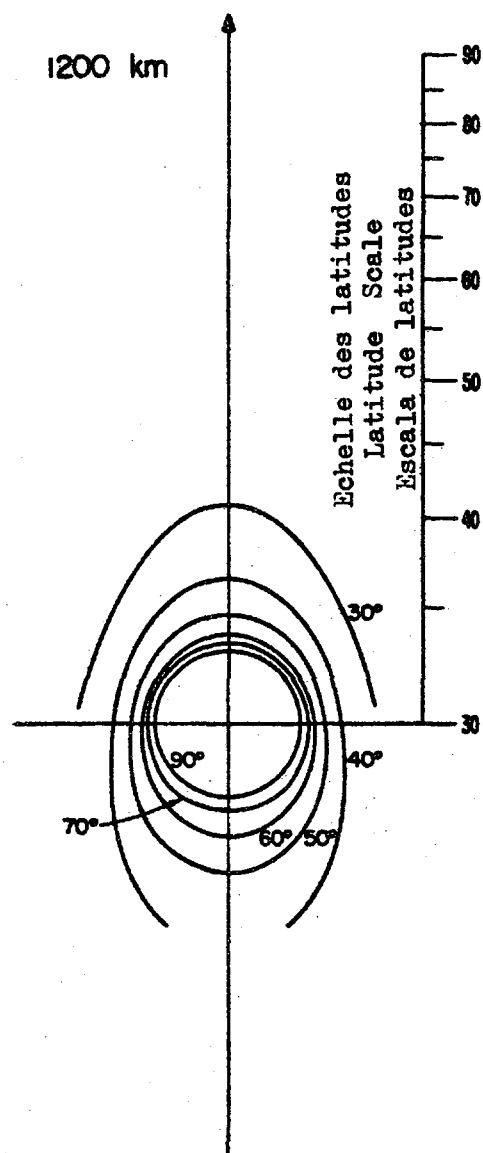
SOUTH POLE



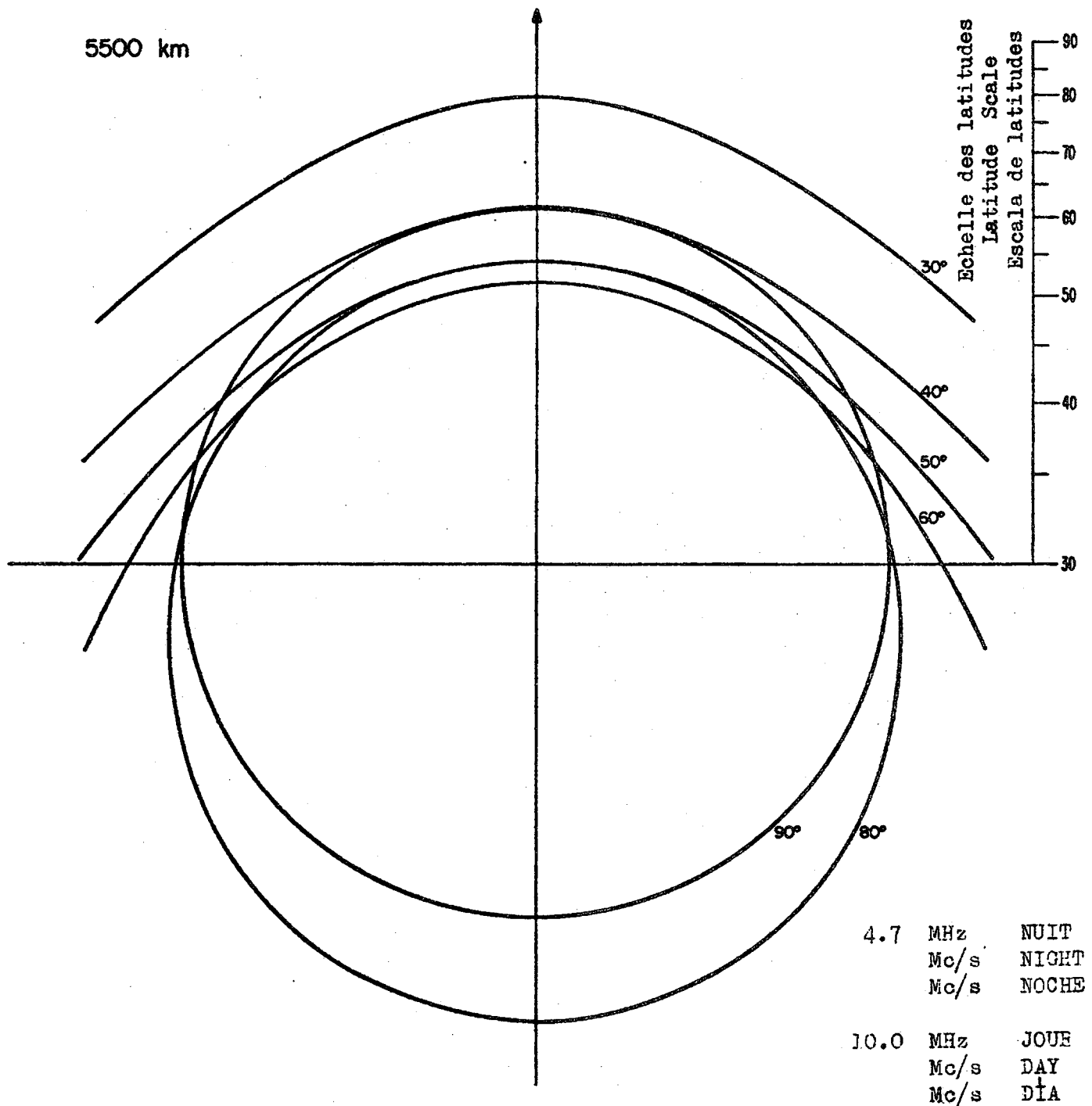
3.0	3.5	MHz	JOUR
		Mo/s	DAY
		Mo/s	DIA

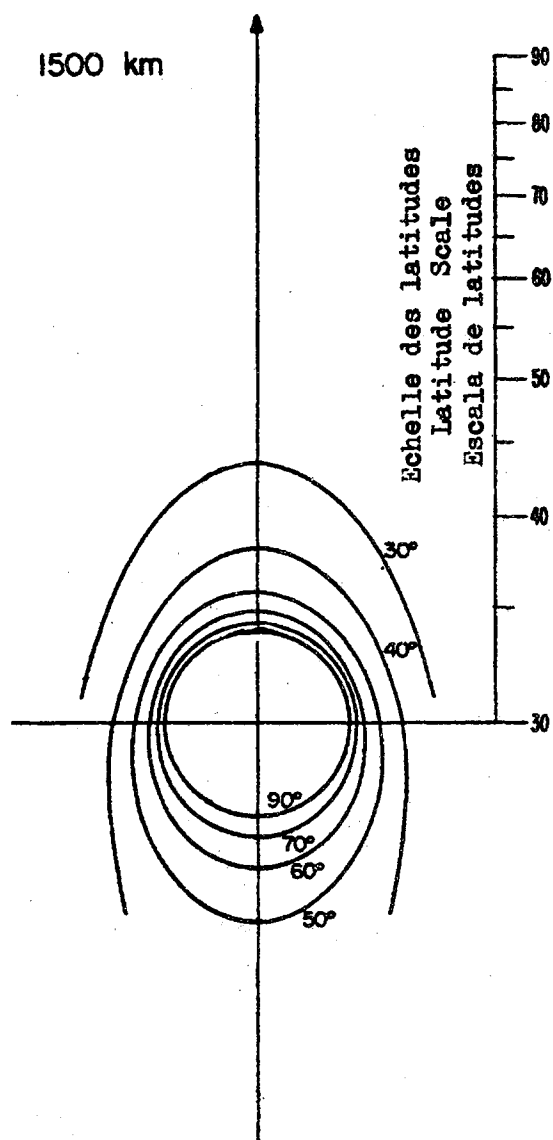




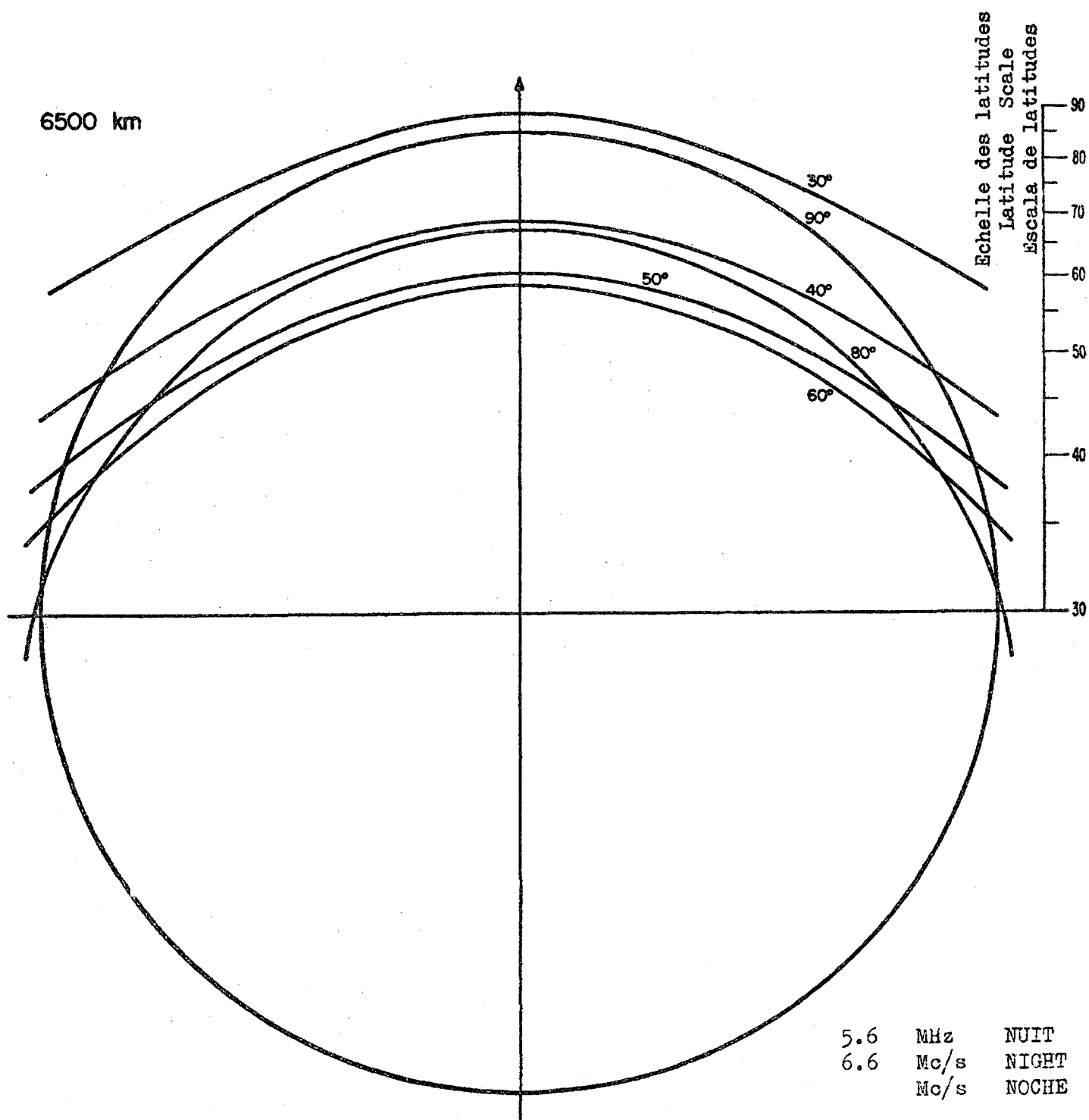


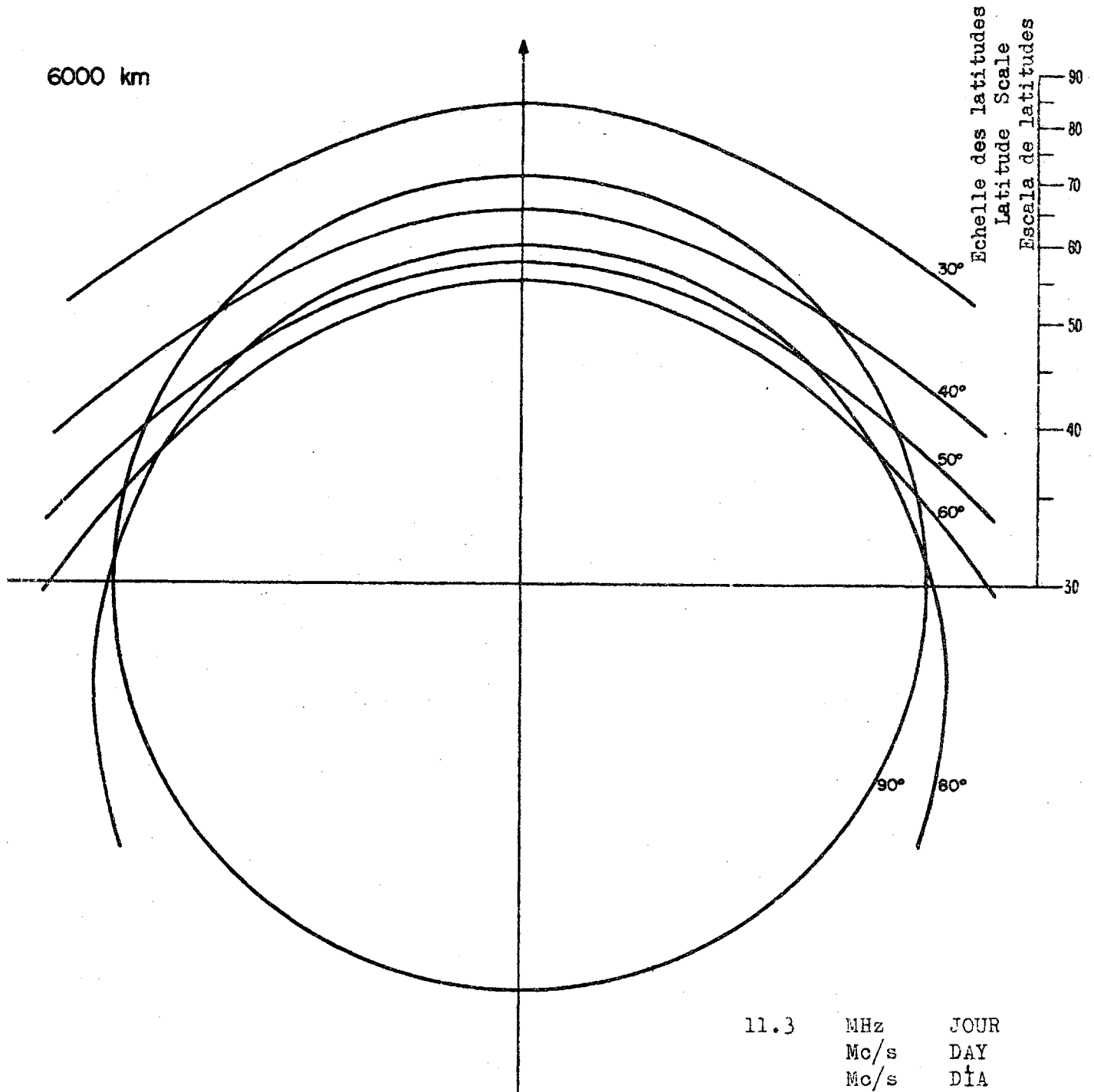
4.7	MHz	JOUR
	Mc/s	DAY
	Mc/s	DÍA

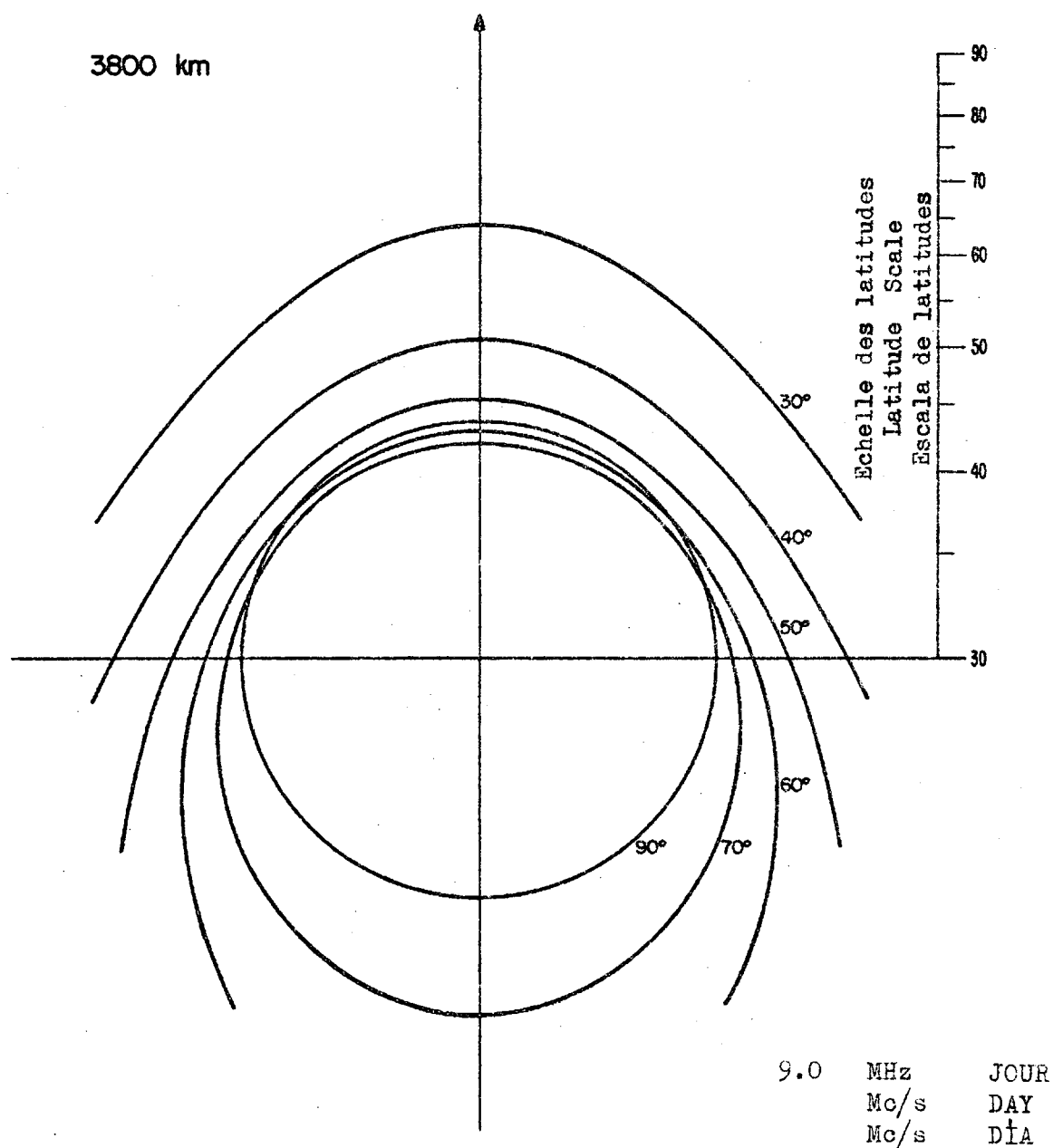


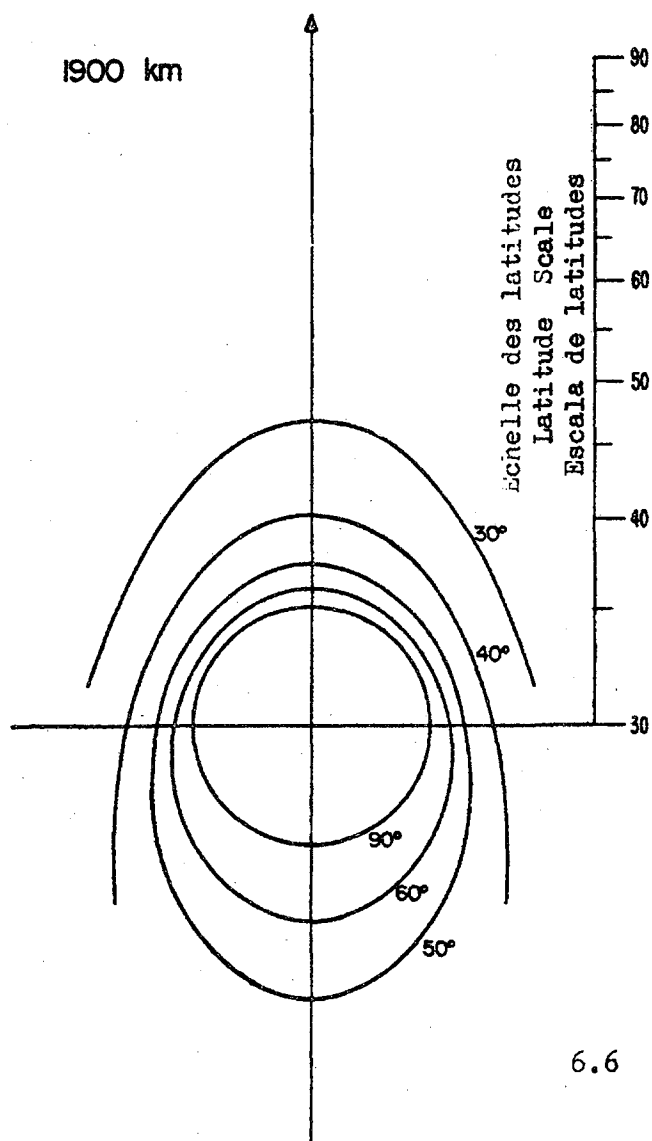


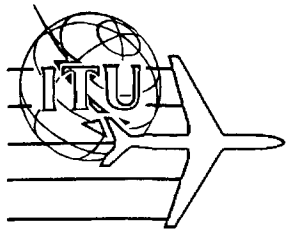
5.6 MHz JOUR
 Mc/s DAY
 Mc/s DIA











AERONAUTICAL CONFERENCE

Document No. II/68-E

21 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

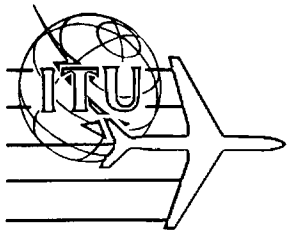
SEVENTH MEETING OF THE TECHNICAL COMMITTEE

Tuesday, 22 March 1966, at 9.30 a.m. in Room A

1. Draft Second Report of Committee 4 (Document No. DT/II-5)
2. Consideration of Classes of emission (Appendix 26, page 6)
Report First Session (pages 3 - 4)
Document No. II/2 USA (pages 15 and 18)
Document No. II/4 CAN (pages 5 and 6)
Document No. II/10 G (pages 11 - 12)
3. Consideration of Channel separation (Appendix 26, page 6)
Report of First Session (page 51)
Document No. II/2 USA (page 10, page 15 para. 10 and pages 16 - 17)
Document No. II/3 J (pages 3 and 4)
Document No. II/4 CAN (pages 2 - 5)
Document No. II/10 G (pages 3 - 5, 12 - 13 and 16 - 19)
Document No. II/18 IND (pages 2 - 3)
4. Any other business.

