



**Documents of the International Administrative Radio Conference for
Aeronautical Communications (1st Session) (Geneva, 1948)**

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COMMITTEE 3

Report of the Editorial Committee
(Committee 3)
1st and 2nd Meetings,
June 3 and 8, 1948

The Committee met on June 3rd and 8th 1948 and the following were present:

France	Mr. Falgarone (Chairman)
United States of America	Miss Trail
Colombia	Mr. Quinjano Caballero
Honduras	Mr. Basilio de Telepnef
I.C.A.O.	Col. Greven
I.F.R.B.	Mr. Petit

1. After examining the possible shape of the final report of the Conference, the Committee adopted unanimously, at the end of the second meeting, the following recommendation:

"The Editorial Committee draws the attention of other Committees of this Conference to the advantage of preparing, as soon as possible, the texts, tables and schemes which will form part of the final reports. With this aim in view it draws attention to the general provisional plan which it proposes for the final document which may easily incorporate all the texts that may be adopted (see annex 1).

The Committee therefore recommends that:

- a) The various committees which will produce texts to be included in the final reports of this conference shall, before finishing their work, take all necessary measures to have these texts in their final form specifically stated in the minutes of meetings indicating the chapter in which the committee feels that the texts should be included.
 - b) The texts in question shall be carefully checked by the competent committees in the three working languages, French, English and Spanish, to make them as identical as possible. This condition is essential to enable the Editorial Committee to carry out its final task in the shortest possible time and to avoid detaining the delegates too long over the formalities of signing.
3. The Committee has decided that the above recommendation, figuring in the present minutes, shall be sufficient to carry weight with the other Committees who are invited to act in accordance.
4. The present minutes have been unanimously adopted at the end of the 2nd meeting.



DRAFT PLAN FOR THE FINAL
ACTS OF THE CONFERENCE

Introduction

Chapter I

- A. Definitions (if any)
- B. Principles admitted for the establishment of the plan
(with references to annexes)

Chapter II

Plan

Chapter III

- A. Procedures for implementation
- B. Recommended procedure for the accomodation of future
requirements

Signatures

Annexes

Miscellaneous Resolutions and Recommendations
(public correspondence, service documents, regional conferences,
etc.)

11 June, 1948

Committee 1

REPORT OF THE STEERING COMMITTEE

(Committee 1)

8th Meeting

9th June, 1948, at 4.45 p.m.

CHAIRMAN : Mr. A. LEBEL (Chairman of the Conference)

Present : Mr. VERES (Committee 2), Mr. FALGARONE (Committee 3),
Mr. SELIS (Committee 4), Mr. DUNCAN (Committee 5),
Mr. BETTS (Committee 6), Mr. FRY (Committee 7), and
Mr. ACTON (Canada), Mr. HARVEY (Union of South Africa),
Mr. TABIO (Cuba), Miss Florence TRAIL (United States).

1. APPROVAL OF REPORTS OF THE SIXTH AND SEVENTH MEETINGS.
(Aer-Documents Nos. 69 and 87).

Aer-Document No.69 (sixth meeting) and Aer-Document No.87, amended to read "Report of the 7th meeting", were adopted

Mr. FALGARONE (France), explaining the point of view of his delegation, said that ever since the Conference of Atlantic City, there had been the problem of finding frequencies common to aviation and maritime services which could be used by aircraft dinghies. There was some disagreement as to the status of an aircraft dinghy on the surface of the sea. His delegation considered that if they were offered frequencies in the maritime bands there would be ill-advised to refuse; but they should not go out of their way to make demands on the maritime services

The CHAIRMAN said that according to some legal opinion, an aircraft dinghy afloat should be considered as a surface craft, although there was still some difference of opinion on this point.

Mr. ACTON (Canada), said that copies of the report prepared by the Preparatory Committee of experts in London were available, and suggested postponing discussion of the subject until members had had time to familiarize themselves with it.

It was agreed that copies of the telegram would be distributed to members of the Committee, and that the matter would be raised at a later meeting.

FINAL ACTS OF THE CONFERENCE.

It was agreed that a draft plan of the Final Acts should be distributed to Chairmen of Committees to give them some guidance.

REPORT OF COMMITTEE 5.

It was agreed that Mr. DUNCAN (Committee 5) should make a statement to the Plenary Meeting on the work of his Committee.

SCHEDULE OF MEETINGS

The Committee drew up a schedule of meetings for Thursday and Friday, June 10 and 11.

AGENDA FOR FOURTH PLENARY MEETING.

The Committee drew up an agenda for the fourth Plenary Meeting, 11 June, 1948.

TRANSLATION OF DOCUMENTS INTO FRENCH.

There was some criticism of the quality of translations into French.

The meeting rose at 6 p.m.

Reporter :
N. Langford

Chairman :
A. Lebel

14 June, 1948

Committee 4

CORRIGENDUM

At the end of paragraph 4.2 of Aer-Doc.No. 103, at the end of paragraph 2 of the resolution, add :

"In view of the disparity of power between the aircraft and ground stations, this figure will result in a ratio of the order of 12 db and 17 db."

At the end of paragraph 3 of the resolution :

"In view of the disparity of power between the aircraft and ground stations will result in a ratio of the order of 2 db and 7 db."

To be inserted :

Between 5b and 5c :

"Accept provisionally as a starting point for preliminary calculations figures of 25 db for A3 and 15 db for A1 emissions under the conditions that these figures will be applied on equal basis for all countries and all air-routes and that these figures will be reconsidered in future if unsatisfactory results are obtained."

GENEVA, 1948

11 June, 1948

Committee 4

R E P O R T

of the Technical and Operational Committee

(Committee 4)

17th Meeting

7 June, 1948

- 1 - The meeting was declared open at 09:32 a.m. by the Chairman.
- 2 - The following delegations and observers took part in the proceedings :

Albania	New Zealand
Argentina	Netherlands
Australia	Netherlands East Indies
Bielorussian S. S. R.	Poland
Canada	Rumania
Chile	Tunisia and Morocco
China	U.S.A. and U.S. Territories
Denmark	United Kingdom
Egypt	Union of South Africa
France	Yugoslavia
India	I.A.T.A.
Ireland	I.C.A.O.
	I.F.R.B.

- 3 - The first item taken up was the consideration of Aer-Doc.54, as this document had appeared in all the three languages. After the following additions, the document was adopted :
 - 3.1 Delegate of I.A.T.A. to be included in the list of participants.
 - 3.2 The delegate from New Zealand said that the following paragraph had been left out in the Appendix B of the document and the Chairman agreed to its inclusion.

"The Chairman mentioned the fact that there had been prepared an index to the charts in PC Aer-Doc.5. These appear as Appendix B in 45-E.
- 4 - The next item considered was the resolution on protection ratios which had been submitted by the U.S. Delegation on Friday 4th June, 1948. This resolution was seconded by the delegate of Australia:
 - 4.1 The delegate of U.S.A. in replying to a query raised by the delegate of France said that high speed communication was possible on all standard channels. However, as the band edges of the channel separation may not divide evenly into the band, there may not be sufficient space to accomodate a high capacity channel, but which could be used on A. Paragraph 3 had been included.

4.2 The delegate of France observed that the protection ratios for ground stations should be specified first and then the protection ratios for aircraft station be worked subsequently. He suggested a figure of 15 db or 20 db in paragraph 3 which correspond to a projection ratio of 2 or 7 db for the ground station. The delegate of U.S.A. agreed to include the following at the end of paragraphs 2 and 3.

5 - At this stage of discussion the delegate of U.S.S.R. made a statement as mentioned below on the question of protection ratio :

"The proposed draft resolution cannot serve as a basis for the satisfaction of all the demands on an equal fading because this resolution takes into account only the World Air Routes and considers only the Simplex communication.

The figures recommended in the resolution cannot, in the opinion of the Soviet Delegation, guarantee an equitable satisfaction of the demands of aviation of all the countries.

Nevertheless, in order to make it clear to everybody, the Soviet Delegation can agree that as a starting point the figures of 25 db for A3 and 15 db for A1 emission be provisionally taken for preliminary calculus on the condition that these figures will be applied to everybody in a uniform manner and in case of unsatisfactory results, they will be revised in the future. As to the last paragraph of the draft resolution concerning the question of interference of adjacent channels, the Soviet Delegation does not have any objections in principle, but thinks it more advisable to consider this question in a separate resolution, bearing in mind that this resolution could be accepted unanimously without any provisions. In accordance with the above, the Soviet Delegation proposes to include the following amendments into the draft resolution submitted by the U.S.A. delegation.

- a) In the first sentence, delete the words "in the world air route system" - "For these purposes" - "and that a system of Simplex communication will be used".
- b) In the third sentence, after the words "duplication of frequencies" to change the text for the following :
- c) to delete the fifth sentence.
- d) to consider the sixth sentence in a separate resolution.

5.1 The delegate from U.S.A. said that he is agreeable for the deletion of the phrase "World Air Route Systems" and also for the consideration of the last paragraph of the draft resolution as a separate resolution, and moved for consideration of the committee the following motion, seconded by the delegate of Australia.

"It is recommended that in the interest of suppression of adjacent channel interference allotment plans should ensure that there will be no necessity for the use of adjacent channels by aircraft stations using the same air space or by aeronautical stations serving such aircraft."

This was unanimously adopted.

- 5.3 As regards the Soviet Delegation's proposal (b), the delegate of U.S.A. observed that he would accept a figure of 25 db for A3 emission as a starting point for preliminary calculations. As the Soviet Delegation did not accept U.S.A. Delegation's viewpoint, the U.S.A. offer was withdrawn. The Soviet resolution seconded by Yugoslavia was put to vote and declared lost, seven delegations voting for the resolution, ten delegations voting against with nine abstentions.
- 5.4 The delegate of South Africa suggested the following protection ratios :
- Initial figures of 30 db and not less than 25 db in individual cases for A3.
- Initial figures of 20 db and not less than 15 db for A1.
- The delegate of U.S.A. agreed to the proposed amendment of the South African delegate.
- 5.5 The delegate of China suggested the figures of 25 db for A3 and 15 db as a starting point of the discussions.
- 5.6 At this stage the delegate of India pointed out that as the original draft resolution had undergone considerable amount of change, it would be appropriate for the resolution to be read out for the benefit of the committee.
- 5.7 The delegate of China moved that as paragraph 51 of PC Aer-Doc. 25 had a very important resolution on the subject, the voting on the draft resolution moved by the U.S.A. be deferred till after the consideration of the paragraph 51. This was supported by the delegate of U.S.S.R. and was declared carried with 13 delegations voting in favour, nine against, with six abstentions.

The meeting adjourned at 12.55.

The Reporter :

The Chairman :

N.V.S. iyengar

O. Selis

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Conférence internationale administrative
des Radiocommunications aéronautiques
GENEVE, 1948

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
GINEBRA, 1948

Aer-Document No.104-E

Aér-Document No.104-F

Documento Aer-No.104-S

12 June, 1948
12 juin, 1948
12 de Junio de 1948

SCHEDULE OF MEETINGS

	Time :	Room I :	Room II :
<u>Monday, June 14, 1948</u>	09:30	4 - 4B	7 (2)
	14:30	6 - 6C	7 (2)
	17:30	6E	Hôtel Richemond
<u>Tuesday, June 15, 1948</u>	09:30	4B	5A
	14:30	6C	6E (Salle B) 7 (2)

HORAIRE DES SEANCES

	Heure :	Salle I :	Salle II :
<u>Lundi, 14 Juin, 1948</u>	9 h. 30	4 - 4B	7 (2)
	14 h. 30	6 - 6C	7 (2)
	17 h. 30	6E	Hôtel Richemond
<u>Mardi, 15 Juin, 1948</u>	9 h. 30	4B	5A
	14 h. 30	6C	6E (Salle B) 7 (2)

PROGRAMA DE SESIONES

	Hora :	Sala I :	Sala II :
<u>Lunes, 14 de Junio de 1948</u>	9 h. 30	4 - 4B	7 (2)
	14 h. 30	6 - 6C	7 (2)
	17 h. 30	6E	Hôtel Richemond
<u>Martes, 15 de Junio de 1948</u>	9 h. 30	4B	5A
	14 h. 30	6C	6E (Sala B) 7 (2)
	17 h. 30		

GENEVA, 1948

13 June, 1948

Committee 1

Report
of the Steering Committee
(Committee 1)

9th Meeting
11 June, 1948, at 4.30 p.m.

CHAIRMAN : Mr. A. LEBEL (Chairman of the Conference)

Present : Mr. SENN (Vice-Chairman of the Conference), Mr. VERES (Committee 2)
Mr. FALGARONE (Committee 3), Miss Florence TRAIL (Committee 3),
Mr. SELIS (Committee 4), Mr. DUNCAN (Committee 5), Mr. BETTS
(Committee 6), Mr. FRY (Committee 7), and :
Mr. ACTON (Canada), Mr. HARVEY (South Africa), Mr. TABIO (Cuba).

REPORT OF THE DRAFTING COMMITTEE (Aer-Document No. 101)

Miss Florence TRAIL (Committee 3) wished to draw the attention of Chairmen of Committees to the recommendations contained in this document. Committee 3 had considered (paragraph 2) that it would be sufficient to reproduce the text of these recommendations; Chairmen would be expected to take the necessary action.

TELEGRAM RECEIVED FROM THE BELGIAN CONGO.

Mr. BETTS (Committee 6), said that a telegram had been received from the Belgian Congo, which indicated that that country had no requirements in the R bands, but that its requirements in the OR bands had changed.

It was agreed that the following reply should be sent :

"The International Administrative Aeronautical Radio Conference will take into consideration the data contained in forms 2 submitted by the Belgian Congo. It should however be pointed out that Forms 2 are used as a basis for frequency allotment only in respect of the OR bands. The plan of frequency allotment for the R bands is based mainly on the volume of airline operations, and only secondarily on other considerations, amongst which are the forms 2."

SCHEDULE OF MEETINGS.

The Committee drew up a schedule of meetings for Monday, June 14, and Tuesday, June 15, 1948.

The meeting rose at 5 p.m.

Reporter :
N. Langford

Chairman :
A. Lebel



14 June, 1948

Committee 4

Report
of the Technical and Operational Committee

(Committee 4)
21st Meeting
11 June, 1948, a.m.

Chairman : Mr. O. J. Selis (Netherlands)

1. The following were present :

Argentina	O. E. Vidal
Australia	E. G. Betts
Bielorussian S.S.R.	I. Jouk
Canada	C. J. Acton
Columbia	S. Quijano Caballero
Cuba	E. Tabio
Denmark	K. Svenningsen
Egypt	J. Boctor
France	M. Falgarone
"	M. Deaufol
Honduras	Basilio de Telepnef
Iceland	G. Briem
Ireland	T. O'Dálaigh
Netherlands East Indies	A. de Haas
New Zealand	G. Searle
Norway	N. J. Soeberg
Pakistan	S. A. Sathar
Poland	A. Arciuch
Protectorates of	M. Chef
Morocco and Tunisia	
Switzerland	P. Senn
United Kingdom	W. A. Duncan
" "	H. A. Rowland
Union of South Africa	G. A. Harvey
United States and	E. L. White
Territories	D. L. Givens
	E. V. Shores
	A. Lebel
U.S.S.R.	A. Jarov
Yugoslavia	S. Mitrovic
I.A.T.A.	J. G. Adam
I.A.C.O.	P. J. Groven
I.F.R.D.	R. Petit

2. No minutes of previous meetings were available for adoption

3. Copies of a resolution adopted by Committee 4 in the 13th meeting, June 1st, revised in the 19th meeting of June 9th, were distributed in the English and Spanish text. The French text was not yet ready. The Chairman pointed out that the French text had appeared in the minutes of the 13th meeting and that the extract of these minutes now distributed had been changed only to clarify paragraph 1. He asked that the Committee approve the resolution without the French text in order that the Plenary Meeting to be held during the afternoon might also consider the resolution.

The English text of the resolution was corrected by substituting the word "servicing" for "service" in the third line of the second paragraph. Also the reference to PC-Aer-Documents No.3 was changed to PC-Aer-Documents No. 5.

The resolution was then adopted without objection with the understanding that Mr. Falgarone would work with the Secretariat in translating the English text into French. The resolution is attached as appendix I of this report.

4. The Chairman advised the Committee that Working Group 4 B had as yet not been able to complete its work and required more time.
5. The Chairman referred to Agenda Item I on page 4 of Document PC-Aer-No.25 and to article 255 of the Atlantic City Regulations concerning the handling of public correspondence on aeronautical mobile radio frequencies and asked for discussion on this matter. Article 255 was then read to the Committee and is quoted below for ready reference.

"Administrations shall not permit public correspondence in the frequency bands allocated exclusively to the aeronautical mobile service, unless allowed by special aeronautical regulations adopted by an aeronautical administrative conference to which all interested members of the Union have been invited. Such regulations must recognize the absolute priority of safety and control messages."

Mr. Falgarone of the French Delegation stated that the decisions made at Atlantic City on this matter infringed the rights of individual states. He felt it was a dangerous precedent which might someday react to the disadvantage of aviation. For example the maritime service might cite the decisions of Atlantic City to gain the right to use certain of the aeronautical frequencies. Mr. Falgarone stated that this kind of precedent should be avoided. He also drew attention to the fact that certain States had no coastal stations or maritime service. As far as France was concerned, Mr. Falgarone stated that the Atlantic City decision to make the maritime frequencies available to aircraft for exchange of public correspondence could not be effected without far reaching changes. In the opinion of the French Delegation the Atlantic City conference was wrong in stating that aeronautical frequencies should not be used for other than operational or safety communications. The French Delegation felt that public correspondence was an operational requirement equal in importance to company messages and it remained to be seen whether such traffic would really overload the available frequencies.

In illustration of the point that public correspondence would not overload the aeronautical frequencies the French Delegation quoted the statistics appearing in appendix 2 of this report.

Mr. Falgarone stated that the Atlantic City view that public correspondence transmission and reception aboard an aircraft station endangered the security watch was questionable. In his opinion this argument failed when you considered that dual equipment and additional radio operator personnel could be carried. The trend of regulation, he said, was towards the requirement of dual radio transmitting and receiving equipments.

Copies of the Netherlands proposal that public correspondence be admitted in the frequency bands allocated exclusively to the aeronautical mobile service were then distributed. The Netherlands proposal appears as appendix 3 to this report.

Mr. White with the permission of the Chairman then distributed copies of the U.S. proposal which would continue the restrictions against public correspondence on the aeronautical mobile frequencies. Mr. White stated that the U.S. proposal was being offered as a substitute for the proposal of the Netherlands. The U.S. proposal appears as appendix 4 of this report.

A recess was then declared by the Chairman to permit delegates to study the two proposals distributed.

After the recess Mr. Adam of I.A.T.A. commented that as far as I.A.T.A. was concerned the mobile aeronautical frequencies were provided for the safety and regularity of air transport and that it was therefore the view of I.A.T.A. that the frequencies thus allotted should not be prostituted to the extent of permitting the exchange of public correspondence messages over them.

Mr. White stated he had listened carefully to Mr. Falgarone's statements and he would like the Committee to consider the following points:

1. Frequencies allocated to the aeronautical service were of an international character and could not be considered from the purely national point of view.
2. In the pre-war period the volume of aviation activity was comparatively light and certain nations found they could handle public correspondence on the aeronautical frequencies without causing appreciable interference or delay to the exchange of operational traffic. This was no longer true. The communications requirements of aviation had increased to an extent where it was no longer possible to assign frequencies exclusively to one airline. The available frequencies must be so allocated as to serve aircraft of all nations.
3. Should this conference authorize the handling of public correspondence over aeronautical frequencies the competitive nature of the airlines would require that they provide and advertise the availability of this service. Such advertising would undoubtedly lead to greater and greater use of the mobile frequencies for public correspondence.

4. The aviation service was comparatively new in the radio communications picture. Frequencies for this service had been largely obtained at the expense of the Maritime, Fixed and Broadcast services. The Fixed Service lost from 25 to 30 percent of their frequencies between the time of the Cairo conference and the Atlantic City conference. The primary justification for providing the aviation^{service} with frequencies at the expense of these other services is the high safety requirements of aviation. If they permitted aeronautical frequencies to be used for the handling of public correspondence they would surely find the next radio conference far less inclined to give consideration to the safety requirements of aviation.
5. Atlantic City provided a means by which aircraft could handle public correspondence. Recognizing the high safety requirements of the aeronautical frequencies, Atlantic City decided that it would not be desirable to use the frequencies for the exchange of public correspondence and accordingly provided that the maritime frequencies should be made available for this purpose.
6. It was on the basis of all these considerations that the proposal (Appendix 4) was prepared.

Mr. Greven then read to the Committee from the ICAO Communication Procedure document for Air Navigation Services the following paragraph :

"The object of the international aeronautical telecommunication service is to ensure the telecommunications necessary for the safety and regularity of international air navigation and the efficient operation of international air transport."

From the same document Mr. Greven quoted the various message categories and priorities as established by ICAO. These, listed in their order of priority were as follows :

- | | |
|----------------------------------|--------------------------------|
| 1. Distress messages. | 5. Aircraft movement messages. |
| 2. Urgent messages. | 6. Meteorological messages. |
| 3. Urgent Notices to Airmen | 7. Operational messages. |
| 4. Air Traffic Control messages. | 8. Service messages. |

The delegate from Poland, referring to paragraph 5, of the Netherlands proposal (Appendix 3) stated he considered two further restrictions should be added to sub-paragraph 2.

1. The number of public correspondence messages which one aircraft could handle should be limited to not more than one per hour.
2. The exchange of public correspondence messages to be interrupted at any time upon instructions from the ground stations.

Mr. Selis in reply agreed to consider the amendments proposed by the Polish delegate if and when the Netherlands proposal was seconded. However, he believed further restrictions might not be necessary in view of the condition stated in the paragraph of the proposal that "messages relating to safety and regularity always have absolute priority."

The delegate from Columbia referred to the aviation experience of his country dating from 1919 in an area where the meteorological and geographic conditions were very difficult. He stated that the question of handling public correspondence over the aeronautical frequencies had been considered many times by Columbia. But to use frequencies assigned for the security of aircraft and the safety of aircraft passengers for handling public correspondence had been found absolutely inadmissible. The importance of private messages was in no way comparable to safety and security traffic. With reference to the statistical data provided by the Netherlands and France on the percentage or number of words of public correspondence handled by aeronautical stations the delegate from Columbia declared these figures were extremely low and gave an erroneous picture. He said "when dealing with security we must consider a particular moment, not a monthly average." The delegate concluded his remarks by pointing out that with increasing aircraft speeds it would ordinarily be possible for the aircraft to reach its destination airport before a telegram sent from the aircraft could reach an addressee at the same general location. For these reasons the Columbian Delegation felt that public correspondence on the aeronautical frequencies would prove ineffective and dangerous...

Mr. Adam, of IATA, commenting on the statistics provided by the French delegation, stated that these figures must be related to operational traffic before one could tell what they actually meant. Further, there was a possibility of public correspondence increasing tremendously.

Mr. Falgarone commenting on a previous statement by Mr. White concerning the possibility of a distress or safety message being interfered with by the transmission of a public correspondence message stated that such interference could be caused by the transmission of any message, regardless of its category, and that the established rules of priority would govern.

Mr. Falgarone pointed out that the experience of France and the Netherlands in handling public correspondence both before and after the war showed there would be no appreciable volume of such traffic. He said that shortly all aircraft would be required to carry duplicate radio equipment and that since to use the maritime frequencies for public correspondence would prevent maintenance of a continuous watch on the route frequencies, it would be much more satisfactory to handle such communications over the aeronautical frequencies thus assuring a continuous watch and making it possible to interrupt the exchange of public correspondence at any time for traffic of higher category.

Mr. Selis commented that his proposal contained so many restrictions and that the volume of public correspondence would be so small that there would be no danger of interference to safety and operational communications. He stated that team work of aeronautical stations involved would assure that this would be so. Every interested station would know what was going on over the frequencies being guarded and would consequently be able to adequately control the situation.

Mr. Acton of Canada supported the views expressed by IATA, the U.S., ICAO and Columbia. He said the Canadian delegation at Atlantic City agreed to the aeronautical mobile frequency allocations solely on the basis that public correspondence would not be permitted. Referring to a previous statement by Mr. Falgarone to the effect that operational messages should include public correspondence, Mr. Acton declared that in his opinion the definition of operational messages did not and should not include public correspondence. He said he agreed with the statement that competition meant that all airlines would probably have to provide public correspondence if it were authorized. This would upset loading factors and jeopardize their position at the next frequency allocation conference. Canada was vitally intererested in the fixed service and would strongly object to increasing air-ground frequencies except for operational purposes.

Mr. Betts, giving Australia's position on this matter stated that in giving consideration to use of the aeronautical frequencies for the handling of public correspondence certain associated problems should be considered. Should public correspondence be authorized many, if not all, ground stations would have to be linked to commercial communications services. The handling of public correspondence by aeronautical ground stations would require special procedures and additional personnel. The cost might be very high. The utility of a public correspondence service as proposed by the Netherlands was questionable in view of its many restrictions. Australia opposed the proposal and felt strongly that the R band frequencies should be reserved for the safety and regularity of flight. However, Australia had no objection to aircraft handling public correspondence on frequencies provided for such service if it could be done without interference to continuous watch on the operational air ground frequencies.

It was agreed that discussion on the matter of public correspondence would be resumed at the next regular meeting of Committee 4 and the meeting was adjourned at 12.35 o.m.

Reporter :
E. V. Shores

Chairman :
O. J. Selis

APPENDIX No. 1

Considering that a need exists for some means of selecting the order of frequencies necessary for individual air route operation, it is recommended that:

1) The maximum range charts annexed to PC-Aer-Document No. 5 be modified to show the expected physical ranges, based on an assumed aircraft noise level of not more than 5 uv/m (bearing in mind that with adequate servicing it should be possible to limit the local noise level to achieve the objective of 15 db signal to noise ratio for A3), with a field intensity in the vicinity of the aircraft of

a) 5 uv/m for A1 manual method of communication.

b) 20 uv/m for high capacity means of communication, including A3

2) Curves for 10 uv/m which already exist, to be maintained.

3) One of the maximum range charts be modified to show the expected physical ranges using a radiated power of 10 kW ;

4) The curves be re-drawn to common standards, i.e., km., and to a more suitable scale, and be included with the introductory statements referred to in sub-paragraph 4 below in the final conference documents;

5) Paragraphs 1 to 21 of the introductory statement to PC-Aer-Doc.No 5, amended in accordance with the decisions of Committee 4, together with the associated modified charts, be used by the Conference as a guide to the allotment of frequencies.

APPENDIX No.2

Statistics showing public correspondences exchanged on the aeronautical mobile service.

1 September, 1947 - 31 December, 1947

Courbes	No. of telegrams received and transmitted	No. of words passed
Algiers	11	127
Biscarrosse	35	450
Bordeaux	13	188
Le Bourget	8	124
Marseilles	13	167
Orly	11	244
Total	91	1300

1 January, 1948 - 31 March, 1948

Brazzaville	0	0
Casablanca	13	144
Dakar	4	76
Fort de France	18	233
Tunis	1	15
Total	36	468

monthly average : $\frac{91}{4} \div \frac{1300}{4} + \frac{36}{3} \div \frac{468}{3}$

22.7 ≠ 325
+ 12 ≠ 156

34.7 telegrams ≠ 481 words

daily average : 1.1 telegram ≠ 16 words

average per day per station : $\frac{16}{11} = 2$ extra words

quarterly exchange of telegrams :

Fort de France	1.7 telegrams transmitted	- 1 received from aircraft
Dakar	1 " "	3
Casablanca	2 " "	13

APPENDIX 3

Committee 4 having under consideration the question of the handling of public correspondence aboard aircraft notes

1. that administrations shall not permit public correspondence in the frequency bands allocated exclusively to the aeronautical mobile service unless allowed by special aeronautical regulations adopted by an aeronautical administrative conference to which all interested members of the International Telecommunications Union have been invited,
2. that the actual loading of the aeronautical mobile channels depends on a number of varying factors of which the prevailing weather conditions are an important one,
3. that the capacity of such channels being necessarily based on the worst conditions under which flights can take place in general only under such conditions those channels are fully loaded
4. that consequently there are usually many periods during a flight during which a limited number of short and simple telegrams of public correspondence can be transmitted on an aeronautical mobile frequency without influencing to any extent the quick exchange of messages relating to the safety and regularity of air traffic
5. that the exchange of public correspondence on frequencies assigned to the maritime mobile service is possible in different cases, but that in other cases this way of handling public correspondence is very complicated with respect to the technical and personal possibilities aboard aircraft and inefficient especially if an aircraft is flying in regions where no coast stations exist, and therefore recommends that in addition to the possibility of transmitting public correspondence on frequencies assigned to the maritime mobile service, public correspondence will be admitted in the frequency bands allocated exclusively to the aeronautical mobile service but only in the following conditions:
 1. Messages relating to safety and regularity always have absolute priority
 2. Telegrams of public correspondence are subject to the following restrictions
 - a) maximum number of words 15
 - b) only plain language allowed
 - c) no special indications (urgent etc..) admitted.
 - d) the possibility of exchange to be interrupted at any time on instruction of the aircraft commander.

APPENDIX No.4

Committee 4 having under consideration the question of the handling of public correspondence aboard aircraft notes that :

the handling of public correspondence on the exclusive aeronautical mobile bands is prohibited unless ^{an} aeronautical administrative conference to which all interested members of the Union have been invited adopts regulations under which such messages may be passed,

any such regulations must recognize the absolute priority of safety and control messages (Atlantic City Regs 255),

aircraft stations are permitted to communicate with stations in the maritime mobile service and may transmit to such stations public correspondence on frequencies assigned to that service (Atlantic City Regs 569-572 inc., 682-779 - 792 - 761 - 771).

RECOMMENDS

That the transmission of public correspondence on the frequencies allocated exclusively to the aeronautical mobile service be prohibited.

That in those cases where provision for the handling of public correspondence is deemed necessary the aircraft be authorized by the various administrations to employ frequencies allocated to the maritime mobile service for handling of public correspondence with stations in that service, provided that such handling of public correspondence will in no case interfere with the transmission or reception of messages relating to the safety or control of the aircraft.

COMMITTEE 6.

REPORT OF THE COMMITTEE ON ALLOTMENT OF R FREQUENCIES
(COMMITTEE 6)
13th Meeting
14th June, 1948

CHAIRMAN: Mr. E.G. Betts (Australia)

1. The following delegations and organizations were represented:

Argentina	Ireland
Australia	Netherlands
Biolorussian S.S.R.	New Zealand
Canada	Poland
China	U.S.A and territories
Cuba	Union of South Africa
Egypt	United Kingdom
France	USSR
Morocco & Tunisia	Yugoslavia
Italy	I.C.A.O.

2. The report of Sub-Committee 6B (Aer-document No. 83-E) was discussed and the following changes approved:

The last line of Para 6, page 2, should read "Ground stations would serve any particular operation."

In Para 13, page 3, the word "pointed" should be "posted".

3. During discussion of the Recommendation of Working Group 6-B (Annex 1 to Doc. 83) it was pointed out that a Working Group had been set up with terms of reference differing slightly from the recommendations of 6-B - that the recommendation should be modified to eliminate reference to Working Group 6-D. The following changes in Annex 1 were approved:

The second sentence of Para 3 should read: "A Major World Air Route Area may-----"

The first sentence of Para 5 should read: "When this information has been compiled the Working Group will:"

4. Paragraphs 4 and 5 were unanimously adopted as terms of reference for Working Groups 6-C.

5. The terms of reference for Working Group 6-C are:

"A Working Group 6-C be set up immediately to determine Major World Air Route Areas as defined in paragraph 3 (of Annex 1 Doc. 83). The Flight Information Tables and associated map shall be used for this purpose. The definitions set up in paragraph 3 by Working Group 6-B should be reviewed in the light of experience gained by Working Group 6-C in carrying out their task, incorporating such modifications or changes as may be necessary for further processing by 6-A."

"When this information has been compiled, the Working Group will;

"Use the propagation data available to determine the order of frequencies required to meet the communication requirements of the longest non-stop flight within each Major World Air Route Area.

"Use the Flight Information Tables and formula adopted to determine the loading on each segment of the Major World Air Routes included in the Area, and the number of frequencies of each order required.

"Utilize agreed protection ratios and propagation data to plan the repetition of frequencies between Major World Air Route Areas so as to ensure that aircraft traversing several Major World Air Route Areas may operate on a minimum number of frequencies."

6. Paragraph 6 of Annex 1 Doc-83E was unanimously adopted, in the following text, as a guiding principle for the committee work -

This Conference should allot frequencies to serve specific Major World Air Route Areas but must not attempt to dictate which aeronautical ground stations shall be assigned these frequencies. It is essential that the administrations and Regions concerned have full responsibility for determining which ground stations shall serve an operation for which frequencies have been provided. It is most important that this concept should not be lost sight of and that it should form part of the final report of Committee 6.

7. The Chairman stressed the need for representation from all areas in the work of 6-C. The delegates of China and India, in addition to those already represented, agreed to participate.

8. The Meeting closed at 1500 hrs in order to allow Working Group 6-C, under the Chairmanship of the Delegate of the Union of South Africa, to proceed with its work.

The Reporter
D. Mitchell.

The Chairman
E.G. Betts.

(18-14-6)

GENEVA 1948

COMMITTEE 4

REPORT
OF THE TECHNICAL AND OPERATIONAL COMMITTEE

(Committee 4)

20th Meeting

10 June, 1948 at 9:30 a.m.

Chairman: Mr. O. Selis (Netherlands)

Representatives of the following countries and organizations were present:

Albania	Netherlands East Indies
Argentina	New Zealand
Australia	Pakistan
Canada	Poland
Chile	Switzerland
Denmark	Union of South Africa
Egypt	U.S.S.R.
France	United Kingdom
French Protectorates	United States and Territories
Iceland	Yugoslavia
Ireland	I.F.R.B.
Netherlands	I.A.T.A.
	I.C.A.O.

The meeting opened at 9:40 a. m.

The Chairman of Working Group 4B stated that this group expected to complete its investigations within a day.

The U. S. delegation submitted a tentative draft revision of paragraph 23, P.C. Aer-Document No. 5 for consideration by the committee and this was agreed to after slight revision.

A group of the committee, designated 4C for reference purposes, was formed to revise document P.C. Aer-Document No. 5 in toto and to assist Mr. Gautier in compiling the supplementary curves required. This group comprised Mr. Gautier, Mr. Layzell, Mr. Betts, Mr. Chef, Mr. Harvey and Mr. Searle.

The following is the agreed revised text of paragraph 23, P.C. Aer-Document No. 5:

Choice of channel separations for given interference ranges or choice of station separations for given channel separations, may be made on the basis of curves such as those in Figures 19(a) and 19 (b). These curves refer to desired protection ratios of 25 and 30 decibels respectively and to night-time propagation conditions (i.e., no absorption). They are derived from Figure 18(a), described above, and Figure 18 (b), which is based on data in reference (5); Figure 18(b) shows the field intensity

ratio of the desired to undesired signals as a function of frequency separation, for protection ratios of 25 and 30 decibels, in the case of radio telephone service employing a total modulation bandwidth of 6 kc/s. This chart takes account of the sideband spectrum of the transmitted signal and also the selectivity characteristics of an average good aircraft receiving set. On this chart, the field intensity ratio is equal to the desired protection ratio at zero frequency separation, but decreases as the separation increases. Inasmuch as the protection ratio scale of figure 18(a) refers to field intensity ratios, this scale may be converted into a frequency separation scale for a specified protection ratio, through the relationship expressed in Figure 18(b). Figures 19(a) and 19(b) are the results of such conversions. Channel separations shown do not include channel tolerances.

The Chairman stated that he had conferred with the Chairmen of Committees 6 and 7 and they had stated they had for the moment no requests for information regarding crossband communication. Therefore, the only matters to be dealt with by Committee 4 which were still outstanding, were the report of Committee 4B and the subject of public correspondence on aeronautical circuits and that it would probably be possible for the Committee to complete its work at the meeting on the 11th of June.

The meeting then concluded.

Reporter:

T. O. Dalaigh

Chairman:

O. J. Selis

(15-15-6)

15 June, 1948

SUMMARY RECORD OF THE FOURTH PLENARY MEETING

held at the Maison des Congrès, Geneva
on Friday, 11 June, 1948, at 2.30 p.m.

CHAIRMAN : Mr. A. LEBEL (United States)

ELECTION OF FIRST VICE-CHAIRMAN

1. The CHAIRMAN said that the chief delegate of Belgium, who had been elected First Vice-Chairman of the Conference, was now unlikely to arrive.

Mr. TABIO (Cuba) proposed that Mr. SENN (Switzerland) be elected First Vice-Chairman. This was seconded by Mr. FALGARONE (France).

Mr. SENN (Switzerland) was elected First Vice-Chairman of the Conference by acclamation.

APPROVAL OF THE SUMMARY RECORD OF THE THIRD PLENARY MEETING
(Aer-Document No. 80)

2. The following amendments were proposed and adopted:

Page 2. paragraph 4, last line, should read "Aer-Documents Nos 4 and 21, as amended, were unanimously adopted."

The letter sent to the Secretary General by the IFRB (paragraph 12, French text, would be amended in accordance with a text to be submitted by Mr. PETIT (IFRB).

In paragraph 13, Aer-Document No. 63 should read "Aer-Document No. 62".

Aer-Document No. 80, as amended, was adopted.

RESOLUTION SUBMITTED BY THE SOVIET DELEGATION
(Aer-Document No. 21)

3. Mr. JAROV (USSR) said that lack of time had prevented full agreement being reached with Mr. FRY (United Kingdom) on a wording of paragraph 2, but that he had every reason to suppose that agreement might be reached.

It was agreed that consideration of the Soviet resolution should be postponed until a later plenary meeting.

REPORT OF THE CREDENTIALS COMMITTEE (Aer-Document No. 93)

4. Mr. VERES (Portugal) in moving the adoption of the report, said that since it was published, his Committee had received credentials authorizing the United Kingdom Delegation to represent United Kingdom territories.

- E -



The CHAIRMAN said that the Credentials Committee considered that the credentials of delegates were adequate to sign the final Acts provided that the plenary meeting agreed to the following statement, as given in paragraph 3:

5. "The signature of the Final Acts of this Conference by the delegates to the said Conference means that the signing delegates acknowledge that the Final Act is authentic, and that, as delegates, they concur with the conclusions contained therein."

The following amendments were proposed and adopted:

On Page 3, paragraph 7 of the French text would be reworded in accordance with a text to be submitted by Mr. LALUNG-BONNAIRE (French Overseas territories).

In paragraph 8, the name of Mr. LAYZELL should be amended to read Mr. L. M. LAYZELL.

Aer-Document No. 93, as amended, was adopted.

REPORT OF COMMITTEE 4 (Aer-Documents Nos. 35 and 76)

(1) Aer-Document No. 35

6. Mr. SELIS (Netherlands) said that a resolution on frequency separation had been adopted by Committee 4 and was contained in the Annexes to Aer-Document No. 35. The original Annex B had been replaced by a separate document dated June 2, 1948. The last two lines of Aer-Document No. 35 had been amended to read as follows :
"The combined texts of Annexes B and C, the former being considered as a foreword to the latter, which contains the United States proposal, were adopted." He moved that the report be adopted.
- Mr. WHITE (USA) seconded this proposal.
7. Mr. FALGARONE (France) said that his delegation had reserved its attitude towards paragraph 1 of Annex C when the resolution was adopted by Committee 4 as, in his opinion, the question of the A1 channels to be derived from the channels provided under the plan had been insufficiently discussed.
8. Mr. MITROVIC (Yugoslavia) said that his delegation disagreed with the recommendation of Committee 4.

The recommendations on Channel Separation made by Committee 4 would make impossible the use of existing radio communication equipment, and in particular, existing aircraft equipment. Such equipment could not be used for A3 emissions, in spite of the fact that the rules and recommendations of the Atlantic City Conference allowed it to be used, with a tolerance of 0.05 %, until 1953.

A satisfactory solution would not be reached by the method recommended by Committee 4 - grouping of channels to allow equipment with a tolerance of 0.05 % to be used. The number of channels, already inadequate, would be still further reduced, and this, in the last resort, would make it impossible to use existing equipment.

9. Committee 4, in adopting such recommendations, had ignored the fact that most European countries, and in particular those countries which had been occupied during the war, could not replace existing equipment by more modern at such short notice. Such demands were more than the industries of these countries could cope with, in view of the more urgent tasks with which they were being faced at the present time.

The aim of the Aeronautical Conference was to effect an equitable distribution of HF frequencies to avoid future interference. This aim would never be reached if they shut their eyes to facts, and adopted standards and recommendations which they knew in advance could not be applied in most countries.

The Soviet Delegation had submitted a proposal (Document 19) which had been rejected in Committee 4; this proposal was the only one which took into account actual conditions, and allowed equipment with a tolerance of 0.05 % to be used, at the same time increasing the number of channels available.

For these reasons the Yugoslav delegation would vote against the recommendations on Channel Separation of Committee 4 and would reserve its attitude towards the questions involved.

STATEMENT MADE BY THE SOVIET DELEGATION.

11. Mr. JAROV (U.S.S.R.) said that the Soviet Delegation had repeatedly declared that decisions on basic questions, that is, on questions of technical principle to be applied in the preparation of a frequency allocation plan and in the allocation plan itself, must be based on unanimous agreement between all members of the Conference. It was obvious that any frequency allocation plan could be implemented only if it was accepted by all countries.

To date the Committees had considered, and agreed upon, a number of technical questions and questions of principle which were of basic importance for aeronautical communications. These included :

- a) standards for channel width, b) standards for field intensity,
- c) standards for protection ratio, d) the basic principles of the system of aeronautical communication.

However, unanimous agreement had not been reached on any of these questions. Indeed, there had been serious differences of opinion on each of them.

12. Of the delegates who had participated in the discussions on these matters, only 60 - 64 % had voted in favour of the technical principles as finally adopted. The rest had voted against them or abstained. Such a ratio of votes showed clearly that the decisions on technical questions taken by committees :

a) did not take into account what was actually possible for a considerable number of European countries, the industries of which had suffered damage during the war and for the next few years would be unable to replace or modernize the radio equipment now in use in aviation,

b) could not, therefore, satisfy the aeronautical requirements of a considerable number of countries on an equitable basis,

c) could not serve as a basis for improving aeronautical communications. If excessively rigid standards were formally adopted, the result would only be an increase in mutual interference, inasmuch as such standards could not be fully applied in practice. That was particularly true of Europe, which was a focal point for the main air lines.

13. The adoption of these technical principles would not improve the present situation, which they all agreed, was unsatisfactory.

14. It had become all too clear, from the way in which all these basic technical problems had been discussed, that the proposals submitted by a number of delegations during the Conference - those submitted by the delegations of France, China, the Soviet Union, and by some others - had not been adequately studied. As soon as it became apparent that a proposal departed from the recommendations of the Preparatory Committee, or rather from the United States delegation's own recommendations, the machinery of the vote was immediately set in motion.

The Preparatory Committee had declared that any recommendations and proposals it had made would not bind any delegation to a particular position during the Conference, and that any other proposals would be considered on an equal footing. This, it seemed, was merely a fine gesture. In fact, the provisions of paragraph 6 of PC-Aer-Document No.25 - the Final Report of the Preparatory Committee - had been violated from the very first day of the Conference.

15. The Soviet delegation could not agree with such a procedure. The undue haste to which it had objected throughout had actually increased during the last few days, as a result of the target date which had been set for the Conference by the Third Plenary Meeting.

Some delegations, by dictatorial methods, had been trying to impose on the Conference proposals which corresponded only to the interests of their particular countries. Against this the Soviet delegation wished to protest.

16. In submitting its proposals to the Conference, the Soviet delegation, together with other delegations, had been guided solely by a desire to take an active part in improving aeronautical communications; it had worked for mutual understanding on the problems involved, with a view to getting the best results.

For these reasons, and out of regard for the sovereign rights of member states of the I.T.U., the Soviet Delegation would consider itself in no way bound by any decision which might be arrived at by means of the methods outlined above.

17. Mr. ARCIUCH (Poland), speaking for his own delegation and that of Czechoslovakia, said that both agreed with the Soviet delegation in considering that all proposals - those submitted by the Soviet and French delegations, amongst others, - should be thoroughly discussed within the appropriate committees.
18. Mr. SELIS (Netherlands) said that in practice it was impossible to get unanimous agreement on the subjects discussed in Committee 4, and in this case he did not think that further discussion would have been profitable. The proposal in question had been adopted by 16 votes to 6, with 4 abstentions.
19. Mr. MITROVIC (Yugoslavia) supported the statement made by the Soviet delegation. As an illustration of the way in which Committee 4 worked, he would point out that the Committee had sat until 1.30 p.m., on one occasion, to adopt a resolution on field intensities. By the time the resolution was put to the vote, many members were absent; at a later meeting there had been many amendments proposed to the text adopted.
20. The CHAIRMAN cautioned members against unwarranted criticism, in a Plenary Meeting of the Conference, of the management of Committees by the Chairmen, particularly when such criticism was based on the relative proportion of votes. This practice tended to create hard feelings unnecessarily, and was unlikely to produce helpful results. In practice, it was very often impossible to obtain unanimity of opinion on matters such as those dealt with in Committee 4. In the case of a 64 % - 36 % vote, the hardship, if any, would be far greater if the opinion of the 36 % prevailed over that of the 64 %. In matters such as this, it seemed to him that the best way of reaching a fair decision was for all interested parties to endeavour to adhere to the majority view. Rule 18 of the Atlantic City rules of procedure was indicative of the spirit that should prevail at conferences such as the present one.
21. Mr. FALGARONE (France), whilst acknowledging that the resolution had been adopted in conformity with the Rules of Procedure, said that there had been a certain tendency to avoid general discussion on some proposals. There had been a tendency throughout to make a somewhat rigid distinction between the plan submitted by the Preparatory Committee and other ideas put forward in the course of the conference.
22. Mr. KITO (Albania) supported the statements made by the delegates of the Soviet Union, Yugoslavia and France. Albania had thrown all her resources into the struggle against the Fascist invaders and had suffered grievous injury. She could not accept the recommendation of Committee 4 on channel separation (Aer-Document No. 35), and he would vote against it. This recommendation would be unacceptable for a number of countries, particularly for the smaller ones and for those, above all, which had been occupied during the war and had suffered heavy damage to their industries. The only proposal which would be satisfactory for all countries was that submitted by the Soviet delegation (Aer-Document No. 19)

Aer-Document No. 35, together with Annex C, was put to the vote and adopted by 25 votes to 9, with 4 abstentions.

(ii) Aer-Document No. 76

23. Mr. SELIS (Netherlands) seconded by Mr. ACTON (Canada), moved adoption of the resolution contained in the Annex to Aer-Document No. 76. This resolution had been distributed in a corrected form as an extract from the Minutes of the 19th meeting of Committee 4.
24. Mr. MITROVIC (Yugoslavia), together with Mr. KITO (Albania), wished to abstain, as they had no experience in this field and would reserve their attitude.

Mr. FALGARONE (France) abstained, as the French text of the Annex to Document 76 was by no means clear.

It was agreed that a revised text would be submitted by Mr. PETIT (IFRB)

Aer-Document No. 76 was put to the vote and adopted by 25 votes to 0, with 13 abstentions.

REPORT OF THE AD HOC GROUP SET UP TO STUDY AER-DOCUMENTS 9 AND 49
(AER-DOCUMENT No.92)

25. Mr. GREVEN (ICAO) said that the name of Mr. ADAM (IATA) had been omitted and that his (Mr. Greven's) initials should be given as "P.J.". He moved adoption of the report. This was seconded by Mr. TABIO (Cuba).

Mr. JAROV (USSR) wished to abstain, as his delegation had insufficient information on the problem.

Aer-Document No. 92 was put to the vote and adopted by 28 votes to 0, with 11 abstentions.

26. It was agreed that a copy should be sent by the Chairman of the Conference to the Secretary-General, together with the relevant maps.

The meeting rose at 4 p.m.

Reporter :
N. Langford

Chairman :
A. Lebel

POLISH DELEGATION

OBSERVATIONS ON THE ALLOCATION OF HIGH FREQUENCIES
TO THE SPECIAL AERONAUTICAL METEOROLOGICAL SERVICE

In Article 5 (Table of Frequency Allocations) of the Atlantic City Radio Regulations only the following bands are allotted to the Meteorological Service:

MF - 2045 - 2065 Kc/s,	Region 1, meteorological aids see table.
HF - 27500 - 28000 Kc/s,	Region 1, meteorological aids see table.
VHF- 94.5 - 19 Mc/s,	Great Britain, France, India, Region 1, meteorological aids No. 190
VHF- 151 - 154 Mc/s,	Region 1, meteorological aids No. 197
UHF- 400 - 420 Mc/s,	World-Wide, meteorological aids No. 208.
UHF- 1700 - 1750 Mc/s,	Regions 1 and 3, meteorological aids No. 219
UHF- 1600 - 1700 Mc/s,	Region 2, meteorological aids see table.
UHF- 2700 - 2900 Mc/s,	World-Wide meteorological aids No. 222.
SHF- 6900 - 7050 Mc/s,	U.S.S.R, meteorological aids No. 229.

As a result, there is, in the Atlantic City Radio Regulations, only one band in the decametric waves (HF), that of 27500-28000 Kc/s, which is assigned to the auxiliary meteorological services.

From the point of view of frequencies, meteorological messages and correspondence may be classified as follows:

1. Meteorological warning messages (No. 1050, Art 45 of the Radio Regulations) which are preceded by the Safety signal and transmitted on the frequencies indicated under No. 946:

"The safety signal and the message which follows it are sent on the distress frequency (500 Kc/s) or on one of the frequencies which may be used in case of distress (see 868 to 871)"

This category of meteorological service messages is thus provided with well defined frequencies. It is not possible to assign to it new frequencies in the HF bands while the Atlantic City Radio Regulations remain in force.

2. The assignment of frequencies in the HF bands to the following categories of meteorological messages must be carried out by the PFB:
 - A - For all communications and messages of the General National Meteorological Service, (excluding the aeronautical meteorological service proper).
 - B - For meteorological emissions and messages (CQ "to all stations") intended for stations of the Aeronautical Mobile Service which do not require communications with aircraft: (See Nos. 1049 and 1052 of the Atlantic City Radio Regulations.)
 - C - Aeronautical meteorological messages and correspondence which require direct communication between the airports of international or national lines.
3. New assignments within the range of decametric waves will have to be authorized for aeronautical meteorological messages emitted by ground stations for aircraft in flight and vice-versa, but only in the case of stations of airports serving a great number of lines.

Airports with a low volume of traffic desiring to send meteorological messages to aircraft in flight, may use their radio direction finding stations; these messages are then transmitted on the frequencies assigned to the latter.

Radio direction finding stations are directly linked (by telephone) to the correspondence offices of the airports which handle the meteorological correspondence mentioned under point 2 above.

Assuming that each airport possesses two radio direction-finding stations (MF and HF) and that one radio direction-finding station can serve 6 aircraft, it may be supposed that about twelve aircraft (equipped with MF and HF apparatus) can be served from the point of view of both the mobile aeronautical service and the aeronautical meteorological service.

If the number of aircraft to be served is greater than twelve, it would be necessary to have available for service one or several additional channels in the range of decametric waves on which the correspondence office of the airport would work directly with the aircraft in flight. These special channels would be exclusively assigned to the meteorological service. In this way, every aircraft would always be able to exchange meteorological messages, either with radio direction-finding stations, or directly with the correspondence offices of the airports.

In short, it is recommended that the Conference should:

- 1 - entrust to the P.F.B. the consideration of the problems of allocating high frequencies to the meteorological correspondence services mentioned under point 2.
- 2 - determine the frequencies to be assigned in the range of decametric waves to airports serving more than twelve lines, and the total number of these frequencies.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No. 111 - E
Aér-Document No. 111 - F
Aer-Documento No. 111 - S

15 June 1948

15 juin 1948

15 de junio de 1948

Schedule of Meetings

	<u>Time</u>	<u>Room I</u>	<u>Room II</u>	<u>Room B</u>
<u>Wednesday, 16 June, 1948</u>	0930	7 (working groups)	6 C	
	1430	7 (" ")	6 C	
	1730		6 E	
<u>Thursday, 17 June, 1948</u>	0930	7 (or working gr.)	6 C	
	1430	4	6 C (after 4)	7 (work. groups)
	1730	3		
<u>Friday, 18 June, 1948</u>	0930	7	6 C (or work. groups)	
	1430	4	6 C (after 4)	7 (work. gr.)
	1730	1		

Horaire des séances

	<u>heure</u>	<u>Salle I</u>	<u>Salle II</u>	<u>Salle B</u>
<u>Mercredi, 16 juin, 1948</u>	9 h.30	7 (gr.de tr.)	6 C	
	14 h.30	7 (gr.de tr.)	6 C	
	17 h.30		6 E	
<u>Jeudi, 17 juin, 1948</u>	9 h.30	7 (ou gr.de tr.)	6 C	
	14 h.30	4	6 C (après 4)	7 (gr.) de tr.)
	17 h.30	3		
<u>Vendredi, 18 juin, 1948</u>	9 h.30	7	6 C (ou gr.de travail)	
	14 h.30	4	6 C (après 4)	7 (gr.de tr.)
	17 h.30	1		

Programa de Sesiones

	<u>Hora</u>	<u>Sala I</u>	<u>Sala II</u>	<u>Sala B</u>
<u>Miercoles, 16 de junio de 1948</u>	9 h.30	7 (gr.de tr.)	6 C	
	14 h.30	7 (gr.de tr.)	6 C	
	17 h.30		6 E	
<u>Jueves, 17 de junio de 1948</u>	9 h.30	7 (o gr.de tr.)	6 C	
	14 h.30	4	6 C (despues de 4)	7 (gr.de tr.)
	17 h.30	3		
<u>Viernes, 18 de junio de 1948</u>	9 h.30	7	6 C (o gr.de tr.)	
	14 h.30	4	6 C (despues de 4)	7 (gr.de tr.)
	17 h.30	1		



16 June, 1948

Committee 4

Working Group B

FINAL REPORT OF WORKING GROUP 4B

- 1 - Working Group 4 B, with terms of reference as contained in Aer-Doc-No.43, presents its report attached as Annex A and B. Annex A shows the channeling of the aero mobile bands in summary form and Annex B in graphical form for convenience of committees 4, 6 and 7.
- 2 - The basis of channel separation was that adopted by the Conference and is contained in Annex C to Aer-Doc-No.34. Tolerances shown at band edges were computed, taking into account adjacent services, on the following basis :
 - (a) A bandwidth of emission of 6000 c/s plus a tolerance of not less than 0.02% except for those cases where strict adherence would mean loss of channels.
- 3 - It was the opinion of the committee that it could not fulfill the second part of its terms of reference without consideration of the requirements of committees 6 and 7. It is recommended that both of those committees render advice as to the unallotted space present at the junction of (R) and (OR) bands, bearing in mind the requirements for common facilities, when these are determined.

Chairman

P. J. Greven



Group 4-B

CHANNELING OF THE AERONAUTICAL MOBILE BANDS

Band : (R) 2850 - 3025 kc/s Width 175 kc/s
(OR) 3025 - 3155 kc/s Width 130 kc/s

Spacing 7 kc.

2850

Tolerance .035%

2854 First (R) frequency
3015 Last (R) " 24 (R) Channels (A-3)

3025 Junction

3032 First (OR) Freq.
3151 Last (OR) Freq. 18 (OR) Channels (A-3)

3155

Tolerance .032%

Combined surplus space at junction of (R) and (OR) bands = 10 kc/s

Consisting of :

(R) space = 6.5 kc/s
(OR) space = 3.5 kc/s

NOTE : It is suggested this combined space be applied to a common channel with designated frequency of 3023.5 kc/s with guard band.

Band : (R) 3400-3500 kc/s Width 100 kc/s

Spacing 7 kc.

3400

Tolerance .044

3404.5 First (R) Freq.
3495.5 Last (R) Freq. 14 (R) Channels (A-3)

3500

Tolerance .043

Band : (R) 4650 - 4700 kc/s Width 50 kc/s
(OR) 4700 - 4750 kc/s Width 50 kc/s
Spacing 7 kc.

4650

Tolerance .032

4654.5 First (R) Freq.
4696.5 Last (R) Freq. 7 (R) Channels (A-3)

4700 Junction

4703.5 First (OR) Freq.
4745.5 Last (OR) Freq. 7 (OR) Channels (A-3)

4750

Tolerance .032

- 2 -

A N N E X A to (Aer-Doc-No.112-E)

Band : (R) 5480 - 5680 kc/s Width 200 kc/s
(OR) 5680 - 5730 kc/s Width 50 kc/s

Spacing 7.5 kc/s

5480

Tolerance .018

5484 First (R) Freq.
5671.5 Last (R) Freq. 26 (R) Channels (A-3)

5680 Junction

5688.0 First (OR) Freq.
5725.5 Last (OR) Freq. 6 (OR) Channels (A-3)

5730

Tolerance .026

Combined surplus space at junction of (R) and (OR) bands = 9 kc/s
Consisting of :
(R) space = 4.75 kc/s
(OR) space = 4.25 kc/s

NOTE : Less than .02% tolerance was considered admissible at 5480 kc/s in view of the nature of services occupying the adjacent band, namely AeM, M, Fx.

Band : (R) 6525 - 6685 kc/s Width 160 kc/s
(OR) 6685 - 6765 kc/s Width 80 kc/s

Spacing 7.5 kc/s

6525

Tolerance .023

6529.5 First (R) Freq.
6679.5 Last (R) Freq. 21 (R) Channels (A-3)

6685 Junction

6693.0 First (OR) Freq.
6760.5 Last (OR) Freq. 10 (OR) Channels (A-3)

6765

Tolerance .022

Combined surplus space at junction of (R) and (OR) bands = 6 kc/s
consisting of :
(R) space = 1.75 kc/s
(OR) space = 4.25 kc/s

Band : (R) 8815 - 8965 kc/s Width 150 kc/s
(OR) 8965 - 9040 kc/s Width 75 kc/s

Spacing 8.5 kc/s

8815

Tolerance .022

8820.0 First (R) Freq.
8956 Last (R) Freq. 17 (R) channels (A-3)

8965 Junction

8975.5 First (OR) Freq.
9035 Last (OR) Freq. 8 (OR) Channels (A-3)

9040

Tolerance .022

Combined surplus space at junction of (R) and (OR) bands = 11 kc/s
Consisting of :
(R) space = 4.75 kc/s
(OR) space = 6.25 kc/s

Band : (R) 10005 - 10100 kc/s Width 95 kc/s

Spacing 9 kc.

10005

Tolerance .04

10012 First (R) Freq.
10093 Last (R) Freq. 10 (R) Channels (A-3)

10100

Tolerance .04

Band : (OR) 11175 - 11275 kc/s Width 100 kc/s
(R) 11275 - 11400 kc/s Width 125 kc/s

Spacing 9.5 kc/s.

11175

Tolerance .022

11180.5 First (OR) Freq.
11266.0 Last (OR) Freq. 10 (OR) Channels (A-3)

11275 Junction

11280.5 First (R) Freq.
11394.5 Last (R) Freq. 13 (R) Channels (A-3)

11400

Tolerance .022

Combined surplus space at junction of (R) and (OR) bands = 5 kc/s
consisting of :
(R) space = .75 kc/s
(OR) space = 4.25 kc/s

A N N E X A to (Aer-Doc-No. 112-E)

Band : (OR) 13200 - 13260 kc/s Width 60 kc/s
 (R) 13260 - 13360 kc/s Width 100 kc/s

Spacing 10 kc/s

13200

Tolerance .019

13205.5 First (OR) Freq.
13255.5 Last (OR) Freq. 6 (OR) Channels (A-3)

13260 Junction

13264.5 First (R) Freq.
13354.5 Last (R) Freq. 10 (R) Channels (A-3)

13360

Tolerance .0187

NOTE : It should be noted that the frequency separation between the last (OR) frequency and the first (R) frequency is only 9 kc/s; therefore, it will be necessary to allot these two channels to services which may be expected to maintain a tolerance of .013%.

Band: (OR) 15010 - 15100 kc/s Width 90 kc/s

Spacing 10 kc/s.

15010

Tolerance .02

15016 First (OR) Freq.
15086 Last (OR) Freq. 8 (OR) Channels (A-3)

15100

NOTE : Spare space 8 kc/s assuming tolerance at band edge of the order of .02%. It is suggested committee 7 be given the opportunity to determine the use to which spare space will be put, recognizing that committee 7 may be able to recommend lower tolerance values at these band edges in the interest of providing the maximum number of channels.

Band : (R) 17900 - 17970 kc/s Width 70 kc/s
 (OR) 17970 - 18030 kc/s Width 60 kc/s

Spacing 10 kc/s

17900

Tolerance .01955

17906.5 First (R) Freq.
17956.5 Last (R) Freq. 6 (R) Channels (A-3)

17970 Junction

17983.5 First (OR) Freq.
18023.5 Last (OR) Freq. 5 (OR) Channels (A-3)

18030

Tolerance .0194

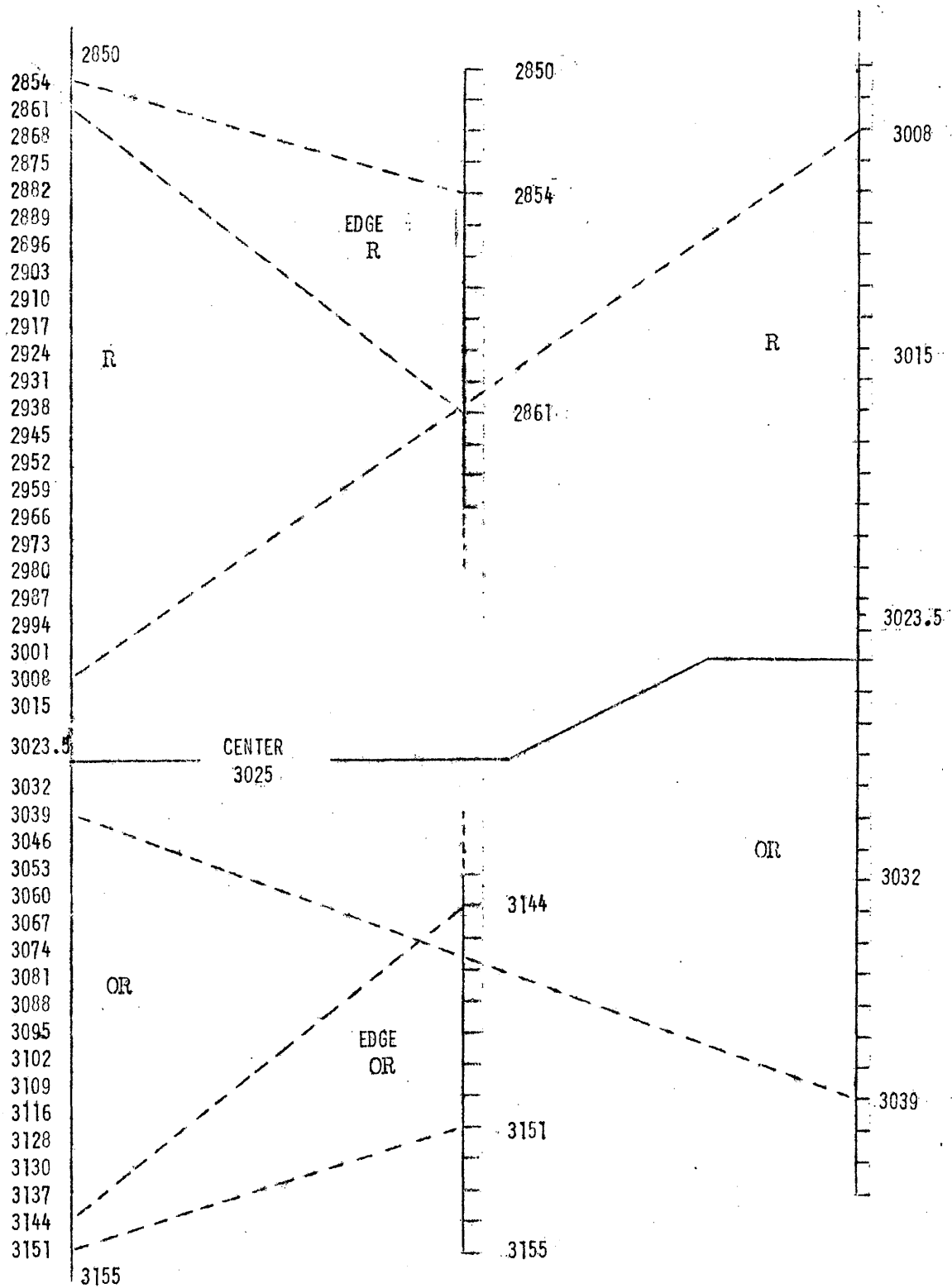
A N N E X A to (Aer-Dos-No. 112-E)

Combined surplus space at junction of (R) and (OR) bands	=	17	kc/s
Consisting of :			
(R) space	=	8.5	kc/s
(OR) space	=	8.5	kc/s

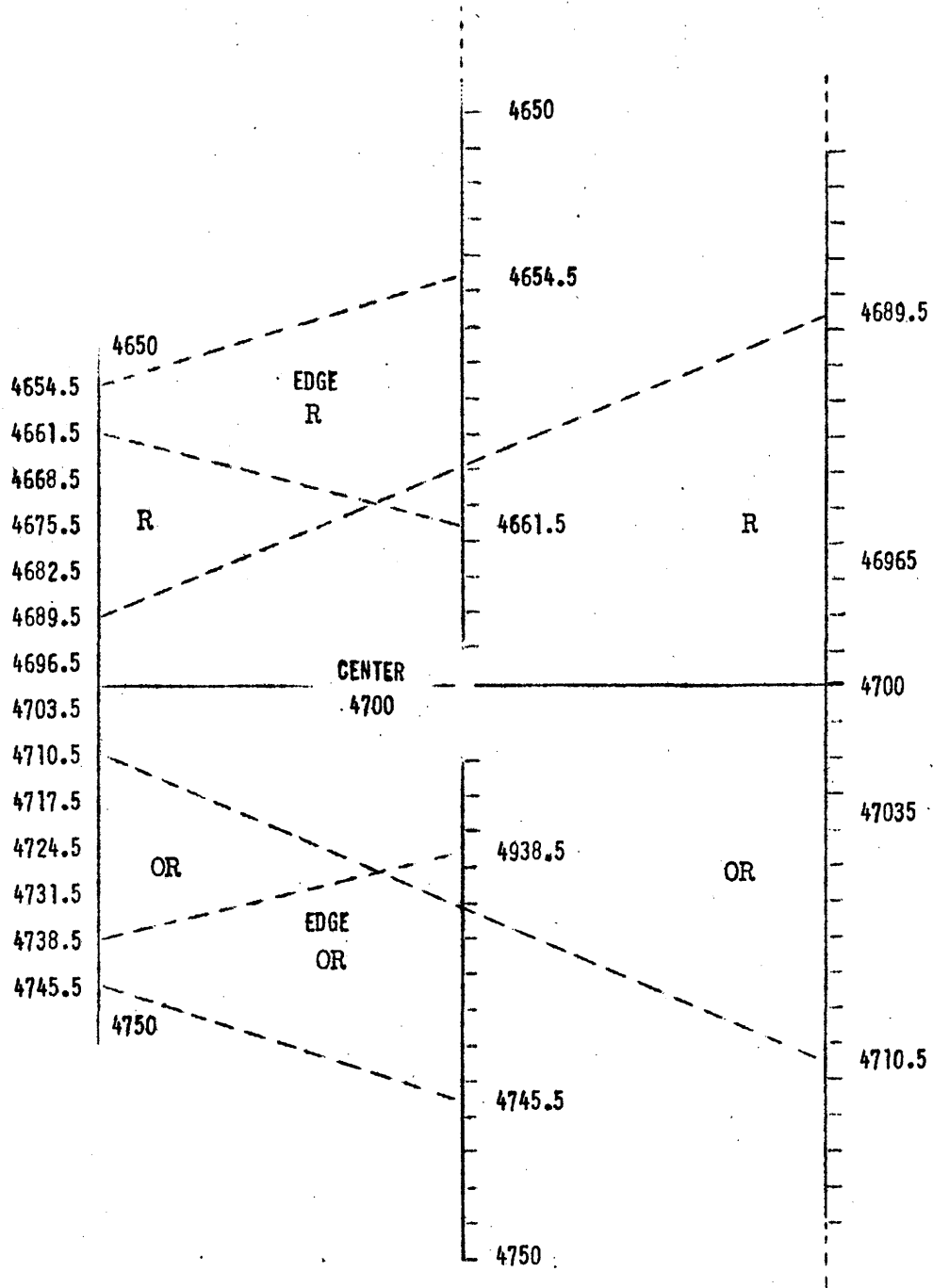
NOTE : Spare space may be utilized by the adoption of two
 (One OR and one R) narrow band A-3 channels.

Band	TOTAL WIDTH (kc/s)		Band Edge Tolerance		Adj. Bands Below	Bands Above	Channel Separation (kc/s)	High Capacity Channels		Unallotted Space (kc/s)		
	R	OR	Lower End	Upper End				R	OR	R	OR	Total
2850 - 3155	175	130	0.035	0.032	FX,M	FX M	7	24	18	6.5	3.5	10.0
3400 - 3500	100	-	0.044	0.043	FX,M B	AM FX M	7	14	-	-	-	-
4650 - 4750	50	50	0.032	0.032	FX,M	B, FX	7	7	7	-	-	-
5480 - 5730	200	50	0.028	0.026	AEM,FX M	FX	7.5	26	6	4.75	4.25	9.0
6525 - 6765	160	80	0.022	0.022	MM	FX	7.5	21	10	1.75	4.25	6.0
8815 - 9040	150	75	0.022	0.022	MM	FX	8.5	17	8	4.75	6.25	11.0
10005 - 10100	95	-	0.04	0.04	SFB	FX	9.0	10	-	-	-	-
11175 - 11400	125	100	0.022	0.022	FX	FX	9.5	13	10	0.75	4.25	5.0
13200 - 13360	100	60	0.0197	0.0187	MM	FX	10.0	10	6	-	-	-
15010 - 15100	-	90	0.02	0.02	SFB	B	10.0	-	8	-	8.0	8.0
17900 - 18030	70	60	0.02	0.019	B	FX	10.0	6	5	8.5	8.5	17.0
TOTALS	1225	695						148	78	27.00	39.00	66.00

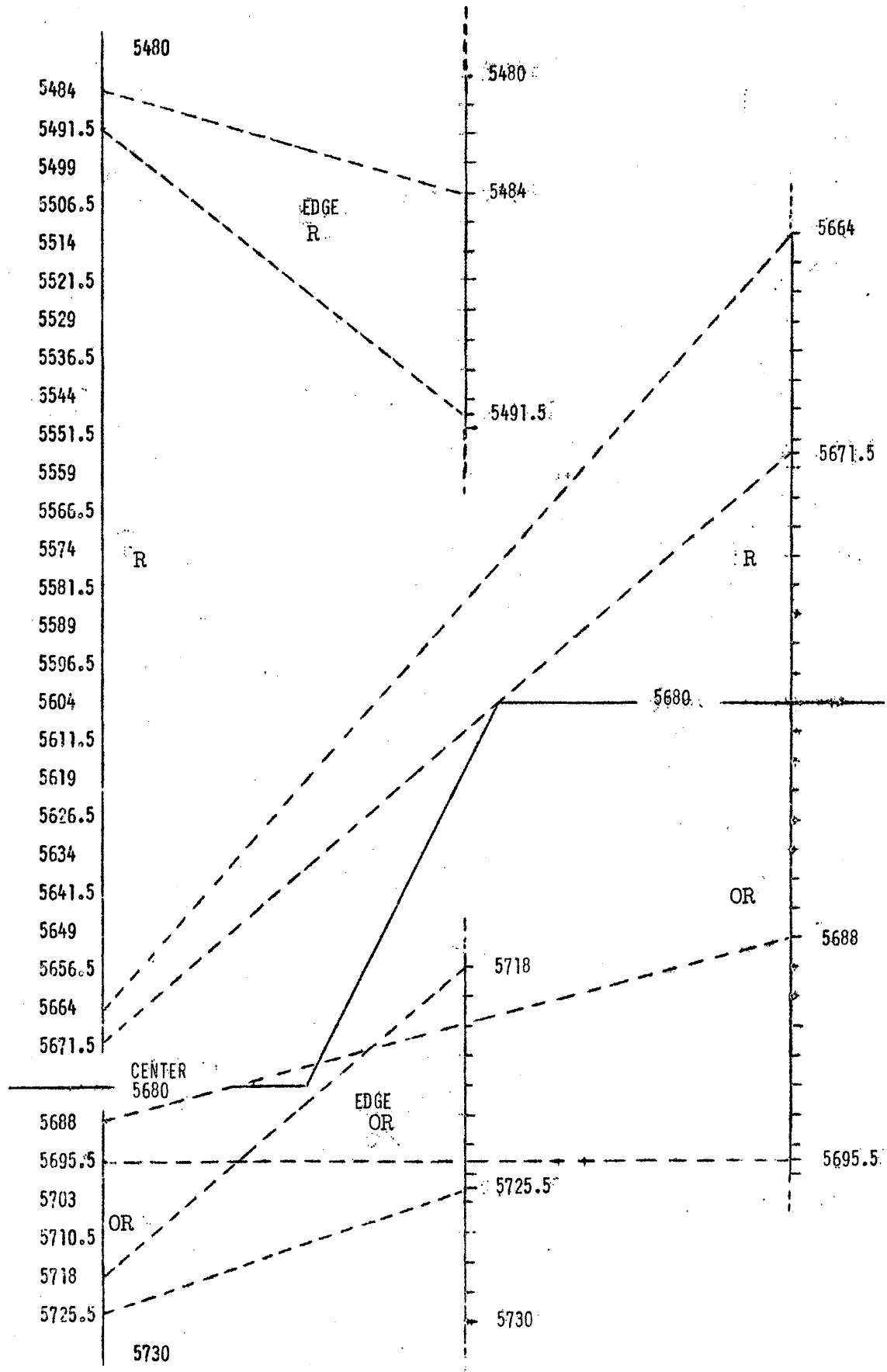
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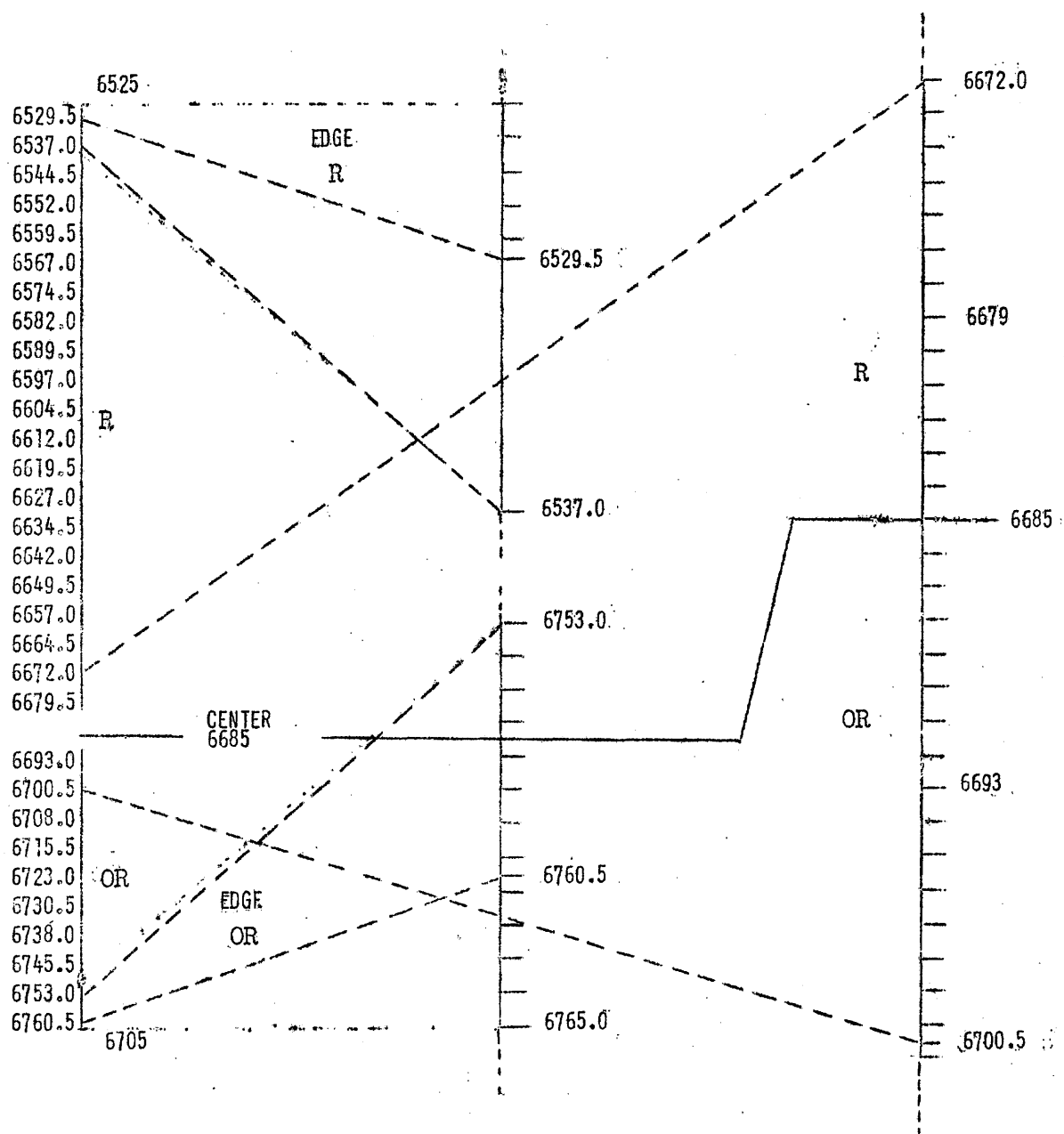
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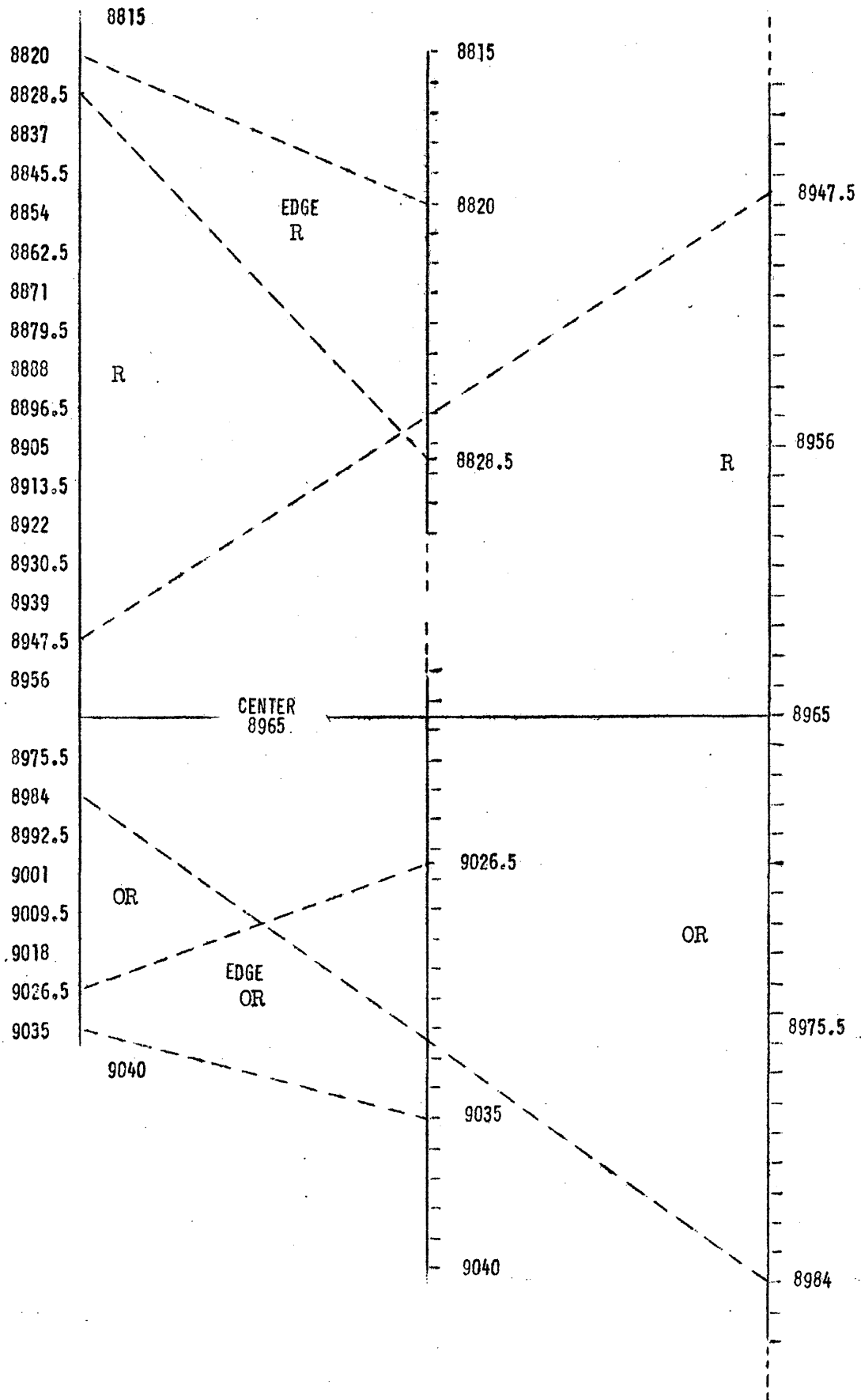
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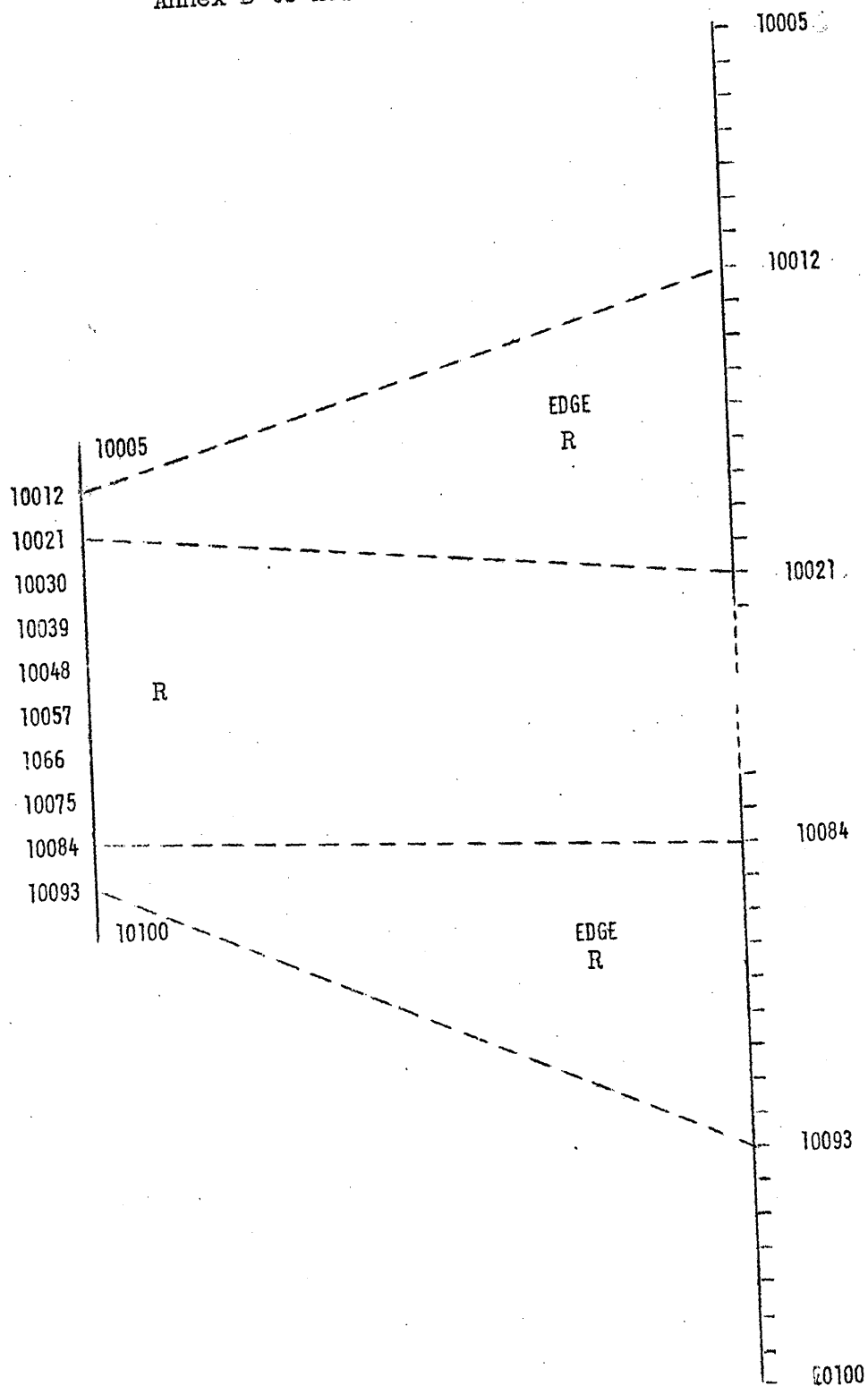
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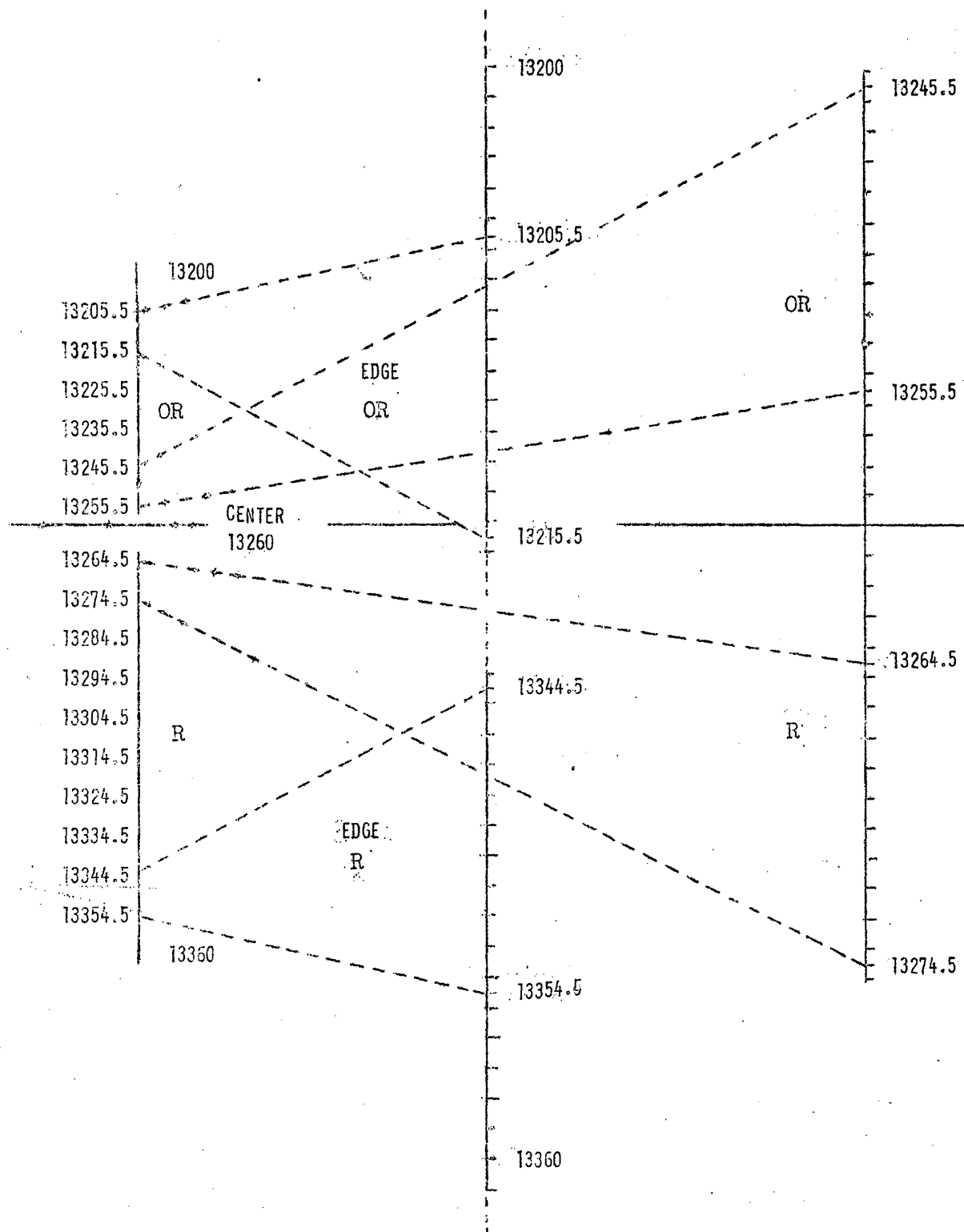
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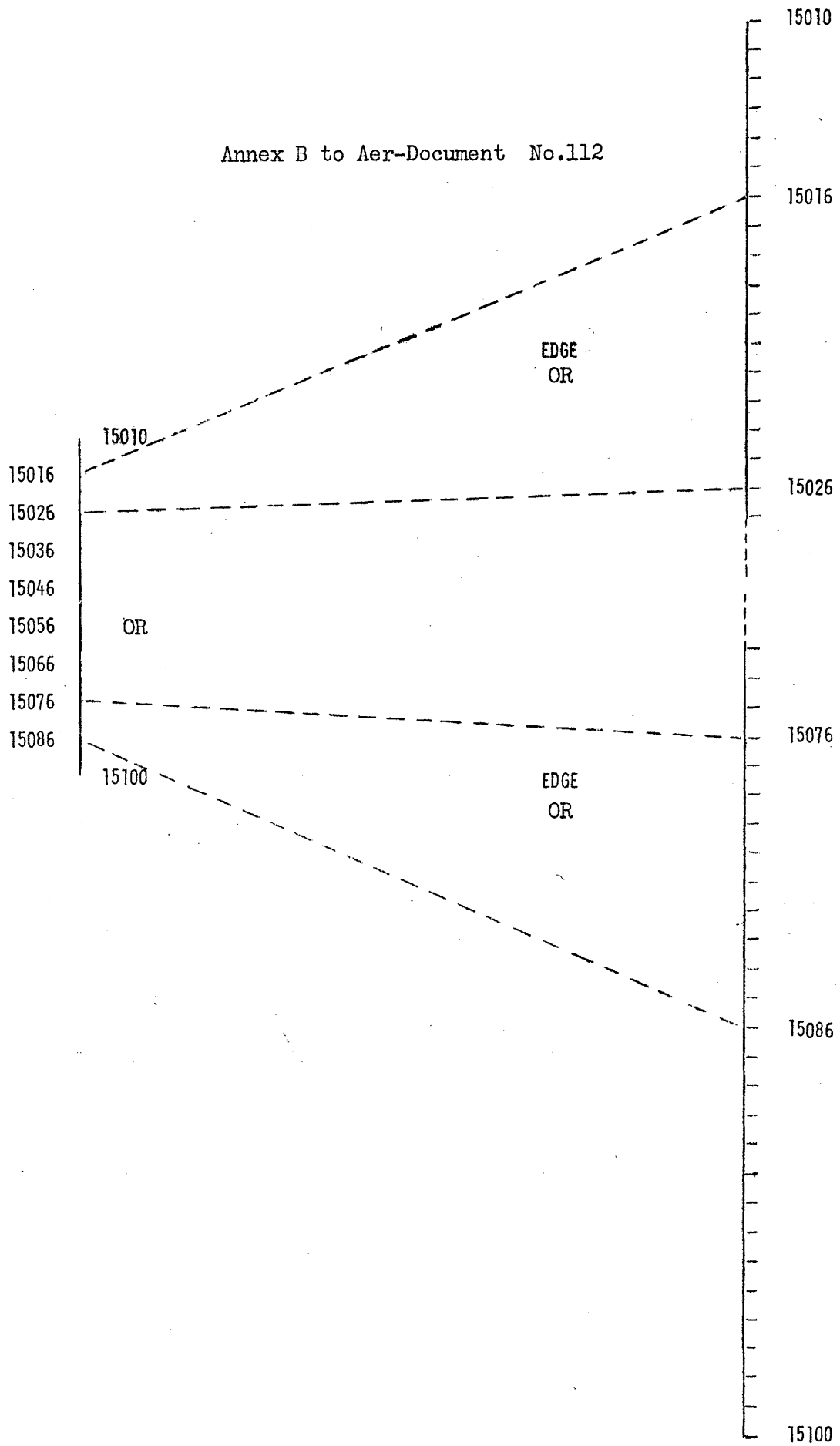
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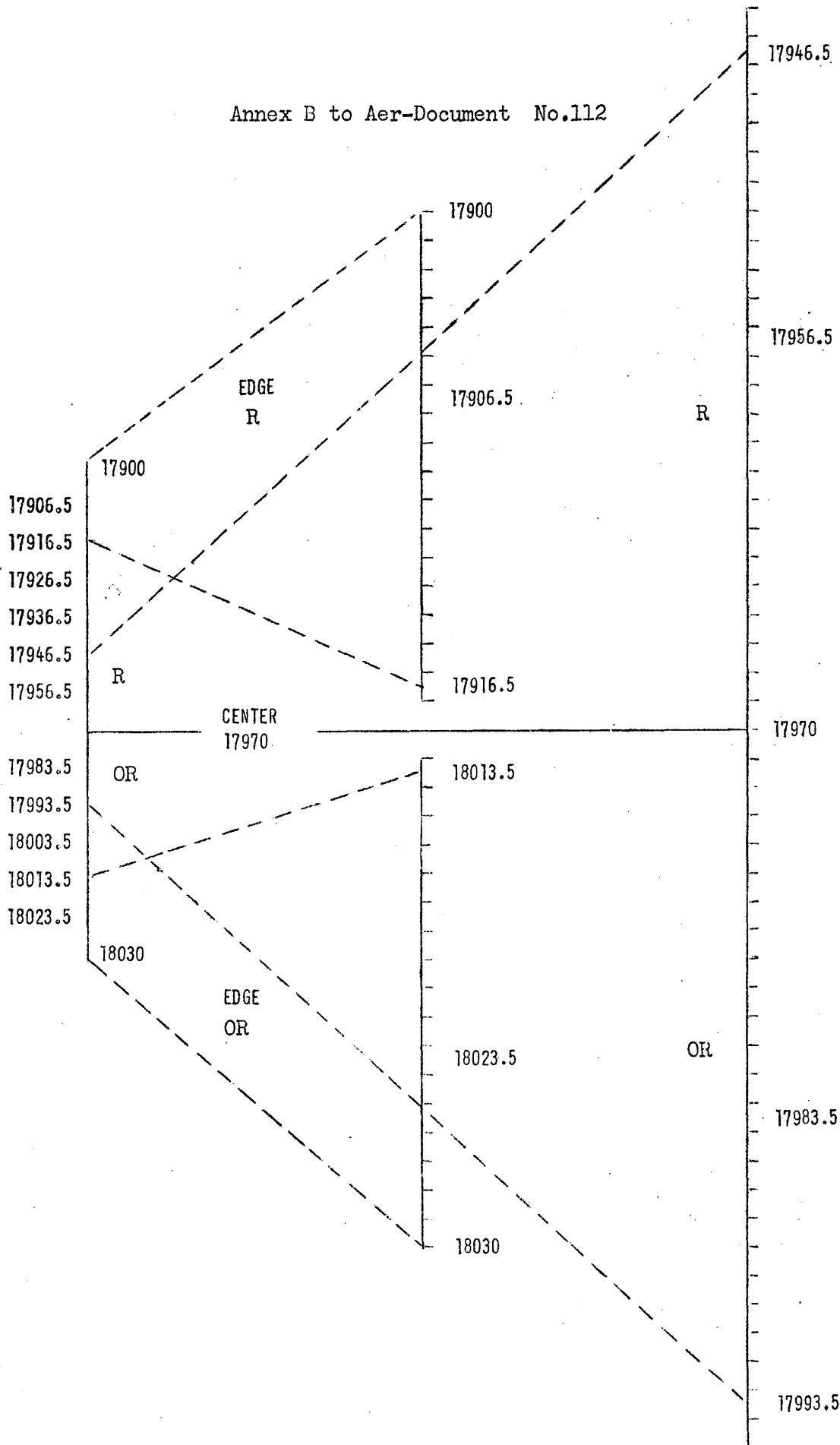
Annex B to Aer-Document No.112



Annex B to Aer-Document No.112



Annex B to Aer-Document No.112

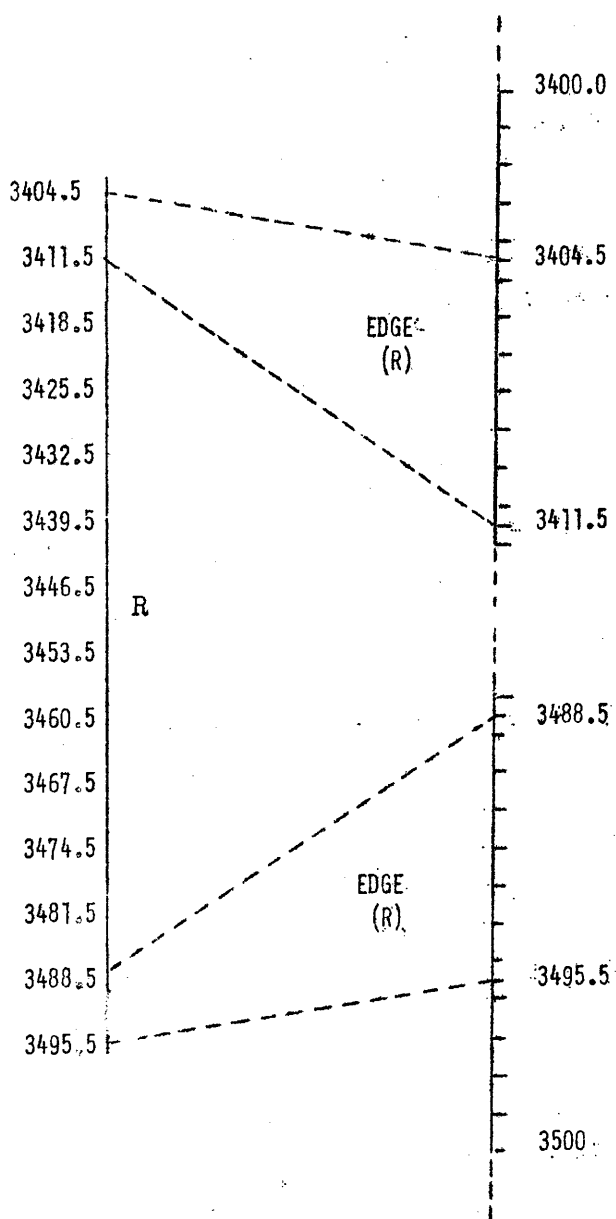


Amendment to Aer-Document No.112-E

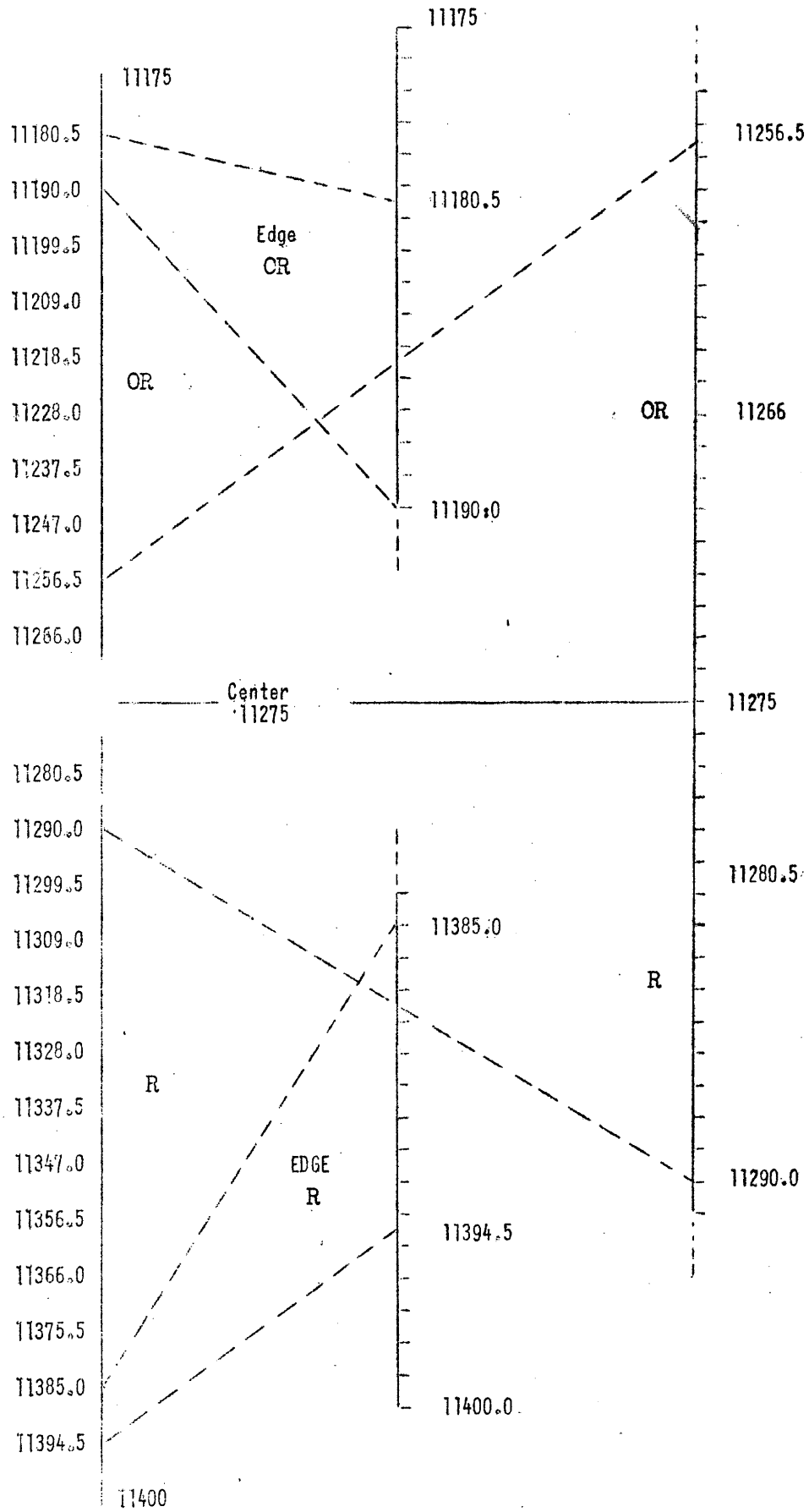
17 June, 1948

Insert the following two sheets in Annex B

Annex B to Aer-Document No. 112



Annex B to Aer-Document No. 112



REPORT

OF THE COMMITTEE ON THE ALLOTMENT OF OR FREQUENCIES

(Committee 7)

16th Meeting

June 11th, 1948

1. The Chairman; Mr. M.A.Fry (United Kingdom) opened the meeting at 9.30 a.m.

Delegations of the following countries were present :

Australia	Poland
Canada	Portugal
Chile	New Zealand
United States of America	United Kingdom
France and French Overseas Territories	Ukraine (S.S.R.)
Honduras (Rep. of)	U.S.S.R.