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/59-E
22 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Monday, 21 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Draft First Report of Committee 4 (Document No. DT/II-4)

1.1 The Chairman presented the draft first report of this Committee and following discussions in which the Delegates of Cuba, Jamaica, Portugal, Republic of South Africa, Switzerland, the United States, the Union of Soviet Socialist Republics and the member of the I.F.R.B. participated, the draft report was adopted with the following amendments:

Page 1 - para. 2 to be amended to include reference to para. 15 as well as para. 18.1.

Page 2 - para. 14.1 - Amend English text as follows:

Lines 3 and 4 to read:

"..... separating two aeronautical stations each having a mean effective radiated power of 1.0 kW (for emissions such as A1, F1, F2, A3, A3H unmodulated) for the frequencies stated and for producing"

2. Continued consideration of Power of emissions (Document No. DT/II-3(Rev.))

2.1 Document No. DT/II-3(Rev.), a discussion paper on power, was introduced by the Chairman and after considerable discussion in which the Delegates of Australia, the Federal Republic of the Cameroons, Canada, Cuba, Italy, the Netherlands, New Zealand, Poland, Portugal, Republic of South Africa, Singapore, Switzerland, Tunisia, the United Kingdom, the United States and the member of the I.F.R.B. participated, the paper was adopted by the Committee with the following amendments:



Under Power - para. 1, lines 3 and 4 amended to read as follows:

"the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values".

In the Table - block 1, under Class of emission - add F2.

block 3, under Minimum peak envelope power to read 300 watts for aircraft stations.

Para. 2 to read:

"It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1, F2, A3, A3H unmodulated) used as a basis for the interference range contours."

Para. 3 a) and e) to read:

"a) the co-ordination is effected with the administrations concerned when there is any possibility of harmful interference."

"e) that, in accordance with the Radio Regulations, full details of the assignment(s) shall be notified to the I.F.R.B. including the transmitting antenna characteristics."

A fourth paragraph obtained from Page 8 of Document No. II/4 and amended, was inserted as follows:

"It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified in para. above. However, the use of such increased power shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based."

2.2 In addition to the above the Delegate of the United Kingdom stated that the VOLMET areas would have to be considered in paragraph 3 c) and it was agreed that this would be taken care of in the cover sheet to the Draft Report.

2.3 The Delegates of Canada and the United States agreed that para.2 of Page 8, Document No. II/4 and para. 20.1.1, Page 45, Document No. II/2, could be dropped from further consideration.

3. Summary Record

The Meeting adopted the Summary Record of the fourth and fifth meetings of Committee 4 (Documents Nos. II/52 and II/59 respectively) without comment.

4. Draft Second Report of Committee 4 (Document No. DT/II-5)

The Meeting adopted the Draft Second Report of Committee 4 (Document No. DT/II-5) without comment.

5. Draft Third Report of Committee 4 (Document No. DT/II-6)

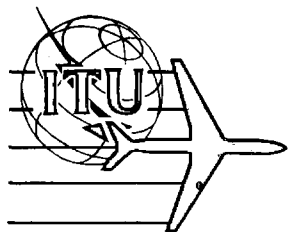
The Meeting adopted the Draft Third Report of Committee 4 (Document No. DT/II-6) without comment.

6. Any other business

In the absence of any other business, the Meeting adjourned at 12.35 until 09.30 Tuesday morning.

Rapporteur
E.H. LEAVER

Chairman
J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/70-E
22 March, 1966
Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

SOCIALIST REPUBLIC OF ROUMANIA

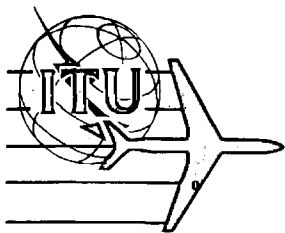
PROPOSAL

Subject : Change to the boundaries of RDARA sub-division IC

It is proposed that the Aeronautical Extraordinary Administrative Radio Conference change the present boundaries of RDARA sub-division IC so as to include the territory of Roumania, which is at present in RDARA sub-division 1D.

Reasons : This change would be more in accordance with operating requirements.





AERONAUTICAL CONFERENCE

Document No. II/71-E
22 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

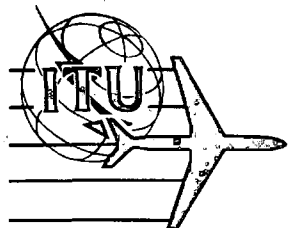
EIGHTH MEETING OF THE TECHNICAL COMMITTEE

Wednesday, 23 March 1966, at 9.30 a.m. in Room A

1. Summary Record of Sixth Meeting (Document No.II/69)
2. Draft Fourth Report of Committee 4 (Document No.DT/II-10 if available)
3. Continued consideration of Channel separation (Appendix 26, page 6)
Report of First Session (page 51)
Document No.II/2 USA (page 10, page 15 para. 10 and pages 16 - 17)
Document No.II/3 J (pages 3 and 4)
Document No.II/4 CAN (pages 2 - 5)
Document No.II/10 G (pages 3 - 5, 12 - 13 and 16 - 19)
Document No.II/18 IND (pages 2 - 3)
4. Any other business



J.T.PENWARDEN
Chairman



AERONAUTICAL CONFERENCE

Document No. II/72-E

22 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 3

POSITION OF THE ACCOUNTS OF THE AERONAUTICAL RADIO CONFERENCE ON 21 MARCH 1966

Rule 5 in Chapter 9 of the General Regulations annexed to the International Telecommunication Convention, Geneva 1959, states that a Budget Control Committee shall approve the accounts for expenditure incurred throughout the duration of a Conference. It shall also present to the Plenary Assembly a report showing, as accurately as possible, the estimated total expenditure at the close of the Conference.

In accordance with the aforementioned provisions, a statement of the expenditure incurred up to 21 March 1966 for the Aeronautical Radio Conference is submitted for examination by the Budget Control Committee. This statement is amplified by an estimate of estimated expenditure up to the close of the Conference.

Roger C. CHATELAIN
Head of the I.T.U. Finance Division

Annex : 1 table



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A N N E X

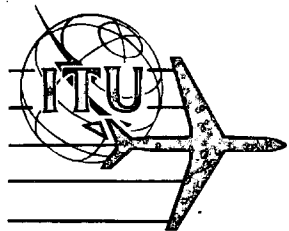
POSITION OF THE ACCOUNTS OF THE AERONAUTICAL RADIO CONFERENCE ON 21 MARCH 1966

Sub-heads and items	BUDGET including 1) add.cred.	Credit transfers		Total credits available	Actual expen- diture	Funds obligated	Estimated expenditure	Estimated TOTAL expenditure
		Item to item	Sub-head to sub-head					
<u>I. Staff</u>								
<u>7.601 Administration</u>								
- Salaries						56,258.-	8,300.-	64,558.-
- Travel					363.80	362.-		725.80
- Overtime							13,000.-	13,000.-
- Sundry							7,716.20	7,716.20
	95,900.-			95,900.-	363.80	56,620.-	29,016.20	86,000.-
<u>7.602 Language Services</u>								
- Salaries					19,756.95	429,867.05	45,625.-	495,249.-
- Travel					5,567.50	5,738.80	6,000.-	17,306.30
- Overtime					-	-	16,000.-	16,000.-
- Sundry					-	-	21,444.70	21,444.70
	607,800.-		-21,000.-	586,800.-	25,324.45	435,605.85	89,069.70	550,000.-
<u>7.603 Document production</u>								
- Salaries					7,323.30	46,058.70	11,808.-	65,190.-
- Travel					-	-	-	-
- Overtime					-	-	15,500.-	15,500.-
- Sundry					-	-	7,310.-	7,310.-
	93,800.-			93,800.-	7,323.30	46,058.70	34,618.-	88,000.-
<u>7.604 Insurance</u>								
- Accident Insurance					-	3,500.-	-	3,500.-
- Sickness ins./SS & B Funds					-	-	1,500.-	1,500.-
	6,300.-			6,300.-	-	3,500.-	1,500.-	5,000.-
TOTAL, Sub-head I.	803,800.-	-	-21,000.-	782,800.-	33,011.55	541,784.55	154,203.90	729,000.-

1) Budget, including additional credits, approved by the Administrative Council at its 20th Session, 1965.

Sub-heads and items	BUDGET including add. cred.	Credit transfers		Total credits available	Actual Expenditure	Funds obligated	Estimated expend.	Estimated TOTAL expenditure
		Item to item	Sub-head to sub-head					
<u>II. Premises and equipment</u>								
<u>7.605 Premises, furniture, machines</u>								
- Hire, Maison des Congrès					-	68,200.-	6,200.-	74,400.-
- Installation costs					-	-	1,000.-	1,000.-
- Hire of furniture and machines					1,600.-	6,800.-	-	8,400.-
- Maintenance and repairs, machines					-	-	500.-	500.-
- Electronic computer					-	-	10,000.-	10,000.-
- Sundry					-	-	700.-	700.-
	74,000.-		+21,000.-	95,000.-	1,600.-	75,000.-	18,400.-	95,000.-
<u>7.606 Document production</u>								
- Paper)	-		
- Stencils) 3,366.55	-	53,000.-	56,366.55
- Ink)	-		
- Offset					1,173.75	-	10,000.-	11,173.75
- Sundry					227.-	-	1,232.70	1,459.70
	72,000.-			72,000.-	4,767.30	-	64,232.70	69,000.-
<u>7.607 Supplies and overheads</u>								
- Office supplies					415.90	-	10,000.-	10,415.90
- Removal expenses					-	1,500	1,500.-	3,000.-
- Local transport expenses					-	-	2,000.-	2,000.-
- Postage					-	-	5,000.-	5,000.-
- Telephone and telegram charges					185.85	-	2,000.-	2,185.85
- Guidebook, badges etc.					180.-	-	-	180.-
- Sundry					-	-	1,218.25	1,218.25
	29,000.-			29,000.-	781.75	1,500.-	21,718.25	24,000.-
<u>7.608 Simult. interpret. and other sound equipment</u>								
- Hire					-	-	-	-
- Magnetic tape, etc.					-	-	1,000.-	1,000.-
	1,000.-			1,000.-	-	-	1,000.-	1,000.-

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AERONAUTICAL CONFERENCE

Document No. II/73-E

22 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 3

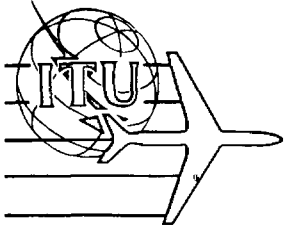
AGENDA
OF THE
FIRST MEETING OF COMMITTEE 3
(BUDGET CONTROL)

Thursday 24 March 1966, at 3 p.m., Room 4

1. Appointment of a Rapporteur
2. Terms of reference of the Committee
(General Regulations annexed to the International Telecommunication Convention, Geneva, 1959, Chapter 9, Rule 5)
3. Budget of the Conference (Document No. II/19)
4. Position of the accounts of the Conference (Document No. II/72)
5. Organization of the Committee's work
6. Any other business

U. MOHR
Chairman





AERONAUTICAL CONFERENCE

Document No. II/74-E
22 March 1966
Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

SUMMARY RECORD OF THE FOURTH MEETING OF COMMITTEE 5 (AIRCRAFT OPERATION STATISTICS)

Friday, 18 March 1966 at 3.00 p.m.

Chairman : Mr. M. CHEF (French Overseas Territories)

Vice-Chairman : Mr. J. RUTOWSKI (People's Republic of Poland)

The agenda of the meeting (Document No. II/49) was adopted without change.

1. Adoption of the summary record of the first meeting (Document No. II/44)

The summary record of the first meeting was adopted by the Committee with the following amendment : Document No. II/44, paragraph 2, penultimate line, add the initials L.K. to the name of Mr. Budge.

2. Examination of the report prepared by the I.F.R.B. technical group
(Document No. DT/II-2)

2.1 The representative of the I.F.R.B. introduced Document No. DT/II-2 which was then submitted to the Committee for comments.

2.2 After a statement by the delegate of Japan, the Chairman suggested that Annexes I and II of Document No. DT/II-2 be considered separately.

2.3 A long discussion ensued during examination of Annex I on the number of frequency families required for the various MWARAs in which many delegates and the observer of I.A.T.A. took part.

2.4 The Chairman, summing up the discussion, said that it showed the need for entrusting to a working party the task of studying the needs for frequency families in the various MWARAs, taking into account the geographical situation of the various regions of the world and the technical facilities available in the areas under consideration.

2.5 He then invited the Committee to continue the general examination of Annex II dealing with the needs for frequency families in the regional and domestic areas (RDARAs).



2.6 The delegates of Ethiopia and of the Overseas Territories (United Kingdom) expressed concern that many countries of the AFI region had not specified their needs for frequency families..

2.7 The delegate of Argentina stressed the need for cooperation and solidarity between States through clearly establishing specific needs for frequencies that could lead to a considerable reduction in the number of frequency families and a more judicious distribution of them. That point of view, as was shown by their statements, was shared by a good many delegates.

2.8 The Chairman stressed the difficulties met with in examining the problems and then submitted to the Committee a plan which, in the early stages, would assist the development of the work.

This proposed plan was as follows :

- a) to entrust to the Chairman and to the observers from I.C.A.O. and I.A.T.A. the task of examining the frequency requirements for the MWARAs and of submitting requirements revised in the light of operational conditions;
- b) to authorize the Chairman to hold separate consultations with different delegations in order to ascertain on what conditions a new presentation of frequency requirements for the RDARAs might be referred to a working party with some chance of success;
- c) to await the results of such steps before proceeding to discuss the problems concerned.

The proposal was adopted unanimously.

Item 3 of the agenda was not taken up.

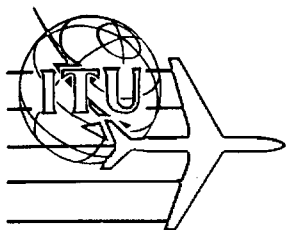
The meeting rose at 18.05 hours.

Rapporteur :

M. REYNIERS

Chairman :

M. CHEF



AERONAUTICAL CONFERENCE

Document No. II/75-E
22 March, 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Tuesday, 22 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Draft Second Report of Committee 4 (Document No. DT/II-5)

1.1 Problems arising from the use of 3023.5 kc/s and 5680 kc/s for combined Search and Rescue operations were referred to by the Delegate of Ireland and following discussion in which the Delegates of Canada, Federal Republic of Germany, France, Ireland, Portugal, the United Kingdom, the United States and the member of the I.F.R.B. participated, it was agreed that para. 3) on pages 3 and 5 should be amended to read:

"the frequency is also authorized, for inter-communication between mobile etc. etc."

1.2 Following a suggestion by the Delegate of France, it was agreed to interchange para. 4 with the amended para. 3) on both pages 3 and 5.

1.3 The member of the I.F.R.B. remarked for clarification purposes that under para. 2) a) of the remarks column, the power of 20 watts would continue to be considered as 20 watts mean power for purposes of technical examinations by the I.F.R.B. unless the Committee indicated otherwise. There being no comment, it was agreed that mean power was a correct interpretation.

2. Consideration of Classes of Emission

2.1 The Delegates of the United States, Canada and the United Kingdom presented the relevant portions of Documents No. II/2, No. II/4 and No. II/10 respectively, and stated that their proposals were substantially the same as contained in the report of the First Session (Geneva, 1964).



2.2 The Chairman, using the Report of the First Session, pages 3 and 4 as the basis for discussion, proceeded on an item by item basis, and with the exception of a modification to para. 1.2 which was amended to read: "Telegraphy (including automatic data transmissions)" the material was approved by the Committee for use in the revised Plan. The Delegates of Portugal, Republic of South Africa, the United States, Canada, the United Kingdom and the observer from I.A.T.A. participated in discussions.

3. Consideration of Channel separation

3.1 The Delegate of the United States presented the relevant portion of Document No. II/2 followed by the Delegates of Japan (Document No. II/3), Canada (Document No. II/4), the United Kingdom (Document No. II/10), and India (Document No. II/18) who presented the relevant portions of their respective documents.

3.2 The Delegates of Norway and the Federal Republic of Germany drew attention to proposals contained in Documents Nos. II/1 and II/16. The Chairman undertook to refer the problem of the I.O.C. requirements to the Steering Committee with a request for an early decision on the principles raised. The Delegate of Norway stated that this subject was brought up at this time to ensure that the matter would not be forgotten.

3.3 In presenting his Administration's proposals, the Delegate of India stated that Document No. II/18, page 3, item ii) should be deleted and replaced with the following:

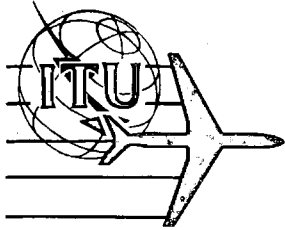
ii) to meet demands for any additional MMARA and RDARA frequencies.

3.4 The following Delegates participated in a discussion on the proposals presented for channel separation: France, Canada, Japan, the United States, New Zealand, Venezuela, Cuba, Norway, Tunisia and the representative of I.A.T.A.

3.5 The meeting was adjourned at 12.50 with the Chairman advising that this discussion would be resumed at 09.30 tomorrow morning.

Rapporteur
E.H. LEAVER

Chairman
J.T. PENNARDEN



AERONAUTICAL CONFERENCE

Document No. II/76-E
22 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

SECOND REPORT OF COMMITTEE 4 (TECHNICAL)

Use of 3023.5 kc/s and 5680 kc/s
(pages 38 and 41 of Appendix 26)

Following a study of proposals by Administrations to the Conference and of the Report of the First Session, Committee 4. unanimously agreed the texts which appear in the Annex attached hereto.

J.T. PENWARDEN
Chairman

Annex : 1



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A N N E X

App.26
p. 38

NOC	Frequency kc/s	Authorized area of use	Remarks
NOC	3023.5	World-wide	Authorized for world-wide use for the (R) and (OR) services as follows :
NOC			1) aboard aircraft for :
NOC			a) communications with approach and aerodrome control;
NOC			b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown;
NOC			2) at aeronautical stations for aerodrome and approach control under the following conditions :
MOD			a) with power limited to a value of not more than 20 watts in the antenna circuit;
SUP			b)
NOC			c) special attention must be given in each case to the type of antenna used in order to avoid harmful interference;
MOD			d) the power of aeronautical stations which use this frequency in the conditions mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to the co-ordination between the Administrations directly concerned and those whose services may be adversely affected.

	Frequency kc/s	Authorized area of use	Remarks
(MOD)	3023.5 (contd.)	World-wide (contd.)	3) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;
MOD			4) the use of the frequency is also authorized for intercommunication between mobile stations engaged in co-ordinated search and rescue operations including communication between these stations and participating land stations;
NOC			5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be sub-divided.

Note to the Editorial Committee :

The order of paragraphs 3 and 4 above has been inter-changed as compared with Appendix 26.

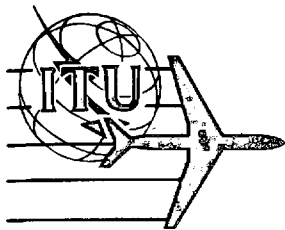
App.26
p.41

	Frequency kc/s	Authorized area of use	Remarks
NOC	5680	World-wide	Authorized for world-wide use for the (R) and (OR) services as follows :
NOC			1) aboard aircraft for :
NOC			a) communications with approach and aerodrome control;
NOC			b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown ;
NOC			2) at aeronautical stations for aerodrome and approach control under the following conditions :
MOD			a) with power limited to a value of not more than 20 watts in the antenna circuit;
SUP			b)
NOC			c) special attention must be given in each case to the type of antenna used in order to avoid harmful interference;
MOD			d) the power of aeronautical stations which use this frequency in the conditions mentioned above may be increased to the extent necessary to meet certain operational requirements, subject to co-ordination between the administrations directly concerned and those whose services may be adversely affected.

	Frequency kc/s	Authorized area of use	Remarks
(MOD)	5680 (contd.)	World-wide (contd.)	3) the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;
MOD			4) the use of the frequency is also authorized for intercommunication between mobile stations engaged in co-ordinated search and rescue operations including communication between these stations and participating land stations;
NOC			5) this channel may be used for A1 or A3 emissions, in accordance with special arrangements. It shall not be subdivided.

Note to the Editorial Committee:

The order of paragraphs 3 and 4 above has been inter-changed as compared with Appendix 26.



AERONAUTICAL CONFERENCE

Document No. II/77-E

22 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEES 6 AND 7

PLENARY MEETING

THIRD REPORT OF COMMITTEE 4 (TECHNICAL)

Use of frequencies 2973 kc/s and 3495.5 kc/s

(pages 37 and 39 of Appendix 26)

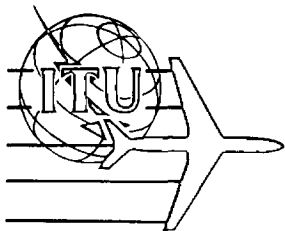
Following a study of proposals by Administrations to the Conference and of the Report of the First Session, Committee 4 unanimously agreed that all the special conditions applying to these two frequencies should be deleted from Column 3 (Remarks) and the frequencies thus released for unrestricted allotment.

In this connection the Chairman consulted with the observer of I.C.A.O., who confirmed that he could find no evidence in any I.C.A.O. regional plans, concerning the use of these frequencies, which would preclude the deletion of the provisions to which reference is made above.

Accordingly, Committee 4 invites the attention of Committee 6 (Plan) and Committee 7 (Editorial) to the above action.

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/78-E

23 March 1966

Original: Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

CUBA

PROPOSAL

Background

The 7th meeting of Committee 4, held on 22 March 1966, began to study the various proposals on channel separation submitted to the Conference.

The main reason given for the need to reduce channel separation is that many more frequency families are required than those available at present and that it is therefore necessary to provide a larger number of frequencies in the portion of the spectrum allotted to the aeronautical mobile service.

As a basis for the determination of actual frequency requirements, the First Session of the Aeronautical E.A.R.C. (Geneva, 1964) requested Administrations to send statistics of their international and regional flights to the I.T.U.

The statistics received are contained in Document DT/II-2 ("Requirements for High Frequencies for Aeronautical Mobile (R) Service Communications"). Annexes 1 and 2 of this document show the number of frequency families which would have to be allotted to meet the requirements of the aeronautical mobile service on the basis of the statistics received.

In view of the enormous difference between the frequency families requirements reckoned on the basis of the flight statistics received and application of the formula with the number actually available, it would seem that all communication requirements in all regions and on all main routes could not possibly have been met up to the present. And yet they were.

In our view, there is a basic contradiction between theoretical and actual requirements.

A few days ago, the delegate of Canada stated in Committee 5 that in a place as busy as Gander, they had been working for many years (and are still doing so) with four families of frequencies whereas, according to Document DT/II-2, 12 families were required. The delegate of Canada considered that figure to be rather exaggerated.



Document No. II/55 (Ireland) clearly demonstrates the inconsistency of the values used to determine the frequency families required in a manner that can leave absolutely no doubt on the question, since it states that "all the data are derived from studies conducted on operational circuits."

In many other MWARAs and RDARAs it can be seen that on no occasion have all the frequency families or all the frequencies in the families at present assigned been used.

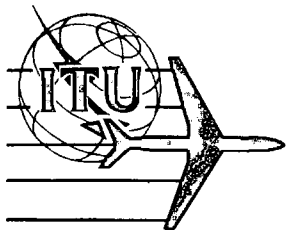
In view of these proven facts, it is to be wondered if there is any real justification for trying to provide a larger number of channels by reducing the separation between channels - with all the economic, technical and operational consequences involved.

Report NBS 9141 shows in clear and accurate tabulated form the relative usefulness of different frequency complements (families) for the aeronautical mobile service. The Report demonstrates that it is possible to obtain almost the same degree of reliability with a family of three well-chosen frequencies as with a family of four or five likewise well-chosen frequencies, and that the difference in reliability might not be great enough to justify any additional frequency consumption.

PROPOSAL

The Delegation of Cuba proposes that, before further discussion of the question of channel separation, the Conference should have sound information on real frequency family requirements and the number of frequencies to be included in each family, drawn up on the following basis :

1. that Document No. DT II/2 indicates a much larger quantity of frequency families than appear to be really necessary;
2. that a degree of reliability should be determined, which will be adequate for the requirements of the aeronautical mobile service;
3. that the number of frequencies in each frequency family on the various routes and in the various areas should be determined on the basis of Report NBS 9141;
4. that the requirements calculated theoretically in Document No. DT II/2 should be compared with actual experience in large aeronautical communication centres;
5. that a large number of high frequencies has been released thanks to the greater use of VHF;
6. that special factors should be borne in mind in some tropical regions;
7. that thought be given to the economic, technical and operational repercussions of reduced channel separation on all Administrations.



AERONAUTICAL CONFERENCE

Document No. II/79-E
23 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

JAPAN

PROPOSAL FOR THE SECOND SESSION OF THE
EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE
FOR THE PREPARATION OF A REVISED ALLOTMENT
PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

Proposal for extension of the boundary of MWARA-FE2

Proposal :

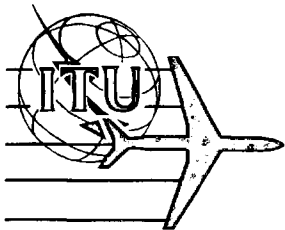
It is proposed that the boundary of MWARA-FE2 be extended to the area covering from the point 12°N 124°E, through the points 35°N 143°E, 37°N 143°E, to the point 35°N 132°E.

Reason :

It is noted that Japan is divided into two areas by the boundary of MWARA-FE2, which is bounded by a line extending from the point 33°N 133°E to the point 35°N 132°E.

As a result, Tokyo and Osaka of our principal international airports have been excluded from FE2 area. Accordingly, the international flights from Tokyo via South-East Asia cannot use the frequencies allocated to FE2 area. Therefore, in order to remove such inconvenience as mentioned above, it is necessary to extend FE2 area to the proposed area which includes Tokyo and Osaka.





AERONAUTICAL CONFERENCE

Document No. II/80-E

23 March 1966

Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

JAPAN

PROPOSAL FOR THE SECOND SESSION OF THE
EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE
FOR THE PREPARATION OF A REVISED ALLOTMENT
PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE

Proposal for boundary for Arctic Polar Air Routes

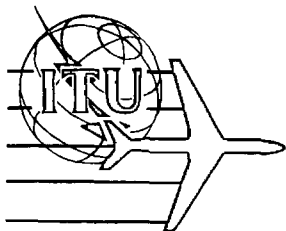
Proposal:

It is proposed that the boundary for Arctic Polar Air Routes be covered by the expansion of MWARA-NA and NP as shown in Appendix A to Agenda Item 2 of I.C.A.O. Document No. 8329, COSP II. This proposal replaces the Proposal No. 1 of the Document No. I/3, namely "Creation of MWARA-Arctic".

Reasons:

At the meeting of the First Session on Aeronautical Mobile (R) Service, our country submitted the proposal for the establishment of MWARA for the Arctic Polar Air Routes. However, taking account of the recent development of the situation, it is regarded as appropriate that the Arctic Polar Air Routes be covered by the expansion of MWARA-NA and NP.





AERONAUTICAL CONFERENCE

Document No. II/81-E

23 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

SUMMARY RECORD
OF THE
FIFTH MEETING OF COMMITTEE 5
(OPERATION STATISTICS)

Monday, 21 March 1966 at 9.30 a.m.

Chairman : H. CHEF (French Overseas Territories)

Vice-Chairman : M. RUTKOWSKI (People's Republic of Poland)

The agenda of the meeting (Document No. II/57) was adopted after the addition, under item 6 - Any other business - of the Report of Working Party 5A (VOLMET).

1. Adoption of the Summary Record of the Second Meeting (Document No. II/48)

The Summary Record of the Second Meeting was approved subject to the following amendments requested by the delegates of Argentina and Australia :

Paragraph 2, subparagraph 2.3, first sentence.:

Insert the words "at this stage of our work" before the words "by the delegates of Argentina and Australia".

2. Adoption of the Summary Record of the Third Meeting (Document No. II/58)

The Summary Record of the Third Meeting was approved after the following amendments had been made to it :

a) Paragraph 1, sub-paragraph 1.2, delete "and the I.F.R.B. representative".

b) Paragraph 1, sub-paragraph 1.11, add Canada and United States of America to the list of countries.

3. Revision of MWARA boundaries

3.1 The Chairman welcomed to the Committee the delegation of Ghana, which expressed its thanks, and invited the delegate of Japan to submit his country's proposal (Document No. II/37, page 5) - Creation of MWARA-Arctic. Th proposal was not accepted by the Committee.



3.2 The Chairman then invited the Committee to consider the various proposals of the countries together with the Recommendations of the I.C.A.O. on the revision of MWARA boundaries in the order in which they were given in Document No. II/57.

3.3 The Committee decided to create MWARA-CAR in accordance with I.C.A.O. Recommendation No. 2/3 of the Special Telecommunications Meeting (1963) after that Recommendation had received support from several delegates.

3.4 The various I.C.A.O. Recommendations concerning MWARA-CEP, EU, FE1, FE2, ME, NA, NP, NSAl, NSA2, NSAM1, NSAM2, SA and SP were given a rapid examination by the Committee simultaneously with the proposals submitted by the delegates of Japan (Document No. II/37, page 6), of India (Document No. II/18), of Saudi Arabia (Document No. II/9), of Argentina (Documents Nos. II/30, II/31 and Document No. II/37, pages 14 and 25), of Brazil (Document No. II/37, pages 15, 16 to 19 and the Annex to Document No. I/53), and the opinions of the I.F.R.B. given in Document No. II/37, page 9, paragraphs 4 and 5.

3.5 The Committee decided to accept all those proposals and the Chairman suggested that henceforth the new designations SAM1 and SAM2 be used.

3.6 The delegate of the People's Republic of Poland then submitted a proposal that a map be prepared showing the MWARA boundaries in an identical format as that prepared by the I.F.R.B. for the delimitation of the areas of analysis. That proposal was accepted by the Committee.

4. Revision of RDARA boundaries

4.1 The Chairman invited the Committee to consider the proposals of the countries given in the documents listed on page 3, item 4 of the agenda.

4.2 The delegate of the Socialist Republic of Roumania proposed that his country be included in RDARA 1C instead of RDARA 1D. This proposal, supported by the delegate of the People's Republic of Hungary, was accepted.

4.3 The delegate of Australia proposed a change in the boundaries of RDARA GB. This proposal was supported by the delegate of New Zealand.

4.4 The delegate of the French Overseas Territories proposed a change in the northern boundary of RDARA GC in order to bring it into line with the boundaries of the flight information area of Papeete. The proposal was supported by the delegate of France.

4.5 After a long discussion in which many delegates took part, in particular those who had submitted the proposals, the Committee decided to accept those proposals and to entrust its Working Parties with the task of preparing the detailed draft revisions.

5. Establishment of Working Parties to prepare draft revisions

5.1 On the proposal of the Chairman, the Committee decided to set up four Working Parties under the chairmanship of the following delegates :

- | | | | | |
|----|-----------------|----------------------------|------------------|---|
| a) | Mr. D.K. CHILD | (United States of America) | Working Party 5B | Revision of MWARA boundaries |
| b) | Mr. Abdel WAHAB | (Algeria) | Working Party 5C | RDARAs included in I.T.U. Region 1 (Nos. 1, 2, 3, 4, 5 and 7) |
| c) | Mr. Luis SIGLER | (Mexico) | Working Party 5D | RDARAs included in I.T.U. Region 2 (Nos. 10, 11, 12 and 13) |
| d) | Mr. A. BOAL | (Australia) | Working Party 5E | RDARAs included in I.T.U. Region 3 (Nos. 6, 8 and 9) |

5.2 The delegates of the countries listed hereafter agreed to participate, on a permanent basis, in the Working Parties responsible for preparing the draft revisions of MWARAs and RDARAs.

a) Working Party 5B

Saudi Arabia, Argentina, Australia, French Overseas Territories, India, Japan, Mexico, Norway, Netherlands, Poland, Portugal, United States of America, U.S.S.R., Venezuela and Overseas Territories (United Kingdom).

b) Working Party 5C

Algeria, Saudi Arabia, Federal Republic of Germany, Roumania, United Kingdom and Czechoslovakia.

c) Working Party 5D

Argentina, Brazil, Ecuador, Jamaica, Mexico, United States of America and Venezuela.

d) Working Party 5E

Australia, China, French Overseas Territories, India, Japan and New Zealand.

The representatives of I.C.A.O. and the observer of I.A.T.A. would assist the Working Parties.

5.3 The following terms of reference of the Working Parties were agreed upon by the Committee:

5.3.1 Terms of reference of Sub-Group 5B

On the basis of

- a) proposals made by Administrations
- b) recommendations by I.C.A.O.
- c) diagrams prepared by the I.F.R.B. showing flight density and directions (Section IV)

to draw up a revised version of Part II, Section 1, and Article 1 of Appendix 26 to the Radio Regulations (pages 16-18 inclusive and annex map No. 1)

5.3.2 Terms of reference of Sub-Groups 5C - D - E

On the basis of

- a) proposals made by Administrations
- b) I.C.A.O. recommendations

to prepare, as far as they are concerned respectively, revised versions of Part II, Article 2 of Appendix 26 to the Radio Regulations (pages 19-29 inclusive and annexed map No. 2)

6. Any other business - Report of Working Party 5A (VOLMET)

6.1 The delegate of Brazil (Mr. M.R.P. Albuquerque), Rapporteur of Working Party 5A, briefly summarized its work and stated that he expected to be able to submit its report to the Committee on the following Monday.

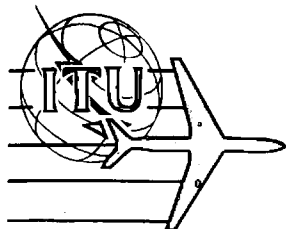
6.2 There being no other business, the meeting rose at 12.35 p.m.

Rapporteur :

M. REYNIERS

Chairman :

M. CHEF



AERONAUTICAL CONFERENCE

Document No. II/82-E

23 March 1966

Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

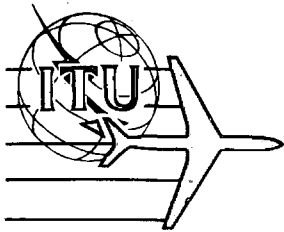
AGENDA OF THE NINTH MEETING OF THE TECHNICAL COMMITTEE

Thursday, 24 March 1966, at 9.30 a.m. in Room A

1. Summary Record of Seventh Meeting (Document No. II/75)
2. Draft Fourth Report of Committee 4 (Document No. DT/II-10)
3. Continued consideration of channel separation, specifically as to detail and date of implementation (Appendix 26, page 6)
Document No. II/4 CAN (pages 2 - 5)
4. First Report of Working Group 4A to Committee 4
Theoretical evaluation of HF complements for the
Aeronautical Mobile (R) Service (Document No. DT/II - 11
if available)
5. Any other business

J. T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/83-E
24 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

FOURTH REPORT OF COMMITTEE 4 (TECHNICAL)

Classes of Emission and Power

(page 15 of Appendix 26)

Following a study of proposals by Administrations to the Conference and of the Report of the First Session, Committee 4 unanimously agreed the texts which appear in the Annex attached hereto.

Committee 4 recalls that the text of sub-paragraph 2.3 c) cannot be finalized until a decision has been taken on the proposal also to use VOLMET areas (Document No. II/10 page 23).

J.T. PENWARDEN
Chairman

Annex : 1



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App. 26
p.15

A N N E X

MOD

C. Classes of Emission and Power

ADD 1. Classes of emission

In the Aeronautical Mobile (R) Service the use of emissions such as listed below is permissible, provided that such use;

- complies with the applicable provisions of Chapter I, paras 4.5 and 6;
- does not cause harmful interference to other users of the frequency.

ADD 1.1 Telephony - Amplitude modulated

- double sideband (A3)
- single sideband, reduced carrier (A3A)
- single sideband, full carrier (A3H)
- single sideband, suppressed carrier (A3J)
- two independent sidebands (A3B)

ADD 1.2 Telegraphy (including automatic data transmissions)

ADD 1.2.1 Amplitude modulation

- without the use of a modulating frequency (by on-off keying) (A1)
- on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission (A2)
- multichannel voice frequency telegraphy, single sideband, reduced carrier (A7A)
- multichannel voice frequency telegraphy, single sideband, full carrier (A7H)
- multichannel voice frequency telegraphy, single sideband, suppressed carrier (A7J)

ADD 1.2.2 Frequency modulation

- frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant. (F1)
- by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency-modulated emission (F2)

ADD 1.3 Facsimile

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

MOD 2. Power

MOD 2.1 Unless otherwise specified in Part II of this Appendix, the maximum peak envelope powers supplied to the antenna transmission line have the values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

MOD	Class of Emission	Stations	Maximum Peak Envelope Power
MOD	A1 F1 F2	Aeronautical Stations Aircraft Stations	1.5 kW 75 W
MOD	A3 A3H (100% modulated)	Aeronautical Stations Aircraft Stations	6 kW 300 W
ADD	Other emissions such as A3A A3J A3B A2 A7A A7H A7J A4	Aeronautical Stations Aircraft Stations	6 kW 300 W

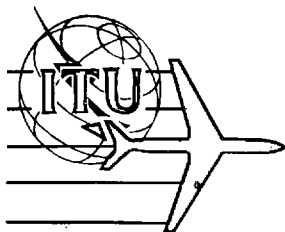
ADD 2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1, F2, A3, A3H unmodulated) used as a basis for the interference range contours.

ADD 2.3 Aeronautical stations serving MWARA's may exceed the power limits specified above in order to provide satisfactory communication with aircraft. In each such case, the administration having jurisdiction over the aeronautical station shall ensure:

- a) that co-ordination is effected with the administrations concerned when there is any possibility of harmful interference;
- b) that harmful interference is not caused to stations using frequencies in accordance with the applicable provisions of the Allotment Plan;
- c) that in other MWARA's or RDARA's allotted the same frequency(ies) the specified protection ratios within the boundaries of those areas shall be maintained;
- d) that the directional characteristics of the antenna are such as to minimize radiation in unnecessary directions, particularly into other MWARA's or RDARA's which have been allotted the same frequency(ies);
- e) that, in accordance with the Radio Regulations, full details of the assignment(s) shall be notified to the I.F.R.B. including the transmitting antenna characteristics.

ADD

2.4 It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified above. However, the use of such increased power shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.



AERONAUTICAL CONFERENCE

Document No. II/84-E

24 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 5

AGENDA

OF THE

SIXTH MEETING OF COMMITTEE 5

(OPERATION STATISTICS)

Friday 25 March, at 9.30 a.m. and 3 p.m., Room B

1. Adoption of the Summary Record of the Fourth Meeting (Document No. II/74)
2. Adoption of the Summary Record of the Fifth Meeting (Document No. II/81)
3. Examination of the Report of Working Party 5B
Change in the boundaries of the MWARAs (Document No. DT/II-9 and Rev.)
4. Examination of the Report of Working Party 5D
Changes in the boundaries of the RDARAs of Region 2 (Document No. DT/II-15)
5. Examination of the Report of Working Party 5E
Changes in the boundaries of the RDARAs of Region 3 (Document No. DT/II-12)
6. Examination of the Proposed Frequency Allotments in the MWARAs
(Document No. DT/II-13)
7. Presentation of the work of Working Party 5A
VOLMET broadcasts
8. Presentation of the work of Working Party 5C
Changes in the boundaries of the RDARAs of Region 1
9. Position with regard to the statement of frequency requirements in
the RDARAs (see Document No. 74, sub-paragraph 2.8-b)



10. Continuation of the work to be done by the Committee :

10.1 Document No. II/22 Annex 1, Section B

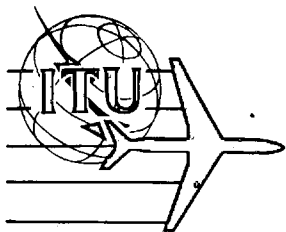
- a) Sub-para. 23. Steps to be taken with regard to Resolution No. 6 of the First Session. Pages 57 and 58 of the Report.
- b) Sub-para. 23. Steps to be taken with regard to Resolution No. 7 of the First Session. Page 58 of the Report.
- c) Sub-para. 26. Doc. No. II/3 (J)
Proposal 2 to be referred to Committee 6
- d) Sub-para. 32. Doc. No. II-18 (IND)

10.2 New documents :

- a) Document No. II/36 (Poland) Flight density maps
(Use in Document No. DT/II-13)
- b) Document No. II/55 (Ireland) Aircraft statistics NA MWARA
(Use in Document No. DT/II-13)
- c) Document No. II/60 (Cuba) Creation of a MWARA in the Caribbean Region (Included in the Report of Working Party 5B)
- d) Document No. II/62 (Argentina) Study of a Frequency Plan for the RDARAs
(Provisional examination within framework of sub-para 2.8 b of Doc. No. 74)
- e) Document No. II/64 (Malaysia) Frequency Allotments COM/MET -HF RTF Sea Region-VOLMET Broadcasts
(To be referred to Committee 6 after consideration by Sub-Working Party 5A)
- f) Document No. II/65 (Singapore) VOLMET Broadcasts in South-East Asia Region
(To be referred to Committee 6 after consideration by Sub-Working Party 5A)
- g) Document No. II/70 (Roumania) Change in the boundaries of RDARA Sub-division IC
(Included in Report of Sub-Working Party 5C)
- h) Document No. II/79 (Japan) Extension of MWARA FE-2
(Considered by Sub-Working Party 5B)
- i) Document No. II/80 (Japan) Arctic lines
(Taken into consideration in the Report of Working Party 5B, see also Document No. DT/II-13)

11. Any other business

Maurice CHEF
Chairman



AERONAUTICAL CONFERENCE

Document No. II/85-E
24 March 1966
Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Wednesday, 23 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Summary Record

1.1 The Meeting adopted the Summary Record of the sixth meeting of Committee 4 (Document No. II/69) amended as follows:

Page 2, after block 3 read "under maximum peak envelope power etc. etc..."

1.2 The Delegate of Spain questioned the use of the Spanish translation of the English word "apparent" rather than the translation for the English word "effective" which appears as "effective radiated power" appearing in Para. 1 and 2 of the Summary Record of the sixth meeting.

It was agreed that the respective texts would be aligned using the recognized definitions in the Radio Regulations.

2. Draft Fourth Report of Committee 4

In the absence of copies of DT/II-10 consideration of this report was deferred.