2. The Chairman recalled that a Working Group 2 had been established and he asked the Chairman of Working Group 1 if he expected any difficulty in gathering the information which his group was to provide for Group 2 and by what date he hoped to finish this particular task.

The Chairman of Working Group 1 explained that he hoped to begin this task on the morning of June 14th and that, by setting up 3 teams of two delegates each, his group would deliver the required information to Group 2 on June 16th.

The Chairman took cognizance of this declaration and emphasized that, in accordance with the provisions of the resolution passed by Committee 7, during its 13th Meeting, only those requirements which had been submitted by June 10th and which contained the necessary indications would be taken into consideration for the establishment of a frequency assignment plan in the "OR" bands.

Concerning this, the Delegate of Australia declared that all acts and decisions of Committee 7 could, of course, be found in the various Minutes of the Meetings, but it would be desirable to have them all condensed into a summary. He had himself undertaken to compile such a summary and he submitted a declaration to Committee 7 which he proposed be included in the present Minutes.

3. Declaration of the Delegate of Australia.

Committee 7 notes the fact that certain delegations have not yet submitted to this conference - in spite of repeated invitations - sufficient information concerning their countries' frequency requirements for the OR aeronautical mobile service bands, prepared in a manner which would allow this Committee to establish a proper technical basis of assignment.

Committee 7 is therefore obliged, in order to summarize the content of the Minutes of this Conference, to restate formally the measures adopted by the ITU and by the present Conference for the purpose of obtaining the minimum information judged indispensable for the establishment of the Technical basis mentioned below. These measures are the following:

- 1)- The Atlantic City Conference decided that a new list of frequencies based on technical principles should be prepared, and the formulas known as Forms 1 and 2 were adopted to allow the various countries to submit the information necessary for the establishment of the list in question (para. 12 (d), page 19 of the Recommendations and Resolutions adopted by the International Radio Conference).
- 2)- The P.F.B. during its 30th Plenary Meeting, held on January 30th, 1948, decided to notify all countries (see Doc. N° 49) that the requirements received after February 25th, 1948 could be considered only after the initial lists had been prepared for distribution.
- 3)- The Preparatory Committee of the International Administrative Aeronautical Radio Conference, in order to give all countries another opportunity to submit the information in question, approved the dispatch of a telegram which, in effect, postponed until May 15th the deadline for the submission of requirements and modified the form of their presentation.
- 4)- Committee 7 of the International Administrative Aeronautical Radio Conference, having found during its 2nd Meeting, May 21st, 1948, that certain countries had not yet submitted the desired information, and having admitted a possible delay in the mails, finally extended the deadline to May 30th, 1948.
- 5)- This Committee, during its 13th Meeting, June 7th, 1948, adopted by 13 votes to 3 (no abstentions) a resolution indicating specifically the minimum of information considered necessary to allow the assignment of frequencies on a technical basis, and the Committee fixed, in addition, the 10th of June, 1948, as the deadline for the submission of minimum information. The Committee also decided that it would not consider the requirements of those countries which had not provided the minimum information by that date, for it felt that it had given all countries every desirable facility to enable them to provide the required information.

The successive measures enumerated above were taken and the nature and quantity of the information considered necessary for the establishment of the technical basis mentioned in the introductory paragraph were reduced to the strict minimum. The date of June 10th, 1948, having passed, the Committee notes that certain delegations have not yet submitted the information required in spite of the fact that their countries were given every possible opportunity to do so. Consequently, Committee 7 has decided to include this statement in the Minutes of this Meeting and to proceed with its task of assigning frequencies to the OR aeronautical mobile service, disregarding those requirements for which the above-mentioned minimum information has not been submitted.

4. The preceding declaration, whose original text was amended several times at the requests of the Delegates of France and Honduras, was approved by the Delegates of the United States and New Zealand, who agreed on its principles.

The Chairman then put the declaration before the Committee for approval.

The Delegate of the U.S.S.R. pointed out that this declaration tended, as a matter of fact, to exclude from consideration those Soviet requirements which had been submitted on May 28th, 1948, but on a form different from the required "form 2". He declared that the U.S.S.R. might furnish some additional information about power used, operating hours and even the utilization regions, without, however, indicating the locations as precisely as required. At any rate, he could not accept such a declaration and found himself obliged to vote against it.

The Chairman, noting that the U.S.S.R. Delegation was ready to cooperate more closely with the majority of the Delegations present, proposed that the additional information mentioned by that Delegation be considered thenceforward as having been received by the 10th of June, 1948. He said that, once this information were received, Committee 7 would decide whether or not it was sufficient. He felt, nevertheless, that the Australian declaration, seconded by other Delegations, should be examined first. He therefore invited the Committee to voice its opinion on:

- a) the declaration of the Australian Delegation,
- b) its own proposal.

The Australian Delegate approved that procedure.

The United States Delegate, seconded by the Canadian Delegate, requested that the Australian declaration be put to a vote.

The French Delegate emphasized that this declaration would be effective only if the information provided were really insufficient.

The Polish Delegate declared that he would vote against the declaration, but because he felt that the Chairman's proposal would conciliate differences of opinion he proposed that the said proposal be considered first of all.

The Chairman followed the procedure previously indicated and, returning to the motion of the United States requesting a vote on the Australian declaration, asked the Committee to voice its opinion first concerning this motion.

By 8 votes to 5, and 1 abstention, Committee 7 decided to put the Australian declaration to a vote. The latter was then adopted by 11 votes to 4 (no abstention).

5. The Chairman therefore submitted, for the Committee's approval, his own proposal, which he repeated:

"Committee 7 agrees that the additional information which the U.S.S.R. Delegation is to submit in the near future shall be considered as having been submitted by June 10th, 1948, without prejudice to its nature or to the final decision to be taken concerning it".

He also supposed that the Ukrainian and Bielorussian Delegations would furnish the same type of information as the Soviet Delegation. In that case, his proposal would be applicable to these two countries as well.

He presumed that the promised information would be forthcoming as soon as possible.

The United States Delegate pointed out that the amount of lost time was already considerable and he was opposed to any further loss of time. The preceding resolutions had stipulated the deadlines and according to him no further delay should be allowed. However, he agreed to the principle involved in the Chairman's proposal.

The Australian Delegate suggested that the expression "in the near future" be replaced by the word "today".

The Chairman accepted this modification of his proposal and declared as well that if the proposal were not immediately and unanimously approved, he would simply withdraw it.

The U.S.S.R. and Ukrainian Delegates could not accept the word "today" in place of the expression "in the near future", for it would have obliged them to furnish without delay the information which they proposed to furnish; they therefore did not agree to the proposal.

The Chairman consequently withdrew his proposal, and adjourned the meeting at 12.45 p.m.

Reporter :

Commandant G. Sarre

Chairman :

A. Fry

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Aer - Document N° 114-E
16 June, 1948
COMMITTEE 2

REPORT OF THE CREDENTIALS COMMITTEE

Adequate credentials were received as of June 15th, appointing Mr. N.V.S. Iyengar to represent the Government of India at the Conference.

Pending the adoption of this report by the Plenary Assembly, it is recommended that Chairmen of Committees take into account the vote of the representative of India at any Committee meetings as of the above date.

The Reporters:

F.A. Trail
M. Chef

The Chairman:

Victor Veres



International Administrative
Aeronautical Radio Conference

GENEVA, 1948

Aer-Document No. 115-E

16 June, 1948

Committee 4

REPORT

OF THE TECHNICAL AND OPERATIONAL COMMITTEE

(Committee 4)

22nd Meeting

14 June, 1948

CORRIGENDUM

Page 5, last paragraph.

Instead of:

The above mentioned methods and U.S.A. proposals, as amended,
are added as Annexes A and B to this document,

read:

The above mentioned Netherlands and U.S.A. proposals, as amended,
are added as Annexes A and B to this document.

(6-24-6)

GENEVA 1948

Committee 4

REPORT

OF THE TECHNICAL AND OPERATIONAL COMMITTEE

(Committee 4)

22nd Meeting

14 June, 1948

Chairman: Mr. Selis (Netherlands)

The following countries and organizations were represented:

Argentina	Norway
Australia	Pakistan
Bielorussian S.S.R.	Poland
Canada	Portugal
Colombia	Roumania
Cuba	Switzerland
France	Union of South Africa
French Overseas Territories	U. S. S. R.
India	United Kingdom
Ireland	U. S. and U. S. Territories
Italy	Yugoslavia
Netherlands Curacao and Suriname	I. F. R. B.
Netherlands East Indies	I. A. T. A.
New Zealand	I. C. A. O.

1. The Chairman opened the meeting at 9:45 a. m. and referred to Aer-Document No. 75 being Minutes of the 14th meeting. These were adopted unanimously.
2. The Chairman referred to the work of Committee 4B and asked what progress was being made. Colonel Greven replied that it was hoped to finish the work that day.
3. The Chairman referred the meeting to the question of public correspondence which had been the subject of considerable discussion at the previous meeting and stated that the Netherlands' proposal had been seconded by the delegate of France; also that the United States' proposal was seconded by the delegate for Canada. The Chairman also drew attention to the fact that in the Netherlands' proposal at the end of paragraph 5.2.d) the words "or ground station" had been added.

The delegate for New Zealand mentioned that there was little reason why as a matter of principle, after the requirements of aircraft had been satisfied, public correspondence should not be conducted on aeronautical mobile channels if there was spare channel time but suggested that the word "will", paragraph 5, line 8, be changed to "may". This amendment was agreed to by the delegates of the Netherlands and France. The delegate of Canada referred to articles 727, 728 and 729 of the Atlantic City Radio Regulations and stated that these regulations indicated that some of the remarks passed by the delegate of New Zealand on the handling of messages on the distress and calling frequency 500 Kc applied only to restricted cases.

The delegate of the U.S.S.R. stated that consideration of the matter must be treated separately for internal air lines and international air lines. The restrictions in the Netherlands proposal were acceptable to the aeronautical service and that, in principle, public correspondence could be admitted on mobile frequencies, providing the basic principles of aircraft safety were not prejudiced. The rules for internal use of frequencies must be left for each country to decide separately. Internal correspondence should be regulated by internal regulations. The Soviet delegation suggested the following addition to the Netherlands proposal as a 6th paragraph:

"The above mentioned conditions refer to international air lines. As for internal air lines which use frequencies allotted specifically to the country concerned, rules should be decided by the administrations themselves."

The Soviet delegation considered that for international air lines, the restrictions in the Netherlands¹ proposal were adequate. The delegates of the Netherlands and France agreed to incorporate the above amendment.

The delegate of India drew attention to the already heavy loading of frequencies, the decrease in protection ratio, the increased loading factor and considered the handling of public correspondence too great a burden and requiring too much additional expenditure. He suggested the establishment of a working group to consider the matter in detail. The Chairman asked that discussion of this subject be deferred in the meantime. The representative of I.A.T.A. stated that there will be no spare channel time to undertake handling public correspondence in the aeronautical mobile frequency bands.

The delegate of Australia stated that high frequency conditions could not be compared with conditions in the medium frequency maritime mobile band and that there would also be severe difficulties in addressing telegrams. In general, he supported the view of the delegate of India but did not believe a working group was necessary. Finally, there were so many restrictions on the service that it was not a service at all.

The delegate of U.S.A. stated that he was concerned about the chances of aeronautical requirements obtaining sufficient frequencies in the future if public correspondence was permitted in the aeronautical mobile bands. He thought that the Conference should not venture outside the field of aircraft safety and regularity. He stated that the Buenos Aires Conference would show how correct his contention was.

The delegate of New Zealand answered questions raised by Australia and IATA. The delegate of Netherlands indicated that the proposal would not be in force until 1950 and that the extra two years before the Buenos Aires conference would be a good experimental period.

The delegate of Pakistan stated that the reasons adduced at Atlantic City which permitted slight public correspondence on 500 kc/s were based on lack of equipment arguments. He felt that public correspondence in the aeronautical mobile bands should be prohibited.

The delegate of Netherlands quoted for the Netherlands West Indies public correspondence traffic data showing a very low density and stated that for the Netherlands his experience showed one message on public correspondence against 500 other messages already being handled.

The delegate of United Kingdom stated that he was strongly against the handling of public correspondence in the aeronautical mobile bands and supported the case made by the delegate of the United States of America. He pointed out that a ship was in an entirely different category to an aircraft as regards the degree of urgency in distress conditions.

The delegate of India stated that if the traffic was to be low, there was no need for the service.

The representative of I.A.T.A. criticized the low figures of public correspondence of traffic density quoted, and stated that the Committee should think in terms of hundreds of messages.

The delegate of Canada stated that his country was against the Netherlands' proposal and that the question as to whether or not public correspondence should be permitted in the aeronautical mobile frequency bands should be reviewed at the I.T.U. 1952 Conference.

The delegate of Norway asked whether we might weaken our argument in 1952, whether the Netherlands' proposal was adopted permanently or temporarily.

The delegate of Ireland wished to reinforce the argument of the representative of I.A.T.A.. A very heavy load would be placed on the aircraft operator.

The delegate of Morocco and Tunisia drew attention to the danger of an aircraft leaving the air frequency to go to the maritime frequencies.

The delegate of Switzerland was concerned lest advertising would increase public correspondence traffic to too high a figure and that "R" frequencies would be overloaded. He considered that it was not correct to use these frequencies for other than aeronautical operational purposes.

For Mr. Petit (I.F.R.B.), the provisions contained in numbers 727, 728 and 729 of the Radio Regulations, which constitute an exception to a principle of a very general nature, revealed that economical questions had been largely taken into consideration by the Atlantic City Conference. In his opinion, this was an example to be followed. Several delegates, namely those from Australia and India, had pointed out the practical and economical difficulties which would be brought about in their countries should the regulations in force in their countries be modified. Mr. Petit therefore considered that in the interest of success in this Conference, the Committee should adopt rules affording a sufficient amount of flexibility, in order that each country may comply with them readily. He also drew the Committee's attention to Number 950 of the Radio Regulations which lays down the order of priority of communications in the mobile service, and which, as was pointed out by the delegate from Australia, would restrict the service, whichever decision may be adopted.

The Chairman stated that it now appeared that no working group was necessary as suggested by the delegate of India.

The representative of I.F.R.B. requested that there be an amendment in paragraph 5 as follows:

2nd line, after "possible" read as follows:

"but that in certain cases this way of handling public correspondence is complicated with respect, etc."

and add after paragraph 5 (1): "In conformity with paragraph 950 of the Atlantic City Radio Regulations."

The delegate of Norway suggested that after the latter amendment suggested by the representative of I.F.R.B. be added: "and every caution be administered to avoid inconvenience to high priority correspondence".

The delegates of Netherlands and France agreed with this amendment.

The delegate of Australia suggested that in paragraph 5.2 (d) the words "at any time" be omitted.

The delegate of the Netherlands and France agreed with this amendment.

The delegate of Colombia could not see how paragraph 2 (d) could be correlated with paragraph 1.

The Chairman stated that listening through devices may be necessary, but that the same question applied to messages other than those of public correspondence.

The delegate of the United Kingdom asked that the following amendment be inserted as paragraph 7 to the Netherlands' proposal: "In order to meet the requirements of paragraph 511 and 2 (d), Administrations will take steps, where necessary, to modify their airborne equipment in order to provide listening through facilities."

The Chairman stated that he could not see why this was required for public correspondence when there were other messages of lower priority than "safety".

The United Kingdom delegate emphasized that we were dealing with messages of no priority. The delegate of France referred to the method of operating which would be used under such circumstances. The representative of I.F.R.B. referring to paragraphs 610 and 614 of the Atlantic City Radio Regulations asked whether these provisions met the United Kingdom point. The delegate of the United Kingdom stated that these paragraphs merely served to emphasize the need for listening through facilities. The representative of I.F.R.B. wonders if paragraphs 612 and 950 should not cover the United Kingdom's requirements. The delegate of United Kingdom did not agree with this.

The delegate of Colombia was not in agreement with the entire proposal and, therefore, would not second the United Kingdom's proposal. The delegate of the United Kingdom pointed out that his delegation was in entire disagreement with the proposal but wished, nevertheless, to create a safeguard against the possibility of the proposal being adopted. The delegate of Cuba then seconded the proposal, pointing out that he would vote against the main issue.

The delegate of Australia stated that "break-in" methods were not possible on Simplex A3, but only on Simplex A1. He, therefore, desired the proposal to be limited accordingly. The delegate for the Netherlands stated that such difficulties had to be met with in the mobile service generally and, therefore, he could not accept the U.K. amendment.

The Chairman put the United Kingdom amendment to the vote and it was carried as follows:

In Favor	Against	Abstentions
17	12	3

The Chairman declared the amendment adopted. The Chairman then put the Netherlands' proposal as amended, and including 7 paragraphs, to the vote. The motion was lost, voting being as follows:

In Favor	Against	Abstentions
14	19	0

The Chairman then passed to the United States' proposal which had been seconded by Canda. He drew attention to the wording in the first paragraph under RECOMMENDATIONS and asked why the words "continue to be prohibited" were incorporated.

The delegate of the United States explained that the sense of the resolution considered the Atlantic City Radio Regulations but that it could be modified. It was accordingly agreed that the words "continue to" be deleted.

The delegate of Morocco and Tunisia suggested the following amendment after paragraph 6 of the United States' motion, "Consequently in the case where messages of public correspondence are handled on frequencies of the maritime mobile service, aircraft will require to be in a position to observe continuous watch on aeronautical mobile frequencies."

The delegates of the United States and Canada agreed with this amendment.

The delegate of Colombia suggested another amendment as follows:

at the end of the final paragraph add: "and that for those specific cases arrangements be made, in accordance with Article 40 of the Atlantic City Regulations."

The delegates of U.S.A. and Canada agreed to this amendment.

The representative of I.F.R.B. suggested that in the last line of the preamble should be added paragraphs "761 and 771".

The delegates of the U.S.A. and Canada agreed to this amendment.

The delegate of South Africa suggested that in paragraph 4, after the word "service", last line, should be added the following: "providing I.C.A.O. regulations are adhered to".

The delegates of U.S.A. and Canada agreed to this amendment.

The Chairman then put the U.S.A. motion to the vote and it was carried as follows:

In favour	Against	Abstentions
17	12	4

The meeting adjourned at 1 p.m.

The Reporter:

G. Searle.

The Chairman:

O.J. Selis.

The above mentioned methods and U.S.A. proposals, as amended, are added as Annexes A and B to this document.

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

NETHERLAND'S PROPOSAL

Committee 4 having under consideration the question of the handling of public correspondence aboard aircraft notes :

1. that administrations shall not permit public correspondence in the frequency bands allocated exclusively to the aeronautical mobile service unless allowed by special aeronautical regulations adopted by an aeronautical administrative conference to which all interested members of the International Telecommunications Union have been invited,
2. that the actual loading of the aeronautical mobile channels depends on a number of varying factors of which the prevailing weather conditions are an important one,
3. that the capacity of such channels being necessarily based on the worst conditions under which flights can take place in general only under such conditions those channels are fully loaded,
4. that consequently there are usually many periods during a flight during which a limited number of short and simple telegrams of public correspondence can be transmitted on an aeronautical mobile frequency without influencing to any extent the quick exchange of messages relating to the safety and regularity of air traffic,
5. that the exchange of public correspondence on frequencies assigned to the maritime mobile service is possible, but that in certain cases this way of handling public correspondence is complicated, with respect to the technical and personal possibilities aboard aircraft, and inefficient, especially if an aircraft is flying in regions where no coast stations exist, and therefore recommends that in addition to the possibility of transmitting public correspondence on frequencies assigned to the maritime mobile service, public correspondence may be admitted in the frequency bands allocated exclusively to the aeronautical mobile service but only in the following conditions:
 1. Messages relating to safety and regularity always have absolute priority in conformity with Paragraph 950 of the Atlantic City Radio Regulations.
 2. Telegrams of public correspondence are subject to the following restrictions:

- a) maximum number of words 15
- b) only plain language allowed
- c) no special indications (urgent etc.....) admitted.
- d) the possibility of exchange to be interrupted at any time on instruction of the aircraft commander.

6. The above mentioned conditions refer to the international airlines. As for internal lines, which use frequencies specifically allotted to the country concerned, rules are to be set down by the administration themselves.

7. In order to meet the requirements of Para 5 1) and 2d) administrations will take steps when necessary to modify the airborne equipment to provide listening through facilities.

U.S.A. PROPOSAL

Committee 4 having under consideration the question of the handling of public correspondence aboard aircraft notes that:

the handling of public correspondence on the exclusive aeronautical mobile bands is prohibited unless aeronautical administrative conference to which all interested members of the Union have been invited, adopts regulations under which such messages may be passed

any such regulations must recognise the absolute priority of safety and control messages (Atlantic City Regulations 255)

aircraft stations are permitted to communicate with stations in the maritime mobile service and may transmit to such stations public correspondence on frequencies assigned that service provided that the I.C.A.O. ATC regulations are adhered to (Atlantic City Regulations 569-572 inc., 668-779, 761-771 and 792) RECOMMENDS

THAT THE TRANSMISSION OF PUBLIC CORRESPONDENCE ON THE FREQUENCIES ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE SERVICE BE PROHIBITED.

That in those cases where provision for the handling of public correspondence is deemed necessary, the aircraft be authorized by the various administrations to employ frequencies allocated to the maritime mobile service for handling of public correspondence with stations in that service, provided that such handling of public correspondence will in no case interfere with the transmission or reception of messages relating to the safety or control of the aircraft.

Consequently in the case where messages of public correspondence are handled on frequencies of the maritime mobile service, aircraft will require to be in a position to observe continuous watch as aeronautical mobile frequencies and that for these specific cases arrangements be made, in accordance with Article 40 of the Atlantic City Regulations.

16 June, 1948

Committee 4

Working Group C

COMBINED MAXIMUM AND MINIMUM RANGE CHARTS

FOR A3 COMMUNICATION IN DAYTIME

Description

The attached charts (33) show minimum and maximum service range for A3 communication in the aeronautical-mobile frequency bands in daytime. They are similar to those presented in Aer-Doc. No. 29 in which maximum ranges were based upon 10 uv/m required field intensity at the aircraft in the presence of local noise only. In the new charts presented herewith the maximum range curves are based upon 20 uv/m required field intensity at the aircraft in the presence of local noise only, in accordance with the recommendation adopted by Committee 4 in Aer-Doc. No. 76, paragraph 13, and amended in Aer-Doc No. 97, paragraph 6.

A separate chart is given for each 10 degrees of latitude extending from 60° N. to 40° S., inclusive, in each of the three zones W, I and E of Fig. 1, PC-Aer Doc. No. 5.

The curves were specifically calculated for local noon-time at the midpoint of the great circle path between aircraft and ground station, for June in the northern hemisphere, and for December in the southern hemisphere. Separate curves are given on each chart for sunspot minimum and sunspot maximum conditions.

The curves are identified as follows: Narrow (thin) lines refer to minimum ranges, while wide (heavy) lines refer to maximum ranges. Continuous lines refer to sunspot minimum conditions, while interrupted (dashed) lines refer to sunspot maximum conditions. The service range of a frequency at sunspot minimum is the interval between the narrow and wide continuous curves. The service range at sunspot maximum is the interval between the narrow and wide interrupted curves.

Method of use

The use visualised is to obtain the family of frequencies required to give A3 communications at all distances between the aircraft and ground station in a given direction from the ground station. As a specific example, consider an aircraft departing from New York (latitude 41° N, approximately) and flying south for a distance of 2500 km. The midpoint latitude for this distance is 29.5° N. Actually the midpoint moves as the aircraft moves, but it is usually sufficiently accurate to

consider only the midpoint of the maximum anticipated distance between the aircraft and the ground station. Thus in the present case, as the midpoint is located in the W-zone near 30° N, the chart labeled W-zone, 30° N will be used.

In general, however, if the ground station is located within approximately 40° of the equator, the chart corresponding to the latitude of the ground station should be used. This is because at low latitudes the maximum service is limited by atmospheric noise at the ground station.

Further, if the midpoint latitude, or the ground station latitude, whichever is used, lies halfway between two adjacent latitudes for which the charts are prepared, it is preferable to use the chart for the lower latitude.

The minimum and maximum ranges at sunspot minimum and maximum for the various frequencies as given by the chart for W-zone 30° N are listed in the following table:

Frequency Mc	Service	Sunspot minimum		Sunspot maximum	
		Min. range	Max. range	Min. range	Max. range
3.0	R, OR	0 km	100 km	0 km	0 km.
3.5	R	0	250	0	0
4.0	OR	0	350	0	200
4.7	R, OR	0	550	0	300
5.6	R, OR	350	700	0	450
6.6	R, OR	450	950	0	600
9.0	R, OR	650	1500	450	1100
10.0	R	750	1700	550	1250
11.3	R, OR	950	2050	650	1550
13.3	R, OR	1300	2500	850	1900
15.0	OR	1600	2800	1050	2200
18.0	R, OR	skips	skips	1400	2600
22.6	R, OR	skips	skips	skips	skips

Thus to provide communication at sunspot minimum and maximum separately for (a) the "R" service, and (b) the "OR" service, frequencies from the following orders might be selected.

(a) "R" Services

Sunspot minimum	Sunspot maximum
4.7 Mc	6.6 Mc
6.6 Mc	10.0 Mc
10.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

(b) "OR" Service

Sunspot minimum	Sunspot maximum
4.7 Mc	6.6 Mc
6.6 Mc	9.0 Mc
9.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

It will be observed that in the case of the "R" service, frequencies at 6.6, 10.0, and 13.3 Mc are common to the families for sunspot minimum and maximum. Thus these frequencies plus 4.7 Mc for short ranges at sunspot minimum and 18.0 Mc for long ranges at sunspot maximum will satisfy the requirement throughout the sunspot cycle.

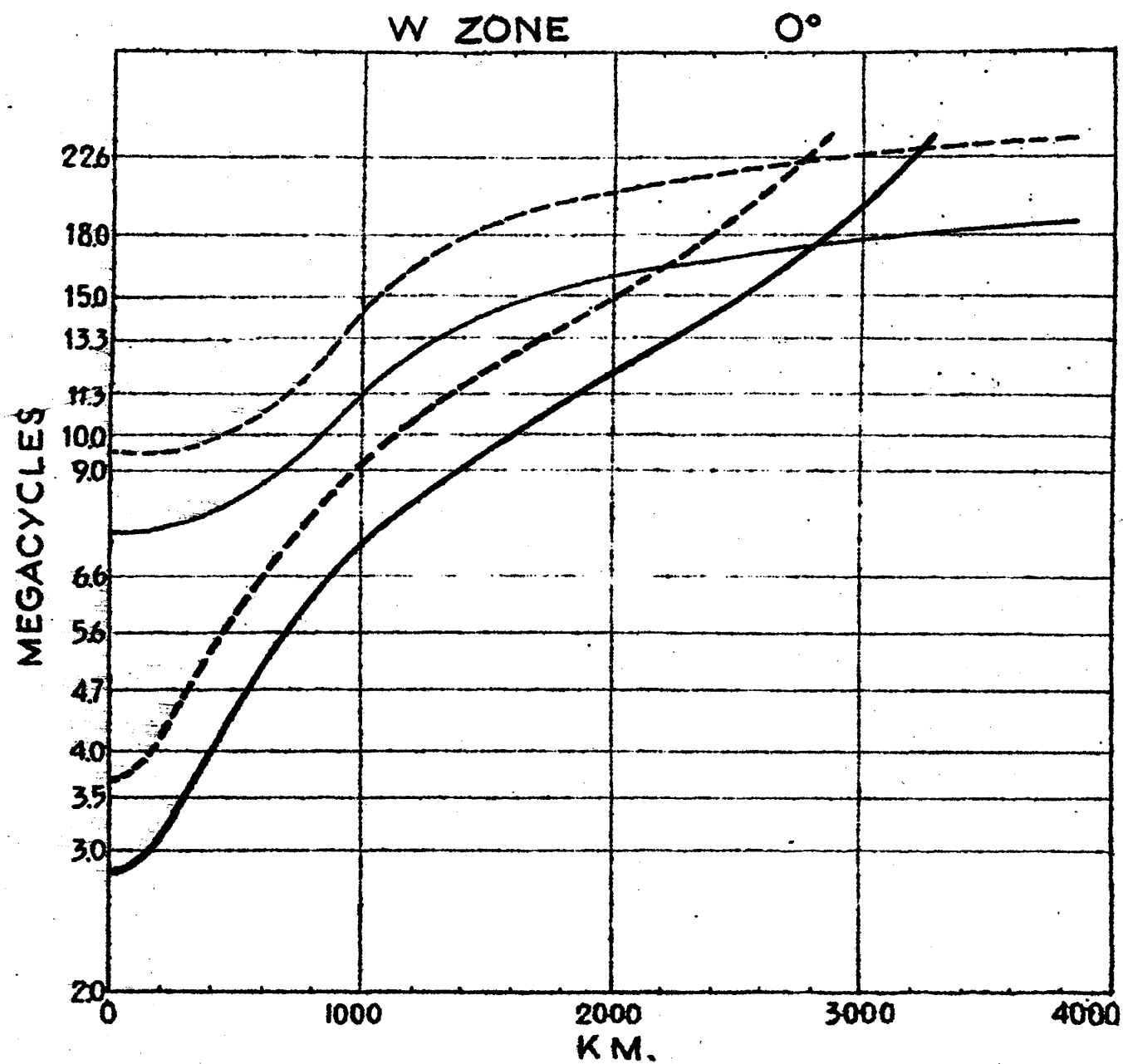
In the case of the "OR" service, 6.6, 9.0, and 13.3 Mc are common to the families for sunspot minimum and maximum. Again, addition of 4.7 and 18.0 Mc to these frequencies provides a family adequate throughout the sunspot cycle.

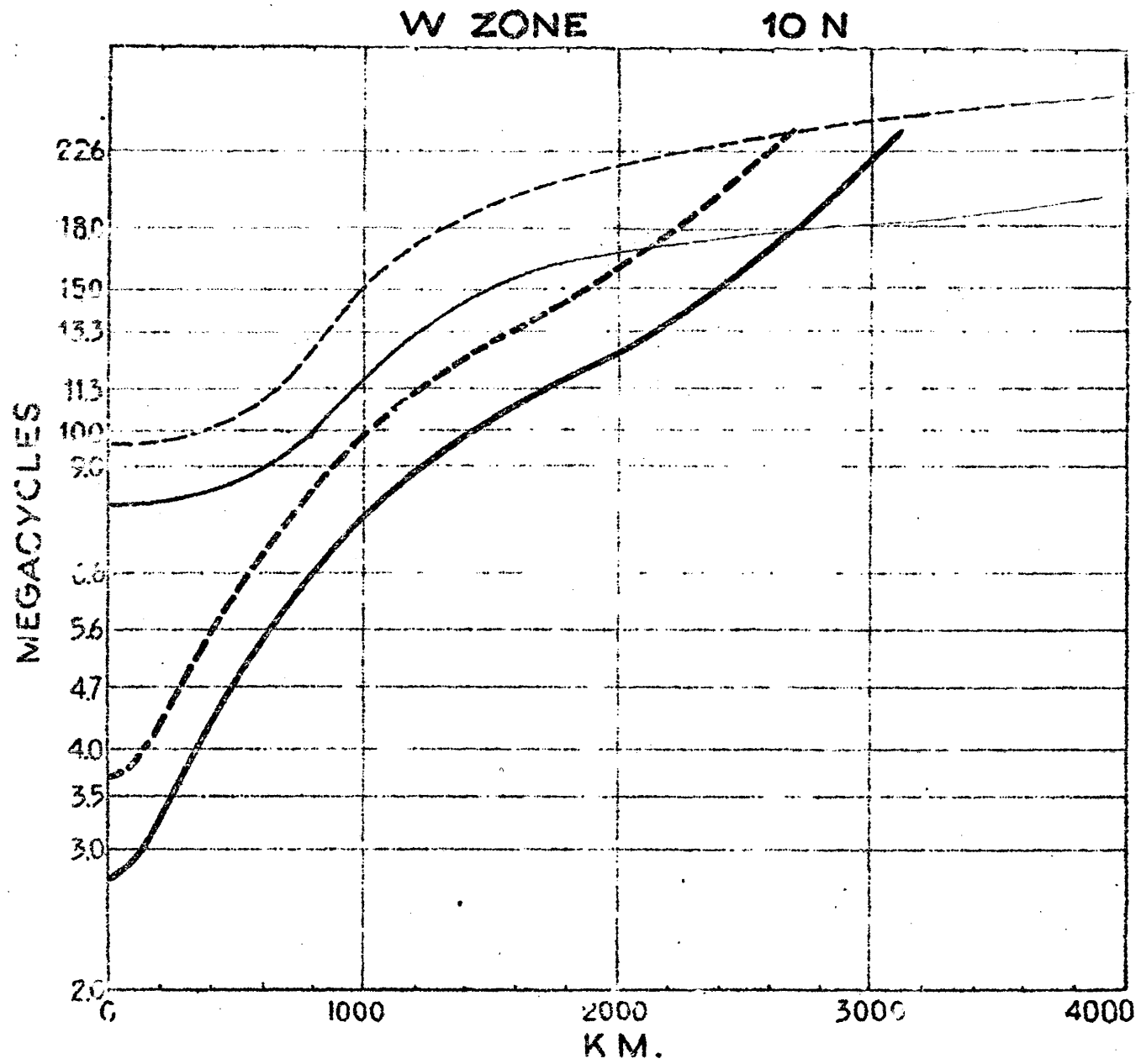
The above frequencies were selected for daytime communication only. If communication at night must also be provided for, a frequency at 3.0 or 3.5 Mc will be necessary for short ranges.

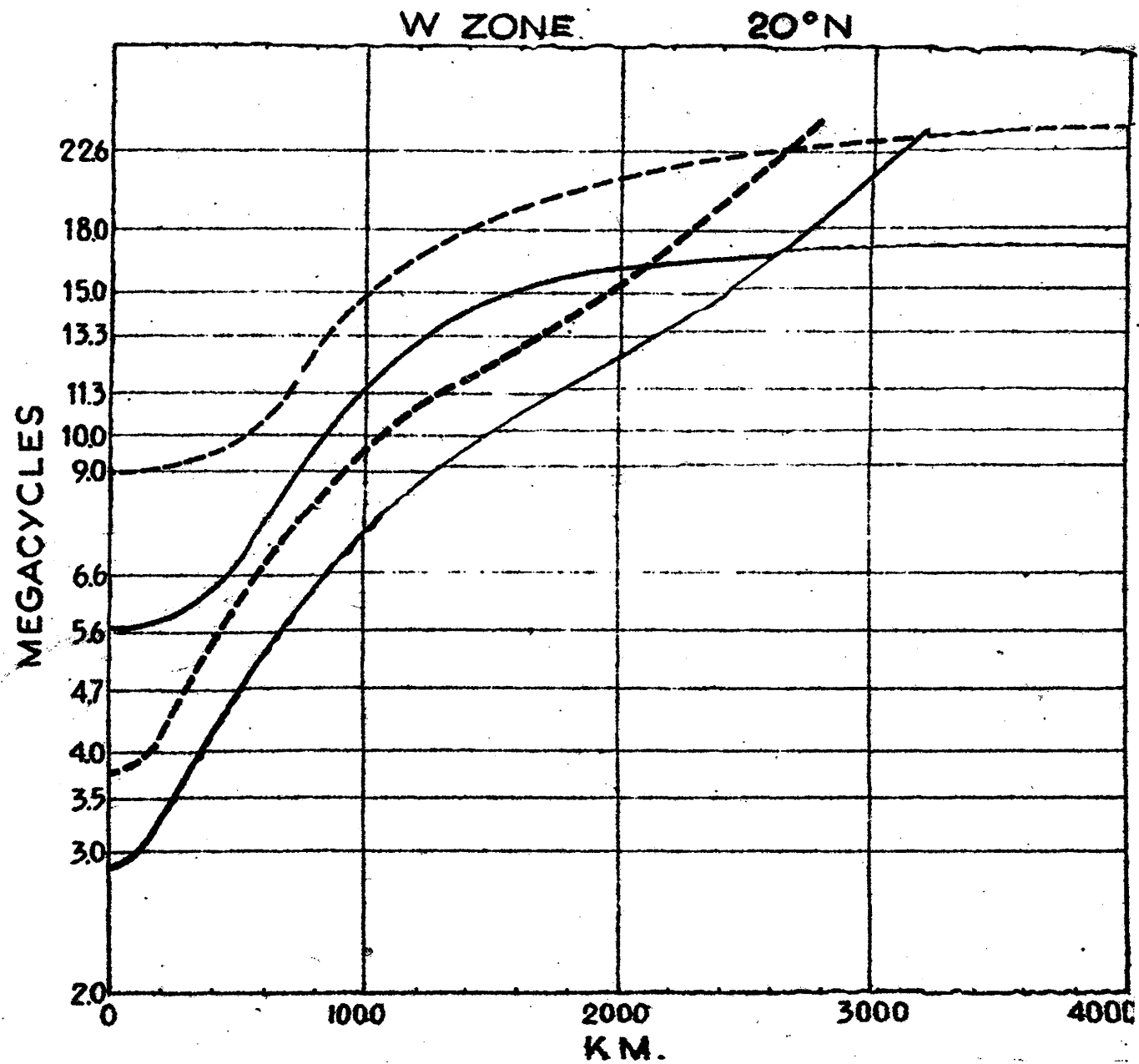
It will be noted that the above example concerns a north-south path and in this case the radio path coincides with a line of longitude. Hence the midpoint latitude is the simple arithmetic mean of the two extreme latitudes. On an east-west path, however, say between latitudes 30° N and 40° N, the midpoint of the radio path is not necessarily on latitude 35° N, the arithmetic mean, but rather at the midpoint of the great circle joining the aircraft and ground station. This point may, depending upon the distance, be on a latitude considerably greater than 35° N.

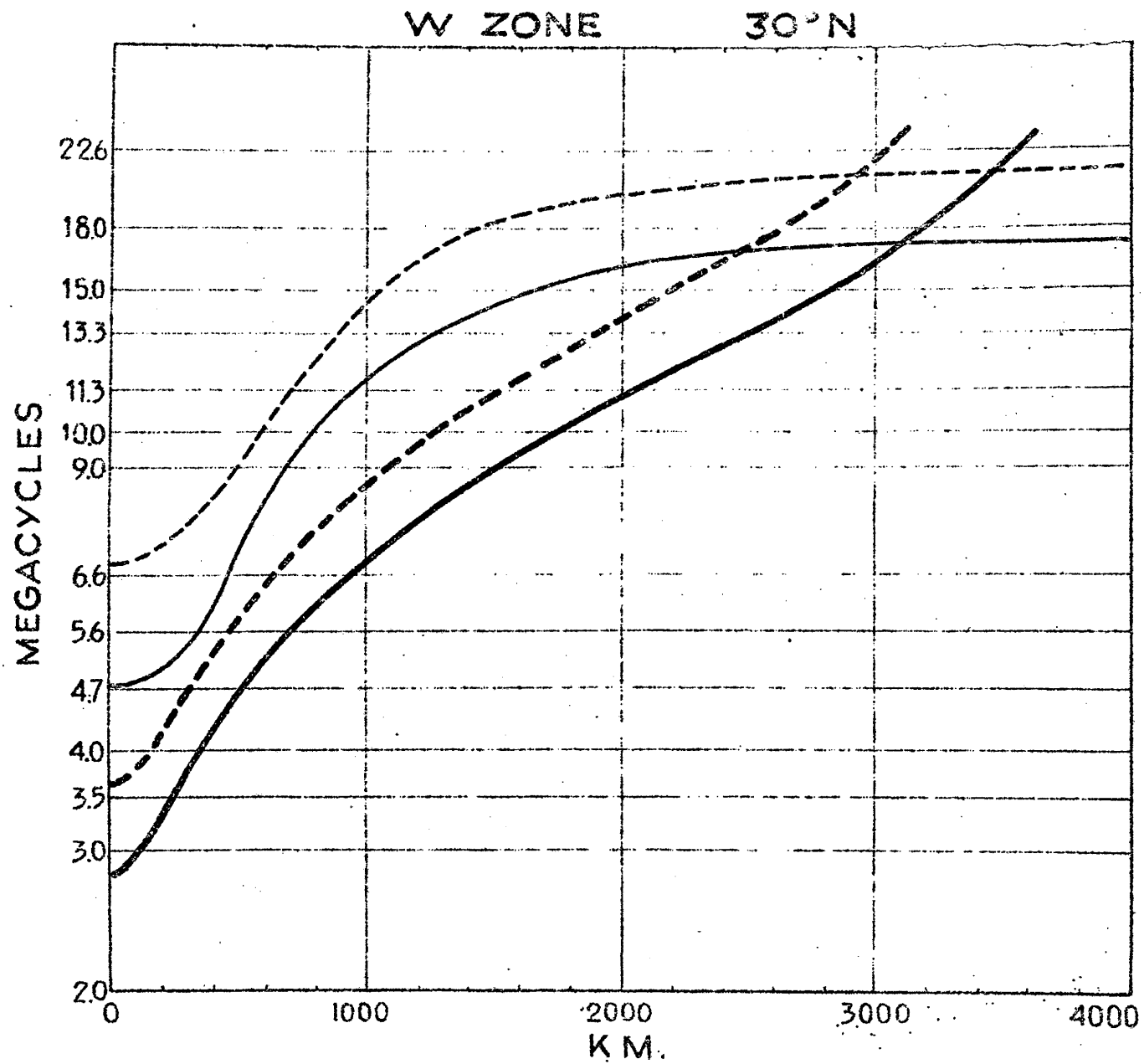
Note

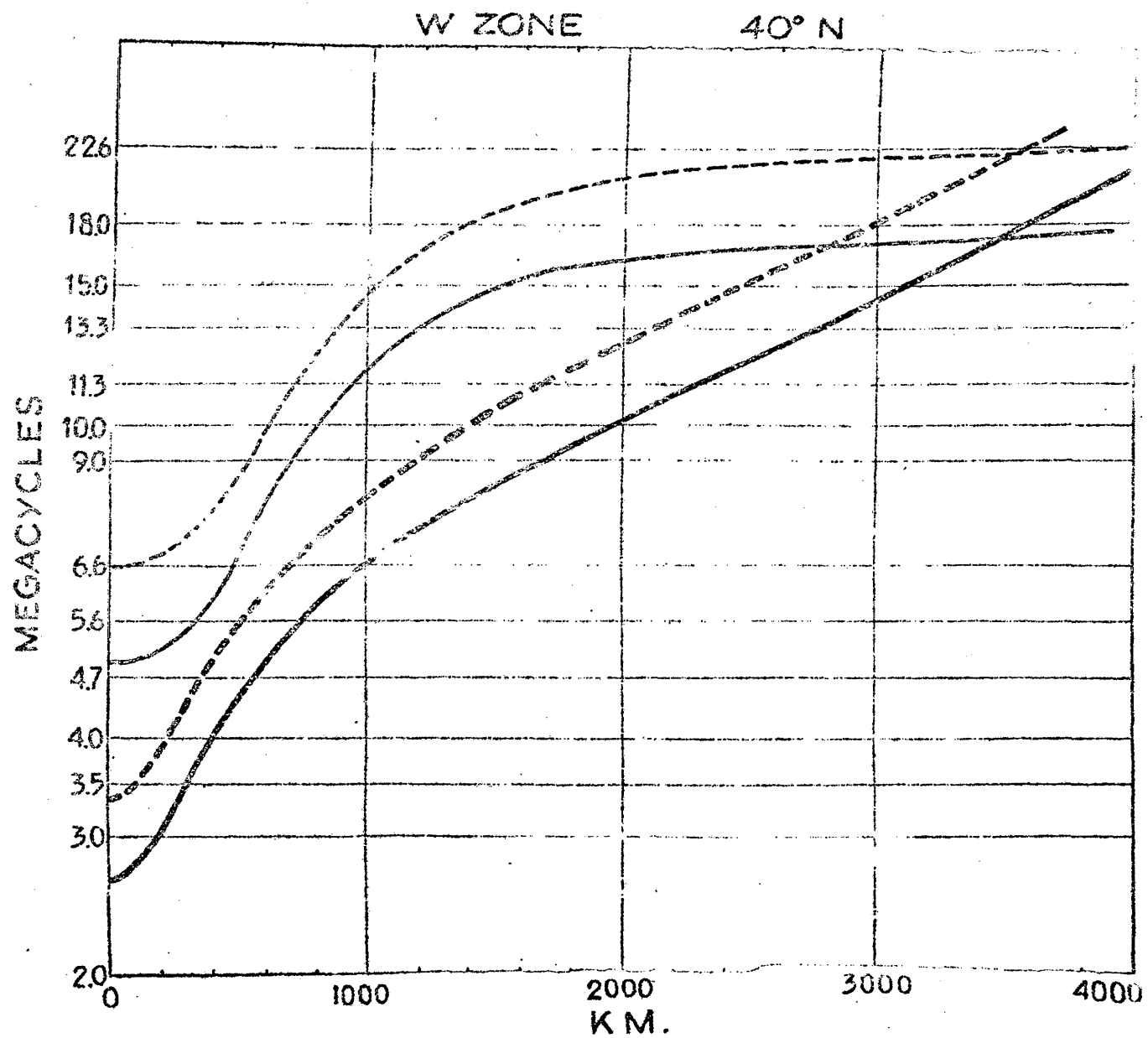
In view of the fact that at latitudes near the equator, maximum atmospheric noise conditions occur nearer the equinoxes than in June or December, it is recommended that the chart for 10° N be used for latitudes between 0° and 15° N, and that the chart for 10° S be used for latitudes between 0° and 15° S.