3. Continued consideration of Channel separation

3.1 In a brief summary of the position emerging from the discussion on the subject at the Seventh meeting, the Chairman suggested that two courses seemed open to the Committee. The first, based on the proposal of the United States would lead to the adoption of the conclusion of the First Session. The second, based on the proposal of Canada, called for the adoption of reduced channel spacing in other bands below 10 Mc/s, namely, the 6, 7 and 9 Mc/s bands.



3.2 A lively and protracted discussion ensued in which nearly all delegates present took part during which the technical merits of the Canadian proposal were considered in relation to the problems its adoption could create both for implementation and in cost.

3.3 Having regard to the differences of view on the relative advantages and disadvantages of maintaining the position reached at the First Session as compared with reducing the channel spacing as proposed by Canada, the latter's proposal was put to the vote, it being understood that the details thereof and the question of implementation date would be the subject of further study.

By a show of hands, the result of the vote was 28 in favour, 5 against, with 5 abstentions.

3.4 The Delegate of India explained that his delegation had abstained from voting because no implementation date had yet been fixed, but he supported the Canadian proposal on its technical merits.

3.5 The Delegate of Mexico explained that his delegation had abstained because not enough information was yet available on real requirements for frequencies.

3.6 The Delegate of Cuba explained that his delegation had abstained since in its view no decision on channel spacing should be taken until requirements for frequencies had been thoroughly studied and evaluated.

3.7 The Delegate of Singapore stated that his delegation had voted in favour of the Canadian proposal but wished to go on record as being unable to agree to an implementation date set at earlier than 1973.

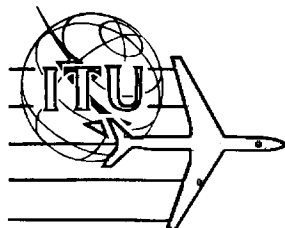
4. The meeting was adjourned at 12.50 hours with the Chairman advising that the discussion on details of the Canadian proposal would be resumed at 09.30 tomorrow morning.

Rapporteur :

E.H. LEAVER

Chairman :

J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/86-E
24 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

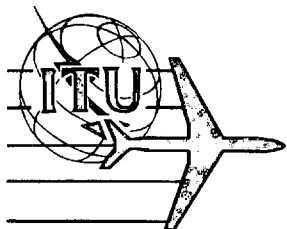
TENTH MEETING OF THE TECHNICAL COMMITTEE

Friday, 25 March 1966, at 9.30 a.m. in Room A

1. Summary Record of Eighth Meeting (Document No. II/85)
2. First Report of Working Group 4A to Committee 4
Theoretical evaluation of HF complements for the Aeronautical
Mobile (R) Service (Document No. DT/II-11)
3. Draft Fifth Report of Committee 4 (Document No. DT/II-16)
Channel spacing
4. Any other business

J. T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/87-E

24 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

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

Thursday, 24 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

1. Summary Record (Document No. II/75)

The Meeting adopted the Summary Record of the seventh meeting with the following amendments:

In para. 3.2 the reference to Document No. II/16 should read No. II/6. The Delegate of Norway asked that the joint authorship of Document No. II/6 by the Administrations of Denmark, Norway and Sweden, should be noted in the Summary Record.

2. Draft Fourth Report of Committee 4 (Document No. DT/II-10)

2.1 The Delegate of Cuba corrected a grammatical error in the Spanish text.

2.2 Following a proposal by the Delegate of the United States, it was agreed to amend the lower left hand blocks in the Table on page 3, to read:

"other emissions such as A3A, A3J etc. etc."

2.3 After a discussion in which the Delegates of Italy, New Zealand Canada, the observer of I.A.T.A. and the member of the I.F.R.B. participated it was agreed to adopt this draft report for onward transmission with the amendments noted above.

3. Continued consideration of channel separation

3.1 The Chairman remarked that yesterday the Committee decided in principle on a reduction in channel separation as put forward by Canada in Document No. II/4. The Chairman complimented the Committee on the quality of the discussions on this subject. The Chairman stated that the Committee



must now consider the details of the Canadian proposal and mentioned that it must be left to Committee 6 to decide on dates.

3.2 The Chairman thanked the Delegate of Cuba for recalling his delegation's paper Document No. II/78 which had been read out at the preceding meeting.

3.3 Pages 2 to 5 of Document No. II/4 were closely examined by the Committee, and following discussions in which the Delegates of Canada, Norway, Federal Republic of Germany, the United States, the United Kingdom, Switzerland, Portugal, Mexico, the member of the I.F.R.B. and the representative of I.A.T.A. participated, it was agreed that the minimum distance between band edges and the first channel allocation would be 4 kc/s with the exception of the band 17 900 to 17 970 where the minimum separation would be 5 kc/s.

3.4 Following a discussion on a proposal by the Delegate of Switzerland, in which Delegates of Poland, Portugal, France, Italy, Norway, New Zealand, Federal Republic of Germany, the United States and Argentina participated, it was agreed as follows:

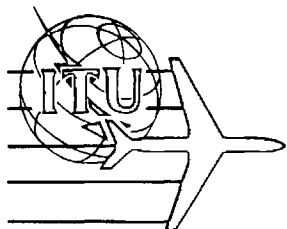
2850 - 3025	kc/s	channels as in Document No. II/4
3400 - 3500	"	" " "
4650 - 4700	"	" " "
(Reg. 2) 5450 - 5480	"	channels to be 5456, 5463, 5470, 5477 kc/s
5480 - 5680	"	channels as in Document No. II/4
6525 - 6685	"	first channel 6533 kc/s, last channel 6680 kc/s 7 kc separation
8815 - 8965	"	" " 8821 kc/s, last channel 8961 kc/s 7 kc separation
10 005 - 10 100	"	" " 10 009 kc/s, last channel 10 089 kc/s 8 kc separation
11 275 - 11 400	"	" " 11 279 kc/s, last channel 11 391 kc/s 8 kc separation
13 260 - 13 360	"	" " 13 264 kc/s, last channel 13 352 kc/s 8 kc separation
17 900 - 17 970	"	" " 17 909 kc/s, last channel 17 965 kc/s 8 kc separation

3.5 The Delegate of the United States remarked that a closer look may have to be made to the frequencies in the Region 2 band, 5450 to 5480 kc/s and accordingly reserved the position of his delegation with respect to this band.

3.6 The meeting adjourned at 12.45.

Rapporteur
E.H. LEAVER

Chairman
J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/88-E

24 March 1966

Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 2

SUMMARY RECORD OF THE FIRST MEETING OF COMMITTEE 2 (CREDENTIALS COMMITTEE)

Wednesday, 23 March 1966 at 15.00

Chairman: S.C. BOSE (India)

Vice-Chairman: JOSE J. HERNÁNDEZ (Mexico)

1. Agenda

The meeting adopted the agenda contained in Document No. II/61 without dissent.

2. Designation of rapporteur

The Chairman stated that a rapporteur speaking the same language as the Chairman (English) should be designated, and requested nominations or volunteers. There being no comment from the floor, the Chairman suggested the name of Mr. Loevinger of the United States Delegation. Mr. Loevinger agreed to serve as rapporteur. There being no other nomination or volunteer, and there being no objection from the floor, Mr. Loevinger was unanimously elected rapporteur.

3. Organization of work

The Chairman stated that the Credentials Committee was acting under Section 535, Chapter 5 of the General Regulations annexed to the International Telecommunications Convention, and that its work consisted primarily of examination and detailed verification of the credentials of delegates, which could best be carried on by a small working group. The Chairman stated that at the First Session of this Conference the work of the Credentials Committee had been done through such a working group. The Chairman therefore proposed that a working group of five members, in addition to the Chairman, be appointed to examine the credentials and report back to



the Committee. The proposal was put to the Committee and, there being no dissent, was approved unanimously.

4. Appointment of working group

Pursuant to the foregoing action of the Committee, the Chairman appointed the following members of the Committee to act as the working group:

Mr. Pierre C.M. BOUCHIER (Belgium)
Mr. T. FURUYA (Japan)
Mr. Jose J. HERNANDEZ (Mexico)
Mr. A. PETTI (Italy)
Mr. Lee LOEVINGER (U.S.A.) (Rapporteur)
Mr. S.C. BOSE (India) (Chairman)

Each of those named agreed to serve on the working group. The Chairman stated that the working group would meet with Mr. Kunz of the Secretariat at a time and place to be notified to the members by the Chairman.

5. Schedule

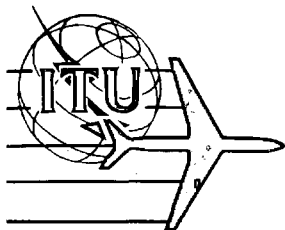
The Chairman called the attention of the Committee to the fact that, by action of the Conference, the Committee was required to report within 4 weeks, or by Monday, 11 April 1966. The Chairman stated that, to date, 51 delegations had registered with the Secretariat for the Conference, but that the Secretariat has received credentials from only 40 delegations up to the present time. The Committee agreed that Mr. Kunz of the Secretariat should communicate with those delegations that have not yet filed credentials and request them to do so.

6. Other business

There being no other business, the meeting adjourned at 15.30.

Rapporteur:
Lee LOEVINGER

Chairman:
S.C. BOSE



AERONAUTICAL CONFERENCE

Document No. II/89-E

25 March 1966

Original : French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 7

AGENDA

OF THE

SECOND MEETING

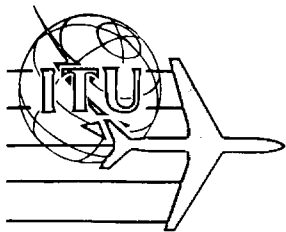
OF COMMITTEE 7 (EDITORIAL)

Monday, 28 March 1966, at 9.30 a.m. Room 2

1. Proposals relative to the layout of the Final Acts.
2. Examination of Documents Nos. 1 to 5 of Committee 7.
3. Any other business.

P. BOUCHIER
Chairman





AERONAUTICAL CONFERENCE

Document No. II/90-E

25 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 3

SUMMARY RECORD
OF THE
FIRST MEETING OF COMMITTEE 3
(BUDGET CONTROL COMMITTEE)

Thursday, 24 March 1966 at 1500 hours

Chairman: U. MOHR (Federal Republic of Germany)

Vice-Chairman: B.K. RAKSHIT (Ghana)

1. Agenda

The meeting adopted the agenda contained in Document No. II/73 without dissent.

2. Designation of rapporteur

The Chairman announced that, pursuant to action of the Plenipotentiary Conference at Montreux, one rapporteur speaking the same language as the Chairman should be designated. The Chairman stated that this required a rapporteur speaking English and suggested designation of the delegate from the United States, Mr. Loevinger. There being no objection, Mr. Loevinger was elected rapporteur and agreed to serve.

3. Terms of reference

The Chairman read the terms of reference of the Committee, being Rule 5, Chapter 9 of the General Regulations Annexed to the International Telecommunications Convention (Geneva 1959), Sections 572, 573, 574 and 575.

4. Consideration of the budget and accounts

The Chairman stated that, pursuant to the terms of reference, the Committee should consider the budget of the conference, which is set



forth in Document No. II/19. The Chairman suggested that the Committee also consider the position of the accounts of the conference, as set forth in Document No. II/72 at the same time. The Chairman then asked a representative of the General Secretariat to explain and comment on the budget and accounts. Mr. R. Prélaz, of the Administrative Services of the General Secretariat, responded. Mr. Prélaz stated that the budget amounted to 1,030,000 Swiss francs. The Administrative Council approved a budget of 1,000,000 Swiss francs and an additional 30,000 Swiss francs has been added by action of the Secretary-General, pursuant to authority of the Administrative Council on account of an increase of 3% in salaries which has been allowed to make the salaries of the I.T.U. staff correspond to U.N. standards. This action is noted in Document No. II/19.

Mr. Prélaz discussed the accounts set forth in the Annex to Document No. II/72 and noted that the accounts are set forth in this Annex in the same manner as the schedule of accounts presented during the first session of the conference.

Mr. Prélaz stated that the accounts showed a transfer of 21,000 Swiss francs from Article I of the accounts to Article II. Such a transfer is proposed by the Secretary-General, but he has authority only to transfer sums between items and not between Articles. Accordingly this transfer must be authorized by the Committee if it is required. The matter was deferred for later consideration.

The Chairman inquired whether the estimate of overtime pay in Article I assumed work on 8 April (Good Friday) and 11 April (Easter Monday) or not. Mr. Prélaz responded that the schedule did not assume work on those days and that, if the conference did work on either or both of those days, it would involve additional expenditures for overtime of 15,000 to 20,000 Swiss francs for each day.

There followed an extended discussion of various items of the budget and schedule of accounts participated in by the Chairman, representatives of the General Secretariat, and Delegates of Ghana, Portugal, Switzerland, Federal Republic of Germany, and the United States. During the course of such discussion, the following points were mentioned.

The budget of this conference does not contain any item for medical services to any delegate who may fall sick, as any delegate may secure medical services for minor illness from the medical facilities of the I.T.U., and provision is made for such medical services in the general budget of the I.T.U. However, the I.T.U. cannot provide hospital services or major medical services to delegates and any delegate requiring such services must secure such services at his own expense.

Substantially, all expenses incurred by the I.F.R.B. in preparation for this conference are set forth in the schedule of accounts (under heading 7.610). The item for expenses of an electronic computer (under heading 7.605) is intended to provide for services of the computer during the period the conference is in session. It was explained that the computer is rented under an arrangement which permits 192 hours of use during each month without any extra charge. The use of the computer during the preparatory work for the conference did not exceed the allowed 192 hours in any month, so there is no expense charged for use of the computer during the preparatory work for the conference. However, it was anticipated that the conference might require intensive use of the computer during the conference sessions, so an item was included to provide for use of the computer in excess of 192 hours a month, and this is the item of 10,000 Swiss francs shown under heading 7.605 of the accounts.

The amounts shown for hire of the Maison des Congrès (under item 7.605) are based on a calculation of 1,100 Swiss francs per day for hire of the building and of 100 Swiss francs a day for electricity. The building is obligated for the period of the conference, so the amount of 68,200 Swiss francs appears as a fund obligated for hire of the building. However, the charge for electricity is made only for actual use of the building, so the amount of 6,200 Swiss francs is shown as the estimated expenditure for this purpose.

The items shown as "Missions" under the general heading of preparatory work by the I.F.R.B. (heading 7.610) refer to attendance of I.F.R.B. representatives at I.C.A.O. meetings. The propriety of the inclusion of such items in the budget of this conference was discussed and it was decided to refer the matter to a working group which should confer with Mr. Petit of the I.F.R.B. concerning the matter.

5. Organization of Committee's work

The Chairman suggested that a detailed examination of the accounts might be made more easily by a small working group and asked the Committee for authority to appoint such a working group. The Committee unanimously agreed to authorize the appointment of such a working group and of the reference to it of the questions that had been raised concerning items of the budget and the accounts.

6. Appointment of working group

Pursuant to authority of the Committee, the Chairman thereupon appointed a working group consisting of :

Mr. René MONNAT (Switzerland) (Chairman)
Mr. M. Amaro VIEIRA (Portugal)

The delegates named by the Chairman agreed to serve.

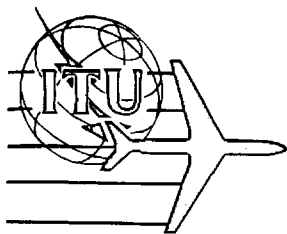
7. Other business

The Chairman called the attention of the Committee to the fact that Document No. I/173, which is the report of the Budget Control Committee at the first session of the conference, states that the question of allowing overtime for the professional staff should be considered by the second session of the conference. The representative of the General Secretariat stated that a decision taken by the Joint Advisory Committee of the I.T.U. on 2 April 1964, after adjournment of the first session, was to the effect that special compensation should be granted to the professional staff if and only if preparation for a conference entailed financial hardship. It was stated that, since no financial hardship had been incurred by the professional staff in preparation for this conference, no provision for special additional compensation has been made.

There being no other business, the meeting adjourned at 16.45 hours.

Rapporteur:
Lee LOEVINGER

Chairman:
Ulrich MOHR



AERONAUTICAL CONFERENCE

Document No. II/91-E
25 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

FIFTH REPORT OF COMMITTEE 4 (TECHNICAL)

FREQUENCY SEPARATION AND FREQUENCIES TO BE ALLOTTED

(Appendix 26, pages 6 and 7)

Following a study of proposals by Administrations to the Conference and of the Report of the First Session, Committee 4 agreed the revised frequency separations and channelling set out in the Annex attached hereto (Document No. II/85 refers).

J.T. PENWARDEN
Chairman

Annex : 1

CHAIRMAN'S EXPLANATORY NOTE

These conclusions, resulting in a reduced channel spacing in all bands above 5450 kc/s, and an unequal separation, in most bands, between the lower and upper band edges and the lowest and highest assignable channel, were based on the following general principles :

- 1) that the tolerances applicable to all transmitters after 1970 were used, permitting of a minimum separation to the band edges of 4 kc/s, in all bands except 17 900 - 17 970 k/cs, where 5 k/cs was adopted;
- 2) that where the adjacent frequency band is allocated in Article 5 of the Radio Regulations to the Aeronautical Mobile (OR) Service the minimum separation to that band edge was chosen. The assignable channels in each band with spacing indicated in the table were calculated from that point, except where special circumstances apply (e.g. 6680 kc/s or 8959 kc/s);
- 3) that any resultant surplus spectrum space would be situated at the end of the band in question adjacent to a band allocated to a service other than the Aeronautical Mobile Service.



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Ap.26
p.6

A N N E X

MOD Section II. Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service.

MOD Factors affecting the Plan

NOC 1. Frequency separation

MOD The frequency separations indicated in the following table are adequate to permit communications using the classes of emission authorized in paragraph X.

NOC	Band (kc/s)	Separation (kc/s)	Band (kc/s)	Separation (kc/s)
	2850 - 3025	7	8815 - 8965	7
	3400 - 3500	7	10005 - 10100	8
MOD	4650 - 4700	7	11275 - 11400	8
	5450 - 5480 (Reg 2)	7	13260 - 13360	8
	5480 - 5680	7	17900 - 17970	8
	6525 - 6685	7		

MOD (a) It is assumed that for radio-telephone emissions the modulation frequencies will be limited to 3000 cycles per second and that the sideband radiation of other authorized emissions will not exceed that of A3 emissions.

(MOD) (b) The use of channels as derived from the above table, for the various classes of emissions will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission, no inherent priority being given to any particular class of emission.

NOC (c) It is recognized that two or more channels can be derived from each of the channels provided under this frequency separation plan.

NOC (d) The grouping of adjacent channels derived from the above table to permit the satisfaction of particular requirements, will be subject to special arrangements by the administrations concerned.

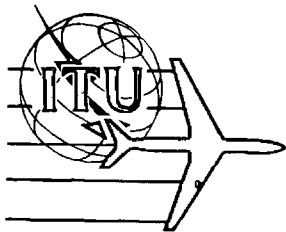
(MOD) (e) The arrangements contemplated in (b), (c) and (d) above should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled "Special Agreements".

2. Frequencies to be allotted

(MOD)

The list of frequencies to be allotted in the exclusive aeronautical mobile (R) bands, on the basis of the frequency separation provided for under paragraph X above, will be found in the following table:

kc/s				
2850 - 3025	4650 - 4700	6525 - 6685	10005 - 10100	17900 - 17970
MOD 2854	4654	6533	10009	17909
2861	4661	6540	10017	17917
2868	4668 7 chan-	6547	10025	17925 8 chan-
2875	4675 nels	6554	10033 11 chan-	17933 nels
2882	4682 7 kc/s	6561	10041 nels	17941 8 kc/s
2889	4689 separa-	6568	10049 8 kc/s	17949 separa-
2896	4696 tion	6575	10057 separa-	17957 tion
2903		6582 22 chan-	10065 tion	17965
2910	5450 - 5480	6589 nels	10073	
2917 24 chan-		6596 7 kc/s	10081	
2924 nels	Region 2	6603 separa-	10089	
2931 7 kc/s		6610 tion		
2938 separa-	5454 4 chan-	6617	11275 - 11400	
2945 tion	5461 nels	6624		
2952	5469	6631	11279	
2959	5477	6638	11287	
2966		6645	11295	
2973		6652	11303	
2980	5480 - 5680	6659	11311	
2987		6666	11319 15 chan-	
2994	5484	6673	11327 nels	
3001	5491	6680	11335 8 kc/s	
3008	5498		11343 separa-	
3015	5505	8815 - 8965	11351 tion	
3023.5 (R) & (OR)	5512		11359	
	5519	8819	11367	
	5526	8826	11375	
3400 - 3500	5533	8833	11383	
	5540 28 chan-	8840	11391	
3404	5547 nels	8847		
3411	5554 7 kc/s	8854	13260 - 13360	
3418	5561 separa-	8861		
3425	5568 tion	8868 21 chan-	13264	
3432 14 chan-	5575	8875 nels	13272	
3439 nels	5582	8882 7 kc/s	13280	
3446 7 kc/s	5589	8889 separa-	13288 12 chan-	
3453 separa-	5596	8896 tion	13296 nels	
3460 tion	5603	8903	13304 8 kc/s	
3467	5610	8910	13312 separa-	
3474	5617	8917	13320 tion	
3481	5624	8924	13328	
3488	5631	8931	13336	
3495	5638	8938	13344	
	5645	8945	13352	
	5652	8952		
	5659	8959		
	5666			
	5673			
	5680 (R) & (OR)			



AERONAUTICAL CONFERENCE

Document No. II/92-E
25 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

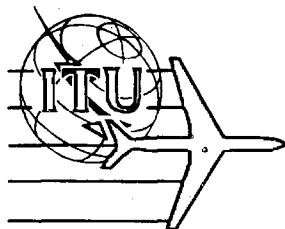
ELEVENTH MEETING OF THE TECHNICAL COMMITTEE

Monday, 28 March 1966, at 9.30 a.m. in Room A

1. Summary Record of Ninth Meeting (Document No. II/87)
2. Summary Record of Tenth Meeting (Document No. II/94 - if available)
3. Consideration of the general provisions to replace those at present in Appendix 26
 - Document No. II/2 U.S.A. (pages 9 and 10)
 - (page 14, paras. 9.6 and 9.7)
 - (page 19, paras. 13.1 and 13.2)
 - No. II/4 CAN (page 10, para. 5)
 - No. II/10 G. (page 10)
 - (page 11, paras. 6-9)
 - (pages 13 and 14)
4. Any other business

J. T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Addendum to
Document No. II/93-E
5 April 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

ADDITIONAL MATERIAL FOR THE EVALUATION OF HIGH FREQUENCY COMPLEMENTS FOR THE AERONAUTICAL MOBILE (R) SERVICE

SELECTION OF RDARA FREQUENCY COMPLEMENTS

Appended hereto is a paper on the above subject, unanimously agreed by Committee 4 for transmittal to Committee 5 (Statistics) and Committee 6 (Plan).