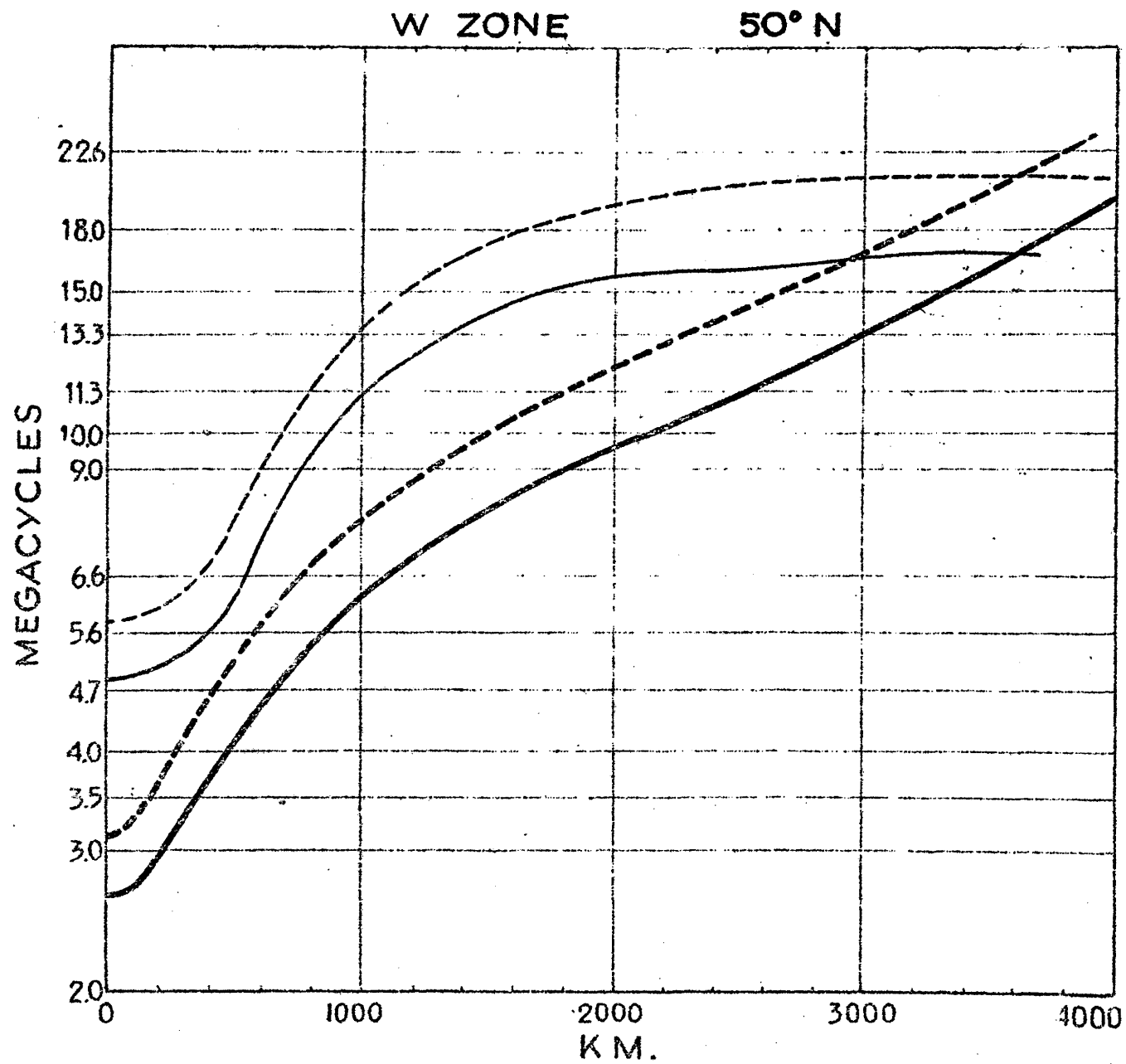


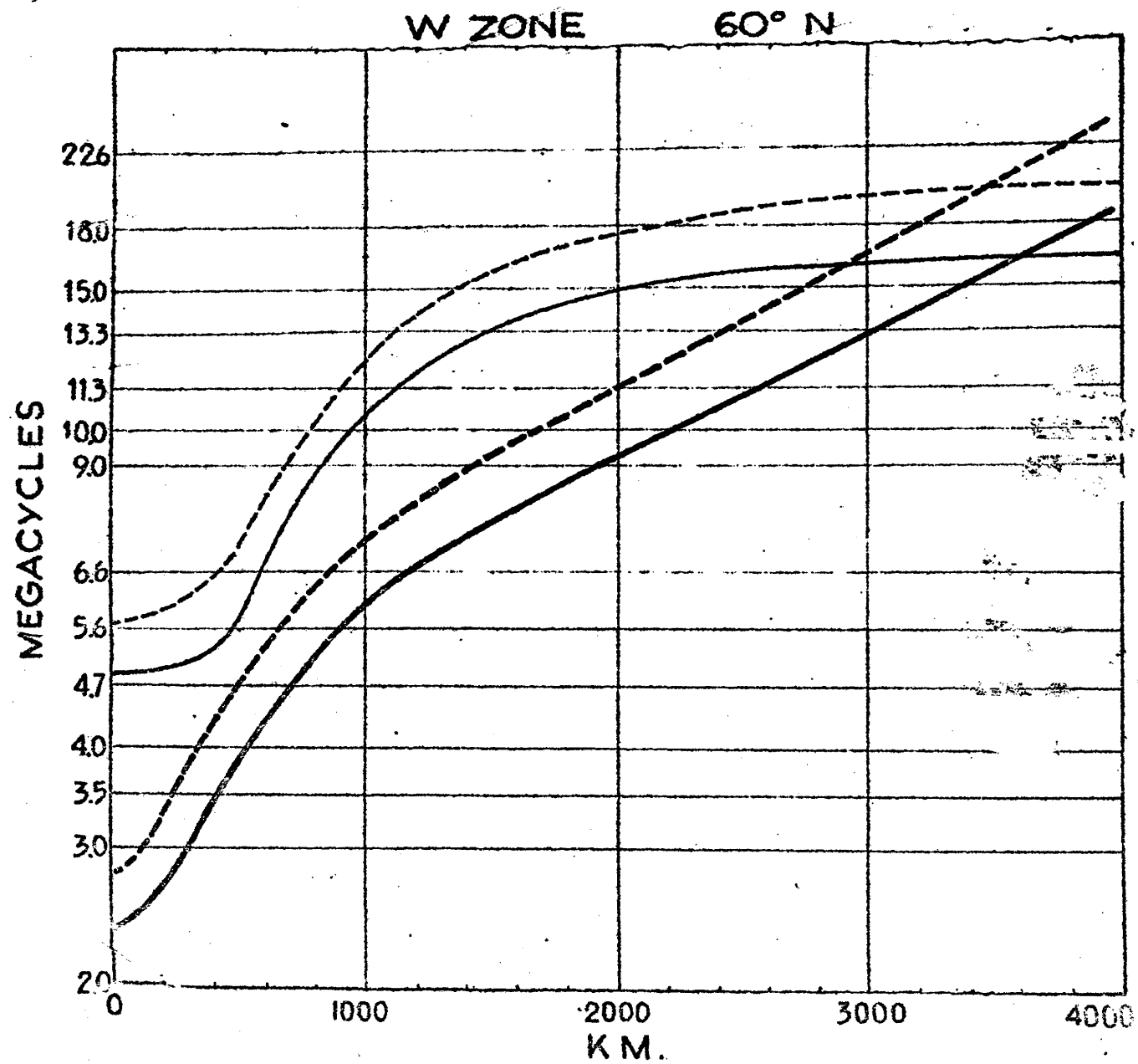


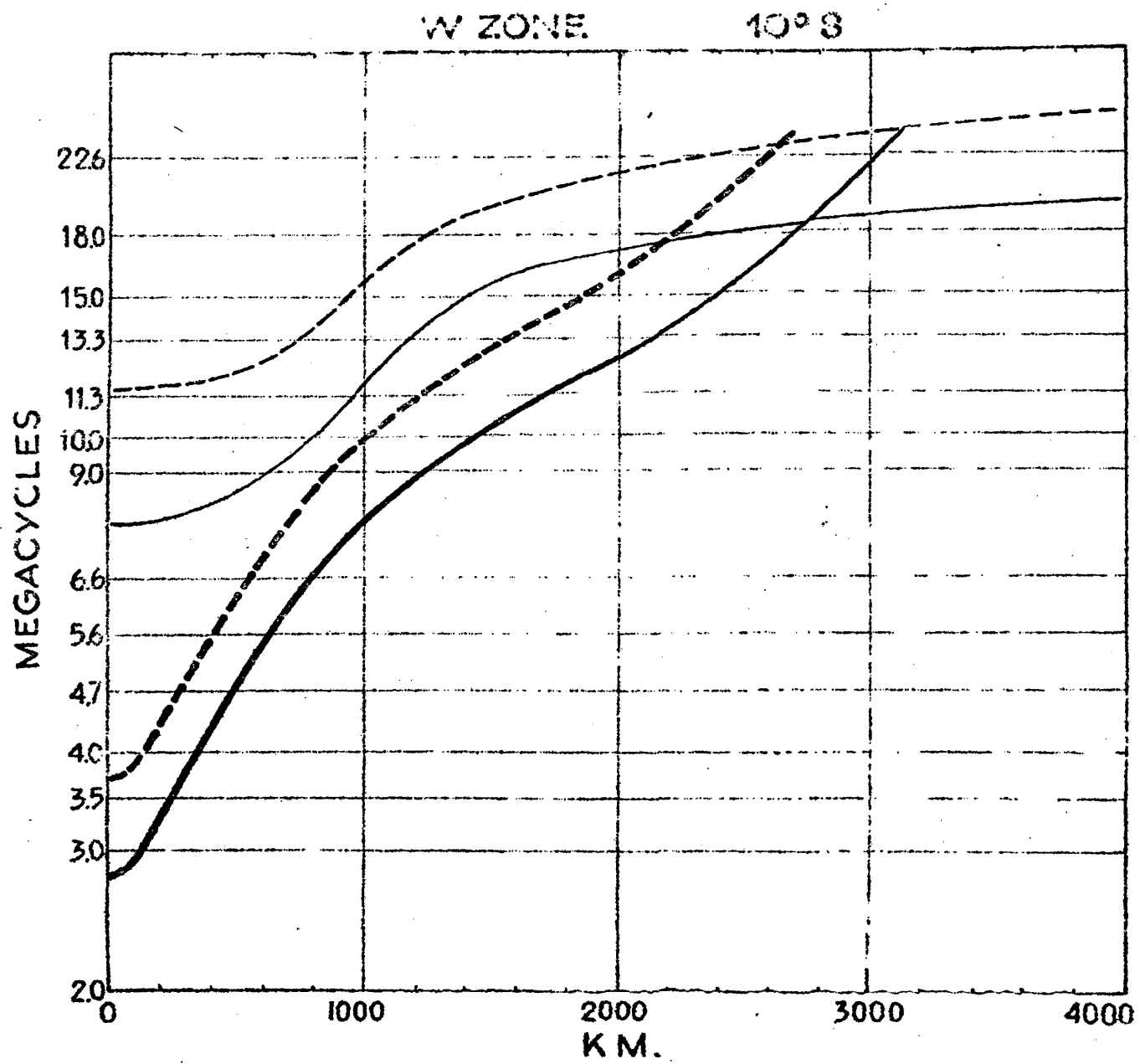


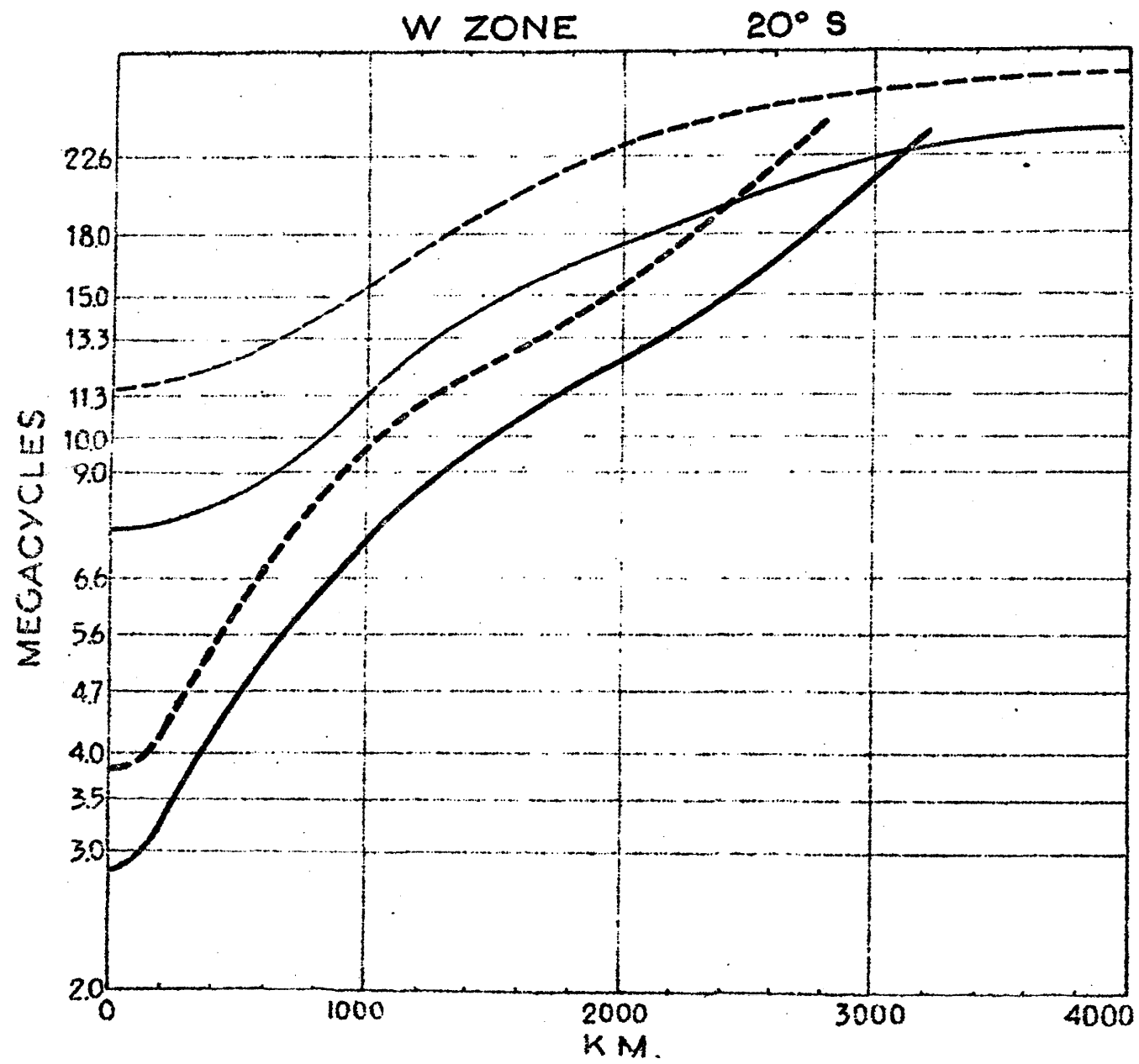


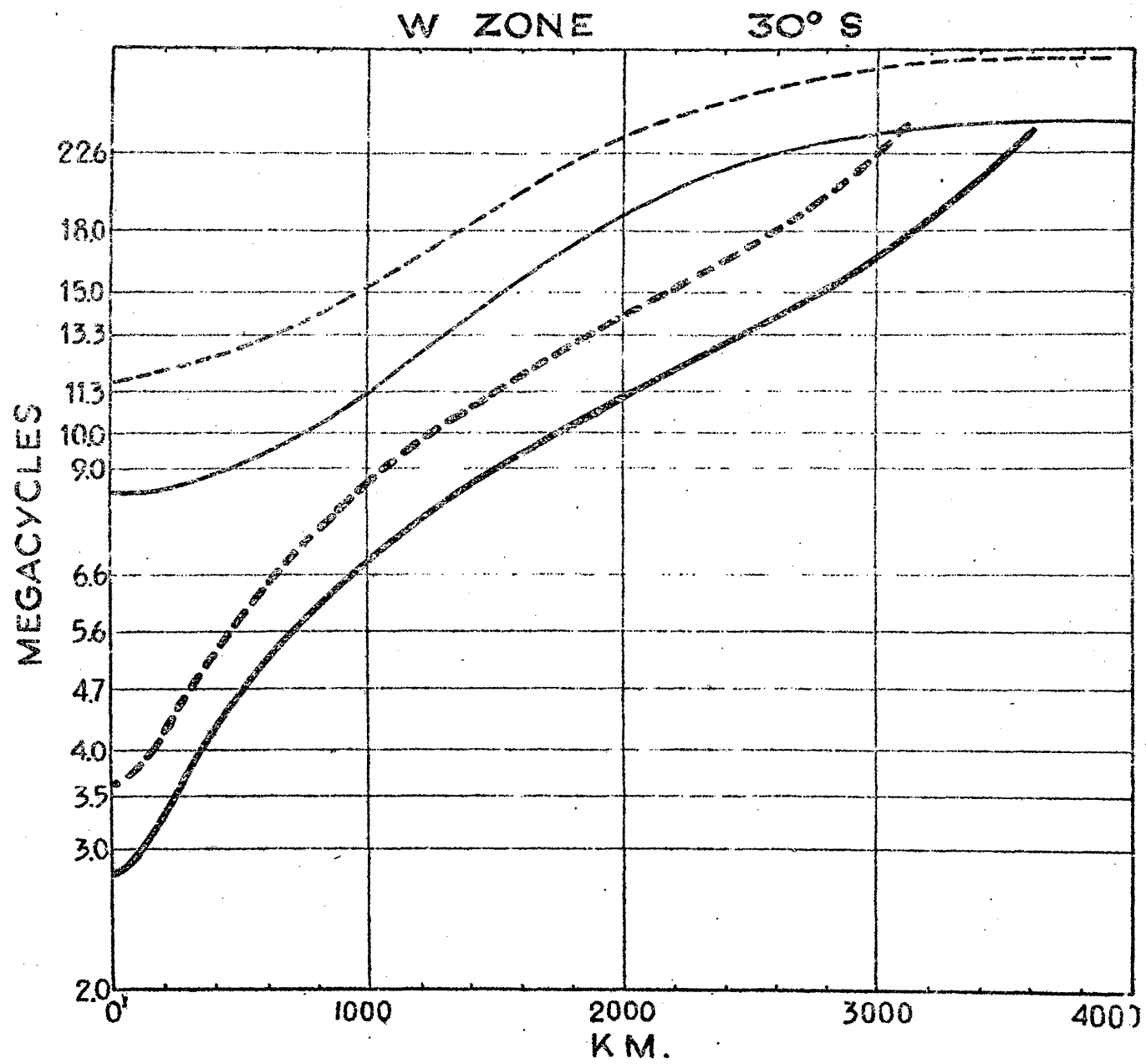


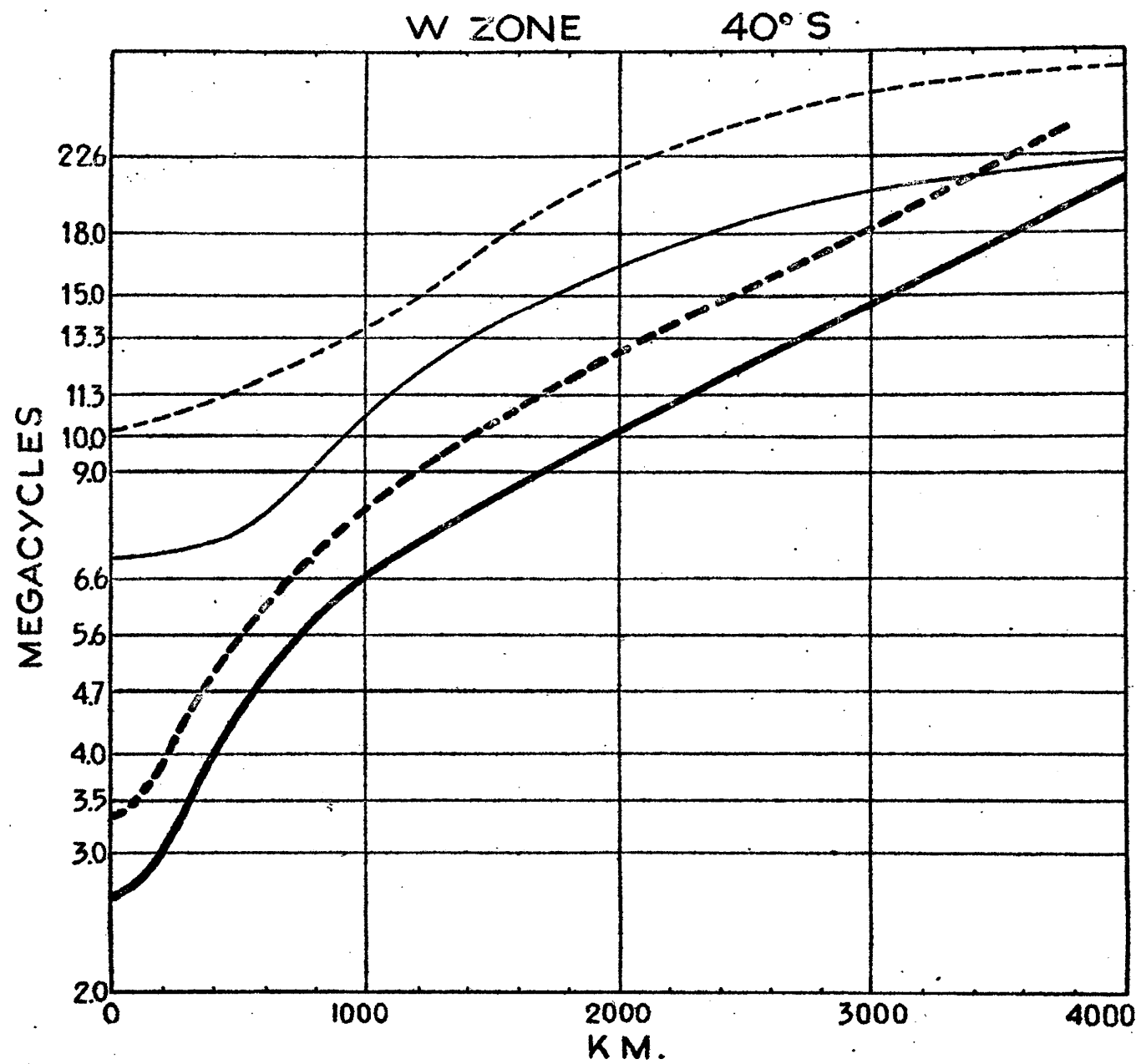


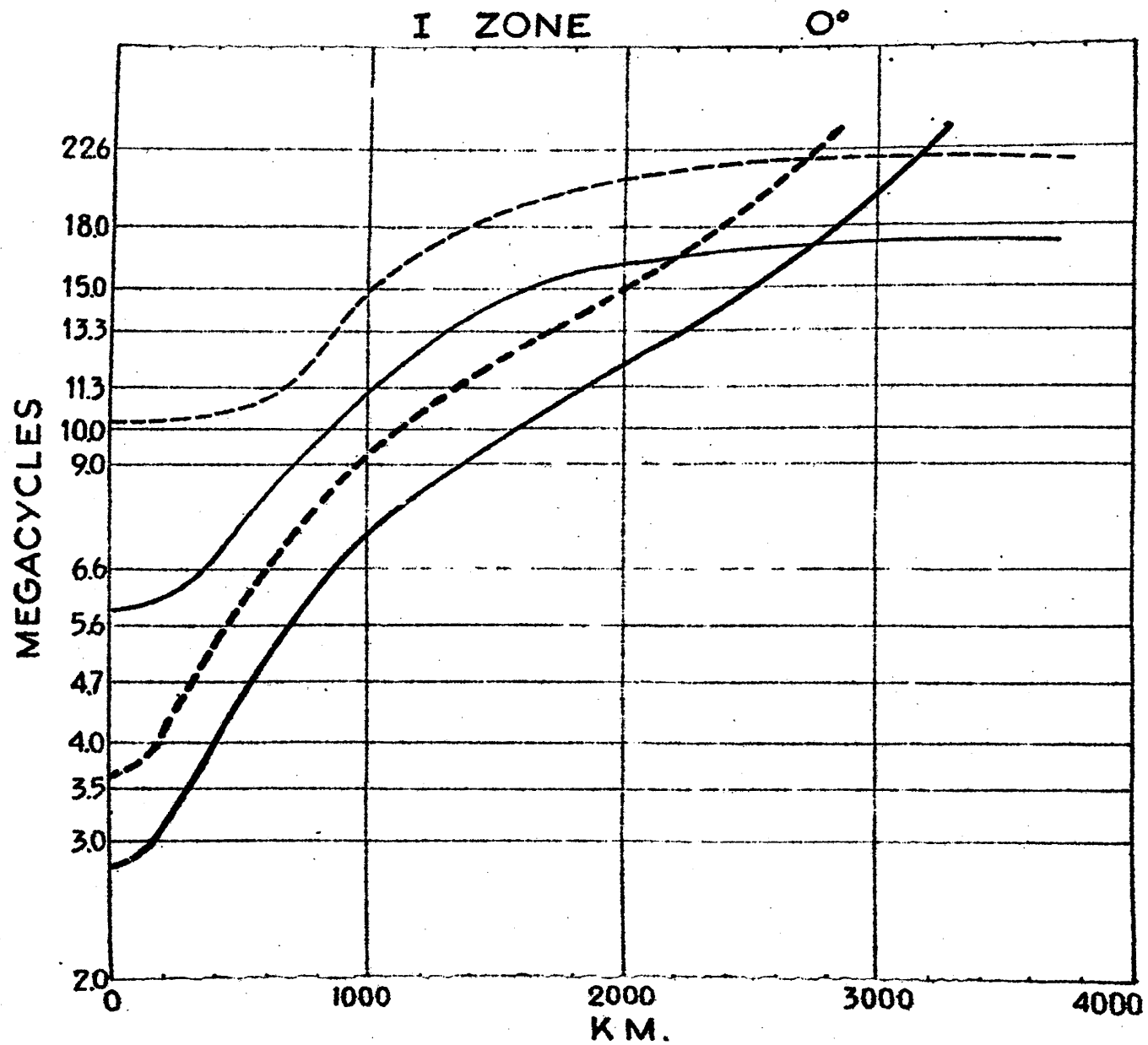


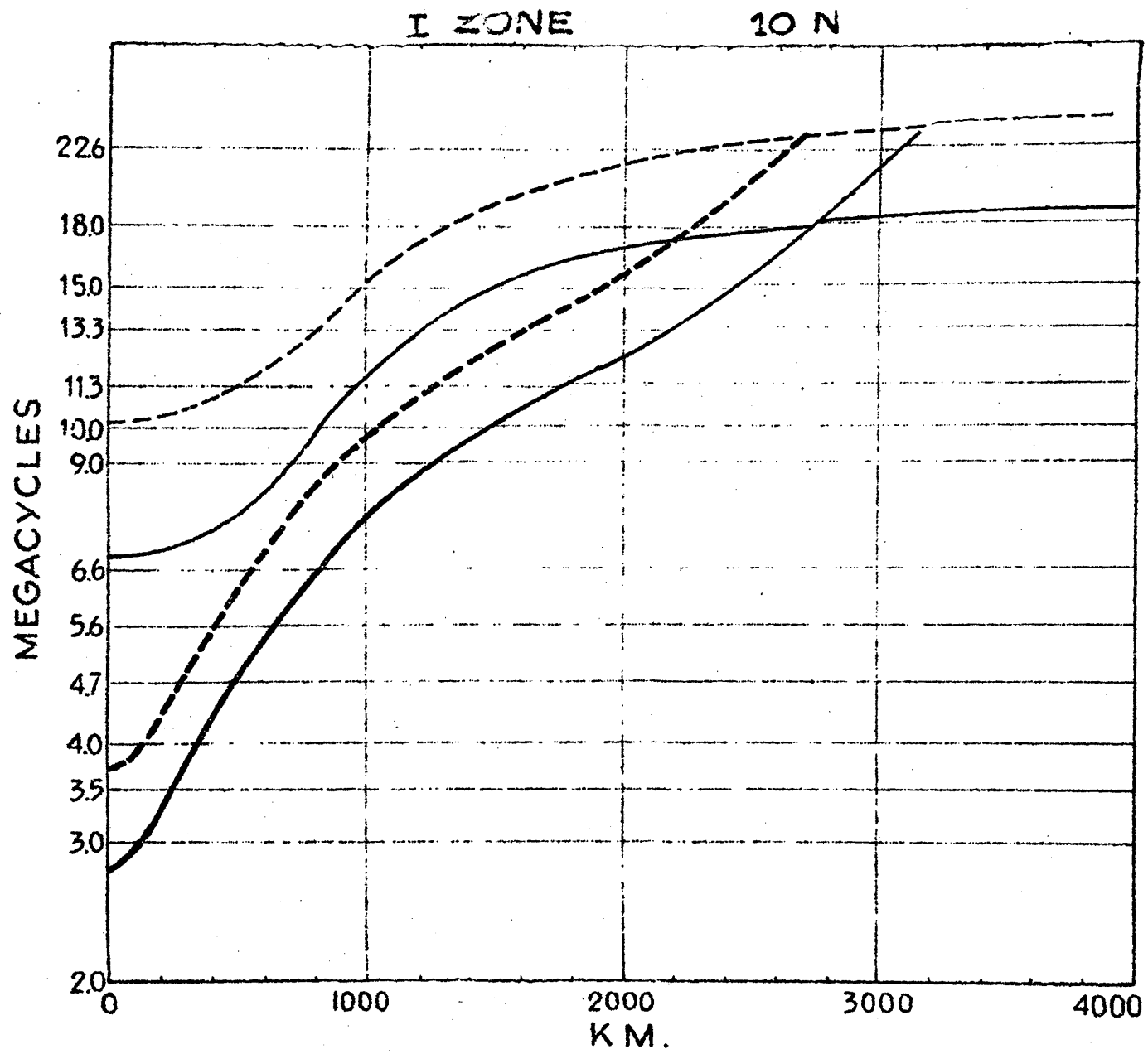






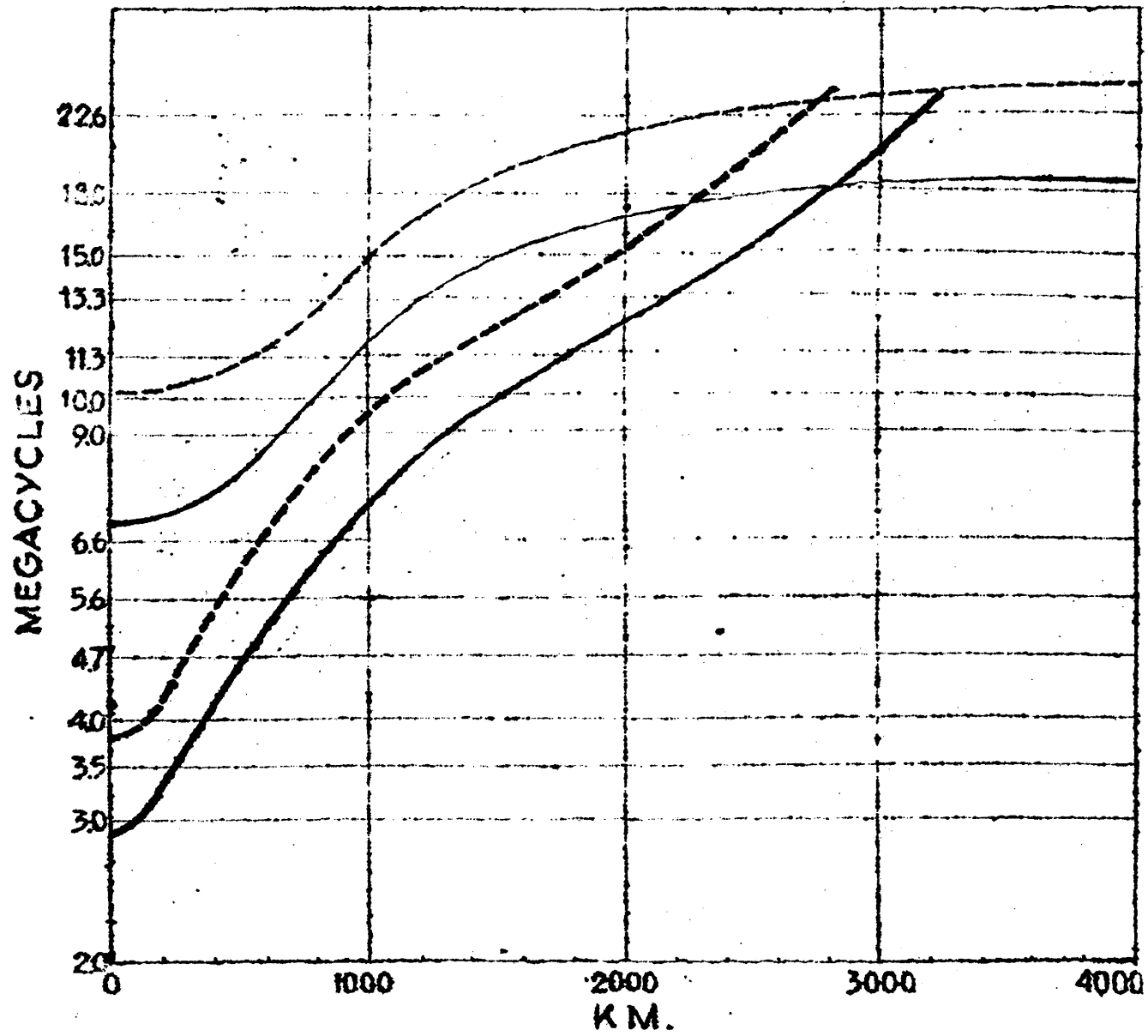


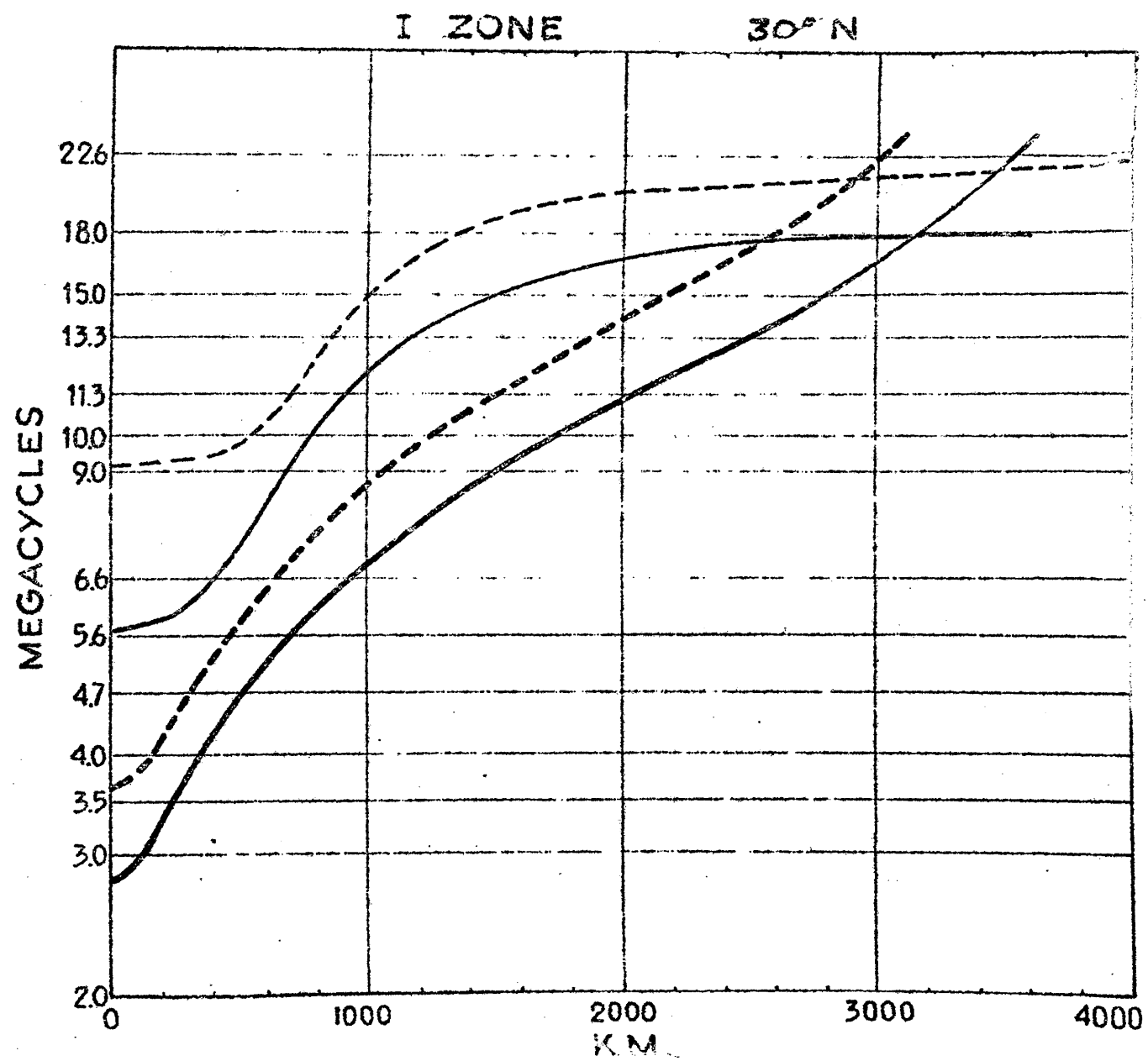


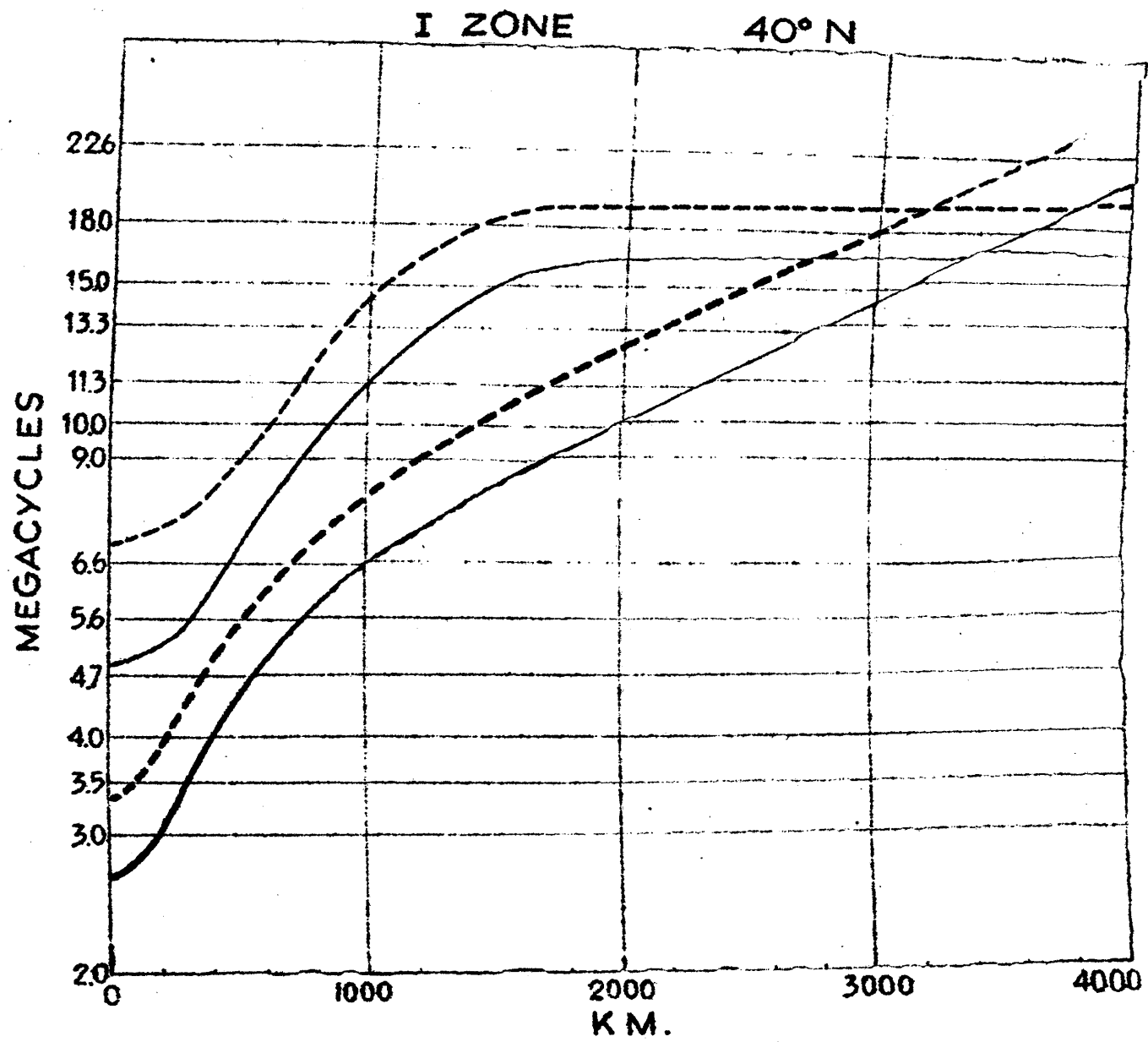


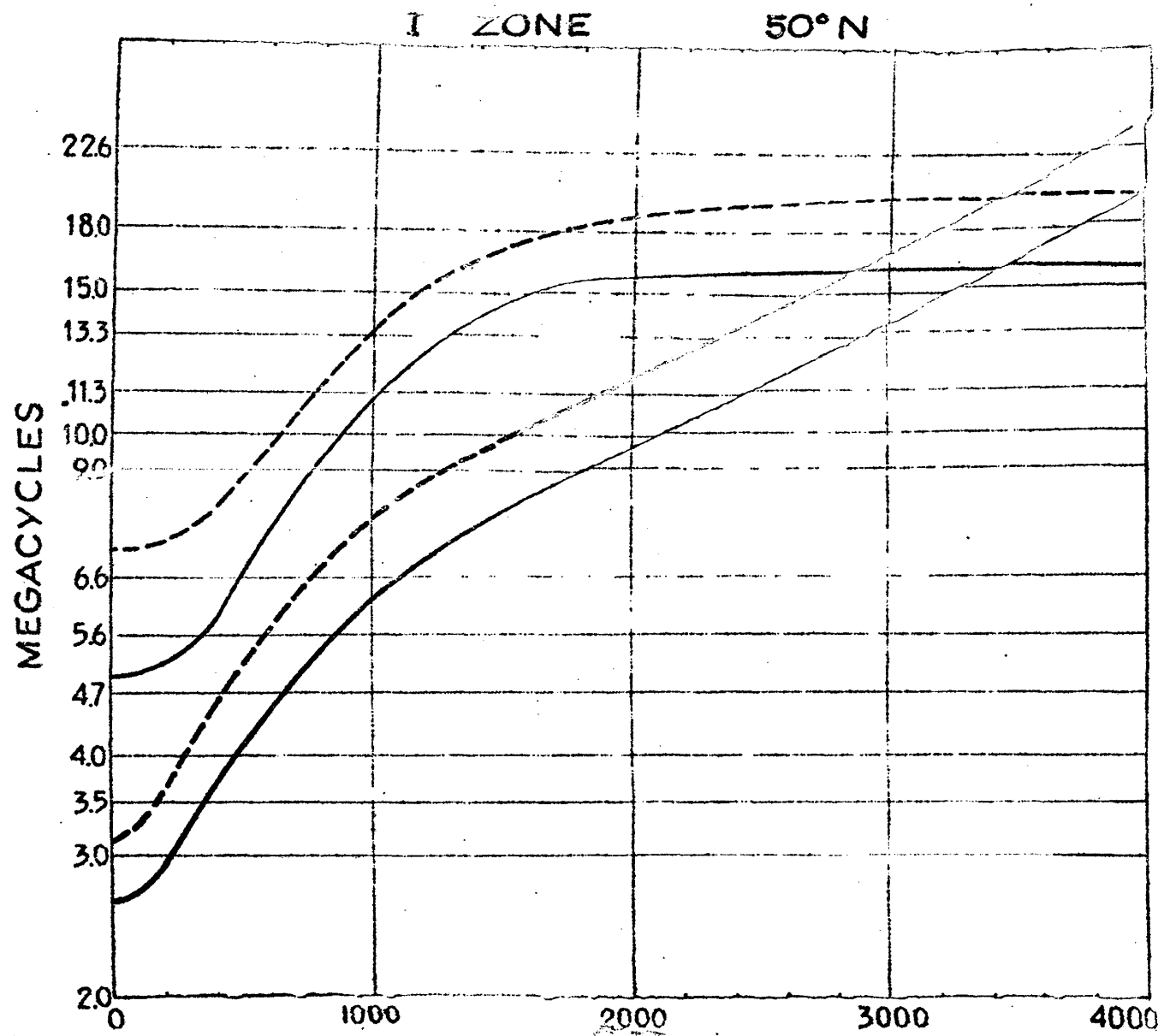
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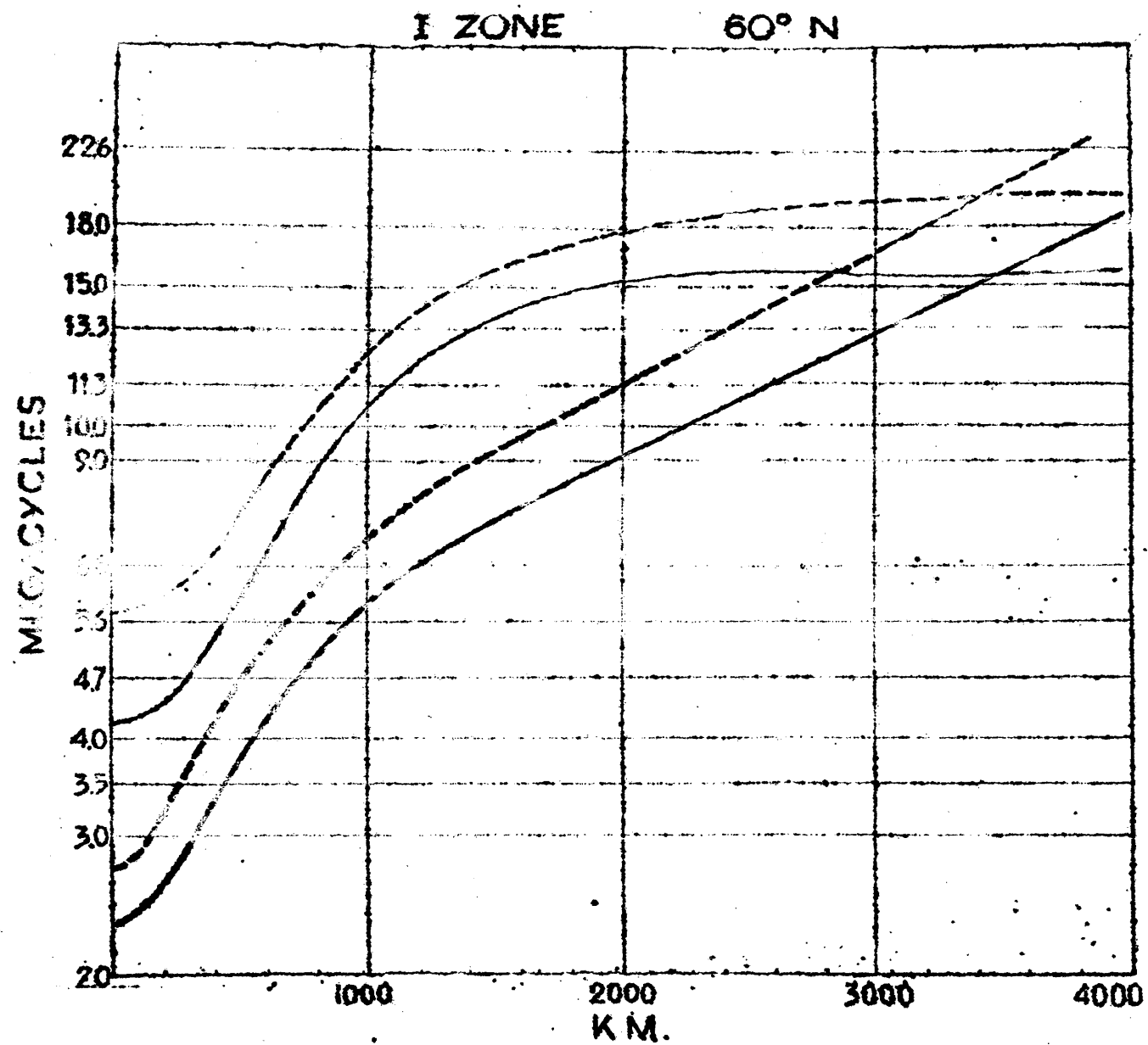
20°N

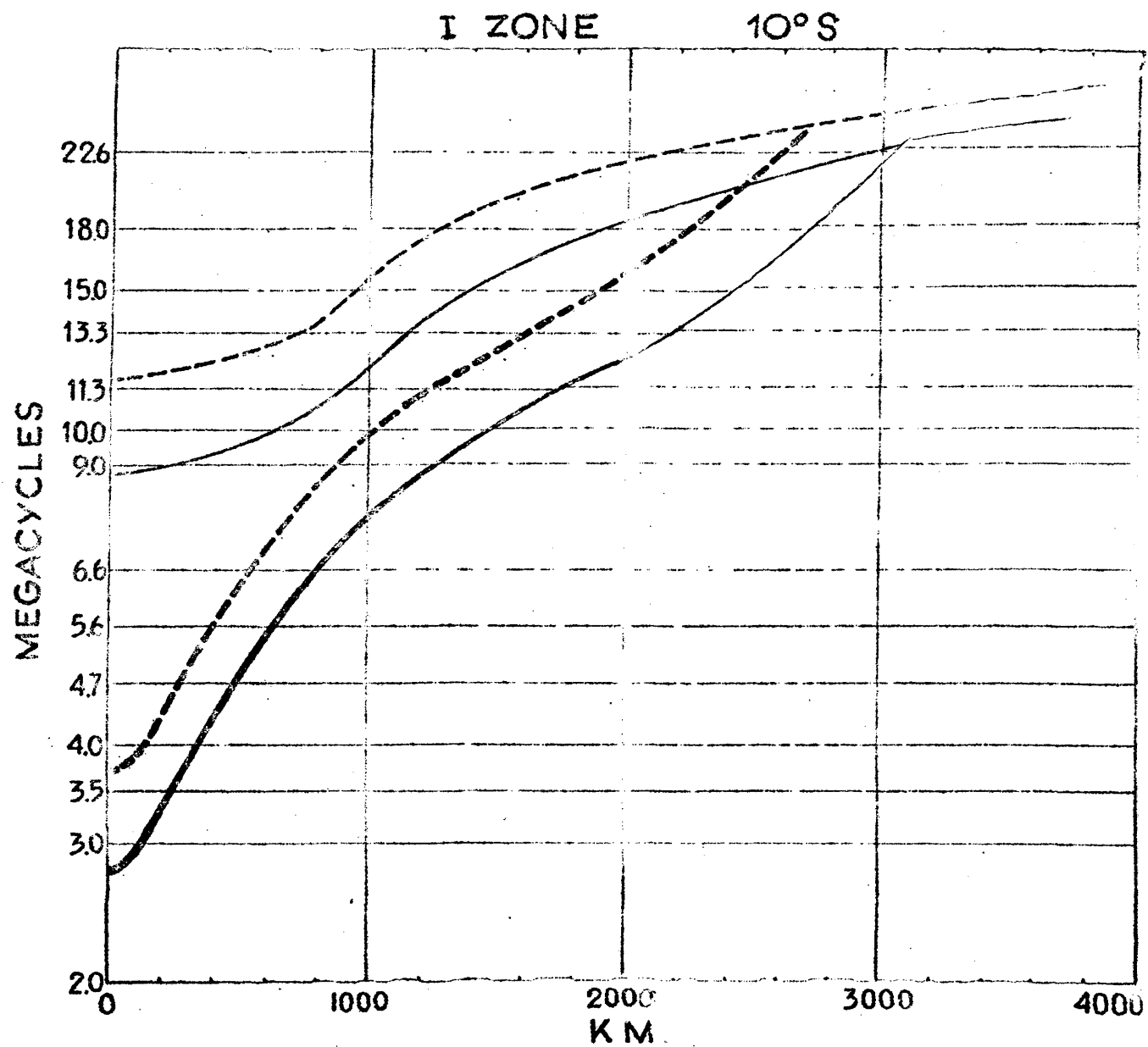


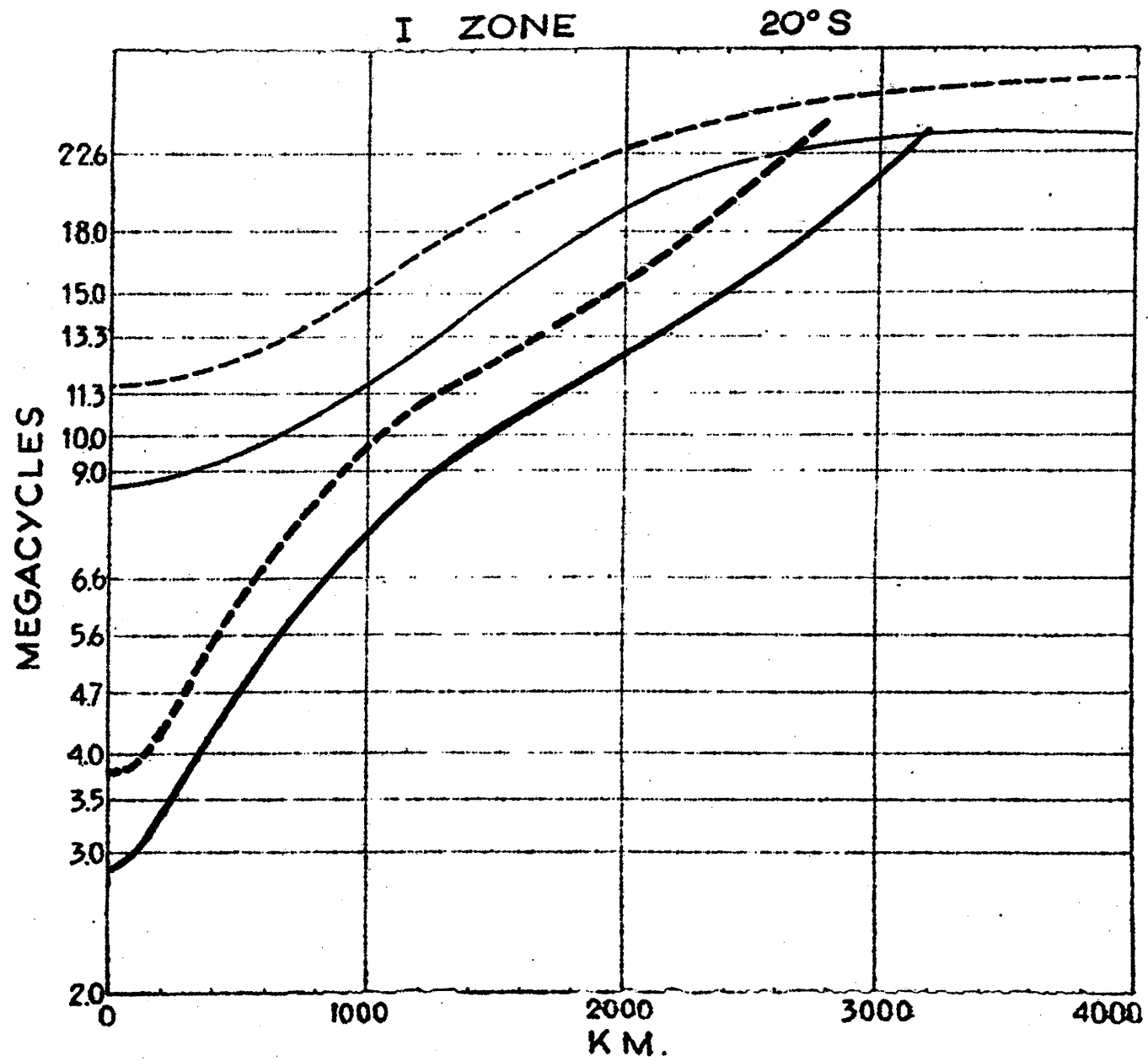


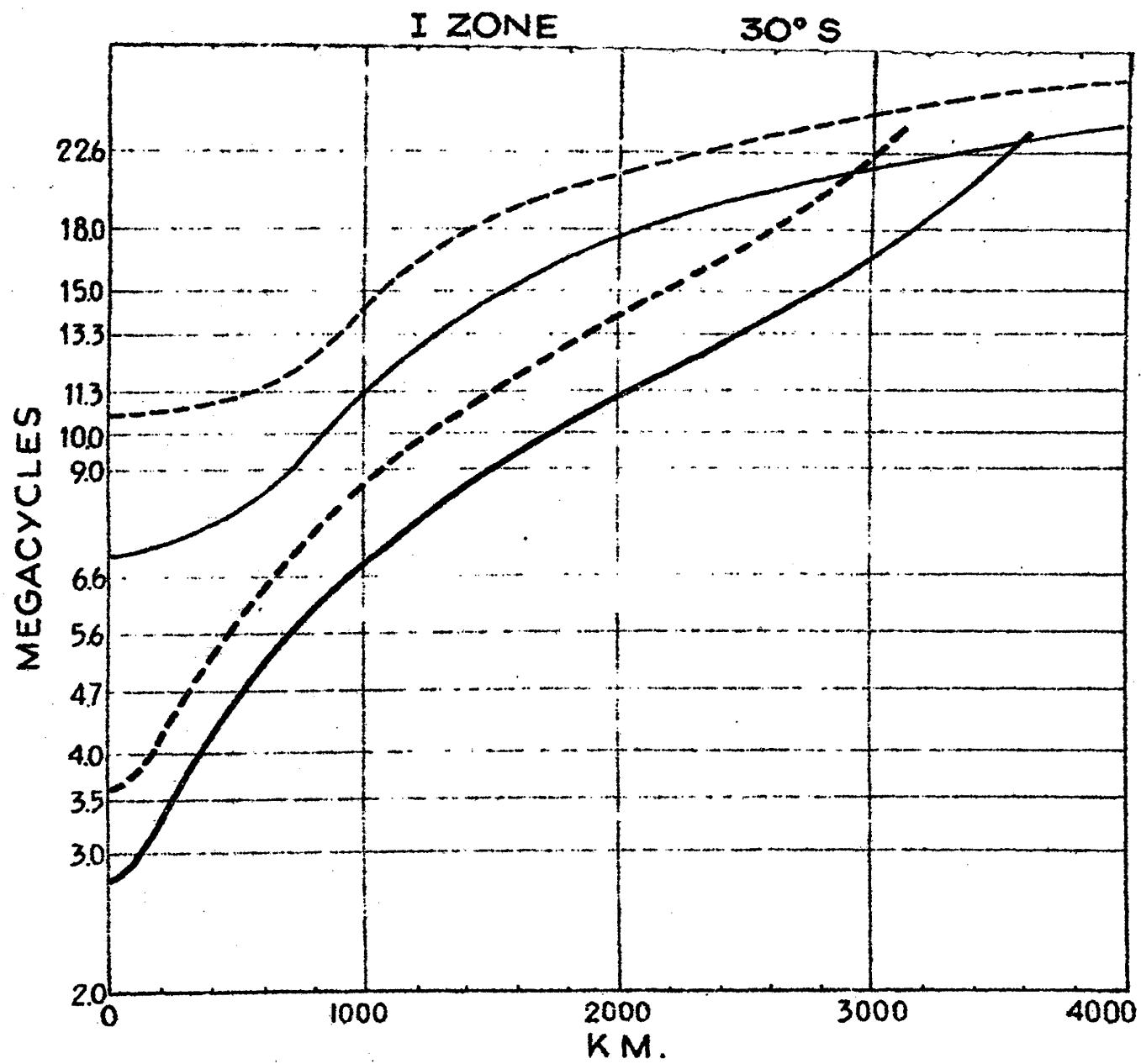


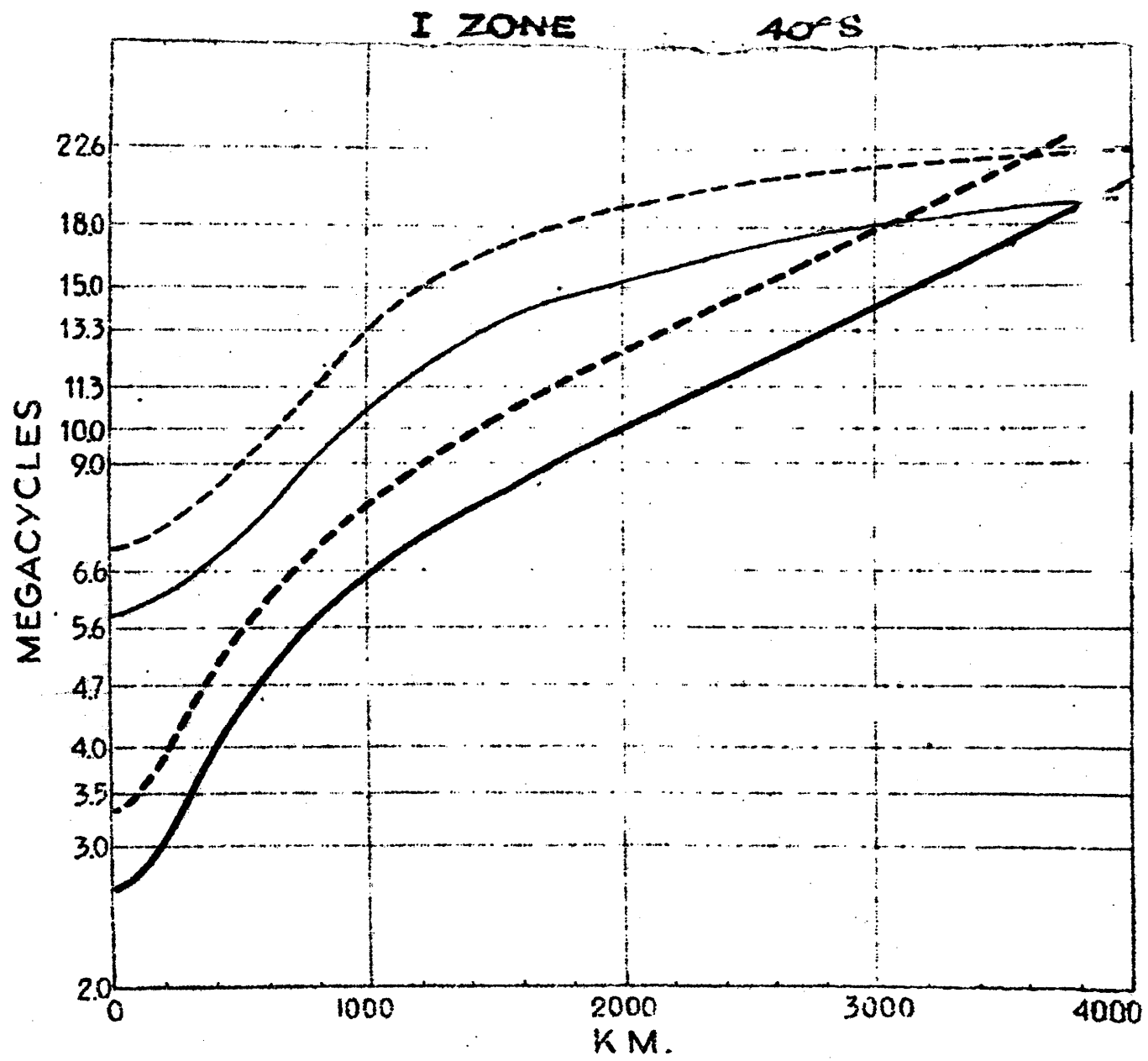


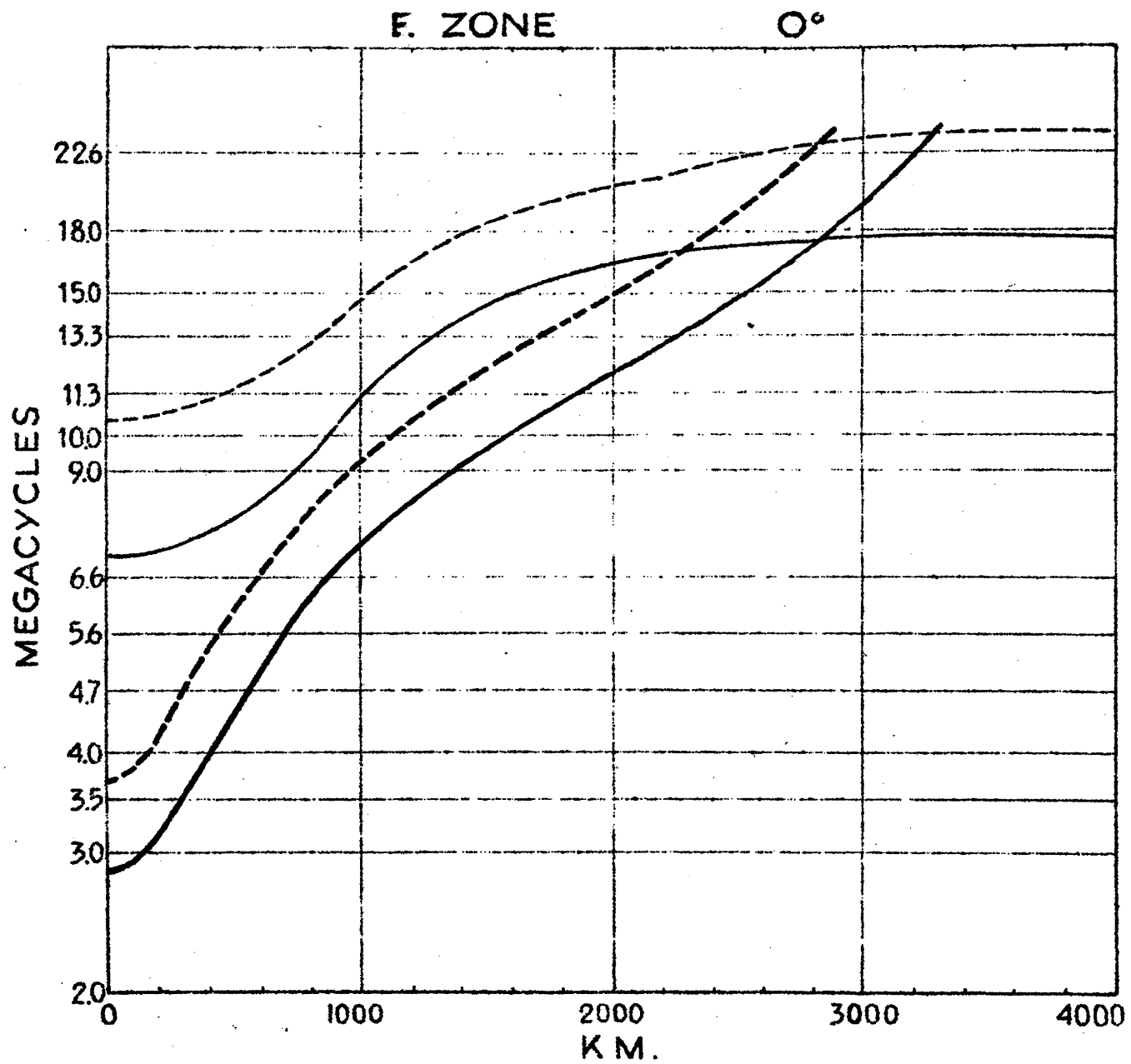


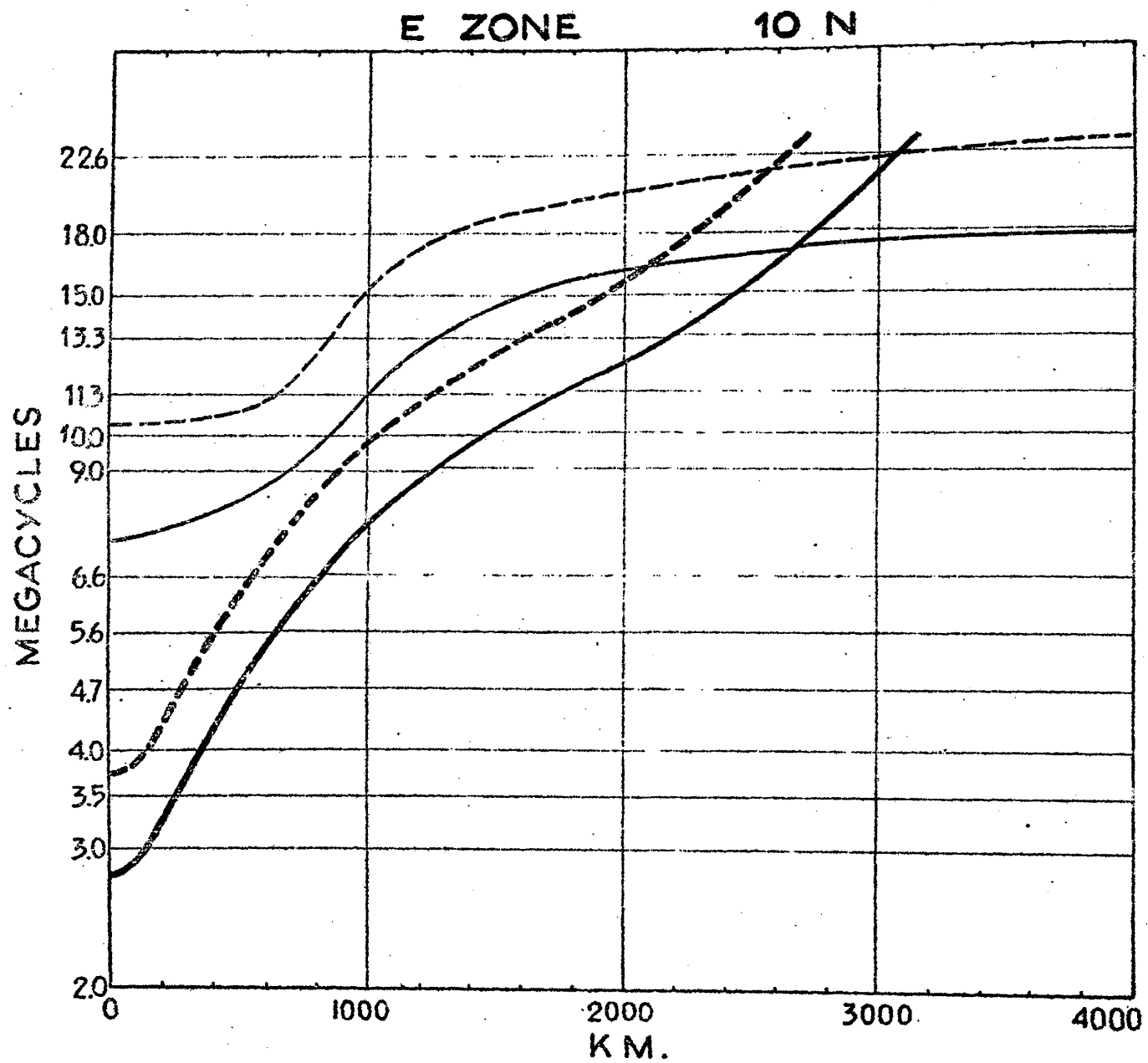


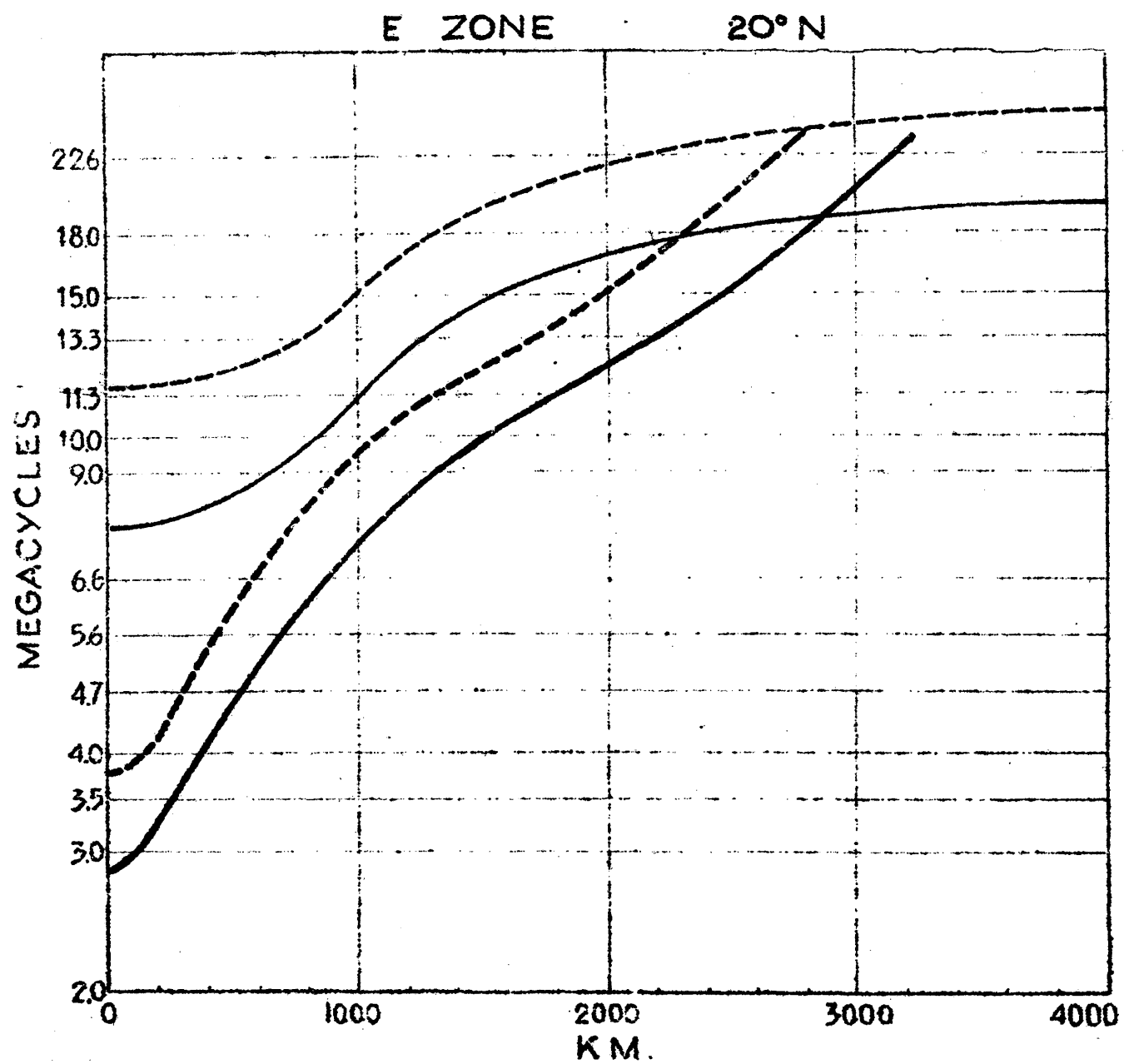


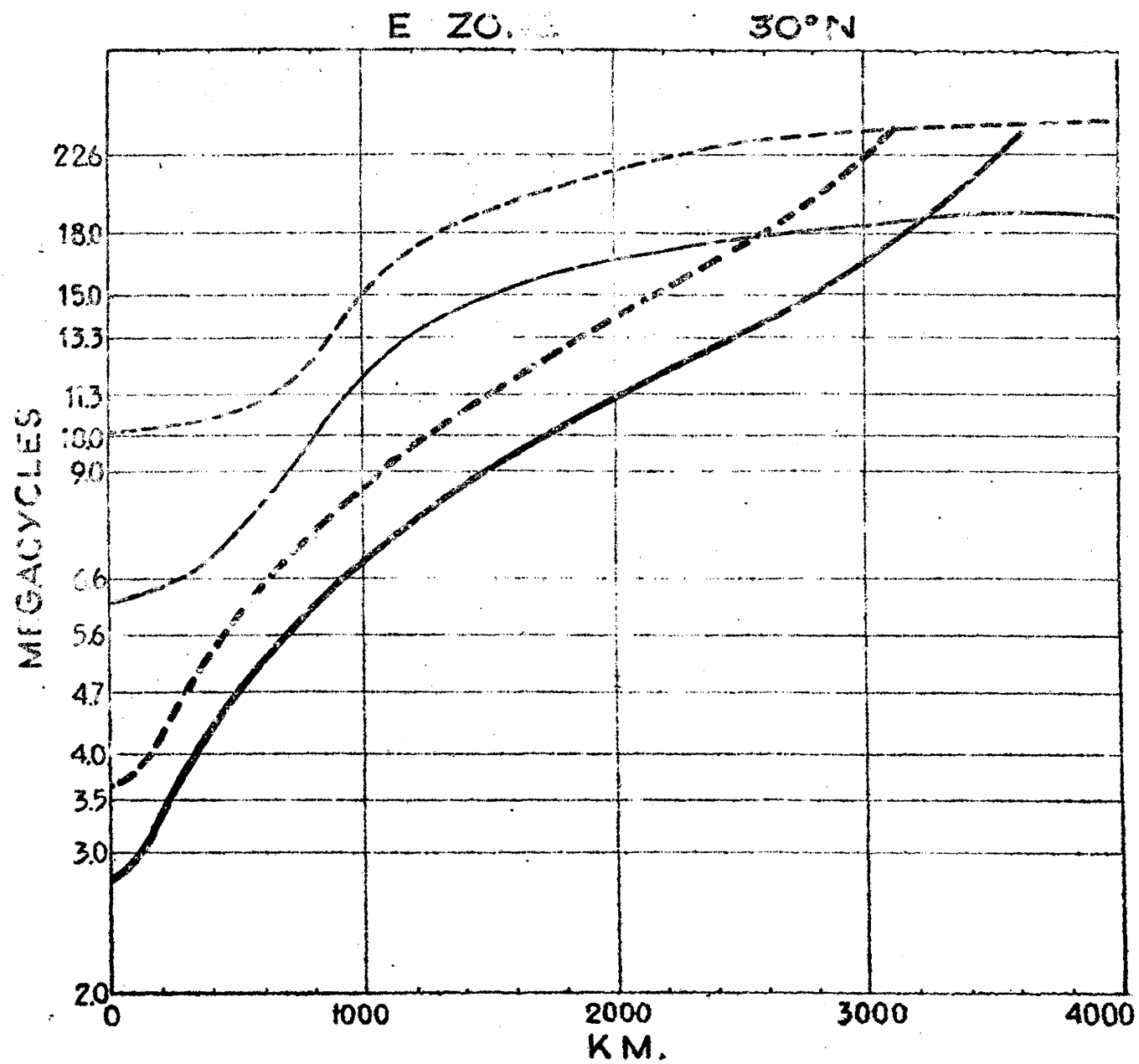


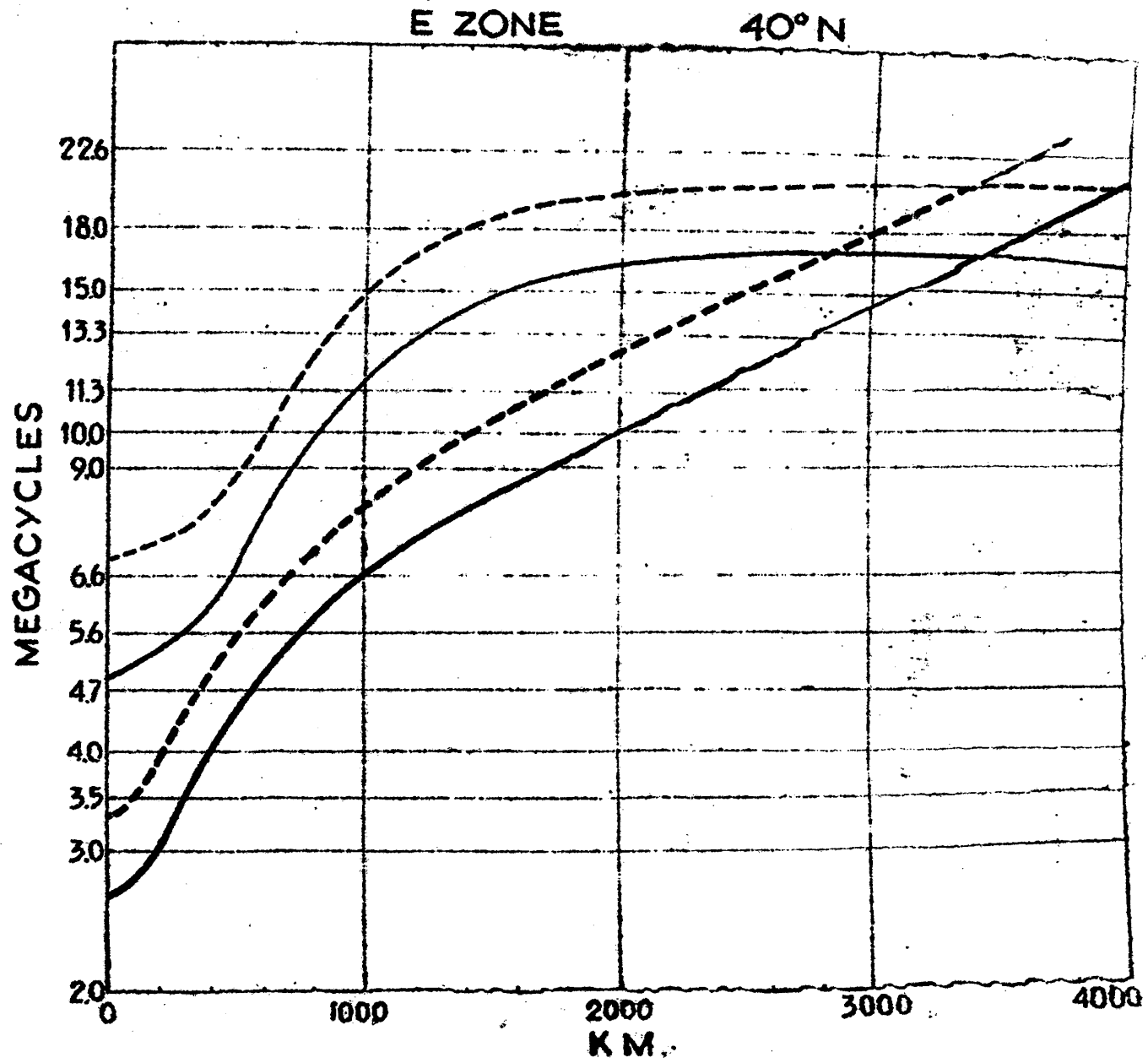


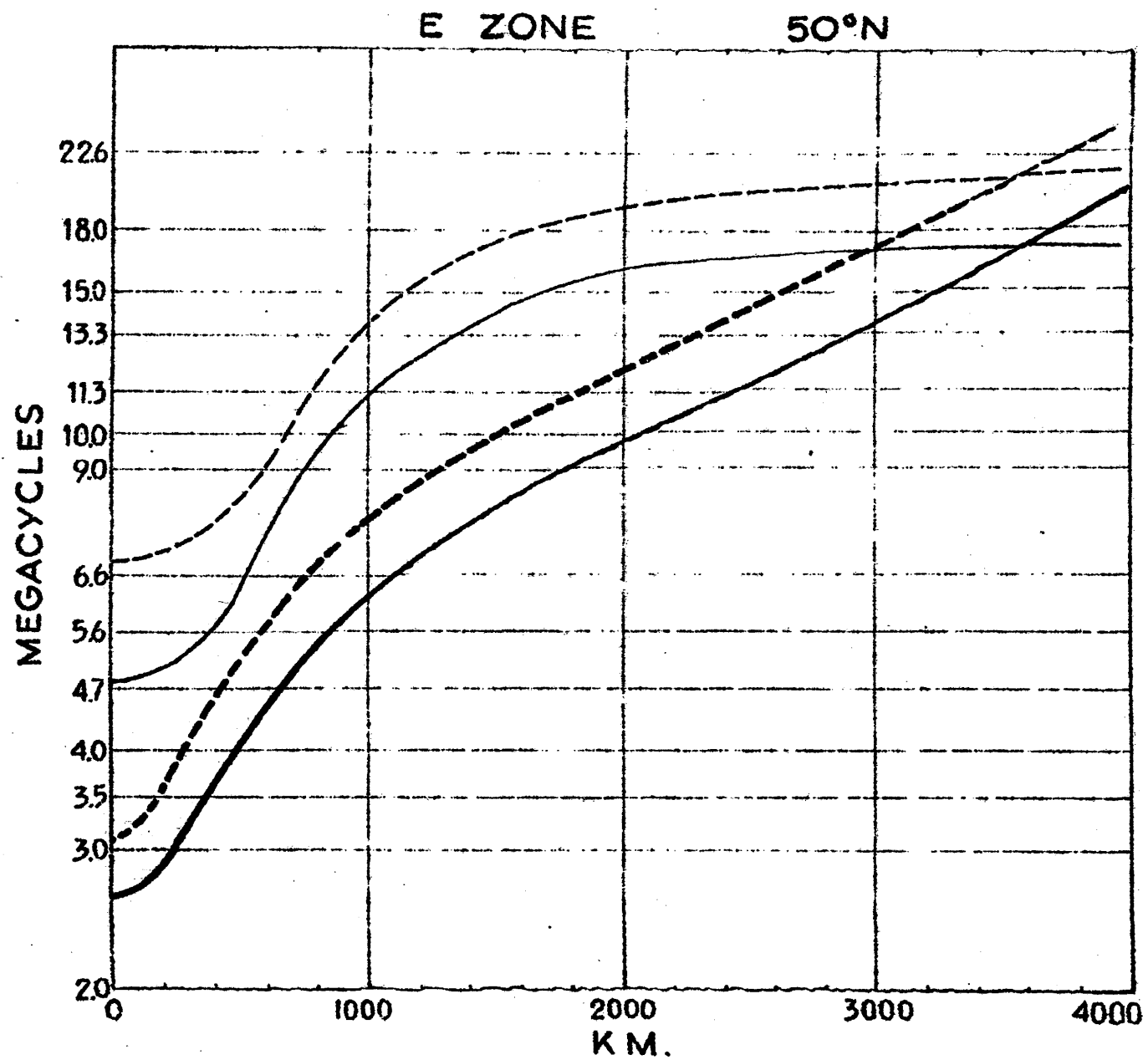


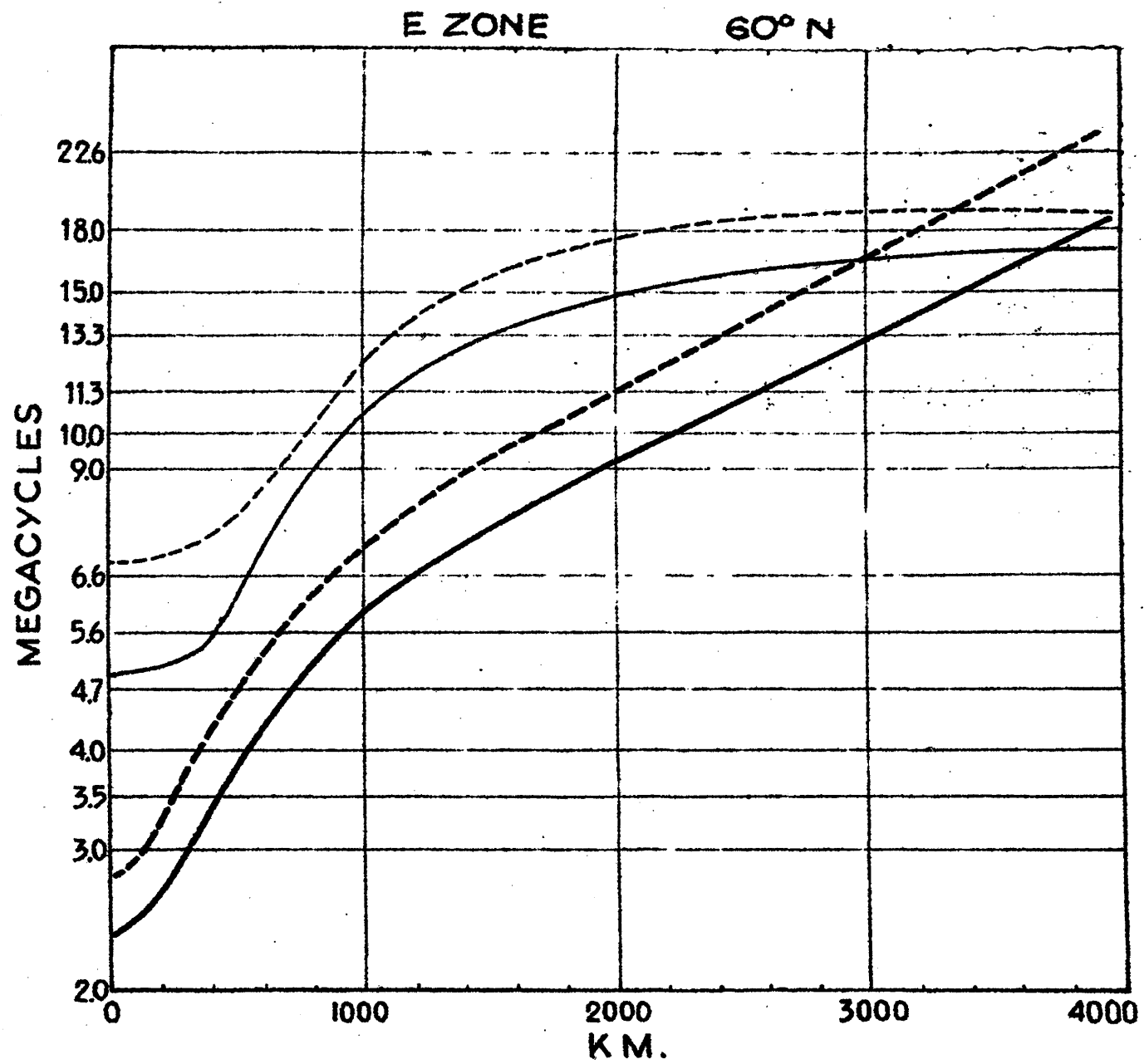






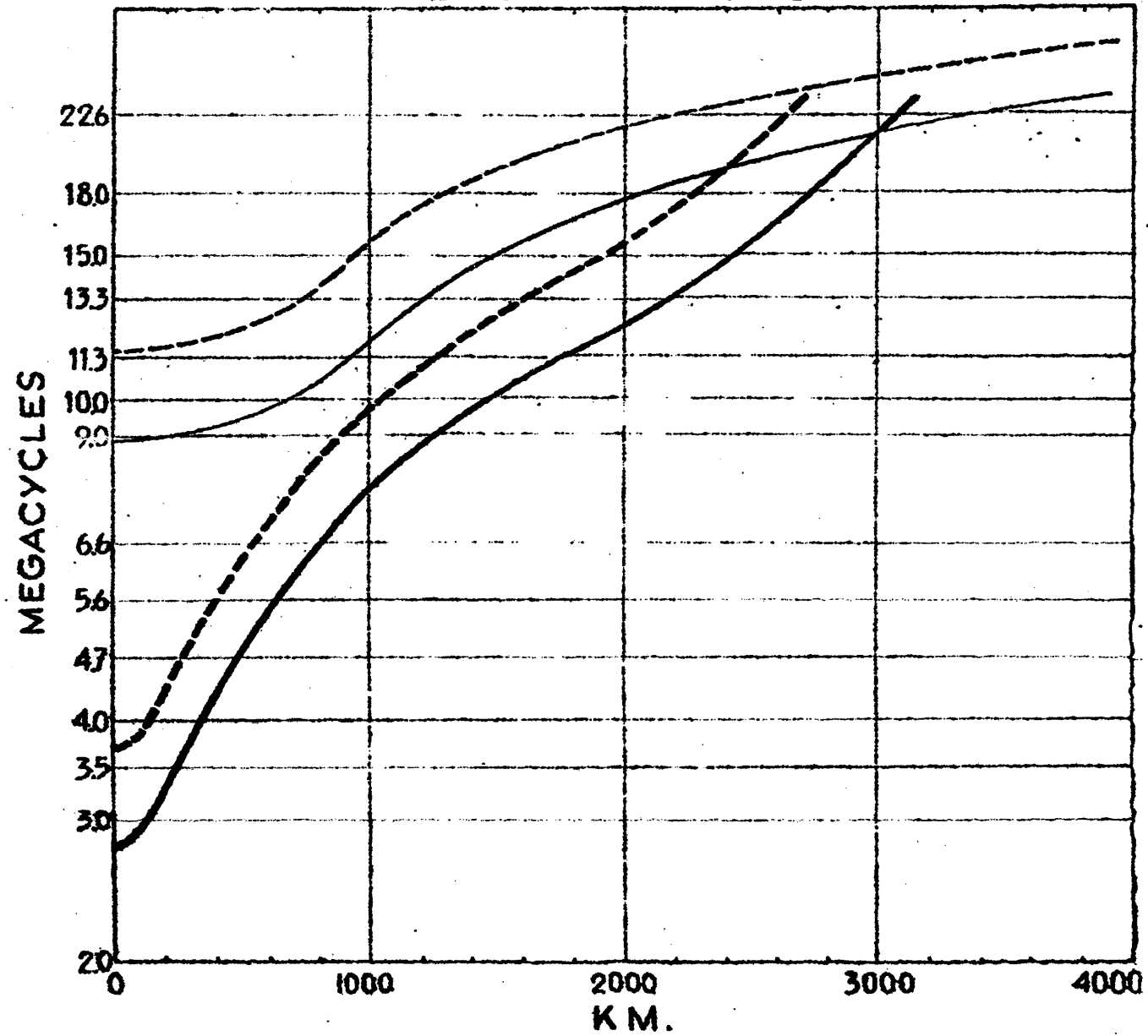


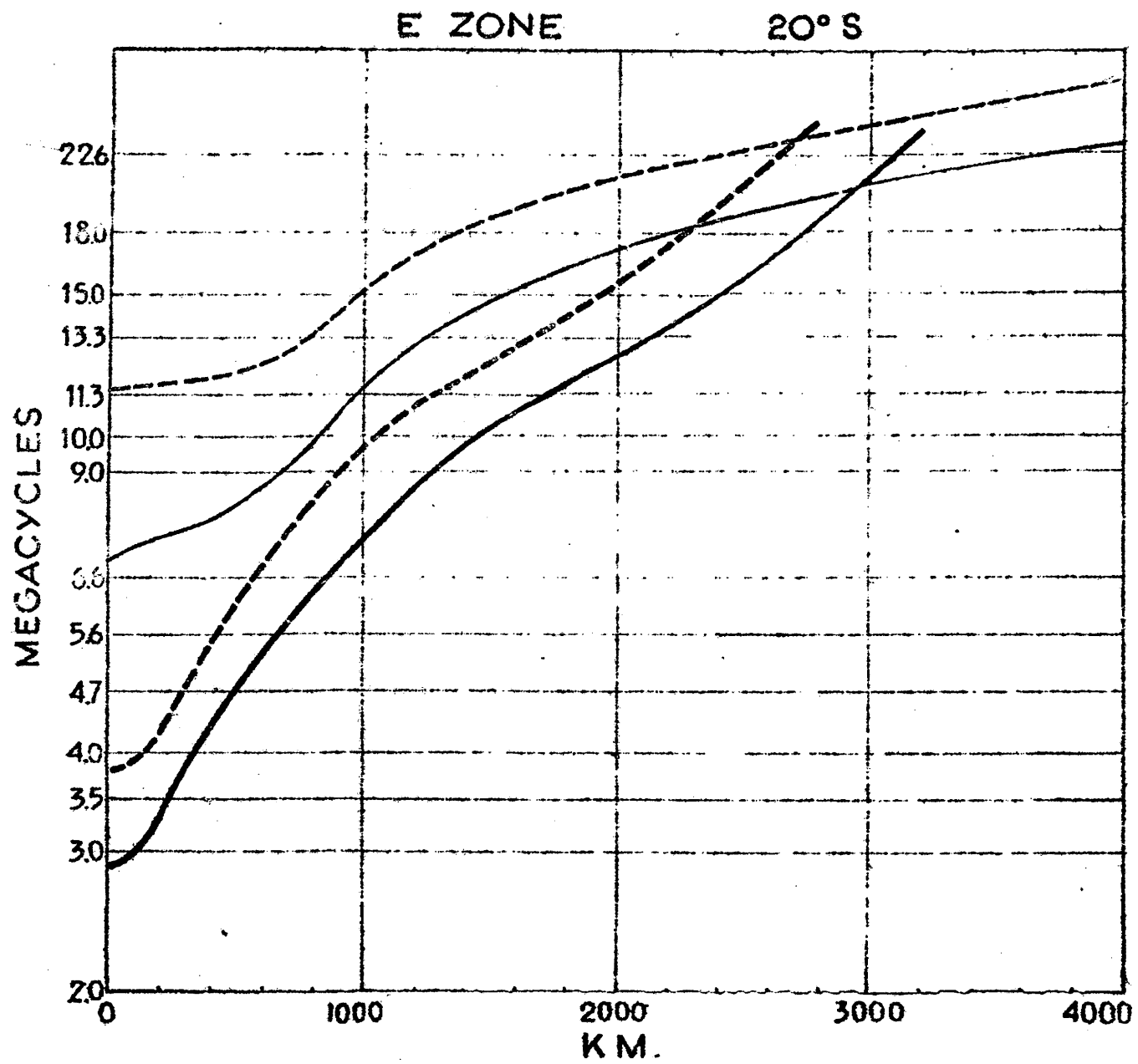


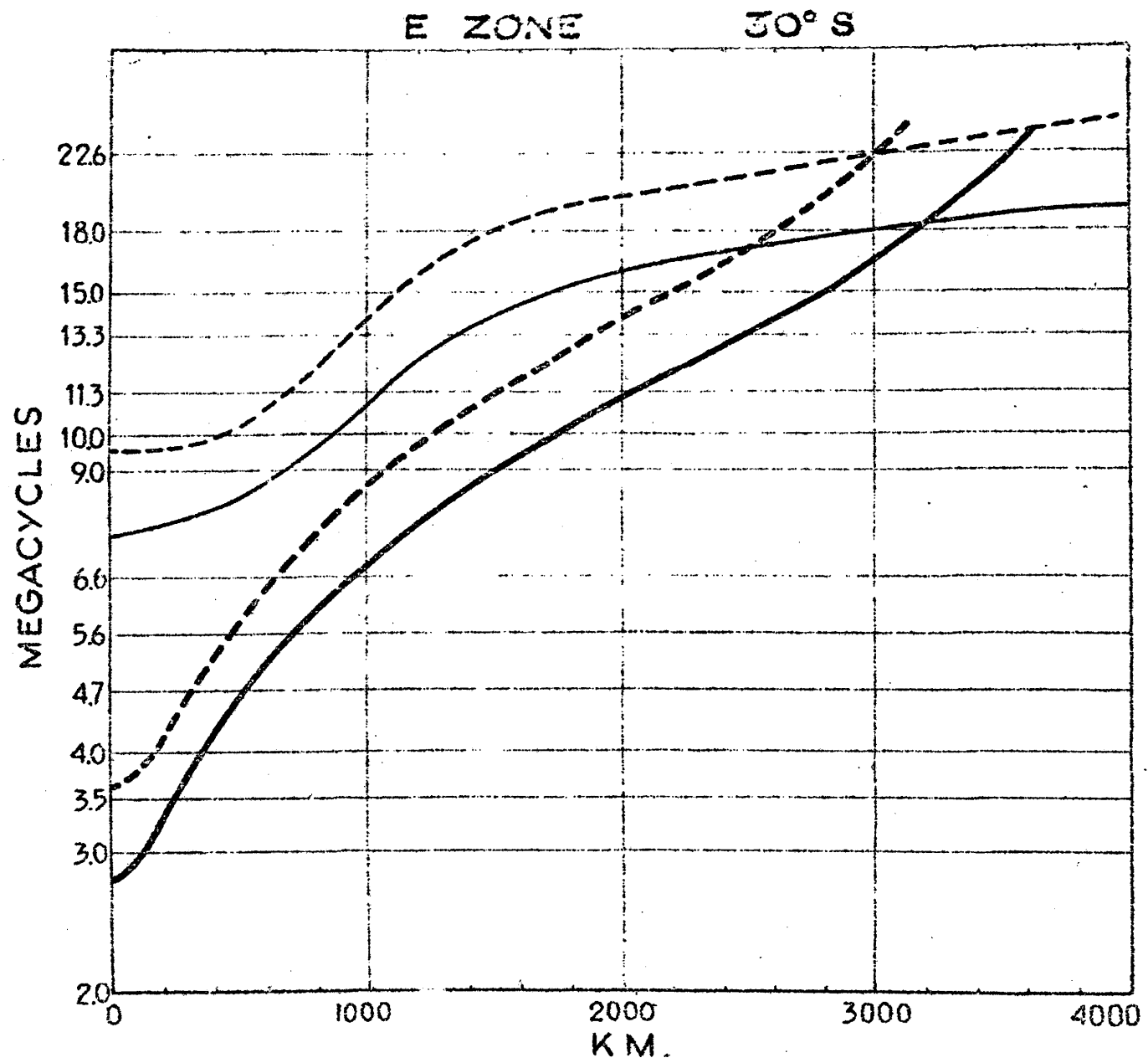


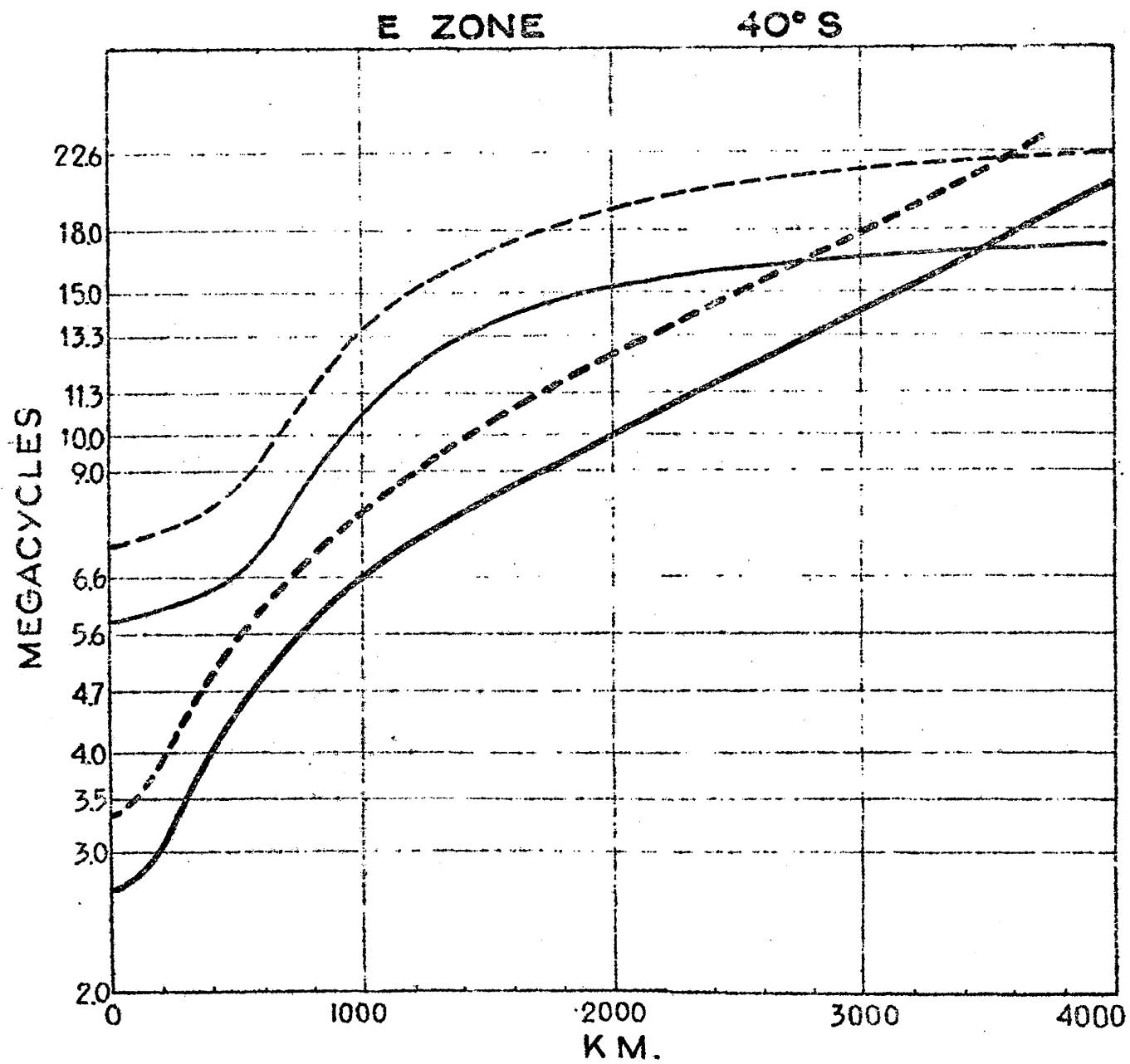
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10° S









17 June, 1948

Committee 1

REPORT OF THE STEERING COMMITTEE

(Committee 1)

10th Meeting

15 June, 1948

CHAIRMAN : Mr. A. LEBEL (Chairman of the Conference).

Present : Mr. P. SENN (Vice-Chairman of the Conference), Miss Florence TRAIL (Committee 3), Mr. SELIS (Committee 4), Mr. DUNCAN (Committee 5), Mr. BETTS (Committee 6), Mr. FURZE (Committee 7), Mr. HARVEY (Union of South Africa).

APPROVAL OF REPORTS OF THE EIGHT AND NINTH MEETINGS
(Aer-Documents Nos. 102 & 105)

Aer-Document No. 102 was adopted.

The following amendment was made to Aer-Document No. 105 : the last part of the sentence attributed to Mr. BETTS should read :
"...which indicated that that country had no requirements in the OR bands, but that its requirements in the R bands had changed".

Aer-Document No. 105, thus amended, was adopted.

ACTION TO BE TAKEN WITH REGARD TO THE CONFERENCE FOR SAFETY OF
LIFE AT SEA AND IN THE AIR;

It was agreed that this matter should be raised at a later meeting, after members had familiarized themselves with the report prepared by the Preparatory Committee of Experts for that Conference.

FORMAT OF FINAL DOCUMENTS.

The CHAIRMAN said that he had studied this question with some care, bearing in mind not only expense, but also the factor of time and the number of copies which would be needed.

He personally preferred the format which had been used for the documents of the Atlantic City Conference. This consisted in the photographic reproduction of typewritten pages, and could be quickly and cheaply produced.

A telegram would be sent to the various administrations to ascertain how many supplementary copies of the Final Acts would be required.

It was agreed that a format similar to that of the Atlantic City documents would be employed for the Final Act of the Conference, except that in the latter case the back of the volume should be reinforced with a strip of linen.

PURCHASE OF A GLOBE FOR WORKING GROUP 6 B

Mr. Harvey (Working Group 6 B) said a large globe had been found indispensable for the work of his Group, and, if he were authorized to do so, he would undertake to obtain one.

It was agreed that Mr. HARVEY should be authorized to obtain a globe and that, with a view to debiting the expenditure to the budget of the Union, an approach should be made to the Assistant Secretary-General.

HOURS OF WORK

Mr. BETTS (Committee 6) suggested that Committees work on Saturday mornings.

It was agreed that Chairmen should use their discretion in arranging meetings in the evening or on Saturday mornings. Encouragement should be given to Working Groups to meet unofficially.

SCHEDULE OF MEETINGS

The Committee drew up a schedule of meetings for Wednesday, 16 June, Thursday, 17 June, and Friday, 18 June, 1948.

The meeting was adjourned at 6.30 p.m.

Reporter :
N. Langford

Chairman :
A. L. Lebel

LIST OF DOCUMENTS PUBLISHED BY THE
INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE

GENEVA, 1948
DOCUMENTS 51 - 100

Aer- Document No.	S U B J E C T
51	- Committee 1 - Report of the 1st and 2nd Meetings - 15 and 19 May, 1948
52	- Committee 1 - Report of the 4th Meeting - 25 May, 1948
53	- Committee 7 - Report of the Committee on the allocation of "OR" frequencies.- 7th Meeting - 27 May, 1948.
54	- Committee 4 - Report of the Technical and Operational Committee - 10 th Meeting - 27 May, 1948.
55	- Committee 6 - Working Group B - Report of Working Group B of Committee 6 2nd Meeting - 7 June, 1948.
56	- Schedule of Meetings - May 31 and June 1, 1948.
57 (revised)	- Third Plenary Meeting - 1 June, 1948 - Agenda
58	- Working Group 4 B - 31 May, 1948 - Report of Working Group 4 B
59	- Committee 6 - Report of the Committee on the allotment of R frequencies- 28 May, 1948.
60	- Committee 1 - Report of the 5th Meeting - 28 May, 1948.
61	- Committee 4 - Report of the Technical and Operational Committee - 11th Meeting - 28 May, 1948.
62	- Proposal submitted by Mr. PETIT (I.F.R.B.) - 31 May, 1948.
63	- Committee 2 - Report of the Credentials Committee - 2nd Meeting - 31 May, 1948.
64	- Committee 7 - Report of the Committee on the allotment of "OR" frequencies - 8th Meeting - 28 May, 1948.
65	- Republic of Poland - Proposal for the adoption of minimum field intensity figures required for the satisfactory reception by aircraft of A1 and A3 commercial telephony.- 1 June, 1948.
66	- Schedule of Meetings - 2, 3 and 4 June, 1948 .
67	- Major World Air Route - Statement presented by I.A.T.A.-2 June, 1948.



Aer-
Document
No.

S U B J E C T

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- | | |
|----|--|
| 68 | - Committee 7 - Report of the Committee on allotment of "OR" frequencies - 9th Meeting - 31 May, 1948 . |
| 69 | - Committee 1 - Report of the 6th Meeting - 1 June, 1948 . |
| 70 | - Committee 4 - Report of the Technical and Operational Committee - 12 th Meeting - 31 May, 1948 . |
| 71 | - Committee 5 - Flight Information Tables . |
| 72 | - International Air Route Map. |
| 73 | - Committee 7 - Report on the allocation of "OR" frequencies - 10th Meeting - 2 June, 1948 . |
| 74 | - Committee 6 - Report of the Committee on the allotment of "R" frequencies - 8th Meeting - 2 June, 1948 . |
| 75 | - Committee 4 - Report of the Technical and Operational Committee - 14th Meeting - 2 June, 1948 . |
| 76 | - Committee 4 - Report of the Technical and Operational Committee - 13th Meeting - 1 June, 1948. |
| 77 | - Committee 4 - Report of the Technical and Operational Committee - 15th Meeting - 3 June, 1948 . |
| 78 | - Committee 6 - Report of the Committee on the allocation of "R" frequencies - 7th Meeting - 31 May, 1948. |
| 79 | - Committee 6 - Report of the Committee on the allotment of "R" frequencies - 9th Meeting - 3rd June, 1948. |
| 80 | - Summary record of the third Plenary Meeting - 1 June, 1948. |
| 81 | - List of documents published - 4 June, 1948 - documents 1 - 50 |
| 82 | - Committee 7 - Report of the Committee on the allotment of "OR" frequencies - 11th Meeting - 3 June, 1948 . |
| 83 | - Committee 6 - Sub-Committee B - Report of Sub-Committee B of Committee 6 - 1st Meeting - 4 June, 1948. |
| 84 | - Committee 5 - Report of the Committee on Aircraft Operation Statistics - 4th Meeting - 4 June, 1948. |
| 85 | - Schedule of Meetings - 7, 8 and 9 June, 1948 . |
| 86 | - Committee 4 - Report of the Technical and Operational Committee - 16th Meeting - 4 June, 1948 . |

Aer-
Document
No.

S U B J E C T

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- | | |
|-----|---|
| 87 | - Committee 1 - Report of the 6th Meeting - 4 June, 1948. |
| 88 | - Committee 7 - Report of the Committee on the allotment of "OR" frequencies - 12th Meeting - 4 June, 1948. |
| 89 | - Committee 6 - Report of the Committee on the allotment of "R" frequencies - 10th Meeting - 7 June, 1948. |
| 90 | - Committee 7 - Report of the Committee for allotment of "OR" frequencies - 14th Meeting, 8 June, 1948 . |
| 91 | - Committee 4 - Report of the Technical and Operational Committee - 18th Meeting - 8 June, 1948. |
| 92 | - Report of the Ad Hoc Working Group - (Reference: Aer-Doc.Nos.9 & 49), 9 June, 1948. |
| 93 | - Committee 2 - Report of the Credentials Committee - 9 June, 1948. |
| 94 | - Schedule of Meetings - 10 and 11 June 1948. |
| 95 | - Committee 6 - Report of the Committee for allotment of "R" frequencies. 12th Meeting - 10 June, 1948. |
| 96 | - Committee 7 - Report of the Committee on the allotment of "OR" frequencies - 13th Meeting - 7 June, 1948. |
| 97 | - Committee 4 - Report of the Technical and Operational Committee - 19th Meeting - 9 June, 1948. |
| 98 | - Committee 6 - Report of the Committee on the allotment of "R" frequencies - 11th Meeting - 8 June, 1948. |
| 99 | - Committee 7 - Report of the Committee on allotment of "OR" frequencies- 15th Meeting - 9 June, 1948. |
| 100 | - Agenda for the Fourth Plenary Meeting.- 10 June, 1948 |
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REPORT
of the Technical and Operational Committee.

(Committee 4)

23rd Meeting

June 17th, 1948

- I. The meeting was opened at 2:30 p.m. by the Chairman, Mr. Selis (Netherlands).
2. The following countries and international organizations were represented:

Argentina (Rep. of)	Pakistan
Australia (Federation)	Poland (Rep. of)
Bielorussia (S.S.R.)	Roumania
Brazil	Switzerland (Confederation)
Canada	Union of South Africa and Mandated
Colombia (Rep. of)	Territories of South-West Africa
Cuba	United Kingdom of Great Britain and
Egypt	North Ireland
France	United States and Territories
French Protectorates	U.S.S.R.
of Morocco and Tunisia	Yugoslavia (Pop. Fed. Rep. of)
Ireland	I.A.T.A.
Italy	I.C.A.O.
Netherlands, Curacao and Surinam	
Netherlands Indies	
New Zealand	
Norway	

3. The Chairman proposed that the committee considers Doc. No. 77 (Report of the 15th Meeting). It was agreed to add the name of the Cuban Delegate to those of the members present at the 15th Meeting.

The Yugoslavia Delegate asked that his declaration, found on page 3 of the report, be worded as follows :

"The representative of Yugoslavia said that if I.C.A.O. had adopted a scheme which was uneconomical in frequency utilization, it was up to the I.T.U. to warn I.C.A.O. and to ask that such a scheme be changed. The I.T.U. must formulate the most economical plan of frequency allotment which will satisfy all the services and all the countries to the same degree."

The Bielorussian Delegate requested that the following amendment be inserted in the Minutes of the 15th Meeting as the 5th para. of page 2, Doc. 77-E:

"The Delegate of Bielorussia stated that if a protection ratio were set up taking into account only the simplex type of operation its result might be an uneconomical utilization of the high frequency bands allocated to the aeronautical service, whereas, in practice Al telegraphy cross-band operation

would be employed in many cases, and for this a considerably lower protection ratio might be allowed.

Considering that the figure of 30db for A-3 was too high, because it would not permit the obtention of enough channels to satisfy the requirements, he suggested that the figures of 20 db for A-3 and 10 db for A-1 be adopted. "

The United Kingdom Delegate pointed out that the name "United Kingdom" should be deleted in the last paragraph of page 2 (Doc. No. 77-E).

The Delegate of the I.A.T.A. requested that the expression "for calculation" be added in the same para. between the words "basis" and "would" (this last correction concerns only the English text).

The United States Delegate pointed out an error in the fourth para. on page 3. The third line should read :

"The U.S. Delegation supplied information indicating that a 15 db ratio was sufficient to provide 90 % intelligibility in the case of A-3, while a ratio of 2 db is sufficient for A-1."

The U.S.S.R. Delegate indicated that in the next to last paragraph his statement should be reproduced as follows:

"The Delegate of the U.S.S.R. stated that before adopting any protection ratio figure it was necessary to consider some practical factors, namely : short duration of communication with the aircraft, variable distance, etc..

The probability of interference will be less than the theoretical one.

If a protection ratio of 20 db for A-3 and 10 db for A-1 is accepted, and if it is taken into account that the communications of aircraft working on the same frequencies are not simultaneous, then, allowing for the local noise level, the percentage of interruption of communications will not exceed 10 %, which should be considered normal.

A lower protection ratio is not an obstacle to the introduction of high capacity means of communication, inasmuch as the speed of the communication itself cuts down the time during which the channel is occupied and consequently decreases the probability of harmful interference. "

The Soviet Delegation supported the protection ratio figures proposed by the Bielorussian Delegation.

With the inclusion of these modifications, the report of 15th Meeting (doc. No. 77) was adopted.

4. The next item of the agenda was the consideration of Doc. No. 91 (Report of the 18th Meeting, June 8th, 1948).

A correction was to be made in the 6th line of the second para. on page 3, which should read : "apply to these channels only". Also, second line of the 4th para. on page 3, replace "Fog.19" by "Fig. 19" (this last correction concerns only the English text).

With the inclusion of these corrections, the report of the 18th Meeting (Doc. No. 91) was adopted.

5. The Report of the 19th Meeting (Doc. No. 97) was then examined. In the first line of sub-paragraph (1) para.6, page 2, replace "CP-Aer. No.3" by "CP-Aer. No. 5".

In the same sub-paragraph the French text, replace "appropriate equipment" by "adequate services".

With the inclusion of these corrections, the Report of the 19th Meeting (Doc. No. 97) was adopted.

6. At the request of the Chairman, Mr. Gauthier (United States of America) gave an oral report on the work completed by Group 4C which had held several meetings. He announced that the graphs concerning fields of 20 microvolts per meter would be distributed on June 18th and the other graphs would follow soon after.

The Delegate of New-Zealand requested that, since the extra-curricular meetings were insufficient, an official schedule of the meetings of this Group be established.

The Chairman agreed and stated that this request would be submitted to the Steering Committee.

In reply to a question by the Chairman, Mr. Gauthier estimated that one week's work, at seven hours a day, would be required to finish the work of Group 4C.

7. At the request of the Chairman, Mr. Greven (I.C.A.O.) next listed the activities of Group 4B and pointed out that the Final Report of this Group was contained in Doc. 112, which had been published only in English. Documents in Spanish and French would be distributed very soon.

A few corrections were to be made in this document.

In the 2nd line of the 2nd para. on page 1, replace "Aer. Doc. No. 34", by "Aer. Doc. No. 35"

On the 2nd page of Annex B, right column, replace "46965 and 47035" by "4696.5 and 4703.5".

Mr. Greven then presented Doc. No. 112.

At the Chairman's suggestion, Doc. 112 was adopted in its English version, but since the French version had not yet appeared, the French Delegate stated that he would accept the English text provisionally, while waiting for the French version.

The Colombian Delegate pointed out a typographical error in Annex B, scale 10005 - 10100; replace 1066 by 10066 between 10057 and 10075.

The Colombian Delegate added that he agreed with the English version of Doc. 112 and he saw no reason to prevent its adoption, provided that the Spanish version were a faithful translation.

The I.A.T.A. Delegate noted that in Annex B of the ~~agreed~~ document, the indications concerning the 3 Mc/s and the 11 Mc/s bands had been omitted.

After comments by the Delegates of Australia, Colombia, and the United States of America, the Chairman declared that the first part of the terms of reference of Group 4B had been completely fulfilled. On the proposal of the Colombian Delegate, the expression "has been assumed" was added at the beginning of para. 2 a).

After a discussion participated in by the delegates of the United States of America, the United Kingdom and the representative of I.A.T.A., the Chairman suggested that the Committee accept the following text : "Committee 4 approved the Report of Working Group 4B and directed its transmission to Committees 6 and 7 for further consideration. In this correction, Committee 4 believed that the values of band edge tolerances used by the Working Group are appropriate".

The representative of I.A.T.A. drew the attention of the meeting to a previous decision of Committee 4 which stipulated that 10 kc/s should be the minimum channel width for the 13 Mc/s band, and stated that in the present channel divisions recommended by Working Group 4B there were 2 channels in the 13 Mc/s band which had a channel width of only 9 kc/s. Furthermore, in order to obtain this narrow-band channel, which may not be suitable for world-wide utilization, the band edge tolerances had been reduced to below .02%.

In view of this, the representative of I.A.T.A. stated that there was no justification for setting up 9 kc/s channels and he requested that the band edge tolerance be restored to .02% and that the space at the center of the band be classified as reserved space as it had been in other bands, this subject to joint consideration by Committees 6 and 7.

He also drew attention to the unallotted space in the R section of the 11 Mc/s band, where 750 cycles remained unallotted, and to the OR section of this band where there were 4.25 kc/s unallotted.

The Chairman agreed that these observations should be included in the Report and that Committees 6 and 7 should take the matter into consideration.

Mr. Greven (I.C.A.O.) declared that a note on page 4 referred to this question to be studied by Committees 6 and 7.

With a reservation concerning the 2 missing pages which were to appear as an Annex, the Committee accepted the above text as proposed by the Chairman concerning Doc. 112, which was thereby adopted.

8. The Yugoslavia Delegate then made the following declaration :

"Because the Yugoslavian Delegation did not agree with the recommendation of Committee 4 concerning channel separation, it will not take part in the discussions concerning the Report of Sub-Committee 4B, while retaining certain reservations concerning the said report".

The Bielorussian Delegate supported the declaration of the Yugoslavian Delegation.

The U.S.S.R. Delegate declared that he had already expressed his disagreement with the principles adopted in regard to the channel width; consequently he abstained from declaring himself on the adoption of the Report of Group 4B and reserved the right to re-open the question.

The Polish Delegate declared that, in the name of his Delegation and in the name of the Delegation of Czechoslovakia, he too would abstain from approving the adoption of the Report of Group 4B and he reserved the right to re-open the question.

The Roumanian Delegate announced the same abstention for his Delegation and reserved the right to re-open the question.

The Chairman took note of these declarations.

9. After having announced that the meetings of Group 4C would replace those of Committee 4, the Chairman adjourned the meeting at 4:45 p.m.

The Reporter :

Mr. Beaufol

The Chairman :

O.J. Selis

International Administrative
Aeronautical Radio Conference

GENEVA, 1948

Conférence internationale administrative
des Radiocommunications aéronautiques

GENEVE, 1948

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas

GINEBRA, 1948

Aer-Document No. 120-E

Aér-Document No. 120-F

Documento Aer-No. 120-S

18 June, 1948

18 juin, 1948

18 de junio de 1948

pen

SCHEDULE OF MEETINGS

Time :	Room I	Room II	Room III
<u>Monday, 21 June, 1948</u>			
0930	4 : 4c	6 c (af- ter 4)	7 B
1430	4 c	6 c	7 B
<u>Tuesday, 22 June, 1948</u>			
0930	6	4 c	7 or 7 B
1430	6	4 c	7 or 7 B
1730		1	

HORAIRE DES SEANCES

Heure :	Salle I	Salle II	Salle III
<u>Lundi, 21 juin, 1948</u>			
9 h.30	4 : 4 c	6 c (après 4)	7 B
14 h.30	4 c	6 c	7 B
<u>Mardi, 22 juin, 1948</u>			
9 h.30	6	4 c	7 ou 7 B
14 h.30	6	4 c	7 ou 7 B
17 h.30		1	

PROGRAMA DE SESIONES

Hora :	Sala I	Sala II	Sala III
<u>Lunes, 21 de junio de 1948</u>			
9 h.30	4 : 4 c	6 c (des- pues de 4)	7 B
14 h.30	4 c	6 c	7 B
<u>Martes, 22 de junio de 1948</u>			
9 h.30	6	4 c	7 ó 7B
14 h.30	6	4 c	7 ó 7B
17 h.30		1	



21 June, 1948

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)
11th Meeting
18 June, 1948, at 5.40 p.m.

CHAIRMAN : Mr. A. L. LEBEL (Chairman of the Conference)

Present :

Mr. SENN (Vice-Chairman of Conference)
Mr. VERES (Committee 2)
Mr. FALGARONE (Committee 3)
Mr. SELIS (Committee 4)
Mr. DUNCAN (Committee 5)
Mr. BETTS (Committee 6)
Mr. FRY (Committee 7)
Mr. HARVEY (Union of South Africa)
Mr. FURZE (Australia)
Mr. TABIO (Cuba)
Miss Florence TRAIL (United States)

APPROVAL OF REPORT OF THE TENTH MEETING (Aer-Document No. 117).

It was agreed to postpone consideration of this document until the text had appeared in Spanish.

ACTION TO BE TAKEN WITH REGARD TO THE CONFERENCE FOR SAFETY OF LIFE AT SEA AND IN THE AIR.

Agreement was reached in the discussion which followed on the need for close collaboration between maritime and aeronautical services; it was considered that the common distress frequency should be chosen from amongst the bands allotted to the maritime service, in view of the limited number of frequencies available to the aeronautical service.

The CHAIRMAN said that the rôle of the Union would necessarily be a limited one. I.C.A.O. had suggested convening a meeting, at which I.M.C.O., I.T.U., and I.C.A.O., would be represented, to discuss the matter (See page 14, paragraph 2 of the Report of the Committee of Experts). The Committee might well lend support to this idea, and, in addition, refer the question to the Administrative Council for consideration.

It was agreed that the Chairman would prepare a text for transmission to the Administrative Council: this text would recommend a meeting of specialists of both aviation and marine services, and indicate that the Union should be represented. Attention would be drawn to the shortage of frequencies available, and a request would be made for directives.

TEXTS TO BE INSERTED IN THE FINAL ACTS.

Mr. FALGARONE (Committee 3) wished to know what texts adopted by the Plenary Committee could be included in the Final Acts, and in what form; the extent to which Committee 3 might re-edit the wording of texts adopted in Committees must be clearly defined. It was desirable for Committees to submit their texts, as far as possible, in the form in which they would be finally adopted by the Conference.

The CHAIRMAN said that a concrete case would arise at the next meeting of Committee 4; this would enable chairmen to form some idea of the Editorial Committee's requirements.

SCHEDULE OF MEETINGS.

The Committee drew up a schedule of meetings for Monday, June 21, and Thursday, June 22nd 1948.

The meeting was adjourned at 7.15 p.m.

Reporter :

N. Langford

Chairman :

A. Lebel

R E P O R T
OF THE TECHNICAL AND OPERATIONAL COMMITTEE
(Committee 4)

24th Meeting
21 June 1948 a.m.

Chairman: Mr. O.J. Selis (Netherlands)

1. The following countries and international organisations were represented:

Argentina	Poland
Australia	Protectorates of Morocco and
Bielorussian S.S.R.	Tunisia
Canada	Roumania
Cuba	Switzerland
Czechoslovakia	United Kingdom
Egypt	United States of America and
France	Territories
Ireland	Union of South Africa
Italy	U.S.S.R.
Mexico	Yugoslavia
Netherlands, Curaçao	I.A.T.A.
and Surinam	I.C.A.O.
New Zealand	I.F.R.B.

2. Due to the departure of the vice Chairman of the Committee, Mr. Acton, a new vice-Chairman had to be elected. Mr. L.E. Coffey, of Canada, was so nominated and elected by acclamation.

3. As no translations of minutes of previous meetings were yet available no minutes were considered.

4. The Chairman brought then up for consideration the report of Working Group 4C, Aer - Document N° 116.

A short explanation was given by Mr. Gautier (U.S.A.), Chairman of the Group, wherein he proposed that for the time being no combined charts for maximum and minimum ranges for A1 manual method of communication be made.

There were considerable discussions regarding this point, in which part was taken by the Chairman and the delegates of France, U.S.S.R., Poland, Australia, U.S.A., Canada and New Zealand. The former three of the delegates were of the opinion that such charts should also be made at the present time. The delegate of the U.S.A. moved that for the time being and pending discussions by Committee 6 these charts should not be made. This motion was seconded by the delegate from Australia. The U.S.S.R. delegate did not agree with this motion and insisted that the charts should now be made.

The Chairman brought the motion to the vote and the motion carried with 14 votes in favor, 11 against and 1 abstention.

During the further discussion of the document, it was brought out that certain minor changes and additional clarification should be made in the text of the document, and that the text should be made ready to form part of the final report.

The Chairman then proposed adoption of the document, with the changes which are deemed necessary. He thanked the Chairman of the Working Group and the members for the work done.

As no objection against the adoption of the document were brought forward, the document was considered adopted by the meeting.

5. The Chairman then proposed the formation of a small working group consisting of 3 delegates representing also the three different language groups, to consider all resolutions which should be put in a suitable form for incorporation in the final report and also to check the translations, so that the text in the three different languages should be identical. The Chairman proposed that this Working Group, to be named 4D, should consist of the following delegates: Mr. Whitey (U.S.A.), Mr. Falgarone (France) and Mr. Tabio (Cuba). These delegates accepted the nomination and their appointment was approved by the meeting.

6. The delegate of New Zealand inquired what had become of paragraph 21 of Aer - Document No 5. The Chairman pointed out that the text of this paragraph had been revised and the correct text as given in Aer - Document No 70 was to be used.

No further points being brought forward, the Chairman adjourned the meeting at 12.05 p.m.

The Reporter:
Louis Bergman

The Chairman:
O.J. Selis

COMMITTEE 7

REPORT

of the Committee on the Allotment of OR Frequencies
(Committee 7)
17th Meeting
17th June 1948

1. The Chairman of Committee 7 having had to absent himself from Geneva, the meeting was opened by the Vice-Chairman, Mr. J. D. Furze, who undertook the responsibilities of the office.

Delegates of the following countries were present at the meeting:

Argentina	New Zealand
Australia	Poland
Canada	Portugal
Chile	Ukraine (S.S.R. of)
France	United States of America
Honduras (Republic of)	U.S.S.R.

2. For the working week of June 14-18, the French Delegation will continue to fill the post of reporter.

3. The Minutes of the 11th, 12th, 13th, 14th, and 15th Meetings (Aer-Documents 82, 88, 96, 90 and 99) were examined. They were approved by the Committee on the condition that the following corrections were to be made:

Aer-Doc. No. 82 - 11th Meeting

- 1) Appendix III, page 2, after the words "Forms 2" delete "or" and insert "but".
- 2) Page 1, para 2: Replace the first paragraph by the following:
"The Delegate of the U.S.S.R. requested that the questions that he had proposed on short notice at yesterday's meeting be replaced by the following:"
- 3) Page 3, para 12, replace the existing paragraph by the following:
"The Delegate of the U.S.S.R. stated that his delegation had no additional information to submit concerning the frequency requirements of the OR mobile aeronautical service of the U.S.S.R."
- 4.) Page 4, para 17, Statement by the Soviet Delegation - first line, replace "is convinced" by "believes".

4. Aer-Doc. No. 88 (12th Meeting)

- 1) Page 2, para 10, first line, replace "his country" by "the Soviet Delegation".
- 2) Page 5, para 24, replace para b) by the following:

"b)Item IV (Power delivered to antenna); although this information is not indicated in Aer-Doc. No. 19, the Soviet Delegation has already notified the Committee that in calculating the requirements of their country protection ratios of 10 db and 20 db were used for telegraphy and telephony, respectively".

- 3) Para 24, page 5, sub-para c), replace the last sentence by the following:
"In conclusion, the Soviet delegation believes that the submission of additional information is unnecessary".

5. Aer-Doc. No. 96 (13th Meeting)

- 1) Page 2, the sub-paragraph following para c) should read:
"Considers that:
the proposal of the United States delegation not to examine requirements which might not contain all the information provided for in the resolution is wrong and irregular".
- 2) Page 3, sub-para 4), first line, delete "industrial" and insert "individual".
- 3) Page 3, para 6, sub-para 3, last sentence - attributed to the Soviet delegate - to read as follows:
"Therefore the Soviet delegation submitted its requirements in a different form, taking into account the fact that Form 2 cannot express the requirements of its country in an appropriate manner".
- 4) Page 3, third last paragraph, after the words "Ukraine speaking", insert the word "also".
- 5) Page 4, para 10, line six, delete "no more" and substitute "only the same amount of ". Line 7, delete "shall" and insert "must". Delete "preliminary".
- 6) Page 5, third last paragraph, after the words preparatory committee, amend to read "was based on a square pattern into".
- 7) Page 6, 2nd para. a) first line, after the word "approved" insert "the principle contained in".
b) sixth line, replace "time-tables" by "time".

6. Aer-Doc. No. 90 (14th Meeting)

- 1) Para 1, to the countries listed add "Chile".
- 2) Page 1, para 3, line 2, read "which he submitted to the Members of Committee 7 for their consideration".
- 3) Page 2, 1st para, 1st sentence should read: "Square patterns might then be drawn on transparent material corresponding to the various frequency ranges for a uniform power of 1 kw."

- 4) Same para, 2nd sentence, delete "for a uniform power of 1 kw."
- 5) Page 2, para 2, line 2, delete "being" and insert "using".
- 6) Page 2, para 4, lines 1 and 2, read "repetition" instead of "duplication".
- 7) Page 2, next to last para, delete the second sentence.
- 8) Page 3, para 6, first line, delete "OR" and insert "in the aeronautical mobile (OR) service".
- 9) Page 3, para 6, line 7, the sentence after the words "next meeting" begins a new para.
- 10) Page 3, para 6, line 8, after "agreed in principle" insert "with the Australian proposal".
- 11) Page 4, para 7, sub-para 3, replace "Determination" by "Presentation".

7. Aer-Doc. No. 99 (15th Meeting)

Point 1, to the list of countries add Chile and New Zealand.

8. To facilitate the designation of new working groups, the Committee decided that henceforth:

- Working Group 1 would be called "Working Group 7A"
- " " " 2 " " " " "Working Group 7B"

9. The Chairman, who represented Committee 7 in Working Group B of Committee 4, announced that this group had submitted its final report, known as Document No. 112, but not yet published in French and Spanish. In spite of this inconvenience, he requested that the Committee agree to undertake a primary examination of this report before it came up for discussion that same afternoon in a meeting of Committee 4 in which he was going to participate.

After an affirmative reply, the Chairman invited the Committee to consider Annex B of the document in question and pointed out that at the common edges of adjacent R and OR bands the tolerance allowed for these two types of frequencies had never been below 0.02R. He also indicated that, because of the occasional impossibility of determining an additional channel, a certain portion of the bands thus remained unused. Consequently, to improve this situation, he asked if the Committee wished:

- a) the determination of the channel maximum to be fixed, making provision for the assignment of possible additional channels for type A1 emissions, or
- b) the OR mobile aeronautical service to abandon, as reciprocity, some kilocycles to the R service in order to provide complementary channels.

The Canadian delegate pointed out that while consulting the table preceding Annex B he noticed that in the 2850-3155 band there were 10 kc/s available and that the channel spacing was only 7 kc/s. In addition, in the 5480-5730 band there were 9 kc/s available with a channel spacing of 7.5 kc/s. These available areas could be used for common purposes.

The United States delegate declared that he had followed closely the work of Group 4B and that there had been many proposals formulated on this item of the agenda. He emphasized that the principle should be adopted concerning the establishment of maximum utilization of the available spectrum. In order to accomplish this, it would be preferable to limit the band edges to A1 transmissions with a minimum tolerance and to adjust the central or adjacent point of R and OR bands. He also noted that the two services had a great number of common points and that it would be advantageous to have common channels. Concerning this, he proposed that the study of these common channels be entrusted to a small working group.

The delegates of Canada and New Zealand agreed to the utilization of the two services' common frequencies.

The French delegate was not opposed to the principle of such utilization, but he felt that it would be better to try, first of all, to derive the maximum use from the OR bands by requesting the mobile aeronautical R service to concede some complementary kilocycles.

The Chairman took cognizance of these various declarations, and passing to another subject asked the Chairmen of Groups 7A and 7B if they had any particular declarations to make.

The Chairman of Working Group 7A announced that his group was gathering the statistical information requested by 7B and that they would be submitted without delay. (number of frequencies requested by transmission power and under various latitudes).

The Chairman of Working Group 7B declared that he had appointed two sub-working groups:

- 7B1 - which was studying the question of protection ratios,
- 7B2 - which was to determine the type of grid and graph capable of arranging the repartition of frequencies in accordance with the formulated requirements and the known technical bases.

The Chairman announced in conclusion, that the method for determining the protection ration adopted by Working Group 7B was to be distributed in the 3 working languages to the members of Committee 7. Para 2 of this study brought up additional information on day or night use of frequencies which the various delegations were invited to submit to Working Group 7A if they thought it necessary.

The meeting was adjourned at 12.25 p.m.

The Reporter:

Commandant G. Sarre

(1-1-7)

The Chairman:

Mr. J. D. Furze

COMMITTEE 7

REPORT

OF THE COMMITTEE ON THE ALLOTMENT OF OR FREQUENCIES.

(Committee 7)

18th Meeting
June 18th, 1948.

1. The Chairman, Mr. J.D. Furze (Australia) opened the meeting at 9.30 a.m.
The following countries were represented :

Argentina	New Zealand
Australia	Poland
Canada	Portugal
Chile	Ukraine (S.S.R. of)
France	United Kingdom
Honduras (Republic of)	United States of America
Italy	and Territories
Netherlands	U.S.S.R.

2. The Chairman stated that Committee 4 had approved the final report of Working Group 4B (Doc.No.112) at its meeting of June 17th and that it had been submitted to Committees 6 and 7 for consideration.

A preliminary study of the English text of this document had already been made by Committee 7 at its meeting of June 17th and the Chairman emphasized that in order to determine a working method and to obtain an approximate view of the existing possibilities with a view to meeting requirements in available bands, Working Group 7B1 was thereafter entitled to use this report. The Chairman suggested that the Committee should study the specific point dealing with the remainder of Kc/s made available at the common edges of adjacent R and OR bands. In this respect, the Chairman recalled that the delegation of the United States had suggested the creation of a small Working Group for the purpose of studying this question.

The United States delegate stated that it would be indeed an excellent idea to set up such a group at once. In his opinion, this group should comprise only a few members and should cooperate with a similar Group of Committee 6, which will need to have all the information concerning OR bands, even if it were to accept the conclusions of the final report of Group 4B for the study of its own bands.

On the other hand, the delegate of France was of the opinion that an immediate creation of such a Working Group would be untimely. He felt that it would be wiser to wait for the publication of the statistical information which is now being compiled by Working Group 7A and which, towards the end of next week, would provide accurate information for Committee 7 concerning the requirements of various countries. It appeared from the available data that it might have been more advisable for the Atlantic City Conference to have assigned more frequency bands to the OR aeronautical mobile service and, as a counter-measure, to have reduced the bands assigned to the R mobile service.

The United States delegate took note of the French delegate's point of view and acknowledged the soundness of his arguments; he felt, however, that these were not sufficient to raise a fundamental objection to the immediate creation of a Working Group, which would be ready to cooperate with the corresponding Working Group of Committee 6 at the invitation of the latter.

The Chairman invited the delegate of France to outline his point of view in a more precise manner. The delegate, accordingly, put forward the following proposal :

- 1) The Committee should adopt the principle of setting up a Working Group to be entrusted with the study of the remainder of available kilocycles at the common edges of adjacent R and OR bands.
- 2) The Group should be assembled for its first meeting seven days later.
- 3) If the statistical data of Working Group 7A were available sooner than expected, the Group should be prepared to hold its first meeting at an earlier date.

The Chairman called the attention of the Committee to the two arguments, as expressed by the delegates of the United States and of France, which disagree only as to the date on which the Working Group should be constituted.

After a rather lengthy discussion, during which the delegates of Argentina, Canada, Republic of Honduras, United Kingdom and U.S.S.R. outlined their respective points of view, the Committee adopted the French proposal by 11 votes to 3, with 1 abstention.

3. The agenda having been completed, the Chairman adjourned the meeting at 11 a.m., after having announced that Squadron Leader A.Fry, once again in Geneva, will take over the chairmanship of Committee 7 at the next meeting.

The Reporter :

Commander G.Sarre

The Chairman :

J.D.Furze

International Administrative
Aeronautical Radio Conference

G E N E V A, 1948

Conférence internationale administrative
des Radiocommunications aéronautiques

G E N E V E, 1948

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas

G I N E B R A, 1948

Aer-Document No. 125 - E

Aér-Document No. 125 - F

Documento-Aer.No. 125 - S

22 June, 1948

22 juin, 1948

22 de junio de 1948

Schedule of Meetings

	Time	Room I	Room II	Room III
<u>Wednesday, 23 June, 1948</u>	09:30	6	4 C	7 (Working gr.)
	14:30	6(or 6C & 4D)	4 C; 6 E	7 (Working gr.)
<u>Thursday, 24 June, 1948</u>	09:30	6C(Working gr.)	4 C	7
	14:30	6C(Working gr.)	4 C; 4 D	7
	17:30	"	"	"
	17:30	1 (Room B)		
<u>Friday, 25 June, 1948</u>	09:30	4	4 C	7 (Working gr.)
	14:30	4; then 6 C	4 C	7 (Working gr.)
	17:30	"	"	"
	17:30	1 (Room B)		

Horaire des séances

	Heure	Salle I	Salle II	Salle III
Mercredi 23 juin, 1948	09:30	6	4C	7(Groupes de tr.)
	14:30	6 (ou 6C et 4D)	4 C; 6 E	7(Groupes de tr.)
Jeudi, 24 juin, 1948	09:30	6 C(Gr. de tr.)	4 C	7
	14:30	6 C(Gr. de tr.)	4 C et 4 D	7
	17:30	"	"	"
	17:30	1 (Salle B)		
Vendredi, 25 juin, 1948	09:30	4	4 C	7(Groupes de tr.)
	14:30	4; puis 6 C	4 C	7(Groupes de tr.)
	17:30	"	"	"
	17:30	1 (Salle B)		

Horario de Sesiones

	Hora	Sala I	Sala II	Sala III
Miércoles 23 de junio de 1948	09:30	6	4 C	7(Grupos de tr.)
	14:30	6(o 6C y 4D)	4 C; 6 E	7(Grupos de tr.)
Jueves, 24 de junio de 1948	09:30	6 C(Gr. de tr.)	4 C	7
	14:30	6 C(Gr. de tr.)	4 C; 4 D	7
	17:30	"	"	"
	17:30	1 (Sala B)		
Viernes, 25 de junio de 1948	09:30	4	4 C	7(Grupos de tr.)
	14:30	4; después 6 C	4 C	7(Grupos de tr.)
	17:30	"	"	"
	17:30	1 (Sala B)		



24 June, 1948

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)

12th Meeting

22 June, 1948, at 5.45 p.m.

CHAIRMAN : Mr. A. L. LEBEL (Chairman of the Conference)

Present : Mr. VERES (Committee 2)
Mr. FALGARONE (Committee 3)
Miss Florence TRAIL (Committee 3)
Mr. SELIS (Committee 4)
Mr. COFFEY (Committee 4)
Mr. DUNCAN (Committee 5)
Mr. BETTS (Committee 6)
Mr. FRY (Committee 7)
Mr. FURZE (Committee 7)
Mr. HARVEY (Committee 6)

APPROVAL OF REPORT OF THE 10th MEETING (Aer-Document No.117)

Aer-Document No.117 was adopted.

TARGET DATE FOR END OF CONFERENCE

The Committee felt that difficulties might be encountered unless the work of the Conference was speeded up, in view of the other conferences which delegates might wish to attend.

It was agreed that Chairmen of Committees should set target dates for their various working groups; and that within each Committee steps should be taken to see that texts adopted should be prepared as far as possible for immediate adoption as documents of the Conference.

MEDIUM FREQUENCY CONFERENCE AT COPENHAGEN

Mr. DUNCAN (Committee 5), speaking on behalf of his delegation, said that a medium frequency conference had not been officially convened by the I.T.U. It was doubtful whether the United Kingdom administration would wish to be represented at Copenhagen unless some assurance could be given that any results there arrived at would have official status.

After some discussion, it was agreed that a telegram should be sent to the Secretary-General for transmission to member-states; this would inquire whether the countries concerned would recognize as official any results of the Copenhagen meeting.

MEETINGS OF HEADS OF DELEGATIONS

The CHAIRMAN said that the question of whether or not such meetings should be convened had been left to his discretion. If any delegation thought that such a meeting was called for, he was always ready to receive suggestions.

No suggestions were made for meetings of Heads of Delegations.

SCHEDULE OF MEETINGS.

The Committee drew up a schedule of meetings for Wednesday, 23, Thursday 24, and Friday, 25 June, 1948.

The meeting was adjourned at 7 p.m.

Reporter :
N. LANGFORD

Chairman :
A.L. LEDEL

23 June, 1948

Committee 6

Report
of the Committee on the Allotment of "R" frequencies
(Committee 6)
14th Meeting
22 June, 1948 .

Chairman : Mr. E.G. Betts (Australia)

1. The meeting was called to order at 09:35 a.m.
The following countries and organizations were represented :

Albania	Mexico
Argentina	Netherlands
Australia	Netherlands, Curacao and Surinam
Belorussian SSR	Netherlands East Indies
Brazil	Nicaragua
Canada	New Zealand
Chile	Pakistan
China	Poland
Colombia	Portugal
Cuba	Rumania
Czechoslovakia	United Kingdom
Egypt	U.S.A. and Territories
France	Union of South Africa
French Protectorates of Morocco and Tunisia	Ukrainian SSR.
India	U.S.S.R.
Ireland (Eire)	Yugoslavia
Italy	I.C.A.O.
	I.F.R.B.
	I.A.T.A.

2. At the request of the Chairman, Mr. E. Tabio of Cuba in his capacity of chairman of Working Group 6 E gave a short verbal report of the proceedings of his Working group and announced the formation of several sub-working groups to consider the meteorological communication needs for different regions of the world.

The delegate from the U.S.A. proposed a change in the terms of reference of this Working group to speed up the work and that in the terms of reference as mentioned in Aer-Doc.95, paragraph 7 sub b the words after "recommend" until "determine" incl. be deleted.

After some discussion, in which took part the delegates from the U.S.A., I.C.A.O., Canada, I.A.T.A., the Netherlands etc. Cuba and the Chairman, it was so approved by the Committee.



3. Mr. Harvey (Union of South Africa), chairman of the Working group 6 C made a verbal report of the proceedings of his Working group, stated that in total 7 meetings were held and that he thought, that about one more day would be necessary to complete the grouping of the major world air routes in areas.

4. The Chairman then brought up for further consideration paragraph 15 of PC-Aer-Doc.No. 25.

The first question was whether the figure of 33 1/3 % increase over the total scheduled flights should be maintained. This subject brought very considerable discussion in which part was taken by the delegates of India, Pakistan, U.S.A., Union of South Africa, Canada, I.A.T.A., United Kingdom, China, France, Portugal, the Netherlands, etc. Argentina and the Chairman.

The main questions were, how this figure should be applied, whether over civilian flights only or including military flights, whether it would be advisable to establish different percentages in different parts of the world and whether adjustments of this figure should be made in Working group 6 C.

Several times the delegates deviated somewhat from the subject and many different opinions were given.

Also the point was raised as to whether military traffic on the major world air routes should be handled on the "R" frequencies or the "OR" frequencies.

Mr. Lebel who was present at the meeting pointed out, that "R" or "OR" frequencies were not to be considered as frequencies for civil or military mobile services, but for "Route" or "off route" and that, if military flights followed regular routes, the "R" frequencies should be used.

At the end of the discussions the figure of 33 1/3 % increase for non-scheduled flights was adopted by the committee.

5. Then the Chairman raised the following points :

1. Will the committee in determining the loading of a route make provisions for future extension.
2. Will it be in order to include such known requirements in present calculations.

It was pointed out by the Chairman that the question of future requirements has two angles, i.e. the increase of traffic on present existing routes and the erection of new routes.

The increase of traffic should be taken care of by improved operation procedures e.g. changing from A1 operation to high capacity means of communication.

Considerable discussion resulted wherein part was taken by the delegate of the U.S.A., Pakistan, France, India, Argentina, China, Canada, the Netherlands etc., South Africa, Cuba and New Zealand.

The matter whether the known future requirements should be taken into account in determining the loading factor was still undecided when the Chairman adjourned the meeting at 12:30 p.m. until 14:30 p.m.

6. The meeting was reopened by the Chairman at 14:40 p.m. and the following countries and international organizations were represented :

Argentina	Mexico
Australia	Netherlands, Curacao, and Surinam
Belorussian SSR.	Netherlands East Indies
Brazil	Nicaragua
Canada	New Zealand
Chile	Pakistan
China	Poland
Colombia	Portugal
Cuba	Roumania
Czechoslovakia	Union of South Africa
Egypt	United Kingdom
France	U.S.A. and Territories
French Protectorates of	Ukrainian SSR
Morocco and Tunisia	Yugoslavia
India	I.A.T.A.
Ireland (Eire)	I.C.A.O.
Italy	

7. The Chairman reopened the discussions on paragraph 15 of Pc-Aer-Doc.25 and proposed that the future requirements of which the delegates have positive knowledge should be taken into consideration and included in the revision of the flight information tables.

In the extensive discussions part was taken by the delegates mentioned sub 5 and also by the delegates of the United Kingdom, Colombia and I.A.T.A.

A motion was proposed by the delegate of New Zealand which motion was amended by the delegates of the Netherlands and Columbia and seconded by the delegates of the U.S.A. and Netherlands East Indies.

The final text of the motion is as follows :

"As far as Committee 6 C is concerned no special account shall be taken of future developments in aircraft services except in those cases where a development of major magnitude is likely to occur within the next three months and materially affect the rational allocation of frequencies to areas.
Relative information must be supplied in appropriate form to Working group 6 C by Friday June 25th 1948."

The Chairman then asked who was against this motion and no objections were raised.

On his question whether there were delegates who wished to abstain in the vote, there were 6 abstentions counted. The proposal was therefore declared carried.

8. The Chairman then raised the question on what basic figure the additional 33 1/3 % loading should be applied. As he understood, it should be applied on the total scheduled loading (including military). He proposed that amendments should be made to the flights information tables to include military flights.

Considerable discussion resulted concerning whether the additional loading of 33 1/3 % should be taken in all cases, or, when a higher figure was known, the latter should be applied.

The delegate of the Netherlands moved that paragraph 15 of PC-Aer-Doc.25 with a change in the working, be adopted by Committee 6 as a recommendation.

The proposed recommendation to read :

"Committee 6 recommends that the number of flights in column 5 in the flight information tables (Aer-Doc.No.71) be increased by 33 1/3 % to represent the probable total loading (scheduled plus non-scheduled flights, including military traffic) which will have to be accommodated on the air routes indicated".

This motion was seconded by the delegates of Cuba and France. Some delegates were of the opinion, that when a greater number than 33 1/3 % over scheduled flights was given in column 6 of the Flight information tables, this greater figure should be taken and not 33 1/3 %. Among those delegates were the delegates of China, the U.S.A., U.K. and Poland. As still 4 more delegates had requested the floor regarding the discussion of the proposed motion, the Chairman decided to adjourn the meeting at 17:45.

The Reporter :
Louis BERGMAN

The Chairman :
E.G. DETTS

24 June, 1948

Committee 6

Report
of the Committee on the Allotment of "R" frequencies
(Committee 6)
15th Meeting
24 June, 1948, at 9.30 a.m.

Chairman : Mr. Betts (Australia)

Vice-Chairman : Mr. Tabio (Cuba)

1. The Chairman declared the meeting open at 9.35 a.m.

2. Present :

Australia	Netherlands
Argentina	Netherlands East Indies
Bielorussian S.S.R.	Nicaragua
Brazil	New Zealand
Canada	Pakistan
Chile	Poland
China	Portugal
Colombia	Rumania
Cuba	United States and
Czechoslovakia	Territories
Egypt	Ukrainian Soviet
France	Socialist Republics
French Protectorates of	Union of Soviet
Morocco and Tunisia	Socialist Republics
Ireland	Union of South Africa
Italy	Yugoslavia
Mexico	I.C.A.O.
	I.A.T.A.

3. In the Report of the 7th meeting, Aer-Doc.No 79, in paragraph 7, page 2 on the 2nd last line the words "two frequencies " should be read instead of "the frequencies". The document was then unanimously adopted.

4. In the report of the 1st meeting of sub-committee B, Aer-Document No.83 the following typographical errors were corrected :
paragraph 6, page 2, last line should read : "ground stations would serve " etc.

The document was then unanimously adopted.

5. In Aer-Document No.89, Mr. Jarov (U.S.S.R.) remarks that in paragraph 6, the words "Bielorussian proposal" should be replaced by "Soviet Delegation's Proposal".

Thus amended, the Aer-Document No. 89 was unanimously adopted.

6. Aer-Document No.98 not having appeared in Spanish was not considered for adoption. With regard to English text, the delegate of Mexico, Mr. Barajas, points out that on page 3, sub-paragraph 11.3 "crosshand" should be changed to "crossband". Same error has repeatedly been observed in Aer-Documents.

7. The Chairman then reopened the discussion on the motion of the Netherlands delegation, seconded by Cuba. The representative of I.A.T.A. pointed out that "unscheduled operations" generally referred to operations of an unforeseen or irregular character and supported the motion of the Netherlands.

Mr. White (U.S.A.) pointed out that two stringent application of the 33 1/3 % ratio might give rise to trouble in some cases, notably for large numbers of aircraft flying between Honolulu and the West-coast of the U.S.A. He gave some examples of the situation in that region where by strict application of the 33 1/3 % ratio, the communication service would not be able to meet the requirements of a large number of flights. He moved an amendment to the motion of the Netherlands in order to take care of these special cases.

During the following discussion, the amendment was withdrawn in favour of a revised wording having the same content which was proposed by Mr. Selis (Netherlands).

i.e. to add to paragraph 15 as amended, the following sentence :
"except in a very limited number of special cases as determined by Committee 6 C, where the number of non-scheduled flights is so large and of such regular character that it will definitely have a bearing on the number of families of frequencies to be allotted to a Major World Air Route Area."

The delegate of Cuba, seconder of the motion, agreed with this addition.

Mr. Harvey (Union of South Africa) pointed out that adoption of the motion might cause some difficulty in the work in Committee 6 C. After some more discussion, the Chairman put the Netherlands motion to the vote.

It was carried by 15 in favour, 1 against and 13 abstentions.
Mr. Barajas (Mexico) refrained from voting due to his credentials recently presented not yet having been dealt with by the Credentials Committee.

8. The Chairman then opened the discussions on paragraph 16 of Document-Pc-Aer No. 25 and stated that Committee 6 C has already had some experience in the application of the peak loading formula and should be in a position to indicate whether it is proving satisfactory or not.

Mr. Harvey (Union of South Africa) as Chairman of Committee 6 C invited those present to state their opinion with regard to the applicability of the formula.

Mr. Betts (Australia) states, that he checked the formula upon conditions prevailing in the Australasian region with which he is familiar that the result was generally in accordance with actual conditions.

Mr. Chen (China) remarked that the speed of most aircraft exceeds 200 mph, as incorporated in the formula. Moreover Major World Air Routes should tend to greater regularity and thus to lower peak loading. He suggested a peak-loading factor of 1.6 for the North-Atlantic Regions.

Mr. O'Da'leigh (Ireland) stated that the figure of 2.4 corresponds to practical experience in that region.

After some discussion, Mr. Chen(China) moved a motion to reconsider the factor 2.4. The motion is seconded by Mr. Doctor (Egypt).

Mr. Shores (U.S.A.) confirmed that for the North Atlantic the formula gives satisfactory results.

The same applies to the Pacific Region as checked by Mr. Givens (U.S.Territories).

Mr. Shores stressed that the consideration of Major World Air Route Area problems in this stage by no means establishes any priority for the allocation of frequencies.

Mr. Chen (China) again stated that in view of the shortage of available frequencies it might be preferable to reconsider the formula at this moment. He asks whether all delegations present are in agreement with the three standards until now accepted viz : the loading of 12 aircraft per family of frequencies, the Protection Ratio and the 2.4 peak loading factor.

A rather lengthy discussion took place during which the Chairman pointed out that the Committee is losing much valuable time and there is much work yet to be done.

Mr. Rowland (United Kingdom) and Mr. Selis (Netherlands) pointed out that after having considered the Regional requirements, we can reconsider the "standards" if necessary.

Mr. Selis, seconded by Mr. Tabio (Cuba) moved the adoption of paragraph 16, PC-Document No. 25.

Mr. Doctor (Egypt) remarked that there is in his region a tendency towards increased flying during night hours, thus with a view to future development the factor 2.4 might be too high.

He considers a factor of 2 being satisfactory.

After the delegates of Canada, I.A.T.A. and China have taken the floor, the Chairman announced that the latest proposal of China, seconded by Egypt, to take 2 as a concentration factor instead of 2.4 would be put to the vote.

The proposal was lost, voting being as follows : 4 in favour, 17 against, 13 abstentions.

Next, the motion by China, seconded by Egypt, to reconsider the loading factor in Committee 6 was put to the vote. It was lost by 4 in favour, 13 against and 12 abstentions

Then discussion proceeded on the motion moved by the Netherlands, seconded by Cuba to adopt the formula of paragraph 16, PC-Aer-Document No. 25.

The delegate of Pakistan, Mr. Sathar, felt that taking into account the "interim" character of paragraph 16, the wording should be changed. After considerable discussion, agreement was reached by the delegates of the Netherlands and Pakistan. The motion of the Netherlands as amended by Pakistan then being as follows.

Paragraph 16 as from PC-Aer Document No.25 with the addition of the sentence "this formula is subject to review by Committee 6 if found necessary."

The delegation of the U.S.S.R. expressed its intention to abstain from voting and requested that the minutes indicate accordingly and that the delegation reserves its position.

The same intention and request were expressed by the delegates of Yugoslavia and Poland.

The delegate of I.A.T.A. proposed that the words "intercontinental routes " in the 2nd line of paragraph 16 should be changed to "Major World Air Route Areas". This was accepted by the delegates of the Netherlands and Pakistan.

The motion was then put to the vote and carried by 21 in favour, 1 against and 12 abstentions.

The Chairman then asked whether Mr. Harvey, Chairman of Committee 6 C might be able to give an estimated date for completing the work of his group. Mr. Harvey thought the group should be able to complete its work by 30th June.

The meeting rose at 12.45

Reporter :
A. de Haas

Chairman :
E.G. Betts.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No. 129-E
Aér-Document No. 129-F
Aer-Documento No. 129-S

25 June, 1948
25 juin, 1948
25 de junio de 1948

Schedule of Meetings

	<u>Time</u>	<u>Room I</u>	<u>Room II</u>	<u>Room III</u>
Monday, 28 June, 1948	09:30	6 C	-	7 (Working groups)
	14:30	6 C	6 E	7 (Working groups)
	17:30	"	"	" "
Tuesday, 29 June, 1948	09:30	6 C (or Work.gr.)	-	7 (Working groups)
	14:30	6 C (or Work.gr.)	6 E	7 (Working groups)
	17:30	"	"	" "
	17:30	1 (Room D)		

Working groups 4 C, 4 D, and 6 F to meet at their convenience.

Horaire des séances

	<u>Heure</u>	<u>Salle I</u>	<u>Salle II</u>	<u>Salle III</u>
Lundi, 28 juin, 1948	09:30	6 C	-	7 (Groupes de tr.)
	14:30	6 C	6 E	7 (Gr. de tr.)
	17:30	"	"	"
Mardi, 29 juin, 1948	09:30	6 C (ou gr. de tr.)	-	7 (Gr. de tr.)
	14:30	6 C (ou gr. de tr.)	6 E	7 (Gr. de tr.)
	17:30	"	"	"
	17:30	1 (Salle D)		

Les groupes de travail 4 C, 4 D et 6 F se réuniront en temps voulu.

Horario de Sesiones

	<u>Hora</u>	<u>Sala I</u>	<u>Sala II</u>	<u>Sala III</u>
Lunes, 28 de junio de 1948	09:30	6 C	-	7 (Grupos de tr.)
	14:30	6 C	6 E	7 (Gr. de tr.)
	17:30	6 C	6 E	7 (Gr. de tr.)
Martes, 29 de junio de 1948	09:30	6 C (o Gr. de tr.)	-	7 (Gr. de tr.)
	14:30	6 C (o Gr. de tr.)	6 E	7 (Gr. de tr.)
	17:30	"	"	"
	17:30	1 (Sala B)		

Los grupos de trabajo 4 C, 4 D y 6 F podrán reunirse a su mayor conveniencia.



Report
of the Committee on the Allotment of Frequencies in
the "R" bands

(Committee 6)
16th Meeting
25 June 1948

Chairman: Mr. E. G. Betts (Australia)

1. The delegations of the following countries and organizations were represented:

Argentina	Ireland
Australia	Nicaragua
Bielorussia S.S.R.	New Zealand
Bulgaria	Netherlands
Canada	French Protectorates of
Chile	Morocco & Tunisia
China	United Kingdom
Colombia	Union of South Africa
Cuba	U.S.S.R.
United States of America	Jugoslavia
& Territories	I.A.T.A.
France	I.C.A.O.
Netherlands East Indies	

The meeting was called to order at 10.35 a.m.

2. The Committee decided to create a small working group which, in conjunction with a similar group from Committee 7, will consider the spectrum space not allocated between the "R" and "OR" bands.

The terms of reference of this working group are as follows:

- a) Taking as a basis the spaces between channels recommended by Committee 4 and taking into account the channels proposed by Sub-Committee 4 B, up to date, to recommend an equitable and efficient use of the frequency space not allocated between the "R" and "OR" bands.
 - b) The possibility of setting up common channels in the 3 and 6 Mc/s bands should be investigated, without taking any decision with regard to the subsequent use of these channels.
3. This working group will be known as Sub-Committee 6 F.
4. Mr. BETTS (Australia) and Mr. GREVEN (I.C.A.O.) are designated by the Committee as members of this working group. Mr. Greven will ensure the liaison between this group and Committee 6 and will submit a report to the latter as soon as possible.

5. It was pointed out that the creation of a similar group by Committee 7 was mentioned in the report of the 18th meeting of this committee. (Aer-Doc. No. 124)

6. As there were no further items on the agenda, the meeting adjourned at 10.50 a.m.

The Reporter:

M. Chef.

The Chairman:

E. G. Betts.

(1-29-6)

F

REPORT OF WORKING GROUP 4C

Maximum Range Charts for A3 and A1; Minimum Range Charts for Midnight; Charts for Interference Range vs Frequency Separation; Proposed List of Figures for the Final Conference Document.

Attached hereto are additional charts proposed for inclusion in the final report of the Aeronautical Radio Conference.

1. Maximum range charts for noon.

Figs. 1, 2, 3 and 4 are maximum range charts for noon similar to Figs. 14, 15, 21 and 22 of Pc-Aer Document No 5. The new charts are based upon 20 uv/m and 5 uv/m required field intensity for reception of A3 and A1, respectively, at the aircraft in the presence of local aircraft noise only.

Figs. 1 and 2 are the charts upon which the maximum range curves of the charts in Aer-Document No 116 are based, except for maximum ranges at 0° latitude. Charts for 0° latitude in the W, I, and E zones in Aer-Document No 116 will be revised accordingly for the final Conference document.

As the charts (Fig. 1, 2, 3 and 4) indicate, at latitudes greater than a certain latitude which depends upon the frequency and type of emission (for example, approximately 40° in the case of A3 at frequencies of 10 Mc and above, Figs. 1 and 2) the ratio signal/atmospheric noise at the ground station is less than the ratio signal/local noise at the aircraft. Therefore, at greater latitudes than this, the range is limited by the local noise at the aircraft. In such cases the range may be increased in practice by decreasing the local noise at the aircraft or by increasing the radiated power of the ground station. At lesser latitudes, where the range is limited by atmospheric noise at the ground station, the range may be increased only by increasing the radiated power of the aircraft.

An idea of the dependence of the range on these factors may be obtained by comparing the charts for A3 and A1 at the same sunspot condition, for example, Figs. 1 and 3, or 2 and 4. In the higher latitudes where the ranges are limited by aircraft noise, the limiting field intensities are 20 uv/m (26 db above 1 uv/m) for A3, and 5 uv/m (14 db above 1 uv/m) for A1. The ratio of these field intensities is 12 decibels. Thus a decrease of 12 db in the noise level at the aircraft would result in ranges for A3 equal to those given for A1. The same increase in range would result from increasing the radiated power of the ground station by 12 db, that is, from 4 kW peak power in the case of A3, or from 1 kW to 4 kW peak power in the case of A1. to 16 kW)

As a general rule, at latitudes where the range is limited by aircraft noise, the range increases by approximately 4% for each decibel increase in the radiated power of the ground station, or the range decreases by approximately 4% for each decibel decrease in the radiated power of the ground station, in the range of distances above about 300 km, and for frequencies below about 15 Mc.



2. Minimum range charts for midnight.

Figs. 5, 6 and 7, are minimum range charts for midnight. They are the same as Figs. 25, 28 and 31 of PC-Aer Document No 5, except that the curves are now plotted for separate frequencies instead of for separate distances. The primary purpose of these curves is to indicate the lowest frequency required for a family. They are therefore drawn for sunspot minimum conditions in the month of June or December, whichever involves the greater minimum range. They may be used, together with maximum range charts, to construct charts of the type in Aer-Doc. No 116.

Similar replotted charts for 2000 and 0400 hours are not yet ready, but will be included in the final Conference document. In the meantime, PC-Aer Document No 5 charts for these hours may be used by Committees 6 and 7 (Figs. 24, 26, 27, 29, 30 and 32).

3. Maximum range charts for midnight.

Figs. 8 and 9 are maximum range charts for midnight for A3 and A1 respectively, in which curves of frequency vs range are plotted for various noise grades. Fig. 8 for A3 is the same as Fig. 34 of PC-Aer Document No 5 with the addition of a curve for noise grade $4 \frac{1}{2}$ and maximum ranges for limitation by local noise at the aircraft when the peak radiated power of the ground station is 200, 400, and 800 watts. These aircraft noise ranges also apply to Fig. 16 of PC-Aer Document No 5.

Fig. 9 is a new chart for A1. In this case maximum ranges in the presence of local aircraft noise only are greater than 4000 km if the ground station peak radiated power is 50 watts or greater.

Similar charts for 2000 and 0400 hours are not yet ready, but will be included in the final Conference document. In the meantime, PC-Aer Document No 5 charts for A3 at these hours may be used by Committees 6 and 7 (Figs. 33 and 35).

These charts are intended for use where a refinement of the ranges given by Figs. 16 and 23 of PC-Aer Document No 5 is necessary. For this purpose the noise grade at the ground station is required. World maps of noise grade contours for December, January, February, and June, July, August, are included in this document as Figs. 13 and 14. Maps for the equinox months will be included in the final Conference document, but are not yet ready for reproduction.

Curves for noise grades of 3 and below in Figs. 8 and 9 refer to winter conditions in the case of stations north of 30°N or south of 30°S, and are therefore to be used only with Fig. 13 for stations north of 30°N, and only with Fig. 14 for stations south of 30°S.

4. Adjacent channel interference range charts.

In Fig. 10 the ratio of field intensities of the desired to undesired signals required for protection ratios of 25 and 30 decibels is plotted as a function of carrier frequency separation for the case of interference between two A3 stations on adjacent channels. These curves are based upon data given in reference 5, PC-Aer Document No 5, in which modulation frequencies up to 3 kc and a receiver with average good selectivity characteristics are assumed. Corresponding curves for telegraphy interfering with telephony, telephony interfering with telegraphy, and telegraphy interfering with telegraphy are nearly identical with those in the

range of frequency separations shown if the receiver selectivity characteristics are the same in each case.

Fig. 10 of this document and Fig. 18 of PC-Aer Document N° 5 (interference range vs protection ratio for night) have been used to derive curves showing interference range as a function of service range and frequency separation. Inasmuch as the protection ratio scale of Fig. 18, PC-Aer Document N° 5, refers to field intensity ratios, this scale may be converted into a frequency separation scale for a specified protection ratio through the relationship given in Fig. 10 of this document. The results for protection ratios of 25 and 30 decibels are shown in Figs. 11 and 12, respectively. Fig. 11 may be used to find the geographical separation necessary to provide 25 decibels protection between two transmitting stations operating on adjacent channels. Fig. 12 is used in the same way if 30 decibels is the required protection ratio.

Required geographical separations for daytime conditions may be obtained by using Fig. 10, this document, with the appropriate interference range chart in Aer-Documents N° 46. Thus for 25 decibels protection, the field intensity ratio for the given frequency separation is read from curve A, Fig. 10. This field intensity ratio is then used as the protection ratio on the appropriate chart in Aer-Documents N° 46 to obtain the interference range. Fig. 10 may also be used to obtain any other desired protection ratio by adding the difference between this protection ratio and 25 db to the field intensity ratio obtained from curve A, Fig. 10, and using this value with the appropriate interference range chart.

5. Proposed list of figures for the final Conference document.

The list below does not include a chart showing the maximum range corresponding to a 10 decibel increase in the radiated power of the ground station in accordance with the recommendation adopted by Committee 4 in Aer-Documents N° 76, paragraph 13, and amended in Aer-Documents N° 97, paragraph 6, and Aer-Documents N° 106, Appendix 1. It is the feeling of Working Group 4C that the discussion in Section 1, above, concerning the effect of changes in radiated power on the maximum range, may be sufficient for this purpose.

Proposed list of figures for revision of PC Aer-Document No 5.

1.	World map showing F2 layer zones W, I and E.	
2.	Atmospheric noise grades Dec, Jan, Feb.	
3.	" " " Mar, Apr, May.	
4.	" " " June, July, Aug.	
5.	" " " Sept, Oct, Nov.	
6.	Idealized noise variation with latitude	
7.	Minimum ranges, noon, June, W-zone, N. hem. SS	0
8.	" " " " " " " " " "	125
9.	" " " Dec " " S " " "	0
10.	" " " " " " " " " "	125
11.	" " " June 1 " N " " "	0
12.	" " " " " " " " " "	125
13.	" " " Dec " " S " " "	0
14.	" " " " " " " " " "	125
15.	" " " June E " N " " "	0
16.	" " " " " " " " " "	125
17.	" " " Dec " " S " " "	0
18.	" " " " " " " " " "	125
19,20,21	Minimum ranges, 2000,0000,0400, W-zone, SS	0
22,23,24	" " " " " " " I " " "	"
25,26,27	" " " " " " " E " " "	"
28.	Maximum Ranges, noon, A3, latitude var.	" 0
29.	" " " " " " " " " "	125
30.	" " " night " " " " " "	-----
31,32,33	" " " A3, 2000,0000,0400, various noise grades	
34.	" " " A1, noon, latitude variation, SS	0
35.	" " " " " " " " " "	125
36.	" " " night " " " " " "	-----
37,38,39	" " " 2000,0000,0400, various noise grades	
40. - 50.	Combined min. and max. ranges, A3, noon, W-zone, 60N - 40S	
51. - 61.	" " " " " " " " " I " " "	"
62. - 72.	" " " " " " " " " E " " "	"
73.	Interference ranges, 4 Mc, receiver at subsolar point	(1)
74.	" " " " " " " 60° from subsolar point	
	reception parallel to day-night line	(2)
75.	" " " " " " " receiver 60° from subsolar point,	
	reception from direction of d-n line	(3)
76.	" " " " " " " receiver at d-n line, reception	
	from direction of subsolar point	(4)
77. - 80.	" " " 6 Mc, (1), (2), (3), and (4).	
81. - 84.	" " " 10 Mc, " " " " "	
85. - 88.	" " " 15 Mc, " " " " "	
89. - 92.	" " " 20 Mc, " " " " "	
93. - 96.	" " " 25 Mc, " " " " "	
97.	" " " all freqs., night conditions (no absorption)	
98.	Relative field intensity of adjacent channel carriers as a function of frequency separation for 25 and 30 db protection ratios, A3.	
99.	Interference range as a function of frequency separation, night conditions, A3, 25 db protection.	
100.	Interference range as a function of frequency separation, night conditions, A3, 30 db protection.	

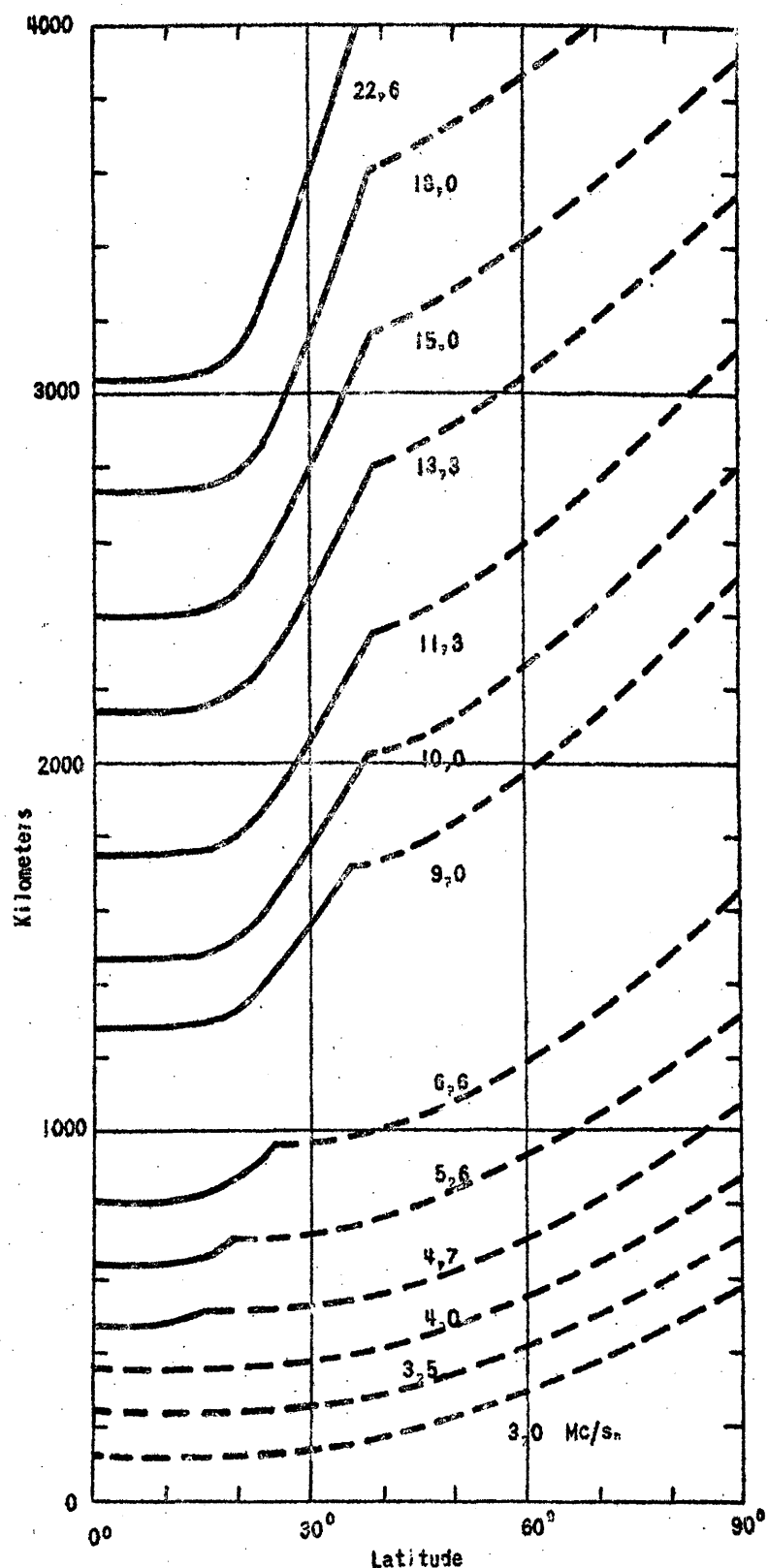


Fig. 1 Maximum distance range for radiotelephone as limited by atmospheric noise at the ground with 200 watts peak power radiated by the aircraft, or by aircraft noise (20 uv/m required field intensity) with 4kw peak power radiated by the ground station. June in the northern hemisphere, December in the southern hemisphere, equinox between 10° N and 10° S. Sunspot number 0. Subject to sufficiently high MUF.

———— Atmospheric noise - - - - Aircraft noise

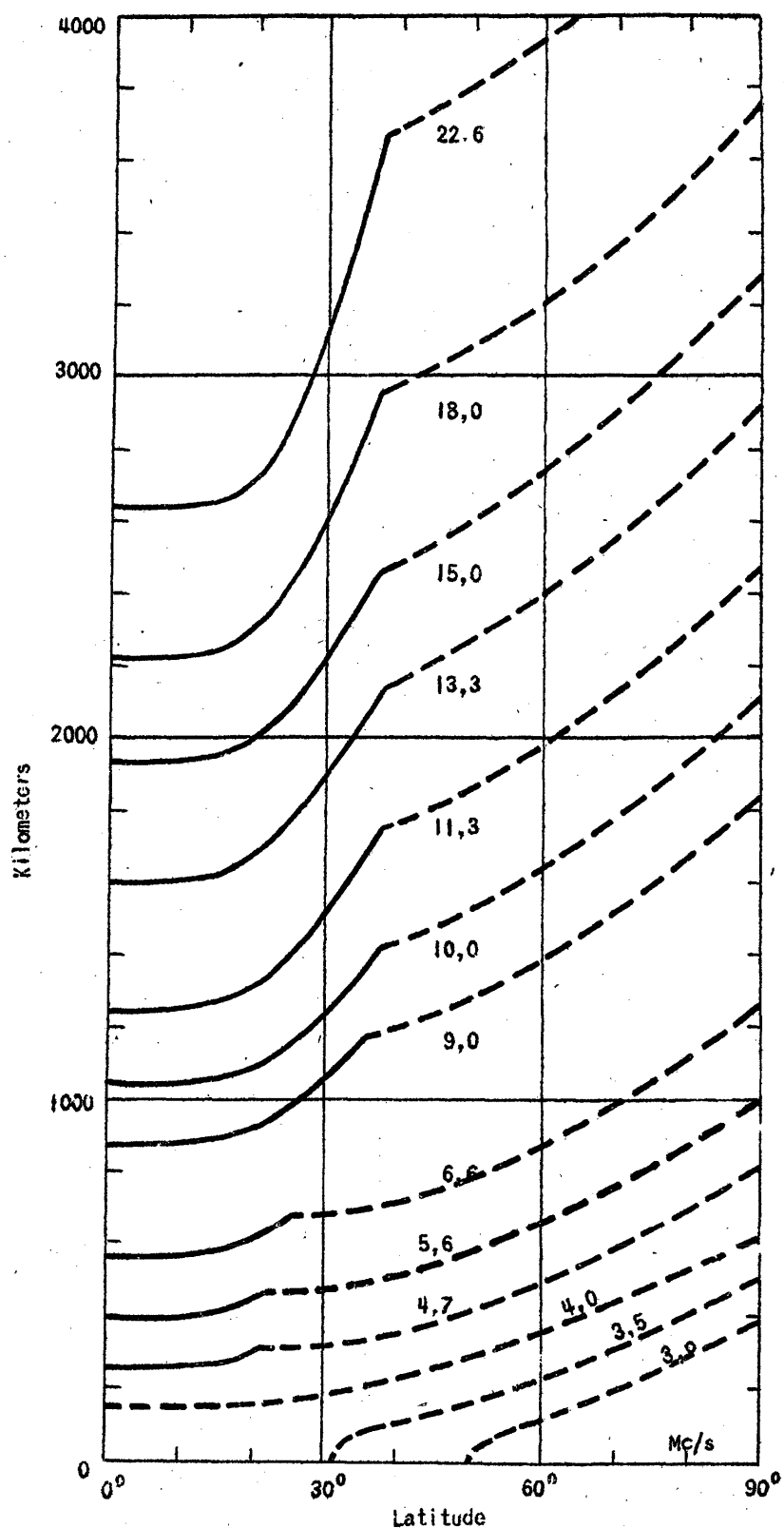


Fig. 2 Maximum distance range for radio telephone as limited by atmospheric noise at the ground with 200 watts peak power radiated by the aircraft, or by aircraft noise (20 uv/m required field intensity) with 4kw peak power radiated by the ground station. June in the northern hemisphere, December in the southern hemisphere, equinox between 10° N and 10° S. Sunspot number 125. Subject to sufficiently high IUF.

— Atmospheric noise - - - Aircraft noise

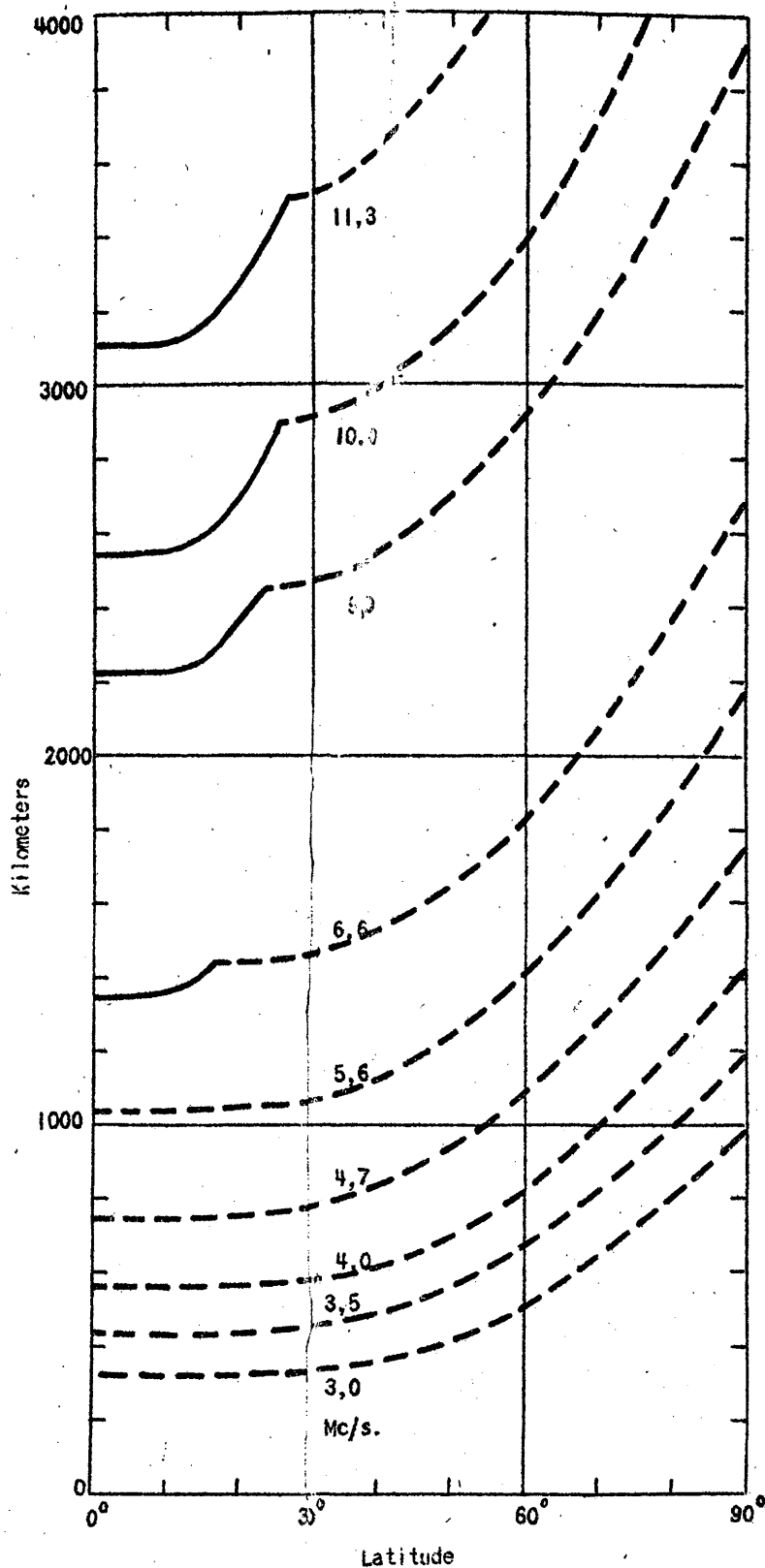


Fig. 3 Maximum distance range for radiotelegraph (manual) as limited by atmospheric noise at the ground with 50 watts peak power radiated by the aircraft, or by aircraft noise (5 $\mu\text{V/m}$ required field intensity) with 1 kW peak power radiated by the ground station, June in the northern hemisphere, December in the southern hemisphere, Equinox between 10° N and 10° S. Sunspot number 0. Subject to sufficiently high MUF.

— Atmospheric noise — — Aircraft noise

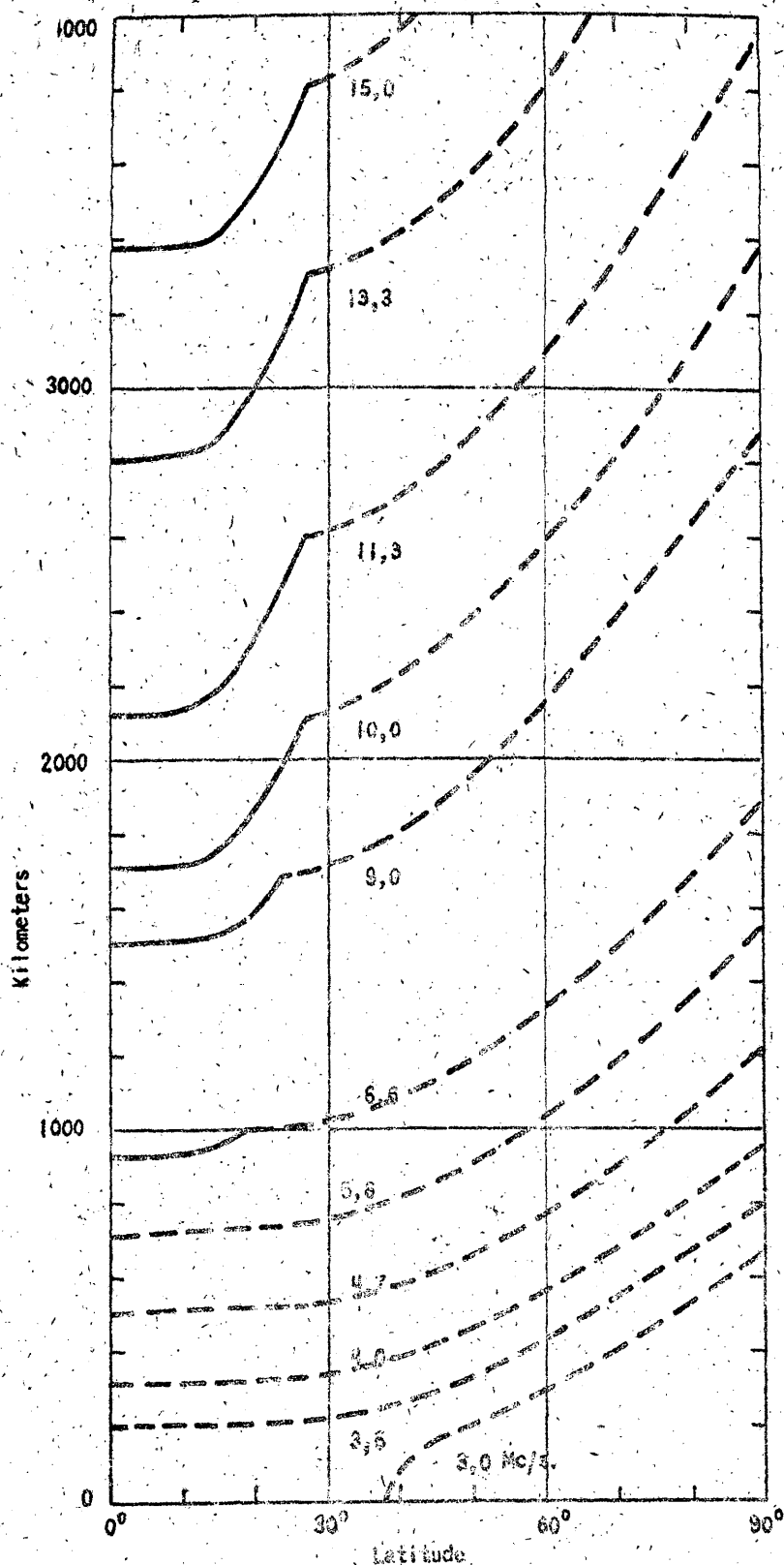


Fig. 4

Maximum distance range for radiotelegraph (manual) as limited by atmospheric noise at the ground with 50 watts peak power radiated by the aircraft, or by aircraft noise (5 uv/m required field intensity) with 1 kW peak power radiated by the ground station. June in the northern hemisphere, December in the southern hemisphere, equinox between 10° N and 10° S. Sunspot number 125. Subject to sufficiently high MUF.

— Atmospheric noise — Aircraft noise

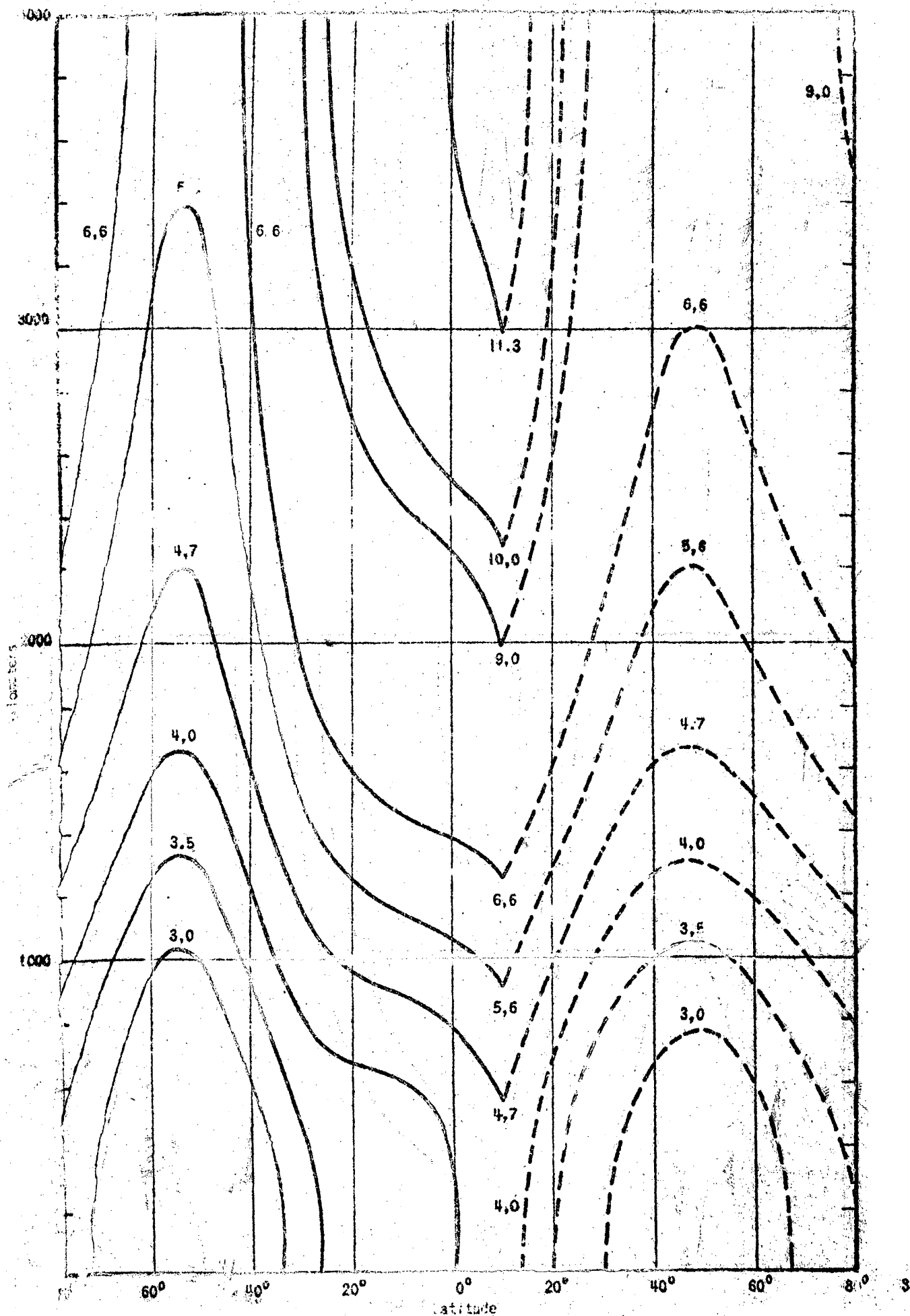


FIG. 5. Minimum distance range (F2 layer), W zone, 0000 local time at midpoint of path, sunspot number 0. Numbers in curves give frequency in Mc/s.

— December

--- June

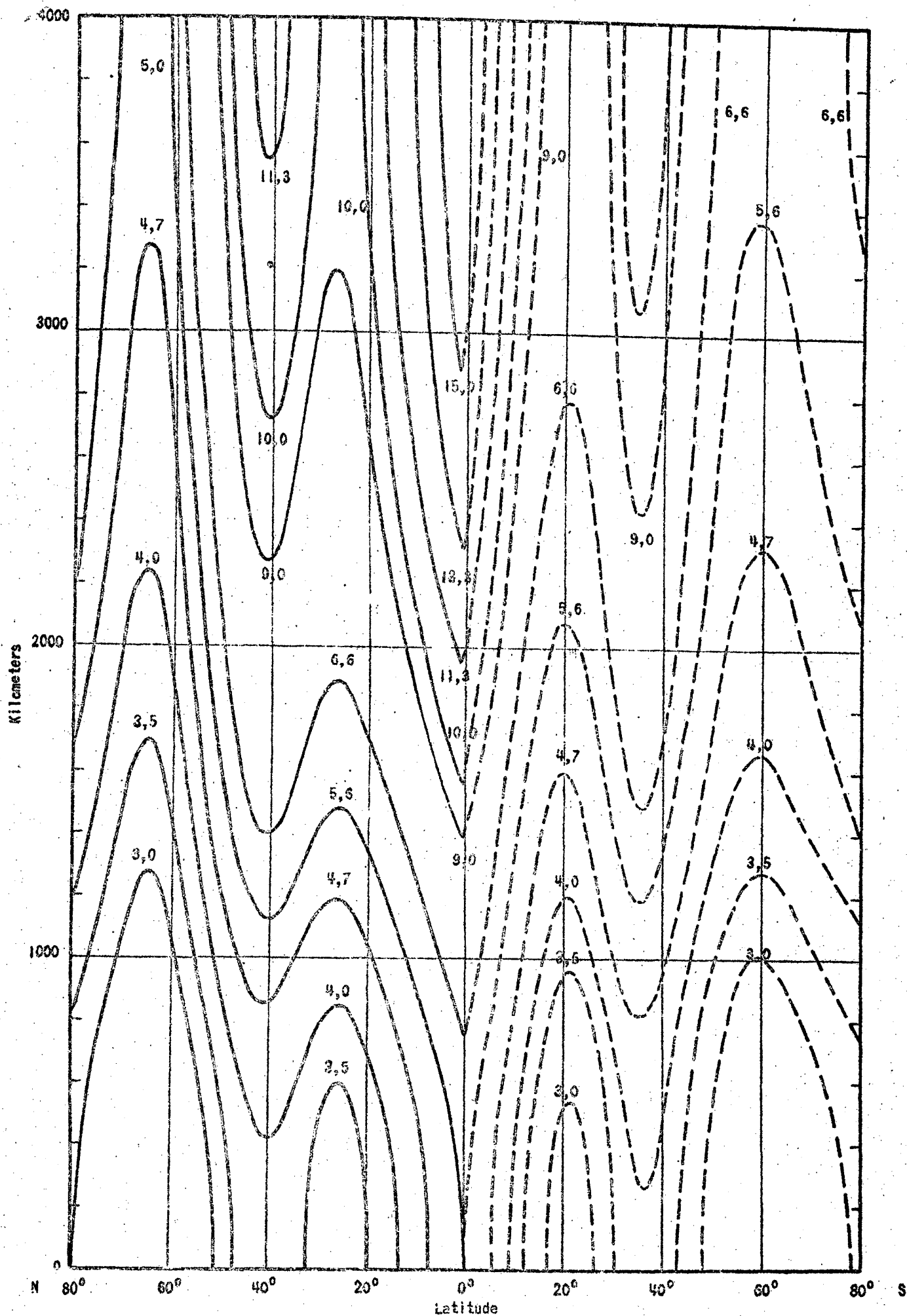


Fig. 6 Minimum distance range (F2 MUF), 1 zone, 0000 local time at midpoint of path, sunspot number 0. Numbers on curves give frequency in Mc/s.

— December - - - June

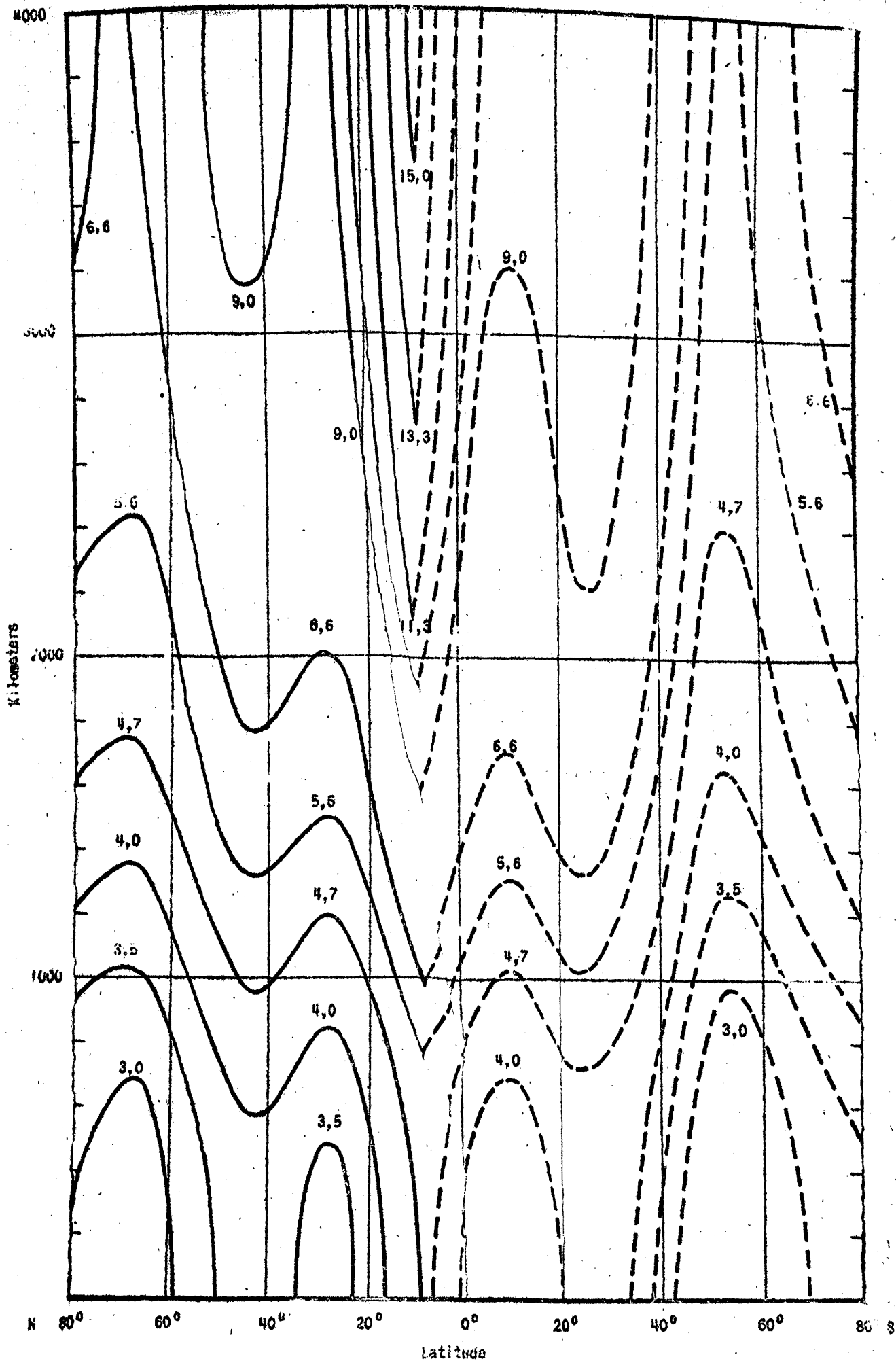


Fig. 7 Minimum Distance range (F2 MUF). E zone. 0000 local time at midpoint of path, sunspot number 0. Numbers on curves give frequency in Mc/s.

— December - - - June

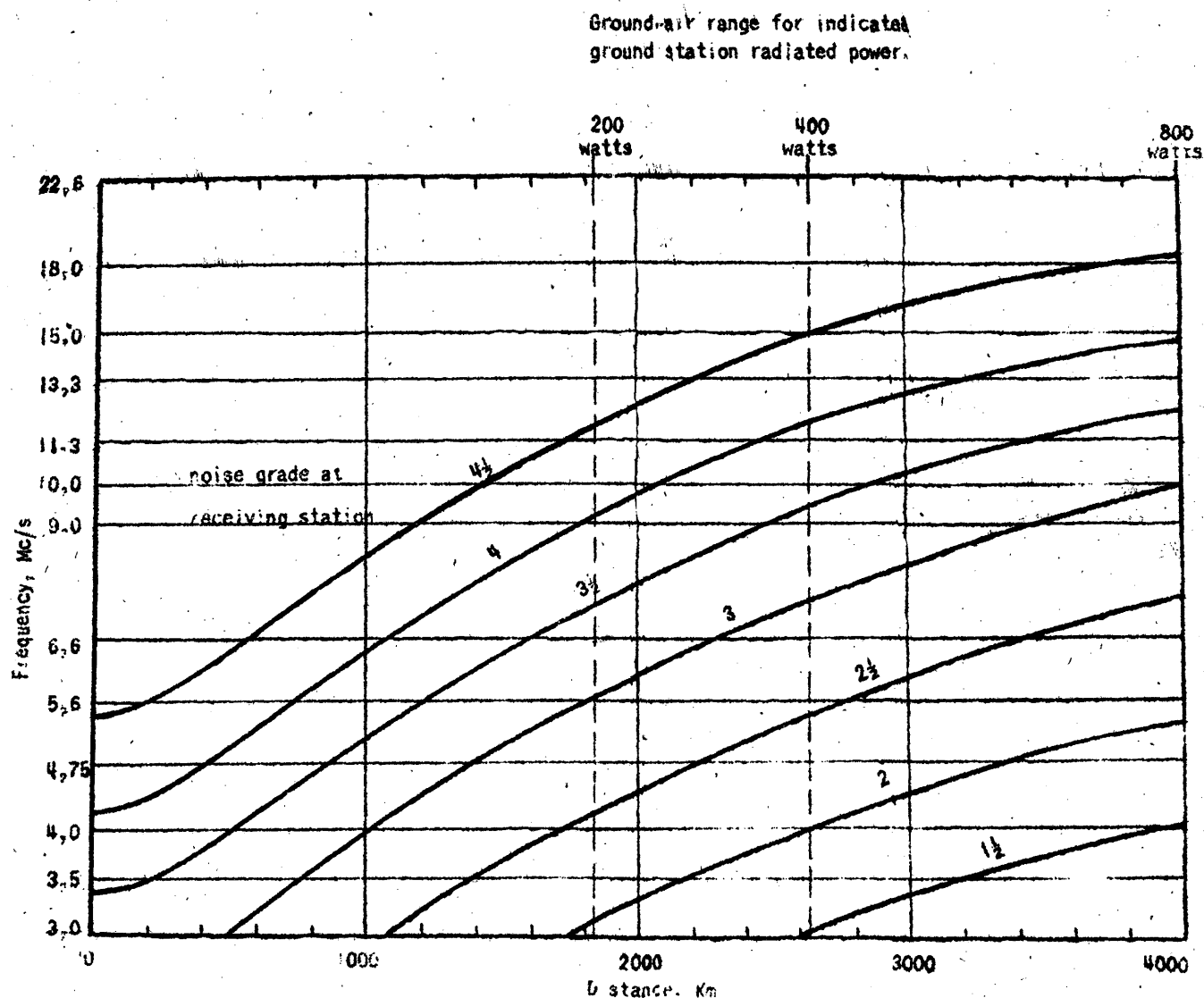


Fig. 8 . Maximum distance range for radio telephone, all ground communication in the presence of atmospheric noise, subject to sufficiently high MUF. Transmission path entirely in darkness, 0000 local time at the receiving station, winter, 200 watts peak power radiated by aircraft. Ground-air range shown at top is based on 20 u/m required field intensity.

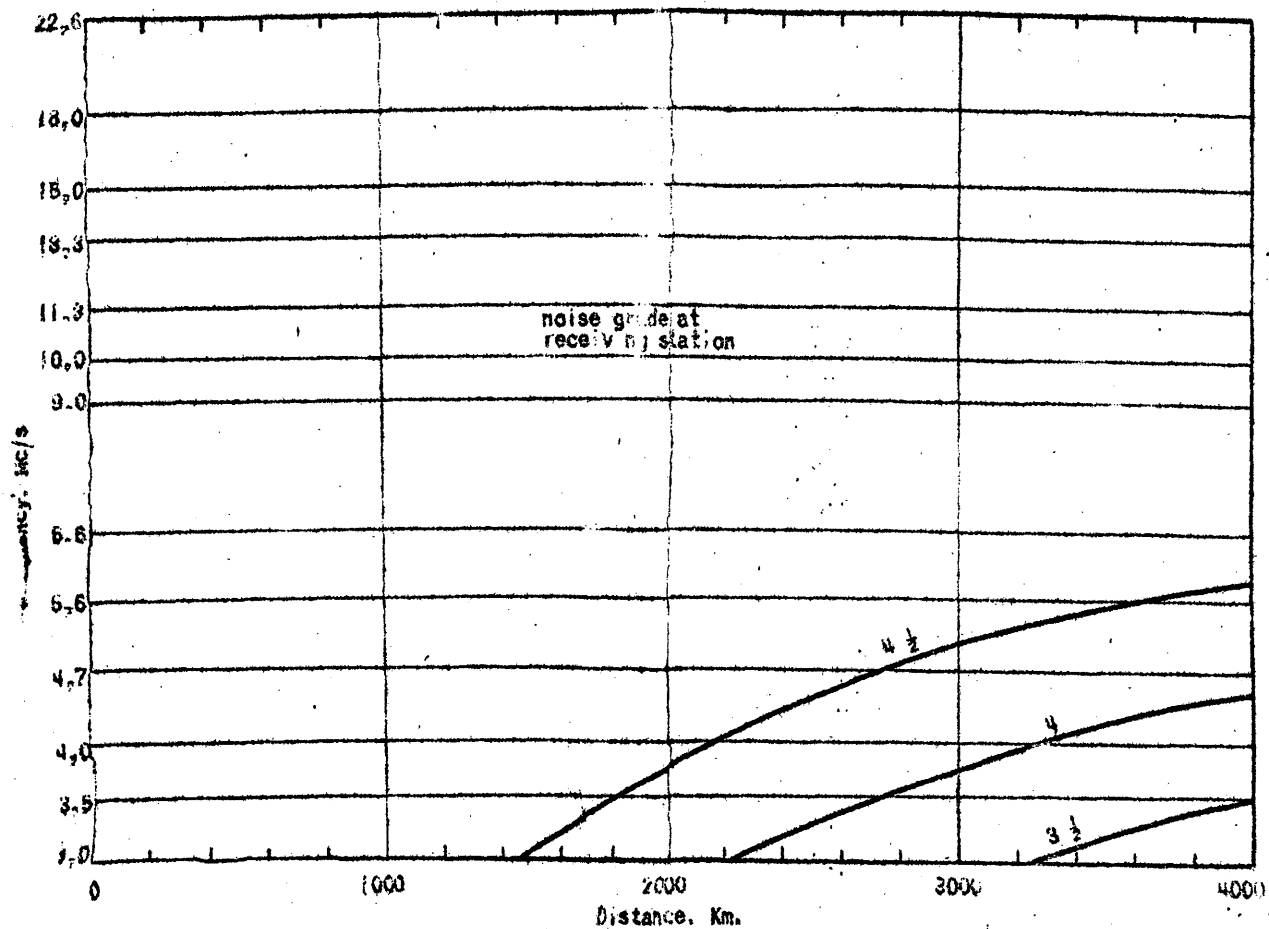


Fig. 9 Maximum distance range for radiotelegraph (manual) air-ground communication in the presence of atmospheric noise, subject to sufficiently high MUF, 0000 local time at the receiving station, December northern hemisphere, June southern hemisphere, 50 watts peak power radiated by the aircraft, Ground-air range for 5 uv/m required field intensity is greater than 4000 Km for 50 watts or more peak radiated power.

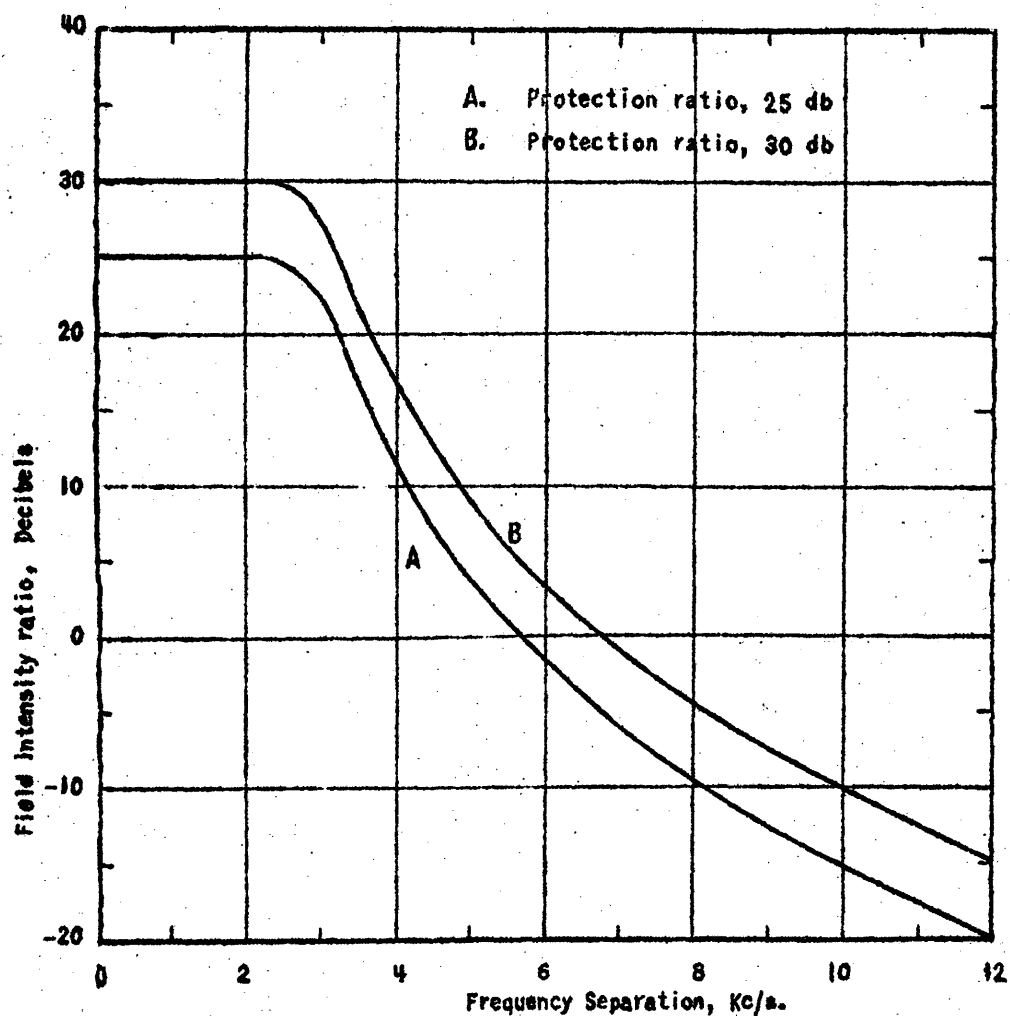
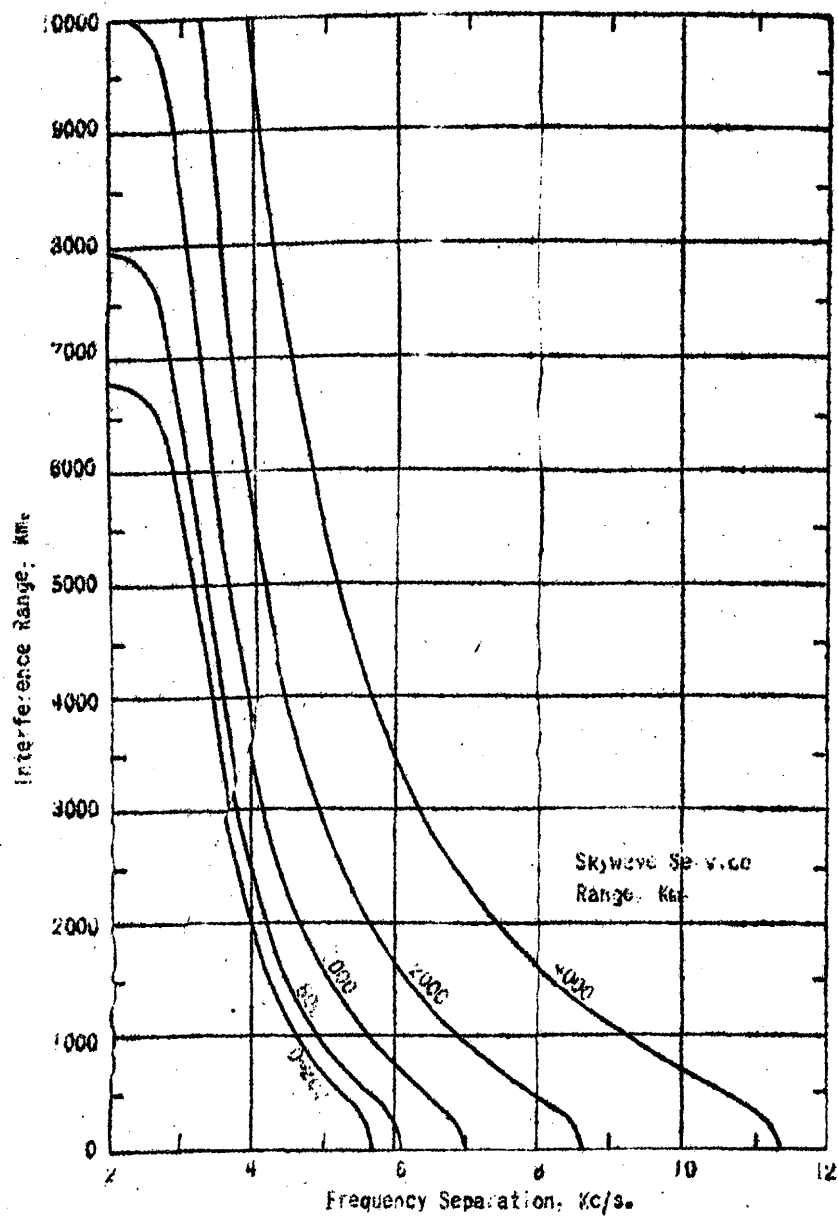


Fig. 10 Field intensity ratio of desired to undesired signals as a function of frequency separation for double-sideband radiotelephony 6 Kc/s bandwidth, corresponding to protection ratios of 25 decibels (curve A), and 30 decibels (curve B).