Participating in the work of the Working Group which prepared the original paper were Delegates of Australia, the Republic of South Africa, the Union of the Soviet Socialist Republics and the United States of America. Mr. J.A. Gracie, member of the I.F.R.B. rendered great assistance to the Group.

J.T. PENWARDEN
Chairman

Annex : 1



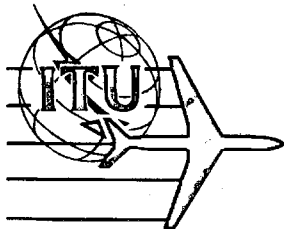
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A N N E X

SELECTION OF RDARA FREQUENCY COMPLEMENTS

1. Document No. II/93 suggests a procedure for using NBS 9141 in the selection of frequency complements for the MWARAs and for the RDARAs when the RDARA requirement approximates a Major World Air Route Segment considered in NBS 9141.
 2. It was further suggested that the Appendices to NBS 9141 might be consulted if the RDARA segment differed appreciably from any route segment considered in the Report.
 3. The Committee, having given further consideration to the problem and noting additional information made available by the I.F.R.B., has concluded that a directly applicable method of frequency selection for the RDARAs mentioned in Paragraph 2 above cannot be made available at this time.
 4. The Committee accordingly recommends that specific problems relating to the technical choice of frequency complements should be dealt with by Committee 6 or its Working Groups on an ad hoc basis in consultation with the I.F.R.B.
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AERONAUTICAL CONFERENCE

Document No. II/93-E
25 March 1966
Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEES 5 and 6

ADDITIONAL MATERIAL FOR THE EVALUATION OF HIGH FREQUENCY COMPLEMENTS FOR THE AERONAUTICAL MOBILE (R) SERVICE

1. Appended hereto is a paper entitled "THEORETICAL EVALUATION OF HIGH FREQUENCY COMPLEMENTS FOR THE AERONAUTICAL MOBILE (R) SERVICE", which has been unanimously adopted by Committee 4 for transmittal to Committee 5 (Statistics) and Committee 6 (Plan).
2. Committee 4 takes this opportunity of placing on record its appreciation of the excellence of the work of Working Group 4A under the chairmanship of Mr. George W. HAYDON of the United States Delegation.

J.T. PENWARDEN
Chairman
Committee 4



Appendix : 1

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APPENDIXTHEORETICAL EVALUATION OF HIGH FREQUENCY COMPLEMENTS
FOR THE AERONAUTICAL MOBILE (R) SERVICE

1. Committee 4 commends to the Chairman of Committees 5 and 6, for their guidance and benefit in statistical analysis and frequency planning, NBS Report No. 9141, entitled "Theoretical Evaluation of Band 7 Frequency Complements for the Aeronautical Mobile (R) Service".
2. This report, recently made available, in limited quantity in English only, to heads of delegations at this Conference, presents numerical criteria by which the relative merits of various families of frequencies may be evaluated on a theoretical basis in meeting the requirements of route areas and of individual routes within such areas.
3. The Report is directed primarily at the solution of MWARA problems and data samples were based on a minimum distance of 500 km along Major World Air Routes out to 60% of the flight distance between the terminals of each segment.
4. During discussions in Committee 4, there appeared to be correlation shown between theoretical optimum frequency complements and the complements presently in use on the limited number of MWARAs and routes examined.
5. The Report appears to have particular application in demonstrating:
 - a) the comparative circuit reliability families comprising 3, 4 or 5 frequencies and
 - b) the wide flexibility available to frequency planners in changing one frequency or another within a family to avoid interference problems without detracting from overall circuit reliability.
6. Committee 4 recommends that the Report be regarded as a working tool to supplement the practical experience upon which the existing plan is built, rather than the basis upon which to build a new plan, and that it be applied in the following manner:
 - 6.1 In Major World Air Route Areas (MWARAs)
 - 6.1.1 The data in this Report be used for numerical comparison of:
 - (a) the reliability of communication depending upon the selection of frequencies for each family;

- (b) the reliability of communication depending upon the number of frequencies in each family.

6.1.2 Whenever necessary, frequency planners should use the wide range of choice as indicated in the Report in the selection of families of frequencies. The minimum number of frequencies to provide the required figure of merit should be selected.

6.1.3 This required figure of merit could be established by noting the theoretical reliability of frequency complements which are considered to be operating satisfactorily in the established MWARAs. The minimum of these values could represent an initial interim figure of merit to be equalled or exceeded in the development of a frequency plan. In the early planning it is expected that this figure would be about 28 to 30.

6.1.4 For established MWARAs, the data in the Report be applied directly unless some circuits in the area differ substantially from those used in the Report.

6.1.5 If established MWARAs are modified, the figure of merit for the revised MWARA be approximated by noting whether ground stations considered in the evaluation for established MWARAs have been added or removed from the modified MWARA. If a new location is added, the figure of merit for the frequency family under consideration may be increased or decreased in accordance with the figure of merit associated with the new location. If a station is removed the effect is vice versa.

6.1.6 If new MWARAs are formed, figures of merit for these MWARAs be approximated by noting figures of merit for circuits of comparable length and latitudes and combining these for the new MWARA. The North Polar Area and the Caribbean Area are considered in appendices to the Report.

6.2 In Regional and Domestic Air Route Areas (RDARAs)

6.2.1 The information contained in the Report can be applied directly to the solution of RDARA frequency family selection problems only if the three following criteria are simultaneously applicable :

- (a) the RDARA should correspond geographically with a route segment of a Major World Air Route on which data has been presented in the Report;
- (b) the high frequency skywave communication requirement in the RDARA is negligible for distances of less than 500 km;

- (c) the maximum distance over which high frequency communication is required in the RDARA should approximate to the distance shown in Column 3 of the Annex to the present paper alongside the corresponding MWARA route segment.

6.2.2 Should the RDARA requirement differ from those specified above (for example, should the distance over which communication is required be appreciably shorter than those assumed for the corresponding route segment) further guidance on the application of the data to the solution of RDARA problems may be obtained from Appendices to the Report. Committee 4 is giving further consideration to this question.

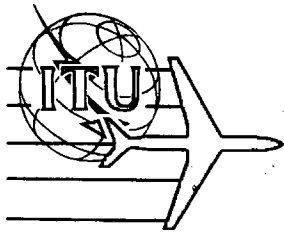
- 7. Finally, Committee 4 recognizes that a theoretical evaluation of frequency complements should not dominate frequency planning where extensive operational experience is available, especially if operational requirements differ significantly from the assumptions used in the Report.

Annex: 1

Annex

Table of maximum communication distances
considered in NBS 9141

MWARA	Route Segment	Maximum Distance - km
CEP	SFO - HNL	3000
CWP	TYO - HNL	4000
	HNL - AWK	3000
	AWK - MNL	3000
EU	LIS - OSL	2000
FE-1	SYD - DRW	2000
	DRW - SIN	3000
	SIN - BKK	1000
	BKK - CCU	1000
FE-2	DRW - MNL	2000
	MNL - HKG	1000
	HKG - BKK	1500
ME	ROM - ANK	1500
	ANK - THR	1500
	THR - KHI	1500
	KHI - CCU	1500
NA	NYC - YQX	1500
	YQX - SNN	3000
NP	SEA - CDB	2000
	CDB - TYO	3000
NSA-1	JNB - LEO	2000
	LEO - ACC	1500
	ACC - DKR	1500
	DKR - ALG	2000
NSA-2	JNB - NBO	2000
	NBO - KRT	1500
	KRT - CAI	1000
	CAI - ROM	1500
NSAM-1	SCL - LIM	1500
	LIM - BLB	1500
	BLB - MEX	1500
NSAM-2	BUE - CCS	4000
SA	MVD - RIO	1500
	RIO - DKR	3000
	DKR - PAR	3000
SP	AKL - PPG	2000
	PPG - HNL	3000



AERONAUTICAL CONFERENCE

Document No. II/94-E

23 March, 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

SUMMARY RECORD

OF THE TENTH MEETING OF COMMITTEE 4 (TECHNICAL COMMITTEE)

Friday, 25 March 1966, 9.30 a.m.

Chairman : Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman : Dr. C. WACHARASINDHU (Thailand)

1. Summary Record (Document No. II/85)

The Summary Record of the Eighth Meeting of Committee 4 was adopted without comment.

2. First Report of Working Group 4A to Committee 4

2.1 The Chairman of Working Group 4A, Mr. George W. Haydon of the United States Delegation, introduced Document No. DT/II-11, entitled "Theoretical Evaluation of High Frequency Complements for the Aeronautical Mobile (R) Service", which is a draft of a document which Committee 4 could refer to Committees 5 and 6 for their use.

2.2 Considerable discussion ensued with Delegates of Venezuela, United States, Australia, New Zealand, Union of Soviet Socialist Republics, Republic of South Africa, Canada, Cuba, the member of the I.F.R.B. and the representative of I.A.T.A. participating, and it was agreed that the document should be made available to Committee 6 with the following amendments to para. 6.2.1.

Line 3 to read: " ... problems only if the three following criteria are simultaneously applicable ..."

(b) to read : "The high frequency skywave communication requirement in the RDARA is negligible for distances of less than 500 km."



2.3 Following a discussion on the applicability of NBS Report 9141 to RDARA and MWARA it was agreed that:

- (a) Application of NBS Report 9141 to MWARA would be extremely valuable;
- (b) The Report is not directly applicable to RDARA except in a few instances and caution is required.

2.4 It was further agreed that Document No. DT/II-11, as a cover note to NBS Report 9141, should go forward in its present form to Committees 5 and 6 and that Working Group 4A continue consideration of the application of the Report to RDARA areas.

3. Draft Fifth Report of Committee 4 (Document No. DT/II-16)

3.1 The Meeting adopted the Draft Fifth Report of Committee 4 (Document No. DT/II-16) with the following amendments:

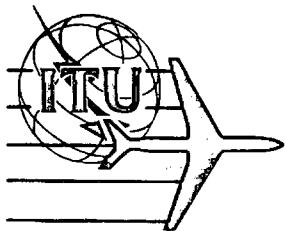
- (a) The United States reservation in para. 2, page 1, may now be deleted.
- (b) Page 2, para. 1 to read: "The frequency separations indicated in the following table are adequate to permit communications using the classes of emissions authorized in paragraph ..."
- (c) Page 2, para. 1 (a) to read: "It is assumed that for radio-telephone emissions the modulation frequencies etc. etc ..."
- (d) Page 2, para. 1 (b) line 3 to read: "... by the Administrations concerned in order to avoid harmful interference ..."
- (e) Page 3 band 5450 - 5480 kc/s Region 2 to read: "5454, 5461, 5469, 5477 kc/s and the reference to 7 kc/s spacing to be omitted.
- (f) Page 3 band 6525 - 6685 kc/s Frequency 6567 kc/s to read "6568 kc/s".
- (g) Page 3 band 8815 - 8965 kc/s First Channel 8819 kc/s, last channel 8959 kc/s with 7 kc/s separation.

3.2 The Delegate of France noted the space between 10089 kc/s and the band edge 10100 kc/s suggesting that this space might be available for an additional single sideband channel.

The Meeting adjourned at 12.55.

Rapporteur
E.H. LEAVER

Chairman
J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/95-E

28 March 1966

Original: French

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

FIRST REPORT OF COMMITTEE 5

(OPERATION STATISTICS)

DESCRIPTION OF MWARA BOUNDARIES

(Pages 16, 17 and 18 of Appendix 26)

After giving due consideration to the proposals presented to the Conference and the Recommendations of the I.C.A.O. for the revision of MWARA boundaries, as well as the Air Craft Operations Statistics, Committee 5 unanimously agreed to the text which appears in the Annex herewith.

This is issued from DT/II-9 (Rev.)

Maurice CHEF
Chairman

Annex: 1



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PART II

NOC	<u>PLAN FOR THE ALLOTMENT OF FREQUENCIES FOR THE AERONAUTICAL MOBILE (R) SERVICE</u> <u>IN THE EXCLUSIVE BANDS BETWEEN 2850 AND 17 970 kc/s</u>
MOD	SECTION I <u>Description of the MWARA, RDARA and Sub-RDARA Boundaries</u>
NOC	1. The boundary descriptions which follow cover the areas to which frequencies are allotted under the Frequency Allotment Plan of the Conference.
NOC	2. These areas are shown graphically on the map attached hereto. If there is any difference between the areas as shown on the maps and as described, the written description is to be considered correct.
MOD	3. The mention of the name of a country or of a territory in the descriptions or on the maps of this Plan, and the tracing of borders on the latter, do not imply, on the part of the I.T.U., any position with respect to the political status of such a country or territory, or official recognition of these borders.
NOC	4. In the description of the Major World Air Route Areas (MWARA's) all lines between points not otherwise specified are defined as great circles. In the descriptions of the Regional and Domestic Air Route Areas (RDARA's) and Sub-Areas lines not otherwise specified are defined as straight lines on a Mercator Projection Map.

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NOC	<p style="text-align: center;">Article 1</p> <p style="text-align: center;"><u>Description of the Major World Air Route Area (MWARA) Boundaries</u></p>
ADD	<p style="text-align: center;">Major World Air Route Area - CARIBBEAN</p> <p style="text-align: center;">(MWARA-CAR)</p> <p>From the point 20°N 120°W through the points 35°N 120°W, 35°N 85°W, 43°N 74°W, 40°N 60°W, 00° 48°W, 00° 80°W, to the point 20°N 120°W.</p> <p><u>Note:</u> Only one family of frequencies allotted to this area is available for extension to the mid-point of the air route between Mexico City and Tahiti.</p>
NOC	<p style="text-align: center;">Major World Air Route Area - CENTRAL EAST PACIFIC</p> <p style="text-align: center;">(MWARA-CEP)</p>
MOD	<p>From the point 50°N 122°W through the points 38°N 120°W, 32°N 117°W, 20°S 145°W, 20°S 152°W, 22°N 159°W to the point 50°N 122°W.</p>
NOC	<p style="text-align: center;">Major World Air Route Area - CENTRAL WEST PACIFIC</p> <p style="text-align: center;">(MWARA-CWP)</p> <p>From the point 17°N 155°W through the points 10°N 160°E, 10°N 117°E, 23°N 114°E, 40°N 117°E, 25°N 155°W, to the point 17°N 155°W.</p>
NOC	<p style="text-align: center;">Major World Air Route Area - EUROPE</p> <p style="text-align: center;">(MWARA-EU)</p>
MOD	<p>From the point 33°N 12°W through the points 54°N 12°W, 70°N 00°, 74°N 40°E, 40°N 40°E, 40°N 36°E, 29°N 35° 30' E, 32°N 13°E to the point 33°N 12°W.</p>
SUP	<p>*) These descriptions were taken from Annex 8 of the 1951 Extraordinary Administrative Radio Conference Agreement, except in a few cases, where the 1959 Administrative Radio Conference made certain amendments.</p>

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the borders between Yugoslavia and Italy, Yugoslavia and Austria, Hungary and Austria, Hungary and Czechoslovakia, U.S.S.R. and Czechoslovakia, Poland and Czechoslovakia, Poland and Germany then through the points 55°N 14°E, 60°N 20°E, 60°N 27°E, excluding all U.S.S.R. and Republic of Poland Territories, thence along border between U.S.S.R. and Finland and through the points 72°N 30°E, 70°N 00°, 54°N 12°W, to the point 33°N 12°W.

Note 1* As an interim measure until such time as the Plan as a whole shall be revised by a Radio Conference convened for the purpose certain frequencies allotted to this area are extended to the east of the Area boundaries.

SUP

These frequencies, noted in the Frequency Allotment Table as EU (Ext), shall be available for use in the area bounded by the following line: from the co-ordinate 72°N 30°E through the co-ordinate 72°N 40°E thence south along the meridian 40°E to the coast of the Black Sea through Tuapse, Sochi and Sukhumi to Ankara rejoining the present boundary of the MWARA-EU.

Note 2* Particular attention is drawn to the Notes attaching to the descriptions of the Areas - MWARA-ME, MWARA-NA, MWARA-SA, MWARA-EU as affecting the availability of frequency allotments, and to Resolution No. 13.

Major World Air Route Area - FAR EAST - 1

(MWARA-FE-1)

From the point 40°S 145°E, through the points 10°S 106°E, 05°N 77°E, 15°N 77°E, 24°N 92°E, 11°N 107°E, 18°S 147°E, 23°S 154°E, 40°S 154°E, to the point 40°S 145°E.

SUP

Major World Air Route Area - FAR EAST - 2

(MWARA-FE-2)

From the point 12°N 124°E, through the points 33°N 133°E, 35°N 132°E, 24°N 88°E, 08°S 105°E, 15°S 130°E, 15°S 158°E, 00° 168°E, 00° 135°E, to the point 12°N 124°E.

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ADD	Major World Air Route Area - FAR EAST
	(MWARA-FE)
	From the point 24°N 88°E through the points 35°N 132°E, 37°N 143°E, 35°N 143°E, 10°N 126°E, 07°S 105°E, to the point 24°N 88°E.
NOC	Major World Air Route Area - MIDDLE EAST
	(MWARA-ME)
MOD	From the point 50°N 80°E through the points 31°N 80°E, 29°N 85°E, 08°N 75°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.
MOD	Major World Air Route Area - NORTH ATLANTIC - 1
	(MWARA-NA-1)
MOD	From the point 49°N 74°W through the points 49°N 100°W, to the North Pole, to 60°N 20°E, 68°N 20°W, to the point 49°N 74°W.
	<u>Note:</u> Only one family of frequencies, which is allotted to MWARA-NA and noted in the Frequency Allotment Plan as NA (1), is available for use in this area.
SUP	*) Amendment made by the 1959 Geneva Administrative Radio Conference.

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ADD	Major World Air Route Area - NORTH ATLANTIC - 2
	(MWARA-NA-2)
	From the point 39°N 78°W through the points 49°N 74°W, 68°N 20°W, 60°N 20°E, 44°N 02°E, 35°N 26°W, to the point 39°N 78°W.

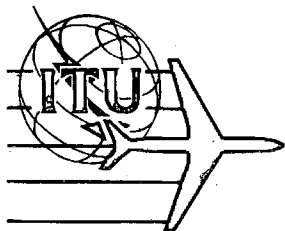
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	Major World Air Route Area - NORTH ATLANTIC - 3
	(MWARA-NA-3)
ADD	From the point 39°N 78°W through the points 35°N 26°W, 44°N 02°E, 32°N 08°W, 16°N 26°W, 05°N 55°W, 18°N 66°W to the point 39°N 78°W.
	<u>Note:</u> Only one family of frequencies, which is allotted to MWARA-NA and noted in the Frequency Allotment Plan as NA (3), is available for use in this area.
NOC	Major World Air Route Area - NORTH PACIFIC
	(MWARA-NP)
MOD	From the point 50°N 166°E through the points 75°N 150°W, 75°N 90°W, 55°N 110°W, 46°N 122°W, 50°N 170°W, 33°N 138°E, 52°N 132°E, to the point 50°N 166°E.
NOC	Major World Air Route Area - NORTH - SOUTH AFRICA - 1
	(MWARA-NSA-1)
MOD	From the point 05°N 03°W through the points 37°N 03°W, 37°N 14°E, 00° 28°E, 11°S 28°E, 20°S 35°E, 31°S 35°E, 31°S 17°E, to the point 05°N 03°W.
NOC	Major World Air Route Area - NORTH - SOUTH AFRICA - 2
	(MWARA-NSA-2)
MOD	From the point 00° 24°E through the points 37°N 07°E, 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, to the point 00° 24°E.
	<u>Note:</u> Only one family of frequencies allotted to this area is available for extension through Cocos Island to Western Australia.

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NOC	Major World Air Route Area - SOUTH ATLANTIC (MWARA-SA)
MOD	From the point 40°N 03°W through the points 05°N 03°W, 20°S 20°W, 22° 30' S 42°W, 15°S 50°W, 00° 38°W, 40°N 15°W, to the point 40°N 03°W. <u>Note:</u> Only one family of frequencies allotted to this area is available for extension to Buenos Aires.
MOD	Major World Air Route Area - SOUTH AMERICA - 1 (MWARA-SAM-1) From the point 36°S 73°W through the points 00° 93°W, 15°N 106°W, 15°N 75°W, 05°N 75°W, 20°S 50°W, 36°S 52°W, to the point 36°S 73°W. Major World Air Route Area - SOUTH AMERICA - 2 (MWARA-SAM-2) From the point 34°S 74°W through the points 24°S 60°W, 02°N 79°W, 15°N 83°W, 15°N 60°W, 10°N 60°W, 05°S 30°W, 36°S 52°W, to the point 34°S 74°W.
ADD	Major World Air Route Area - SOUTH EAST ASIA (MWARA-SEA) From the point 29°N 85°E through the points 15°N 105°E, 00° 135°E, 00° 168°E, 35°S 150°E, 35°S 116°E, 08°N 75°E, to the point 29°N 85°E.
NOC	Major World Air Route Area - SOUTH PACIFIC (MWARA-SP)
MOD	From the point 22°N 158°W through the points 22°N 156°W, 00° 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 38°S 145°E, 00° 167°E, 00° 175°W, to the point 22°N 158°W.
SUP	*) Amendment made by the 1959 Geneva Administrative Radio Conference.