Interference range as a function of service range and frequency separation. double-sideband radio-telephone. 6 Kc/s bandwidth, night conditions (no absorption), all frequencies above 3 Mc/s subject to sufficiently high MUF.
 Protection ratio 25 db below for equal radiated powers.

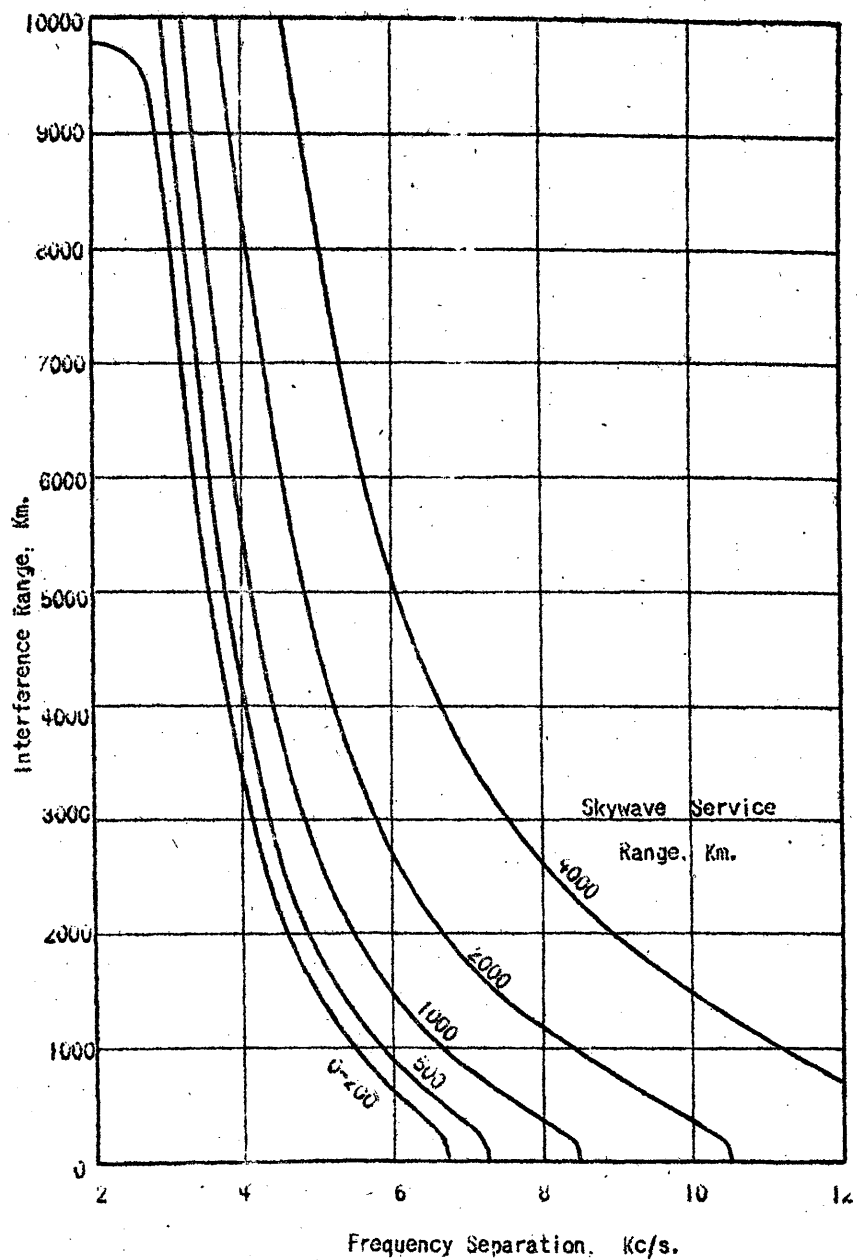


Fig. 12 Interference range as a function of service range and frequency separation, double-sideband radiotelephone, 6 Kc/s bandwidth night conditions (no absorption), all frequencies above 3 Mc/s, subject to sufficiently high MUF. Protection ratio 30 decibels for equal radiated powers.

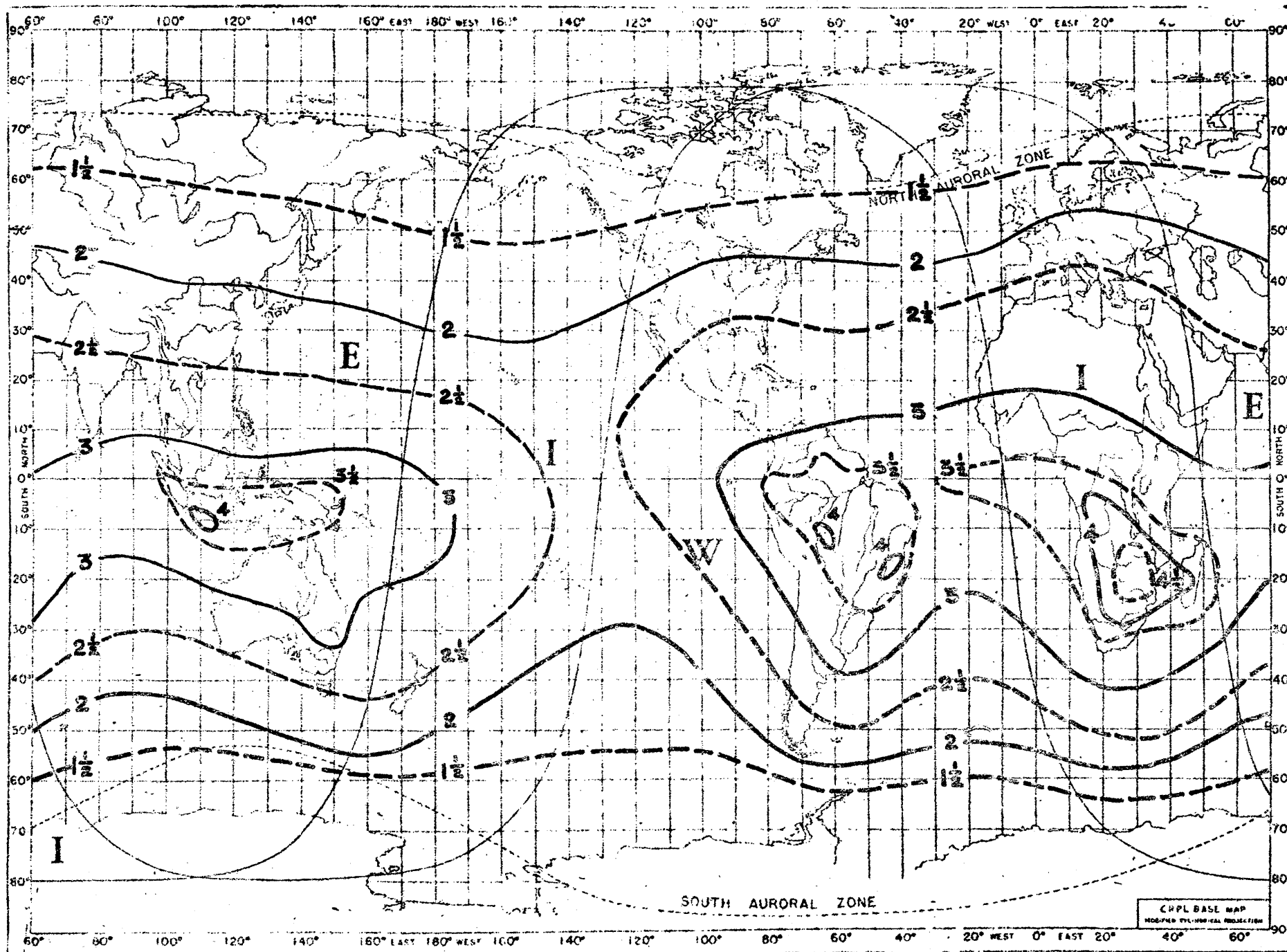


FIG 13

NOISE DISTRIBUTION FOR PERIOD DECEMBER, JANUARY, FEBRUARY

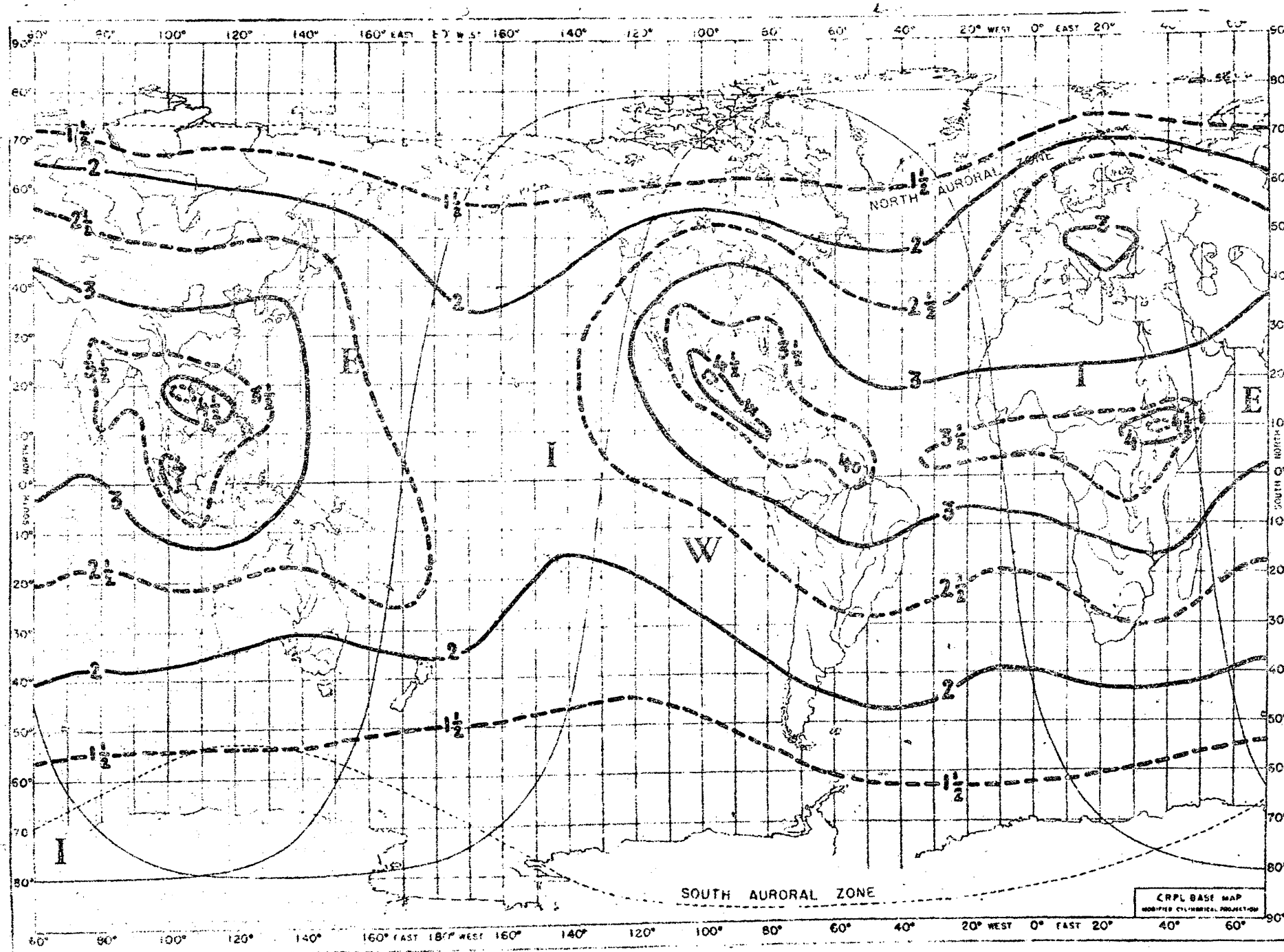


FIG. 14

NOISE DISTRIBUTION FOR PERIOD JUNE JULY-AUGUST

REPORT OF WORKING GROUP 6 C

3rd Meeting, 25 June, 1948

Chairman : M.C.A. Harvey (Union of South Africa)

1. Delegations of the following countries and organizations were represented :

Bielorussian S.S.R.	Ireland
Brazil	Netherlands
Canada	French Protectorates of Morocco
Chile	& Tunisia
China	United Kingdom
Colombia (Republic of)	Union of South Africa
United States of America and Territories	Yugoslavia
France	I.A.T.A.
Netherlands East Indies	I.C.A.O.

2. The Chairman called the meeting to order at 11.20 a.m. and read the following agenda :

Consideration of the work effected during the week and preparation of the work to be done in the course of the following week.
/stated/

- 2-1. Mr. Shores (United States) /that the maps of regions NA -- SA -- NSAI -- NSAZ -- Europe, were ready and were to be carefully checked.

Mr. Rowland (United Kingdom) observed that further additions were to be made that afternoon to the European region by the delegate of the I.A.T.A.

- 2-2. Mr. Givens (United States) announced that the maps of regions NP -- SP -- Asia -- Indian Ocean, were ready, as were the lists of statistics. A complete verification of these, and the final additions to the map of the African region would be made that afternoon.

3. It was decided that, as from 5.30 p.m. on Friday 25th June, no further request would be accepted concerning the incorporation of new additions in the system of major world air routes.

4. The Chairman requested that all information be uniformly presented and proposed the following programme for the completion of the study of major world routes. :

- Monday : Terminate work in hand.
- Divide the major world route areas into smaller regions with the same operational characteristics. This could be done during a plenary meeting of Committee 6 C.
- Verify that no route has been overlooked.
- Define the limits of the various zones on the planisphere.

- c) Examine for each zone the megacycle order, the number of each order of frequencies required and the repetition possibilities.
This could be finished by Wednesday.
- f) Indicate all the areas on the globe, and, on the basis of the great circles, define the areas in which frequency repetitions are possible, marking these subsequently on the planisphere.
- g) Prepare for Friday the final report, with the recommendations.

The Chairman requested that Committee 6 C should respect this timetable insofar as possible.

5. Following a proposal from Mr. Betts (Australia), Chairman of Committee 6, it was decided to form a small working-group composed of Mr. Coffey (Canada), Mr. Weaver (United States), and Mr. Jouk (Biellorussia), responsible for the preparation, in the form of practical tables, of the technical data furnished by Aer-Doc-ument No. 116. Giving frequency orders against distance for various latitudes and ionosphere zones.

6. Mr. Selis (Netherlands) recalled the definitions contained in Aer-Doc-ument No. 83, regarding major world route areas, and requested that it be borne in mind that one of the principal reasons which had motivated the creation of these regions was the limited number of frequencies carried by equipment aboard long-distance aircraft.

7. Mr. Shores (United States) agreed with Mr. Selis on this point and stated his own views with regard to the limitation of regions.

There were, in his opinion, two factors which should be considered concerning the economical use of allotted frequencies.

- a) If the region is too big, repetition of frequencies becomes impossible.
- b) On the other hand, routes with the least traffic could be further extended.

In the opinion of the United States delegation an aircraft should, in peacetime, communicate with the nearest station. Consequently, it would be possible to reduce the number of frequencies with a high megacycle order.

Mr. Falgarone (France) considered that it was necessary for an aircraft to be able to communicate with its destination point rather than with the point of departure.

It is, of course, evident that an aircraft should be able to communicate with its terminus from any point along its route.

8. The Chairman stated that discussion of this subject would be resumed on Monday morning, June 28th, and adjourned the meeting at 12.35.

The Reporter :
M. Chef

The Chairman :
M.C.A. Harvey

Report
of the Technical and Operational Committee
(Committee 4)

25th Meeting

June 25th, 1948

CHAIRMAN: Mr. O. J. Selis (Netherlands).

1. The following delegations and organizations were represented:

Argentina	Netherlands
Australia	Netherlands East Indies
Bielorussia (S.S.R.)	New Zealand
Bulgaria	Nicaragua
Canada	Union of South Africa
Chile	United Kingdom
China	U.S.A. and U.S. Territories
Columbia (Republic of)	U.S.S.R.
Cuba	Yugoslavia
France	I.A.T.A.
French Protectorate of Tunisia and Morocco	I.C.A.O.
Ireland	

2. The Chairman opened the meeting at 09.40 a.m. and proposed the study and adoption of the recently published reports.

3. Aer-Document No. 103 (17th Meeting) was adopted subject to the following modifications and additions:

- a. The addition of U.S.S.R. to the list of delegations present
- b. In para. 5. b), read

" Accept provisionally as a starting-point for preliminary calculations the figures of 30 db. for emissions....." for " Accept provisionally as a starting-point for preliminary calculations the figures of 25 db. for emissions....."

- c. Page 3, para. 5.4): in the declaration of the Chinese delegate the expression "15 db for A1" should be added after "25db for A3".
(This modification concerns the English text)

4. Aer-Document No. 106 (21st Meeting) was adopted subject to the following corrections:

- a. Page 3, para. 6: the declaration of the I.A.T.A. representative should be replaced by:

" After the recess Mr. Adam of I.A.T.A. stated that as far as his organisation was concerned the mobile aeronautical frequencies were provided for the safety and regularity of air services; in consequence, in the opinion of I.A.T.A., these frequencies should not be reserved for the transmission of public correspondence."

- b. Page 3: the last sentence of the 3rd sub-paragraph should be redrafted thus, at the request of Mr. Falgarone (France):

" He added that the general trend of regulation of aeronautical services was towards the employment of two independent radio installations aboard aircraft used for the operation of the great international lines".
- c. Page 6, 5th line: the phrase "for aircraft with a single installation" should be inserted between "the route frequencies" and "it would be much more satisfactory."
- d. Appendix 1, para. 4: read "sub-paragraph 5 below" instead of "sub-paragraph 4 above" - ("below" in English text. S.H.)
- e. Appendix 2: the heading of the first column of the table in the English text should read "station" instead of "curves".
- f. Appendix 2: after "quarterly exchange of telegrams", read "Fort de France: 17 telegrams transmitted "instead of "1.7!"
- g. Appendix 3 should be headed "Proposal of the Netherlands".
- h. In Appendix 3, in the English text of the document, the recommendation in paragraph 5 should be separated by a space from the rest of the paragraph.

5. The Chinese Delegate, who was absent during the adoption of Aer-Document No.97, requested, if the Committee agreed, that this document should be reconsidered in order to establish the text of one of its declarations correctly.

On the motion of Mr. Falgarone (France), seconded by Mr. White (U.S.A.), the Committee decided to include the following declaration by Mr. Chen in the report of the present meeting:

" The Chinese delegate, referring to paragraphs 7 and 8 of Aer-Document 97, pointed out that this text does not exactly reflect the point which he had raised.

" He explained that he had, during the 19th meeting, suggested that the Committee should consider a reduction in the protective ratio in db. in cases where figures of 25 and 30 db. led to an insufficient number of available channels.

" He gave as an example, a particular case which arose in China, simply to show that the adoption of a lower ratio of protection for frequency repetition in the lower part of spectrum H.F. was completely satisfactory."

6. The adoption of documents Nos. 108, 115 and 119 was held over for a later meeting, as not all the texts had yet been distributed in the three languages.

7. Next the Chairman asked for a summary of work completed by sub-groups 4C and 4D.

- a. Mr. Gautier (U.S.A.), chairman of group 4C, stated that the provisional report was almost completed, including the revision of Doc. CP Aer. No. 5, and that he expected it to be distributed on the following Tuesday.

Also, the text to be included in the final acts of the Conference would be completed the following week.

- b. Mr. White (U.S.A.) of group 4D, stated that all the reports of Committee 4 had been examined together by that group, which would be able to submit a document, in the form of a report to be sent to the drafting committee, so that the latter might include it in the final acts.

Also, Mr. Falgarone (France) stated that a certain number of Committee 4 reports contained recommendations which would undoubtedly necessitate further discussions owing to modifications which might be demanded by Committee 6.

In his opinion, the report would not be finally drawn up until the basic technical facts were no longer in dispute and were acceptable to Committee 6.

He also drew the Committee's attention to the fact that the adoption of a document in plenary session was not sufficient to justify its inclusion in the final acts.

The Chairman concluded by asking for the preparation of a preliminary text, which would allow the rapid establishment of a final report.

8. Mr. Tabio (Cuba), in consideration of his possible departure, asked that somebody be found to replace him, especially in sub-group 4 D.
The Chairman suggested M. Quijano (Columbia) and asked M. Tabio to find out from him if he would accept.
9. The agenda being completed, the meeting ended at 10. 35a.m.

Reporter:
M. Chef

Chairman:
O. J. Selis

29 June, 1948

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)

13th Meeting
25th June, 1948, at 4.30 p.m.

CHAIRMAN : Mr. A. L. LEBEL (Chairman of the Conference)

Present : Mr. FALGARONE (Committee 3)
Mr. SELIS (Committee 4)
Mr. COFFEY (Committee 4)
Mr. ROWLAND (Committee 5)
Mr. BETTS (Committee 6)
Mr. HARVEY (Committee 6)
Mr. FRY (Committee 7) and

Mr. TABIO (Cuba), Mr. CHEF (France), Miss Florence TRAIL
(United States)

It was agreed that any decisions taken should be subject to approval
by Mr. VERES (Committee 2), who was unavoidably absent.

ADOPTION OF REPORT OF THE 10th MEETING (Aer-Document No.117).

Aer-Document No.117 was adopted.

PUBLICATION OF FINAL ACTS OF THE CONFERENCE.

The CHAIRMAN said that Mr. von ERNST (Secretary-General of the Union) had suggested that the nature and status of the Conference were not such as to warrant the publication of a Final Act, since it had been laid down at Atlantic City that the final plan of frequency allotment should merely be passed on to the PFB for incorporation in its lists.

Publication of the Final Acts in printed form would involve a very considerable expense.

Mr. FALGARONE (France), supported by Mr. HARVEY (Union of South Africa), and by Mr. ROWLAND (United Kingdom), said that since the finances of the I.T.U. were in fact provided by member states, it was for the Conference itself to decide whether or not the expenses involved by printing were justified. The cost of printing would be justified by the fact that an adequate supply of the Final Acts was essential for the efficient functioning of air services. Mr. BETTS (Australia) said that the Final Acts would be primarily a working document. By eliminating the Flight Information Tables, it would be possible to condense them to a considerable extent. He was in favour of producing reduced copies, which might then be cheaply bound.

After some discussion, it was agreed that if it were possible to find a paper at least equal in quality to that used for the Final Acts of the Atlantic City Conference, and if the copies could be cheaply stitched and bound, The Final Acts of the Conference should be reproduced by the means at the disposal of the Conference. In view of the fact that Committee 3 would be unable to devote the requisite attention to questions of format, the document would be carefully revised for form of presentation before being reproduced.

ACTION TO BE TAKEN WITH REGARD TO THE CONFERENCE FOR SAFETY OF LIFE AT SEA AND IN THE AIR.

The CHAIRMAN said that he had prepared a paper for approval by the Committee. The London Conference for the Safety of Life at Sea and in the Air had recommended that I.C.A.O. be requested to convene a conference of the four organizations concerned in the establishment of a distress^{frequency} and search and rescue procedures. The paper would in fact be a gesture on the part of the I.T.U., concurring in that decision and offering to collaborate.

It was agreed that consideration of the CHAIRMAN's text should be deferred until a later meeting.

DISTRIBUTION OF HIGH FREQUENCY BANDS.

Mr. FALGARONE (France) said that the Conference should make a recommendation to the PFB as to the distribution between the fixed and mobile services of the 21 and 23 megacycle HF bands, so that there might be no possible confusion later within the PFB.

Mr. FRY (Committee 7) said that his committee had already adopted a recommendation on shared bands between 3 and 23 megacycles, some of which concerned the aeronautical mobile OR service(Aer-Document No.64). Only one of the two bands mentioned was an R band, and this might be dealt with by Committee 6.

It was agreed that the Conference should suggest a method for sharing the bands in question.

BROADCASTING CONFERENCE AT COPENHAGEN

Mr. ROWLAND (United Kingdom) said that the Conference had adopted a resolution calling upon the Danish Government to convene a meeting of aeronautical experts in Copenhagen(Aer-Document No.62). His Government wished to make it quite clear that the discussions therein referred to must not be included on the agenda of the European Broadcasting Conference, and must be of a strictly informal nature.

The CHAIRMAN said that there was little the Conference could do on this point until it was aware of these difficulties. Whatever decisions might be reached at Copenhagen, the administration concerned could always reserve its position and raise the matter again at the Administrative Conference later.

It was agreed that this matter should, for the present, be held in abeyance.

SCHEDULE OF MEETINGS

The Committee drew up a schedule of meetings for Monday, June 28th, and Tuesday, June 29th, 1948.

PHOTOGRAPH OF THE CONFERENCE

It was agreed that a collective photograph should be taken of members of the Conference, preferably before a Plenary Meeting.

The meeting was adjourned at 6.30 p.m.

Reporter :

N. LANGFORD

Chairman :

A.L. LEBEL

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No.135-E
Aér-Document No.135-F
Aer-Documento No.135-S

29 June, 1948
29 juin, 1948
29 de junio de 1948

Schedule of Meetings

	Time	Room I	Room II	Room III
Wednesday, June 30, 1948	09:30	6C(or Work.gr.)		7(Work.gr.)
	14:30	" "	6E(Work.gr.)	" "
	17:30	" "	" "	" "
Thursday, July 1, 1948	09:30	" "		" "
	14:30	" "		" "
	17:30	" "		" "
Friday, July 2, 1948	09:30	" "		" "
	14:30	" "	6 E	" "
	17:30	" "	1 (Room B)	

Working groups 4 C and 4 D to meet at their convenience.

Horaire des séances

	Heure	Salle I	Salle II	Salle III
Mercredi, 30 juin, 1948	09:30	6C(ou Gr.de tr.)		7(Gr. de tr.)
	14:30	" "	6E(Gr. de tr.)	" "
	17:30	" "	" "	" "
Jeudi, 1er juillet, 1948	09:30	" "		" "
	14:30	" "		" "
	17:30	" "		" "
Vendredi, 2 juillet, 1948	09:30	" "		" "
	14:30	" "	6 E	" "
	17:30		1 (Salle B)	

Les Groupes de travail 4 C et 4 D se réuniront à leur convenance.

Horario de Sesiones

	Hora	Sala I	Sala II	Sala III
Miércoles, 30 de junio de 1948	09:30	6C(o Gr.de tr.)		7(Gr. de tr.)
	14:30	" "	6E(Gr. de tr.)	" "
	17:30	" "	" "	" "
Jueves, 1 de julio de 1948	09:30	" "		" "
	14:30	" "		" "
	17:30	" "		" "
Viernes, 2 de julio de 1948	09:30	" "		" "
	14:30	" "	6 E	" "
	17:30		1 (Sala B)	

Los grupos de trabajo 4 C y 4 D podrán reunirse a su mayor conveniencia.



1 July, 1948

Committee 7

R E P O R T

of the Committee on the Allotment of "OR" Frequencies

(Committee 7)
20th Meeting.
24 June, 1948

Chairman : Mr. A. Fry (United Kingdom)

1 - The meeting opened at 14.30 hours.

The following countries were represented :

Argentina	Netherlands
Australia	Netherlands East Indies
Bielorussia	New Zealand
Canada	Norway
Chile	Poland
China	Portugal
Czechoslovakia	Ukrainian S.S.R.
Egypt	United Kingdom
France	U.S.S.R.
Honduras	U.S.A. and Territories
Iceland	Yugoslavia

2 - The Chairman stated that the first consideration was Recommendation 1 from Working Group 7 B.

The delegate of Poland said that after studying Recommendation 2, he was quite prepared to agree that Recommendation 1 be put to the meeting.

Recommendation 1 was put to the meeting as follows :

- (a) That for the 3, 4, 5 and 6 Mc/s bands, assignments be made to all requirements on day time service and interference ranges with as high a protection ratio as appears possible within the limits of 30 db, and that night-time use of such of those frequencies as are required for night-time use would be possible on the assumption of the probability that a reasonable percentage of stations will be closed down during night-time, and that those remaining will achieve, by distance separation, a protection ratio, which, although considerably lower than the day time figure, will permit them to operate.
- (b) That these protection ratios be varied by agreement between countries where peaks of longitudinal requirements occur.

The delegates of China and Chile stated that they wished to reserve their opinions and the Chairman, in the absence of any opposition, ruled that Recommendation 1 was approved unanimously, with the exception of the reservations of the delegates of China and Chile.

- 3 - The Chairman then called on Mr. Krause, Chairman of Working Group 7B (1), to present the report of Working Group 7B (1).

Mr. Krause informed the meeting that Working Group 7B (1) had come to the same conclusions as Working Group 7B (2) in endeavoring to ascertain the type of pattern required to be used in the assignment of frequencies. The Working Group had considered 6 Mc/s, with a protection ratio of 25 db, and with a power of one kw on the ground, and 50 watts in the aircraft, in order to prevent any assumptions or approximations, in view of the fact that all charts and information required were available for this Working Group. The conclusions reached by the Working Group indicated that it would not be possible, at the given protection ratio of 25 db, to fulfill all requirements in the information received from Working Group 7A. In the case of heavily congested areas, such as Europe, (1) the protection ratio is low and means that each country will have to reduce requirements to, at least, the level of the channels available, (2) more use should be made of VHF in such congested places.

- 4 - The Chairman thanked Mr. Krause for his report and pointed out the following :

4. (1) Working independently from Working Group 7B 2, Working group 7B 1 had reached the same conclusions as 7B 2, i.e. the requirements as indicated cannot be satisfied.
4. (2) Congested areas do not permit the same protection ratios to be available, and indicated the need for delegates representing European countries, and any other congested areas, to get together, to investigate these points and submit results to Committee 7.
4. (3) Although perhaps not immediately evident, Working Group 7B 1, in the course of studies had tried various methods and gained considerable experience. The Working group had an appreciation of the various mechanical devices necessary for use in the work of the assignment of frequencies. Thus, the advice of Working Group 7B 1 would be invaluable to any smaller groups working on individual frequency assignments.

- 5 - The delegate of France agreed with the Chairman and said that congested countries may evolve a formula for the solution of the problem in Europe. The same may possibly apply to frequencies above 6 Mc/s.

The Chairman explained the reasons for Working Group 7B 2 using 6 Mc/s as an example, and he went on to say that the remarks of Working Group 7B 2 were intended to cover other frequencies as well.

The delegate of Australia inquired from the Chairman of Working group 7B 2 as to the type of propagation charts used by that Working Group. When it was confirmed that the same charts had been used by both Working Groups, the delegate of Australia stated that it would therefore be useful, if the Committee agreed as to the necessary principles to be adopted by Working Groups, in subsequent work. He suggested that the Working Group 7B 2 paper dated 16 June 1948, be adopted as to principles.

- 6 - The Chairman informed the meeting that there were several matters of principle and several matters of detail to be agreed upon. He then put Recommendation 2 of Working Group 7B 2 to the meeting.

7 - The Working Group considers that in those frequency bands where the requirements greatly exceed the number of assignable channels it would be more satisfactory to assign one channel to several requirements controlled by any one administration, rather than to assign a separate channel for each requirement but with a very low protection ratio. The Working group recommends the investigation of this method recognising that it is easier to ensure satisfactory operation, on a given channel when all the interfering stations are controlled by the same administration, rather than when they are controlled by administrations of other countries.

8 - The delegate of the U.S.A. agreed that such a method of frequency assignment was more acceptable than any other system, whereby requirements have to be reduced, and, with a minor drafting amendment to the recommendation, the U.S.A. delegation was willing to support the recommendation, (the amendment was to replace "ALL" with " A LARGE PROPORTION OF ").

The Chairman of Working Group 7B 2 agreed to the amendment.

9 - The delegate of France suggested that the recommendation should be held up until an investigation had been made.

The delegate of the U.S.S.R. suggested that the same Working Group be charged with further investigation. He therefore supported the delegate of France and said that other delegations may agree to join the Working Group and suggested that a date might be given the Working Group to complete its investigations.

10 - The delegate of the U.S.A. agreed with the remarks of the delegates of France and U.S.S.R. and stated that U.S.A. support was given to the original recommendation, as recommending further investigation. The Chairman said that as it appeared to be the general opinion of the Committee, that a further investigation should be carried out, he would suggest the formation of a Working Group, consisting of the members of Working Group 7B 2, with instructions that the Working Group report as soon as possible to the committee, on its findings. Further, he suggested that the Working Group remain as three members but with power to co-opt any delegate who could assist or indicate to the Chairman of the Working Group any other proposal.

11 - On a question of the delegate of U.S.S.R., the Chairman quoted the terms of reference of this Working group briefly as follows :

"to consider the recommendations by Working Group 7B 2, in Recommendation 2, and present to Committee 7, as early as possible, its findings and recommendations on the subject recommended by Working Group 7B 2."

12 - The delegate of France considered that such a Working Group may waste time.

The delegate of U.S.S.R. suggested adding, after "Recommendation 2", in the terms of reference, "or any other proposals put to it".

The Chairman agreed with the delegate of U.S.S.R. and put to the meeting the proposal to form a Working group 7C with the above amended terms of reference.

13 - There being no objection expressed by any delegation, the Chairman ruled that the proposal was adopted unanimously.

The Chairman then suggested consideration of the assignment of frequencies in the 3, 4, 5 and 6 Mc/s bands, in accordance with Paragraphs 5 and 7 of the terms of reference of Working Group 7B 2, dated 16 June 1948. In Paragraph 5, in calculating service ranges, the Working Group proposed that figures for 30° from the day/night line be employed, and in Paragraph 7, that summer sunspot maxima be employed. The question before the Committee was therefore to decide if the approach proposed by Working Group 7B was to be the approach agreed upon by the Committee. The Chairman then gave a short explanation for using the figures for 30° from the day/night line. He indicated that there were two extreme alternatives,

- (a) the conditions at noon,
- (b) the conditions at the day/night line.

If (a) was taken, the service ranges obtained would be greater than the calculated values for all the day, except for a short period about noon. If (b) was taken, conditions approached the maxima, and the service ranges calculated would be large, and would not be obtainable except at dawn and dusk.

Accordingly, the Working Group had decided to use a figure of a reasonable average between the two extremes, i.e., with a station at 30° from the day/night line, when absorption, very roughly, approximates one half that at mid-day.

The Chairman asked, therefore, whether the Committee was prepared to adopt this recommendation of Working Group 7B 2, and, if this recommendation was to be employed as a basis for the future workings of the Committee.

- 14 - There being no objections raised, the Chairman ruled that, in future work by the Committee, figures for 30° from the day/night line, and service ranges at summer sunspot maxima will be employed. This was adopted unanimously.
- 15 - The Chairman then considered the suggestion of the delegate of U.S.S.R., to use protection ratios of 30 db for 3 Mc/s, 25 db for 4 Mc/s, and 20 db for 5 and 6 Mc/s, and pointed out, that the amendment of the delegate of New Zealand, permitted a variation of the protection ratios, where longitude peaks of requirements occurred, to be made between the countries concerned.

After some discussion, the following proposal was put to the meeting :

That the Committee adopt the following figures for protection ratios to be applied to the various points mentioned :

3 Mc/s	30 db
4 Mc/s	25 db
5 to 6 Mc/s	20 db

These protection ratios may be modified in particular areas, according to the loading in those areas, by agreement between the countries concerned.

- 16 - In the absence of any objection, the Chairman ruled that the proposal was adopted unanimously.

The meeting closed at 17.40 hours.

The Reporter

A. L. Partelow

The Chairman

A. Fry

1 July, 1948

Committee 7

Report
of the Committee on the Allotment of OR frequencies

(Committee 7)

21st meeting

25 June, 1948

Chairman : Mr. Fry (United Kingdom)

1. The Chairman, Mr. A. Fry, opened the meeting at 09.40 a.m.

The following countries were represented :

Argentina
Australia
Canada
Chile
France
Honduras
Netherlands
Netherlands East Indies
New Zealand
Poland
United Kingdom
U.S.A. and Territories
U.S.S.R.

2. The Chairman wished to ascertain from Col. Janes, Chairman of Working group 7B, if all the points in the report of Working group 7B had been covered or if there was anything else he wished to bring out.

Col. Janes replied that all points had been discussed. He asked if anything was to be done with reference to the constitution and setting up of an organization for the assignment of frequencies.

The Chairman indicated that this was being held over for discussion and decision. He enquired of the Chairman of Working group 7A if there were any points to be brought up in connection with the report of Working group 7B(1).

3. As Mr. Krause had nothing to bring up, the Chairman asked, in view of the fact that the two chairmen of the Working groups were satisfied that all points raised had been brought to the notice of the Committee, if any delegate wished to raise any further points.

Col. Flashman (U.S.A.) wished to know if representatives for the joint Working group, in discussions with representatives of Committee 6, were now to be appointed.

4. The Chairman stated that he had discussed this point with the Chairman of Committee 6, and he understood that representatives of Committee 6 were being appointed to serve on the joint Working group.

5. The Chairman suggested the appointment of Working groups for :

- (a) The making of the frequency assignment plan
- (b) discussions with representatives of Committee 6, on the use of spectrum space, which had been left open by Committee 4.

6. The Chairman nominated Col. Flashman as coordinator of all the working teams on the frequency assignments, and added that the amount of work involved, in order to ensure that proper records were kept for the writing out of the final plan, might necessitate having two coordinators.

The delegate of Honduras supported the remark of the Chairman, and Col. Flashman (U.S.A.) and M. de Calan (France) were unanimously appointed as coordinators.

7. Considerable discussion then took place on the question of representation on the Joint Working group which was to consider the spare spectrum space.

The Chairman indicated that complete coordination would result from the French delegate's suggestion that the two coordinators could best carry out this work. They should have a general idea of the Committee's view on the use of this spectrum space.

The Chairman's remarks were supported by the delegate of the U.S.S.R.

8. The work ahead of the committee was then summarized by the Chairman as follows :

- n 8. (1) Working group 7C under Mr. Furze which would deal with the higher frequency bands.
- 8. (2) Representatives of Committee 7 on the Joint Working group to discuss with representatives of Committee 6. He suggested the use of the spare spectrum space.
- 8. (3) Small working teams to set in motion the machinery for the working of an assignment plan.

9. This summary raised one essential point for consideration; i.e. that there was only a limited time to do the work required, by the purely practical consideration, with reference to delegates being unable to remain too long. Thus, it was absolutely essential, to the success of this Committee and the Conference as a whole, for everyone to cooperate, and to do as much, individually as could be done to complete the work in the shortest possible time.

The Chairman then suggested a mechanism which would work, and, he hoped, would not receive objections from the members of the committee.

Room III would be at the disposal of Committee 7 until the end of the Committee's work. All material and papers, particularly those of Working group 7A, could now be held in Room III, and thus be available at all times.

10. An outline of the suggested plan for the working teams on the actual assignment of frequencies, was given

The delegates would be divided into working teams of two.

Each team would take a particular portion of the spectrum, and endeavour to make a frequency assignment plan for the "OR" service, for that part of the spectrum.

11. Complete coordination of all working teams would be ensured, with coordinators able to assist each team, and to ensure that all the work was kept together, and, in a form suitable for working into a final plan.
12. The delegate of the U.S.A. said he fully agreed with the Chairman's suggested organization. The organizing of teams for such a tremendous task was logical, and must surely be logical to all delegates. He suggested that the teams work in regions, by virtue of the necessity for frequent reference to the Forms 2.

The immediate assembly of working materials should ensure the start of the work by Monday 28th June.

13. The Chairman, referring to the grids constructed by Working group 7B (1), said it was possible to divide the world into regions, and, with minor exceptions, the divisions could almost be treated as separate regions. Therefore, the idea of the delegate of the U.S.A. was a practical one.

The Chairman's remarks were supported by the delegate of Australia, Canada, New Zealand and U.S.S.R.

14. The Chairman, after a query from the delegate of Poland, with reference to full committee meetings of Committee 7 to give a decision on any problem, indicated, that that very fact had been covered by the appointment of the coordinators. They would keep in touch with all work and any problems, and should be able to iron out any difficulties arising in working teams.
15. In answer to a query from the delegate of Poland as to how the regions were to be worked out, the Chairman ruled that the regions would be as set out in Atlantic City Regulations.

Considerable discussion took place between the delegates of France, Australia, U.S.A. and Canada on the question of the spare spectrum space. The discussion culminated in the following suggested terms of reference for the Committee 7 representatives on the Joint Working group:

- 1- "On basis of channel separations recommended by Committee 4, and recognizing the channels thus far proposed by Committee 4B to recommend an equitable and efficient utilization of unallotted space between the R and OR bands.
- 2- "Consideration shall be given to the possibility of establishing not more than 2 common channels in different bands below 8 Mc/s.
- 3- "Consideration shall be given to the use of A1 channels, where equitable and appropriate.
- 4- "To make exchange of unallotted space in the adjacent bands between the R and OR services, and, if the need arises, to modify the channel spacing, recommended by Committee 4 at the beginning and end of each band, on condition that no harmful interference to the R services results."

16. There being no objection to the proposed terms of reference, the Chairman ruled that they be adopted unanimously, for Working group 7.

The delegate of Canada stated that there was a definite requirement in the 3 Mc/s frequency band, for a common channel for "R" and "OR" services. This was supported by the delegates of Chile and Argentina.

After considerable discussion on this point, the show of hands was taken, indicating a unanimous requirement for a common channel.

The Chairman stated that it would be useful to indicate to the representatives on the Joint Working group, the line to take, representing the view of the Committee as whole, and the Committee had to decide, at some stage, whether the results would be satisfactory to everyone. The view of the meeting showed a requirement for a common channel and that should be sufficient for the representatives.

The Chairman concluded the meeting by stating that the committee had decided upon the work it had to do, and upon the working groups, and working teams, with which to carry it out. Working groups could arrange their own time of meetings, and the delegates could be divided up into the various working teams, on Monday 28th June. All delegates, who could assist, would make for extra efficiency in this work of Committee 7.

The meeting closed at 12.45 hours.

The Reporter :
A. L. Partelow

The Chairman :
A. Fry

R E P O R T
of the Committee on the Allotment of OR frequencies

(Committee 7)

19th Meeting

24th June 1948

Chairman: Mr. A. Fry (United Kingdom)

1. - The meeting opened at 09.35 a.m.

The following countries were represented:

Argentina	Netherlands
Australia	Netherlands East Indies
Canada	New Zealand
Chile	Poland
China	Portugal
Egypt	Ukraine
France	U.S.A. & U.S. Territories
Honduras	U.S.S.R.

2. - The Chairman opened the meeting by stating that the purpose of the meeting was to consider reports from Working Groups 7A and 7B.

The Chairman explained the Working group's methods of work as follows:

Working Group 7A (Mr. de Calan). This working group was charged with the task of calculating statements of OR frequency requirements of all countries, and had to ensure that all amendments agreed upon by Committee 7 had been incorporated.

Working Group 7B (Col. Janes). This working group was assigned the task of investigating the proposal of the Australian delegate, and/or any other proposal submitted to it, and with the submission of a report and any recommendations to Committee 7.

Working Group 7B was divided into:

7B (1) (Mr. Furze) to work on calculations from charts and documents of Committee 4.

- E -

(7-2-7)



7B (2) (Mr. Krause) to consider the best methods of applying mechanical details of the proposals before Working Group B in making an assignment plan.

The Chairman asked Mr. de Calan if there was any report from Working Group 7A not adequately covered in the reports of the other Working Groups.

Mr. de Calan said he had no particular remarks to present, but he could enumerate, if necessary, all the information which had been passed to the other Working Groups.

The Chairman stated that firstly the Committee should hear the report of Working Group 7B and obtain clarification of any necessary points. He then called on Col. Janes as Chairman of Working group 7B for the report.

Col. Janes informed the Committee that Working Group 7B had prepared a draft paper dated 16th June 1948 and entitled "Method for Determination of a Protection Ratio adopted by Working Group B of Committee 7". (This paper is attached as Annex A).

Col. Janes said he considered it premature to issue this paper as a conference document until the figures in the Tables had been confirmed by Committee 7 and he called on Mr. Furze and Mr. Krause to present their reports.

Col. Janes' final comment was to the effect that a preliminary look at the organization to be used when allocating individual frequencies, indicated that it would be necessary to utilize many small groups, perhaps by regions, and, in places where extreme congestion exists, some compromise may have to be arrived at. Thus as many members of Committee 7 as possible would be required, to form these small working groups to work on the assignment of frequencies.

The Chairman thanked Col. Janes and called upon Mr. Furze for any figures to supplement the report.

Mr. Furze stated that there were two copies in French and two in Spanish of the paper entitled "Method for Determination of a Protection Ratio adopted by Working Group B of Committee 7", dated 16 June 1948. He went on to say that these papers were used as the terms of reference for Working group 7 B (2), and explained how the Working group had dealt with the different factors contained in paragraph 1 (a), (b), (c), (d) and (e).

Mr. Furze then presented the results as a Table (attached as Annex B) He also gave an explanation of the methods used in its construction (attached as Annex C). He completed this explanation with the following observations:

(1) If a large percentage of requirements are for night use, no variation in protection ratio can enable all requirements to be satisfied; but, if a large percentage, or all of the requirements, are for day use, a variation in protection ratio may satisfy most of the requirements in the lower frequency bands.

(2) Where a country indicated a continuous requirement for a frequency, this frequency may have to be used with a day-time protection ratio.

(3) For frequencies above 6 Mc/s, methods, other than those used in the above calculations, may have to be employed.

(4) It therefore appeared from the investigations carried out that there were two main factors to consider in order to assist in satisfying the requirements; firstly, the necessity for the reduction to a minimum of the number of requirements, and, secondly, the reduction of the protection ratio.

Mr. Furze concluded his explanation by stating that the time at the disposal of the Working group being necessarily limited, full investigation of the problems could not be made. In fact, the Working Group was of the opinion that this subject could most likely be discussed for several months without necessarily coming any closer to the answer, and bearing this in mind, the Working Group desired to make the following recommendations for the consideration of the Committee:

Recommendation 1 - that, for the 3, 4, 5 and 6 Mc/s bands, assignments be made to all requirements on day-time service and interference ranges, with as high a protection ratio which appears possible, and, that night-time use of such of those frequencies as are required for night-time use, would be possible, on the assumption of the probability that a reasonable percentage of stations will be closed down during night-time, and that those remaining will achieve, by distance separation, a protection ratio which, although considerably lower than the day-time figure would permit them to operate.

Recommendation 2 - The Working Group considers that, in those frequency bands where the requirements greatly exceed the number of assignable channels, it would be more satisfactory to assign one channel to several requirements controlled by any one administration, rather than to assign a separate channel for each requirement but with a very low protection ratio. The Working Group recommends the investigation of this method, recognizing that it is easier to ensure satisfactory operation on a given channel when all the interfering stations are controlled by the same administration, rather than when they are controlled by administrations of other countries.

Col. Janes confirmed that Working Group 7B had agreed to these recommendations.

The Chairman complimented Mr. Furze on the extremely able way in which he had explained an exceedingly complicated problem, and stated that he would deal separately with the two recommendations.

The delegate of the U.S.S.R. stated that, while the general report was very clear and was considered one of the best and the most reasonable methods of satisfying those demands, he wished to make the following observations:

The results give a general picture of the possibilities of satisfying requirements without considering the longitude of requirements. He suggested adding to the report "that the true picture of the possibilities of satisfying those demands is varied slightly in that the distribution of frequencies throughout the world differs from the way in which repetitions were worked out, by virtue of being concentrated in certain places."

He agreed that the final figures for protection ratios for the higher frequency bands should be given more consideration and suggested that possibly a different protection ratio could be given for each band.

The Delegate of the U.S.S.R. said that the conclusions reached indicated that 30 db would enable requirements to be satisfied on 3 Mc/s, 25 db all requirements on 4 Mc/s, and 20 db nearly all requirements on 5 and 6 Mc/s. He also agreed that the other bands should be further examined in order to obtain a suitable method of satisfying those requirements. He suggested an amendment to Recommendation 1 so that it read as follows: "Interference ranges with as high a protection ratio as appears possible, within the limit of 30 db, and that night-time use, etc."

The Delegate of New Zealand suggested the following amendment to Recommendation 1: Add new paragraph to Recommendation 1: "That these protection ratios may be varied by agreement between countries where longitudinal requirement peaks occur."

The Delegate of U.S.S.R. fully agreed with this amendment.

The Delegate of Australia agreed with the statement of the Delegate of U.S.S.R. and also with the amendments suggested by the Delegates of the U.S.S.R. and New Zealand. He suggested that the committee should proceed with the task of assigning frequencies in the lower bands, whilst the higher bands were being reexamined.

The Delegate from the Netherlands East Indies agreed with the above suggestion with reference to the 4, 5 and 6 Mc/s bands, but said he was concerned re 3 Mc/s, which is the only frequency band suitable for use at night in the Netherlands East Indies.

The Delegate of France stated that he also fully agreed with the common-sense remarks of the U.S.S.R.

The Chairman, after considerable discussion, agreed with many delegates that in view of the time, both recommendations would be put to the committee at the next meeting.

The Chairman stated that before adjourning the meeting he wished to say that the Steering Committee hoped to have the work of committees completed by 15th July. This left two complete weeks for work and then several days for the presentation of the final report. This, he added, would give some idea of the continued work of Committee 7.

The meeting closed at 12:40 hours.

Reporter:
A.L. Partelow

Chairman:
A. Fry

A N N E X "A"

16 June 1948

METHOD FOR DETERMINATION OF A PROTECTION
RATIO ADOPTED BY WORKING GROUP B
of COMMITTEE 7

PREAMBLE

It is essential to obtain an approximate idea of the sharing possibilities in each of the frequency bands available to the aeronautical mobile (OR) service as varied by differing protection ratios, and while recognizing that there may be many possible solutions to this problem, the following has been adopted as a method which will

- a. achieve this result within a reasonable time
- b. be sufficiently accurate for the purpose

Then as the accepted solution to estimating the sharing possibilities, the following plan is being employed.

PLAN

1. It is recognized that the following factors control the service and interference ranges and hence the sharing factor of a given frequency

- a. Day or night time use
- b. Latitude of use, which also take into account the effects of distribution of atmospheric noise
- c. Power employed
- d. Protection ratio employed
- e. Variations of ionospheric conditions

2. With regard to day or night time use, this information can be obtained from Form 2, but it is requested that delegations so far as possible amend their requirements and advise Working Group No. 1 of the following amendments as early as possible:

- a. The circuits (by circuit number) on which it is essential to have night time protection
- b. Where a circuit employs a family of frequencies, indicate on which specific megacycle orders of frequency nighttime protection is required.

3. With regard to the power employed, it is considered that a figure of 1 Kw. for the ground transmitter and 50 watts for the aircraft transmitter represents a sufficiently accurate average for this purpose.
4. The question of service range for different latitude shall be dealt with by assessing the world's requirements by latitude for each of the frequency bands. The service range appropriate to the latitude with the heaviest requirements for the frequency band shall be determined from the propagation data and employed as the average service range for calculating sharing possibilities. Different values of service range will, of course, be necessary for night time and day time conditions.
5. Calculation of the night time service range is simplified by the fact that absorption during this time may be disregarded. For calculating the day time service range it was decided that the figures appropriate to conditions 30° from the day-night line be employed.
6. It is further agreed that when calculating night time service ranges, summer conditions be used because the service ranges thereby derived, although in fact the minimum, are the greatest which can be consistently obtained throughout the year.
7. Similarly, when calculating day time service ranges, summer sunspot maximum conditions be employed since here again, the service range thereby derived, although in fact the minimum, are the greatest which can be consistently obtained throughout the sunspot cycle.
8. By employing the different values of protection ratio, the service and interference ranges will be obtained. It is agreed that they be so calculated for values of 20, 25 and 30 db. protection ratio. In agreeing to calculate the sharing possibilities employing a protection ratio of 20 db, the working group does not commit itself at this stage to accepting the employment of this protection ratio.
9. The comparison of the number of assignments possible by employing these protection ratios with the number of requirements, will then enable Working Group No. 2 to make recommendations to Committee 7, which will permit it to decide on the protection ratio it will adopt.

C.W. Janes
Chairman, Working Group B
of Committee 7

Frequency Band	Protection Ratio	Channels Available	Daytime Repetitions possible	Total daytime assignments possible	Night time Repetitions possible	Total night time assignments possible	Total requirements (Forms 2)	Percentage of requirements satisfied	
Bande de fréquence	Rapport de protection	Voies disponibles	Jour Répétitions possibles	Total des assignations possibles pendant le jour	Nuit Répétitions possibles	Total des assignations possibles pendant la nuit	Total des demandes (Formules 2)	Pourcent des demandes satisfaites	Porcentaje de necesidades satisfechas
Banda de frecuencia Kc/s	Coefficiente de protección db.	Canales disponibles	Día - Repeticiones posibles	Total de asignaciones posibles durante el día	Noche - Repeticiones posibles	Total de asignaciones posibles durante la noche	Total de solicitudes (Formulario 2)	Jour - Rapport de protection	Nuit - Rapport de protection
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
3025 - 3155	20	18	172	3100	7	125	1005	300	12.5
	25		130	2340	6	108		230	10
	30		77	1385	5	90		137	9
4700 - 4750	20	7	122	854	7	49	643	132	7.6
	25		98	686	5	35		106	5.5
	30		66	462	2	14		72	2.2
5680 - 5730	20	6	53	318	4	24	323	99	7.5
	25		40	240	3	18		74	5.6
	30		30	180	2	12		56	3.7
6685 - 6765	20	10	40	400	4	40	672	60	6
	25		26	260	3	30		39	4.5
	30		22	220	2	20		32	3
8965 - 9040	20	8	7	56	3	24	275	20	9
	25		6	48	2	16		17	6
	30		4	32	2	16		12	6
11175 - 11275	20	10	8	80	2	20	258	31	8
	25		4	40	2	20		15	8
	30		3	30	2	20		12	8
13200 - 13260	20	6	6	36	2	12	225	16	5
	25		4	24	2	12		11	5
	30		3	18	2	12		8	5
15010 - 15100	20	8	3	24	-	8	138	17	-
	25		3	24	-	8		17	-
	30		3	24	-	8		17	-
17070 - 18030	20	5	3	15	-	5	215	7	-
	25		3	15	-	5		7	-
	30		3	15	-	5		7	-

(Ver-138.B - F - S)
(Annex 'B')
(Annexe 'B')
(Anexo 'B')

(23-4-7)

A N N E X "C"

EXPLANATION OF THE TABLE OF REPETITION POSSIBILITIES

GIVEN BY THE CHAIRMAN OF WORKING GROUP 7B 2

The terms of reference of this working group are those contained in a paper dated 16th June 1948, headed:

"Method for Determination of Protection Ratio
Adopted by Working Group B of Committee 7".

Under sub-para 1-a, separate values of service and interference ranges were calculated for both day and night time conditions.

Sub-para (b). The requirements, listed under different latitudes as supplied by Working Group "A", were then graphed in the diagram attached. Day and night service range curves were then superimposed on this diagram.

A square form of graph was employed rather than a running curve, to enable areas to be more accurately assessed. The area enclosed by the graph was then calculated, and a dotted line drawn to bisect this area. From the point where this dotted line intersected the service range curve, another dotted line was dropped down on to the service range axis, and the figure thus arrived at was employed as the averaged service range for that frequency.

Values were calculated for all the frequency bands for both day and night time conditions.

Sub-para (c). The powers to be employed had previously been decided as indicated in para. 3 of the terms of reference.

d) Interference ranges were then calculated from the graphs contained in Aer-Document No. 46 (Figure 115-125) for day and night time conditions, and for protection ratios of 20, 25 and 30 db, separate values being calculated for North-South and East-West directions for daytime use.

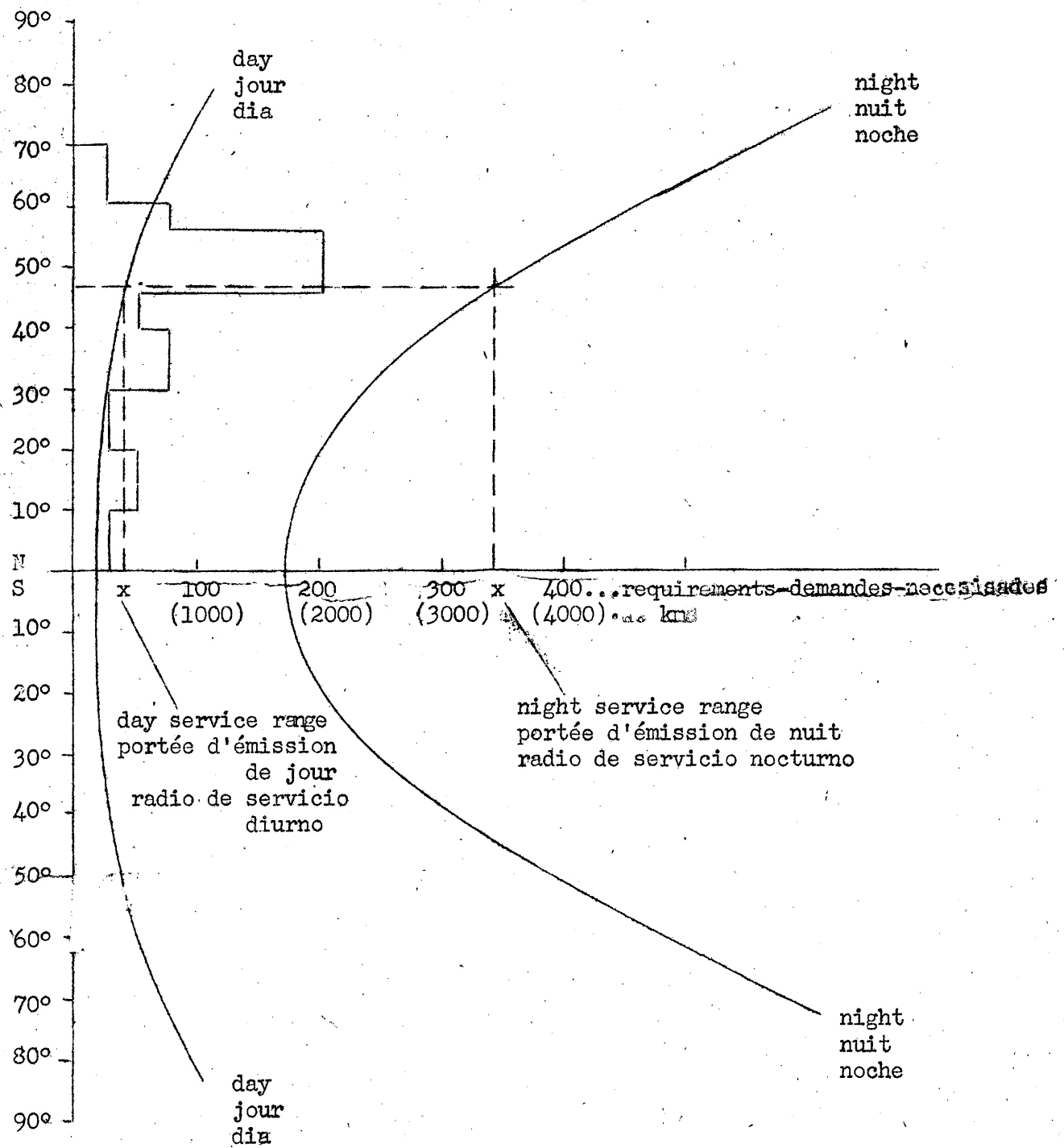
e) For variations in ionospheric conditions, those set forth in paragraphs 5, 6 and 7, of the terms of reference were employed.

DETERMINATION OF REPETITION POSSIBILITIES

The service and interference ranges were then employed to construct a gridded pattern on a transparency. This transparency was then laid on a map of the world, and the repetition possibilities on the land masses, and to some extent, the ocean islands, were noted. These figures are shown in Annex B, column 4 in respect of daytime conditions, and column 7 in respect of night time conditions, for the different protection ratios.

It was then assumed that all available channels could be used for daytime assignments. The repetition factor was therefore multiplied by the number of channels available to give the total daytime assignments possible. These results are shown in Column 5. The same assumption was made in respect of night time repetitions and these results are shown in Column 7.

In Column 8 have been listed the total world's requirements as supplied by Working Group "A". The percentages of satisfying all these requirements are shown in columns 9 and 10.



1 July, 1948

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)

14th Meeting

29 June, 1948, at 5.45 p.m.

CHAIRMAN : Mr. A. L. LEBEL (Chairman of the Conference)

Present : Mr. VERES (Committee 2)
Mr. FALGARONE (Committee 3)
Miss Florence TRAIL (Committee 3)
Mr. SELIS (Committee 4)
Mr. COFFEY (Committee 4)
Mr. BETTS (Committee 6)
Mr. HARVEY (Committee 6)
Mr. TABIO (Committee 6)
Mr. FRY (Committee 7)
Mr. FURZE (Committee 7)
Mr. CHEF (France)

ACTION TO BE TAKEN WITH REGARD TO THE CONFERENCE FOR SAFETY OF LIFE AT
SEA AND IN THE AIR.

After considerable discussion on a paper submitted by the CHAIRMAN
(see Aer-Document No.121), agreement was reached on the text of a document to be
published in the form of a draft recommendation of the Steering Committee.

FINAL REPORT OF THE CONFERENCE

The CHAIRMAN said that a number of small practical problems were likely to
arise regarding the production of the Final Report, and asked whether the
Committee wished to be consulted on each of them.

It was agreed that such problems should be settled by the CHAIRMAN at his
discretion.

SCHEDULE OF MEETINGS

The Committee drew up a schedule of meetings for Wednesday, June 30,
Thursday, July 1, and Friday, July 2, 1948.

TEXTS TO BE PREPARED FOR THE FINAL REPORT.

It was agreed that Mr. FRY (Committee 7) together with Mr. FALGARONE
(Committee 3) and the CHAIRMAN, should meet informally to discuss the question
of incorporating in the Final Report material prepared by Committee 7.

The meeting was adjourned at 7 p.m.

Reporter :
N. LANGFORD

Chairman :
A. L. LEBEL



REPUBLIC OF POLAND

The Polish delegation submits a flexible method for allocation and repetition of frequencies.

This is based on the fact that 4 different families of frequencies, that is, 4 families in which there are no common frequencies, are necessary and sufficient to cover, with repetition, a continent, without risk of interference.

If we take N frequencies, containing the frequencies $f_1 f_2 \dots f_n$ we can divide them into any whatever 4 groups, provided that these groups are made up of different frequencies.

Suppose, for example, that these groups are made up as follows :

$$A = f_1 + f_2$$

$$B = f_3 + f_4 + f_5$$

$$C = f_6 + f_7 + f_8$$

$$D = f_a \dots f_n$$

If a grid is formed with the dimensions corresponding to

- a) value P of the power radiated by the antenna of a transmitter
- b) a protection ratio D
- c) a frequency order f for the band in question

for example if $P = 0,5 \text{ kW}$, $D = 20 \text{ db}$ $f = 3 \text{ Mc/s}$, two transmitters both broadcasting in the 3 Mc/s band, must be distant one from another by at least

- a) 975 kms in a NS
- b) 1050 kms in a WE direction.

and if this grid is then placed on a map of the world with the families of frequencies in each rectangle then the positions of the 4 different groups of frequencies can be expressed by the following diagrams.

:	D	:	C	:	D	:
:	B	:	A	:	B	:
:	D	:	C	:	D	:

or
ou bien
o

:	D	:	C	:	D	:
:	B	:	A	:	B	:
:	C	:	D	:	C	:

:	D	:	C	:	D	:
:	A	:	B	:	A	:
:	D	:	C	:	D	:

or
ou bien
o

:	C	:	D	:	C	:
:	B	:	A	:	B	:
:	D	:	C	:	D	:

or
ou bien
o

:	C	:	D	:	C	:
:	B	:	A	:	B	:
:	D	:	C	:	D	:

By the use of these diagrams ground stations interference can be avoided.

For a given maximum power and protection ratio this method allows :

- a) The transmitter to be placed at any point within the area assigned a given frequency or a given group of frequencies without causing interference with other emissions broadcast on the same frequency or groups of frequencies.
- b) free choice of frequencies with the possibility of grouping them, according to the different interests of states within the limitations of the grid plan. This method is applicable to the aeronautical mobile service.

In our example, if $P = 0,5 \text{ kW}$, $D = 20 \text{ db}$, $f = 3 \text{ Mc/s}$ the surface of a rectangle in the grid would be $975 \times 1050 = 1.025 \times 10^6 \text{ sq. kms}$

For each continent, the number of rectangles needed to cover it may be calculated.

Africa	(30 X 10 ⁶ sq. kms.)	is covered by 30 rectangles
America	(38 X 10 ⁶ sq. kms.)	" " " 38 "
Australia	(7.93 X 10 ⁶ sq. kms.)	" " " 8 "
Asia	(45 X 10 ⁶ sq. kms.)	" " " 45 "
Europe	(10 X 10 ⁶ sq. kms.)	" " " 10 "

Each group of 4 rectangles represents a group of frequencies or families of frequencies which may be repeated, for example :

In Africa the average frequency repetition is :

	7 1/2 times	(30/4)
America	9.5	(38/4)
Australia	2	(8/4)
Asia	11 1/4	(45/4)
Europe	2 1/2	(10/4)

Conclusion :

The four family system can be applied to a continent if the maximum number of frequencies required for the countries of the continent, covered by the surface of 4 different rectangles, grouped together, as shows the diagram, does not exceed the total number of frequencies available in the given band; - neither time sharing or predetermined repetition are here contemplated, - the transmitters may be presumed to operate continuously.

This grid must be built up taking into account the maximum power of transmitters. In certain cases if the number of very high power transmitters is very limited, it is more practical to consider separately the allotment of frequencies to these individual high-power transmitter, and to apply the system proposed here to the rest of the continent, with a new maximum power.

2 July, 1948

Committee 7

REPUBLIC OF POLAND

SUGGESTIONS ON ALLOTMENT AND DUPLICATION OF
OR FREQUENCIES

In order to ensure the proper distribution of OR frequencies between states, Committee 7 has adopted a method of approach to the problem based on the following:

- a) An assumed standard power P_a radiated by the antenna of an OR transmitter.
- b) an assumed protection ratio D .

Account was also taken of the fact that the propagation characteristics of HF waves in an E-W (or W-E) direction are different from those obtaining in a N-S (or S-N) direction.

Example: If $P = 0.5$ kW
 $D = 20$ db
 $f = 3$ Mc/s

then :

two transmitters working on the same frequency $f = 3$ Mc/s should be distant one from another by at least :

- a) 975 kms in a N-S, or S-N direction
- b) 1050 kms in a W-E, or E-W direction

These figures were taken as a basis for the purely graphical method of determining how all transmitters having a given power 0.5 kW and using the same frequency should be distributed over the earth's surface; by using this method it is possible to determine the total number of transmitters which can operate on the same frequency without giving rise to harmful interference.

This method adopted by Committee 7, is not in complete conformity with the regulations governing OR services, as laid down in the Final Acts of the Atlantic City Conference. It does not allow a transmitter (of a given power $P = 0.5$ kW) to be sited where it is really needed, but tends to place it at any one of a number of fixed points in some world system of OR transmitters. The system that results is extremely rigid, and subordinates the national interests of different states to one large mutually dependent system.

It should be obvious from the above that if these methods are applied it will be impossible to move any OR transmitter ($P = 0.5$ kW) without causing harmful interference to others using the same frequency.

Hence the Polish Delegation proposes that another and much less rigid method be used.

The method proposed is based on the division into four main groups of all the available frequencies in a band. If each group contains n frequencies ($n_1 = f_1, f_2, \dots, f_{n_1}$) the total number of frequencies in the given band will be :

$$N = n_1 + n_2 + \dots \text{frequencies}$$

Thus, in the band between 3 and 3.14 Mc/s, for example, with the channel separation adopted for A3 work of 7 kc/s

$N = 20$ frequencies

Now let one group :

A -	consisting of	$f_1 \neq f_2$ frequencies	}	Total number of frequencies in the given band $N = 10$
B -	"	$f_3 \neq f_4 \neq f_5$ frequencies		
C -	"	$f_6 \neq f_1 \dots \dots$		
D -	"	$f_8 \neq f_9 \neq f_{10}$ "		

Then the positions of the different groups can be expressed diagrammatically as follows :

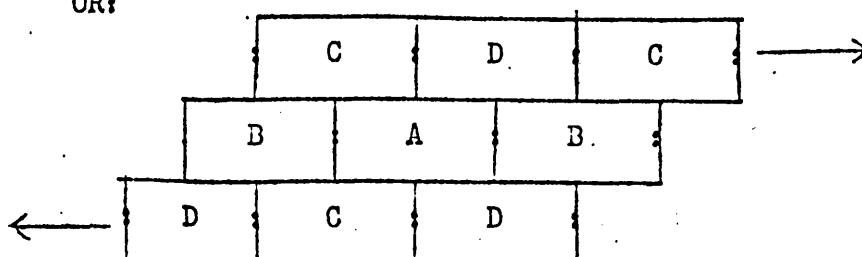
D	C	D
B	A	B
D	C	D

D	C	D
A	B	A
D	C	D

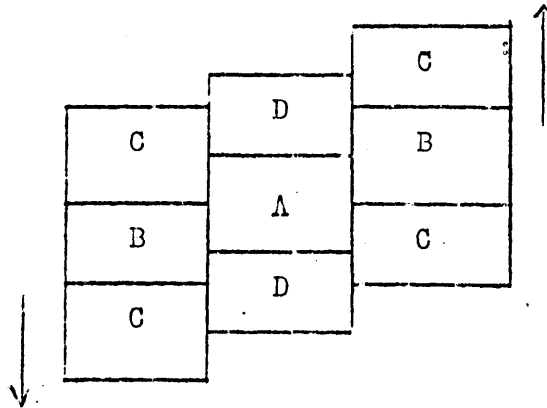
OR :

D	C	D
B	A	B
C	D	C

OR:



OR:



For a given maximum power and protection ratio, equal for all the transmitters concerned, this method:

1) permits an OR transmitter to be sited anywhere within the area allocated to a given group of frequencies, without causing harmful interference to any other transmitters working on the same frequency or group of frequencies (in each sector A, B, C or D).

2) Allows both A1 and A3 to be used with complete freedom within the limits of the channel width allotted to a given group of frequencies.

3) Allows OR transmitters to be sited more rationally

4) Allows frequencies to be freely chosen or grouped together in accordance with the particular interests of different states.

It should be pointed out that if :

$P = 1 \text{ kW}$
and $f = 3 \text{ Mc/s}$
then the area covered by the radio waves emitted is roughly $975.1050 = 9.75 \times 10^5 \text{ sq. km.}$ and the "transmitter capacity" of:

Africa	$(30 \cdot 10^6 \text{ sq. km.})$	is only 30 transmitters
America	$(38 \cdot 10^6 \text{ sq. km.})$	" " 38 "
Australia	$(7.93 \cdot 10^6 \text{ sq. km.})$	" 8 "
Asia	$(45 \cdot 10^6)$	" " 45 "
Europe	$(10 \cdot 10^6)$	" " 10 "

These figures give the number of transmitters able to use the same frequency; they are completely inadequate to cover requirements.

The above system, proposed by the Delegation of Poland, is of general application, and can be used in connection with OR, as well as for the allotment and duplication of R frequencies.

THE DELEGATION OF POLAND

2 July, 1948

Committee 2

Report of the Credentials Committee

(Committee 2)

Adequate credentials, in the form of a telegram from the Government of the Philippines, were received as of June 30, 1948 appointing M. A. Alvendia to represent the Government of the Philippines at the Conference.

Pending the adoption of this report by the Plenary Assembly, it is recommended that Chairmen of Committees take into account the vote of the representative of the Philippines at any Committee meetings, as of the above date.

The Reporter :

F. A. Trail

The Chairman :

Victor Veres



2 July, 1948

Final Report of Joint Working Group on Utilization
of unalloted Space

Representatives of Committee 6F and of Committee 7 convened at 8:30 p.m., June 28th, in room 121, Hotel Beau-Rivage.

Those present were :

Mr. P. de Calan	France
Mr. E. G. Betts	Australia
Mr. P. J. Greven	I.C.A.O.
Mr. J. D. Flashman	U.S.A.

In accordance with the respective terms of reference of Committees 6 F and 7, the representatives of the Joint Working Group considered the question of utilization of the space between the "R" and "OR" bands shown in document 112 as unalloted. The recommendations of the Joint Working Group are shown in Appendix "A".

As an after agenda item, although not contained in the terms of reference of all of the representatives, the Joint Working Group also considered the question of channelization of the band 21850-22000 kc/s, shared between aeronautical fixed and aeronautical mobile "R" and the band 23200-23350 kc/s, shared between aeronautical fixed and aeronautical mobile "OR".

Recommendations in this respect are contained in Appendix B.

The Joint Working Group, recognizing that opportunity exists for the fulfillment of some of the aeronautical mobile "OR" service requirements in shared bands below 23 Mc/s, recommends that proposals concerning channelization in such shared bands be left entirely to the discretion of Committee No. 7.



A P P E N D I X 'A'

Band	:Separ-	:Unallotted Space kc/s			:Fractional Channel		:Proposed allocation			Remarks
	:ation	: R	OR	Total	Width		:			
	:	:			: R	OR	:R	Common	OR	
2850-3155	: 7	: 6.5	3.5	10	:0.93	0.5	:-	A3(10kc/s)	-	:centered at :3023.5
5480-5730	: 7.5	: 4.75	4.25	9	:0.633	0.566	:-	A3(9kc/s)	-	:centered at :5680
6525-6765	: 7.5	: 1.75	4.25	6	:0.232	0.566	:-		2A-1	:centered at :6685 and :6687.5
81-9040	: 8.5	: 4.75	6.25	11	:0.56	0.735	:A-1		A2	:centered at :8961.5 and :8967
11175-11400	: 9.5	: 0.75	4.25	5	:0.079	0.447	:		A1	:centered at :11273
15010-15100	: 10.0	:	(8)*		:	(0.8)*	:-		2 A-1	:centered at :15092.5 and :15096.5
17900-18030	: 10.0	: 8.5	8.5	17.0	:0.85	0.85	:A3		A1	:centered at :17966.5 and :17975
Total		27 kc/s	29 kc/s		3.284 channels	3.664				

*15010-15100 kc/s exclusively "OR" therefore these figures not included in totals.

SUMMARY :- For Common 2 A3 channels
 For "R" Service 1 A3 and 1 A1 channel
 For "OR" Service 1 A3 and 4 A1 channels

A P P E N D I X B

1.

Band 21850 - 22000 kc/s Aero fixed
Width 150 kc/s Aero mobile "R"
Spacing 12 kc/s between channels

21850 kc/s Tolerance at lower band edge 0.0274

First frequency	21859	
	71)	
	83)	
	95)	
	907)	
	919)	12 channels Total
	931)	
	943)	
	955)	
	967)	
	979)	
Last frequency	991	

22000 kc/s Tolerance at upper edge 0.0272

Adjacent bands	Lower edge	Fixed
	Upper edge	Maritime Mobile

Note: The above frequency allocations are those which, in accordance with the recommendations of Committee 4, would be applicable if the whole of this band were to be made available solely for the aeromobile "R" service.

A P P E N D I X B

2.

Band 23200 - 23350
Width 150 kc/s
Channel spacing 12 kc/s

Aero fixed
Aero mobile "OR"

23200 kc/s

Tolerance at lower edge - 0.026

First frequency	23209)	
	21)	
	33)	
	45)	
	57)	
	69)	12 channels Total
	81)	
	93)	
	305)	
	17)	
	29)	
Last frequency	41)	

23350 kc/s

Tolerance at upper edge 0.026

Adjacent bands	lower edge	Fixed
	upper edge	Fixed and land mobile

Note : The above frequency allocations are those which, in accordance with the recommendations of Committee 4, would be applicable if the whole of this band were to be made available solely for the aeromobile "OR" service.

Report of Sub-Committee 6C

4th Meeting
June 30, 1948

Chairman: Mr. G.A. Harvey.

1. The Chairman reviewed the terms of reference of the Committee as contained in Document No 83 and outlined the matters to be considered in the meeting:

- (a) frequency assignment procedure;
- (b) determination of the major world air route areas and question of their extension into Europe;
- (c) the number of frequencies an aircraft travelling world air route areas could reasonably be expected to carry.

2. The delegate of Canada gave an explanation of the maximum distance tables for various frequency orders and latitudes as extracted from Document No 116. The format of these tables was discussed and it was decided to include for each latitude and each ionospheric zone the various combinations of orders of frequencies for maximum distances which are not necessarily common. The delegate of France requested that consideration be given to use of frequencies in the shared bands 20 to 23 Mc/s for aeronautical mobile use. After discussion of the use of the higher order of frequencies, the delegate of Australia proposed a small Working Group to consider this question, this group to be called 6 C-2 and to be composed of the following: representatives of the United Kingdom, France, Netherland East Indies, I.C.A.O., and I.A.T.A., to have the following terms of reference:

- (1) prepare statement of operational requirements for long distance communication to provide operational control and terminal flight information.
- (2) prepare a statement in connection with the higher order of frequencies to be used on the major world air routes with particular reference to the 22 Mcs band.

The delegate of United Kingdom was asked to convene the Group and to prepare a report by next Friday afternoon.

3. After further discussion of the frequency assignment procedure, the following was agreed upon as a working basis for the procedure to be followed: a frequency from each band available in the spectrum for the world aeronautical route service to be assigned in each area; individual route segments to be divided in one-half, this distance to be used in determining the order of frequencies required and the load on each segment to determine the multiplier.

4. The Chairman gave an explanation of two charts which are to be used to list frequency orders and frequency requirements.

5. It was agreed to request the working group 6 C I under Mr. Coffey (Canada)

to extend their activities to the determination of repetition factors for various orders of frequencies and to tabulate these in a convenient manner.

6. The question of maximum number of frequencies to be carried by world air route aircraft was discussed and, after hearing the views of a number of delegations, the Committee decided that the maximum number of frequencies which should be carried by any one aircraft in the world service was 10 to 20, with the higher number to be used after 1951. This is to be used only as information, since the over-riding concept is to keep the number of frequencies carried at an absolute minimum.

The meeting closed at 5:30 p.m.

G.A. HARVEY
Chairman.

REPORT OF SUB-COMMITTEE 6 C

5th Meeting

1 July, 1948

Chairman: Mr. G. A. Harvey.

The only item of business on the agenda was the determination of major world air route areas and their extension into Europe

1. The representative of I.A.T.A. stated that the extension of a major world air area into any other area or region was a question of principle and that the same principle should apply equally in all areas; that in the EU-MED area, there were two requirements (a) for A.T.C. communication, and (b) long distance transmission of terminal flight information and operational control information. It was his belief that the world air route frequencies should not be used within the boundaries of the European Region

2 The Chairman interrupted business to welcome two delegates who had just arrived at the Conference, namely, Mr. Alvendia, of the Philippine Republic and Mr. Dvorsky, F.C. of Czechoslovakia.

3. The delegate of the United States suggested a flexible approach to the problem of extension of the world air routes so as to permit maximum freedom for operational control.

4. The delegates of the Netherlands, Denmark, France and the United Kingdom stated that they agreed with this concept. After discussion, the following resolution was proposed by the United States Delegation and seconded by the Netherlands:

RESOLUTION

Proposal regarding a method of approach to the definition of Major World Air Route Areas.

- 1) Working Groups to define the geographical limits of the Major World Air Route Areas.
- 2) That a Major World Air Route Area be established for Europe
- 3) That frequencies be allotted to the European Major World Air Route Area on the same basis as for other areas
- 4) That for landing purposes aircraft operations in adjoining areas extending into the European area will be charged to the adjoining area to the point of first landing in the European Area.

Loading will be applied to the European area from the point of first landing within that area to any point within the European area.

- 5) In establishing the boundaries of the Major World Air Route Areas the areas of authorized frequency utilization be overlapped to the extent operationally required.
- 6) The extent of the overlap to be kept as small as possible consistent with operational requirements, so that the necessity for protection of the frequency in the area will not destroy the possibility of duplication elsewhere in the world.

The resolution was approved unanimously with the following delegations stating that they reserved their opinion for the future and were abstaining: Yugoslavia, Albania, Liellorussia, and the U.S.S.R

5. The Chairman asked the Working Group to definitely define each area by place names and coordinates in order to facilitate the transfer of these areas to other maps to the globe, and for transmission of information to the P.F.B.

The meeting adjourned at 11:30 a.m.

D. Mitchell,
Rapporteur.

G. A. Harvey,
Chairman

COMMITTEE 6

Working Group C(2)

Report of Working Group 6 C(2)

2 July, 1948

Terms of reference:

1. Prepare a statement of operational requirements for long distance communication to provide operational control and terminal flight information.
2. Prepare a statement in connection with the higher order of frequencies to be used on the major world air routes with particular reference to the 22 Mc/s band.

Item 1

I.C.A.O. has stated a requirement, as follows, for the provision of aeronautical mobile frequencies to be used for flight information and operational traffic with aircraft entering, leaving and flying within the EU-MED (I.C.A.O.) Region:

Recommendation No. 22

The Committee recommends that one common group of high frequencies comprising one channel in each of the bands at 6, 8, 11 or 12 and 17 Mc/s should be allotted, when available, for long and medium distance air-ground communications in the Region.

Recommendation No. 23

The Committee recommends that H.F. communications be provided as required at appropriate locations in the Region for the exchange of flight information and Airline Operating Agencies operational traffic over medium and long distances. In the interim it is recommended that the following frequencies be used"

In order to enable European Administrations, where necessary, to make separate provision for this class of traffic, it is recommended that one family of frequencies be allotted. The family to include frequencies of the orders:

5.6 9 13 18 22 Mc/s

Consideration as to likely loading, etc., indicated that 2 to 3 families of frequencies would be needed to fully satisfy the requirements of this service; nevertheless, in view of the shortage of available frequencies, the group decided that not more than one family could be allotted. It wishes to stress, however, that any reduction in the size of the family recommended would prevent the application of a workable plan.

The group assumes that elsewhere in the world this class of traffic will continue to be confined to the air traffic control channels.

Item 2

By a majority view the working group recommends that provision be made for the allotment of 22 Mc/s frequencies to the Major World Air Route Areas

in those cases where frequencies of the order of 18 MC/S are known to be inadequate.

It further recommends that Sub-Committee 6C take early steps to work out the detailed requirements in order that the P.F.B. may be notified accordingly.

2 July, 1948

PROPOSAL OF THE STEERING COMMITTEE
(Committee 1)

COORDINATION BETWEEN THE AVIATION AND MARINE SERVICES
IN THE FIELD OF TELECOMMUNICATION

1. The Preparatory Committee for this Conference considered that the subject of frequencies for distress and scene of action purposes should be considered by this Conference. (1) In order to assist in such consideration, a letter was sent to the Safety of Life at Sea and in the Air Conference, then meeting in London to request comments on the matter. (2) A copy of that letter and a copy of the reply are attached as Annexes 1 and 2.
2. The Atlantic City Regulations provide a number of frequencies available jointly to the Marine and Aviation services for use in the interest of safety, distress, and search and rescue. Annex 3 hereof lists the pertinent provisions, which outline the purposes for which the frequencies are to be used, and restrictions placed on such use.
3. This Conference believes that while much is yet to be done to ensure to the greatest extent the most effective use of telecommunications in the Safety of Life at Sea and in the Air, the Conference and the I.T.U. in general have gone as far as their fields of activity permit, considering the information presently available.

(1) Par. 4, 1., 3), page 3, PC-Aer Doc. No. 16 :

"Frequencies for distress and scene of action purposes should be considered by the main Conference, and it is suggested that the Secretary-General of the I.T.U. contact the Safety of Life at Sea and in the Air Conference in London for their decisions and recommendations."

(2) Par. A, PC-Aer Doc. No. 29 :

"The Chairman was requested to have a communication sent to the Safety of Life at Sea and in the Air Conference, in London, in pursuance of Paragraph 4.1.3 on Page 3 of PC-Aer Document No. 16."



4. The problems of safety of life at sea differ in major respects from the problems of safety of life in the air. In the case of an aircraft, the time between imminence of distress and complete disaster may be very short. Therefore aircraft place primary reliance on their ground operational organization to initiate and direct search and rescue operations. As aircraft normally fly the air path shortest in time between the point of origin and destination, they do not commonly operate over the lanes used by ships, and thus cannot rely on a simple means for the interception of survival craft signals and for the rescue of those on board. Weight and bulk limitations restrict the capability of airborne survival craft communication equipment and make it unsafe to rely on 500 kc/s as a means of initiation of search by surface vessels. The additional protection given by the long range characteristics of 8364 kc/s with the resulting possibility of obtaining assistance through interception of distress signals by coastal stations, is the basis for the inclusion of this frequency as part of airborne survival equipment.
5. These considerations led to the creation of a Search and Rescue Organization within the framework of I.C.A.O., which organization calls upon many agencies, civil and government surface and air, for assistance in case of distress. Annex 4 hereto contains a detailed description of typical cases of distress, followed by search and rescue.
6. Communications with respect to distress of aircraft over the sea comprise three phases : first, the period of distress; second, the period of search; and third the rescue. In the first phase the aircraft places primary reliance on the aeronautical working frequencies and organization for the distress call and planning and execution of relief measures. In the second phase various agencies join in the search for the distressed aircraft or its survivors. Similarly, aircraft can and frequently do join in the search for distressed surface ships and survivors. If survivors, either of air or surface craft, are observed by air search, surface agencies must be directed to the location so that the final stage - rescue - may be completed. For either purpose, i.e. the air aspects of distress, search, or rescue, present equipment and present means of communication between the several agencies involved is believed inadequate. The distress frequency of 500 kc/s is available as a means of communication but this is unsatisfactory and inadequate for the reasons that (a) 500 kc/s equipment with adequate power is too heavy and bulky for modern high speed aircraft; (b) antenna drag is excessive; (c) a long trailing antenna increases lightning and fire hazard; and (d) radiation efficiency of fixed antennas is low. The frequency of 8364 kc/s, while partly solving the problem of long range distress communications, is unsuitable for scene of action short range communications and is useful only for communication with coastal stations.
7. There is required, therefore, for distress, search, and rescue functions, ^{(action frequencies of} the order of 3 and 6 Mc/s which would be implemented by those agencies joining in the search task and would be used for coordination of their efforts in conducting an efficient and thorough search. It should be noted that since the use of these frequencies would only occur in connection with coordinated operations which would of necessity have to be pre-arranged, there is no need for any one to maintain a watch on these frequencies unless actively participating in a search operation. Consideration might be given to permitting the use of the common frequencies
kc/s and kc/s * allocated by this Conference for this purpose.

* Figures to be inserted when the selection is made by the present Conference.

RECOMMENDATION:

It is recommended that, on the basis of the provisions of the Atlantic City Radio Regulations cited in Annex 3 hereof, and with the help of the frequencies set aside for the purpose, the International Civil Aviation Organization proceed with the necessary steps to produce a plan of coordination of distress, search and rescue operations.

It is further recommended that, in accordance with Art. 27 of the Convention the Administrative Council of the I.T.U. suggest to I.C.A.O. and the Inter-governmental Maritime Consultative Organization the creation of a small Working Group composed of experts of the three organizations to study this subject with a view to the formulation of a coordinated plan of action to provide the maximum benefit of telecommunication facilities in cases of distress.

ANNEX I

COPY

Secretary General,
International Conference of Safety
of Life at Sea and in the Air,
c/o General Post Office,
London

14 May 1948

Dear Sir,

I am directed by the plenary assembly of the Preparatory Committee for the International Administrative Radio Aeronautical Conference, meeting here in Geneva, to call your attention to the following suggestion approved by that Conference:

"In connection with the allocation of special frequencies for distress and scene of action purposes, it is suggested that the Safety of Life at Sea and in the Air Conference now meeting in London make a recommendation to the World Aeronautical Radio Conference concerning suitable frequencies for such purposes."

It will be very much appreciated if any recommendations you may have on this subject be referred to the undersigned at your earliest convenience.

Sincerely yours,

Gerald C. Gross
Assistant Secretary General

ANNEX 2

COPY

59662 LONDON 1333/8 252 8 1614 ETAT

To: PALAIS WILSON - THE PREPARATORY COMMITTEE FOR THE INTERNATIONAL
ADMINISTRATIVE RADIO AERONAUTICAL CONFERENCE, GENEVA.

The International Conference on Safety of Life at Sea have received your telegram concerning the allocation of special frequencies for distress and scene of action purposes which might be used jointly for aviation and marine purposes STOP The Preparatory Committee of experts on the coordination of Safety at Sea and in the Air who recently met in London recognized that communications played an important part both in precautionary measures as well as in actual distress incidents and considered that it would be useful if the matter was examined by representatives of the three agencies concerned namely the International Civil Aviation Organization, The Intergovernmental Maritime Consultative Organization, and the International Telecommunication Union and the necessary coordination secured between them STOP The Committee further suggested that the International Civil Aviation Organization after further consideration of the matter should if it deems this desirable raise the matter of frequencies other than 500 kc/s with the other agencies named above STOP The International Conference on Safety of Life at Sea feels that having regard to the fact that the allocation of frequencies falls within the field of the International Telecommunication Union and that representatives technically instructed on this matter by the three organizations are not in attendance at this Conference the best course would be for the matter to be dealt with as suggested by the Preparatory Committee of experts and recommends accordingly STOP Secretary General International Conference on Safety of Life at Sea - London

081615

081615 500

ANNEX 3

Provisions of the Atlantic City Radio Regulations
governing joint use of frequencies by the aeronautical
and maritime services

The following paragraphs of the Atlantic City Radio Regulations relate to the use of frequencies available for distress purposes either to the maritime mobile service, or to the aeronautical mobile service, or to both:

General Provisions

239, 271, 378/79, 570, 571, 598, 599, 761, 762, 775, 779, 780, 805, 861, 862, 865, 871, 891.

Provisions relating to 500 kc/s

714, 718, 720, 721, 722, 733, 600, 601.

Provisions relating to 2182 kc/s

813, 814, 815, 819, 826*, 827*. (*relate to Region 1 only)

Provisions relating to 156.80 Mc/s

198, 830, 832.

Provisions relating to 8364 kc/s

277, 600, 601.

ANNEX 4

EXAMPLE OF OPERATION OF AIR SEA RESCUE SERVICES

Standard aeronautical procedures generally specify that an aircraft in distress or anticipating such circumstances will first attempt to contact the ground communication station having the receiving guard for this aircraft on the route frequency normally in use, for example 6577 kc/s. The ground station upon receipt of such advice immediately notifies the Air Traffic Control Center which has the responsibility for further advice to the coordinated Air-Sea Rescue Service.

The ground communication station then immediately clears all other aircraft from 6577 kc/s, transferring them to the remaining channels of the frequency family authorized for this route, which, in this example, consist of 3395, 8577, and 11369, to permit of the exclusive use of 6577 kc/s for additional emergency communications. The ground station at this time also notifies via the remaining air ground channels, and available point-to-point circuits all other aircraft and ground stations in the area concerned to permit them to render any assistance possible.

In the ocean areas, all Government and Civil facilities available for life saving services, are coordinated as a combined unit under the Air-Sea Rescue Service Center. This Center is tied closely by telephone and teletype lines with all agencies concerned and with the direction finding networks, and those agencies are alerted for immediate action by the Air-Sea Rescue Center upon advice from the Air Traffic Control Center of aircraft emergencies.

Multi-motored aircraft capable of long distance overseas flights and fully equipped with modern life saving apparatus are available to the Air-Sea Rescue Service for aeronautical and marine rescue, and, upon advice from the Air-Sea Rescue Center, that there is emergency, they proceed immediately to the location where the aircraft has been reported to be in distress, followed, if advisable, by any available surface vessels. The Coastal Stations through the marine communication system also notifies all vessels in the area concerned, for such assistance as they may be able to render.

Should the distressed aircraft prove difficult to locate, and the search become extensive, it is probable that a large number of air and marine craft may assemble in a given area, thereby complicating the problem of efficient scene of action search control. No general radio frequency channels are presently authorized for such control service although in certain areas common frequency channels have been designated by the Military services to expedite their own activities at joint "Scene of Action" operations. Consequently, a great deal of communication is carried on between individual units engaged in the search and their respective home bases, to obtain the necessary coordination required for efficient search organization. Much of this communication is carried on the frequencies authorized for use of the air routes traversing the search area resulting in serious disruption to all other normal air-ground-air communications in this area.

Use of available Air-Sea Rescue Services is by no means restricted solely to the benefit of distressed aircraft but is utilized to a considerable extent in connection with life saving services rendered to marine craft. As an example of such aid to the marine services one of the most extensive aerial searches ever organized was recently conducted over a period of several weeks in the Central Pacific area to locate a barge carrying a small group of men, which had been cut loose from a towing tug in the vicinity of Palmyra Island due to lack of fuel. The towing vessel after refueling at Palmyra Island was unable to locate the barge. The Palmyra Island Aeronautical Communication station was notified by the tug of its difficulties and this advice was forwarded to the U.S. Coast Guard Headquarters at Honolulu. Air and marine craft of the Air-Sea Rescue Service then engaged in the search for the barge without success. During the succeeding days, as no trace of the barge was found, additional military and civil aircraft were pressed into service and the search area widened. Due to the long distance at which the aircraft were operating from their home base, it became necessary to establish temporary search control headquarters at Palmyra Island as well as additional temporary facilities for servicing such aircraft and subsistence for their crews. A Naval Aircraft Carrier was dispatched to the search area and aircraft from this vessel with the others surveyed large areas of the Pacific before finally locating the barge, which due to the strong ocean currents prevailing in this area, had drifted a considerable distance from its original location.

Communication between the temporary search headquarters at Palmyra Island and craft engaged in the search was carried on by the Palmyra Island aeronautical communication station on the frequencies utilized by the military services for their joint "Scene of Action" operations. The heavy communication load between Palmyra Island and the home bases of the search units at Honolulu was carried by the aeronautical point-to-point communication circuits between these points thereby leaving the air-route frequencies free for other essential communications.

15 July, 1948

Paragraph 14, line 5, read "considered desirable for the Aeronautical Mobile (OR) Service."

Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948

Corrigendum au document-aér

No. 147 - F

15 juillet, 1948

Paragraphe 14, ligne 5, lire: "les normes techniques considérées comme désirables pour le service mobile aéronautique (OR)."

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Correcciones al Documento-Aer

No. 147 - S

15 de julio de 1948

Página 2 , párrafo 1, léase : "Conferencia de Radiocomunicaciones de Atlantic City."
" párrafo 2, léase : "Comisión Preparatoria" en vez de "Conferencia Preparatoria."

" párrafo 3, léase : "POR LO TANTO SE ACUERDA, como solución equitativa para todos, que aquellas comunicaciones..."

" párrafo 6, léase : "donde la banda ocupada por el nuevo tipo de emision sea igual o menor a la misma."

" párrafo 9, léase : "los métodos que deban aplicarse para satisfacer".

Página 3 , párrafo 12, léase : "CONSIDERANDO que no ha de escatimarse esfuerzo alguno para satisfacer las necesidades..., sobre bases exclusivas de alcance mundial."

" párrafo 13, léase : "...satisfacer las necesidades restantes entre la bandas regionales..."

" párrafo 14, léase : "haciendo mención de las normas técnicas que se estiman deseables."

Página 4 , párrafo 18, léase : "la información solicitada en estos formularios y considerada por dicha Conferencia..."

" párrafo 20, léase : "(i) La ubicación de la estación de tierra en términos generales.

(iii) Las horas de operación (en GMT)

(iv) La potencia suministrada a la antena (en Kws)

(v) El orden de frecuencias descado (en Mc/s).

" párrafo 21, léase : "1.(a) Para frecuencias inferiores a 6 Mc/s..."



3 July, 1948

Interim Report by the Chairman
of Committee 7

1. The attached document contains all the resolutions made by Committee 7 in its work so far. These resolutions have been extracted from the reports of the various meetings so that they may be presented in one document for the approval of the Plenary Assembly of the Conference.
2. In extracting these resolutions they have, in some cases, been slightly redrafted so that although the original sense is retained the language is clearer, and so that, where necessary they may be included with the minimum of re-editing, in the final acts of the Conference.

A. FRY
Chairman,
Committee 7.

1. IT IS RESOLVED that the date of 15th May 1948 be the final date for the submission of Statements of Requirements on Form 2 for the Aeronautical Mobile (OR) service, called for^{by} the Atlantic City Radio Conference.

2. In making this resolution, the Conference recognises that this date (15th May 1948) has already been specified as the final date for such submissions by the Preparatory Committee of the aeronautical Conference, and that notice to this effect is given in the Preparatory Committee telegram of 2nd May 1948. The Conference recognises, however, that delays in mail may, under some circumstances, have prevented the requirements of some countries from reaching the Secretariat by 15th May 1948.

3. IT IS THEREFORE RESOLVED that, as a solution equitable to all those requirements which have not been received by 30th May 1948 shall be dealt with only after those which have been received on or before that date.

4. IT IS RESOLVED that the Conference shall work directly from Form 2, or from statements of requirements similar in nature to Form 2 (containing essentially the same information as called for) in making a frequency assignment plan for the Aeronautical Mobile (OR) service.

5. IT IS RESOLVED that the information essentially the same as that called for by Form 2 should be used as a basis for determining the requirements of the various countries in the Aeronautical Mobile(OR) service.

6. IT IS RESOLVED that wherever possible in the Aeronautical Mobile (OR) service similar types of emission should be assembled into contiguous channels and that a change-over from one type of emission to another shall be allowed in those cases where the band occupied is approximately the same.

7. In making this resolution the Conference recognises that it is necessary, on the one hand, to avoid harmful interference to stations operating on adjacent channels, and, on the other hand, to use the spectrum space to its full capacity.

8. IT IS RESOLVED that where a country so desires and geographical considerations permit, then wherever practicable assignments in the Aeronautical Mobile (OR) service for that country shall be assembled into contiguous channels.

9. The Conference, while undertaking its study of methods of satisfying the world's requirements for Aeronautical Mobile (OR) channels, recognises that Administrations

- (a) Will require a proportion of their requirements for continuous use, and
- (b) Will require only daylight protection on a major proportion of their requirements, but will, in certain instances, desire to use such channels by night, even with the corresponding decrease in protection ratio thereby resulting, and
- (c) Will require a proportion of their requirements for night use only and will require the normal protection ratio for these frequencies.

10. WHEREAS the Conference has considered the decision of the Administrative Council at its 32nd meeting in accepting the recommendation contained in P.F.B. document 66, and

11. WHEREAS requirements for families of frequencies common to more than one Region will be assigned from allocations common to the Region concerned, and

12. WHEREAS every effort will be made to assign Aeronautical Mobile (OR) requirements from allocations providing for that service on a world wide basis, and

13. WHEREAS where requirements exceed the world-wide space available, consideration will be given to satisfying excess requirements from both Regional allocations and from allocations shared with other services.

14. IT IS RESOLVED

- (a) To submit to the I.F.R.B., for further submission to the various Regional Conferences, information concerning the requirements of the Aeronautical Mobile (OR) service in the shared bands between 3 Mc/s and 4 Mc/s, due mention being made of the technical standards considered applicable to the Aeronautical Mobile (OR) service. This action is considered necessary as certain common families of frequencies for the Aeronautical Mobile (OR) service are required in more than one Region and it is necessary that these requirements be properly coordinated.
- (b) To submit to the P.F.B. a statement of the requirements of the Aeronautical Mobile (OR) service in the shared bands between 4 Mc/s and 27.5 Mc/s under the same conditions and for the same reasons as in (a) above.
- (c) That consideration be accorded to making assignments from bands in the following sequence :

- (i) Regionally exclusive allocations in which should be assigned frequencies for requirements common only to that Region (see "Directives for the P.F.B., Art. 6 (e)"), but taking into account (a) and (b) above.
 - (ii) Allocations which specifically provide for the Aeronautical Mobile (OR) service but which are shared with other services.
 - (iii) Allocations for the General Mobile service from which the Aeronautical Mobile (OR) service is not specifically excluded.
- (d) That requirements in the shared bands should be satisfied equitably between all countries.

15. WHEREAS countries having overseas territories may wish to have all or some of the same frequencies in the Aeronautical Mobile (OR) service for such overseas territories as for their home country,

16. IT IS RESOLVED that such requests shall be satisfied on condition that maximum economy in the use of frequencies is achieved and the possibilities of geographical duplication are taken into account.

17. WHEREAS the resolution of the Atlantic City Radio Conference providing for the making of a new International Frequency List directed that this list should be based on engineering principles, and

18. WHEREAS in conformity with this resolution the said Conference directed that the Bureau of the International Telecommunication Union, assemble a list of Fixed service requirements on Form 1 and of Mobile service requirements on Form 2, the information called for on those forms being that considered by the said Conference to be necessary to enable a frequency-list to be prepared on an engineering basis, and

19. WHEREAS the present Conference recognises that, in respect of the Aeronautical Mobile (OR) service requirements, whilst it is desirable to have all the information called for in Form 2 to enable these requirements to be satisfied, nevertheless it is possible to proceed with the task of making frequency assignments in the Aeronautical Mobile (OR) bands without some of the details contained therein, but there remains a limit below which the amount of information required may not be allowed to fall, without the engineering basis of the satisfaction of such requirements suffering in consequence, therefore,

20. IT IS RESOLVED

- (a) That in considering the plan of assignment of frequencies in the Aeronautical Mobile (OR) service, only those requirements should be taken into account for which the following minimum information has been supplied by the country concerned:

- (i) The general location of the ground transmitter (1).
 - (ii) The type of emission.
 - (iii) Hours of operation (G.M.T.)
 - (iv) Power delivered to the antenna (kW)
 - (v) Order of frequencies desired (Mc/s).
- (b) In conformity with an earlier resolution, only those requirements shall be considered which have been received by 30th May 1948 and which contain the Information in (a) (2) above.

21. Notes

1. (a) For frequencies less than 6 Mc/s, used in daylight, the location of the transmitter is to be stated to within 50 kms, in the frontier zone (3) of each country, and to within 300 kms. outside this zone.
 - (b) For frequencies above 6 Mc/s used both by day and by night, the location of the transmitter is to be stated to within 100 kms. in the frontier zone (3) of each country, and to within 600 kms. outside this zone.
 - (c) For frequencies below 6 Mc/s used by night, the location of the transmitter is to be stated as in (b).
2. The requirements of countries which have been submitted by 30th May, 1948 but which do not give the information indicated in subparagraph 20 (a) will be considered on the same footing, as those of countries which have provided full information by that date if this information arrives before 10th June 1948.
3. The frontier zone of a country is defined for this purpose as a zone 600 kms. wide extending into the country towards the interior from the frontier.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948

Aer-Document No.148 - E

3 July, 1948

Schedule of Meetings

	<u>Time</u>	<u>Room I</u>	<u>Room II</u>	<u>Room III</u>
Monday, 5 July, 1948	09:30	6 C		7
	14:30	6, then 6 C		7(Work.groups)
	17:30		3	
Tuesday, 6 July, 1948	09:30	6		7(Work.groups)
	14:30		Plenary (Room B)	
Wednesday, 7 July, 1948	09:30	4; then 6 (or Work.groups)		7(Work.groups)
	14:30	6 (or Work.groups)		"
Thursday, 8 July, 1948	09:30	6 (or Work.groups)		"
	14:30	"		"
Friday, 9 July, 1948	09:30	"		"
	14:30	"		"



5 July, 1948

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)

15th Meeting

2 July, 1948, at 5.45 p.m.

Chairman : Mr. Arthur L. LEBEL (Chairman of the Conference).

Present : Mr. VERES (Committee 2)
Mr. FALGARONE (Committee 3)
Miss Florence TRAIL (Committee 3)
Mr. SELIS (Committee 4)
Mr. BETTS (Committee 6)
Mr. HARVEY (Committee 6)
Mr. FRY (Committee 7)
Mr. FURZE (Committee 7)
Mr. Souto CRUZ (Portugal)

APPROVAL OF REPORTS OF THE ELEVENTH AND TWELFTH MEETINGS (Aer-Documents
Nos. 121 and 126).

- I. Aer-Document No. 121. It was agreed that the paragraph beginning
"Agreement was reached in the discussion which followed.." should be deleted.

Aer-Document No. 121, as amended, was adopted.

2. Aer-Document No. 126 was adopted.

MEDIUM FREQUENCY CONFERENCE AT COPENHAGEN. (Aer-Document No. 126).

The CHAIRMAN said that it had been found unnecessary to take the action indicated in Aer-Document No. 126.

PLENARY MEETING OF THE CONFERENCE.

An agenda was drawn up for a Plenary Meeting of the Conference, to be held on Tuesday, 6 July, 1948. (See Aer-Document No. 151).

SCHEDULE OF MEETINGS.

The Committee drew up a schedule of meetings for Monday to Friday, July 5th to July 9th., 1948.

The meeting was adjourned at 6.30 p.m.

Reporter :

N. LANGFORD

CHAIRMAN :

A. L. LEBEL



RECOMMENDATIONS OF THE INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE (GENEVA, 1948) ON THE
SUBJECT OF SERVICE DOCUMENTS.

In the course of its plenary meeting of June 11, 1948, the International Administrative Aeronautical Radio Conference adopted the following:

1° - Publication of the List of Aeronautical and Aircraft Stations.

The Conference recommends:

- a) That the 19th Edition of this List be withheld until February 1949, and that the attention of Administrations be directed to the necessity for supplying the Secretary General with accurate data for inclusion in that edition. In case of the section listing Aircraft Stations, only those aircraft making international flights are to be included.
- b) That the 20th Edition of this List should not be published until the draft new Frequency List, containing the Aeronautical Mobile Service Frequency Allotment plan, has been approved by the Special Administrative Radio Conference, to be called for that purpose. Furthermore, this edition should list only the frequencies available for use by the Aeronautical Mobile Service Stations in the new frequency list and this should be indicated on the cover.

2° - Publication of the Map of Land Stations open to public correspondence with Aircraft Stations.

The Conference recommends:

- a) That this map should be published in accordance with the Radio Regulations, Atlantic City, 1947, and should contain all Land Stations providing an international public correspondence service to aircraft only.
- b) That the Secretary General use his discretion regarding the areas, scale, projection, etc... bearing in mind that this map will be utilized solely for identifying the location of such land stations.

3° - Publication of the Map of Radionavigation Land Stations.

For the aeronautical service, the publication of such a map presents a particularly intricate problem:

- on the one hand, such a map is of interest to airmen only if it is possible to use it for navigation purposes as well - a requirement which involves the use of special types of projection;

- on the other hand, radionavigation land stations undergo constant revision in meeting the expansion and changing needs of aviation.

Further, meeting these requirements would involve the establishment of extensive cartographic services, supported by a rapid means of revision to keep abreast of new developments and installations. Such an undertaking would involve heavy expenditure for the I.T.U.



The International Civil Aviation Organization (I.C.A.O.), which is a specialized agency of the United Nations Organization, through its Member States, has established standards for charts and maps, which contain all pertinent information on aeronautical radionavigation stations. These charts and maps undergo constant revision through an accepted I.C.A.O. procedure, namely Notice to Airmen (NOTAM) messages to all interested operating agencies.

However, it should be noted that all I.T.U. members are not members of I.C.A.O. If such a map is not published by the I.T.U., those States which are not members of I.C.A.O. will have to make individual arrangements with the latter organization in order to obtain such charts and maps in case they consider the information contained in the list of radiolocation Stations published by I.T.U. (see No. 453 of Radio Regulations) to be insufficient.

The Conference therefore,

Considering,

- a) That the "Recommendations of the United Nations", contained in Annex 5 (Article IV, Paragraph I) to the International Telecommunication Convention, 1947, stress the need "for the coordination of policies and activities of specialized agencies".
- b) That the United Nations specialized agency "International Civil Aviation Organization" (I.C.A.O.) has arranged for the publication of charts with complete information of aeronautical radionavigation aids provided on the world air routes.
- c) That the publication of such a map by the I.T.U., in addition to the List of Radiolocation stations, in so far as the aeronautical mobile service is concerned, would be a duplication of a service now being provided by another specialized agency of the United Nations.
- d) That owing to the agreement referred to under a) above, between the I.T.U. and the U.N.O., such duplication cannot be contemplated and that an adjustment of the Atlantic City Radio Regulations would have to be considered in this respect.

Recommends:

That the Administrative Council (third session) instruct the Secretary General to exclude Aeronautical Radionavigation Land Stations in the "Map of Radionavigation Land Stations", referred to under Item 464 of the Atlantic City Radio Regulations (1947).

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No.151 - E
Aér-Document No.151 - F
Documento-Aer No.151 - S

3 July, 1948
3 juillet, 1948
3 de julio de 1948

Agenda for the Fifth Plenary Meeting
Tuesday, July 6, 1948, at 2.30 p.m.

1. Minutes of the Fourth Plenary Meeting (Aer-Document No. 109-E)
2. Resolution submitted by the Soviet Delegation at the Second Plenary Meeting
(see paragraph 3 of Aer-Document No.109-E)
3. Resolutions submitted by Committee 4 (Aer-Documents Nos. 103, 112, 115, 119).
4. Proposal of the Joint Working Group of Committees 6 and 7 on unallotted space
(Aer-Document No. 142-E) - if available.
5. Resolutions submitted by Committee 7 (Aer-Document No. 147-E)
6. Authorization for the Steering Committee to convene meetings 7 days a week.
7. Approval of July 15 as final date for Committees 4, 6 and 7.
8. Approval of July 22 as closing date of the Conference.

Ordre du Jour de la cinquième séance plénière
Mardi, 6 juillet, 1948, à 14 h.30

1. Procès-verbal de la quatrième séance plénière(Aér-Document No. 109-F)
2. Résolution présentée par la délégation soviétique lors de la deuxième séance plénière(voir le paragraphe 3 du document-Aér No. 109-F)
3. Résolutions présentées par la Commission 4 (Aér-Documents, Nos.103,112,115,119)
4. Proposition relative à l'utilisation de l'espace non-assigné , présentée par le groupe de travail mixte des Commissions 6 et 7(Aér-Document No. 142-F) - si ce document est à disposition.
5. Résolutions présentées par la Commission 7(Aér-Document No. 147-F)
6. Autorisation à accorder à la Commission de Direction afin qu'elle puisse convoquer des séances pendant la semaine entière.
7. Approbation du 15 juillet comme date-limite pour les travaux des commissions 4, 6 et 7.
8. Approbation du 22 juillet comme date-limite pour les travaux de la conférence.

Orden del Dia para la Quinta Sesión Plenaria
que se celebrará el martes de julio de 1948
a las 2.30 p.m.

1. Acta de la Cuarta Sesión Plenaria (Documento Aer.No.109-S)
2. Resolución presentada por la Delegación Soviética a la Segunda Sesión Plenaria (Vease párrafo 3 del Documento Aer.No. 109).
3. Resolución presentada por la Comisión 4 (Documentos Aer.Nos. 103,112,115 y 119)
4. Propuesta del Grupo de Trabajo Mancomunado de las Comisiones 6 y 7, relativa al espacio no distribuido (Documento Aer No. 142), si dicho documento está disponible.
5. Resoluciones presentadas por la Comisión 7 (Documento Aer.No. 147).
6. Autorización a la Comisión Ejecutiva para convocar sesiones los siete días de la semana.
7. Aprobación de la fecha del 15 de julio, como límite para los trabajos de las Comisiones 4, 6 y 7.
8. Aprobación de la fecha del 22 de julio como límite para los trabajos de la Conferencia.



5 July, 1948

Committee 6

Report of Working Group 6 C

6th Meeting

1. Chairman : Mr. G. A. Harvey (Union of South Africa)

2. The following countries and organizations were represented :

Argentina	Mexico
Australia	Netherlands
Bielorussian S.S.R.	New Zealand
Brazil	Poland
Canada	Sweden
Chile	United Kingdom
Colombia (Republic of)	United States of America and Territories
Czechoslovakia	Union of South Africa
Denmark	Yugoslavia
France	I.F.R.B.
Ireland	I.C.A.O.
	I.A.T.A.

3. The minutes of the 3rd Meeting Aer-Doc. No 132 were adopted with the following amendments :

3.1 Australia added to list of participants.

3.2 In para. 2.1 NSAI and NSA2 to be changed to NS-1 and NS-2 respectively.

4. The delegate of the United States proposed the following motion :
That we accept the boundaries as now outlined on the globe except that to the Eu-Med frequency protection areas now provided for Major World Air Routes entering Europe, we add Copenhagen, Oslo and Stockholm.
This was seconded by the delegate of France provided the following condition was attached to the proposal. This was agreed to by the mover of the proposal.
The boundaries of the various Major World Air Route Areas may be extended by means of regional agreements to the extent that these modifications do not interfere with the possibilities of frequency repetition as derived from initial boundaries.

5. The Soviet delegation stated that they did not consider it correct to extend the Major World Air Routes into Europe as this will interfere with repetitions and would not allow of the maximum utilization of frequencies. They feel the North Pacific Area should not be established as this enclosed a route carrying only 8 flights per week by one United States company. Therefore the Soviet delegation proposed the following two amendments to the U.S.A. proposal.

First Amendment

5.1 The boundaries of the Major World Air Route areas could overlap only to the nearest landry point on the territory of the adjacent area.

Second Amendment

5.2 The North Pacific area be excluded from Major World Air Route Areas and the loading of the Anchorage - Tokyo route be transferred to regional requirements.

6. The delegate of Yugoslavia seconded both amendments as proposed by the Soviet delegation.
7. The delegate of Poland stated that due to acute shortage of frequencies for the satisfaction of the requirements of all countries and for the necessity to have repetition as much as possible some concessions should be made for the common good. Therefore the line Anchorage-Tokyo should be absorbed in the regional frequency allotment.
8. The delegate of the United States stated that concessions should be expected from all countries and not only from one, there was therefore no limit to the extent to which this could go. The route was a Major World Air Route in terms of this definition and therefore no useful purpose could be served by further discussion as it had received adequate discussion in the working groups.
9. The Chairman then put the first amendment of the Soviet delegation to the vote with the following result : -
- | | | | |
|-------------|----|---|------------------------------|
| For | 3 | } | Motion therefore <u>lost</u> |
| Against | 19 | | |
| Abstentions | 2 | | |
10. The Chairman then put the second amendment of the Soviet delegation to the vote with following result :
- | | | | |
|-------------|----|---|------------------------------|
| For | 4 | } | Motion therefore <u>lost</u> |
| Against | 21 | | |
| Abstentions | 3 | | |
11. The Chairman then put the proposal of the United States to the vote :
- | | | | |
|-------------|----|---|---------------------------------|
| For | 24 | } | Motion therefore <u>carried</u> |
| Against | 4 | | |
| Abstentions | 1 | | |
12. The Chairman then stated that he with the approval of the Committee wished to motion the terms of reference of Committee 6 C I dealing with frequency tables, so as to enable them to complete the frequency requirement for Major World Air Route Areas and the duplication possibilities between Major World Air Route Areas. The Chairman stated that he would join the original working group if the committee agreed to this. There were no objections to this procedure.
13. The Chairman then proposed the formation of another working group comprising Mr. Shores, Mr. Falgarone, Mr. Selis and Mr. Givens, to define the boundaries of the Major World Air Route areas in suitable language and to supervise the drawing in of these boundaries as a Mercators projection of the World. A draughtsman to be put at their disposal. At the same time the group would check off the Major World Air Routes taken account of against the Flight information Tables.
14. The meeting adjourned at 11:15 hours.

Reporter :
P. J. GREVEN

Chairman :
G.A.HARVEY

5 July, 1948

Committee 6

Report
of the Committee on the Allotment of "R" frequencies
(Committee 6)
17th Meeting
5 July, 1948

1. The Chairman opened the meeting at 14:40.

Present :

Argentina	New Zealand
Australia	Norway
Brazil	Philippines
Bielorussian S.S.R.	Poland
Canada	Roumania
Chile	Sweden
China	Union of South Africa
Cuba	United Kingdom
Czechoslovakia	United States of America and
Denmark	Territories
France	U.S.S.R.
Iceland	Yugoslavia
Ireland	I.A.T.A.
Netherlands	I.C.A.O.

2. Document No. 98 was adopted with the following amendments:

- (a) China requested they be added to list of delegations contained in paragraph 10
- (b) I.A.T.A. suggested that "the airline operators "be changed to read "an airline operator " in para 9 second line.
- (c) Soviet Delegation requested change 5.1 to read "Committee and that of the U.S.S.R., France and I.C.A.O" in the first and second lines and also that the following statement be added at the end of paragraph 11,"

"The Soviet delegate, in objecting to the U.S.A. delegate, stated that the proposals submitted by the Soviet and the French delegations had not been discussed but had just been considered for information purposes. It cannot be affirmed that only the U.S.A. proposal, to which so much time had been devoted, presents the best possible solution for the communication problems in aviation.

"He stated that all proposals that have been submitted must be considered and discussed on equal basis and as a result of this the best possible solution must be found. The Soviet delegate supported the proposal made by the French delegate."

- 3. Document No. 95 was adopted without amendment.
- 4. Document No. 107 was adopted with following addition :
I.A.T.A. to be added to list of participants.
- 5. Document No. 127 was adopted with following amendments :



- (a) Chairman requested end of first sub-paragraph of paragraph 8 be amended to read "the regular or scheduled military flights".
- (b) Netherlands to be deleted from list of participants.
- (c) U.S.A. suggested the second sub-paragraph of paragraph 2 be clarified to read "paragraph 7 b".
- (d) Poland requested inclusion in the last paragraph of an explanation with respect to Poland's viewpoint, viz: "The delegate of Poland believed that provision should be made for anticipated measures in the international services of certain countries which due to effects of World War II have been unable so far to fully develop their service".
- (e) China is deleted from last paragraph of paragraph 8.

Document No. 128 was adopted without amendment.

7. Document No. 130 was adopted without amendment.

8. The Chairman pointed out that reference to shared bands contained in Aer-Doc.134 will be discussed at a later date with respect to the 21-23 Mc/s bands.

9. Mr. Tabio (Cuba), gave brief presentation of the results of Committee 6 E with respect to Meteorological broadcast requirements and stated the report would contain summary of known requirements as determined in the I.C.A.O. Air Navigation regions as well as requirements stated by various delegations in regions that had not made specific recommendations for this service.

10. (a) Document No. 142 containing the report of Working group 6 F on unallotted space between (R) and (OR) services was presented to the committee by Mr. Greven (I.C.A.O.) and the Chairman respectively.

(b) The U.S.A. moved the adoption of Appendix A of this report as a reasonable compromise. Seconded by Canada.

(c) Mr. Rowland (United Kingdom) suggested that the A1 channel 8961.5 Mc/s should have a note stating this should be assigned to high tolerance service only. This was accepted for insertion.

(d) Netherlands and France requested that a note be attached to Appendix A, indicating that the use of the two common channels for A3 or A1 or both A1 and A3 will be decided later. Also that a second note be added to indicate that the general decision already taken with regard to high capacity channels in so far as the use of A1 is concerned is also applicable to the A3 channel in the 17 Mc/s band.

(e) Adopted by full committee without exception.

11. The Chairman suggested the committee study the regional problems and recommended study of the following documents prior to 7 July 1948

(a) PC-Document No. 25, para. 24, 25, 26.

(b) Annex 1 to PC-Document No. 25

" 2 " " " " "

(c) Aer-Document No. 2, 34.

Reporter :

P. J. GREVEN.

Chairman :

E. G. BETTS.

7 July, 1948

Committee 6

Working Group E

Final Report of Working Group 6 E

1. This working group convened four times. Its terms of reference were given in Aer-Doc. No. 95-E, paragraph 7, re: Meteorological Broadcasts, for recommending to Committee 6:
 - a) The necessary megacycle order of frequencies,
 - b) The number of necessary frequencies in each megacycle order, and
 - c) The areas in which the use of these frequencies may be duplicated.
2. The following delegations and organizations were present most of the times:

Argentina	Pakistan
Brazil	Poland
Chile	Protectorate of Tunisia
China	Union of South Africa
Cuba	United Kingdom
Egypt	United States of America
France	I.A.T.A.
Ireland	I.C.A.O.
Italy	
Netherlands	
3. The Polish delegation presented Aer.Doc.No.110, re: "Observations on the Allocation of High Frequencies to the Aeronautical Meteorological Service," but it was considered that the information contained in this document was not in accordance with the Working Group 6-E terms of reference.
4. After thorough discussions Working Group 6-E agreed to study the matter under consideration in the following manner:
 - a) Study of the I.C.A.O. Regional Manuals for the different areas of the World to find the actual requirements.
 - b) Form small groups among the delegations present, with common area interests.
 - c) These groups were to study the following areas:

Africa - Middle East - India - Pakistan
European Mediterranean
North Atlantic
Caribbean
South America and South Atlantic
North Pacific
South Pacific
Southeast Asia



d) After the groups rendered the necessary information by areas, a small coordinating group composed of: United Kingdom, France, Egypt, I.A.T.A. and I.C.A.O. arranged the data on a World Map and found the following requirements:

5. EUMED For Area Broadcast: 2(3.5 - 6.6 - 11.4) Range 2000 kms.
Sub-Area Broadcast: 4(4.6 - 8.8) Range 1600 kms.

AFRICA For Area Broadcast: 2(3.5 - 6.6 - 11.4) Range 1600 kms.
Middle East Sub-Area Broadcast: 3(4.6 - 8.9) Range 1000 kms.

NORTH ATLANTIC For Area Broadcast: 1(3 - 4.7 - 6 - 9 - 13) Range 2400 kms.

CARIBBEAN For Area Broadcast: 1(3 - 6 - 11) Range 1000 kms.

SOUTH AMERICA
& For Area Broadcast: 1(6 - 9 - 11 - 13) Range 2400 kms.
SOUTH ATLANTIC 1(4 - 8 - 11) Range 1500 kms.
1(5 - 9 - 11) Range 1500 kms.

NORTH PACIFIC For Area Broadcast: 1(3 - 6 - 8 - 13) Range 2400 kms.

SOUTH PACIFIC For Route Broadcast: 1(4.6 - 6) Range 1600 kms.

SOUTHEAST ASIA: Area Broadcast : 1(5 - 8 - 11) Range 1600 kms.
Sub-Area Broadcast : 1(4 - 6) Range 1000 kms.
" " 1(5 - 8) Range 1000 kms.

6. The question of the areas in which the use of these frequencies might be duplicated: the Working Group 6-E decided that the necessary information was not available and to let this matter be decided by Committee 6.
7. For information of Committee 6 there is included in Annex 1 excerpts taken from the Final Report of the MET Committee from the ICAO EUMED Regional Air Navigation Meeting, held in Paris, May 1948 (I.C.A.O. DOC-EM/103 MET/EM/ 17, 13/5/48).
8. A map showing graphically the areas around the world where this service of Met. Broadcasting is in use, or expect to use it in the near future has already been brought under the notice of Committee 6 at its 14th meeting.

The Chairman, Committee 6 - E

Ernesto E. TABIO

June 21, 1948

(Annex 1 to Aer-Doc.No.154 - E)

WORKING GROUP 6-E

This document contains excerpts taken from the Final Report of the Meteorological Committee from the I.C.A.O. European Mediterranean Regional Air Navigation Meeting, held in Paris, May, 1948.- (I.C.A.O. DOC-EM/103, MET/EM/17, 13/5/48.-)

This data will be useful in the consideration of the problems affecting the assignment of frequencies for Meteorological Broadcasts in the HF bands.



1.3

Exchange of Aeronautical Meteorological Messages

1.3.1.

For aeronautical purposes a system of area and sub-area meteorological broadcasts has been organized for the European-Mediterranean Region. A general description of this system is given in the paragraphs below.

1.3.1.1.

Details as to stations, contents, times and frequencies are given in Tables III and IV. Charts III and IV show the networks of area and sub-area broadcast stations throughout the European-Mediterranean Region.

1.3.1.2.

Where possible, transmissions should be made on automatic equipment.

1.3.2.

Area Meteorological Broadcasts

1.3.2.1.

The European Mediterranean Region has been organized into nine meteorological broadcast areas. One station within each area has been, or will be, designated as the broadcast centre for that area. Each of the nine designated area centres will broadcast once every three hours in an established sequence on a common set of three high frequencies. Each area broadcast centre is allotted not more than twenty minutes in order that all nine broadcasts may be made in every three hour period.

1.3.2.1.1.

Details as to stations, contents and frequencies of these area broadcasts are given in Table III. Chart III shows the geographic territory assigned to each of the nine area broadcast centres.

1.3.2.2.

Each of the area meteorological broadcasts will consist of the contents given below, and will be transmitted in the following order :

- 1) Terminal forecasts.
- 2) Area or route forecasts.
- 3) Main terminal reports to the extent permitted by the remaining transmitting time.

1.3.2.5.

The power of each of these area meteorological broadcast centres should be sufficient to provide satisfactory reception over the whole of the European-Mediterranean Region and adjacent territory.

1.3.2.6

Each of the area meteorological broadcasts should be transmitted on three radio frequencies simultaneously (i.e. 3957, 6975 and 12818 kc/s).

1.3.2.7.

Each country will arrange for the collection of meteorological information within its national boundary and arrange for the delivery of this information to the area meteorological centres.

1.3.3.

Sub-Area Meteorological Broadcasts

1.3.3.1

The European-Mediterranean Region has been organized into eighty meteorological broadcast sub-areas. One station within each sub-area has been designated as the broadcast centre for that sub-area. Each of the sub-area centre broadcasts for three minutes at half-hourly intervals on one medium frequency, and also broadcasts for three minutes at hourly intervals on two high frequencies. The high frequency broadcasts made once each hour from each sub-area broadcast centre is always transmitted simultaneously with one of the two medium frequency broadcasts made each hour from the same sub-area centre (i.e. with those medium frequency broadcasts which contain terminal forecasts).

1.3.3.2

In order to permit the maximum use of the six medium frequencies and the eight high frequencies now allotted to sub-area meteorological broadcasts in the European-Mediterranean Region the eighty sub-area centres have been organized into eight networks, each consisting of a maximum of ten sub-area centres.

1.3.3.3

The schedule of broadcasts and the allotment of frequencies to all eighty sub-area meteorological broadcast centres has been arranged to provide maximum utilization of available frequencies and minimum possibility of interference, and at the same time be of optimum value to aeronautical interests.

(Annex 1 to Aer-Dec.No. 154-E)

1.3.3.4.

Each of the ten sub-area broadcast centres in any one of the eight networks uses the same medium frequency for three minutes each half-hour, and uses the same two high frequencies for three minutes each hour.

1.3.4.

Sub-Area Meteorological Broadcasts on Medium Frequencies

1.3.4.1.

Each of the sub-area meteorological broadcasts which are made on one medium frequency will be made in an established sequence for three minutes at half-hourly intervals.

1.3.4.2

The contents of these sub-area broadcasts on medium frequency only at alternate half-hours are given below, and should be transmitted in the following order :

- 1) one main terminal report
- 2) one alternate terminal report
- 3) a maximum of three auxiliary terminal reports
- 4) repeat of first main terminal report.

1.3.4.3

The contents of the Sub-Area Broadcasts on Mf and HF at the other alternate half-hours are given below, and will be transmitted in the following order :

- 1) one main terminal report
- 2) one alternate terminal report
- 3) one main terminal forecast
- 4) one alternate terminal forecast
- 5) repeat of first main terminal report, if time permits.

1.3.4.6

The power of each of these Sub-Area Meteorological Broadcast stations using medium frequencies should be sufficient to provide satisfactory reception up to distance of 600 kilometers (400 miles).

1.3.4.7

Each Sub-Area Meteorological Broadcast station will be assigned for three minutes of each half-hour the use of one of the six medium frequencies reserved for the Sub-Area Meteorological Broadcasts in the European Mediterranean Region (i.e. either 279, 281, 283, 285, 287 or 289 kc/s).

(Annex 1 to Aer-Doc.No. 154-E)

1.3.4.8

Details as to stations, contents, times and frequencies of these Sub-Area Broadcasts on medium frequencies are given in Table IV.

1.3.5

Sub-Area Meteorological Broadcasts on high frequencies

1.3.5.1

Each of the Sub-Area Meteorological Broadcasts which are made on two high frequencies simultaneously will be made in an established sequence for three minutes in each hour. The contents of these Sub-Area Broadcasts are given below, and will be transmitted in the following order :

- 1) one main terminal report
- 2) one alternate terminal report
- 3) one main terminal forecast
- 4) one alternate terminal forecast
- 5) repeat main terminal report, if time permits.

1.3.5.2

The power of each of these Sub-Area Meteorological Broadcast stations using two high frequencies simultaneously should be sufficient to provide satisfactory reception up to distances of 1600 kilometers (1000 miles).

1.3.5.3

Each Sub-Area Meteorological Broadcast station will be assigned for three minutes of each hour the exclusive use of two of the eight high frequencies reserved for the Sub-Area Meteorological Broadcasts in the European-Mediterranean Region.(i.e. 3953 and 8492, or 3961 and 8515, or 3969 and 8561, or 3977 and 8546).

1.3.5.4

Details as to stations, contents, times and frequencies for these Sub-Area Broadcasts on high frequencies are given in Table IV.

TABLE III

AREA BROADCASTS

FREQUENCIES : 3957, 6975, 12818 kc/s.

HOURS AND MINUTES PAST EACH SYNOPTIC HOUR	AREA No.	AREA	COUNTRIES	AREA OR ALTERNATE AREA CENTRE	CALL SIGN	CONTENTS OF BROADCASTS	
						TERMINAL FORECASTS/TERMINAL REPORTS	AREA FORECASTS ROUTE FORECASTS
00-20	1	Central Europe	Czechoslovakia Germany, Austria Poland	Praha	OKL	Frankfurt, Praha, Berlin (Tempelhof) Wien (Tulln), Warszawa, München, Berlin (Gatow), Bratislava, Hamburg, Gdansk	AREA 1
20-40	2	Scandinavia	Sweden, Norway, Denmark, Finland	Stockholm	SMA	Stockholm, København, Fornebu, Helsinki, Göteborg, Gardermoen, Sola, Aalborg	AREA 2
40-1.00	3	United Kingdom	England, Scotland Ireland, Netherlands, Belgium	London	MZL	London Airport, Shannon, Prestwick, Amsterdam, Bruxelles, Calshot, Hurn, Northolt, Renfrew	AREA 3
1.00-1.20	4	Western Europe	France, Switzerland	Paris	FNB	Orly, Marseilles, (Marignane), Bordeaux, Geneva, Zurich, Bourget, Lyon, Bâle	AREA 4
1.20-1.40	5	Western Mediterranean	Spain, Portugal Algeria, Morocco Tunisia	Algiers	FOG2	Lisboa (Portela), Tunis, Madrid Casablanca, Algiers, Marrakech, Oran, Barcelona, Gibraltar	AREA 5
1.40-2.00	6	Central Mediterranean	Italy, Malta, Lybia	Rome	IKO	Rome (Ciampino), Tripoli, Catania, Malta, Cagliari/Elmas, Brindisi, Benghazi, Napoli, Milano, Venezia	AREA 6
2.00-2.20	7	Near East	Egypt, Palestine, Syria, Libanon, Cyprus	Cairo	SUD	Farouk, Lydda, Mariut, El Adem, Beyrouth, Nicosia, Almaza	Route Rome-Farouk Route Benghazi-Farouk

HOURS AND MINUTES PAST EACH SYNOPTIC HOUR	AREA No.	AREA	COUNTRIES	AREA OR ALTERNATE AREA CENTRE	CALL SIGN	CONTENTS OF BROADCASTS	
						TERMINAL FORECASTS/TERMINAL REPORTS	AREA FORECASTS ROUTE FORECASTS
2.20-2.40	3	Aegean	Greece, Turkey	Athens or Ankara	SWA or ...	Athens, Istanbul, Ankara, Heraklion, Izmir	AREA 8
2.40-3.00	9	Southeastern Europe	Yugoslavia, Albania, Bulgaria, Hungary Rumania	Belgrade	...	Budapest, Zagreb, Sofia, Tirana, Beograd, Bucarest, Cluj	AREA 9

NOTE (1) Terminal Forecasts listed above will always be transmitted and they will be sent in the order shown.

(2) When transmission time does not permit the inclusion of all the terminal reports listed, as many as possible will be included. The order of priority for inclusion in the transmission is the order of the list specified in each area.

INFORMED TO COM-106 NO. 15/15

TABLE IV

FREQUENCIES	: A	00-03 30-33	: B	03-06 33-36	: C	06-09 36-39
Every half	:	AMSTERDAM MP	:	RENFREW MP	:	PRESTWICK MP
hour on	:	EINDHOVEN MP	:	EDINBURGH MP	:	BELFAST MP
287 kc/s	:	Twente M	:	Aberdeen M	:	Stornoway M
First half	: 1	Eldo M	:	Inverness M	:	Tiree M
hour also	:	Zuid Limburg	:	Sumburgh M	:	
on 3953 kc/s	:	M	:		:	
8492 kc/s	:		:		:	
Every half	:	LULEA MP	:	FORNEBU MP	:	STAVANGER MP
hour on	:	KIRUNA MP	:	GARDEMOEN MP	:	HERDIA MP
289 kc/s	:	Vannas M	:	Kjevik M	:	Haugesund M
Second half	: 2	Boden M	:	Trondheim M	:	Alesund M
hour also	:	Malmberget M	:		:	
on 3953 kc/s	:		:		:	
8492 kc/s	:		:		:	
Every half	:	TEMPELHOF MP	:	HAMBURG MP	:	KOLN MP
hour on	:	GATOW MP	:	BUCKENBURG MP	:	
279 kc/s	:	Wasserkuppe M	:	Bremen M	:	
First half	: 3		:	Wunsdorf M	:	
hour also	:		:	Schleswig M	:	
on 3961 kc/s	:		:		:	
8515 kc/s	:		:		:	
Every half	:		:	STRASBOURG MP	:	LE BOURGET MP
hour on	:		:	BALE MP	:	ORLY MP
285 kc/s	:		:	Nancy M	:	Corneille M
Second half	: 4	Reserved	:	Lille M	:	Coulommiers M
hour also	:		:	Tours M	:	Beauvais M
on 3961 kc/s	:		:		:	
8515 kc/s	:		:		:	
Every half	:	TIRANA MP	:	SOFIYA MP	:	BEOGRAD MP
hour on	:		:		:	
283 kc/s	:		:		:	
First half	: 5		:		:	
hour also	:		:		:	
on 3969 kc/s	:		:		:	
8561 kc/s	:		:		:	
Every half	:	ATHENAI MP	:	HERAKLION MP	:	NICOSE MP
hour on	:	SALONIKI MP	:	CALATO MP	:	LIMASSOL MP
287 kc/s	:	Araxos M	:		:	
Second half	: 6	Yanina M	:		:	
hour also	:	Lemnos M	:		:	
on 3969 kc/s	:		:		:	
8561 kc/s	:		:		:	
Every half	:	MADRID MP	:	BILBAO MP	:	BARCELONA MP
hour on	:	SALAMANCA MP	:	VITORIA MP	:	Zaragoza MP
289 kc/s	:	Valladolid M	:	Santander M	:	Calamocha M
First half	: 7	Albacete M	:	Logrono M	:	Reus M
hour also	:		:	Burgos M	:	Montseny M
on 3977 kc/s	:		:		:	
8546 kc/s	:		:		:	
Every half	:	FIRENZE MP	:	CAGLIARI MP	:	ROME (Ciampino)
hour on	:	PISA MP	:	ELMAS	:	MP
281 kc/s	:	Genova M	:	ALGHERO MP	:	NAPOLI MP
Second half	: 8	Livorno M	:	Olbia M	:	Roma Urbe M
hour also	:		:		:	Guidonia M
on 3977 kc/s	:		:		:	Centocelle M
8546 kc/s	:		:		:	

S U B A R E A

B R O A D C A S T S

: D 09-12 39-42		: E 12-15 42-45		: F 15-18 45-48		: G 18-21 48-51	
: MANCHESTER	MP	: RONALDSWAY	MP	: EASTLEIGH	MP	: LONDON	MP
: SPEKE	MP	: BLACKPOOL	MP	: CALSHOT	MP	: HURN	MP
: Birmingham	M	: Newcastle	M	: St Eval	M	: Bovingdon	M
: Leeds	M	: Carlisle	M	: Whitchurch	M	: Blackbushe	M
:	:	:	:	: Jersey	M	:	:
:	:	:	:	:	:	:	:
: GOTEBOURG	MP	: AALBORG	MP	: KOBENHAVN	MP	: STOCKHOLM	MP
: KARLSTAD	MP	: AAHRUS	MP	: MALMO	MP	: NORRKOPING	MP
: Satenas	M	: Blavand	M	: Jönköping	M	: Visby	M
: Stromstad	M	: Karup	M	: Kalmar	M	: Orebro	M
: Varberg	M	:	:	: Rönne	M	: Uppsala	M
:	:	:	:	:	:	:	:
: FRANKFURT	MP	: MUNCHEN	MP	: WIEN-TULLN	MP	: BRATISLAVA	MP
: WIESBADEN	MP	: ERDING	MP	: SCHWECHAT	MP	: KOSICE	MP
: Stuttgart	M	: Fürstenfeldbrück	M	: Horsching	M	: Zliac	M
:	:	:	M	: Klagenfurt	M	: Prescv	M
:	:	:	:	:	:	:	:
: RENNES	MP	: BORDEAUX	MP	: TOULOUSE	MP	: AJACCIO	MP
: NANTES	MP	: LIMOGES	MP	: PAU	MP	: BASTIA	MP
: Brest	M	: Cognac	M	: Perpignan	M	: Cap Corse	M
: Cherbourg	M	: Cazaux	M	: Lezignan	M	:	:
: Dinard	M	: Mont de Marsan	:	:	:	:	:
:	:	:	M	:	:	:	:
: ZAGREB	MP	: BUDAPEST	MP	: CLUJ	MP	: BUKARESTI	MP
:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:
:	:	:	:	:	:	:	:
: BEYROUTH	MP	: LYDDA	MP	: CAIRO	MP	: MERSA MATRUH	MP
: DAMASCUS	MP	: HAIFA	MP	: (Farouk)	:	: ALEXANDRIA	:
: Homs	M	: Aamman	M	: CAIRO	:	: (Mariut)	MP
:	:	: Ramalla	M	: (Almasa)	MP	: Port Said	M
:	:	:	:	: Luxor	M	:	:
:	:	:	:	:	:	:	:
: PALMA	MP	: MELILLA	MP	: CASABLANCA	MP	: GIBRALTAR	MP
: VALENCIA	MP	: MALAGA	MP	: MARRAKECH	MP	: TANGER	MP
: Formentara	M	: Larache	M	: Rabat-Sale	M	:	:
: Alicante	M	: Tetuan	M	: Port Lyautey	M	:	:
: Mahon	M	:	:	: Fez	M	:	:
:	:	:	:	:	:	:	:
: BRINDISI	MP	: CATANIA	MP	: TUNIS	MP	: ALGER	MP
: BARI	MP	: PALERMO	MP	: BONE	MP	: BLIDA	MP
: Foggia	M	: Calabria	M	: Gabes	M	: Miliana	M
: Lecce	M	: Marsala	M	: Sfax	M	:	:
:	:	:	:	:	:	:	:

(Annex to Aero-Doc. No. 154-E)

: H 21-24 51-54		: J 24-27 54-57		: K 27-30 57-60		: Remarks	
: NORTHOLT	MP	: SHANNON	MP	: BRUXELLES	MP		
: CROYDON	MP	: DUBLIN	MP	: COXYDE	MP		
: Manston	M	: Valentia	M	: Evere	M	M = METAR	
		: Middleton	M	: St Hubert	M	P = (Forecast)	
				: Courtrai	M		
						MF = Medium frequency	
: HELSINKI	MP	: WAASA	MP	: SUNDSVALL	MP		
: TURKU	MP	: KEMI	MP	: Ostersund	MP	HF = High frequency	
: Marieham	M	: Kuppio	M	: Söderhamn	M		
: Juväskylä	M	: Oulu	M	: Nordmaling	M		
: Pori	M					<u>Typeform</u>	
: PRAHA	MP	: WARSZAWA	MP	: GDANSK	MP	LONDON = Terminal transmitting	
: BRNO	MP	: POSZNAN	MP	: SWOECIN	MP	METAR every half hour; and forecast	
: Budejovice	M	: Kracov	M			every hour when	
: Ostrava	M	: Lodz	M			MF and HF are	
: Zlin	M	: Lwow	M			used simultaneously.	
: MARNAGNE	MP	: LYON	MP	: ZURICH	MP	Visby = Terminal transmitting	
: NICE	MP	: DIJON	MP	: GENEVE	MP	METAR every hour	
: Montpellier	M	: Grenoble	M	: Basel	M	on that half	
: Toulon	M	: Clermont-		: Berne	M	hour when only	
: Istres	M	: Ferrand	M			MF is used.	
		: Montélimar	M				
: ISTANBUL	MP	: ANKARA	MP			NOTE : All trans-	
: ISMIR	MP	: ADANA	MP			missions shall	
: Bursa	MP	: Konya	M	: Reserved		be made at the	
: Etimesut	M	: Antalya	M			time and in the	
						order shown in	
						the table. The	
						first report	
						shall be repeated	
: BENGASI	MP	: TRIPOLIS	MP	: MALTA	MP	at the end	
: EL ADEM	MP					of the transmission.	
						In the	
						event of one	
						transmitter being	
						used for more	
						than one Sub-	
: SEVILLA	MP	: LISBON (Portela)	MP	: LUGO	MP	Area Centre, each	
: FUENBOVEJUNA	MP		MP	: LEON	MP	individual block	
: San Pablo	M	: PORTO (Pedras		: Santiago	M	must be transmitted	
: Santo Elena	M	: Rubras)	MP			in exact	
: Monesterio	M	: Coimbra	M			adherence to the	
		: Portalegre	M			schedule shown	
		: Braganca	M			in the table.	
: ORAN	MP	: MILANO	MP	: VENEZIA	MP		
: ORLEANSVILLE	MP	: TORINA	MP	: BOLOGNA	MP		
: Oujda	M	: Turbigo	M	: Treviso	M		
		: Venegrono	M	: Udine	M		
		: Passo Cisa	M	: Monte Cimone	M		

4.

RESOLUTIONS AND ADDITIONAL RECOMMENDATIONS

4.1.

Broadcasting NOTAMS in Area Broadcasts

At the request of the COM Committee, the MET Committee examined the possibility of providing time for the transmission of NOTAMS on the area meteorological broadcast channel. The MET Committee recognised that a satisfactory method of disseminating NOTAMS could be guaranteed by their inclusion in the nine area meteorological broadcasts and gave fullest consideration to the possibility of assigning several minutes in each 20-minute broadcast.

Examination of the minimum meteorological requirements has shown however, that there will be no time available when the full area plan comes into operation. In fact it has been determined that the provision of adequate meteorological service to aviation will necessitate a duplication of the present plan which will require the assignment of 3 additional frequencies. A portion of the additional broadcast time made available under this arrangement could be permanently allocated to the NOTAM service.

The Meteorological Committee recognised however, that some time must elapse before the present plan is put in operation by all nine area centres and it considers that, in view of the importance of the NOTAM service, one of the 20-minute periods not availed of at the present time should be temporarily allocated to the NOTAM service.

Recommendation No 9

It is recommended that in view of the impossibility when the present plan for area meteorological broadcasts is fully implemented, of providing, by this means, the volume of meteorological information required for meteorological service to aircraft, in the form best adapted to the operators requirements, and in view of the lack which may then exist of any mean of broadcasting NOTAMS, the Council take appropriate action to secure as soon as possible the assignment of three additional frequencies suitable for region-wide dissemination of meteorological information and NOTAMS.

It is further recommended that when those frequencies have been assigned action be taken to establish a new plan for three hourly area broadcasts from the nine European-Mediterranean areas based upon the use of the existing 3 frequencies and the assignment of two periods of 20 minutes to each area centre, the first period being assigned solely to the transmission of meteorological information and the second to consist of

a 15-minute period for the transmission of meteorological information followed by a 5-minute period for the transmission of NOTAMS.

In the meantime, as a temporary measure, it is recommended that the periods allocated to one of the centers not at present broadcasting under the existing area broadcasting plan should be utilised for the broadcasting of NOTAMS until such time as the periods are actually required for the issue of meteorological information.

R E P O R T

of the Committee on the Allotment of OR Frequencies

(Committee 7)

22nd Meeting
5 July, 1948

1. The Chairman, Mr. A. Fry (U.K.) opened the meeting at 9.30 hours.
2. Delegates from the following countries were present:

Argentina	New Zealand
Australia	Pakistan
Canada	Poland
Chile	Portugal
France	Ukranian S.S.R.
Honduras (Republic of)	United Kingdom
Iceland	United States of America
Netherlands	U.S.S.R.

3. The Chairman suggested that Document 142 (Final Report of Joint Working Group on Utilization of Unallotted Space) be considered as the first item on the agenda.

The first aspects of consideration were the common channels (shown on page 2 of Aer-Doc.142), i.e. 3023.5 and 5680 Kc/s.

The delegate of Canada, seconded by the delegate of Chile tabled a proposal concerning these common channels. Amendments were suggested by the delegate of the U.S.S.R., France and the U.S.A. These amendments were accepted. The proposal as amended, shown hereunder, was unanimously approved.

"Common AeM (OR) and AeM (R) Channels

- 1) The frequencies 3023.5 and 5680 Kc/s are designated common channels for the use of the Aeronautical Mobile Service, and are reserved for this purpose.
- 2) These frequencies are authorized for assignment as follows:
 - (a) All aircraft stations, without restriction.
 - (b) All aeronautical stations, with a maximum radiated power of 20 watts and/or on the condition that harmful interference is not caused to other aeronautical stations.
- 3) These frequencies are authorized for use as follows:
 - (a) By aircraft which are not equipped to transmit to the desired aeronautical station on the other reception frequencies of the aeronautical station concerned.

(b) By aeronautical stations subject to the restriction contained in para 2 (b), in reply to calls received from aircraft on these frequencies, when:

(i) The aircraft has indicated that it cannot receive communications transmitted from the aeronautical station on the normal working frequencies of the latter, or

(ii) An administration desires to use simplex communication on these frequencies.

- 4) While all administrations are encouraged to provide reception facilities on these frequencies at their aeronautical stations, nothing in this regulation is to be construed as making this mandatory.
- 5) The specific uses to be applied to these common channels may be decided at regional aeronautical conferences of the regions concerned.
- 6) Consideration should be given to the possibility of the use of these common channels for "Joint Scene of Action" communication such as for Search and Rescue Purposes.

4. The proposed allocation of two A-1 channels at 6685 and 6687.5 Kc/s was approved on the understanding that these channels would be assigned with sufficient geographical separation to prevent interference to each other.
5. The proposed allocation of one A3 channel at 8967 Kc/s was approved.
6. The proposed allocation of one A1 channel at 11273 Kc/s was approved.
7. The proposed allocation of two A1 channels at 15092.5 and 15096.5 Kc/s was approved on the understanding that these channels would be assigned with sufficient geographical separation to prevent interference to each other.
8. The proposed allocation of one A1 channel at 17975 Kc/s was approved.
9. Consideration of page 2 of Appendix B to Aer-Doc. 142 was deferred pending further study of the problem.
10. The Chairman, after congratulating the Committee 7 members of the Joint Working Group, directed attention to Working Group 7-C.
11. The convener of Working Group 7-C (Mr. Furze, Australia) gave a report of the findings and recommendations of his group. This report is attached as Appendix "A".
12. After discussion, recommendation 1 of the report of 7-C was unanimously approved.
13. After the insertion of new para. 4 to this recommendation (as hereunder)
 - 4) In regions where longitudinal peaks of requirements occur, the administrations concerned may modify these recommendations to enable the satisfaction of requirements in these regions.

14. Recommendation 2 was accepted unanimously with the exception that the delegates of Poland, Pakistan and Egypt reserved their position.
15. Recommendations 3 and 4 were adopted unanimously without reservation.
16. Aer-document 140 was next brought before the committee but could not be considered as it was available only in English.
17. It was decided all final tables and calculations of Working Group 7-C will be published as a separate document.
18. The Chairman's final comment was that it is essential to have full cooperation and a disregard of our limited formal working hours in order to bring our task to a successful conclusion.

The Reporter:

B.R. Rafuse

The Chairman:

A. Fry

A P P E N D I X

Terms of reference

"To carry out further investigation of the problem of the assignments of frequencies in the bands above 6 Mc/s, and in particular recommendation No. 2 of Working Group 7-B1 which is the possibility of assigning a channel to an administration to satisfy more than one requirement on the assumption that this would enable the administration to control a large proportion of the interference caused on this channel."

Introduction

1. The Working Group agreed that certain general recommendations could be made which could be applied equally to the 9, 11, 13 and 15 Mc/s bands, but that specific recommendations were necessary for each individual band. Many different methods of approach were considered and as a result the following conclusions and recommendations are made for the consideration of the Committee.

Conclusions

1. A careful study of the requirements indicates many duplications of the same frequency by one administration, the working group therefore approached delegates from countries with large requirements, with a view to obtaining a more exact indication of the number of separate requirements.

One result was a considerable reduction in the number of separate requirements, while another resulting from the first, was a decrease in the repetition possibilities of a given frequency band, since some countries requirements extended to overseas territories.

2. Where countries stated requirements exceed the total number of available channels, it is obvious that one channel must satisfy more than one requirement, which means a reduction in the time of use of this frequency available to a given station.
3. In the tabulation appended to the minutes of the 19th meeting of Committee 7, the average power supplied to the antenna (1kW) was used as the average power radiated. In subsequent calculations, the more correct figure of 500 watts has been employed.
4. That certain countries, by the nature of their geographical location, should not need frequencies in the higher megacycle bands.
5. The possibility of satisfying all requirements employing the A3 channelling recommended by Committee 4 is relatively low, as is indicated in the first line of the table of results. Since in general existing requirements are higher for A1 than A3, consideration was given to employing A1 channelling, and the results of

the discussion in Committee 4 were examined and the following table indicates the bandwidths considered reasonable for A1:

9 Mc/s	4 or 5 kc/s
11 Mc/s	5 kc/s
13 Mc/s	5 kc/s
15 Mc/s	5 or 6 kc/s

These are approximatively half of the width now applied to A3 channels.

6. That there is probability that any one station would only operate for a certain percentage of the time, therefore an administration could satisfy more than one requirement with one frequency, provided that it controlled all the interference on that frequency below a given protection ratio.

Therefore if the percentage of time of operation on all requirements is reduced to a certain figure, all requirements can be satisfied.

The percentage of time available to an individual station will vary, depending on the number of stations, under the control of its administration, which surround it.

7. It was observed that frequencies in the 13, 15 and 17 Mc/s bands are on the average only useable during portion of the daylight period, therefore since it is only necessary to provide protection during reduced hours, condition at the subsolar point may be employed for calculating interference ranges.

Results:

The results obtained by applying these conclusions to the 9 Mc/s band are listed herewith, while those for the 11, 13 and 15 Mc/s bands will be produced in the next few days.

The problem of the 18 Mc/s band will depend to a large extent on the results of the application of para. 1 to this band, nevertheless further investigation is proceeding.

The figures in the last column of the table of results, indicate the average percentage of time that all stations could operate if all requirements were satisfied or the percentage of requirements that could be satisfied for full time operation.

RESULTS 9 Mc/s BAND

			Repetitions
Working Group A revised statement of requirements =	275		7
Application of Para 1 reduced this figure to =	149		5.5

Average power radiated vide para 3 0.5 kW

Based on 20 db protection ratio.

Requirements : Channels Available : Possible : 100% satisfaction of requirements				Average % of time of operation for						
(vide para 5)				repetitions						
				Total						
A1	:	A3 : A1	:	A3	:	A1	:	A3	:	A1 - A3
147	:		:	9	:	8	:		:	48 %
63	:	84 : 6	:	6	:	8	:	76%	:	57% : 61%
(5.5X1.4)										

Recommendations

It is recommended:

1. That in calculating interference ranges for the 13, 15 and 17 Mc/s bands, conditions at the subsolar point be employed.
2. That Administrations accept one A3 channel to satisfy two A1 requirements but in no case should the two halves of a channel be assigned to different Administrations.
3. That Administrations should accept one channel or half channel to satisfy more than one requirement, on the condition that the Administration controls all the interference on that channel below a given protection ratio.
4. In regions where longitudinal peaks of regions occur the Administration concerned may modify these recommendations to enable the satisfaction of requirements in these regions.

Note: It appears to the Working Group that one or more of the above recommendations would assist in the assignment of frequencies in the 10 Mc/s band.

8 July, 1948

Committee 4

Report
of the Technical and Operational Committee
(Committee 4)
26th Meeting
7 July, 1948

1. The following delegations and organizations were represented:

Argentina	New Zealand
Belorussian S.S.R	Poland
Brazil	Rumania
Chile	United Kingdom and Territories
Czechoslovakia	U.S.S.R.
France	Union of South Africa
French Protectorates of Morocco and Tunisia	United States of America
Ireland	Yugoslavia
Mexico	I.C.A.O.
Netherlands	I.A.T.A.
Netherlands East Indies	

2. The minutes of the 20th meeting (Document No. 108) were adopted.
3. The minutes of the 22nd meeting (Document No. 115) were adopted subject to the following amendments:

Page 1, last paragraph. Amend "Articles 727, 728 and 729" to read
"Paragraphs 727, 728 and 729".

Page 2, paragraph 4 last sentence. Amend to read:

"The representative of I.A.T.A. stated that in light of previous statements made in Committee No. 4 he did not believe that there would be sufficient spare channel time to undertake the handling of public correspondence in the aeronautical mobile route bands."

Page 3, paragraph 3. Amend to read:

"The representative of I.A.T.A. referred to the very low traffic loading figures quoted by the delegate of Curacao and Surinam, and explained to the committee that these figures were not a true indication of the loading that could be expected on these channels if the Aviation Companies fully exploited this facility. He recommended that more realistic figures should be used as basis on which to consider the provision of channels for the handling of Public Correspondence".

Page 6 (Annex A), paragraphe 5, line 6. The words beginning "and therefore recommends" to form a new paragraph.

Page 8 (Annex B), last paragraph. Transfer words beginning "and that for these specific cases" to the end of the preceeding paragraph, line 3, amend "watch as aeronautical" to read "watch on aeronautical."

Amend "Article 40 of the Atlantic City Regulations" to read
"Article 40 of the Atlantic City Convention" wherever such entries appear.

4. The minutes of the 23rd meeting (Document No.119) was adopted subject to the following amendments:
Page 1, paragraph 2 (English text), amend "Australia (Federation)" to read "Australia".
Page 3, paragraph 6, amend "Mr. Gauthier" to read "Mr. Gautier".
Page 5, paragraph 8, 3rd line of Yugoslav declaration. Delete "certain".
5. The minutes of the 24th meeting (Document No. 122) were adopted with the following amendments:
Page 2, paragraph 5 (English text), line 6. Amend "Mr. Whitey" to read "Mr. White".
6. The minutes of the 25th meeting (Document No.133) were adopted without amendment.
7. Following resumé of the progress of Sub-Committee 4 C, given by Mr. White of the U.S., it was agreed that the next meeting of Committee 4, which would consider the work of the Sub-Committee, should be provisionally fixed for 8.30 a.m. Tuesday, 13th July.
8. Mr. Searle (New Zealand) referring to the revised document proposed by Sub-Committee 4 C, stressed the important need for delegates to give it careful and detailed study before discussion in full committee. He pointed out that the wording in particular differs considerably from that in PC Aer.Doc. No. 5 which, together with the new form and method of presentation would take some time to digest.
9. Continuing, Mr. Searle stated that he would be absent from the conference for some little while and would therefore be unable to take further part in any of its working groups. He nominated Squadron-Leader Partelow (New Zealand) as his temporary successor in the work of Committees 4 and 6.
10. Following a proposal from Mr. Falgarone (France), to the effect that the propagation tables drawn up by Sub-Committee 6 C from the curves proposed by Sub-Committee 4 C, should be included in the final report of the Conference, it was agreed that the chairmen of Committees 4, 6 and 7 should discuss the matter in company with Mr. Falgarone and Mr. White.

11. The Chairman announced that, consequent on the departure of Mr. Tabio (Cuba), Mr. Quijano-Caballero (Colombia) would be participating in the work of Sub-Committee 4 D.
12. The meeting closed at 10.30 a.m.

Reporter:
H.A. ROWLAND

Chairman:
O.J. SELIS

8 July, 1948

Committee 6

Report
of the Committee on the Allotment of R frequencies
(Committee 6)
18th Meeting
7 July, 1948

Chairman: Mr. E. G. Betts.

The meeting opened at 10.45 a.m. and the following countries and organizations were represented:

Argentina	Italy
Australia	Mexico
Bielorussian S.S.R.	Netherlands
Brazil	Netherlands East Indies
Canada	New Zealand
Chile	Pakistan
China	Poland
Czechoslovakia	Roumania
Denmark	United Kingdom
Egypt	United States of America and Territories
France	
French Protectorates of	U.S.S.R.
Morocco and Tunisia	Yugoslavia
Iceland	I.C.A.O.
Ireland	I.A.T.A.

The Chairman intimated that in view of the departure of Mr. Tabio, Vice-Chairman, and the absence of Mr. Veres, second Vice-Chairman, it would be necessary to appoint a new vice-chairman in order that the work might proceed quickly.

- 1.1 The delegate of Union of South Africa proposed Mr. Selis, and this appointment was unanimously agreed by the Committee.
2. The Chairman stated that it would be necessary to establish an editorial group to coordinate resolutions formulated by the Committee in a similar manner to the editorial group of Committee 4.
- 2.1 The delegate of U.S.S.R. intimated that a Russian-speaking representative would take part in the work of this Committee. It was agreed that the group should be designated Committee 6 D, under the chairmanship of Col. Grevon (I.C.A.O.), with the following members:

Mr. H.A. Rowland (United Kingdom)
Mr. I. Jouk (Bielorussian S.S.R.)
Mr. Chef (France)
Mr. O.E. Vidal (Argentina)
Mr. A. Schwerter (Chile)

(Aer-Document No. 157-E)

3. In answer to the question regarding Russian participation in the editorial groups, Mr. Jarov (U.S.S.R.), stated that until the situation was finally clarified, Mr. Jouk or Mr. Baikouzov would participate in all the editorial groups.
4. The Chairman intimated there were three major items still outstanding, namely
 - 4.1 the necessity to establish at an early date precise frequency requirements for meteorological broadcasts,
 - 4.2 the use of the common channels established in Doc. 142,
 - 4.3 the allotment of frequencies for regional use.
5. The Chairman of Sub-Committee 6 C was asked for a report as to the size of the working groups involved in the work of this Committee.
 - 5.1 Major Harvey reported that two working groups were at work, one on the allocation of frequencies to Major World Air Route Areas, which consisted of Mr. Coffey, Mr. Weaver and Major Harvey. The second working group, who were defining the boundaries of Major World Air Route Areas and assisting with the preparation of the map, consisted of Mr. Shores and Mr. Greven. He intimated that by the evening it would be possible to give an approximate idea of the number of frequencies required for Major World Air Route Areas; but that a more precise answer would not be available until tomorrow evening, or later, in view of the fact that it was necessary to establish a method to determine frequency duplication.
 - 5.2 At this stage, the delegate of China referred to the participation of a Chinese speaking delegate in the Editorial Group and pointed out that he was not at liberty to waive rights of the Chinese Government with respect to Article 15 of the Atlantic City Convention. It would not be necessary however for a Chinese speaking delegate to participate in the work of the Editorial Groups at this stage, but the Chinese Government reserved the right to demand a Chinese edition of this document.
6. The delegate of Belorussia considered that only after a thorough examination of the regional requirements would it be possible to consider the ratio of frequencies that should be allocated to Major World Air Route Areas and to regional and national requirements. He therefore proposed the immediate formation of a working group to determine the regional or national requirements, and pointed out that if we delayed the formation of this group until we had completed assessing the requirements for Major World Air Route Areas we would be falling into the trap of preferential treatment for Major World Air Route Areas.
 - 6.1 The delegate of France (Mr. Falgarone) agreed with the Soviet view to form a working group, and pointed out that if we approached the problem of formulating the regional requirements in the same manner as we had done for the Major World Air Route Areas the time factor would be far in excess of the time available and consequently it would be necessary to find a quick

method to determine an equitable distribution of frequencies to all regions. He suggested that it may not be possible to satisfy all the needs between the point of approach and landing and that this could be handled satisfactorily on V.H.F.

- 6.2 The Chairman suggested that at this stage it would be advisable to exchange ideas on the subject in full committee.
7. The delegate of the Netherlands (Mr. Selis) agreed with Mr. Falgarone (France) that the regional problem was very important and that it would not be possible to build from the beginning in the same way as we had done for Major World Air Route Areas. He recommended that we should wait until we knew the requirements of the Major World Air Route Areas and then proceed with the regional work because if the balance of frequencies left after the requirements of Major World Air Route Areas had been met was sufficiently high with respect to the regional needs, the regional problem would be very simple.
8. Mr. Betts, speaking as the delegate of Australia, stated that, in the case of Major World Air Route Areas we had a considerable amount of information available, but in the case of the regional problem we only had the route miles available which would not be sufficient to establish a ratio for frequency allocation to the different areas. Therefore, it would be advisable, before we commenced to consider the regional problem, to know how many frequencies would be available for regional allocation. He also pointed out that the greatest problem in respect to regional frequency allocation would not be in areas such as Australia, but in large densely populated land masses, such as the United States of America and Europe. Before we could start the work it would be necessary to know how we intended to use the common channels and what frequencies would have to be allocated to meteorological broadcasts.
9. The delegate of Poland stated that two serious problems faced the Committee; one, shortage of time; 2. limited number of channels at our disposal. He pointed out that a greater number of states were interested in the regional problem than those interested in the problem of Major World Air Route Areas, and, therefore, the solution of the Regional Problem could not be delayed, and should be given preference to the Major World Air Route Area requirements.
10. The delegate of Mexico stated that he was in a slightly embarrassing position because of the non-arrival of his credentials but he hoped that this matter would be cleared in the near future. However, he would like to make certain observations and recommended that no preference should be given to the allocation of frequencies to Major World Air Route Areas. He considered that work should have started on both problems together; this would have resulted in a more equitable allocation of frequencies between Major World Air Route Areas and Regions, as the time left to consider the regional problem was exceedingly short compared with the amount of work which was to be done. He did not consider, however, that the work we had done on Major World Air Route Areas was time lost because this experience and the information would be very valuable when considering the regional problem. He agreed with the French proposal to form a group

immediately to study the regional requirements so that we may insure an equitable distribution of frequencies to these two services, otherwise it may be necessary, at a later stage, for Mexico to say that the problem had been studied in a one-sided manner and preference given to Major World Air Route Areas.

11. The delegate of Yugoslavia agreed with the delegate of Mexico that a working group should be set up immediately and when a final plan was established it must satisfy all the regional requirements. He also asked how the regional requirements could be satisfied if we did not know what the regional and national requirements were, and how it would be possible to establish an equitable balance between Major World Air Route Areas and regional or national requirements.
- 11.1 The decisions of the Atlantic City Convention stated that regional requirements of all countries must be set forth in Forms 1 and 2 and that all countries had filled in the Forms 2, which had been handed to this Conference, and he considered that these should be used at this stage to determine the regional and national requirements. On this basis he supported the proposals of Belorussia and Mexico to establish a working group to study the regional and national requirements.
12. The delegate of U.S.S.R. (Mr. Jarov) stated that nothing had been said about a complete and satisfactory solution to the problem of allocation of frequencies to regions and countries. At an earlier meeting of the Plenary Assembly a resolution had been passed which did not put any limits on the use of frequencies for regional or Major World Air Route Areas and that was correct because of the necessity for absolute safety for both of these services. He agreed with the delegate of Mexico and recommended the immediate establishment of a working group to proceed with the work, as stated.
13. The delegate of Australia affirmed that his statement was in complete accord with the resolution of the Plenary Session and that any misunderstanding may have been caused by a translation error. He went on to suggest that a working group should be set up to commence work at 8.30, Friday the 8th July.
14. The delegate of France (Mr. Falgarone) proposed the delegate of Mexico for Chairman of this working group, but due to pressure of work in other committees, the delegate of Mexico was unable to accept.
- 14.1 The delegate of the United States (Mr. Lebel) proposed the delegate of Brazil (Mr. H. Costa), as Chairman of this Working Group. This was unanimously approved by the Committee.
15. This Sub-Committee was nominated Committee 6 G, with the following terms of reference :
 - 15.1 to study the problem of the regions,
 - 15.2 to formulate a method of approach to the allocation of frequencies necessary to meet regional requirements,
 - 15.3 to carry out the agreed method of approach in a manner similar to that used by Committee 6 for the Major World Air Route Areas.

16. Considerable discussion took place in connection with the terms of reference of this working group. It was finally agreed that the Chairman of the working group should make a verbal report to Committee 6 G, Friday afternoon at 14.30 hours, in connection with the progress made in determining the method of approach to the problem.

The following delegations expressed their desire to participate in the work of this working group.

Argentina	Netherlands
Bielorussian S.S.R.	Netherlands East Indies
Chile	Pakistan
China	Poland
Czechoslovakia	Roumania
Denmark	United Kingdom
Egypt	United States of America
France	U.S.S.R.
Ireland	Yugoslavia
Italy	I.C.A.O.
	I.A.T.A.

Some discussion took place in connection with the number of delegates participating in the work of this working group as it was considered that a large group would not be able to solve the problems speedily. It was agreed that in the initial stages it would be satisfactory to have a group of this size, but that after the verbal report to Committee 6, on Friday, it would be necessary to reduce the size of this group.

The delegate of Brazil, the Chairman of Committee 6 G, stated that the flight tables only contained route mileage and suggested that the delegates submit further information on loading within their areas.

The Chairman (Mr. Betts) intimated that this should be taken up in Committee 6 G.

It was agreed that the question of the use of common channels should be considered at 14.30 hours and that the work of the working groups would be postponed until 15.30 to allow this matter to be considered.

The meeting rose at 12.30 hours.

Reporter :

L. M. LAYZELL

Chairman :

E. G. BETTS

R E P O R T

of the Committee on the Allotment of R Frequencies

(Committee 6)
19th Meeting
7th July, 1948

1. The following delegations and organizations were represented:

Argentina	Mexico
Australia	Netherlands
Bielorussian S.S.R.	Netherlands East Indies
Brazil	New Zealand
Chile	Pakistan
China	Poland
Czechoslovakia	Roumania
Denmark	United Kingdom and Colonies
Egypt	U.S.A. and Territories
France	U.S.S.R.
French Protectorates of Morocco and Tunisia	Yugoslavia
Ireland	I.C.A.O.
Italy	I.A.T.A.

2. The Chairman, introducing Document No. 142, dealing with the common channels 3023.5 and 5680 kc/s, pointed out that Committee 7 had already passed a resolution regarding the use to which they should be put. He recommended that Committee 6 should similarly decide their uses in order that the views of the two Committees could be co-ordinated in a joint Working Group.

3. Mr. Selis, of the Netherlands, put forward a proposal as follows:

"It is recommended that the common frequencies 3023.5 and 5680 kc/s be authorised world-wide for the following uses only:

(a) Aboard aircraft for:

- (i) Approach and aerodrome control,
- (ii) Communication with land stations, when other frequencies are either unavailable or unknown.

(b) At land stations for approach and aerodrome control under the conditions:

- (i) For approach control with power limited to a value that will produce 20 microvolts per metre at 160 km.
- (ii) For aerodrome control with the power limited to a value that will produce 20 microvolts per metre at 80 km.

(iii) In assigning the frequencies, priority shall be given to the service of international aviation.

(c) For use aboard aircraft and mobile surface vehicles and ships engaged in co-ordinated search and rescue operations at the scene of a disaster.

It is further recommended that these frequencies be available for A1 and A3 emissions in accordance with regional arrangements, and that they are not subject to sub-division."

4. Considerable discussion took place on the proposal put forward by Mr. Selis, during which the following amendments were proposed and accepted:

(b) (ii) Amend to read "40 km"

(c) Amend to read:

"For use for intercommunications between aircraft, mobile surface vehicles and ships engaged in co-ordinated search and rescue operations at the scene of a disaster".

5. It was finally agreed that Messrs. Selis, Jouk, Falgarone and Coffey should form a Working Group to redraft the resolution in accordance with the views expressed for reconsideration by Committee 6 and bring it forward at the next meeting.

The Reporter:
H.A. Rowland

The Chairman:
E.G. Betts

CORRIGENDUM SHEET

The following changes are to be made in the English text of Doc. 159.

- Page 1 Paragraph B - 1 a(1) (b)
 aircraft speeds will require increasing
- Page 3 First column - change 2869 to 2868;
 change 3128 to 3123
- Page 4 2nd column - add 8922 and 8930.5 between 8913.5 and 8936
 3rd column - change 10061 to 10066;
 add 0.04 % to bottom of column
- Page 5 2nd column - change heading from 15016-15086 to 15010-15100
 3rd column - change figure at bottom of column from
 0.094 % to 0.0194 %
- Page 6 1st paragraph "c" 2nd line change "shall" to "should"
 Paragraph 2 a. 3rd line change "were" to "have been"
 Paragraph b (1) 9th line change 1st "was" to "should be"
 delete 2nd "was"

 Last paragraph (2) next to last line change first "was" to "should
 be" delete 2nd "was".
- Page 7 Paragraph 3 - 1st line delete "temporary"
 4th line change "were" to "should be"



R E P O R T
of the Working Group 4D

There is attached a statement of the principles adopted by Committee 4 in a form believed appropriate for inclusion in the Final Report of the Conference.

In preparing this statement, Committee 4 has considered decisions taken in all of its meetings, most of which have been approved by the Plenary Assembly, and, for the convenience of the Conference, has embodied them in this single document.

The material included in this document may be found in its original text in the following documents:

<u>Document</u>	<u>Subject</u>	<u>Approved by Plenary Meeting No.</u>
35	Channel Separation	4 (Doc. 109)
112 - 119	Assignable Channels	5 (Doc. 161)
142	Unallotted Space	
103	Adjacent Channels	5 (Doc. 161)
76 & 97	Standards for Curves	4 (Doc. 109)
43	Channel Capacity	3 (Doc. 80)
91	Duplication Factor	5 (Doc. 161)
115	Public Correspondence	

CHAPTER I

B. Principles Admitted for the Establishment of the Plan for the Allotment of Aeronautical Mobile Frequencies

1. Determination of Channels

a. Channel Separation

(1) Considering:

- (a) that the aviation service is growing rapidly and that the number of kilocycles allocated to the aeronautical mobile service is extremely limited; and,
- (b) that the present trend toward higher aircraft speeds requires increasing speed in the handling of air ground messages; and,



SUBSTITUTE SHEET FOR PAGE 2 - Aer-Document No. 159 - E

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(Aer-Doc.159-E)

- (c) that provision for the use of equipment with low stability in the aviation service will require wide communication channels; and,
- (d) that the period which will elapse until the implementation of the plan will permit the modification or, if necessary, the retirement of equipment with low stability,

frequency separations adequate to permit high capacity means of communication as indicated in the following table were adopted:

<u>Bands</u>	<u>Separation</u>
2850 - 3155 kc/s	7.0 kc/s
3400 - 4750 kc/s	7.0 kc/s
5480 - 6765 kc/s	7.5 kc/s
8815 - 9040 kc/s	8.5 kc/s
10005 -10100 kc/s	9.0 kc/s
11175 -11400 kc/s	9.5 kc/s
13200 -18030 kc/s	10.0 kc/s
21850 -23350 kc/s	12.0 kc/s

- (2) The use of channels as derived from the above table, for the various classes of emissions (A_1 , A_2 , A_3 , etc...) will be subject to regional or individual agreements between the administrations concerned in order to avoid the interference which may result from the use of the same channel for several classes of emission, no priority being given in principle to any particular class of emission.
- (3) It is recognized that as a practical matter it might be possible for two or more A-1 channels to be derived from each of the channels provided under this frequency separation plan and that there is a present requirement for manual telegraph communication in many parts of the world.

The sub-division of channels and grouping of adjacent channels derived from the above table to permit the satisfaction of particular requirements will be subject to regional or individual agreements between the administrations concerned in order to avoid the interference which may result from the use of one or several channels for the different classes of emission.

- (4) Such arrangements should be made under the provisions of Article 40 of the International Telecommunications Convention and Chapter III, Article 4 of the Radio Regulation, Atlantic City, 1947.



- (c) that provision for the use of equipment with low stability in the aviation service will require wide communication channels; and,
- (d) that the period which will elapse until the implementation of the plan will permit the modification or, if necessary, the retirement of equipment with low stability,

frequency separations adequate to permit high capacity means of communication as indicated in the following table were adopted:

<u>Bands</u>	<u>Separation</u>
2850 - 3155 kc/s	7.0 kc/s
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11175 -11400 kc/s	9.5 kc/s
13200 -18030 kc/s	10.0 kc/s
21850 -23350 kc/s	12.0 kc/s

It is recognized that as a practical matter it might be possible for two or more A-1 channels to be derived from each of the channels provided under this frequency separation plan and that there is a present requirement for manual telegraph communication in many parts of the world. However, the provision for channels on a permanent basis with a narrow separation would defeat the purpose of providing for the use of high speed means of communication on all channels without reallocation.

2. The sub-division of channels or grouping of adjacent channels shall be authorized:
 - (a) when an administration controls all the operations, both aircraft and land, in the area or over the route served by the channel or channels to be sub-divided or grouped; or,
 - (b) by arrangement between all administrations having an interest in any phase of the aeronautical operation (including the operation of aircraft or land station) in the area or route served by the channel or channels to be sub-divided or grouped.

Such channel sub-divisions or groupings shall be made on a temporary basis and in the understanding that no interference is caused thereby to other aeronautical services rightfully operating on other routes or in other areas subject to frequent review in order to determine whether such sub-division or grouping is still necessary.

b. Assignable Channels

(At the top and bottom of each column is shown, in %, the maximum deviation of the carrier frequency in the direction of the band edge which may be permitted, assuming double side band modulation with a maximum modulation frequency of 3000 cycles)

Band 2850-3155 0.035 %	3400-3500 0.044 %	4650-4750 0.032 %	5480-5730 0.018 %
2854	3404.5	4654.5	5484
2861			5491.5
2869	3411.5	4661.5	5499
2875			5506.5
2882	3418.5	4668.5	5514
2889			5521.5
2896	3425.5	4675.5	5529
2903			5536.5
2910	3432.5	4682.5	5544
2917			5551.5
2924	3439.5	4689.5	5559
2931			5566.5
2938	3446.5	4696.5	5574
2945			5581.5
2952	3453.5	4703.5	5589
2959			5596.5
2966	3460.5	4710.5	5604
2973			5611.5
2980	3467.5	4717.5	5619
2987			5626.5
2994	3474.5	4724.5	5634
3001			5641.5
3008	3481.5	4731.5	5649
3015			5656.5
	3488.5	4738.5	5664
3023.5			5671.5
	3495.5	4745.5	5680
3032			5688
3039			5695.5
3046	0.043 %	0.032 %	5703
3053			5710.5
3060			5718
3067			5725.5
3074			
3081			
3088			0.026 %
3095			
3102			
3109			
3116			
3128			
3130			
3137			
3144			
3151			
0.032 %			

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Band 6525-6765 0.023 %	8815-9040 0.022 %	10005-10100 0.04 %	11175-11400 0.022 %
6529.5	8820	10012	11180.5
6537.0			
6544.5	8828.5	10021	11190.0
6552.0			
6559.5	8837	10030	11199.5
6567.0			
6574.5	8845.5	10039	11209.0
6582.0			
6589.5	8854	10048	11218.5
6597.0			
6604.5	8862.5	10057	11228.0
6612.0			
6619.5	8871	10061	11237.5
6627.0			
6634.5	8879.5	10075	11247.0
6642.0			
6649.5	8888	10084	11256.5
6657.0			
6664.5	8896.5	10093	11266.0
6672.0			
6679.5	8905		11273.0
6685			
6687.5	8913.5		11280.5
6693.0			
6700.5	8939		11290.0
6708.0			
6715.5	8947.5		11299.5
6723.0			
6730.5	8956		11309.0
6738.0			
6745.5	8961.5		11318.5
6753.0			
6760.5	8967		11328.0
0.022 %	8975.5		11337.5
	8984		11347.0
	8992.5		11356.5
	9001		11366.0
	9009.5		11375.5
	9018		11385.0
	9026.5		11394.5
	9035		0.022 %
	0.022 %		

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Band	13200-13360	15016-15086	17900-18030
	0.019 %	0.02 %	0.01955 %
	13205.5	15016	17906.5
	13215.5	15026	17916.5
	13225.5	15036	17926.5
	13235.5	15046	17936.5
	13245.5	15056	17946.5
	13255.5	15066	17956.5
	-	15076	17966.5
	13264.5	15086	17975
	13274.5	15092.5	17983.5
	13284.5	15096.5	17993.5
	13294.5		18003.5
	13304.5	0.02 %	18013.5
	13314.5		18023.5
	13324.5		
	13334.5		0.094 %
	13344.5		
	13354.5		
	0.0187 %		

c. Adjacent Channels

In the interest of the suppression of adjacent channel interference, allotment plans shall avoid the use of adjacent channels by aircraft operating in the same flight areas and by aeronautical stations serving those aircraft.