AERONAUTICAL CONFERENCE

Document No. II/96-E

28 March 1966

Original: English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

AGENDA

OF THE

TWELFTH MEETING OF THE TECHNICAL COMMITTEE

Tuesday, 29 March 1966, at 9.30 a.m. in Room A

1. Summary Record of Tenth Meeting (Document No. II/94)
2. Consideration of the provisions governing various classes of emission

Use of Single Sideband

Report of the First Session (pages 47 - 49)

Document No. II/2 USA (pages 11 - 14)

Document No. II/4 CAN (pages 8 and 9)

Document No. II/5 CAN

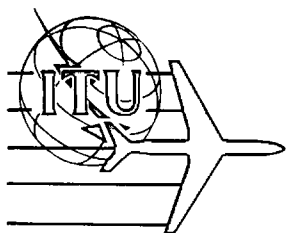
Document No. II/24 MEX

Proposal by the Delegation of Japan

3. Any other business

J.T. PENWARDEN
Chairman





AERONAUTICAL CONFERENCE

Document No. II/97-E

28 March 1966

Original : English

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

COMMITTEE 4

SUMMARY RECORD

OF THE

ELEVENTH MEETING OF COMMITTEE 4

(TECHNICAL COMMITTEE)

Monday, 28 March 1966, 9.30 a.m.

Chairman: Mr. J.T. PENWARDEN (United Kingdom)

Vice-Chairman: Dr. C. WACHARASINDHU (Thailand)

The Chairman welcomed the Delegates of Indonesia and Pakistan to the Meeting.

1. Summary Record

1.1 The Summary Record of the Ninth Meeting of Committee 4 (Document No. II/87) was adopted with the following amendment as suggested by the Delegate of Switzerland:

Page 2, Para. 3.4 to read "Following a discussion on a proposal by the Delegate of Switzerland in which it was suggested to start channelling from the limits of the OR bands and in which Delegates of etc. etc..."

1.2 The Chairman drew attention to the explanatory note which was included in the Fifth Report of Committee 4 (Document No. II/91).

2. The Summary Record of the Tenth Meeting was not available at this time.

3. Consideration of the general provisions to replace those at present in Appendix 26

3.1 The Delegate of Mexico pointed out an error in the Spanish text of Document No. II/92 which is the Agenda of the Eleventh Meeting of Committee 4.

3.2 The Delegate of the United States suggested that the matter to be discussed be divided into three parts, namely, (a) definitions (b) special arrangements and (c) allotment procedures.



3.3 Definitions: The Delegates of the United States, Canada and the United Kingdom introduced the relevant portions of their documents, namely, Documents Nos. II/2, II/4 and II/10 respectively. A lively discussion ensued concerning the merits of including definitions associated with the Aeronautical (R) Service in which the Delegates of New Zealand, India, Italy, Singapore, Portugal, Federal Republic of Germany, Argentina, Canada, Ghana and the member of the I.F.R.B. participated. The Committee agreed that since the Appendix will be part of the Radio Regulations and these definitions are adequately covered therein, to repeat them would be superfluous. The Committee agreed to delete the words "or by particular countries" from paragraph 1, page 5, of the present Appendix 26 since this would not apply to the Aeronautical Mobile (R) Service.

3.4 Special Arrangements: The Delegates of the United States and the United Kingdom presented the relevant portions of Documents Nos. II/2 (page 14) and II/10 (page 13) respectively. It was noted that paragraphs 9.6 and 9.7 of the United States proposal was basically the same as the United Kingdom proposal with the exception of the reference to Article 9 of the Radio Regulations. The Delegate of Argentina suggested that para. 9.7 of Document No. II/2 and para. 2.10 of Document No. II/10 be amended to read: "... coordinates aeronautical mobile (R) communications with ..." to which the Committee agreed. The Delegate of the United Kingdom drew attention to para. 2.4, page 13, of Document No. II/10; however, the Delegate of the United States stated that in his view this paragraph was not appropriate and was supported by the Committee. The Committee agreed to the United Kingdom proposals, Document No. II/10, pages 13 and 14, paras. 3.1, 3.2 and 3.3.

3.5 Adaptation of Allotment Procedures: The Delegate of the United States introduced the appropriate reference in his Administration's Document No. II/2, page 19. Paras. 3.1 and 3.2 were adopted by the Committee; it could not agree to the deletion of paragraph 6, page 9, of the present Appendix 26. The Committee agreed to the deletion of the present paragraph 8, page 9, Appendix 26.

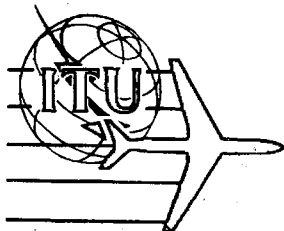
4. Other Business

4.1 The Delegate of Japan drew attention to his Administration's Document No. II/3, page 3, and advised that proposal number five (Proposal relating to carrier (reference) frequencies in the SSB system) was being withdrawn and would be replaced. The Chairman advised the Japanese delegate that any new proposal should be submitted this afternoon if it is their wish to have it included in discussions tomorrow morning.

4.2 In the absence of any other business the Meeting adjourned at 12.40.

Rapporteur:
E.H. LEAVER

Chairman:
J.T. PENWARDEN



AERONAUTICAL CONFERENCE

Document No. II/98-E

28 March 1966

Original : French, English
Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

PROPOSALS BY COMMITTEE 7 (EDITORIAL) CONCERNING THE LAYOUT OF THE FINAL ACTS OF THE CONFERENCE

Committee 7, having noted various proposals concerning the layout of Appendix 26 (Docs. Nos. II/2 - United States, 4 - Canada, 10 - United Kingdom, 18 - India, 25 - Mexico and 35 - Argentina) and taken cognizance of Recommendation No. 4 of the First Session of the Conference, submits a few general suggestions below concerning the layout of the Final Acts. These are not intended to prejudge decisions by the Plenary Meeting, but merely to facilitate the discussions.

A rapid decision on this subject by the Plenary Meeting will greatly facilitate the work of Committee 7, since the latter would be able to insert the texts which it receives from the various committees in the right place.

The Final Acts might well be given the following form :

- Final Acts proper (see for example pages 1 and 2 of the Final Acts of the Space E.A.R.C., Geneva 1963),

Signatures;

Annex I : Amendments to the Radio Regulations (Geneva 1959), if any,

Annex II : Appendix 26 - OR Service (see document attached hereto),

Annex III : Appendix 26A - R Service (see document attached hereto),

- Additional protocol, if any,

Signatures,

- Resolutions and recommendations, if any.

Chairman
P. BOUCHIER



APPENDIX 26

(OR) SERVICE*

	pages
NOC Part I	5
NOC General Provisions	5
NOC Section I Definitions	5
NOC 1 Frequency allotment plan	5
NOC 2 Terminology	5
SUP 3 ...	5
SUP 4 ...	5
SUP 5 ...	5
SUP 6 ...	5
SUP 7 ...	5
(MOD)** Section II Technical and Operational principles	6 to 15
SUP Part II	16 to 44
NOC Part III	45 to 46
NOC Part IV	47 to 76

* The texts which have been retained are from Appendix 26 to the Radio Regulations (Geneva 1959), without change.

** (MOD) This section is taken from Appendix 26 without changes in substance, but with the provisions relating to the (R) Service removed.

APPENDIX 26A

(R) SERVICE*

pages

Part I	5 to 15
Part II	16 to 44
Maps and transparencies	

* The texts mentioned are from Appendix 26 to the Radio Regulations (Geneva, 1959) as amended by the Aeronautical E.A.R.C. (Geneva, 1966)

AERONAUTICAL CONFERENCE

Geneva, 1966

Document No. II/99-E
29 March 1966PLENARY MEETINGFIRST READINGB.1

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Meeting for first reading.

Source Document

Issuing Committee	Doc. No.	Pages	Reference App. 26 (Geneva, 1959)	Remarks
4	II/67	3-28	Pages 9-14; 2 maps 10 contours (interference range contours)	

P. BOUCHIER
Chairman of the Editorial Committee

Annex : Pages B.1/2 - B.1/27



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B. Interference Range Contours

NOC 1. Definition of Contours

MOD 1.1 The transparencies inserted in the pocket at the end of this Appendix show contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW (for emissions such as A1, F1, F2 A3 and A3H 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. This limit is generally assumed to be at the boundary of the area concerned and the service range is not included in the contour.

ADD 1.2 Two types of transparencies are provided for use respectively with the Mercator projection world maps and 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. This overlap is intended to provide continuity between transparencies of the two projections.

MOD 2. Type of Maps used

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

NOC 3. Change of Scale or Projection

MOD 3.1 Should any other scale or projection be desired, then new interference range contours can be drawn to fit the new scales or projections, by using the co-ordination given in the tables shown below.

MOD 3.2 When 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.

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MOD 3.3 The co-ordinates shown in the following tables are given with reference to the 180° meridian taken as the axis of symmetry for the construction of the contours.

NOC 4. Sharing conditions between areas

MOD 4.1 The transparencies are constructed on the basis of the following sharing conditions:

NOC	Areas	Bands between: Mc/s	Sharing Conditions
NOC	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 considered the same
NOC	MWARA to RDARA	3 - 5.6 6.6 - 11.3 13 - 18	night propagation day propagation time separation
NOC	RDARA to RDARA	3 - 4.7 5.6 - 11.3 13 - 18	night propagation day propagation time separation

NOC 4.2 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.

SUP (The material ... etc.)

NOC 5. Method of use

NOC 5.1 Take the MWARA or the RDARA maps accompanying this Appendix and select the transparency for the frequency order and sharing conditions under consideration.

ADD 5.2 The Gnomonic projections are applicable in the polar areas north of 60° North and south of 60° South; and the Mercator projections are applicable between 60° North and 60° South.

NOC 5.3 Place the centre 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.

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- NOC 5.4 A transmitter located at any point outside the contour will result, as defined in paragraph 1.1 above, in a protection ratio of better than 15 db.
- MOD 5.5 A transmitter located at any point inside the contour will result in a protection ratio of less than 15 db.
- MOD 5.6 For the Northern Hemisphere, the Mercator projection 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 areas which involve the transition of the equator.
- ADD 5.7 For either the north or south polar areas, the Gnomonic projection 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.

NOC 6. Data for tracing interference contours

Tables published on pages 5 to 14 of this document, replace the tables appearing on pages 11 to 14 of Appendix 26 (Geneva, 1959).

3,0 et 3,5 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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 - Latitude - Latitud	00°		10°		20°		30°		40°	
	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	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 - Latitude - Latitud	50°		60°		70°		80°		90°	
	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	56,3	180,0	66,3	180,0	76,3	180,0	86,3	Toutes longitudes All Longitudes Todas longitudes	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

Latitude - Latitude - Latitud			00°		10°		20°		30°		40°	
			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 - Latitude - Latitud			50°		60°		70°		80°		90°	
			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	0,0	88,5	0,0	78,5	0,0	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	65,6	103,3	59,8	75,9	59,7	53,8	65,4		58,5
			126,0	60,3	108,7	65,0	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	111,0	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	139,9	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 A 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

3,5 MHz, nuit - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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 - Latitude - Latitud	00°		10°		20°		30°		40°	
	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	-6,0	180,0	4,0

Latitude - Latitude - Latitud	50°		60°		70°		80°		90°	
	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		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	39,2	138,7	47,0		54,0
	156,4	19,3	154,6	28,4	151,6	37,3	146,6	45,9		54,0
	162,1	17,0	160,8	26,5	158,7	35,9	154,7	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

Toutes longitudes
All longitudes
Todas longitudes

Latitude - Latitude - Latitud	00°		10°		20°		30°		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

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

4,7 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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

Latitude - Latitude - Latitud	50°		60°		70°		80°		90°	
	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	69.6	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

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

Toutes longitudes
 All Longitudes
 Todas longitudes

4,7 MHz, nuit et 10,0 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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 - Latitude - Latitud	00°		10°		20°		30°		40°	
	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	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 - Latitude - Latitud	50°		60°		70°		80°		90°	
	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,	80,5	0,	70,5	0,	60,5	0,	50,5	Toutes longitudes All Longitudes Todas longitudes	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 A 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 - Latitude - Latitud			00°		10°		20°		30°		40°	
			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 - Latitude - Latitud			50°		60°		70°		80°		90°	
			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

Latitude - Latitude - Latitud	00°		10°		20°		30°		40°	
	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 - Latitude - Latitud	50°		60°		70°		80°		90°	
	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 A 6500 km
 5,6 & 6,6 Mc/s night - DATA FOR PLOTTING 6500 km INTERFERENCE CONTOURS
 5,6 y 6,6 Mc/s dfa - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 6500 km

6,6 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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 - Latitude - Latitud	00°		10°		20°		30°		40°	
	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	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	158,1	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

Latitude - Latitudo - Latitud	50°		60°		70°		80°		90°	
	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	67,1	180,0	77,1	180,0	87,1	0,	82,9	Toutes longitudes All Longitudes Todas longitudes	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

Latitude - Latitude - Latitud			00°		10°		20°		30°		40°	
			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	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 - Latitude - Latitud			50°		60°		70°		80°		90°	
			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	34.2	0.	85.8	0.	75.8	0.	65.8	Toutes longitudes All Longitudes Todas longitudes	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	39.5	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	16.1	173.3	26.1	173.1	36.0	171.9	45.9		55.8
			180.0	15.8	180.0	25.8	180.0	35.3	180.0	45.8		55.8

9,0, MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 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 - Latitudo - Latitud	00°		10°		20°		30°		40°	
	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
	125,4	-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
	166,6	-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 - Latitudo - Latitud	50°		60°		70°		80°		90°	
	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

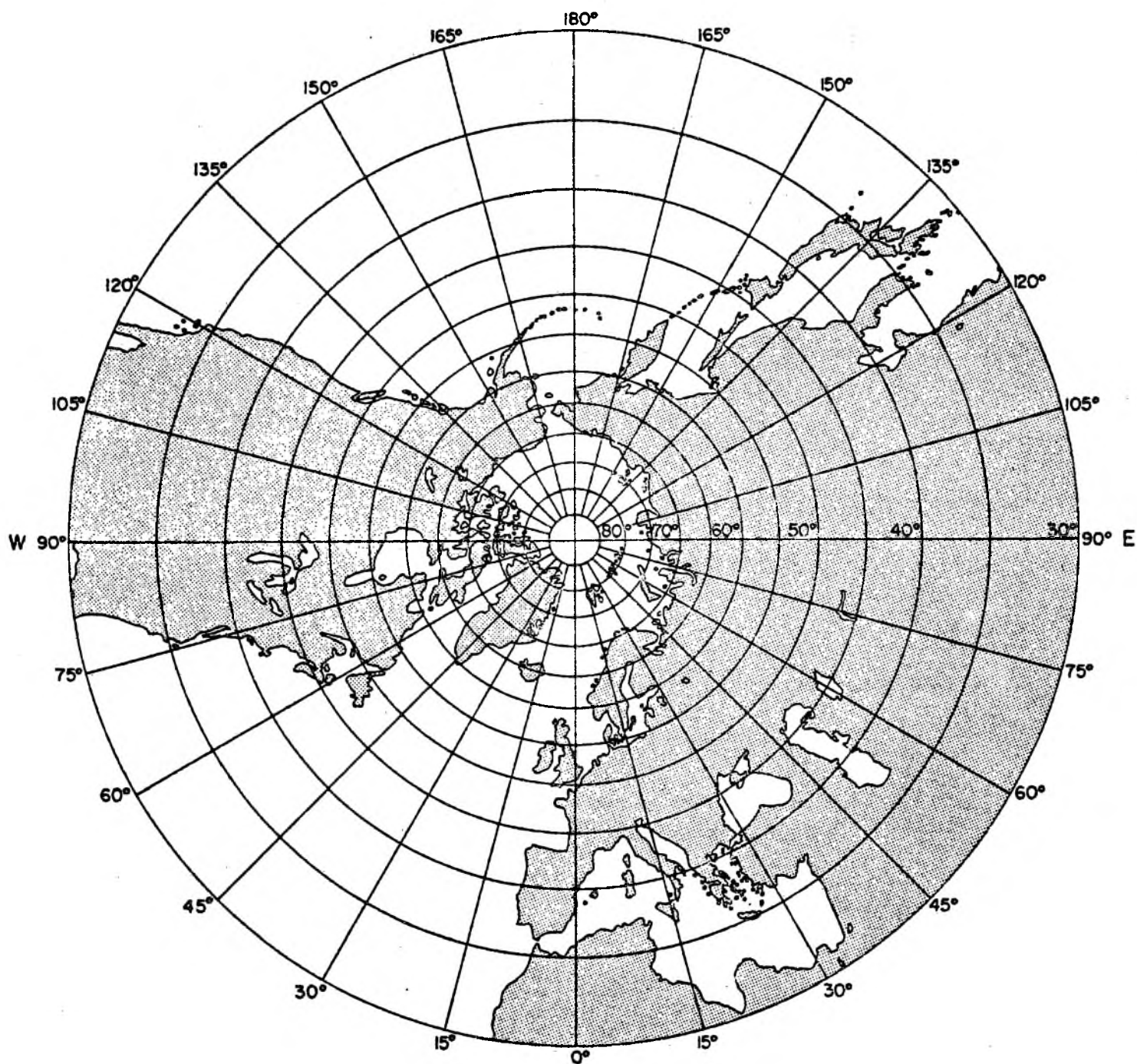
11,3 MHz, jour - ELEMENTS POUR LE TRACÉ DES COURBES DE BROUILLAGE A 6000 km
 11,3 Mc/s day - DATA FOR PLOTTING 6000 km INTERFERENCE CONTOURS
 11,3 Mc/s día - DATOS PARA EL TRAZADO DE CURVAS DE INTERFERENCIA A 6000 km

Appendix 26
Page 9

Note: The following maps and contours will be published as annexes in the same way as the maps and transparencies contained in the pocket of the previous edition of Appendix 26 (Geneva, 1959)