2. Technical Data

a. Standards for the Construction of Curves (See Annex ____)

Considering that a need exists for some means of selecting the order of frequencies necessary for individual air route operation, maximum range charts were prepared for use as a guide to the allotment of frequencies, in order to show the expected physical ranges, based on an assumed aircraft noise level of not more than 5 $\mu\text{v}/\text{m}$ with a field intensity in the vicinity of the aircraft of 5 $\mu\text{v}/\text{m}$ for hand-speed method of communications (A-1 emissions), and 20 $\mu\text{v}/\text{m}$ for high capacity means of communication, including A-3 emissions. It should be borne in mind that with adequate servicing the aircraft noise level can be limited to achieve the objective of 15 db signal to noise ratio for A-3 emissions. It was decided not to make use of charts for 10 $\mu\text{v}/\text{m}$ which had previously been prepared by the Preparatory Committee as a guide to the allotment of frequencies but, nonetheless, to include them for possible future use. The charts showing the curves and the explanation of their construction and manner of use appear as Annex ____.

b. Repetition of Frequencies

- (1) For the purpose of considering the possibilities of repetition of frequencies, it is assumed that aeronautical stations will have a radiated peak power of 4000 watts, that aircraft stations will have a radiated peak power of 200 watts and that a system of simplex communication will be employed. When using the curves in Annex ____, in considering the possibilities of repetition of frequencies for all types of emission, except as set forth in (2) below, a figure of 30 db was used initially and was downgraded as far as 25 db in individual cases when this achieved an increase in the possibility of repetition. These figures apply to the reception conditions aboard an aircraft at the maximum service range when endeavoring to receive a particular ground station with interference from another ground station on the same frequency. In view of the disparity of power between the aircraft and ground stations, these figures will result in a protection ratio of the order of 17 and 12 db at the ground station when receiving the aircraft through the interference of the other ground station.
- (2) As a result of the use of the recommended system of channel separation, channels were produced at the junction of the "R" and "OR" bands, suitable for A-1 emission only. For these channels a figure of 20 db was used initially and was downgraded as far as 15 db in individual cases when this achieved

an increase in the possibility of repetition. In view of the disparity of power between the aircraft and ground station, these figures will result in a protection ratio of the order of 7 and 2 db at the ground station when receiving the aircraft through the interference of the other ground station.

3. Communication Channel Capacity

Considering the requirement for the temporary use of hand speed telegraphy (A-1) method of communication, the following figures were adopted as indicating the capacity of communication channels in terms of aircraft per hour and were used to calculate the number of frequencies or families of frequencies required to be allotted to the major world air route areas:

1. Per family of frequencies - 12 aircraft
2. Per frequency (when a family consists of a single frequency) 10 aircraft

In adopting these figures, it was taken into account that it will be necessary, in the regions in which meteorological conditions and density of air traffic make this necessary, to organize the broadcast of meteorological information destined to aircraft in flight on frequencies other than those used for routine air ground communications. Otherwise, requests for special weather information by aircraft in flight may overload those frequencies.

Recommendation

Concerning the Handling of
Public Correspondence aboard Aircraft

The International Administrative Aeronautical Radio Conference,
Geneva,

Considering:

that paragraph 255 of the Radio Regulations, Atlantic City, 1947 provides: "Administrations shall not permit public correspondence in the frequency bands allocated exclusively to the Aeronautical Mobile Service, unless allowed by special aeronautical regulations adopted by an Aeronautical Administrative Conference to which all interested members of the Union have been invited. Such regulations must recognize the absolute priority of safety and control messages".

that aircraft stations are permitted to communicate with stations in the maritime mobile service and may transmit to such stations public correspondence on frequencies assigned that service provided that the I.C.A.O. ATC regulations are adhered to (Radio Regulations, Atlantic City, pars. 569, to 572, 668, 779, 761, 771 and 792).

Recommends:

that the transmission of public correspondence on the frequencies allocated exclusively to the aeronautical mobile service be prohibited; and,

that in those cases where provision for the handling of public correspondence is deemed necessary, the aircraft be authorized by the various administrations to employ frequencies allocated to the maritime mobile service for handling of public correspondence with stations in that service, provided that such handling of public correspondence will in no case interfere with the transmission or reception of messages relating to the safety or control of the aircraft and that for these specific cases arrangements be made in accordance with Article 40 of the International Telecommunication Convention, Atlantic City. In the case when messages of public correspondence are handled on frequencies of the maritime mobile service, aircraft will be required to be in a position to observe simultaneous and continuous watch on the frequencies used for aeronautical mobile communications.

9 July, 1948

Committee 7

Report
of the Committee on the Allotment of OR frequencies
(Committee 7)
23rd Meeting
8 July, 1948

Chairman : Mr. A. Fry (United Kingdom)

1. The Chairman, Mr. A. Fry, opened the meeting at 16.30.

The following countries were represented:

Argentina	Norway
Australia	Poland
Bielorussian S.S.R.	Portugal
Canada	Sweden
Chile	Ukrainian S.S.R.
China	United Kingdom
France	United States of America
Netherlands	U.S.S.R.
Netherlands East Indies	

2. The Chairman placed before the Committee the consideration of Aer-Document No. 140 containing suggestions on allotment and duplication of OR frequencies by the delegation of Poland.

The delegate of Poland stated that owing to a number of inaccuracies in the document, he wished to render a verbal explanation and proceeded to explain his proposed method extensively with the help of diagrams on the blackboard.

The basic principles of the method are:

- 1) To draw a pattern of rectangles on a mercatorial projection map of the earth, the sides of which are equal to the repetition distances in N-S and E-W directions for a given transmitter power and for the frequency band concerned.
These rectangles can be grouped in various ways.
- 2) To divide the frequency band concerned in groups of frequencies and assign each group to a square, to be repeated in non-adjacent squares whereby many combinations are possible.

The delegate stated the advantages of his method as given in Aer-Document No. 140, page 3, sub. 1), 2), 3) and 4, and explained how it could be applied in practice. He recommended his method for large land masses

like the U.S.S.R., Africa or North and South America. For Europe where requirements are so concentrated his method would not be practical.

He further stated that the last 3 paragraphs of Aer-Doc. 140 are confusing and should be deleted, the explanation he made should be taken instead.

3. The Chairman drew attention to the paragraph on page 1 of Aer-Document No. 140 - E starting with "This method adopted by Committee 7", and inquired from the delegate of Poland why in his opinion the working method presently followed is contrary to Atlantic City regulations and exactly which articles of the Final Acts have been violated.

The delegate of Poland in reply stated that his sentence should be completely redrafted in order to avoid misunderstandings. The present working did not reflect accurately what he had meant to say and was beside the principle of his proposal. The phrase relating to Atlantic City should be deleted.

4. The Chairman suggested that if this meeting is discussing an inaccurate document it would be better to adjourn till a correct text is available.

5. The delegates of Australia and the U.S.A. agreed that the proposed method has certain merits. It would enable a great deal of protection and flexibility if only there were sufficient frequencies available, which is not the case however.

Furthermore the work of Committee 7 and its working groups is now so far advanced that adoption of a new working method at this stage would undo all our previous work and would mean that Committee 7 could not finish its work on or before July 15th, the target date set by the fifth Plenary meeting.

The U.S.A. delegate expressed as his opinion that the proposed method would not be suitable for N-America due to the limited number of frequencies available in proportion to the concentrated requirements.

However in cases where perhaps sufficient frequencies were available it might be a good scheme. It was therefore suggested that the delegate of Poland redraft his text after which a small working group consisting of the delegate of Poland and another would be formed to study in which cases the method might be recommended as a good practical one.

6. The delegate of the U.S.S.R. agreed with the delegate of the U.S.A. that the work of the working groups has advanced too far now to alter the working method and submitted a similar suggestion.
7. The delegate of Poland in reply to a question from the Chairman confirmed that he was willing to withdraw Aer-Document No. 140, redraft it and submit it as new proposal.
8. The delegate of Argentina proposed to set up a small working group at once to study if proposed method is applicable for further work. This proposal was seconded by the delegate of Chile.

9. After some discussion the formation of a small working group consisting of the delegates of Poland and of the U.S.A. (Lt.Col.Flashman), with the following terms of reference, proposed by the Australian delegate and seconded by the delegate of the Netherlands:

"To investigate the proposal submitted by the delegate of Poland on the allotment and duplication of OR frequencies and report to Committee 7 on its merits", was unanimously adopted.

10. The Chairman then presented to the committee the following proposal:

"The formation of a working group to draft the final report to be presented by Committee 7 consisting of one member for each language in which the report has to be written."

The terms of reference for this working group to be:

"To extract from the various documents of Committee 7 the information to go into the final report, put it in a suitable form and present it to the committee".

This proposal was unanimously adopted.

The following members volunteered for the job:

1. For the French language: Mr. Sarre or
Mr. de Calan.
2. For the Spanish language: Mr. Olano (Argentina) or
Mr. Gonzalez (Chile)
3. For the Russian language : Mr. Baikusov
Mr. Gavilitsa
4. For the English language: Mr. Fry (United Kingdom) or
Mr. Furze (Australia)

The meeting closed at 18.37.

Reporter:
C.J.O. RIETHOF

Chairman:
A. FRY

SUMMARY RECORD OF THE FIFTH PLENARY MEETING

held in the Maison des Congrès,
Geneva, on Tuesday, 6 July 1948, at 3 p.m.

CHAIRMAN : M. Arthur L. LEBEL (United States).

APPROVAL OF MINUTES OF THE FOURTH PLENARY MEETING (Aer-Document No. 109).

Mr. MITROVIC (Yugoslavia) submitted the following amendment to the third sentence of the speech attributed to him in paragraph 8 :

"Such equipment could not be used for A3 (radiotelephony) emissions, in spite of the fact that the rules and recommendations of the Atlantic City Conference allowed it to be used, with a tolerance of 0.05%, until 1953".

The third sentence of paragraph 19 should read as follows :

"On this resolution being put to the vote, many delegates had no very clear idea of what they were voting for, so that, at a later meeting, when the document in question came up for adoption, many amendments were submitted to the text already adopted".

These amendments were adopted. Aer-Document No. 109, as amended, was unanimously adopted.

RESOLUTION SUBMITTED BY THE SOVIET DELEGATION (see paragraph 3 of Aer-Doc. No. 109)

Mr. FRY (United Kingdom) said that agreement had been reached between his delegation and that of the Soviet Union on the following amendments to paragraph 2 of the Soviet resolution (Aer-Document No. 21) :

- 1) Sub-paragraph 2(b) to read : "For the aeronautical mobile R service, to divide the world into regions..."
- 2) Add a new sub-paragraph 2(d) to read : "For the aeronautical mobile OR service, taking into account wave propagation conditions and the maximum possibility of frequency duplication, to allot frequencies between countries for the satisfaction of the requirements of countries, taking into consideration that the further assignment of frequencies within the areas specified will be done by administrations themselves".

The Soviet resolution, as amended, was unanimously adopted.

TEXTS SUBMITTED BY COMMITTEE 4 (Aer-Documents 91, 103, 112, 119).

Mr. SELIS (Netherlands) said that the resolutions adopted by Committee 4 were subject to re-drafting by Working Group 4 D. The revised texts, in English, French and Spanish, would be incorporated in a single document for inclusion in the Final Report. He moved the adoption of the resolution on interference between adjacent channels (Aer-Document No. 103, sub-paragraph 5(1)).



This resolution was unanimously adopted.

Mr. SELIS (Netherlands), seconded by M. WHITE (United States), moved the adoption of the resolution on frequency duplication contained in the last four sub-paragraphs of paragraph 6, on page 2 of Aer-Document No. 91-E).

Mr. JAROV (U.S.S.R.) said that long before the actual frequency allotment the Soviet delegation had expressed in Committee 4 its views on the question of protection ratio. From the very first day of practical work in Committee 7, it had become apparent that the standards of protection ratio recommended by Committee 4 were unrealistic, particularly for the bands above 6 Mc/s. Committee 7 in allotting frequencies to the OR service (a service mainly domestic in character) was already running into difficulties in satisfying national requirements. That was particularly true of the European region.

The same, if not greater difficulties would be encountered by Committee 6 in assigning frequencies to regular air routes, particularly when assigning frequencies to regional air lines - a problem with which that Committee had not yet come to grips.

The resolution on protection ratio submitted by Committee 4 took into account the interests of major world air routes only, and in view of this, could not serve as a basis for the equitable satisfaction of even the minimum frequency requirements of other air lines.

Furthermore, the chances of satisfying the needs of all countries in aeronautical frequencies would be still further reduced by the adoption of the simplex system of communication and of A3 emission as the standard type of transmission.

Aeronautical communications on the American continent were in an assured position. The United States delegation had been trying to get its own proposals carried without regard for the problems presented by frequency allotment in other countries. Such problems were particularly acute in the European region, which was a focal point not only for major world air routes, but for regional and domestic lines.

A number of delegations had submitted proposals which would have ensured a more equitable approach to the task of providing the aeronautical mobile service with frequencies. They had however been rejected at the instigation of the United States delegation, which had pushed through its own proposals with ruthless disregard for the interests of other countries, without making any attempt to come to terms with the various other proposals submitted.

The Soviet delegation could not admit that preferential treatment should be accorded to major world air routes. It could not admit that the aeronautical frequency requirements of individual countries and regions should be ignored.

The Soviet delegation would therefore vote against adoption of the resolution submitted by Committee 4. It might be, however, that the Conference really wished to find a just solution to its problems. The Soviet delegation still hoped that when Committees 6 and 7 came to actual frequency allotment, consideration would be given to any expedient whereby national requirements in the aeronautical mobile service might be satisfied on an equitable basis.

Mr. SELIS (Netherlands) said that the possibility of decreasing the figure of 25 db, in individual cases, had been provided for in the resolution itself, if this would increase the repetition factor.

Mr. COFFEY (Canada) thought there was some misunderstanding on the figures involved. As the ground transmitter used 1000 watts, and that of the aircraft 50, there would be a difference of the order of 15 db. The figure given in the resolution implied a 4.1 ratio in signal voltage; to go beyond this would involve time-sharing.

Mr. CHEN (China) said that at the seventeenth meeting of Committee 4 he had pointed out that paragraph 51 of Pc-Aer-Document No. 25 had a bearing on the question of protection ratios. This paragraph had been assigned by the Plenary Meeting to Committee 7. If it had not been discussed by Committee 7, he would abstain from voting. As a large proportion of the R. and QR-services would be using A1 emission for the next five years, the standards set by Committee 4 might have to be lowered.

Mr. FRY (United Kingdom) said that this point had not been raised in Committee 7. There was no satisfactory method of giving effect to the ideas in paragraph 51 within the bands his committee was considering. The anxieties of the Chinese delegation would, however, be kept in mind.

Mr. MITROVIC (Yugoslavia) said that Committee 4 had adopted a protection ratio of 30 db for A3, and of 20 db for A1 emissions, with the possibility of reducing those figures to 25 db and 15 db, respectively. This decision had been taken because certain delegations, especially that of the United States, wanted to endow the major world air routes with the most favourable conditions of work, without considering the needs and potentialities of regional and national services.

In spite of statements to the contrary, the work done in Committee 6 gave priority to major world air routes by satisfying their requirements first. Committee 4's resolution on protection ratio, if applied, would be detrimental to the regional services, the requirements of which would be subordinated to those of the major world air routes.

For these reasons the Yugoslav delegation would vote against this resolution and reserve its position.

Mr. ARCIUCH (Poland) wished to support the statements made by the Soviet and Yugoslav delegates.

Mr. FRY (United Kingdom) said that in Committee 7 it had proved impossible to satisfy the world's requirements in certain bands using the protection ratio recommended by Committee 4. They had to accept the risk of interference under these conditions. In spite of this, however, his delegation considered that the figures recommended were the absolute minimum required for safe operation.

The resolution contained in paragraph 6 of Aer-Document No. 91 was put to the vote and adopted by 25 votes to 9, with 9 abstentions.

Aer-Documents Nos. 112 and 142.

Mr. SELIS (Netherlands), moving the adoption of these reports, said that Aer-Document No. 112 contained the final report of Working Group 4 B. This had been approved by Committee 4 (Aer-Document No. 119), and submitted for consideration

to Committees 6 and 7, being subsequently embodied in the Final Report of the Joint Working Group of Committees 6 and 7 (Aer-Doc. No. 142).

Mr. FRY (United Kingdom) said that Committee 7 had adopted the recommendations of the Joint Group regarding the 6, 8, 11, 15 and 17 Mc/s bands. With reference to the 6 and 15 Mc/s bands, a reservation had been made to the effect that in assigning pairs of channels for A1 use only allocation would be made in such a way that stations using these channels would be separated geographically.

On the two common channels recommended in the 3 and 5 Mc/s bands, Committee 7 was in agreement with the Joint Group and had adopted a resolution on a method for allotting and using them. Committee 7, in addition, had suggested that arrangements should be made on the regional level to restrict the use of common channels in individual regions, if it was found necessary to do so.

Mr. FALGARONE (France) asked that consideration of Aer-Document No. 142 be deferred. The French delegation had proposed certain amendments to this document when it was adopted by Committee 6, and a French text of these had not yet appeared.

It was agreed to postpone consideration of Aer-Document No. 142 until a later meeting.

Mr. SELIS (Netherlands), seconded by Mr. SEARLE (New Zealand), moved the adoption of Aer-Document No. 112.

Mr. JAROV (U.S.S.R.) wished to abstain from voting, as his delegation disagreed with the basic principles adopted for channel separation.

Mr. MITROVIC (Yugoslavia), and Mr. JOUK (Bielorussian Soviet Socialist Republic) abstained, and reserved their position.

Aer-Document No. 112 was put to the vote and adopted by 33 votes to 0, with 8 abstentions.

Mr. PETIT (I.F.R.B.) said that the document would be incomplete without two resolutions. One would be addressed to the P.F.B. and the other to the H.F. radio conference, so that these two bodies might take the necessary steps to protect boundary frequencies in the aeronautical mobile bands.

It was agreed that Mr. PETIT (I.F.R.B.) and Mr. SELIS (Netherlands) should draft these recommendations.

APPROVAL OF JULY 15 AS FINAL DATE FOR COMMITTEES 4, 6 and 7.

Mr. FALGARONE (France) said he had grave doubts as to whether Committees 6 and 7 would be able to finish their work by July 15. If a date were fixed, the Conference must reserve the right to change it if necessary.

The CHAIRMAN said that according to the Chairmen of Committees 4, 6 and 7 the work of these committees could be finished by the date in question. At a time of year when travel was very difficult, some consideration should be given to delegates who had considerable distances to travel. It was essential to fix a closing date well in advance.

Mr. JAROV (U.S.S.R.) said that he was fairly hopeful with regard to Committees 4 and 7. But it was unlikely that Committee 6 would have finished its work by the date in question in view of the fact that it was still studying the problem of Major World Air Routes, and had not even begun to consider the question of domestic and regional air lines.

Mr. HARVEY (Union of South Africa) said that much of the information accumulated by Committee 6 in studying Major World Air Route Areas would be of use when the Committee passed on to consider regional problems.

Mr. PETIT (I.F.R.B.) thought that the time taken by the Conference to complete its work was of secondary importance. It was certain that neither the P.F.B., which had much to do in connection with the maritime bands, nor any other body would be willing to take responsibility for any work that might be left outstanding by the Conference.

The Steering's Committee's proposal that July 15th should be taken as a final date for the work of Committees 4, 6 and 7 was put to the vote and adopted by 20 votes to 10, with 5 abstentions.

CLOSING DATE OF THE CONFERENCE

Mr. FALGARONE (France) said that at least eight days would be required for completion of the Final Report after the texts submitted by Committees had been adopted by the Plenary Meeting. It was very unlikely that Committee 6 would have finished by July 15th. After two months' work it would be regrettable if the results of the Conference were to be jeopardized by such haste. July 30th would be a more suitable final date.

The CHAIRMAN, hoping that the Steering Committee would agree, suggested that a compromise solution to the problem be found by extending the final date to July 25. This was supported by Mr. SELIS (Netherlands) and Mr. QUIJANO (Colombia).

The Chairman's proposal to agree on July 25 as the closing date of the Conference was put to the vote and adopted by 23 votes to 11, with 6 abstentions.

AUTHORIZATION FOR THE STEERING COMMITTEE TO CONVENE MEETINGS 7 DAYS A WEEK.

The CHAIRMAN said that at the first Plenary Meeting, on 15 May 1948, a decision had been made which seemed to imply a prohibition of all work on Saturdays and Sundays. The Steering Committee was now asking the Plenary Meeting to remove this prohibition.

Mr. JAROV (U.S.S.R.) said that the fact that translation of documents into Russian was not provided by the Secretariat imposed a burden on his delegation. If however an extra effort was required, his delegation would try to collaborate.

After some discussion, it was agreed that authority should be given to the Steering Committee to convene meetings on Saturdays and Sundays, but only for working groups. With effect from July 7, meetings would be held from 08:30-12:30, and from 14:30 to 18:30 hours.

REPORTS OF THE CREDENTIALS COMMITTEE (Aer-Documents Nos. 114 and 141).

Mr. Souto CRUZ (Portugal) moved the adoption of Aer-Documents Nos. 114 and 141,

Aer-Documents Nos. 114 and 141 were unanimously adopted.

REPRODUCTION OF DOCUMENTS.

In view of the heavy increase in work which the end of the Conference might be expected to involve, it was agreed that strong representations should be made to the Secretariat for a more rapid translation and reproduction of documents.

REPRODUCTION OF FINAL REPORT.

Mr. FALGARONE (France) speaking on behalf of the Editorial Committee, said that there had been some difference of opinion on the form of the Final Report. The French and Spanish-speaking delegates had been in favour of publishing the Final Report with parallel translations in three languages on the same sheets; the English-speaking members had been in favour of separate volumes, each in one of the three languages.

At other regional conferences, it had been the practice of Russian and Chinese-speaking members to authorize publication of final acts in the three working languages only. Committee 3 would find itself faced with grave physical difficulties if required to produce the Final Report in the five official languages.

Mr. JAROV (U.S.S.R.) said that it was laid down in Rule 15, paragraph 2 of the Atlantic City Convention that the final acts of administrative conferences should be published in five languages (English, French, Spanish, Russian and Chinese). There was no reason to depart from this provision.

He could not agree to publication in the three working languages only; his delegation was not competent to take such a decision.

Mr. WHITE (United States) said that facilities did not exist for reproducing the Final Report in Russian and Chinese, but that this could be done later if required. The question was not one of principle, but of convenience.

After some discussion, it was agreed that Committee 3 should be authorized to proceed with the production of a Final Report in English, French and Spanish, the three languages to be in parallel on the same sheets, and in as many volumes as might be considered necessary. This decision would in no way prejudice any arrangements that might be made subsequently for publication in other official languages.

The meeting rose at 7 p.m.

Reporter:

N. LANGFORD

Chairman:

A. LEBEL

Report of Working Group 4C

Proposed Text for Revision of PC-Aer-Doc. No. 5

LIST OF FIGURES

The list of figures for the revision of PC-Aer-Doc. No. 5 was given on Page 4 of Aer-Doc. No. 131. It was not possible to include a set of figures with the present document. However, most of them have appeared previously in PC-Aer-Doc. No. 5 and Aer-Doc. Nos. 46, 116, and 131. The following table identifies these previously published figures with the figures in the revision of PC-Aer-Doc. No. 5.

<u>Figure No.</u> <u>in Revised Doc.</u>	<u>Previous Document and Figure No.</u>
1	PC-Aer-Doc. No. 5 Figure 1
2	Aer-Doc. No. 131 " 13
4	" " " " " 14
6	PC-Aer-Doc. No. 5 " 17
7-18	" " " " " 2-13
19-27	" " " " " 24-32 (old form)
20,23,26	Aer-Doc. No. 131 " 5,6,7 (new form)
28,29	" " " " " 1,2
30	PC-Aer-Doc. No. 5 " 16 (to be changed slightly)
31,32,33	" " " " " 33,34,35 (old form)
32	Aer-Doc. No. 131 " 8 (final form)
34,35	" " " " " 3,4
36	PC-Aer-Doc. No. 5 " 23
38	Aer-Doc. No. 131 " 9
40-72	Aer-Doc. No. 116 (0° maximum range to be revised)
73-96	Aer-Doc. No. 46
97	PC-Aer-Doc. No. 5 Figure 18
98,99,100	Aer-Doc. No. 131 " 10,11,12

1. Introduction

The range of distances over which skywave propagation of a given radio frequency will provide satisfactory communication is limited at the maximum range by attenuation of the signal and at the minimum range by the skip effect. The maximum range depends upon the type of service, the power of the transmitting station, the noise and interference levels at the receiving station and the required signal-to-noise and signal-to-interference ratios. The minimum range is independent of these factors. The solution to the problem which takes into account all the aforementioned variables has been undertaken by graphical means, as this appears to be the most useful and convenient form of presentation.

In the utilization of the charts in this document, it must, however, be borne in mind that (a) aircraft transmitters do not have the same power and usually have low power as compared with ground stations, and (b) noise levels in aircraft are generally high and difficult to limit to levels comparable with receiving set noise levels. Whereas the solutions resulting from the application of the charts are considered reasonable and usually coincident with practical experience, in some cases divergences will be found. In such a case, practical experience in the special situation involved should be used to arrive at the solution.

2. General description of the work undertaken.

The end result desired is a convenient collection of charts which will enable frequency families and geographical spacing of interfering assignments to be determined to insure at least 90% reliable communications throughout the year and throughout the sunspot cycle. These charts appear and are indexed in Annex to the report.

The charts are based on two types of communications:

- (1)-A3 and other high capacity means of communication for which bandwidths are not greater than those required for A3.
- (2)-A1, Manual telegraphy

The graphs produced have been, as far as possible, placed in convenient form for the selection of frequencies in the "R" or "OR" frequency bands of the Radio Regulations, Atlantic City, 1947.

3. Assumptions and basic data utilized in the preparation of the graphs.

3.1-Radiated Powers

For A1 emission the peak radiated power is assumed to be 1 kilowatt at the ground station and 50 watts at the aircraft.

For A3 emission the peak radiated power with 100% modulation is assumed to be 4 kw at the ground station and 200 watts at the aircraft. With 100% modulation the field intensity of the radiated wave is double that of the unmodulated wave. Thus the peak radiated power with 100% modulation is four times the radiated power of an unmodulated carrier wave.

3.2-Bandwidths

It is assumed that A3 modulation frequencies will be limited to 3 kc and that the sideband radiation of A1 emissions will not exceed that of A3 emissions. The use of a receiving set with good selectivity characteristics is assumed.

3.3-Noise levels

3.3.1-Local noise. The local noise on the aircraft is assumed to be 5 μ v or less at the input terminals of the receiving set. It is expected that on new aircraft and on properly serviced used aircraft, the local noise level can be kept much lower than 5 μ v.

Local noise at the ground station is assumed to be so low in comparison with local noise on the aircraft that it never imposes a limitation on communications.

3.3.2-Atmospheric noise

Atmospheric noise levels considered here are based upon data presented in the document listed as Reference 4. In that document atmospheric noise is classified as to noise grade and a series of charts for each grade is presented giving the field intensity necessary to provide 90% of the time 15 decibels signal-to-noise ratio for reception of A3 transmissions with a receiver having a bandwidth of 6 kc. Curves are included for winter, summer, and equinox seasons, at 4-hour intervals throughout the day beginning with 0000. The geographical distribution of noise grades at four seasons of the year is shown by maps, which are reproduced as Figs. 2-5. The lowest and highest grades shown by the maps are 1 1/2 and 4 1/2.

In Fig. 6 and idealized latitude distribution of atmospheric noise is shown. Fig. 6 C is an idealized distribution of noise grades based largely upon noise grades for continental masses. Noise grade 4 1/2 has been omitted as this occurs only in very small areas. Fig. 6 A shows required field intensities for A3 (15 decibels signal-to-noise ratio) at summer noon as a function of latitude based on Fig. 6 C and required field intensity charts of Reference 4. Fig. 6 B is a similar chart for night. These charts were utilized in the preparation of maximum range charts as explained hereinafter.

3.4-Desirable signal-to-noise and signal-to-interference ratios.

For A3 communication a minimum of 15 decibels signal-to-noise or signal-to-interference ratio is considered desirable for good intelligibility. For A1 communication this ratio may be 0 decibels.

3.5-Antennas

3.5.1-The effective length of the aircraft receiving antenna is assumed to be one meter.

3.5.2-The effective length of the ground station receiving antenna is not specified, but is assumed to be great enough so that receiving set noise is never a controlling factor in the maximum range.

The use of directional antennas for receiving may improve both signal-to-atmospheric-noise and signal-to-interference ratios. Such antennas may be feasible in cases where the aircraft fly well-defined narrow routes.

Directional transmitting antennas at the ground station may also have the following advantages: the diminution of interference to stations lying in directions other than that of the principal lobes of the radiation pattern, and the reduction in the amount of power which must be delivered to the antenna to provide a satisfactory signal level at the aircraft. However, it should be remembered that use of a directional transmitting antenna without reduction of the power to the minimum required level may cause undue interference to other stations lying within the range of the principal lobes.

3.6-Required field intensities

3.6.1-Required field intensities for reception of A3 in the presence of atmospheric noise are those presented in Reference 4 and described above.

3.6.2-Required field intensities for reception of A1 in the presence of atmospheric noise are assumed to be 15 decibels less than for A3 emissions.

3.6.3-Since the aircraft local noise level is assumed to be 5 μv or less at the input terminals of the receiving set
• for an effective length of the antenna of one meter, the required field intensity for 15 decibels protection (for A3 emission) would be 28 $\mu\text{v}/\text{m}$.

However in view of the fact that lower local noise levels are attainable with proper servicing, charts in Annex ___ are based upon 20 $\mu\text{v}/\text{m}$ required field intensity for A3 reception at the aircraft in the absence of atmospheric noise and interference.

3.6.4-The required field intensity for A1 reception on the aircraft, with an antenna having an effective length of one meter, is assumed to be 5 $\mu\text{v}/\text{m}$.

3.7-Signal-to-interference (protection) ratios.

It was considered that duplication of A3 frequency assignments should be made on the basis of 30 decibels protection ratio at the aircraft for reception of the ground station through the interference of another ground station of equal power if the peak radiated power of the ground station is 4 kw and that of the aircraft is 200 watts. It was further considered that this figure might be downgraded as far as 25 decibels if additional assignments were thereby made possible.

Because the ratio of ground station power (4 kw) to aircraft power (200 watts) is 13 decibels, 30 and 25 decibel protection ratios at the aircraft imply that the protection ratios at the ground station for reception of the aircraft through the interference from another 4 kw ground station are only 17 and 12 decibels, respectively.

The protection ratios 17 and 12 decibels at the ground station will provide tolerable signal-to-interference ratios providing there are no uncorrelated variations (fading) in the field intensities of the desired and undesired signals. Actually, of course, some uncorrelated fading is inevitable. However, the effects of short term fading may be greatly minimized by the use of diversity antenna systems and by the diversity effect introduced by the motion of the aircraft.

3.8-Charts for selection of daytime frequencies are drawn for conditions at noon in summer, i.e., June in northern latitudes, December in southern latitudes, equinox at equatorial latitudes, at minimum sunspot number (0) and maximum sunspot number (125). Since minimum ranges (skip distances) at noon are usually greater in summer than in winter, and maximum ranges are shorter in summer, the interval between the minimum and maximum range is usually smaller at summer noon than at any other time of the year. Thus summer noon represents the worst condition encountered with respect to the number of frequencies required for communication.

3.9-Propagation Characteristics

All charts are based upon sky-wave propagation. Propagation characteristics are derived principally from references 2, 3, and 6.

4. Description of the Charts Produced

4.1-Minimum Range Charts for Noon

Figures 7 through 18 show the minimum ranges for each frequency band as a function of latitude in the northern and southern

hemispheres of each of the three zones W, I, and E of Fig. 1. The charts refer in each case to local noon at the midpoint of the great circle path between the transmitting and receiving stations, to June in the northern hemisphere, and to December in the southern hemisphere. Separate charts are included for sunspot number 0 (sunspot minimum) and for sunspot number 125 (sunspot maximum).

On each curve, E- or F2-layer control of the range is indicated by a continuous or interrupted line, respectively. Effects of the F1-layer are included with those of the E-layer. Because of its erratic and unpredictable effects, sporadic-E has not been considered. When it occurs, however, the effects are to decrease the minimum range.

The minimum ranges are based upon the E-layer muf (maximum usable frequency) and the F2-layer owf (optimum working frequency = 85% of the muf) and are thus nominally exceeded on only 10% of the days of the month. Values of the E-layer muf were obtained from Reference 2. Values of the F2-layer muf were obtained from Reference 3.

4.2-Minimum Range Charts for Night

Minimum ranges for 2000, 0000, and 0400 hours are given in Figs. 19-21, 22-24, and 25-27 for the three zones W, I, and E, respectively. Except for the effects of sporadic-E, minimum ranges at night for frequencies of 3 Mc and above depend only upon the F2-layer. Since the primary purpose of the charts is to indicate the order of the lowest frequency required for a family, they are based upon the F2-layer minimum range (muf) at sunspot minimum in the month of December or June depending upon which is the greater minimum range, i.e., the greater skip distance.

4.3-Maximum Range Charts for Noon

Maximum ranges for radiotelephone, or other high capacity means of communication for which the required field intensities are the same as for radiotelephone, are given in Figs. 28 and 29 for noon at sunspot minimum and sunspot maximum, respectively. Corresponding charts for manual radiotelegraphy are given as Figs. 34 and 35. The assumptions as to radiated power and required field intensities on which these charts are based have been stated.

As the charts indicate, at latitudes greater than a certain latitude which depends upon the frequency and type of emission (for example, approximately 40° in the case of radiotelephone at frequencies of 10 Mc and above) the ratio signal/atmospheric-noise at the ground station is greater than the ratio signal/local-noise at the aircraft. Therefore, above this latitude, the range is limited by the local

noise at the aircraft. In such cases the range may be increased in practice by decreasing the local noise at the aircraft or by increasing the radiated power of the ground station. Below this latitude, where the range is limited by atmospheric noise at the ground station, the range may be increased only by increasing the radiated power of the aircraft.

An idea of the dependence of the range on these factors may be obtained by comparing the charts for A3 and A1 at the same sunspot condition, for example Figs. 28 and 34, or Figs. 29 and 35. In the case of the higher latitudes where the ranges are limited by aircraft noise, the limiting field intensities are 20 $\mu\text{v/m}$ (26 db above 1 $\mu\text{v/m}$) for A3, and 5 $\mu\text{v/m}$ (14 db above 1 $\mu\text{v/m}$) for A1. The ratio of these field intensities is 12 decibels. Thus a decrease of 12 db in the noise level at the aircraft would result in ranges for A3 equal to those given for A1. The same increase in range would result from increasing the radiated power of the ground station by 12 db, that is, from 4 kw to 64 kw peak power in the case of A3, or from 1 kw to 16 kw peak power in the case of A1.

As a general rule, at latitudes where the range is limited by aircraft noise, the range increases by approximately 4% for each decibel increase in the radiated power of the ground station, or the range decreases by approximately 4% for each decibel decrease in the radiated power of the ground station, in the range of distances above about 300 km, and for frequencies below about 15 Mc.

4.4-Maximum range charts for night

4.4.1-Idealized latitude variation of maximum range

In Fig. 30, the maximum range at night for radiotelephone in the various frequency bands is plotted as a function of latitude. These curves are based upon the required field intensity for night shown in Fig. 6. Interrupted (dashed) lines across the chart show ranges for ground station peak radiated powers of 200, 400, and 800 watts, as limited by local noise at the aircraft only. Above 800 watts this range is greater than 4000 km. As an example, consider the case of a ground station radiating 400 watts peak power. The range for this power, as limited by local noise at the aircraft only, is 1650 km. However, at 3 Mc, and at latitudes less than 65° , atmospheric noise at the ground station limits the range (curve labeled 3.0). As another example, at 6.6 Mc, when the peak radiated power of the ground station is 400 watts, atmospheric noise at the ground station limits the range at latitudes less than about 45° .

Fig. 36, similarly, gives maximum ranges at night as a function

of latitude for radiotelegraphy. In this case the range as limited by local aircraft noise for values of the peak radiated power of the ground station of 50 watts or more, is greater than 4000 km.

4.4.2-Maximum ranges for various noise grades

Figs. 31-33 and 37-39 for A3 and A1, respectively, are maximum range charts for 2000, 0000, and 0400 hours in which curves of frequency vs range are plotted for various values of the atmospheric noise grade at the ground station. These charts are intended for use when a refinement of the ranges given by Figs. 30 and 36 is necessary. For this purpose the noise grade at the ground station is obtained from Fig. 2, 3, 4, or 5. In the case of stations north of 30° N and south of 30° S, curves for noise grades 3 and below apply only to the winter season, and are therefore to be used only with Fig. 2 in the case of stations north of 30° N, and only with Fig. 4 in the case of stations south of 30° S.

In Figs. 31-33 for A3, interrupted (dashed) lines drawn across the chart indicate the maximum range in the presence of aircraft noise only, for 200, 400, and 800 watts peak radiated power at the ground station.

In Figs. 37-39 for A1, maximum ranges, in the presence of aircraft noise only, are greater than 4000 km if the ground station peak radiated power is 50 watts or greater.

4.5-Combined Maximum and Minimum Range Charts

For convenience in the selection of orders of frequencies for noon conditions, minimum range charts (Figs. 7-18) and maximum range charts for A3 (Figs. 28 and 29) have been combined in a series of charts, one for each 10° of latitude extending from 60° N to 40° S in each zone W, I, and E. On these charts the frequency has been plotted as a function of its minimum and maximum ranges for both sunspot minimum and sunspot maximum.

The curves are identified as follows: Narrow lines refer to minimum ranges; wide lines refer to maximum ranges; continuous lines refer to sunspot minimum; interrupted lines refer to sunspot maximum. The service range of a frequency at sunspot minimum is the interval between the narrow and wide continuous lines. The service range at sunspot maximum is the interval between the narrow and wide interrupted lines.

4.6-Interference Range Charts

4.6.1-Co-channel interference

If two stations, desired and undesired, transmit on the same frequency, the interference caused by the undesired station to reception of the desired station at a given receiving station depends upon the ratio of the field intensities of the desired and undesired stations. This ratio, which is identical with the protection ratio in the case of co-channel interference, depends in turn upon the ratio of the radiated powers of the transmitting stations, and upon the attenuation experienced by each transmitted wave traversing the distance between its respective transmitting station and the receiving station. As the attenuation depends upon the distance, the ratio of field intensities at the receiving station is a function of the service range (the distance between the receiving station and the desired transmitting station) and the interference range (the distance between the receiving station and the undesired transmitting station).

At night when absorption is negligible, the attenuation is solely a function of the distance, but during daytime it depends also upon the geographical relation of the transmission path to the subsolar point. Thus, for example, the attenuation along a 2000 km path directed toward the subsolar point from a transmitter located 45° from the subsolar point, is greater than the attenuation along a path of the same length in a direction at right angles to the direction of the subsolar point. The attenuation along a path directed away from the subsolar point is even less and is in fact less than that along a path of the same length in any other direction.

This, together with the fact that the absorption along a given path in daylight is different for different frequencies, makes it impracticable to give a complete description of the interference possibilities on all frequencies.

Figs. 73-96 (reproduced from Reference 3) present information on the interference range as a function of service range and protection ratio in the form of a series of charts applying to 4, 6, 10, 15, 20, and 25 Mc, showing, for each frequency band, four typical relations of the transmission path to the subsolar point.

These typical relations are:

1. The receiving station at the subsolar point receiving from transmitting stations in any direction.
2. The receiving station 60° from the subsolar point receiving from transmitting stations in directions at right angles to the direction of the subsolar point.

3. The receiving station 60° from the subsolar point receiving from transmitting stations in the direction opposite to that of the subsolar point.
4. The receiving station located at the day-night line (90° from the subsolar point) receiving from transmitting stations in the same direction as the subsolar point.

Approximate solutions for other frequencies and relations of the transmission path to the subsolar point may be found by interpolation.

For transmission paths in darkness, because absorption is virtually absent, the attenuation is independent of frequency and of the direction of the transmitting station. Thus one chart, Fig. 97, is sufficient for night conditions.

4.6.2-Adjacent channel interference

In addition to the factors mentioned above for co-channel interference, adjacent channel interference depends upon the frequency separation, the characteristics of the sidebands emitted by the interfering transmitter, and the selectivity characteristics of the receiving set.

In Fig. 98 the ratio of field intensities of the desired to undesired signals required for protection ratios of 25 and 30 decibels is plotted as a function of carrier frequency separation for the case of interference between two radiotelephone stations on adjacent channels. These curves are based upon data given in Reference 5 in which modulation frequencies up to 3 kc and a receiver with good selectivity characteristics are assumed. Corresponding curves for telegraphy interfering with telephony, telephony interfering with telegraphy, or telegraphy interfering with telegraphy are nearly identical with those in the range of frequency separations shown, if the receiver selectivity characteristics are the same in each case.

Figs. 97 and 98 have been used to derive curves showing interference range as a function of service range and frequency separation. Inasmuch as the protection ratio scale of Fig. 97 refers to field intensity ratios, this scale may be converted into a frequency separation scale for a specified protection ratio through the relationship given in Fig. 98. The results for protection ratios of 25 and 30 decibels are shown in Figs. 99 and 100, respectively. Fig. 99 is used to find the separation necessary to provide 25 decibels protection between two transmitting stations operating on adjacent channels. Fig. 100 is used in the same way if 30 decibels is the required protection ratio.

Required geographical separations for daytime conditions may be obtained by using Fig. 98 together with the appropriate interference range charts, Figs. 73-96. Thus for 25 decibels protection, the field intensity ratio for the given frequency separation is read from curve A, Fig. 98. This field intensity ratio is then used as the protection ratio on the appropriate interference range chart to obtain the interference range.

Fig. 98 may also be used to obtain the field intensity ratio corresponding to any other desired protection ratio by adding the difference between this protection ratio and 25 decibels to the field intensity ratio obtained from curve A, Fig. 98. The resulting field intensity ratio may then be used as the protection ratio in Figs. 72-97 to obtain the interference range.

5. Procedure for selection of frequency families

5.1-General Procedure

The combined minimum and maximum range charts, Figs. 40-72, provide a convenient and rapid means for the selection of frequencies for an individual route segment or route area, which, together with a frequency selected from the 3.0 or 3.5 Mc band, will constitute a family adequate to provide, in the absence of deleterious interference from other stations, at least 90% intelligible air-ground A3 communication at all times under normal radio propagation and reception conditions, except those in which the lowest frequency selected is not low enough. The applicability of the charts is, of course, subject to correspondence of radiated powers and required field intensities with the assumptions previously stated.

The process of selection is to determine from the curves a minimum set of frequencies necessary to cover the required distance at both sunspot minimum and sunspot maximum. For this purpose it is usually convenient to select families for sunspot minimum and sunspot maximum independently, and then to combine these into a single family suitable for sunspot minimum or sunspot maximum.

It is not advisable to select a family which fits between the minimum range curve for sunspot minimum and the maximum range curve for sunspot maximum. This results in an unnecessarily numerous family of frequencies.

Generally, the chart used is that corresponding to the latitude and zone of the midpoint of the great circle path between the ground stations at the terminals of a route segment. Actually the midpoint between the aircraft and the ground station moves as the aircraft moves, but it is usually sufficiently accurate to consider only the midpoint of the route segment or of the maximum anticipated distance between the aircraft and the ground station in the case of

a flight involving a single ground station.

In case one or both ground stations are located within approximately 40° of the equator, it may be preferable to use the chart corresponding to the latitude of the ground station nearer the equator. This is because, on the basis of Figs. 28 and 29, the maximum service range is limited by atmospheric noise at the ground station at latitudes less than about 40° .

If the midpoint latitude or the ground station latitude, whichever is used as the reference point, lies approximately half-way between two adjacent latitudes for which the charts are prepared, it is preferable, unless an interpolation is made, to use the chart for the lower latitude as this represents the more severe limitation on the maximum range.

Further, if the reference point lies on the boundary between two zones of Fig. 1 (e.g. I & E), the chart on which the minimum ranges are greater is used.

Maximum ranges corresponding more closely to the actual noise grade for the ground station, where this differs from that given by the idealized curve of Fig. 6, may be obtained as follows: Read the true noise grade at the ground station on Fig. 2, 3, 4, or 5, bearing in mind that the maximum range curves relate to summer conditions, i.e., June in northern latitudes, December in southern latitudes, and equinox in equatorial latitudes. Next, on Fig. 6C find the latitude corresponding to this noise grade on the side marked "summer". Then the combined minimum and maximum range chart for this latitude gives the correct maximum ranges.

In the case of north-south route segments, the midpoint latitude is equal to the arithmetic mean of the endpoint latitudes. On an east-west route segment, however, this is no longer true except near the equator. For example, if the latitude of one station were 30° N and that of the other station were at 40° N but 20° west of the first station, the latitude of the midpoint would not be 35° N but somewhat higher.

If any pair of adjacent orders of frequencies selected on the basis of the chart bear a ratio to each other greater than about 2:1, it is desirable that an intermediate frequency be introduced in order to insure that the family will be adequate for conditions at times of the day other than noon. At such times the values of the minimum and maximum ranges at each frequency will be altered and this may result in an appreciable interval of distance over which none of the frequencies is suitable if the intervals between successive frequencies are too great.

5.2-Selection of noon frequencies - Example

As a specific example, consider an aircraft departing from New York (latitude 41° N, approximately) and flying south for a distance of 2500 km. The midpoint latitude for this distance is 29.5° N. Thus, as the midpoint is located in the W-zone near 30° N, the chart labelled W-zone, 30° N (Fig. 43) will be used.

The minimum and maximum ranges at sunspot minimum and maximum for the various frequencies as given by the chart for W-zone 30° N are listed in the following table:

Frequency Mc	Service	Sunspot minimum		Sunspot maximum	
		Min. range	Max. range	Min. range	Max. range
3.0	R, OR	0 km	100 km	0 km	0 km
3.5	R	0	250	0	0
4.0	OR	0	350	0	200
4.7	R, OR	0	550	0	300
5.6	R, OR	350	700	0	450
6.6	R, OR	450	950	0	600
9.0	R, OR	650	1500	450	1100
10.0	R	750	1700	550	1250
11.3	R, OR	930	2050	650	1550
13.3	R, OR	1300	2500	850	1900
15.0	OR	1600	2800	1050	2200
18.0	R, OR	skips	skips	1400	2600
22.6	R, OR	skips	skips	skips	skips

Thus to provide communication at sunspot minimum and maximum separately for (a) the "R" service, and (b) the "OR" service, frequencies from the following orders might be selected:

(a) "R" Service

Sunspot minimum	Sunspot maximum
4.7 Mc	6.6 Mc
6.6 Mc	10.0 Mc
10.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

(b) "OR" Service

4.7 Mc	6.6 Mc
6.6 Mc	9.0 Mc
9.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

It will be observed that in the case of the "R" service, frequencies of 6.6, 10.0 and 13.3 Mc are common to the families for sunspot minimum and maximum. Thus these frequencies, plus 4.7 Mc for short ranges at sunspot minimum and 18.0 Mc for long ranges at sunspot maximum, will generally satisfy the requirement at summer noon throughout the sunspot cycle.

In the case of the "OR" service, 6.6, 9.0 and 13.3 Mc are common to the families for sunspot minimum and maximum. Again, addition of 4.7 and 18.0 Mc to these frequencies provides a family adequate at summer noon throughout the sunspot cycle.

5.3-Completion of family for night

The above frequencies were selected for daytime communication only. If communication at night must also be provided for, a frequency at 3.0 or 3.5 Mc will usually be necessary for short ranges.

Reference to Figs. 19-21, the nighttime minimum range charts for the W-zone, will indicate the following minimum ranges for 3.5 and 3.0 Mc at 2000, 0000, and 0400 hours at 30° N:

	2000 hr	0000 hr	0400 hr
3.5 Mc	0 km	500 km	0 km
3.0 Mc	0 km	0 km	0 km

Thus it appears that 3.0 Mc is well suited as a short range night frequency, and, except for a few winter months at sunspot minimum, 3.5 is also suitable.

In selecting this frequency it should be remembered that a portion of the distance nearest the transmitting station will be covered by the ground wave in case the sky wave skips at short range.

5.4-Frequency Spacing

Examination of the families selected in the above example shows that in no case does the ratio of adjacent frequencies exceed 2:1. Thus it is unnecessary to introduce an additional frequency to insure adequate coverage at all times.

6. Frequency Sharing - Determination of Geographical Separation

6.1-Co-channel assignments

Interference ranges for daytime conditions may be determined from Figs. 73-96. Interference ranges for night conditions are given by

Fig. 97. These charts have been described.

Because of relatively less attenuation at night, interference ranges at night are greater than in daytime. Therefore, if the geographical separation of stations to which the same or adjacent channels are assigned is based upon the nighttime interference range, the use of the frequency will also be adequately protected for daytime. However, separations based on daytime protection will not usually provide nighttime protection.

The service range on which the interference range and geographical separation are to be based may be specified arbitrarily or selected on the basis of one of the maximum range charts. As an example, consider the nighttime range for 3.0 Mc at 40° latitude given in Fig. 30. Assuming the peak radiated power of the ground station is more than 200 watts, the range is approximately 500 km. If the desired protection ratio at the aircraft is 30 decibels, and the radiated power of the undesired station is the same as that of the desired ground station, the interference range of the undesired station is read at 30 decibels protection ratio on the curve for 500 km service range, Fig. 97. The interference range in this case is a little greater than 10,000 km. For a desired protection ratio of 25 decibels, the interference range is 8000 km.

In case the radiated power of the undesired station is not the same as that of the desired station, the interference range should be read at a value of the protection ratio equal to the desired protection plus the ratio of the radiated powers of the undesired and desired stations expressed in decibels. If a directive antenna is used at either or both transmitting stations, the radiated power in each case should be the total radiated power multiplied by the gain of the antenna with respect to an omni-directional antenna, taken in the direction of the receiving station. Further, if a directional receiving antenna is used at the receiving station, the radiated power ratio should also be multiplied by the ratio of the receiving antenna gain in the direction of the undesired station to that in the direction of the desired station.

At night the maximum service range is always limited by atmospheric noise except in the case of radiotelephone at high latitudes when the radiated power of the ground station is low (see Fig. 30). Also the range increases rapidly with increasing latitude. Thus on the basis of the service ranges in Fig. 30 of two stations operating on the same channel or on adjacent channels, the interference range, and therefore the geographical separation, is controlled by the station at the higher latitude.

Similar considerations apply to daytime interference, but under conditions where the service range is limited by aircraft noise, for

example above 40° latitude in Figs. 28 and 29, the variation of service range with latitude is not as great as when it is limited by atmospheric noise. The interference range in such cases is therefore less critically dependent upon the latitude of the stations.

6.2-Adjacent-channel assignments

Determination of the interference range for a given frequency separation and for 25 and 30 decibels desired protection ratios under night conditions may be made from Figs. 99 and 100, described previously. The use of Fig. 98 to determine interference ranges for daytime conditions and for other desired protection ratios was also described.

All of the considerations mentioned above, involving the effect of varying service range and radiated power also apply in the case of adjacent-channel interference ranges.

REFERENCES

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2. Ionospheric Data, IRPL-F18, February 1946.
3. High Frequency Radio Propagation Charts for Sunspot Minimum and Sunspot Maximum, CRPL-1-2, 3-1, December 23, 1947.
4. Minimum Required Field Intensities for Intelligible Reception of Radiotelephone in Presence of Atmospherics or Receiving Set Noise - U. S. Signal Corps, Radio Propagation Unit, Technical Report No. 5 (Revised), July 1947.
5. Separations between Frequency Assignments for Radio Services on Adjacent Channels - Report of Committee "A", U. S. Preparatory Team, Provisional Frequency Board, January 1948.
6. Calculation of Sky-wave Field Intensities, Maximum Usable Frequencies, and Lowest Useful High Frequencies - U. S. Signal Corps, Radio Propagation Unit, Technical Report No. 6 (Second printing), October 1947.

References 1, 4, and 6 are available on request directed to the Office of Technical Services, Department of Commerce, Washington 25, D. C.

References 2, 3, and 5 are not available for general distribution.

Report of Working Group 4C

Proposed Text for Revision of PC-Aer-Document No. 5

LIST OF FIGURES

The list of figures for the revision of PC-Aer-Doc. No. 5 was given on Page 4 of Aer-Doc. No. 131. It was not possible to include a set of figures with the present document. However, most of them have appeared previously in PC-Aer-Doc. No. 5 and Aer-Doc. Nos. 46, 116, and 131. The following table identifies these previously published figures with the figures in the revision of PC-Aer-Doc. No. 5.

<u>Figure No. in Revised Doc.</u>	<u>Previous Document and Figure No.</u>
1	PC-Aer-Doc. No. 5 Figure 1
2	Aer-Doc. No. 131 " 13
4	" " " " " 14
6	PC-Aer-Doc. No. 5 " 17
7-18	" " " " " 2-13
19-27	" " " " " 24-32 (old form)
20,23,26	Aer-Doc. No. 131 " 5,6,7 (new form)
28,29	" " " " " 1,2
30	PC-Aer-Doc. No. 5 " 16 (to be changed slightly)
31,32,33	" " " " " 33,34,35 (old form)
32	Aer-Doc. No. 131 " 8 (final form)
34,35	" " " " " 3,4
36	PC-Aer-Doc. No. 5 " 23
38	Aer-Doc. No. 131 " 9
40-72	Aer-Doc. No. 116 (0° maximum range to be revised)
73-96	Aer-Doc. No. 46
97	PC-Aer-Doc. No. 5 Figure 18
98,99,100	Aer-Doc. No. 131 " 10,11,12

1. Introduction

The range of distances over which skywave propagation of a given radio frequency will provide satisfactory communication is limited at the minimum range by the skip effect and at the maximum range by attenuation of the signal. The maximum range depends upon the type of service, the power of the transmitting station, the noise and interference levels at the receiving station and the required signal-to-noise and signal-to-interference ratios. The minimum range is essentially independent of these factors. The solution to the problem which embraces all the afore-mentioned variables has been undertaken by graphical means, as this appears to be the most useful and convenient form of presentation.

In the utilization of the charts in this document, it must, however, be borne in mind that (a) aircraft transmitters have variable power ratings and are usually of low ratings compared with ground stations, and (b) noise levels in aircraft are generally high and difficult to limit to levels comparable with receiving set noise. Whereas the solutions resulting from the application of the charts in this document are considered reasonable and generally coincident with practical experience, in some cases divergences will be found. In such cases, practical experience in the special factors involved should be used to adjust the solution.

2. General description of the work undertaken.

The end result desired is a convenient collection of charts which will enable frequency families and geographical spacing of interfering assignments to be determined to insure at least 90% reliable communications throughout the year and throughout the sunspot cycle.

The charts are based on two types of communications:

- (1)-A₃ and other high capacity means of communication for which bandwidths are not greater than those required for A₃.
- (2)-Manual Morse telegraphy (A₁).

The graphs produced have been, as far as possible, placed in convenient form for the selection of frequencies in the "R" or "OR" frequency bands of the Atlantic City Conference regulations.

3. Assumption and basic data utilized in the preparation of the graphs.

3.1. -Radiated Powers

For A₁ emission the peak radiated power (i.e. the "key-down" radiated power) is assumed to be 1 kilowatt at the ground station and 50 watts at the aircraft.

For A₃ emission the peak radiated power with 100% modulation is assumed to be 4 kw at the ground station and 200 watts at the aircraft. With 100% modulation the field intensity of the radiated wave is double that of the unmodulated wave. Thus the peak radiated power with 100% modulation is four times the radiated power of an unmodulated carrier wave.

3.2. - Bandwidths

It has been assumed that A₃ modulation frequencies will be limited to 3 kc and that the sideband radiation of A₁ emissions will not exceed that of A₃ emissions. The use of a receiving set with average good selectivity characteristics has been assumed.

3.3. - Noise levels

3.3.1. Local noise. The local noise on the aircraft is assumed to

be 5 uv or less at the input terminals of the receiving set. It is expected that on new aircraft and on properly serviced used aircraft, the local noise level may be kept much lower than 5 uv.

Local noise at the ground station is assumed to be small enough that it never imposes a limitation on communications in comparison with local noise on the aircraft.

3.3.2. Atmospheric noise

Atmospheric noise levels considered here are based upon data presented in reference 4. In this document, atmospheric noise is classified as to noise grade and a series of charts for each grade is presented giving the field intensity necessary to provide 15 decibels signal-to-noise ratio 90% of the time for reception of A_3 transmissions with a receiver having a bandwidth of 6 kc. Curves are included for winter, summer, and equinox seasons, at 4-hour intervals throughout the day beginning with 0000. The geographical distribution of noise grades at four seasons of the year is shown by maps, which are reproduced here as Figs. 2-5. The lowest and highest grades shown by the maps are 1 1/2 and 4 1/2.

In Fig. 6 an idealized latitude distribution of atmospheric noise is shown. Fig. 6 C is an idealized distribution of noise grades based largely upon noise grades for continental masses. Noise grade 4 1/2 has been omitted as this occurs only in very small areas. Fig. 6 A shows required field intensities for A_3 (15 decibels signal-to-noise ratio) at summer noon as a function of latitude based on Fig. 16 C and required field intensity charts of reference 4. Fig. 6 B is a similar chart for night. These charts are utilized in the preparation of maximum range charts as explained in section 4.

3.4. Desirable signal-to-noise and signal-to-interference ratios.

For A_3 communication a minimum of 15 decibels signal-to-noise or signal-to-interference ratio is desirable for 90% intelligibility. For A_1 communication this ratio may be 0 decibels.

3. 5. Antennas

3. 5. 1. The effective length of the aircraft receiving antenna is assumed to be one meter.

3. 5. 2. The effective length of the ground station receiving antenna is not specified, but is assumed to be great enough that receiving set noise is never a controlling factor in the maximum range.

The use of directional antennas for receiving may improve both signal-to-atmospheric-noise and signal-to-interference ratios. Such antennas are feasible in cases where the aircraft fly well-defined narrow routes.

3. 5. 3. Directional transmitting antennas at the ground station may also have advantages, i.e., the diminution of interference to stations lying in directions other than that of the principal lobes of the radiation pattern, and the reduction in the amount of power which must be delivered to the antenna to provide a satisfactory signal level at the aircraft. However, it should be remembered that use of a directional transmitting antenna without reduction of the power to the minimum required level may cause undue interference to other stations lying within the range of the principal lobes.

3. 6. Required field intensities

3. 6. 1. Required field intensities for reception of A3 in the presence of atmospheric noise are those presented in reference 4 and described in section 3. 3.2. above.

3. 6. 2. Required field intensities for reception of A1 in the presence of atmospheric noise are taken to be 15 decibels less than for A3.

3. 6. 3. Since the aircraft local noise level is assumed to be 5 uv or less at the input terminals of the receiving set (section 3.3.1.), for an effective length of the antenna of 1 meter, the required field intensity for 15 decibels protection (A3) would be 28 uv/m.

However in view of the fact that lower local noise levels are attainable with proper servicing, charts in the document are based upon 20 uv/m required field intensity for A3 reception at the aircraft in the absence of atmospheric noise and interference.

3. 6. 4. The required field intensity for A1 reception on the aircraft, with an antenna having an effective length of 1 meter, is assumed to be 5 uv/m.

3. 7. Signal-to-interference (protection) ratios.

It was considered that duplication of A3 frequency assignments should be made on the basis of 30 decibels protection ratio at the aircraft for reception of the ground station through the interference of another ground station of equal power if the peak radiated power of the ground station is 4 kw and that of the aircraft is 200 watts. It was further considered that this figure might be downgraded as far as 25 decibels in case additional assignments were thereby made possible.

Because the ratio of ground station power (4 kw) to aircraft power (200 watts) is 13 decibels, 30 and 25 decibel protection ratios at the aircraft imply that the protection ratios at the ground station for reception of the aircraft through the interference from another 4 kw ground station are only 17 and 12 decibels, respectively.

The protection ratios 12 and 17 decibels at the ground station will provide tolerable signal-to-interference ratios providing there is no uncorrelated variations (fading) in the field intensities of the desired and undesired signals. Actually, of course, some uncorrelated fading is inevitable. However, the effects of short term fading may be greatly minimized by the use of diversity antenna systems and by the diversity effect introduced

by the motion of the aircraft.

3. 8. Charts for selection of daytime frequencies are drawn for conditions at noon in summer, i.e., June in northern latitudes, December in southern latitudes, equinox at equatorial latitudes, at minimum sunspot number (0) and maximum sunspot number (125). Since minimum ranges (skip distances) at noon are usually greater in summer than in winter, and maximum ranges are shorter in summer, the interval between the minimum and maximum range is usually smaller at summer noon than at any other time of the year. Thus summer noon represents the worst condition encountered with respect to the number of frequencies required for communication.

3. 9. Propagation Characteristics

All charts are based upon sky-wave propagation. Propagation characteristics are derived principally from references 2, 3, and 6.

4. Description of the Charts Produced.

4. 1. Minimum Range Charts for Noon

Figures 7 through 18 show the minimum ranges for each frequency band as a function of latitude in the northern and southern hemispheres of each of the three zones W, I, and E of Fig. 1. The charts refer in each case to local noon at the midpoint of the great circle path between the transmitting and receiving stations, to June in the northern hemisphere, and to December in the southern hemisphere. Separate charts are included for sunspot number 0 (sunspot minimum) and for sunspot number 125 (sunspot maximum).

On each curve, E- or F2-layer control of the range is indicated by a continuous or interrupted line, respectively. Effects of the F1-layer are included with those of the E-layer. Because of its erratic and unpredictable effects, sporadic-E has not been considered. When it occurs, however, the effect is to decrease the minimum range.

The minimum ranges are based upon the E-layer muf (maximum usable frequency) and the F2-layer owf (optimum working frequency = 85% of the muf) and are thus nominally exceeded on only 10% of the days of the month. Values of the E-layer muf were obtained from reference 2. Values of the F2-layer muf were obtained from reference 3.

4. 2. Minimum Range Charts for Night

Minimum ranges for 2000, 0000, and 0400 hours are given in Figs. 19-21, 22-24, and 25-27 for the three zones W, I, and E, respectively. Except for the effects of sporadic-E, minimum ranges at night for frequencies of 3 Mc and above depend only upon the F2 layer. Since the primary purpose of the charts is to indicate the order of the lowest frequency required for a family, they are based upon the F2-layer minimum range (MUF) at sunspot minimum in the month of December or June depending upon which is the greater minimum range, i.e., the greater skip distance.

4. 3. Maximum range charts for noon

Maximum ranges for radiotelephone, or other high capacity means of communication for which the required field intensities are the same as for radiotelephone, are given in Figs. 28 and 29 for noon at sunspot minimum and sunspot maximum, respectively. Corresponding charts for manual radiotelegraphy are given as Figs. 34 and 35. The assumptions as to radiated power and required field intensities on which these charts are based were stated in section 3.

As the charts indicate, at latitudes greater than a certain latitude which depends upon the frequency and type of emission (for example, approximately 40° in the case of radiotelephone at frequencies of 10 Mc and above) the ratio signal/atmospheric-noise at the ground station is less than the ratio signal/local-noise at the aircraft. Therefore, above this latitude, the range is limited by the local noise at the aircraft. In such cases the range may be increased in practice by decreasing the local noise at the aircraft or by increasing the radiated power of the ground station. Below this latitude, where the range is limited by atmospheric noise at the ground station, the range may be increased only by increasing the radiated power of the aircraft.

An idea of the dependence of the range on these factors may be obtained by comparing the charts for A3 and A1 at the same sunspot condition, for example Figs. 28 and 34, or Figs. 29 and 35. In the case of the higher latitudes where the ranges are limited by aircraft noise, the limiting field intensities are 20 uv/m (26 db above 1 uv/m) for A3, and 5 uv/m (14 db above 1 uv/m) for A1. The ratio of these field intensities is 12 decibels. Thus a decrease of 12 db in the noise level at the aircraft would result in ranges for A3 equal to those given for A1. The same increase in range would result from increasing the radiated power of the ground station by 12 db, that is, from 4 kw to 64 kw peak power in the case of A3, or from 1 kw to 16 kw peak power in the case of A1.

As a general rule, at latitudes where the range is limited by aircraft noise, the range increases by approximately 4% for each decibel increase in the radiated power of the ground station, or the range decreases by approximately 4% for each decibel decrease in the radiated power of the ground station, in the range of distances above about 300 km, and for frequencies below about 15 Mc.

4. 4. Maximum range charts for night

4. 4. 1. Idealized latitude variation of maximum range

In Fig. 30, the maximum range at night for radiotelephone in the various frequency bands is plotted as a function of latitude. These curves are based upon the required field intensity for night shown in Fig. 6. Interrupted (dashed) lines across the chart show ranges for ground station peak radiated powers of 200, 400, and 800 watts, as limited by local noise at the aircraft only. Above 800 watts this range is greater than 4000 km. As an example, consider the case of a ground station radiating 400 watts peak power. The range for this power, as limited by local noise at the aircraft only, is 1650 km. However, at 3 Mc, and at latitudes less than 65° , atmospheric noise at the ground station limits the range (curve

labeled 3.0). As another example, at 6.6 Mc, when the peak radiated power of the ground station is 400 watts, atmospheric noise at the ground station limits the range at latitudes less than about 45° .

Fig. 36, similarly, gives maximum ranges at night as a function of latitude for radiotelegraphy. In this case the limiting range for local aircraft noise for values of the peak radiated power of the ground station of 50 watts or more, is greater than 4000 km.

4. 4. 2. Maximum ranges for various noise grades

Figs. 31-33 and 37-39 for A3 and A1, respectively, are maximum range charts for 2000, 0000, and 0400 hours in which curves of frequency vs range are plotted for various values of the noise grade at the ground station. These charts are intended for use when a refinement of the ranges given by Figs. 30 and 36 is necessary. For this purpose the noise grade at the ground station is obtained from Fig. 2, 3, 4, or 5. In the case of stations north of 30° N and south of 30° S, curves for noise grades 3 and below apply only to the winter season, and are therefore to be used only with Fig. 2 in the case of stations north of 30° N, and only with Fig. 4 in the case of stations south of 30° S.

In Figs. 31-33 for A3, interrupted (dashed) lines drawn across the chart indicate the maximum range in the presence of aircraft noise only, for 200, 400, and 800 watts peak radiated power at the ground station.

In Figs. 37-39 for A1, maximum ranges, in the presence of aircraft noise only, are greater than 4000 km if the ground station peak radiated power is 50 watts or greater.

4. 5. Combined Maximum and Minimum Range Charts

For convenience in the selection of orders of frequencies for noon conditions, minimum range charts (Figs. 7-18) and maximum range charts for A3 (Figs. 28 and 29) have been combined in a series of charts, one for each 10° of latitude extending from 60° N to 40° S in each zone W, I, and E. On these charts the frequency has been plotted as a function of its minimum and maximum ranges for both sunspot minimum and sunspot maximum.

The curves are identified as follows: Narrow lines refer to minimum ranges; wide lines refer to maximum ranges. Continuous lines refer to sunspot minimum; interrupted lines refer to sunspot maximum. The service range of a frequency at sunspot minimum is the interval between the narrow and wide continuous lines. The service range at sunspot maximum is the interval between the narrow and wide interrupted lines.

4. 6. Interference Range Charts

4. 6. 1. Cochannel interference

If two stations, desired and undesired, transmit on the same frequency, the interference caused by the undesired station to reception of the desired station at a given receiving station depends upon the ratio of the field intensities of the desired and

undesired stations. This ratio, which is identical with the protection ratio in the case of cochannel interference, depends in turn upon the ratio of the radiated powers of the transmitting stations, and upon the attenuation experienced by each transmitted wave traversing the distance between its respective transmitting station and the receiving station. As the attenuation depends upon the distance, the ratio of field intensities at the receiving station is a function of the service range (the distance between the receiving station and the desired transmitting station) and the interference range (the distance between the receiving station and the undesired transmitting station).

At night when absorption is negligible the attenuation is solely a function of the distance, but during daytime it depends also upon the geographical relation of the transmission path to the subsolar point. Thus, for example, the attenuation along a 2000 km path directed toward the subsolar point from a transmitter located, say, 45° from the subsolar point, is greater than the attenuation along a path of the same length in a direction at right angles to the direction of the subsolar point. The attenuation along a path directed away from the subsolar point is even less and is in fact less than that along a path of the same length in any other direction.

This, together with the fact that the absorption along a given path in daylight is different for different frequencies, make it impracticable to give a complete description of the interference possibilities on all frequencies.

Figs. 73-96 (reproduced from reference 3) present information on the interference range as a function of service range and protection ratio in the form of a series of charts applying to 4, 6, 10, 15, 20, and 25 Mc and four typical relations of the transmission path to the subsolar point.

These situations are:

1. The receiving station at the subsolar point; transmitting stations in any directions.
2. The receiving station 60° from the subsolar point receiving from transmitting stations in directions at right angles to the direction of the subsolar point.
3. The receiving station 60° from the subsolar point receiving from transmitting stations in the direction opposite to that of the subsolar point.
4. The receiving station located at the day-night line (90° from the subsolar point) receiving from transmitting stations in the same direction as the subsolar point.

Approximate solutions for other frequencies and relations of the transmission path to the subsolar point may be found by interpolation.

For transmission paths in darkness, because absorption is virtually absent, the attenuation is independent of frequency and of the direction of reception at the receiving station. Thus one chart, Fig. 97, is sufficient for night conditions.

4. 6. 2. Adjacent channel interference

In addition to the factors mentioned above for cochannel interference, adjacent channel interference depends upon the frequency separation, the characteristics of the sidebands emitted by the interfering transmitter, and the selectivity characteristics of the receiving set.

In Fig. 98 the ratio of field intensities of the desired to undesired signals required for protection ratios of 25 and 30 decibels is plotted as a function of carrier frequency separation for the case of interference between two radiotelephone stations on adjacent channels. These curves are based upon data given in reference 5 in which modulation frequencies up to 3 kc and a receiver with average good selectivity characteristics are assumed. Corresponding curves for telegraphy interfering with telephony, telephony interfering with telegraphy, or telegraphy interfering with telegraphy are nearly identical with these in the range of frequency separations shown if the receiver selectivity characteristics are the same in each case.

Figs. 97 and 98 have been used to derive curves showing interference range as a function of service range and frequency separation. Inasmuch as the protection ratio scale of Fig. 97 refers to field intensity ratios, this scale may be converted into a frequency separation scale for a specified protection ratio through the relationship given in Fig. 98. The results for protection ratios of 25 and 30 decibels are shown in Figs. 99 and 100, respectively. Fig. 99 is used to find the separation necessary to provide 25 decibels protection between two transmitting stations operating on adjacent channels. Fig. 100 is used in the same way if 30 decibels is the required protection ratio.

Required geographical separations for daytime conditions may be obtained by using Fig. 98 together with the appropriate interference range charts, Figs. 73-96. Thus for 25 decibels protection, the field intensity ratio for the given frequency separation is read from curve A, Fig. 98. This field intensity ratio is then used as the protection ratio on the appropriate interference range chart to obtain the interference range.

Fig. 98 may also be used to obtain the field intensity ratio corresponding to any other desired protection ratio by adding the difference between this protection ratio and 25 decibels to the field intensity ratio obtained from curve A, Fig. 98. The resulting field intensity ratio may then be used as the protection ratio in Figs. 72-97 to obtain the interference range.

5. Procedure for selection of frequency families.

5.1. General Procedure

The combined minimum and maximum range charts, Figs. 40-72, provide a convenient and rapid means for the selection of frequencies for an individual route segment or route area, which, together with a frequency selected from the 3.0 or 3.5 Mc band, will constitute a family adequate to provide, in the absence of deleterious interference from other stations, at least 90% reliable air-ground A 3 communication at all times under normal radio propagation and reception conditions except those in which the lowest frequency selected is not low enough. The applicability

of the charts is, of course, subject to correspondence of radiated powers and required field intensities with the assumptions stated in section 3.

The process of selection is to determine from the curves a minimum set of frequencies necessary to cover the required distance at both sunspot minimum and sunspot maximum. For this purpose it is usually convenient to select families for sunspot minimum and sunspot maximum independently, and then to combine these into a single family suitable for sunspot minimum or sunspot maximum.

It is not advisable to select a family which fits between the minimum range curve for sunspot minimum and the maximum range curve for sunspot maximum. This results in an unnecessarily numerous family of frequencies.

Generally, the chart used is that corresponding to the latitude and zone of the midpoint of the great circle path between the ground stations at the termini of a route segment. Actually the midpoint between the aircraft and the ground station moves as the aircraft moves, but it is usually sufficiently accurate to consider only the midpoint of the route segment or of the maximum anticipated distance between the aircraft and the ground station in the case of a flight involving a single ground station.

In case one or both ground stations are located within approximately 40° of the equator, it may be preferable to use the chart corresponding to the latitude of the ground station nearer the equator. This is because, on the basis of Figs. 28 and 29, the maximum service range is limited by atmospheric noise at the ground station at latitudes less than about 40° .

If the midpoint latitude or the ground station latitude, whichever is used as the reference point, lies approximately half-way between two adjacent latitudes for which the charts are prepared, unless an interpolation is made, it is preferable to use the chart for the lower latitude as this represents the more severe limitation on the maximum range.

Further, if the reference point lies on the boundary between two zones of Fig. 1 (e.g. I & E), use the chart on which the minimum ranges are greater.

Maximum ranges corresponding more closely to the actual noise grade for the ground station, where this differs from that given by the idealized curve of Fig. 6C, may be obtained as follows: Read the true noise grade at the ground station on Fig. 2, 3, 4, or 5, bearing in mind that the maximum range curves relate to summer conditions, i.e., June in northern latitudes, December in southern latitudes, and equinox in equatorial latitudes. Next, on Fig. 6C find the latitude corresponding to this noise grade on the side marked "summer". Then the combined minimum and maximum range chart for this latitude gives the correct maximum ranges.

In the case of north-south route segments, the midpoint latitude is equal to the arithmetic mean of the endpoint latitudes. On an east-west route segment, however, this is no longer true except near the equator. For example, if the latitude of one station were 30° N and the other station were at 40° N but

20° west of the first station, the latitude of the midpoint would not be 35° N but somewhat higher.

If any pair of adjacent frequencies selected on the basis of the chart bear a ratio to each other greater than about 2:1, it is desirable that an intermediate frequency be introduced in order to insure that the family will be adequate for conditions at times of the day other than noon. At such times the values of the minimum and maximum ranges at each frequency will be altered and this may result in an appreciable interval of distance over which none of the frequencies is suitable if the intervals between successive frequencies are too great.

5.2 Selection of noon frequencies - Example

As a specific example, consider an aircraft departing from New York (latitude 41° N, approximately) and flying south for a distance of 2500 km. The midpoint latitude for this distance is 29.5° N. Thus, as the midpoint is located in the W-zone near 30° N, the chart labelled W-zone, 30° N (Fig. 43) will be used.

The minimum and maximum ranges at sunspot minimum and maximum for the various frequencies as given by the chart for W-zone 30° N are listed in the following table:

Frequency Mc	Service	Sunspot minimum		Sunspot maximum	
		Min. range	Max. range	Min. range	Max. range
3.0	R, OR	0 km	100 km	0 km	0 km
3.5	R	0	250	0	0
4.0	OR	0	350	0	200
4.7	R, OR	0	550	0	300
5.6	R, OR	350	700	0	450
6.6	R, OR	450	950	0	600
9.0	R, OR	650	1500	450	1100
10.0	R	750	1700	550	1250
11.3	R, OR	950	2050	650	1550
13.3	R, OR	1300	2500	850	1900
15.0	OR	1600	2800	1050	2200
18.0	R, OR	skips	skips	1400	2600
22.6	R, OR	skips	skips	skips	skips

Thus to provide communication at sunspot minimum and maximum separately for (a) the "R" service, and (b) the "OR" service, frequencies from the following orders might be selected.

(a) "R" Service

Sunspot minimum	Sunspot maximum
4.7 Mc	6.6 Mc
6.6 Mc	10.0 Mc
10.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

(b) "OR" Service

4.7 Mc	6.6 Mc
6.6 Mc	2.0 Mc
9.0 Mc	13.3 Mc
13.3 Mc	18.0 Mc

It will be observed that in the case of the "R" service, frequencies of 6.6, 10.0 and 13.3 Mc are common to the families for sunspot minimum and maximum. Thus these frequencies plus 4.7 Mc for short ranges at sunspot minimum and 18.0 Mc for long ranges at sunspot maximum will generally satisfy the requirement at summer noon throughout the sunspot cycle.

In the case of the "OR" service, 6.6, 9.0 and 13.3 Mc are common to the families for sunspot minimum and maximum. Again, addition of 4.7 and 18.0 Mc to these frequencies provides a family adequate at summer noon throughout the sunspot cycle.

5.3 Completion of family for night

The above frequencies were selected for daytime communication only. If communication at night must also be provided for, a frequency at 3.0 or 3.5 Mc will usually be necessary for short ranges.

Reference to Figs. 19-21, the nighttime minimum range charts for the W-zone, indicates the following minimum ranges for 3.5 and 3.0 Mc at 2000, 0000, and 0400 hours at 30° N.

	2000 hr	0000 hr	0400 hr
3.5 Mc	0 km	500 km	0 km
3.0 Mc	0 km	0 km	0 km

Thus it appears that 3.0 Mc is well suited as a short range night frequency, and, except for a few winter months at sunspot minimum, 3.5 is also suitable.

In selecting this frequency it should be remembered that a portion of the distance nearest the transmitting station will be covered by the ground wave in case the sky wave skips at short range.

5.4 Frequency Spacing

Examination of the families selected in the above example shows that in no case does the ratio of adjacent frequencies exceed 2:1. Thus it is unnecessary to introduce an additional frequency to insure adequate coverage at all times.

6. Frequency Sharing -- Determination of Geographical Separation

6.1. Cochannel assignments

Interference ranges for daytime conditions may be determined from Figs. 73-96. Interference ranges for night conditions are given by Fig. 97. These charts were described in section 4.

Because of relatively less attenuation at night, interference ranges at night are greater than in daytime. Therefore, if the geographical separation of stations to which the same or adjacent channels are assigned is based upon the nighttime interference range, the use of the frequency will also be adequately protected for daytime. However, the reverse is usually not true.

The service range on which the interference range and geographical separation are to be based may be specified arbitrarily or selected on the basis of one of the maximum range charts. As an example, consider the nighttime range for 3.0 Mc at 40° latitude given in Fig. 30. Assuming the peak radiated power of the ground station is more than 200 watts, the range is approximately 500 km. If the desired protection ratio at the aircraft is 30 decibels, and the radiated power of the undesired station is the same as that of the desired ground station, the interference range of the undesired station is read at 30 decibels protection ratio on the curve for 500 km service range, Fig. 97. The interference range in this case is a little greater than 10000 km. For a desired protection ratio of 25 decibels, the interference range is 8000 km.

In case the radiated power of the undesired station is not the same as that of the desired station, the interference range should be read at a value of the protection ratio equal to the desired protection plus the ratio of the radiated powers of the undesired and desired stations expressed in decibels. Strictly, if a directive antenna is used at either or both transmitting stations, the radiated power in each case should be the total radiated power multiplied by the gain of the antenna with respect to an omnidirectional antenna taken in the direction of the receiving station. Further, if a directional receiving antenna is used at the receiving station, the radiated power ratio should also be multiplied by the ratio of the receiving antenna gain in the direction of the undesired station to that in the direction of the desired station.

At night the maximum service range is always limited by atmospheric noise except in the case of radiotelephone at high latitudes when the radiated power of the ground station is low, (see Fig. 30). Also the range increases rapidly with increasing latitude. Thus on the basis of the service ranges in Fig. 30, of two stations operating on the same channel or on adjacent channels, the interference range, and therefore the geographical separation, is controlled by the station at the higher latitude.

Similar considerations apply to daytime interference, but under conditions where the service range is limited by aircraft noise, for example above 40° latitude in Figs. 28 and 29, the variation of service range with latitude is not as great as when it is limited by atmospheric noise. The interference range in such cases is therefore less critically dependent upon the latitude of the stations.

6.2 Adjacent-channel assignments

Determination of the interference range for a given frequency separation and for 25 and 30 decibels desired protection ratios under night conditions may be made from Figs. 99 and 100, described previously in section 4.6.2. The use of Fig. 98 to determine interference ranges for daytime conditions and for other desired protection ratios was also described in section 4.6.2.

All of the considerations in section 6.1, above, involving the effect of varying service range and radiated power also apply in the case of adjacent-channel interference ranges.

REFERENCES

1. Relative Sky-wave Signal Strengths Required for Intelligible Reception of Various Types of Radio Communication Service - U. S. Signal Corps, Radio Propagation Unit, Technical Report No. 4, August 1945.
2. Ionospheric Data, IRPL-F18, February 1946.
3. High Frequency Radio Propagation Charts for Sunspot Minimum and Sunspot Maximum, CRPL-1-2, 3-1, December 23, 1947.
4. Minimum Required Field Intensities for Intelligible Reception of Radiotelephone in Presence of Atmospherics or Receiving Set Noise - U. S. Signal Corps, Radio Propagation Unit, Technical Report No. 5 (Revised), July 1947.
5. Separations between Frequency Assignments for Radio Services on Adjacent Channels - Report of Committee "A", U. S. Preparatory Team, Provisional Frequency Board, January 1948.
6. Calculation of Sky-wave Field Intensities, Maximum Usable Frequencies, and Lowest Useful High Frequencies - U. S. Signal Corps. Radio Propagation Unit, Technical Report No. 6 (Second printing), October 1947.

References 1, 4, and 6 are available at the Office of Technical Services, Department of Commerce, Washington 25, D. C.

References 2, 3 and 5 are not available for general distribution.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No. 163 - E
Aér-Document No. 163 - F
Documento-Aer No. 163 - S

10 July, 1948
10 juillet, 1948
10 de julio de 1948

Schedule of meetings
Horaire des séances
Programa de sesiones

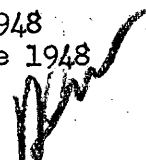
	Room B Salle B Sala B	I	II	III
Monday, 12 July, 1948 Lundi, 12 juillet 1948 Lunes, 12 de julio de 1948				
0830		6 0	6 G	7 Work.Gr. 7 Gr. de tr.
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2030	Plenary Meeting	----- Assemblée plénière -----	Sesión plenaria	
Wednesday, 14 July, 1948 Mercredi, 14 juillet, 1948 Miercoles, 14 de julio de 1948				
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Thursday, 15 July, 1948 Jeudi, 15 juillet 1948 Jueves, 15 de julio de 1948				
0830		6 C	6 G	"
1430		6 C	6 G	"
1630		6		
2030	Plenary Meeting	----- Assemblée plénière -----	Sesión plenaria	



International Administrative
Aeronautical Radio Conference,
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No. 164 - E
Aér-Document No. 164 - F
Documento-Aer No.164 - S

10 July, 1948
10 juillet, 1948
10 de Julio de 1948



Agenda for the Sixth Plenary Meeting.
Tuesday, 13 July, 1948, at 2030 hours.

1. Minutes of the Fifth Plenary Meeting, if available. (Aer-Document No. 161).
 2. Approval of Aer-Documents Nos. 131(if available), 147, 142(without Annex B; together with the two relevant documents - Aer-Document No. 155 and a document to be produced by Committee 6), 115, 159 (if available).
 3. Final documents of the Conference and languages.(Aer-Document No. 165).
-

Ordre du jour pour la sixième séance plénière
Mardi, 13 juillet, 1948, à 20 h.30

1. Procès-verbal de la cinquième séance plénière,(Aér-Document No. 161, si disponible).
 2. Approbation des documents-Aér. Nos:131 (si disponible), 147, 142 (sans annexe B, mais avec les deux documents qui s'y rapportent - le document No. 155 et celui qui sortira de la Commission 6), 115, 159 (si disponible).
 3. Documentation finale et langues. (Aér-Document No. 165).
-

Orden del dia de la sexta sesión plenaria.
Martes, 13 de julio de 1948, a las 20.30

1. Acta de la quinta Sesión Plenaria, si está disponible.(Documento-Aer.No. 161).
 2. Aprobación de los documentos siguientes; Documento-Aer. No. 131, si está disponible; Documento-Aer. No. 147; Documento-Aer.No. 142, (sin anexo B, y con los Documentos que a él se refieren - Documento-Aer. No. 155 y el que facilitará la Comisión 6); Documento-Aer. No. 115; Documento-Aer. No. 159, (si está disponible).
 3. Documentos finales y lenguas. (Documento-Aer. No. 165).
-



PROPOSAL SUBMITTED BY THE DELEGATION
OF THE UNITED STATES OF AMERICA

The International Administrative Aeronautical Radio Conference, Geneva,

Considering:

1. that the conclusions of this Conference are not final in the sense of the conclusions of an administrative conference of the International Telecommunication Union which modify the texts of the Regulations;
2. that those conclusions are to be transmitted to the Provisional Frequency Board and thereafter to the administrative conference which considers the new frequency list, there to be considered and possibly amended;
3. that the production or even the planning of a final document in the five official languages of the Union would add a considerable amount of time to the conference and would complicate the task of preparing its final report;
4. that the production of such a document would also involve considerable expense to the Union and would add to the expense of the administrations wishing to obtain additional copies of the report of the conference over and above the free distribution;
5. that the conference, has, to this time, lasted about two months at considerable expense to the Governments which have sent delegations thereto,

Decides:

- a. To prepare a report of its conclusions in the form of a working document as follows:
 - I General Report: Foreword, resolutions, recommendations, technical and operational standards, explanatory texts to the plans for the allotment of "R" bands, and "OR" bands, explanatory texts to the frequency selection charts. This part of the Report should be in four separate volumes, one for each of the following languages: French, English, Spanish, Russian.
 - II Annex I: Frequency selection charts arranged in such a manner that each chart will be placed on the right side of the volume (odd-numbered pages) and the legend pertaining to it, in the four languages mentioned above will face the chart (even-numbered pages).
 - III Annex II: Allotment plan for the "R" bands, less the explanatory texts, but including the maps pertaining thereto, and with indications in the same four languages.

IV Annex III: Allotment plan for the "OR" bands, less the explanatory texts, with x column heads in the same four languages.

- b. to prepare the above report on paper of the same quality as that used for the documentation of this Conference, except in the cases of the frequency selection charts and of the maps, which should be made by a commercial firm on paper of such quality as will ensure reasonably satisfactory presentation;
- c. to disregard all previous decisions of the Conference conflicting with this Resolution;
- d. to refer all matters of detail, interpretation and application of this Resolution to the Steering Committee;
- e. to refer the matter of publishing the conclusions of the Conference in a different form for decision by the Administrative Council of the I.T.U. ;
- f. to transmit officially one copy of the report to the Provisional Frequency Board over the signature of the Chairman of the Conference.

UNITED STATES PROPOSALS

United States
Proposal Concerning
The Form of the "Frequency List" as
Applied to the "R" Bands

The United States proposes the following for inclusion in the final report of the Conference on the above subject:

FORM OF THE "FREQUENCY LIST" AS APPLIED TO THE "R" BANDS

The Committee, in considering the advisability of including a list of aeronautical mobile stations in the draft "Frequency List" which is to be prepared by the PFB for submission to the "Special Administrative Radio Conference, 1949", has noted the following:

- 1) One of the main purposes of a Frequency List is to establish a basis on which an administration may make a choice of a required frequency, submit the chosen frequency to the IFRB for registration and inclusion in the master frequency list, provided the IFRB considers that the chosen frequency is suitable from an engineering viewpoint.
- 2) A list showing frequencies used by the various aeronautical stations alone would not serve this purpose. The more important information required is that indicating the area of use of each particular frequency.
- 3) The information submitted on Forms 2 by the various administrations (regardless of its application in the case of the "OR" frequencies) is not an adequate guide in the consideration of the problem of allotment of "R" frequencies because:
 - a) It was prepared on the basis of a system of uncoordinated frequency assignments and provides for the use of frequencies in numbers exceeding those available,
 - b) It does not indicate the area of aircraft operations served by the various stations, and
 - c) It was prepared on the basis of systems of aircraft operations which in many respects are obsolete.

tho 1-

- 4) As a result of the development during the war of new methods of aircraft manufacture and use together with the increasing interest in air transport both for persons and goods, the civil air transport system is undergoing rapid expansion, and its methods of operation and its organization are changing rapidly.
- 5) The I.T.U. should not prescribe for aviation the organization of the Aviation Communication Service but should only insure that the most equitable distribution of frequencies is made among the various segments of that service.
- 6) The aviation service should have maximum freedom to adopt that method of use of radio frequencies found most suitable to its operational requirements.

In view of the foregoing, the Committee concludes:

- 1) That the aeronautical mobile "R" frequencies should appear in the frequency list in accordance with the recommendations of this Conference and without reference to specific stations, as follows:
 - a) Frequency
 - b) Area of use authorized
 - c) Purpose for which authorized
 - d) Any restrictions in b) or c) (such as maximum authorized power) that may be indicated
- 2) That any station may be admitted to registry provided that the administration indicates that such station is established in accordance with the provisions of the frequency list as set forth above.
- 3) That the various administrations are expected to agree either bilaterally or regionally on the details of use of the various frequencies by their Aviation Services and to register stations accordingly.
- 4) That a list of aeronautical stations is not essential for the purposes of the draft frequency list.
- 5) That subsequent frequency lists, published in the form set forth in the Atlantic City Radio Regulations, will include details of the use of specific frequencies by the various aeronautical stations, in addition to the information referred to in paragraph 1).

United States

Proposal concerning Agenda Item H -

"Consideration of the recommendation to be made to the PFB relating to the carrying out of the plan drawn up by the Conference."

The United States proposes the following for inclusion in the final report of the Conference on the above subject:

1. The requirements of safety and efficiency in air operations make it necessary that the frequencies which have been allotted under the foregoing plan be made available for the intended use at the earliest practicable date. The Conference invites attention to the vital dependence of aviation upon radio communications in comparison with the situation of other users of the radio frequency spectrum. The Aeronautical Radio Frequency Conference, in the light of this consideration, and in the light of the recognition already given at Atlantic City to the urgency of the requirements of aviation which cannot now be met, requests that the PFB accord to aviation in any plan for implementation of the frequency lists, first priority consideration.

2. It is considered by the Conference that it is not practical to fix a date for simultaneous shifting of frequencies on a world-wide basis, even within the aviation service alone. However, the Conference does strongly recommend that the earliest practicable date be fixed by which changes shall be completed, preferably within six months after the final action of the Special Administrative Radio Conference.

3. The Conference expresses the view, to which it invites the attention of the interested administrations, that frequency assignment changes accomplished gradually are desirable as this will diminish the possible confusion and disruption which will be involved in attempting the very large number of frequency changes which will follow final action on the frequency lists. Further the bringing into force of those changes which are practicable will aid in meeting immediate operational needs of the aviation service. It is recognized that Governments may, by bi-lateral or regional arrangements, proceed with the implementation of the aeronautical frequency allotment plan, on a transitional basis, in advance of final action by a Special Administrative Radio Conference, provided that such arrangements are within the framework of the Cairo Regulations.