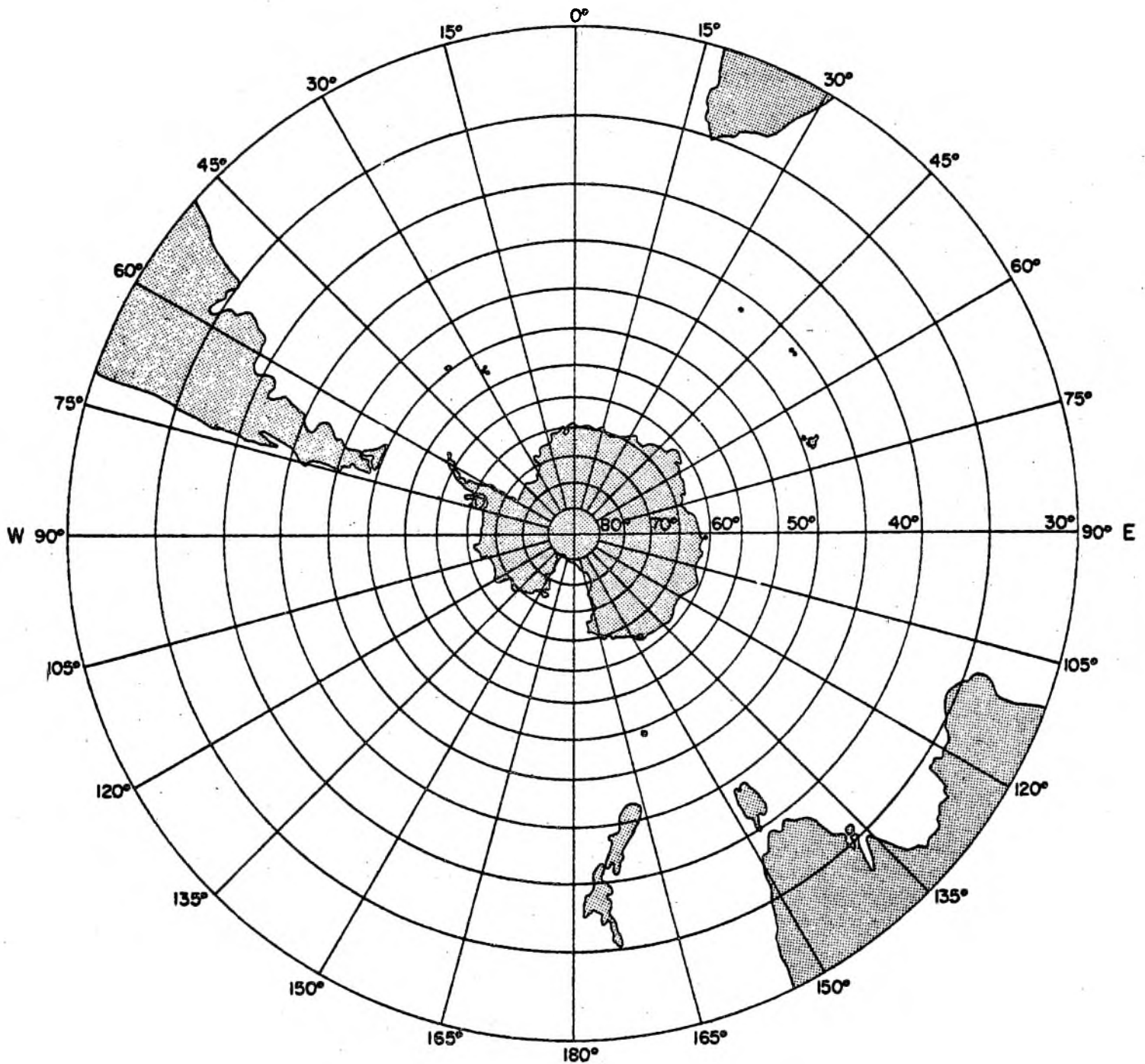
CARTE POLAIRE - POLAR MAP - MAPA POLAR

Pôle Nord - North Pole - Polo Norte

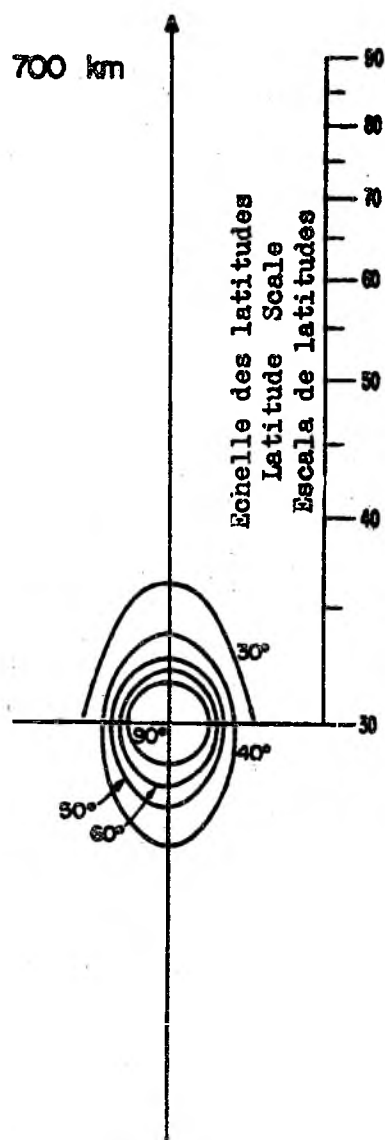


CARTE POLAIRE - POLAR MAP - MAPA POLAR

Pôle Sud - South Pole - Polo Sur



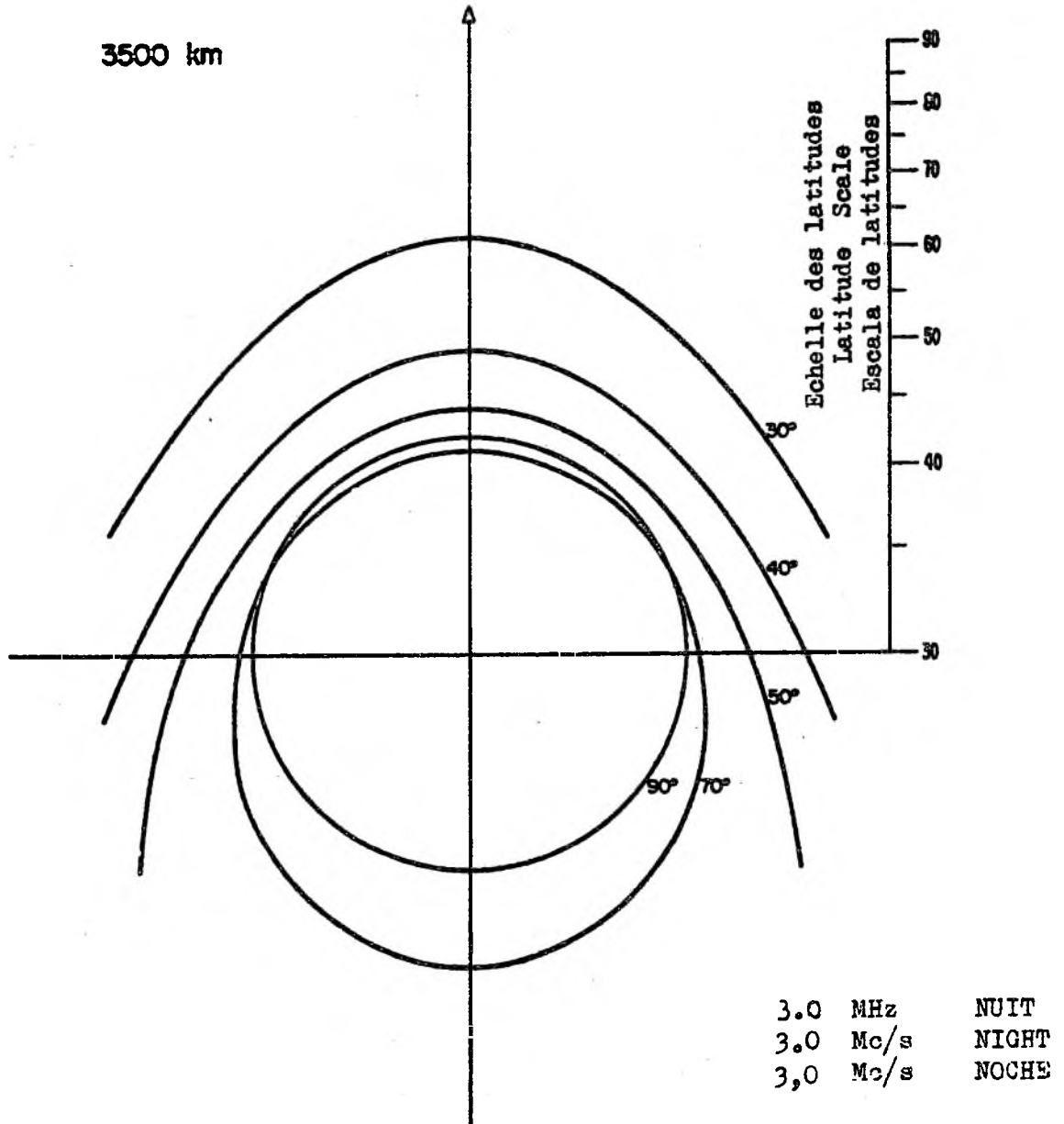
PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



3.0	3.5	MHz	JOUR
3.0	3.5	Mc/s	DAY
3,0	3,5	Mo/s	DIA

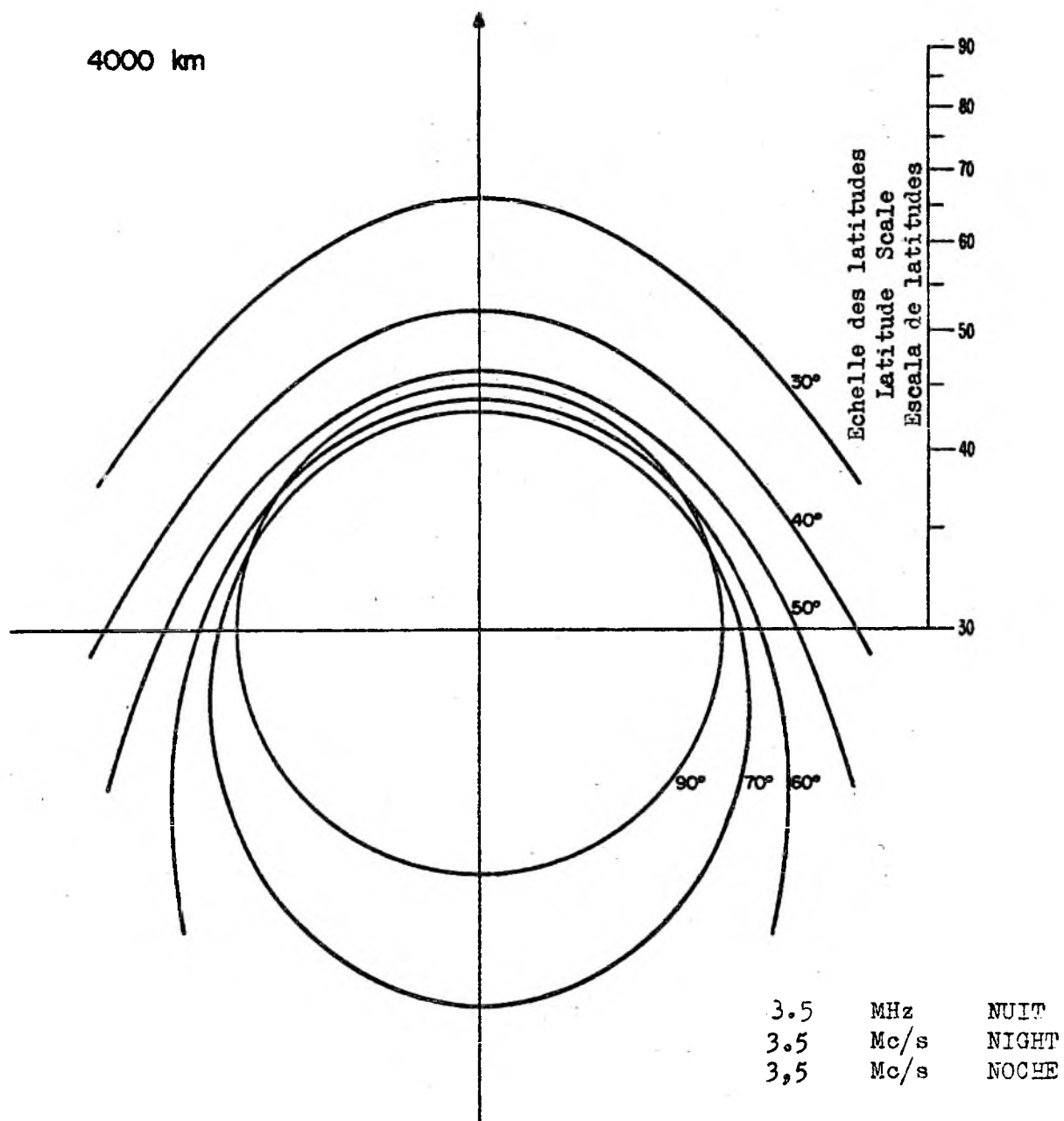
PROYECCIÓN GNOMÓNICA

PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



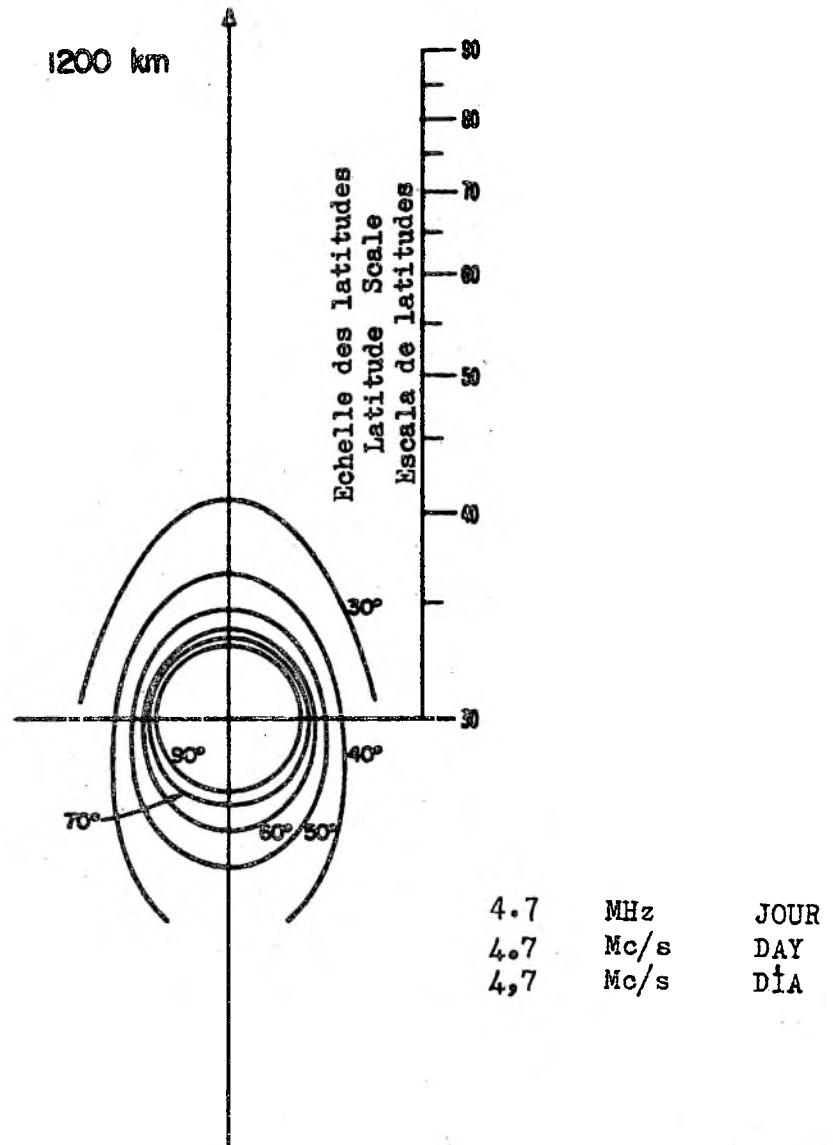
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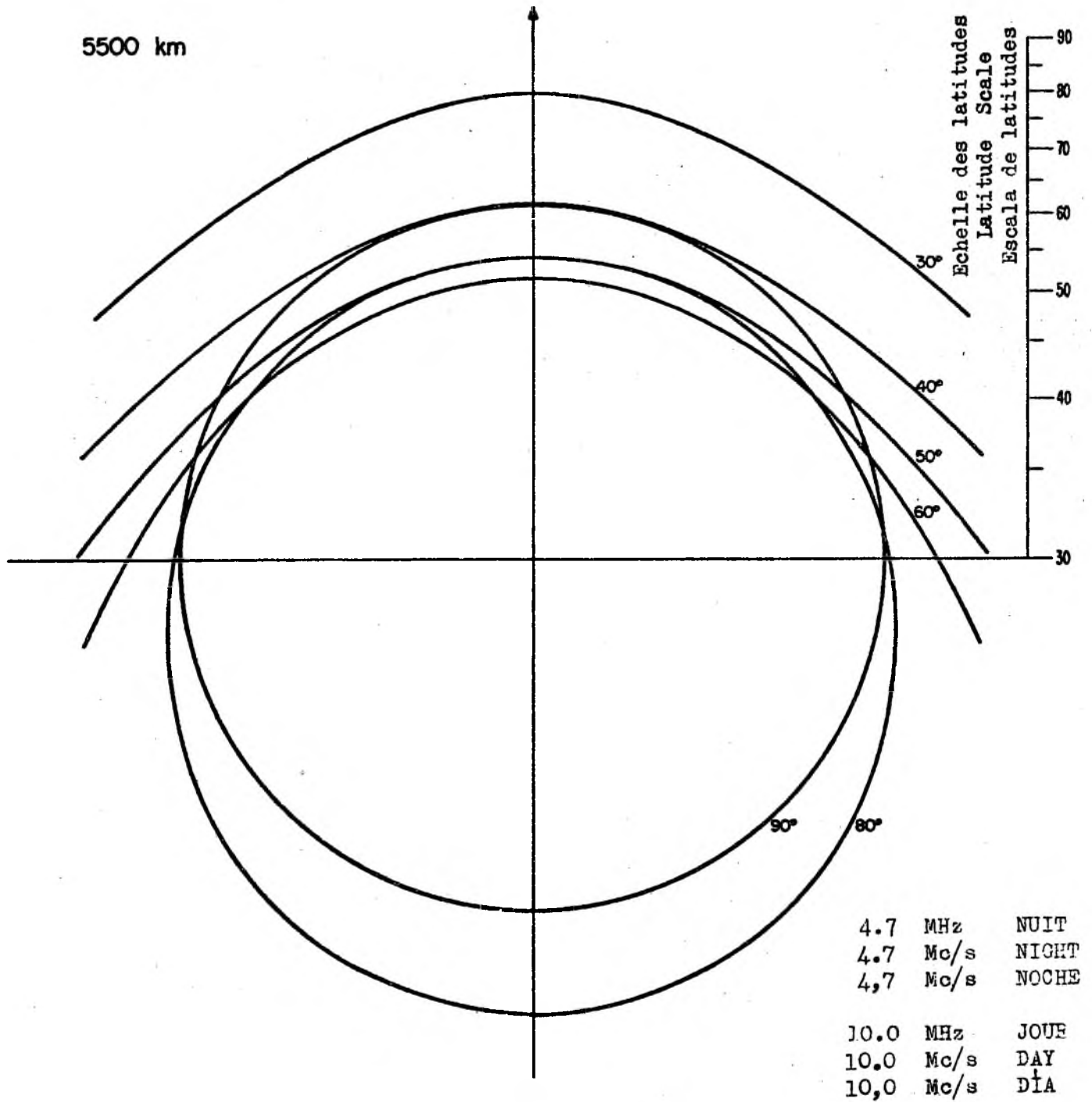
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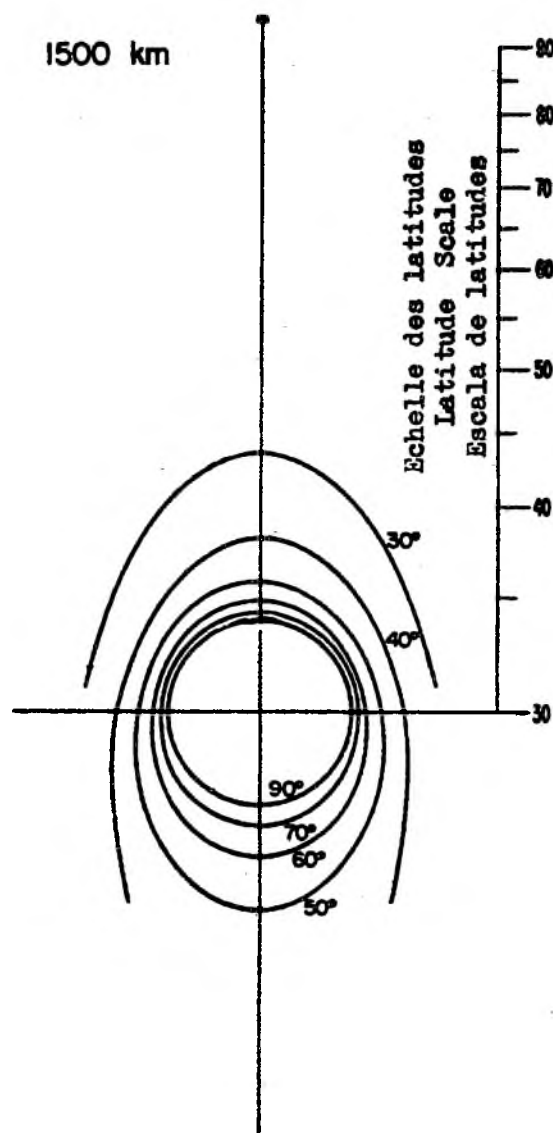
PROYECCIÓN GNOMÓNICA

PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



PROYECCIÓN GNOMÓNICA

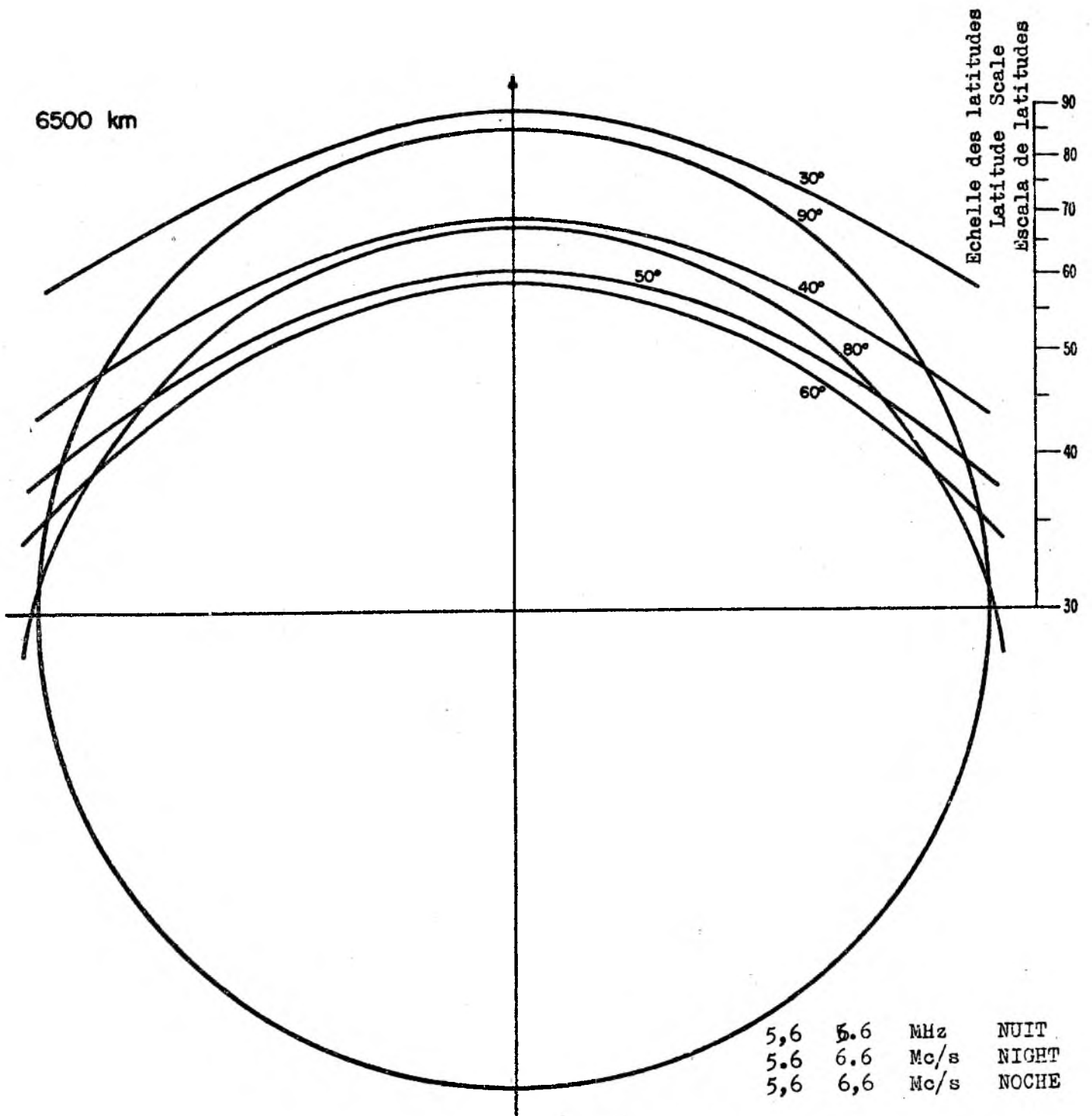
PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



5.6	MHz	JOUR
5.6	Mc/s	DAY
5,6	Mc/s	DÍA

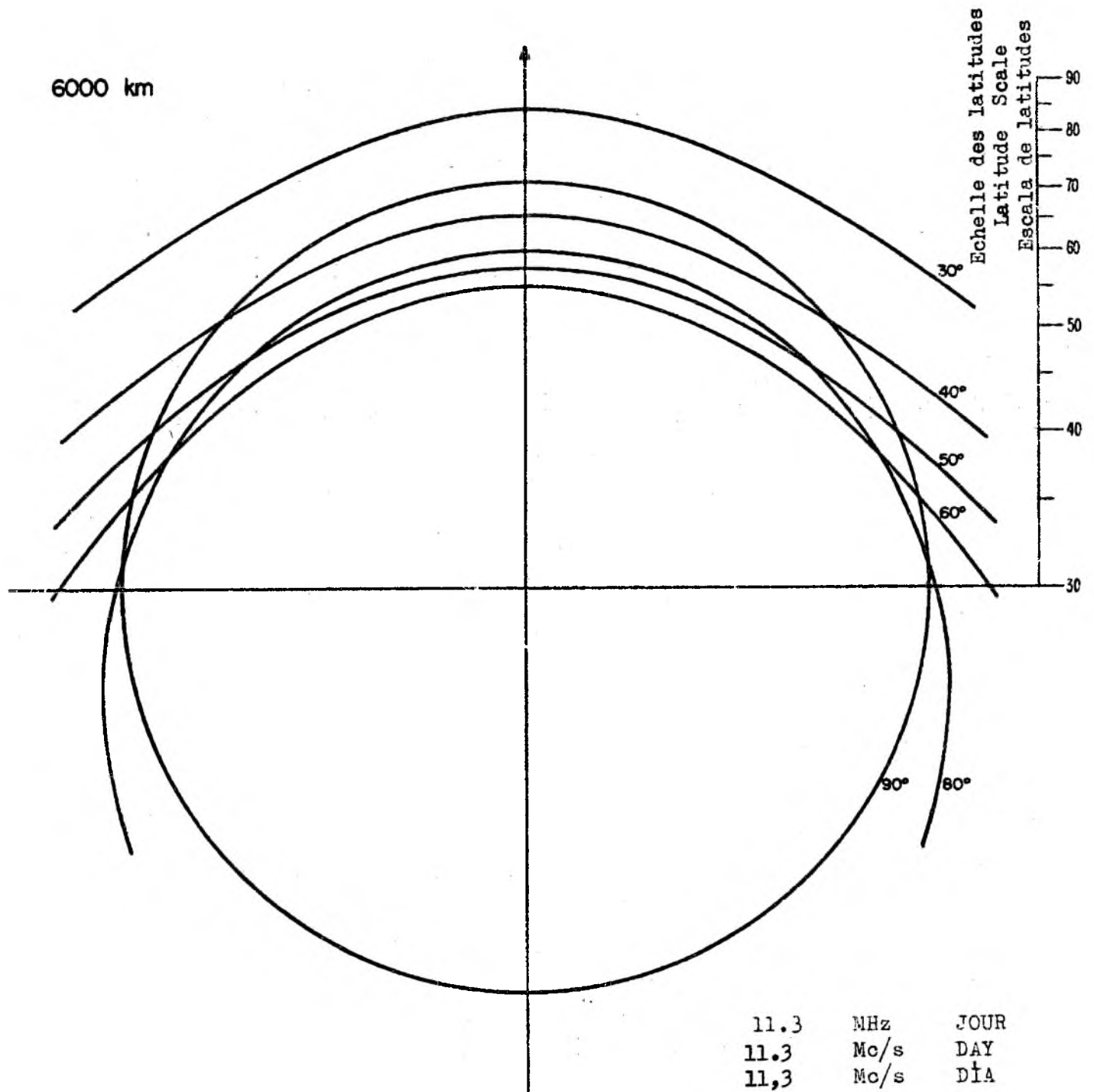
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PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



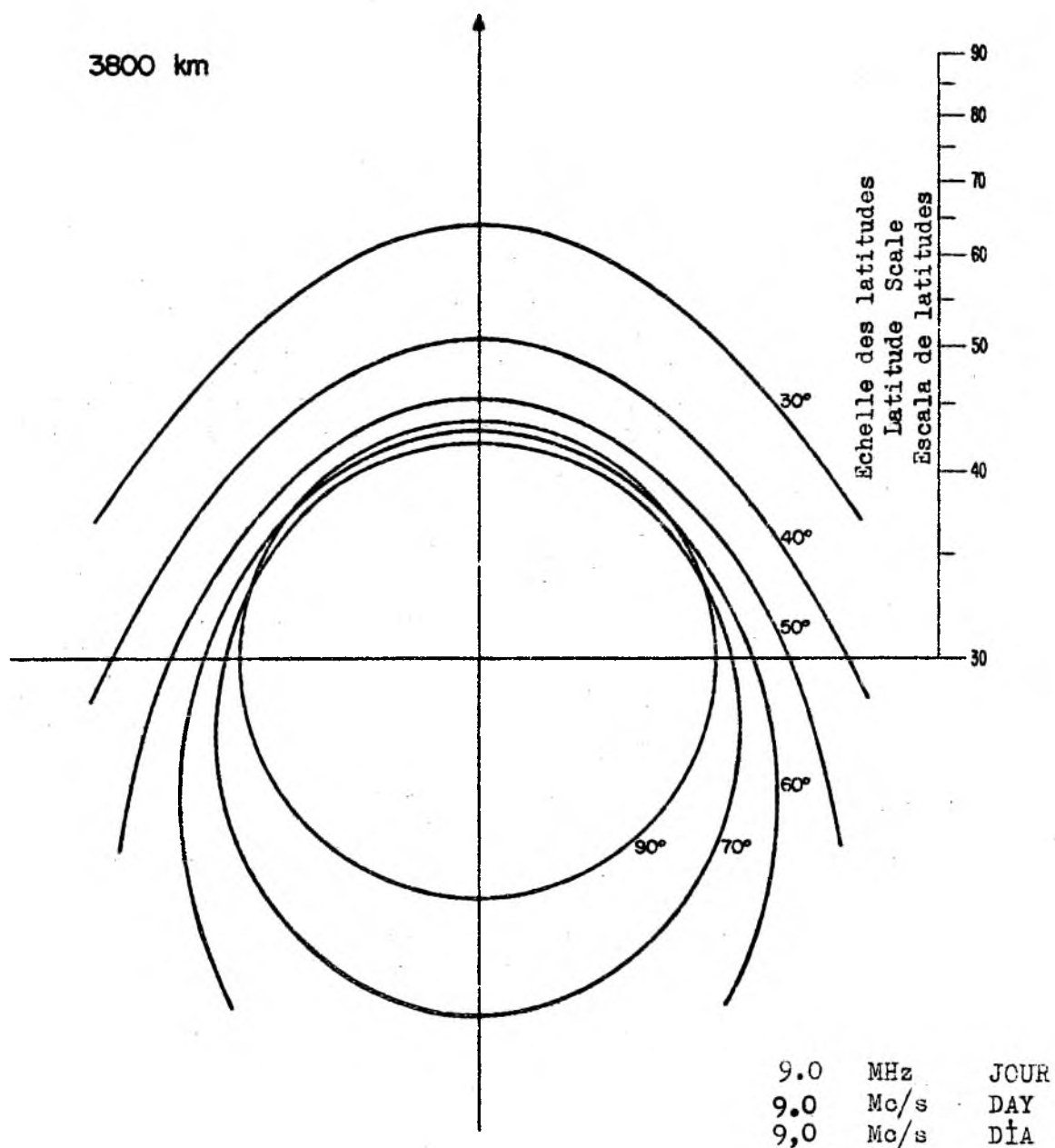
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PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



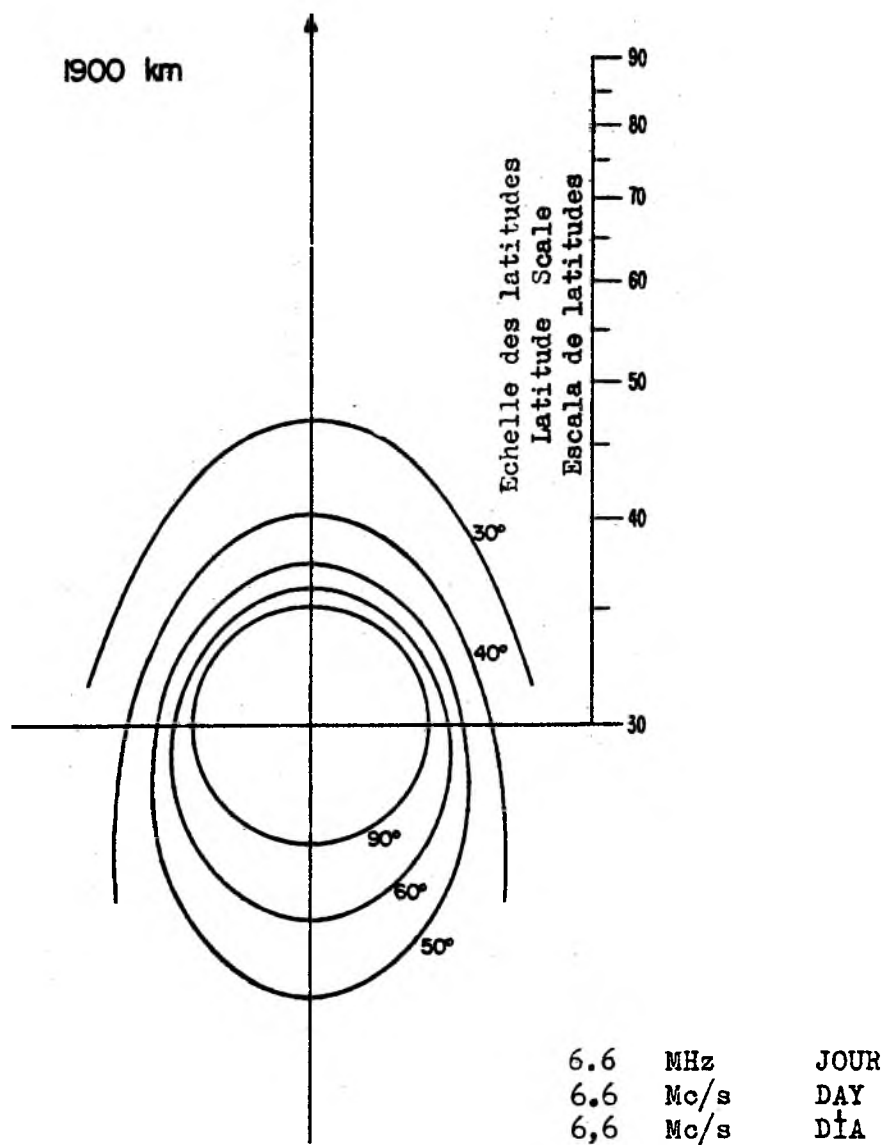
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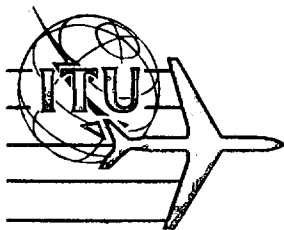


PROYECCIÓN GNOMÓNICA

PROJECTION GNOMONIQUE - GNOMONIC PROJECTION



PROYECCIÓN GNOMÓNICA



AERONAUTICAL CONFERENCE

Document No. II/100-E

31 March 1966

Original : French/English/
Spanish

E. A. R. C. FOR THE PREPARATION OF A REVISED ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICE - GENEVA

PLENARY MEETING

LIST OF DOCUMENTS OF THE 2ND SESSION OF THE CONFERENCE

(Documents Nos. 1 to 100)

Document No.	Title	Origin	Destination
II/1	Non-allocation of specific frequency sub-bands	F.R. of Germany	Plenary Meeting
II/2	Proposals for revision of the (R) Band Plan	U.S.A.	Plenary Meeting
II/3 and Add.1	Proposals	Japan	Plenary Meeting
II/4	Proposals	Canada	Plenary Meeting
II/5	Draft resolution regarding the introduction of single-sideband systems into the aeronautical mobile (R) services	Canada	Plenary Meeting
II/6	Frequency bands for ocean data radiocommunication	Denmark, Norway and Sweden	Plenary Meeting
II/7	Statistical analyses of international flights and of regional and domestic flights	I.F.R.B.	Plenary Meeting
II/8	Committee Structure	S.G.	Plenary Meeting
II/9	Proposal	Saudi Arabia	Plenary Meeting
II/10	Review of the allotment plan for the aeronautical mobile (R) service	United Kingdom	Plenary Meeting



Document No.	Title	Origin	Destination
II/11	Proposal relating to the amendment of boundaries of the Area 9 Sub-EDARA's	Australia	Plenary Meeting
II/12	Proposal relating to the authorization of certain frequencies for approach and aerodrome control communications	Australia	Plenary Meeting
II/13 and Corr.	Convening of the Conference	S.G.	Plenary Meeting
II/14	Position of certain countries with regard to the Convention	S.G.	Plenary Meeting
II/15	Agenda of the Meeting of the Heads of Delegations		Heads of Delegations
II/16	Agenda of the 1st Plenary Meeting		Plenary Meeting
II/17	Secretariat of the Conference	S.G.	Plenary Meeting
II/18	Proposals for the revision of the radio regulations (Geneva 1959) and the frequency allotment plan for the aeronautical mobile (R) service	India	Plenary Meeting
II/19	Budget of the Conference	S.G.	Committee 3
II/20 and Corr.	Statistical analyses of international flights and of regional and domestic flights	I.F.R.B.	Plenary Meeting
II/21	Special programmes for monitoring the bands allocated exclusively to the aeronautical mobile (R) service between 2850 kc/s and 17 970 kc/s	I.F.R.B.	Plenary Meeting
II/22	Apportionment of proposals among the Committees	S.G.	Plenary Meeting

Document No.	Title	Origin	Destination
II/23	Opinion on factors to be taken into account in allotting frequencies to the various areas of the world under the new plan	Mexico	Plenary Meeting
II/24	Proposal concerning the use of single sideband techniques in the bands allotted to the aeronautical mobile (R) service between 2850 and 17 970 kc/s	Mexico	Plenary Meeting
II/25	Use of channels common to the aeronautical mobile (R) and (OR) services	Mexico	Plenary Meeting
II/26	Chairman and Vice-Chairman of Committees		Plenary Meeting
II/27	Agenda of the 1st Meeting of the Aircraft Operation Statistics Committee	Committee 5	Committee 5
II/28	Agenda of the 1st Meeting of the Technical Committee		Committee 4
II/29	Agenda of the 1st Meeting of the Plan Committee		Committee 6
II/30	Proposal No. 1 - Amendments in boundaries of MWARA SA	Argentina	Plenary Meeting
II/31	Proposal No. 2 - Amendment of the boundaries and designation of the MWARA NSAM-1 and NSAM-2	Argentina	Plenary Meeting
II/32	Proposal No. 3 - Amendment of the boundaries of RDARA Sub-Area 13 G	Argentina	Plenary Meeting
II/33	Proposal No. 4 - Change in the boundaries of Sub-Area RDARA 13 H	Argentina	Plenary Meeting
II/34	Proposal No. 5 - Allotment of a family of frequencies for meteorological broadcasts in South America	Argentina	Plenary Meeting
II/35	Proposal No. 6 - concerning the arrangement of Appendix 26 to the Radio Regulations	Argentina	Plenary Meeting

Document No.	Title	Origin	Destination
II/36	Flight Density Maps	Poland	Committee 5
II/37	Proposals referred by the First Session of the Conference for examination by the Second Session		Committee 5
II/38	Agenda of the 2nd Meeting of Committee 4		Committee 4
II/39	Summary Record of the 1st Meeting of Committee 4	Committee 4	Committee 4
II/40	Minutes of the 1st Meeting of the Heads of Delegations		Plenary Meeting
II/41	Agenda of the 1st Meeting of Committee 7		Committee 7
II/42	Agenda of the 3rd Meeting of Committee 4		Committee 4
II/43	Summary Record of the 2nd Meeting of Committee 4		Committee 4
II/44	Report of the 1st Meeting of Committee 5	Committee 5	Committee 5
II/45	Summary Record of the 1st Meeting of Committee 6	Committee 6	Committee 6
II/46	Agenda of the 3rd Meeting of Committee 5		Committee 5
II/47	Summary Record of the 3rd Meeting of Committee 4	Committee 4	Committee 4
II/48	Summary Record of the 2nd Meeting of Committee 5	Committee 5	Committee 5
II/49	Agenda of the 4th Meeting of Committee 5		Committee 5
II/50	List of documents of the Conference	Secretariat	Plenary Meeting

Document No.	Title	Origin	Destination
II/51	Agenda of the 5th Meeting of the Technical Committee		Committee 4
II/52	Summary Record of the 4th Meeting (Technical Committee)	Rapporteurs	Committee 4
II/53	Summary Record of the 1st Meeting (Editorial Committee)	Rapporteurs	Committee 7
II/54	Minutes of the Opening Plenary Meeting	Rapporteurs	Plenary Meeting
II/55	Aircraft Statistics - NA - MWARA	Ireland	Committee 5
II/56	Agenda of the 6th Meeting of the Technical Committee		Committee 4
II/57	Agenda of the 5th Meeting (Operation Statistics)		Committee 5
II/58	Summary Record of the 3rd Meeting (Operations Statistics)	Rapporteurs	Committee 5
II/59	Summary Record of the 5th Meeting (Technical Committee)	Rapporteurs	Committee 4
II/60	Creation of a MWARA in the Caribbean Region	Cuba	Committee 5
II/61	Agenda of the 1st Meeting (Credentials)		Committee 2
II/62	Proposal No. 7 Study of a Frequency Plan for the RDARAs and Proposals for the most Practical Solutions	Argentina	Committee 5
II/63	Intergovernmental Oceanographic Commission	Secretariat	Committee 6
II/64	Proposal No. 1 Frequency Allotment : COM/MET - HF RTF. Sea Region - VOLMET Broadcast	Malaysia	Committee 5

Document No.	Title	Origin	Destination
II/65	Proposal No. 1 Volmet Broadcasts in South East Asia Region	Singapore	Committee 5
II/66	Agenda of the 1st Meeting of the Special Working Party		Committee 7
II/67	First Report (Technical)	Committee 4	Plenary Meeting
II/68	Agenda of the 7th Meeting of the Technical Committee		Committee 4
II/69	Summary Record of the 6th Meeting (Technical Committee)	Rappor- teurs	Committee 4
II/70	Proposal	Roumania	Committee 5
II/71	Agenda of the 8th Meeting of the Technical Committee		Committee 4
II/72	Position of the Accounts of the Aeronautical Radio Conference on 21 March 1966	Secre tariat	Committee 3
II/73	Agenda of the 1st Meeting (Budget Control)		Committee 3
II/74	Summary Record of the 4th Meeting (Aircraft Operation Statistics)	Rappor- teurs	Committee 5
II/75	Summary Record of the 7th Meeting (Technical Committee)	Rappor- teurs	Committee 4
II/76	Second Report (Technical) Use of 3023.5 kc/s and 5680 kc/s	Committee 4	Plenary Meeting
II/77	Third Report (Technical) Use of Frequencies 2973 kc/s and 3495.5 kc/s	Committee 4	Committees 6 and 7 Plenary Meeting
II/78	Proposal	Cuba	Committee 4

Document No.	Title	Origin	Destination
II/79	Proposal for extension of the boundary of MWARA-FE2	Japan	Committee 5
II/80	Proposal for boundary for Arctic Polar Air Routes	Japan	Committee 5
II/81	Summary Record of the 5th Meeting (Operation Statistics)	Rappor- teurs	Committee 5
II/82	Agenda of the 9th Meeting of the Technical Committee		Committee 4
II/83	Fourth Report (Technical)	Committee 4	Plenary Meeting
II/84	Agenda of the 6th Meeting (Operation Statistics)		Committee 5
II/85	Summary Record of the 8th Meeting (Technical Committee)	Rappor- teurs	Committee 4
II/86	Agenda of the 10th Meeting of the Technical Committee		Committee 4
II/87	Summary Record of the 9th Meeting (Technical Committee)	Rappor- teurs	Committee 4
II/88	Summary Record of the 1st Meeting (Credentials Committee)	Rappor- teurs	Committee 2
II/89	Agenda of the 2nd Meeting (Editorial)		Committee 7
II/90	Summary Record of the 1st Meeting (Budget Control Committee)	Rappor- teurs	Committee 3
II/91	Fifth Report (Technical) Frequency Separation and Frequencies to be Allotted	Committee 4	Plenary Meeting
II/92	Agenda of the 11th Meeting		Committee 4

Document No.	Title	Origin	Destination
II/93	Additional Material for the Evaluation of High Frequency Complements for the Aeronautical Mobile (R) Service	Committee 4	Committees 5 and 6
II/94	Summary Record of the 10th Meeting (Technical Committee)	Rapporteurs	Committee 4
II/95	First Report (Operation Statistics) Description of MWARA Boundaries	Committee 5	Plenary Meeting
II/96	Agenda of the 12th Meeting of the Technical Committee		Committee 4
II/97	Summary Record of the 11th Meeting	Rapporteurs	Committee 4
II/98	Proposals by Committee 7 (Editorial) concerning the Layout of the Final Acts of the Conference	Committee 7	Plenary Meeting
II/99	First series of texts	Committee 7	Plenary Meeting
II/100	List of documents of the Conference	Secretariat	Plenary Meeting