4. It is recognized that, in some instances, stations in the aeronautical service may have to change frequency twice in the working out of the final implementation plan. Governments, parties to bi-lateral or regional arrangements such as referred to in paragraph 3 above should accept in advance this condition.

5. It is recognized that problems involving certain practical difficulties will be encountered in accomplishing frequency shifts in the aviation service, due to remote location of stations, difficulty in accomplishing economical modification of aircraft equipment, and other causes. It is considered by the Conference that Administrations should make whatever preliminary arrangements are necessary in order to insure minimum delay in carrying out frequency changes, including the stockpiling of the necessary equipment, such as crystals, materials for antenna construction, etc., so that the aviation service can declare itself, at the appropriate time, to be in a state of readiness to accomplish these frequency shifts.

6. The Aeronautical Conference draws attention to the fact that its employment of frequency space is for safety purposes and recommends to the PFB that in any general plan of implementation safeguards be provided so as to prevent impairment of safety in the air during the transition.

Submitted by Messrs. Caswell, Weaver, and Bartlett -- members of Working Group.

(7-12-7)

United States
Proposal concerning Agenda Item G
"Consideration of Methods for the
Accommodation of additional Future
Requirements in the Aeronautical
Mobile Bands."

The United States proposes the following for inclusion in the Final Report of the Conference on the above subject:

This Conference has allotted all frequencies available in the aeronautical mobile bands established by the Atlantic City Radio Regulations. In making these allotments, cognizance has been taken of the fact that a large proportion of the users of the aeronautical mobile frequencies now conduct their communications by means of manual telegraphy at slow speed. The allotment plan, on the other hand, has been based on a channel separation adequate to handle high capacity means of communication. The reasons of the Conference for accepting this basis for the allotment plan were: first, that the basic structure of aeronautical mobile communication planning must be adapted to high-capacity means of communication; and, second, that, from a practical point of view, each one of these high capacity channels can be used, where required to meet present equipment limitations, for type A1 communication.

The aviation communication service is one of the most rapidly expanding users of the radio spectrum. The allotment plan adopted utilizes all of the frequency space available in an effort to meet present needs, and does not and could not provide a reserve of unused frequencies to meet future needs,

Future expansion of air communication operations may therefore be accomplished through the following means:

First, provision must be made for the accommodation of traffic for additional aircraft on existing frequencies, using existing communication means, through simplification of procedures, through the use of standardized abbreviations, and through improvements in operating practices. The objectives are both to reduce the wordage that passes between the aircraft and the ground to a minimum, and to save communication time through the maintenance of high circuit discipline.

Second, those aeronautical operations that can be served by the VHF and SHF frequencies should abandon the use of the high frequencies for air/ground communications at the earliest possible date, thus making possible the use of the high frequencies by more aircraft operating under conditions where the higher frequencies will not serve.

Third, the capacity of the allotted communications channels to handle aircraft must be expanded by means of the bringing into use of forms of high speed mechanical and automatic communication, and the application of other

technical advances in the telecommunications art as soon as they can be made available.

It is believed that if these principles are followed, the frequency bands available to the aeronautical mobile service, under the present allotment plan, will accommodate the needs of air/ground communication for some time to come.

The Conference believes that, in spite of all the efforts of the aviation service to use frequencies in an efficient and economical manner, the expected growth in the number of aircraft and the extent of their operation will find limitations on ability to communicate, resulting in limitations on safety. Therefore the Conference entertains the hope that the next ITU Conference will again consider carefully the needs of this service with a view to increasing the size of the exclusive aeronautical mobile bands.

Submitted by Messrs. White, Bartlett, and Lebel.

(7-12-7)

10 July, 1948

Committee I

Report
of the Steering Committee

(Committee 1)

16th Meeting

9 July, 1948

1. The meeting was opened at 5.45 p.m.

Chairman : Mr. A. L. Lebel (Chairman of the Conference)

Mr. Souto Cruz	(Committee 2)
Mr. Falgarone	(Committee 3)
Mr. Selis	(Committee 4)
Mr. Coffey	(Committee 4)
Mr. Chef	(Committee 5)
Mr. Betts	(Committee 6)
Mr. Harvey	(Committee 6)
Mr. Fry	(Committee 7)

2. Approval of reports of the 13th, 14th and 15th meetings (Aer-Documents Nos. 134, 139 and 149).

Aer-Document No. 134 was adopted.

Aer-Document No. 139 was adopted with the following amendment :

In the list of those present, read "Mr. Chef (Committee 5)", instead of "Mr. Chef (France)".

Aer-Document No. 149 was adopted.

3. General questions

None.

4. Date of the next Plenary Meeting.

After a discussion in which agreement was reached on the desirability of holding a Plenary Meeting as soon as possible, it was decided to call one for Tuesday, 13 July. In view of the limited time remaining and in order not to interrupt the work of Committees, the meeting would be held at 2030 hours.

5. Agenda for the Plenary Meeting.

An agenda was drawn up for the Plenary Meeting (See Aer-Doc. No. 164).

The meeting rose at 1900 hours.

Reporter :

J. Kunz

Chairman :

A. L. Lebel



13 July, 1948

Committee 7

French Delegation

Allotment of frequencies on a secondary basis

1. The bands allocated to the aeronautical mobile OR service are narrow in comparison with the considerable volume of requirements which have to be met in them. Committee 7 has therefore allocated the same frequency to two different countries separated one from the other by a distance less than the protection distance - that is, under conditions such that harmful interference might arise. It has done so considering that intermittent use of this frequency by the countries concerned would ensure satisfactory operation.

The two countries are considered as possessing equal rights in the "time-sharing" of the common frequency.

But even by adopting this principle, such a small proportion of the requirements of countries in the aeronautical mobile OR bands will be satisfied that the countries concerned will find satisfactory communications impossible.

2. Hence the French delegation proposes that Committee 7 satisfy those requirements which could not have been met by the normal allotment of a frequency or by time-sharing, on the basis of a system of priority.

The country or countries to which a frequency was allocated in the first instance would use it on a "primary" basis, and would enjoy prior rights by comparison with a country using it on a "secondary" basis. If interference arose between two stations belonging to two different countries, it would be the country operating the frequency on a "secondary" basis which, by agreement with the other, would be called upon to take the necessary measures for elimination of the interference, such as a change in the times of emission, a reduction of power, a change, possibly, in the type of emission, or by arranging for the frequency to be used by a station further removed from the station concerned. Hence the system proposed would substitute bipartite or multilateral agreements for equality of rights between states.

3. But if different stations are to function satisfactorily under such conditions, precautions must be taken to ensure an adequate degree of protection between them.

Therefore the French delegation proposes:

- a) That stations operating a frequency on a secondary basis should be at most equal, and wherever possible, inferior in power to the station operating on a primary basis.
- b) That such stations should be distant one from another by at least a third, and, wherever possible, by a half of the distance required for a protection ratio of 20 db.



- c) That frequencies allocated on a secondary basis should be noted in the international frequency card index in the column "Notification". This should be done in accordance with the rules laid down for the registration of frequencies under such conditions by the Atlantic City Radio Regulations. (see Radio Regulations - Nos. 343, 344 and 345).

4. The French delegation acknowledges that this method of frequency allotment is not perfect but emphasizes :

- a) That in all bands it would enable most requirements to be satisfied, and in the case of certain bands, all of them.
- b) That its application would be easier by reason of the "intermittent" use of frequencies in the aeronautical mobile OR bands, for which allowance is usually made.
- c) That the risk of some interference is better than complete anarchy. In any case, every country would have a number of "primary" frequencies giving it priority over "secondary" ones.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948

Corrigendum to : Aer-Document

No. 169 - E

15 July, 1948

In b) (3), add a comma after the word "polarization".

Last line but one, read "but that they be not subject to sub-division."

Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948

Corrigendum au document-aér.

No. 169 - F

15 juillet, 1948

à la dernière ligne, lire "et ceci sans qu'elles soient l'objet de division."

Corrigendum au document-aér

No. 165 - F

15 juillet, 1948

Amender le point 2 de la façon suivante :

"que lesdites conclusions doivent être transmises au Comité provisoire des fréquences, et ultérieurement à la Conférence administrative spéciale chargée de l'approbation de la nouvelle liste des fréquences; cette Conférence les examinera et, le cas échéant, les modifiera."

Dans la partie opérante de la résolution, point I, quatrième ligne, lire "permettant le choix des fréquences."

Point II, première ligne, lire "graphiques permettant le choix des fréquences."



RESOLUTION ADOPTED BY COMMITTEE 6 IN CONNEXION
WITH THE USE OF THE TWO COMMON CHANNELS 3023.5
AND 5680 kc/s.

"IT IS RECOMMENDED; that the common channels centred at 3023.5 and 5680 kilocycles be authorized worldwide for the following uses:

a) Aboard aircraft for

- (1) communication with approach and aerodrome control.
- (2) communication with aeronautical stations when other frequencies are either unavailable or unknown.

b) At aeronautical stations for aerodrome and approach control under the following conditions:

- (1) for approach control with the 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.
- (2) 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.
- (3) attention should be paid to the polarization used in order to avoid harmful interference

c) For use for intercommunication between aircraft, mobile surface vehicles and ships engaged in coordinated search and rescue operations at the scene of a disaster.

d) The specific applications of these common channels for these purposes may be decided at regional aeronautical conferences.

e) With respect to the use of the 5680 kilocycles for approach and aerodrome control, it is recognized that it is not an appropriate frequency for that purpose and that it should be abandoned as soon as possible and that it should be used with careful regard to its propagation characteristics.

IT IS FURTHER RECOMMENDED that these channels be available for A1 or A3 emission in accordance with regional arrangements and that it be not subject to subdivision."

REPORT OF SUB-COMMITTEE 6C

7th Meeting
12 July, 1948

1. The meeting opened at 2.45 p.m. under the chairmanship of Mr. G. A. Harvey (Union of South Africa).
2. The following countries, and international organisations were represented.

Argentina	Netherlands East Indies
Australia	Norway
Bielorussia	Poland
Brazil	Portugal
Canada	Roumania
Chile	Sweden
Egypt	Union of South Africa
France	United Kingdom
French Protectorates of Morocco and Tunisia	United States and Territories
Ireland	U.S.S.R.
Italy	Yugoslavia
Netherlands, Curacao and Surinam	I.C.A.O.
	I.A.T.A.

3. The following documents were adopted, subject to the amendments detailed hereunder:-

Document 143 - Add the delegate for the Netherlands to those who participated in the work of Group 6C2.

Document 144 - Amplify the statement made by the representative for I.A.T.A. to read - "It was his belief that World Air Route frequencies pertaining to the NA, SA, NSAI, NSA2, and ME major routes should not be used within the boundaries of the European region."

Document 152 - The French text of this document was not available, but the delegate for France agreed to its consideration on the basis of the English text, while reserving his right to request any necessary amendments when the French text was issued.

Page 1 (a) include U.S.S.R. in list of countries represented.

(b) in last line, amend "landry" to read "landing".

Page 2 - Para. 12, second line - amend "motion" to read "extend".
Para. 13, fourth line - amend "as" to read "on".

4. Copies of the descriptions of the thirteen Major World Air Route Areas were circulated, and the Chairman called upon Mr. Shores, leader of group 6C1 to explain the procedure adopted.

In the course of his explanation Mr. Shores pointed out that the description was in two parts:-

- (1) a general description by reference to geographical locations and
- (2) by coordinates of latitude and longitude.



He added that the informal agreement of the majority of delegates interested had already been obtained to the boundaries as defined verbally and on the chart.

The definitions and chart boundaries were approved, subject to the following amendments

- (1) European Area - Casablanca (French Protectorate of Morocco) to be included in the geographical description of this area.

The Bielorussian delegate submitted the text of an addendum to the description of this area, the substance of which was to make it clear that its boundary did not enclose any territory of the U.S.S.R.

- (2) North Pacific Area - A similar addendum was submitted for inclusion in the description of this area. The text of both these amendments will be found in an annexe to this document.

The Bielorussian delegate reiterated his previous objections to the interpenetration of areas into Europe, and to the creation of a North Pacific area.

The Chairman concluded discussions on this matter with a resumé of the progress achieved so far, and brief particulars of the material which would be included in the final report of committee 6C.

The committee then passed on to discussion of the report of working group 6C2, Document 145.

Item 1 of the recommendations of this committee was the subject of prolonged discussion, in which the delegates of the U.S.A., United Kingdom, I.A.T.A., Australia, Netherlands, Bielorussia, I.C.A.O. and Canada joined. In favour of the recommendation it was argued that this was an airline operators requirement which had received I.C.A.O. approval. It was suggested that a family of frequencies might be made available for this purpose from the allocation to the European Area with the addition of a frequency of the 22 Mc/ order, provided this frequency family was accorded protection on a worldwide basis. Against this, it was pointed out that the allocations of frequencies to areas and regions could not be further reduced, nor could worldwide protection be accorded a family of frequencies without curtailing frequency repetition possibilities and furthermore that facilities already existed for the transmission of operational traffic on the aeronautical fixed services. The following proposal moved by Mr. Selis (Netherlands) seconded by Mr. Chef (France) and as amended by Mr. Rowland (United Kingdom) was finally put to the vote.

"In order to enable European administrations, where necessary, to make provision for this class of traffic, it is recommended that one family of frequencies be allotted. The family to include frequencies of the orders 5.6 9 13 18 22 Mc/s. In the event that sufficient frequencies are not available for this service it is proposed that the requirement be met as far as possible from those frequencies allotted the European Major World Air Route Area, provided that no interference is caused to Major World Air route systems operating on the same frequencies."

The motion was defeated by 16 votes to 12 with one abstention.

Item 2 of the report then came up for consideration, and after brief discussion it was decided that a group comprising the delegates for Australia, the United Kingdom, I.A.T.A. and the I.F.R.B. should formulate a recommendation on this matter for eventual submission to the P.F.B. by Committee 6.

Before closing the meeting, the chairman circulated leaflets showing

- (a) the number and orders of frequency allocated each area - an amendment was entered on this sheet;
- (b) details of the sharing of frequencies;
- (c) the interference ranges used for determining frequency repetition possibilities;

and requested delegates to study these in the interim period in order that they could be expeditiously disposed of at committee 6C's next meeting.

Reporter:
T. O'DALAIGH

G. A. HARVEY
Chairman

Annexe

Addendum to description of European Area -

"The eastern boundary of the European area of major world air routes is drawn along the longitude of 30° E only for convenience of rendering. The actual eastern boundary of the European area of major world air routes follows the western state boundary of the U.S.S.R. and it is consequently understood that no part of the territory of the U.S.S.R. enters the European area of Major World Air Routes."

Addendum of description of North Pacific Area -

"The foregoing description of the boundaries of the North Pacific Area of major world air routes is simplified. The actual boundaries of this area should nowhere cut the state boundaries of the U.S.S.R. and it is consequently understood that no part of the territory of the U.S.S.R. enters the North Pacific Area of Major World Air Routes."

AGENDA FOR THE SEVENTH PLENARY MEETING

Thursday, 15 July, 1948 at 8.30 p.m.

1. Approval of minutes of the fifth Plenary Meeting (Aer.Doc.n° 161)
2. U.S. Proposal on Conference final Report (Aer.Doc.N° 165)
3. Progress report of Chairman of Committee 4, 6 and 7.
4. Aer.Doc.N° 142, Annex B.

Conférence internationale administrative
des Radiocommunications aéronautiques
GENEVE, 1948

Aér-Document n° 171-F
14 juillet 1948

ORDRE DU JOUR POUR LA SEPTIEME SEANCE PLENIERE

Jeudi 15 juillet, 1948, à 20 h 30

1. Approbation du procès-verbal de la 5e séance plénière (Aér.Doc.N° 161)
2. Proposition des Etats-Unis d'Amérique relative au Rapport final de la Conférence.
3. Rapport des présidents des Commissions 4, 6 et 7 sur l'état des travaux de la commission.
4. Aér.Doc.N° 142, annexe B.

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
GINEBRA, 1948

Documento Aer-n° 171-S
14 de julio de 1948

ORDEN DEL DIA PARA LA SEPTIMA SESION PLENARIA

Jueves, 15 de julio de 1948 a las 20h30

1. Aprobación del acta de la 5a Sesión Plenaria (Doc.Aer.n° 161)
2. Propuesto de los Estados Unidos de América relativa al informe definitivo de la Conferencia.
3. Informe de los Presidentes de las Comisiones 4, 6 et 7, respecto al estado de los trabajos de sus respectivas Comisiones.
4. Documento Aer.n° 142, Anexo B.

15 July, 1948

Committee 6

Report

of the Committee on the allotment of R frequencies

(Committee 6)

20th meeting
12 July, 1948

1. Chairman : Mr. E. G. Betts

Present :

Australia	Netherlands East Indies
Argentina	New Zealand
Bielorussian S.S.R.	Norway
Brazil	Poland
Canada	Portugal
Chile	Roumania
Columbia (Republic of)	United Kingdom and Colonies
Egypt	United States of America and Territories
France	U.S.S.R.
French Protectorates of Morocco and Tunisia	Union of South Africa
Ireland	Yugoslavia
Italy	I.A.T.A.
Netherlands	I.C.A.O.

2. The Chairman opened the meeting at 11:20 a.m. and placed Documents 153, 154, 157, 158 and 169 before the Committee for its consideration

Document 153 was adopted by the Committee without discussion.

No action was taken by the Committee on Document 157 due to lack of French and Spanish texts.

3. A resolution concerning the use of common channels and prepared in accordance with the provisions in Paragraph 5 of Document 158 was introduced with the proposal that this resolution be submitted to the forthcoming Plenary session to permit of the establishment of a definite basis for the use of common frequency channels. Following some discussion, Mr. Shores (United States of America) proposed adoption of this resolution, seconded by Mr. de Haas (Netherlands East Indies). After some discussion by the delegation of Italy, Poland, Yugoslavia, Columbia, Netherlands, Netherlands East Indies, Canada and the representatives of I.C.A.O. and I.A.T.A. the following Resolution was adopted unanimously:

(Aer-Document No. 172-E)

4. RESOLUTION ADOPTED BY COMMITTEE 6 IN CONNEXION WITH THE USE OF THE TWO COMMON CHANNELS 3023.5 AND 5680 kc/s.

"IT IS RECOMMENDED : that the common channels centred at 3023.5 and 5680 kilocycles be authorized worldwide for the following uses :

- a) Aboard aircraft for
 - (1) communication with approach and aerodrome control.
 - (2) communication with aeronautical stations when other frequencies are either unavailable or unknown.
- 5. b) At aeronautical stations for aerodrome and approach control under the following conditions :
 - (1) for approach control with the power limited to a value that will produce 30 μ v/m at 100 km. and in any case no more than 20 watts in the antenna circuit.
 - (2) for aerodrome control with the power 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.
 - (3) attention should be paid to the polarization used in order to avoid harmful interference
- 6. c) For use for intercommunication between aircraft, mobile surface vehicles and ships engaged in coordinated search and rescue operations at the scene of a disaster.
- d) The specific applications of these common channels for these purposes may be decided at regional aeronautical conferences.
- e) With respect to the use of the 5680 kilocycles for approach and aerodrome control, it is recognized that it is not an appropriate frequency for that purpose and that it should be abandoned as soon as possible and that it should be used with careful regard to its propagation characteristics.

IT IS FURTHER RECOMMENDED that these channels be available for A1 or A3 emission in accordance with regional arrangements and that it be not subject to subdivision."

7. Document 154 was then taken under consideration by the Committee following a statement by the Chairman regarding the large number of frequency assignments involved in the provisions of this document.

Mr. Shores (United States of America) suggested at this time that not more than 2 families of frequencies be set aside for this purpose, for use in the Pacific and Atlantic Ocean areas. Extended discussion ensued participated in by Mr. Shores (U.S.A.), Mr. Selis (Netherlands), Mr. de Haas (Netherlands East Indies) and Mr. Greven (I.C.A.O.) prior to

the introduction of a proposal by Mr. Shores (U.S.A.) incorporating his original suggestions.

8. Mr. Selis (Netherlands) then followed with an amendment to Mr. Shores' proposal recommending duplication of Pacific frequencies in the European Region due to the particular situation in that area. Mr. de Haas (Netherlands East Indies) seconded Mr. Shores proposal on the basis of inclusion of the Netherlands amendment. Discussion, participated in by Mr. Coffey (Canada), Mr. Shores (U.S.A.) and Mr. Mitrovic (Yugoslavia) continued on this proposal until adjournment of the session at 12:40 p.m. by the Chairman with the proposal to be further considered at the afternoon session beginning at 14:30 p.m.
9. The Chairman reconvened Committee No. 6 at 2:40 p.m. with Mr. Shores (U.S.A.) submitting a revised motion to replace his proposal introduced during the morning session of this Committee.

Mr. Jouk (Bielorussian S.S.R.) then submitted an amendment limiting the number of frequency families to one family with A-1 transmission required.

10. Mr. Rowland (United Kingdom) followed with an amendment to Mr. Shores proposal limiting the frequencies proposed for Ground-Air meteorological broadcasts to 3 in each family with the megacycle frequencies previously included in the 2 families to be excluded.
11. Mr. Shores (U.S.A.) opposed Mr. Jouk's amendment and stated the U.S.A. delegation might consider the elimination of the 11 megacycle frequencies as proposed by Mr. Rowland.
12. Mr. Jouk clarified his amendment by stating that he considered the one family could be utilized for A-1 operation in both the Atlantic and Pacific Ocean areas due to width of the band.
13. Following some further discussion the Committee voted on Mr. Jouk's amendment as follows :

For 9 - Against 17 - Abstaining 3

14. After some additional discussion the following proposal was adopted :

Resolution proposed by the United States in
connection with the allocation of frequencies for ground-air
meteorological broadcasts

15. It is proposed to provide two (2) families of frequencies from the "R" bands for Ground-to-air meteorological broadcasts. Each family to consist of not more than 3 frequencies of the approximate order of 3, 6 and 9 megacycles. The primary assignment of these frequencies to be as follows:

One family to serve Major World Air Routes traversing
the Atlantic Ocean areas

One family to serve Major World Air Routes traversing
the Pacific Ocean areas.

16. Duplication of these frequency families for the purpose of meteorological broadcasts throughout other parts of the world to be based on accepted frequency separation standards and possible time sharing arrangements. In any case, because of the particular requirements of the European area, the family of frequencies assigned to the Pacific Ocean area to be made available for ground-to-air meteorological broadcasts in the European Major World Air Route Area.

Voting : For 20 - Against 7 - Abstaining 3

17. The Chairman stated at this time that as Document 154 contained no recommendations the minutes of this meeting will indicate only that the Document has been considered by the Committee.
18. The Chairman then informed the Committee that he considered it advisable that some further guidance be given to Committee 6C and 6G inasmuch as it was apparent that the frequencies available are inadequate to fulfil all requirements. Following some discussion by Mr. Shores (U.S.A.) and Mr. Mitrovic (Yugoslavia) of this recommendation the Chairman stated that he considered committees 6C and 6G could make such derogations of standards as seemed practicable to effect the maximum economy possible in the use of the frequency bands. Such derogations to be noted in the records.
19. Mr. Quijano (Columbia) objected to such consideration and suggested the matter be referred to the forthcoming evening plenary session.
- Mr. Shores (U.S.A.) supported the Chairman's statements.
20. Mr. Harvey (Union of South Africa) stated that committees 6C and 6G had not effected any such derogations of standards but rather that the economies effected to date in the use of frequencies was due to the coordination between the various delegates.
21. Mr. Quijano (Columbia) strongly objected against any such instructions being given of these sub-committees and again requested the matter be referred to the evening plenary session.
22. Mr. Rowland (United Kingdom) stated this time that he considered no value could be obtained by reference of this matter to the Plenary Session.
- The Committee then voted on this matter as follows:

For 23 - Against 1 - Abstaining 1

Thereby approving issuance of instructions to Committees 6C and 6G as previously outlined by the Chairman.

23. The Chairman then informed the Committee that he intended to propose in the Plenary Assembly that Committee 6 be disbanded and that its working sub-committees become Ad Hoc committees reporting directly to the Plenary Committee as he believed that this procedure would result in a saving of time.

Mr. Jarov (U.S.S.R.) considered that such action is not desirable at this stage.

An informal vote was then taken on the Chairman's views as follows :

For 12 - Against 6 - Abstaining 8

Mr. Mitrovic (Yugoslavia) then stated his opposition to the Chairman's views on disbanding Committee 6.

The Chairman then adjourned Committee 6 at 3:45 p.m.

Reporter :

D. Givens

Chairman :

E. G. Betts

LIST OF DOCUMENTS PUBLISHED BY THE
INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE

Geneva, 1948
Documents 101-150

Aer Document No.	SUBJECT
<hr/>	
101	- Committee 3 - Report of the Editorial Committee - 1st and 2nd Meetings - 3 and 8 June, 1948.
102	- Committee 1 - Report of the Steering Committee - 8th Meeting, 9 June 1948
103	- Committee 4 - Report of the Technical and operational Committee - 17th Meeting - 7 June, 1948.
104	- Schedule of Meetings - 14 and 15 June, 1948.
105	- Committee 1 - Report of the Steering Committee - 9th Meeting - 11 June, 1948.
106	- Committee 4 - Report of the Technical and operational Committee - 21st Meeting - 11 June, 1948.
107	- Committee 6 - Report of the Committee on allotment of R frequencies - 13th Meeting - 14 June, 1948.
108	- Committee 4 - Report of the technical and operational Committee - 20th Meeting - 10 June, 1948.
109	- Summary record of the 4th Plenary Meeting - 11 June, 1948.
110	- Working Group 6 E - Polish Delegation - Observations on the allocation of high frequencies to the special aeronautical meteorological service - 15 June, 1948.
111	- Schedule of Meetings - 16, 17 and 18 June, 1948.
112	- Committee 4 - Final Report of Working Group 4B - 16 June, 1948.
113	- Committee 7 - Report of the Committee on the allotment of OR frequencies - 16th Meeting - 11 June, 1948.
114	- Committee 2 - Report of the Credentials Committee - 16 June, 1948.
115	- Committee 4 - Report of the technical and operational Committee - 22nd Meeting 14 June, 1948.

- 116 - Committee 4 - Working Group C - Combined maximum and minimum range charts for A3 communications in daytime - 16 June, 1948.
- 117 - Committee 1 - Report of the Steering Committee - 10th Meeting - 15 June, 1948.
- 118 - List of documents published by the International Administrative Aeronautical Radio Conference, Geneva 1948, Documents 51 - 100 - 18 June, 1948.
- 119 - Committee 4 - Report of the Technical and operational Committee - 23rd Meeting - 17 June, 1948.
- 120 - Schedule of Meetings - 21 and 22 June 1948.
- 121 - Committee 1 - Report of the Steering Committee - 11th Meeting - 18 June, 1948.
- 122 - Committee 4 - Report of the Technical and operational Committee - 24th Meeting - 21 June, 1948.
- 123 - Committee 7 - Report of the Committee on the Allotment of OR frequencies - 17th Meeting - 17 June, 1948.
- 124 - Committee 7 - Report of the Committee on the allotment of OR frequencies - 18th Meeting - 18 June, 1948.
- 125 - Schedule of Meetings - 23, 24 and 25 June, 1948.
- 126 - Committee 1 - Report of the Steering Committee - 12th Meeting - 22 June, 1948.
- 127 - Committee 6 - Report of the Committee on the allotment of R frequencies - 14th Meeting - 22 June, 1948.
- 128 - Committee 6 - Report of the Committee on the allotment of R frequencies - 15th Meeting - 24 June, 1948.
- 129 - Schedule of Meetings - 28 and 29 June, 1948.
- 130 - Committee 6 - Report of the Committee on the allotment of frequencies in the R bands - 16th Meeting - 25 June, 1948.
- 131 - Committee 4 - Report of Working Group 4 C - 28 June, 1948.
- 132 - Committee 6 - Report of Working Group 6 C - 3rd Meeting - 25 June, 1948.
- 133 - Committee 4 - Report of the Technical and Operational Committee - 25th Meeting - 25 June, 1948.
- 134 - Committee 1 - Report of the Steering Committee - 13th Meeting - 25 June, 1948.
- 135 - Schedule of Meetings 30 June, 1st and 2 July, 1948.

- 136 - Committee 7 - Report of the Committee on the allotment of OR frequencies - 20th Meeting - 24 June, 1948.
- 137 - Committee 7 - Report of the Committee on the allotment of OR frequencies - 21st Meeting - 25 June, 1948.
- 138 - Committee 7 - Report of the Committee on the allotment of OR frequencies - 19th Meeting - 24 June, 1948.
- 139 - Committee 1 - Report of the Steering Committee - 14th Meeting - 29 June, 1948.
- 140 - Committee 7 - Republic of Poland - Suggestions on allotment and duplication of OR frequencies - 2 July, 1948.
- 141 - Committee 2 - Report of the Credentials Committee - 2 July, 1948.
- 142 - Final Report of Joint Working Group on Utilization of unallotted space - 2 July, 1948.
- 143 - Committee 6 - Report of Sub-Committee 6 C - 4th Meeting - June 30, 1948.
- 144 - Committee 6 - Report of Sub-Committee 6 C - 5th Meeting - 1 July, 1948.
- 145 - Committee 6 - Report of Working Group 6 C(2) - 2 July, 1948.
- 146 - Committee 1 - Proposals of the Steering Committee - Coordination between the aviation and marine services in the field of telecommunication - 2 July, 1948.
- 147 - Committee 7 - Interim Report by the Chairman of Committee 7 - 3 July, 1948.
- 148 - Schedule of Meetings - 5, 6, 7, 8 and 9 July 1948.
- 149 - Committee 1 - Report of the Steering Committee - 15th Meeting - 2 July, 1948.
- 150 - Recommendations of the International Administrative Aeronautical Radio Conference (Geneva 1948) on the subject of service documents.

16 July, 1948

Committee 6

Report
of Sub-Committee 6 G

1st meeting
July 8, 1948

Chairman : Lt. Col. H. Costa

1. Sub-committee 6 G convened at 08:30 in room II.
The following delegations were represented :

Argentina	Ireland
Australia	Italy
Bielorussian S.S.R.	Netherlands
Brazil	Netherlands East Indies
Canada	New Zealand
Chile	Poland
China	United Kingdom
Colombia	U.S.S.R.
Czechoslovakia	United States of America and Territories
Egypt	Yugoslavia
France	I.C.A.O.
French Protectorates of Morocco and Tunisia	I.A.T.A.
Iceland	

2. The Chairman reviewed the terms of reference as given to him in yesterday's meeting of the Committee 6, which read :

"To study the problems of the regions;

"To formulate a method of approach to the allocations of frequencies necessary to satisfy the requirements of the regions;

"To carry out the agreed method in the same manner as sub-committee 6C has done for the Major World Air Route Areas.(M.W.A.R.A.)"

The Chairman also pointed out that the time was short and that he was expected to present a verbal report to the Committee next Friday. He explained that he would hope to have an agreed decision by that time on the method of approach that should be followed. He asked delegates to avoid long discussions on theoretical points and present positive suggestions that would help in speeding up the work of sub-committee 6 G. He then asked for suggestions.

3. The delegate from United States suggested that before any consideration of problem should start, it would be advisable for the sub-committee 6 G to take cognizance of some data collected by Mr. Harvey from the work of Committee.
4. Mr. Harvey presented the tabulation below on the expected availability of frequencies of the "R" band. Column 3 of the table was organized from data compiled on Committee 6 on the basis of a protection ratio of 25 db and accepting the duplication of frequencies below 5.6 Mc/s on night time

conditions. Other factors such as time differential, degradation of protection ratios, etc. were not considered when preparing the table, which is presented below.

Frequencies	channels available	Requirements for M.W.A.R.A.	Balance
1	2	3	4
3	24	14	+ 10)
3.5	14	9	+ 5)
4.7	7	5	+ 2) 45
5.6	26	12	+ 14)
6.6	21	7	+ 14)
9.0	17	18	- 1
10.0	11	12	- 1
11.3	13	3	+ 10
13.3	10	19	- 9
18.0	7	13	- 6

5. The delegate of the Netherlands, upon a request from the Chairman for suggestions, proposed what could be considered as a satisfactory method of approach. The proposal was roughly described for the Eastern hemisphere as indicated below. The hemisphere could be divided in 6 large regions and those subdivided in 4 smaller areas. For each area a family of frequencies would be assigned.

By doing so the whole hemisphere could be covered by 8 families of frequencies as shown below. Repetition of frequencies could be achieved as indicated. Mr. Selis explained that the boundaries of regions and areas had to be adjusted according to the requirements and following the following basic principles :

- 1) with certain restrictions all the available frequencies can be used in Western hemisphere with approximately 2 times duplication; and they can be used in the Eastern hemisphere with 3 to 4.5 duplication (see table);
- 2) Each delegate has an approximate idea of the number of frequencies necessary for the region where its country is located in order to satisfy the minimum requirements of the region;
- 3) There are available 80 to 90 frequencies to satisfy regional requirements, mostly on the lower band of the spectrum.

(Aer-Document No.174-E)

Eastern Hemisphere

A	B	E	F	A	B
EU-MED		W USSR		E USSR	
C	D	G	H	C	D
$\frac{1}{2}$ E	$\frac{1}{2}$ F	$\frac{1}{2}$ A''	$\frac{1}{2}$ B''	E	CHINA F
N=AFR		INDIA PAKISTAN			
$\frac{1}{2}$ G	$\frac{1}{2}$ H	$\frac{1}{2}$ C''	$\frac{1}{2}$ D''	G	N.E.I. H
$\frac{1}{2}$ A'	$\frac{1}{2}$ B'			A	B
S=AFR				AUSTR.	
$\frac{1}{2}$ C'	$\frac{1}{2}$ D'			C	D

The delegate of the Netherlands made several other remarks on his proposed method of approach explaining that adjustments had to be made both on boundaries and on the shifting of frequency families on the light of the requirements available.

6. Several questions were raised by other delegates and were explained by Mr. Selis.
7. The delegate of Iceland asked that Iceland should be included as part of the European area and not as part of the Western Hemisphere for reasons of propagation conditions and traffic interest.
8. The delegate of U.S.A. suggested that the method proposed should be accepted as sound and that 2 working groups should be organized to take care of the two hemispheres. That both Working Groups should work in the same room, as to exchange views.

9. The delegate of U.S.S.R. said that he could not very well endorse point 2 of the basic principles suggested by Mr. Selis. He declared that no sound work could be carried on if the requirements of each country were not compiled. These requirements should serve as a basis to the assignment of frequencies for each region and/or area.
10. The delegate of the Netherlands stated that the proposal made by him could be considered as compromise of the different opinions voiced by different delegations. He could not see the need for an exact definition of the requirements. He thought that a long time would be necessary to compile precise data and when that data be available it would contain too many requirements that could not be satisfied.
11. Some discussion took place and the delegates from Canada, United Kingdom and others voiced their ideas.
12. The delegate of Poland did not accept the idea of using the Flight Information Table (Aer-Document 71) as a basic document to judge the requirements. He would prefer to use the informations contained in Form 2. He also suggested that the needs for meteorological services should be considered.
13. The delegate of U.S.S.R. asked the delegate of U.S.A. to explain in a more concrete manner the way the work should be done on the basis of Mr. Selis' proposal.
14. The delegate of U.S.A. explained along the same lines, paragraph 10.
15. The delegate of U.S.S.R. did not agree entirely because he thought that the requirements of each country should be defined first and should serve as a basis for the assignment of frequencies.
16. The delegate of South Africa suggested that the two ideas could be combined in the same process of working. The requirements of each country being investigated while the work of each group progressed.
17. The delegate of the United Kingdom suggested that the work of the two proposed groups progressed in 4 steps presented as follows:

Step No.1 (i) Define the precise regional boundaries in map form, taking into account traffic patterns and other technical considerations.
(ii) Then consider resulting geographical separation from a frequency protection point of view.

Step No.2 Sub-divide these regions as appropriate with due regard to frequency repetition, traffic patterns and other technical considerations.

Step No.3 (i) Provisionally allot the available frequencies to individual regions on the basis of the Netherlands plan.
(ii) Add those frequencies to regions or sub-regions made available by repetition of the Major World Air Route Area frequencies.

Step No. 4 Consider, on the basis of traffic loading or by some other standard, whether the requirements of individual regions and countries are satisfied, and make any possible adjustments subject to frequency protection requirements.

18. Considerable discussions took place, intervening several delegates
19. The delegate of Bielorussia made some considerations on the necessity of taking into consideration the requirements of each country and suggested that a fourth item be added on Mr. Rowland's (United Kingdom) three point procedures.
20. The delegates of Colombia, Netherlands, Yugoslavia, U.S.S.R., I.A.T.A., Australia and United Kingdom exchanged opinions.
21. The Chairman summarized the work done; by saying that there was no fundamental disagreement that some delegates thought it more convenient to define the requirements of each region precisely before trying to apply the method suggested by Mr. Selis (Netherlands). He thought that a long time would be required for that purpose and that much information would not be available. He called attention to the short time within which the work should be completed and he hoped that with that thought in mind the meeting should adjourn for 15 minutes.
22. The meeting was adjourned at 10h.50 for a short recess.
23. The meeting reconvened again at 11h.15. The Chairman asked if there were further comments.
24. The delegate of Poland stated his views supporting the idea that the requirements contained in Form 2 should be considered.
25. The delegate of the Netherlands explained his views again in line with the thoughts of paragraph 10. He thought that the consideration of Form 2 would imply having 300 % more requirements than those really needed.
26. The delegate of China said that the requirements should be considered first, taking for instance the mileage per week of each country as contained in the Flight Information Tables as a basis.
27. The delegates of Colombia, Yugoslavia and Netherlands exchange views.
28. The delegate of I.A.T.A., supported Mr. Quijano (Colombia) on his idea of taking other factors in considering the requirements, such as traffic flows, air traffic control areas, etc. He then suggested that the first part of the first point of Mr. Rowland's suggestion (para.17) should read like this :
 - 1 - Define precise boundaries in map form taking into account traffic flows and other technical considerations.
29. The delegate of Australia said that everybody agreed with Mr. Rowland's points. That a note should be added to those points asking each delegate to indicate requirements once the regions have been defined. He also suggested to contact sub-committee 6C to find out where some frequencies already allocated to M.W.A.R.A. could be used for regional services.

30. The Chairman made a review of the discussion and suggested as a satisfactory compromise to organise 3 groups. Two groups would take care of the Eastern and Western Hemispheres and try to apply Mr. Selis' (Netherlands) suggested method, following the procedures indicated by Mr. Rowland (U.K.) on the basis of the available verbal indication of the requirements, as presented by the delegates. Meanwhile the 3rd group could devote itself to the task of piling up precise information on the requirements, taking into account all the technical factors involved.
31. The delegate of the U.S.S.R. said that he did not object on that but he thought that the sub-committee 6G being as it was a joint meeting of Committees 4 and 6 did not have to hurry up its work in order to have a definite answer by Friday afternoon as requested by the Chairman of Committee 6 on yesterday's meeting.
32. The Chairman of the Conference (Mr. Lebel) and the Chairman of Committee 6 supported that idea voiced by the delegate of U.S.S.R.
33. The delegates of Colombia and Yugoslavia disagreed on the formation of a 3rd group. They thought that delegates of both groups could be charged with the task of investigating requirements. The delegate of United States agreed on that point. Some discussion followed....
34. The Chairman then asked the delegates if they all agreed on the immediate formation of the two Working Groups. There being no objections the Chairman ruled that the groups would be formed. He then asked for suggestions.
35. The delegate of United States proposed Mr. Quijano (Colombia) as the Chairman of the Working Group in charge of the Western Hemisphere. The delegates agreed on that indication.
36. The delegate of Bielorussia proposed Mr. Selis (Netherlands) as the Chairman of the Working Group in charge of the Eastern Hemisphere. Mr. Selis declined in view of the excessive work he had on hand. He then indicated Mr. Rowland (U.K.). The indication was accepted by all the delegates.
37. The Chairman ruled that two Working Groups should be formed :
W.G.-6G-1 under the chairmanship of Mr. Quijano in charge of the Western Hemisphere.
W.G.-6G-2 under the chairmanship of Mr. Rowland in charge of the Eastern Hemisphere.
The Chairman also said that the two groups should try to apply the method of approach suggested by Mr. Selis (Netherlands) to the two hemispheres and that they should follow the terms of reference suggested by Mr. Rowland and amended by Mr. Adams and contained in Annex A.
38. The 1st meeting of sub-committee 6 G adjourned at 12 h.35.

15 July, 1948

Committee 4

Report

of the Technical and Operational Committee

(Committee 4)

27th meeting

12 July, 1948

1. Chairman : Mr. O.J. Selis

Present : representatives of the following :

Argentina	Norway
Australia	New Zealand
Bielorussian S.S.R.	Netherlands
Brazil	Netherlands East Indies
Canada	Poland
Chili	Portugal
Czechoslovakia	Union of South Africa
France	U.S.S.R.
French Protectorates of Morocco and Tunisia	U.S.A. and Territories
Iceland	U.K. and Colonies
Ireland	Yugoslavia
Italy	I.F.R.B.
Mexico	I.C.A.O.
	I.A.T.A.

The meeting was convened at 8:40 a.m. with Documents 131-156-159 and 162 being introduced by the Chairman for the consideration of the Committee.

2. Document 156 was adopted without discussion by the Committee.
3. Document 162 was next considered by the Committee and following a discussion by Mr. White of the U.S.A., Chairman of Committee 4D, on the status of this Document it was adopted on the basis that minor additional changes would be made in the drafting of the text by Committee 4D without further reference to Committee 4.
4. Document 131 was then adopted by the Committee after correction of typographical errors.
5. Mr. Rowland, delegate of the United Kingdom requested at this time that the Committee return to Document 162 for some additional clarification which was given.
6. Mr. White, delegate of the U.S.A., as Chairman of Committee 4D then informed the Committee of the status of Document 159.
7. The delegate of Chile, Mr. Schwerter advised the Chairman at this time of the lack of satisfactory Spanish interpretation. Measures were immediately taken to correct this condition and the Committee proceeded with its consideration of

8. Document 159 - Mr. Chef, delegate of France informed the Committee at this time of French objections to various wordings in Paragraphs 1 and 2 of this document. After lengthy discussion participated in by Mr. White(U.S.A.) Mr. Rowland (United Kingdom), Mr. Lebel (U.S.A.) and Mr. Chef(France), the Committee agreed to delete the last sentence in Paragraph 1(d) and the second paragraph of 2(b) and that France would submit a revised wording on the remainder of these paragraphs to the Drafting Committee.

9. Mr. Jarov, delegate of the U.S.S.R. advised the Committee at this time of the non-acceptance by the Soviet delegation of the technical principles contained in Document 159. The statement submitted by this delegation for the record follows:

"The Soviet delegation has already expressed its disagreement with the main technical standards, namely : frequency separation and protection ratio and opposed to the adoption of these technical standards.

The Soviet delegation has not changed its opinion and wishes to reserve its position on these questions."

The position of the Soviet delegation was supported by Mr. Mitrovic, delegate of Yugoslavia, Mr. Arciuch, delegate of Poland and Mr. Bodeaga, delegate of Roumania. The statements submitted by these delegations for the record follow :

10. Statement of the Yugoslav delegation.

"In view of the fact that Document 159 represents a summary of recommendations and resolutions of Committee 4, and in view of the fact that the Yugoslav delegation was not in agreement with certain of these recommendations for example those relative to channel spacing and protection ratio, the Yugoslav delegation hereby makes the same reservations as to Document 159 as it made before with regard to the said recommendations."

11. Mr. Arciuch (Poland) made the following formal declaration:

"Having in view that the delegation of the Republic of Poland, in the previous meetings, many times made remarks and opposed some technical principles and figures involved also into the Document Aer. No. 159, the delegation of Poland asks to include its reservation on the subject of the Document-Aer, No. 159 into minutes of the present meeting."

12. Mr. Bodeaga (Roumania) made the following formal declaration:

"The delegation of Republic of Roumania asks to include its reservation on the subject of the Document-Aer. No. 159 into the minutes of the present meeting, as the delegation of Roumania cannot accept some technical principles and figures involved in the said document."

13. Mr. Coffey, delegate of Canada proposed at this time the revision of the last part of Paragraph 3, some discussion ensued and the Committee adopted a suggested wording by Mr. Greven, representative of I.C.A.O. for revision of this paragraph.

14. Mr. Adams, representative of I.A.T.A. followed with a suggestion for the deletion of the word "Temporary" from the first line of Paragraph 3. This deletion was accepted and the Committee thereupon adopted Document 159 with the understanding following a request by
15. Mr. Jouk, delegate of Bielorussia, that all amendments and resolutions introduced during the meeting were to be included.
16. The Chairman, Mr. Selis, then extended the thanks of the Committee to Mr. Gautier, of the U.S.A. delegation and to the others who had aided in the work of the Committee. The Committee then adjourned at 12:40 p.m.

Reporter :
D.L. Givens

Chairman :
O.J. Selis

Corrigendum to Aer-Document No. 176-E

19 July 1948

On page 1, replace the statement attributed to Mr. de Telepnef by the following :

"Mr. de Telepnef (Republic of Honduras) supported the United States proposal, subject, however, to certain modifications."

* * * * *



16 July, 1948

SUMMARY RECORD OF THE SIXTH PLENARY MEETING

held in the Maison des Congrès, Geneva,
on Tuesday, 13 July, 1948 at 8.45 p.m.

CHAIRMAN : Mr. Arthur L. LEBEL (United States)

APPROVAL OF MINUTES OF THE FIFTH PLENARY MEETING (Aer-Document No.161).

1. Mr. LALUNG-BONNAIRE (Overseas France) requested that consideration of this document be postponed, in view of the fact that it had only just been distributed.

It was agreed to postpone consideration of Aer-Document No. 161.

FINAL DOCUMENTS OF THE CONFERENCE AND LANGUAGES (Aer-Document No. 165)

2. Mr. WHITE (United States of America) said that his delegation had submitted in Aer-Document No. 165 a proposal for the preparation of a final document which would be simple and economical to produce. Since it was drafted, he had been carefully following the progress of Committees. Committee 7 seemed likely to be left with a vast mass of clerical work which might not be ready for the final report before the end of the Conference. The Plenary Meeting might decide to appoint a small committee which would remain behind to complete that work after the Conference had dispersed. If so, the explanatory texts to the allotment plan for OR frequencies might be embodied in Annex III of the proposed final document.
Mr. de TELEPNEF (Honduras) supported the United States proposal.
3. Mr. LURASCHI (Argentina) could not agree that the main body of the report should be published in four separate volumes. A similar procedure had been adopted for the Atlantic City Regulations, the Spanish text of which had been long delayed. At the fifth Plenary Meeting it had been decided to publish the general report in one volume, to which separate volumes would be added.
4. The CHAIRMAN said that there were serious material difficulties in putting texts in four different languages on the same page. The Conference might rest content with the production of a working document, leaving the final report to be published in accordance with decisions to be taken by the Administrative Council.
5. As to the question of signature by all delegations, it might be pointed out that delegates leaving the Conference, almost without exception, had left no signatures.



6. Mr. PETIT (I.F.R.B.) said that the wording of paragraph 2 might give rise to the erroneous impression that the conclusions of the Conference were to be considered not only by the special administrative Conference but also by the P.F.B. Paragraph 2 should therefore be amended to read as follows:
7. " 2. that those conclusions are to be transmitted to the Provisional Frequency Board and thereafter to the special administrative Conference which is to approve the new frequency list. This Conference will study, and, where necessary, amend them."

Mr. WHITE (United States) approved this amendment.

8. Mr. LURASCHI (Argentina), supported by Mr. FALGARONE (France) requested that consideration of Aer-Document No. 165 be deferred, as there had been insufficient time to study it.

It was agreed that consideration of Aer-Document No. 165 be postponed until a later meeting.

9. The CHAIRMAN said it was regrettable that the work of the Conference should be thus seriously interfered with by the slowness with which documents appeared. A much speedier translation, reproduction and distribution of documents was urgently required.

CONSIDERATION OF AER-DOCUMENTS Nos. 131, 159, 162.

10. Mr. SELIS (Netherlands), on behalf of Committee 4, said that all the resolutions contained in these documents had been approved by the Plenary Meeting with the exception of the resolution on public correspondence (Aer-Document, No. 159). Each document had been carefully revised for inclusion in the Final Report by the drafting group of Committee 4. He moved their adoption.

Mr. WHITE (United States) seconded the motion.

The CHAIRMAN suggested that in view of the nature of this subject, the question of public correspondence might be dealt with separately.

It was agreed that the procedure suggested by the Chairman should be adopted.

a) Resolution on public correspondence (Aer-Document No. 159)

11. Mr. SELIS (Netherlands), speaking on behalf of his delegation, said that in Committee 4 there had been no pronounced majority in favour of the unconditional prohibition of public correspondence within the exclusively aeronautical bands.
12. It would be unwise rigidly to prohibit a procedure which had never proved unsatisfactory in practice or detrimental to the exchange of messages relating to the safety and control of aircraft. The procedure proposed by the Netherlands delegation in Committee 4, although it had never been used on a world-wide scale, had worked very well in Europe before the war. What his delegation had in fact proposed was that public correspondence should be permitted within the aeronautical mobile bands on a very restricted scale.

The results obtained, even in the short time which would elapse before the next world telecommunication Conference, would enable a decision to be taken on the basis of experience as to whether or not this practice should be continued.

13. Mr. PARTELOW (New Zealand) said that in this matter, his delegation had been guided by the following principles :
14. 1. If time was available on channels after the special requirements of aircraft had been met, there was no reason why public correspondence should not be passed, due regard being paid to the order of messages as laid down in Article 38, paragraph 950, of the Atlantic City Radio Regulations.
15. 2. It was inadvisable for an aircraft to pass from the aeronautical mobile frequencies normally used to other frequencies, as would be the case when handling public correspondence on the maritime mobile frequencies, (paragraphs 570, 571 and 572 of the Atlantic City Radio Regulations.)
16. 3. The travelling public needed facilities for air-to-ground communication.

The New Zealand delegation further considered that in the event of public correspondence being generally admitted to the bands reserved exclusively for the aeronautical mobile service, the final decision on this point must be left to Member States themselves, in view of the fact that coordination with domestic telecommunication services was required. Therefore his delegation had supported the Netherlands proposal discussed in Committee 4.

17. In considering the question further, after it had been discussed in Committee, his delegation had noted that a) the principle objectors to the proposal to introduce public correspondence to the exclusive aeronautical mobile frequencies comprised states through the territories of which passed, and in the territories of which terminated, the greatest volume of air traffic on the major world air routes. b) That the work of the Conference to date seemed to indicate that the aeronautical mobile frequencies, especially those used on the major world air routes, would be so heavily loaded that in the great majority of cases spare channel time would not be available. c) That the continuously expanding use of air services would result in higher traffic loading on each frequency, as Committee 6 had found it impracticable to make general allowance for such future expansion.
18. With these considerations in mind, and in view of the fact that the volume of international air traffic terminating in New Zealand was relatively slight, his delegation would abstain from voting on the final report of Committee 4, in so far as it concerned this subject, and would accept the majority view.
19. The New Zealand delegation did, however, consider that it would be wise for administrations to keep the matter under review, so that at a future date, if the question was reconsidered, either from the point of view of frequency usage or from that of loading on aeronautical or maritime frequencies, information of a specific nature would be available.
20. Mr. CHEF (France), supporting the statements made by the delegates of the Netherlands and of New Zealand, said that Committee 4 had not adequately considered the problem presented by aircraft making long flights over land.

21. Mr. QUIJANO (Columbia) said that the matter was one which involved the domestic affairs of sovereign states, and he was grateful to the preceding speakers for the restraint they had shown in this connection.
22. The second line of the operative part of this resolution recommended that public correspondence should be prohibited. It would be more logical to say that such correspondence should remain prohibited, since it was, in fact, forbidden by the Atlantic City Regulations.
23. Mr. SELIS (Netherlands) said that the present text was the result of a request made in Committee 4 by the Netherlands delegation. As the Atlantic City Regulations were not yet in force, it would be incorrect to imply that public correspondence was at present prohibited.
24. Mr. RAO (India), supporting the amendment proposed by the delegate of Columbia, said that the Cairo Regulations were presumably still in force, and these prohibited public correspondence.
25. After some discussion, it was agreed to adopt the wording used in the Atlantic City Regulations, and to amend the words "be prohibited" to read "be not permitted".

The resolution, thus amended, was put to the vote, and adopted by 22 votes to 9, with 9 abstentions.

b) Aer-Document 159.

26. Mr. JAROV (U.S.S.R.) said that his delegation had already expressed its disagreement with the basic technical standards adopted for frequency separation and protection ratio. Its attitude was still the same and it would reserve its position with regard to the questions involved.
27. Mr. MITROVIC (Yugoslavia) said that Aer-Document No. 159 contained a number of resolutions, such as those on channel spacing and protection ratio, with which the Yugoslav delegation was not in agreement, and he would therefore continue to reserve his attitude.
28. Mr. ARCIUCH (Poland) said that his delegation had previously made reservations on the technical principles involved, and disagreed with the way they were presented in Aer-Documents 159 and 131. He supported the statements made by the delegates of the U.S.S.R. and Yugoslavia, and would reserve his position.
29. Mr. QUIJANO (Columbia) said that paragraph 2 of Chapter I might be interpreted to mean that an individual aircraft operating, for example, on telephony, could not transfer to manual telegraphy unless a regional conference was convened to that end. The paragraph should be reconsidered when the document was being prepared for inclusion in the final report.
30. It was agreed that this paragraph should be reconsidered by the drafting group of Committee 4.

Aer-Document No. 159, without the recommendation on public correspondence, was put to the vote and adopted by 32 votes to 8, with 1 abstention.

c) Aer-Documents Nos. 131 and 162

31. Mr. SELIS (Netherlands), seconded by Mr. WHITE (United States) moved the adoption of these documents. In view of the fact that the text of Aer-Document No. 131 was embodied in that of Aer-Document No. 162, the two might be considered together.
32. Mr. PETIT (I.F.R.B.) supported by M. de CALAN (France), wished to draw the attention of the Editorial Committee to the fact that the French text was far from clear.

Aer-Documents Nos. 131 and 162 were put to the vote and adopted by 29 votes to 0, with 10 abstentions.

CONSIDERATION OF DOCUMENTS SUBMITTED BY COMMITTEE 6 AND 7

(Aer-Documents Nos. 142, 147, 155 and 169).

a) Aer-Document No. 142.

33. Mr. BETTS (Australia), moving adoption of this document, said that Committee 6 in adopting Annex A, had added three notes on common channels - these might be found in the reports of the Committee.

Mr. FALGARONE (France) said that his delegation would reserve its position with regard to the French text of the notes added by Committee 6.

Aer-Document No. 142 was unanimously adopted.

b) Aer-Documents Nos. 155 and 169.

34. The CHAIRMAN suggested that Aer-Document Nos. 169 being the later document, and having been written partly on the basis of Aer-Document 155, might be considered as replacing Aer-Document No. 155 for purposes of discussion.

Aer-Document No. 169, subject to drafting changes in the three languages, was considered in place of Aer-Document No. 155 and was unanimously adopted.

c) Aer-Document No. 147.

35. Mr. FRY (United Kingdom), moving the adoption of this document, said that it contained the resolutions adopted by Committee 7 up to its 13th meeting. Some slight changes had been made in the wording of these resolutions for the sake of clarity.
36. Mr. JAROV (U.S.S.R.), seconded by Mr. METROVIC (Yugoslavia) and Mr. JOUK (Bielorussian S.S.R.) moved that Aer-Document No. 147 be withdrawn and referred back to Committee 7 for approval. This was all the more necessary as certain of the resolutions were not intended for the Final Report; for the Plenary Meeting to consider them now would be a waste of time.

37. Mr. FALGARONE (France), as Chairman of the Editorial Committee, agreed with the views expressed by the Soviet delegation on this point.

The Soviet motion in favour of referring Aer-Document No. 147 back to Committee 7 was put to the vote and rejected by 9 votes to 13, with 14 abstentions.

38. Mr. PETIT (I.F.R.B.) suggested that the phrase "This action is considered necessary" in paragraph 14 should be amended to read "This action is considered desirable".

This amendment was adopted.

39. Mr. OLANO (Argentina) suggested that the word "approximately" in the last line of paragraph 6 be amended to read "equal or less than."

This amendment was adopted.

40. Aer-Document No. 147, subject to drafting changes, was adopted by 28 votes to 0, with 10 abstentions.

CONVENING OF MEETINGS IN THE EVENING.

41. Mr. OLANO (Argentina) supported by Mr. SCHWERTER (Chile) doubted whether authority had been conferred on the Steering Committee to convene evening meetings. The smaller delegations were being put in a very difficult position. There was insufficient time to study the documents submitted for their approval. Night work also had a bad effect on punctuality the following morning.
42. Mr. FALGARONE (France), supporting this statement, said that the French representative on the Steering Committee had opposed the arrangements made for evening meetings.
43. The CHAIRMAN, while appreciating the inconvenience caused by such meetings, said that the Steering Committee, faced by the fact that delegations were gradually leaving, had found it necessary to accelerate the work of the Conference. He moved that authority be conferred on the Steering Committee to convene evening meetings if such meetings seemed to be necessary.
44. The CHAIRMAN's proposal to authorize the Steering Committee to convene evening meetings was put to the vote and adopted by 21 votes to 15, with 3 abstentions.

The meeting rose at 11.45 p.m.

Reporter :

N. LANGFORD

Chairman :

A.L. LEBEL

Copy of a communication addressed to the
Chairman of the Conference.

To: the Chairman, International Administrative Aeronautical Radio Conference, Geneva.

Dear Sir,

According to article 14, paragraphe 5 of the Atlantic City Radio Regulations:

"If there is a specialized international organization for a particular service, complaints and reports of irregularities and of infractions relating to interference caused by the stations in this service shall be addressed to such organization at the same time as to the administration or centralizing office concerned."

The President of the Council of the International Civil Aviation Organization (I.C.A.O.) has despatched the following telegram, dated 9 April, 1948, to the Secretary-General of the International Telecommunications Union:

"Burinterna Berne.-

Reference article 14, paragraphe 5 of Radio Regulations your advice required on whether I.C.A.O. should take steps for recognition as appropriate body to which complaints on interference in bands of aeronautical service should be addressed."

On 15 April, the Secretary-General replied by telegram through the Canadian Ministry of Transport:

"Request inform Mr. Wamer President I.C.A.O. Montreal as follows: Appears no rules given by Atlantic City Acts for designation of specialized international organization referred to in article 14, paragraphe 5 of Radio Regulations. You might draw attention of Chairman international aeronautical radio conference sitting in Geneva from 15 May to this point. Very interested to hear views of that conference. Might submit question to our own Administrative Council."

In accordance with the terms of the telegram sent to the President of the Council of I.C.A.O. by the Secretary-General of the I.T.U., it is requested that the International Administrative Aeronautical Radio Conference consider the request submitted by the President of the Council of I.C.A.O., Mr. Wamer, to the effect that I.C.A.O. be recognized as the appropriate specialized international agency to which complaints on interference in the aeronautical service bands should be addressed, in conformity with Article 14, paragraphe 5, of the Atlantic City Radio Regulations.

I am, Sir, your most obedient servant,

P.J.Greven

Representative of I.C.A.O.

REPORT OF THE COMMITTEE ON THE ALLOTMENT OF R FREQUENCIES.
21st Meeting, 15 July 1948

1. The meeting was opened by the Chairman at 16.45.
2. Document No 157 was adopted with the following additions and amendments :
 - a) Last line of para.15.3 to read "6C".
 - b) Netherlands desired last line of para.7 to read as follows :
"would perhaps be very simple".
 - c) Soviet delegation requested following change in para.12
" Mr. Jarc (U.S.S.R.) said that nothing had been said about the complete and satisfactory solving of the problem of frequency assignment to particular regions and countries. At one of the earlier Plenary Sessions of the Conference there was passed a resolution which did not admit any distinction in the assignment of frequencies to regions and major world air routes, - and that was right since both the services had an equal need to be provided for the safety of their flights on an equitable footing.
He expressed his agreement with the Delegate of Mexico and recommended that a working group be immediately set up to solve the problem of satisfying the requirements of domestic air lines."
 - d) French delegation pointed out error in document page numbering on pages 2,3,4, and 5 of the French document 157.
 - e) Mexico requested following change in para.10 :

... otherwise the study would be a one-sided one, and Mexico would not be in a position to agree on a plan which gave preference to the major world air route areas, if this preference resulted in an unfair assignment of frequencies for the domestic routes and even for the international regional routes.
 - f) Portugal, Union of South Africa to be included in the list of participants.
3. Document No 158 was adopted with following amendments :
 - a) To be added to the list of participants - Colombia, Nicaragua, Canada, Portugal.
4. The delegate of the United Kingdom, supported by the soviet delegation, presented the following two proposals for adoption by the Committee :

Proposal I.

- a) Whereas it is necessary to provide for the proper coordination in the work of subcommittee 6C and 6G so that the complete R plan may be developed on coordinated lines and properly combined in the final document within a minimum of time.
- b) Committee 6 agrees that subcommittees 6C and 6G be abolished forthwith

and that the remainder of the work be undertaken by working groups within Committee 6 on the understanding that the work already completed by 6C and 6G will be taken into account and utilized.

Proposal II.

- a) Whereas it is evident that it will not be possible for the Committee to prepare a frequency allotment plan which will satisfy the minimum requirements of the regions and major world air route areas using the standards recommended by Committee 4.
- b) Committee 6 agrees that it will be necessary to lower these recommended standards in respect of the protection and for channel loading factors to the extent necessary to provide satisfactorily for the regional and major world air route area requirements.

4(1) There ensued a discussion of the proposal and the delegate of Colombia suggested the amendment shown in proposal I underscored. Mr. Roland (United Kingdom) gave a brief review of the reasoning behind the proposal to show that it was designed to remove steps which slow down the work of the conference.

4(2) Proposal I was adopted unanimously by the Committee with no abstentions.

4(3) The delegate of Colombia suggested discussion with regard to the working groups and the Chairman proposed the following as heads of working groups :

Mr. <u>Costa</u>	-	(Brazil)	-	Western Hemisphere
Mr. <u>Rowland</u>	-	(UK)	-	Eastern "
Mr. <u>Harvey</u>	-	(South Africa)	-	6C (propagation)

These working groups will report directly to Committee 6 without written report.

Members of the working Groups are listed as follows :

Western Hemisphere :

Canada
Chile
Colombia
Argentina
United States
Mexico

Major Harvey
Quijano
Mitchell
Gautier

Eastern Hemisphere :

Netherlands
Portugal
Egypt
France
U.S.S.R.
Bielorussia
Poland
Romania
Yugoslavia
Czechoslovakia
Norway
United Kingdom
I.A.T.A.

4(4) France proposed the following added amendment to proposal II :

- a) Also to consider the reduction into one simple region of the various major world air route areas, the loading of which will become insufficient to justify the use of a family of frequencies.
- b) To consider finally the use of a duplex system of the waves A.

4(5) The delegate of the United Kingdom refused the amendment while the soviet delegation as seconder supported the amendment.

4(6) Proposal II was tabled at this time to the next meeting of Committee 6.

5. Mr. Rowland (United Kingdom) gave a brief explanation of the progress of the Eastern Hemisphere work stating the work might be finished in two or three days if a solution can be found.

6. Mr. Quijano (Colombia) spoke for the Western Hemisphere noting that there is a definite frequency shortage and that it was not possible to give a date of completion for this work. The delegate of Brazil stated the plan might be finished if everyone would accept compromise.

7. The delegate of France suggested that the plans should not be viewed too optimistically at this time and that there should be more meetings of Committee 6 to fully discuss these plans.

8. In view of the expected departure of Mr. Selis (Netherlands), the Chairman expressed the wish of the Committee in extending thanks to Mr. Selis for his work as vice-chairman of Committee 6.

Reporter :
P.J.Greven

Chairman :
Betts.

R E P O R T

of the Committee on the Allotment
of OR frequencies
24th Meeting
13 July, 1948

Chairman: Mr. A. Fry

Vice-Chairman: Mr. J. Furze

1. The Chairman declared the meeting open at 2.30 p.m.
2. Present:

Australia	Netherlands East Indies
Argentina	New Zealand
Bielorussian S.S.R.	Pakistan
Brazil	Poland
Canada	Portugal
Chile	United States and
Colombia	Territories
Cuba	Ukrainian Soviet
Egypt	Socialist Republics
France	Union of Soviet
Mexico	Socialist Republics

3. The Chairman stated that during the study of the assignment of frequencies in the different bands, and especially some of the higherbands, we have arrived at the following conclusions:
 - a) that it is quite impossible to satisfy all the requirements of the different countries, with the number of available frequencies,
 - b) that if we reduce drastically the number of frequencies at the disposal of the different countries, they will not be able to carry out their communications.

He said that the two following methods had been proposed:

- 1) To allot the same frequency to two or more countries who will be closer than the minimum interference range, with the hope that the percentage of time utilisation will be such that the two or more countries would be nevertheless able to carry on their work. These different countries will have equality of rights in the use of the same frequency.
- 2) To allot the same frequency to different countries without equality of rights. This means that a country could use a frequency on a primary basis and the other countries on a secondary basis. The country using the frequency on a secondary basis will not have the right to prejudice the communications of the primary user.



4. After discussion, the delegate of Mexico made a formal proposal, that was supported by the delegate of Cuba, and amended by the delegate of Australia.

The final proposal was as follows:

- I. "In constructing the frequency assignment plan countries should not necessarily carry over to their colonies and overseas territories frequencies assigned to their home country but rather that the requirements of such colonies and overseas territories should be considered on an equal priority with neighbouring countries of the colonies or overseas territories."
- II. "In examining proposals for improving or modifying the frequency assignment plan on a given band equal priority must be given to all portions of a region and specifically, the requirements of countries in the extremes of a region should not necessarily be satisfied first."

The proposals were accepted unanimously.

5. The Chairman then passed to the second item of the agenda: the discussion of a proposal of the delegate of France concerning the allotment of frequencies on a secondary basis.
6. The delegate of France said that henceforward it would be impossible to satisfy the demands of countries by allocating frequencies either normally or by time-sharing.

If the requirements of countries were inadequately met, the countries concerned would be unable to maintain a satisfactory system of communications.

Hence, the French delegation proposed that Committee 7 satisfy these requirements which could not have been otherwise met on a "secondary" basis.

The countries to which a frequency had been allotted in the first instance would have it on a "primary" basis and would be guaranteed against interference with respect to a country using it on a "secondary" basis. If interference arose between two stations on the same frequency, the station operating on a secondary basis would be required to take every necessary step to eliminate the interference, in agreement with the other country concerned. Such measures might include changes in times of emission, diminution of power, use of that frequency by a station further removed from the station interfered with. This system would substitute for equality of rights between nations the possibility of mutual or multilateral agreements.

Certain precautions would, however, have to be taken to allow stations to operate in this way, if some degree of protection was to be obtained. This protection could be achieved by restricting the power of the secondary transmitter, by adequate separation between the two stations using the same frequency, and by noting the frequency allotted on a secondary basis in the column headed "notifications".

The French delegation would shortly submit a written text to the Secretariat for publication as a document of the Conference."

7. The Chairman then passed to the third item of the agenda: the consideration of the report of the working group composed of the delegates of the U.S.A. and the Republic of Poland, whose terms of reference were the study

and modifications of the proposals made by the delegation of Poland, contained in Aer-Document No. 140.

8. The delegate of the U.S.A. (as a member of the working group), in presenting Aer-Document No. 140 (Revised) said that all the references to Committee 7 contained in the original document have been withdrawn. No great modifications had been introduced in the original text. A conclusion has been added at the end. This conclusion reads as follows:

"The four family system can be applied to a continent if the maximum number of frequencies required for the countries of the continent covered by the surface of 4 different rectangles, grouped together, as shows the diagram, does not exceed the total number of frequencies available in the given band; neither time sharing or predetermined repetition are here contemplated, the transmitters may be presumed to operate continuously.

This grid must be built up taking into account the maximum power of transmitters. In certain cases if the number of very high power transmitters is very limited, it is more practical to consider separately the allotment of frequencies to these individual high-power transmitters and to apply the system proposed here to the rest of continent, with a new maximum power."

9. The delegate of Canada made then the following proposal:

1. "Committee 7 notes with interest the statement of principle contained in Aer-Document 140 (Revised) which was presented by the delegate of Poland.
2. "It is regretted that the extremely limited number of frequencies available to satisfy Aeronautical Mobile (OR) requirements prevent Committee 7 from applying this principle in the work of the current International Administrative Aeronautical Radio Conference."
3. "In the event that at some future conference adequate frequencies are available to the Aeronautical Mobile Services for the application of this principle, Committee 7 recommends its further consideration at that time."

This proposal was adopted unanimously.

10. The Chairman then thanked the delegate of Poland for his very useful work and expressed regret that we could not apply the proposal in Committee 7.
11. The Chairman then introduced the question of the non-availability of the Aeronautical OR Forms 2 of the Republic of Colombia.

Mr. de Calan (France), convener of the working group 7A, promised to undertake the necessary steps to report to the Committee the present position with regard to the Forms 2 submitted by the Republic of Colombia containing the requirements for the Aeronautical Mobile (OR) Service.

12. The delegate of Canada then proposed a meeting of the working group that evening. This was seconded by the delegate of Australia.

After some discussion, this proposal was adopted.

13. The Chairman adjourned the meeting at 6.35 p.m.

The Reporter:
A. Souto Cruz

The Chairman:
A. Fry

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

27 JULY, 1948

SUBCOMMITTEE 6 C

COMMITTEE 6

Report of the Sub-Committee 6 C

8th Meeting
13 July, 1948.

1. The Chairman opened the meeting at 4.20 p.m.
The following countries and organisations were represented:

Australia
Bielorussia
Czechoslovakia
Egypt
Iceland
Ireland
Netherlands
Netherlands East Indies
New Zealand
Norway
Poland
Portugal
Roumania
United Kingdom and Colonies
U.S.A. and U.S. Territories
U.S.S.R.
Yugoslavia
I.C.A.O.
I.A.T.A.

2. Mr. Rowland (United Kingdom) referring to item No.2 of document 145, informed the meeting that the necessary text had been drafted and was with the secretariat for reproduction. It would be available that day.

Considerable discussion by the delegates of Yugoslavia and U.S.A., on the frequency families allocated to the major world air route areas; resulted in agreement being reached that changes of frequency orders within the families could be made, if the situation regarding requirements of frequencies was not worsened. T

The Chairman outlined what was virtually the final report of Committee 6 i.e. the present frequency situation. There was a total of 149 frequencies available. Of these, 67 were used for major world air route areas, and 82 were surplus. This did not mean that major world air route frequencies were unable to be used elsewhere. They could be, depending upon where they could be repeated geographically, and with the necessary protection ratio. The Committee 4 plan should not be altered and it was suggested that this report be taken as only the first step, then 6c and 6g should work together to formulate some plan which would work.

Mr. Jouk (Bielorussia) did not think it opportune to consider at a plenary session of committee 6, the working together of major world air route and regional subcommittee. It would be impossible to satisfy national requirements if the major

world air route subcommittee paper was approved, and therefore, a different variation, based on slightly lower standards, must be worked out.

The Chairman indicated that he wished that the groups should work out together a plan on reduced standards, which could give some measure of satisfaction.

Mr. Betts (Australia) stated that Working Group 6 C should remain in session until Working Group 6 G has completed its work, in order that, then, Working Group 6 C may be able to rearrange the grouping of the frequency families, and probably manage, finally, to make more frequencies available to the regional working group 6 C needed more precise informations from 6 G to ascertain if additional frequencies were absolutely necessary.

Mr. Jouk (Bielorussia) stressed that the U.S.S.R. delegation had not taken part in the plan for working out major world air routes, as it did not take part in the operation of major world air routes. But his delegation considered this major world air routes frequency plan quite hopeless, with regard to national or regional air route requirements. The preparatory committee plan had less frequency requirements for major world air routes than shown in the present plan.

Ag-Document 19 had provided 66 frequencies for major world air routes, and showed that 20 of the 3 and 3.5 Mc/s frequencies could be shared outside the major world air route areas.

In the new plan 3 to 4 frequencies only, could be repeated outside the major world air route areas, for example, in Eastern Siberia, where they were not required. Therefore this plan was not acceptable to the U.S.S.R. He recalled that Col. White had, at one time, mentioned that approximately 40 frequencies would be required for major world air routes, from which, half the number could be repeated outside the major world air route areas. Even that plan would not satisfy requirements, but would have been more acceptable than the present plan of 60, which made repetition possibilities limited.

The first step towards the approach to a satisfactory plan would be to alter the limits of sharing possibilities in Europe, such as increasing the sharing possibilities by using daytime protection ratios.

The Chairman informed the subcommittee that the plan was based on night-time protection ratios for 3 to 9 Mc/s, and daytime protection ratios for 11 and 13 Mc/s. An arbitrary system had been used for allocations in the 18 Mc/s band, in view of the small number of requirements in those frequency bands. The working group had tried a reduction of overlap in Europe, and, if 25 db protection ratio was retained, no sharing would be possible. Another factor had been, that duplication of 3 and 3.5 Mc/s within the major world air route areas was not feasible, even at 15 db protection ratio. The amalgamation of these frequencies with Regional requirements might make it possible for the use of 20 db protection ratio on the major world air routes.

Mr. Mitrovic (Yugoslavia) supported Mr. Jouk's point of view, and said that even if these frequencies could not be repeated in the major world air route areas, they could, if the boundaries of the major world air routes were reconsidered, and, by considerable lowering the protection ratio overall, be repeated throughout Europe. He added that, even that afternoon, it had been decided to add 6 frequencies for MET to the 67 already assigned to the major world air routes, i.e. making a total of 73, and thus reducing to 76, those for regional allocation; in other words, the regions get half of the total number of frequencies available in the "R" bands.

Only 16 countries had submitted their requirements to the working group concerned and only 10-15% of those requirements could be satisfied. He suggested that

time should not be wasted, and the discussion should not continue, if the committee is to arrive at a reasonable plan, after the study of 6C's report.

Mr. Rowland (U.K.) suggested that 6C should present its final figures to 6G, so that 6G could get on with its job, as a working group, reporting direct to the plenary assembly.

Mr. Betts (Australia) disagreed with this suggestion.

2 Mr. Partelow (New Zealand) agreed with the Chairman and suggested that it might now be a convenient time to dispense with 6C and 6G, and form a combined sub-committee 6H to implement the final plan.

Mr. Rowland (U.K.) wished that the figures obtained by 6C should be presented to 6G, thus allowing working groups 6G1 and 6G2 to assess the value of the plan. He proposed that the document be adopted provisionally. This was seconded by Mr. Shores (U.S.A.).

There being no objection raised (6 abstentions), this step was approved.

Mr. Rowland (U.K.) introduced a proposal for long distance communication on 22 Mc/s which was seconded by Mr. Shores (U.S.A.). The proposal was as follows:

"Whereas a requirement exists for long distance communication between aircraft and their terminal locations in certain areas, for the carrying out of operational control and obtaining terminal flight information.

"And whereas in certain areas the existing Aeronautical Fixed Service is inadequate and cannot at present meet the operational requirement.

"It is recommended that two adjacent channels in the 22 Mc/s band, each of bandwidth of 12 kc/s, be made available and afforded world wide protection, for use by those administrations requiring such facilities.

"It is believed that the requirement will no longer exist when a satisfactory world wide aeronautical fixed service is provided.

"It is recommended that the P.F.B. be notified for information".

Mr. Jouk (Bielorussia) requested that a decision on this subject be deferred until a later meeting.

Mr. Rowland (U.K.) proposed that the document be adopted subject to any later remarks by the delegate of Bielorussia.

The Chairman, in the absence of any objections, ruled that the document was adopted, provisionally, subject to any later remarks of the delegate of Bielorussia.

The Chairman indicated that all possible data from 6C would be available for 6G the following day. He added that 6C had completed its work in accordance with its terms of reference, and that this interim report being passed to 6G, would, when finally amended, be considered the final report of subcommittee 6C.

The meeting closed at 5.35 p.m.

Reporter: A.L. PARTELOW.

Chairman: G.A. HARVEY.

Proposal by the Chairman of Committee 7

Compilation of the Frequency List for the Aeronautical
Mobile (OR) Service

Considering

1. That the essential results of the work of Committee 7 must be presented to the P.F.B. in the form of a list of frequency assignments indicating the frequencies to be used by the various stations operating on the various circuits shown in the requirements.
2. That this list will be at least 100 pages in length and that the preparation of the master copy will take several weeks.
3. That although the compilation of the list is largely a clerical and mechanical process, it will nevertheless require the supervision of a group of persons familiar with the work of Committee 7.

It is resolved.

1. That in the final report of the Conference a skeleton plan of frequency assignment be approved.
2. That a Working Group consisting of persons familiar with the work of Committee 7 be appointed by the Plenary Assembly to continue to work after the end of the Conference if necessary, with the following Terms of Reference:
 - "(a) To supervise the preparation of a frequency list for the Aeronautical Mobile(OR) Service from the skeleton assignment plan prepared in the course of the Conference; the form of this list to be that laid down in Appendix 6 (page 234) of the Radio Regulations (Atlantic City), with the addition of an extra column for the circuit number of the corresponding requirement on Form 2.
 - (b) On completion of this work, to transmit the results to the Conference Secretariat.
3. That all countries represented at the Conference be requested to indicate in writing to the Working Group before the end of the Conference which of the frequencies allotted to their country in the skeleton plan are to be assigned to the various circuit requirements.
4. That in compiling those parts of the frequency list concerning countries which have not submitted information as in 3 above (including countries not represented at the Conference) each frequency allotted shall be shown as assigned to every circuit requiring that particular order of frequency in the area of the country shown in the skeleton plan.



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(Aer-181-E)

5. That the Secretariat be authorized to reproduce sufficient copies of the list and to distribute them to the Members of the I.T.U.

A. Fry

Chairman Committee 7

Communication from the Polish Delegation
on the Distribution of Medium Frequencies

The question of the medium frequencies represents for Poland and many other countries a vital problem of prime importance.

Availing itself of the presence of the delegates of all the countries of the world, the Polish Delegation presents here the proposed text of a telegram to be signed by the delegates to the International Administrative Aeronautical Radio Conference. This telegram proposes the convocation of an international administrative aeronautical radio conference in Copenhagen, to discuss the question of the assignment of the medium frequencies.

The delegates who are in agreement with the contents of the telegram are requested to affix their signatures thereto.

The number of signatures affixed will determine whether the Conference is to be regional or world-wide. In the event that the number of signatories is sufficient, the proposed telegrams will be sent to the governments of the signatory countries.

The step proposed will be treated as an enlargement of the problems that the Secretary General of the International Telecommunication Union at Bern began to discuss with the Danish Government following a resolution of our Conference.

The delegates who approve of this proposal are requested to send the projected telegram, duly signed, to the Polish Delegation.

DELEGATION OF POLAND

Proposed text of a telegram, signed by the delegates to the International Administrative Radio Conference in Geneva, to their respective governments, proposing the convocation of an administrative aeronautical radio conference, in Copenhagen, to discuss the question of the assignment of medium frequencies.

The delegates to the International Administrative Aeronautical Conference in Geneva signatories to this telegram have come to the conclusion that the convocation of an administrative aeronautical radio conference to settle the question of the distribution of medium frequencies to the mobile aeronautical and radio navigation services is necessary.

The question pertains to the following bands:

1. 255-285 kc/s for region 1 and 200-285 kc/s for regions 2 and 3, with the questions stated with regard to numbers 119, 120, 121, 122, 123 and 125 of the Atlantic City Radio Regulations.
2. 285-325 kc/s for regions 2 and 3, and the band 315-325 kc/s for region 1 with the questions stated with regard to numbers 126, 127, and 128 of the Atlantic City Radio Regulations.
3. 325-405 kc/s for the world-wide services with the questions stated with regard to numbers 129, 130, 131 and 132 of the Atlantic City Radio Regulations.
4. 405-415 kc/s for regions 1, 2 and 3 with the questions stated with regard to numbers 133, 134, 135, 136 and 137 of the Atlantic City Radio Regulations.

The questions allied with the utilization of the medium bands closely touch upon the questions of frequencies employed by the radio broadcasting and maritime radio navigation services which are currently being settled by the Conference at Copenhagen.

As a result, the undersigned delegates, acting on the basis of article 11, subparagraph 3b of the International Telecommunication Convention of Atlantic City, direct to their respective governments the proposal to avail themselves of the radio Broadcasting Conference currently being held in Copenhagen and call for, in the event that the administrations deem it necessary to comply with this proposal, the convocation for the 15th of August 1948 in Copenhagen of an Aeronautical Radio Conference - (still at the expense of the interested administrations).

This conference will have the task of distributing and assigning the frequencies within the bands mentioned above and to settle all the above enumerated questions connected with the utilisation of the frequencies of these bands.

The administration should address their requests to the General Secretariat of the International Telecommunication Union at Bern.

The administration may issue the authorization to participate in the extraordinary conference proposed above to the delegates to the European Conference of Radio Broadcasting at Copenhagen, or to the delegates currently at the International

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(Aer- 182-E)

Aeronautical Radio Administrative Conference, or to other delegates.

COUNTRY

SIGNATURE

COUNTRY

SIGNATURE

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Aer-Document No. 183-E

Aér-document No. 183-F

Conférence internationale administrative
des Radiocommunications aéronautiques
GENEVE, 1948

Documento-Aer - No. 183-S

17 July, 1948

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronáuticas
GINEBRA, 1948

17 juillet, 1948

17 de julio de 1948

Schedule of Meetings
Horaire des séances
Programa de sesiones

	Time	Room B	Room I	Room II	Room III
	Heure	Salle B	Salle I	Salle II	Salle III
	Hora	Sala B	Sala I	Sala II	Sala III
Monday, 19 July	0830				7
Lundi, 19 juillet	1430	7	6D		(Working groups)
Lunes, 19 de julio	1630	3 (or in Room III)			(Groupes de travail)
		(ou dans la Salle III)			(Grupos de trabajo)
		(o en la Sala III)			"
Tuesday, 20 July	0830				"
Mardi, 20 juillet	1430				"
Martes, 20 de julio	1730	I			"

Meetings of Committee 7 will be announced daily.

Rooms 1 and 2 reserved for Committee 6 and working groups -- times to be announced.

Les réunions de la Commission 7 seront annoncées journellement au tableau.

La Salle I et la Salle 2 sont réservées à la Commission 6 et à ses groupes de travail - le bulletin sera affiché.

Las sesiones de la Comisión 7 serán anunciadas diariamente.

Las salas 1 y 2, reservadas a la Comisión 6 y a los grupos de trabajo. Los horarios de empleo serán anunciados.



COMMITTEE 6

REPORT OF THE COMMITTEE ON ALLOTMENT
OF "R" FREQUENCIES

22nd Meeting - 16th July 1948

Chairman: Mr. E.G. Betts.

1. The meeting opened at 9:50 a.m. and the following countries and organizations were present:

Australia	MM. E.G. Betts
Argentina	O.E. Vidal
Biclorussian SSR	I. Jouk
Brazil	Helio Coste
Brazil (Expert)	Zairk Beck
Canada	L.E. Coffey
Chile	A. Schwerter
Egypt	J. Boctor
France	M. Falgarone
I.A.T.A.	(J.G. Adam L.M. Layzell)
I.C.A.O.	P.J. Greven
Italy	A.C. De Vincenti
Ireland	T.O. Dalaigh
Netherlands	O.J. Selis
Neth East Indies	A. De Haas
New Zealand	A.L. Partelow
Norway	N.J. Soeberg
Pakistan	S.A. Sathar
Poland	A. Arciuch
Portugal	N. Veres
Roumania	A. Bodeaga
French Protectorates	
Tunisia & Morocco	M. Chef
U.K. and Colonies	H.A. Rowland
Union of Sth Africa	G.A. Harvey
U.S.S.R.	A. Jarov
U.S.A. & Territories	J.N. Gautier - E.L. White - W.E. Weaver E.V. Shores - D.L. Givens
Yugoslavia	S. Mitrović

2. The Chairman stated that the Committee had now to consider the following proposal submitted by the delegate of the United Kingdom Mr. Rowland.

Proposal of the Delegation of the United Kingdom

"Whereas it is evident that it will not be possible for the Committee to prepare a frequency allotment plan which will satisfy the minimum requirements of the regions and the major World Air Route Areas using the standards recommended by Committee 4;

Committee D agrees that it will be necessary to lower these recommended standards in respect of the Protection

and or Channel loading factors to the extent necessary to provide satisfactorily the Regions and Major World Air Route Areas requirements."

Two amendments had been proposed by the French at the previous session of committee 6 and had been seconded by the USSR delegate Mr. Jarov. The text of these amendments is as follows :

" Amendments of the French delegation to the proposal of the United Kingdom .

to add: " to consider the reduction into one single region of the various regions of the major World Air Route Areas, the loading of which will become insufficient in order to justify the use of a family of frequencies and

" to consider finally the use of cross-band system of communication for waves A1."

3. Mr. Rowland stated, that he could not accept these amendments. According to his point of view, the first amendment would place undue emphasis on the question of the loading factor.

As to the second amendment Mr. Rowland pointed out that in his opinion the recommendations thus far accepted by this Conference would not allow for the duplex system of communication being used.

He would however be agreeable to accept the amendment if the words "duplex" could be changed to "adjacent channel cross-band".

Some discussion took place on the principles underlying the meaning of "adjacent channel cross-band" system; examples of such systems were given in order to make sure that there was no confusion as to the meaning.

The delegate of Canada, Mr. Coffey, pointed out that he could not see that the French amendments were actually amendments in the proper sense of the word. He suggested to dispose firstly of the United Kingdom's proposal without amendments.

4. Mr. Falgarone agreed to not include the text he had submitted as an amendment to the United Kingdom's proposal. The seconder of the amendment, Mr. Jarov, also agreed to this procedure.

The Chairman at this stage proposed to drop the amendment now and to reconsider it at a later stage.

He gave a brief outline of the stage he had in mind of the work of various working groups of committee 6. After some three more meetings of the group of which Mr. Harrey is the chairman, we might be able to get the minimum requirements for the Major World Air Route Areas, after which the points raised by the French Delegation could be taken into consideration.

The second proposal of the United Kingdom unamended was then unanimously adopted.

5. The French delegation requested that these minutes show that it reserved its right to raise the points of their amendments later.

The delegate of France asked whether it would be possible to prepare a table showing which zones and to what extent the accepted standards of loading and Protection Ratio have been lowered.

The Chairman stated that the working party consisting of Mr. Harvey, Mr. Betts, Mr. Gautier, Mr. Givens and Mr. Mitchell should indicate to the committee the final loading factor and Protection Ratio which are applicable to the Major World Air Route Areas in the final plan they will produce for consideration by the Committee.

In the Regional allotment plan there should also be shown the Protection Ratios.

Mr. Falgarone said that he simply desired to see in table-form the reduction which we were going to apply.

6. At this stage the Chairman stated that the working groups could now immediately continue their work. He suggested that the groups of Mr. Harvey and Mr. Costa might try to reach Agreement on the matter of defining the Areas.

In the course of the discussion that followed, Mr. Harvey pointed out that even a reduction of the Protection Ratio to 15 db would not materially affect the situation as a result of the peculiar shape of the Areas.

On the other hand, reconsidering of the loading can make a great difference. However, the duplication of frequencies for Major World Air Route Areas in the Regions might possibly give a considerable improvement in the situation. This problem has to be attacked in coordination with the Regions.

Mr. Layzell (IATA) suggested that the working groups concerned with Regional requirements, especially for the most difficult areas, might coordinate with Mr. Harvey.

The Chairman agreed to this.

In connection with the information of the required order of frequencies for regional use Mr. Layzell suggested that Master-Region-requirements should go to Mr. Harvey's group.

The Chairman, Mr. Betts, stated that close coordination should be undertaken in this respect and that he would be prepared to arrange accordingly.

7. Mr. White (USA) suggested Mr. Betts to act as a coordinator. Mr. White further remarked, that there will elapse at least a period of two years before we might get the frequencies we are now considering. Keeping in mind the rapid growth of aviation, it might occur that after two years time, the boundaries of Regions and their subdivisions on the basis as we are considering them now, would then no longer seem logical.

Mr. White suggested in this respect that Regions might possibly be authorized to settle their own problems, as long as no interference outside the Region is created.

If such a point of view could be accepted, the USA delegation was willing to submit a proposal to this effect.

Mr. Costa (Chile) agreed in principle with this point of view. However, he thought it would still be unavoidable to indicate sub-regions, as these subdivisions have a definite bearing on the duplication possibilities. However, he agreed that many details might well be worked out by the Regions and that we can dispense now with many of these details.

8. The Chairman announced that he would call a full Committee 6 Meeting as soon as the situation of the work done by the various working groups, made such necessary.

In connection with a request of Mr. Rowland (United Kingdom) to pass the accepted group-boundaries to Mr. Harvey, some discussion took place on the subject of Major divisions and sub-divisions. Mr. Harvey pointed out that for the final analysis, subdivisions would be required.

Mr. Layzell (IATA) remarked that at this stage we are still experimenting with different methods of approach, so that subdivisions cannot yet be given.

The boundaries of one of the Major World Air Route Zones is moreover still under consideration.

The Chairman hoped that, in his function of coordinator, he might well be able to reach agreement on several points.

9. Mr. Arciuch (Poland) wanted to make a few remarks with respect to the loading factor, a probability factor of 2.4 for peakloading having been accepted, to take into account that most flights take place during dayhours. Thus it seems feasible that for nighthours a smaller number of night-frequencies would be required. If, on the other hand, more flying would occur during the night-hours, less frequencies would be required for daytime.

He remarked that the Delegate of China, Mr. Chen, some time ago expressed as his view that a loading factor of 1.6 might make more frequencies available for the Regions.

The Chairman agreed to discuss this point together with the delegate of Poland.

The meeting was then adjourned at 10.50

Reporter
A. de Haas

Chairman
E.G. Betts

Report of the Steering Committee.

(Committee 1.)
17th Meeting.
16 July, 1948, at 5.45 p.m.

Chairman: Mr.A.L.Lebel (Chairman of the Conference)

Present: Mr.Jarov (Vice-Chairman of the Conference)
Mr.Veres (Committee 2)
Mr.Falgarone (Committee 3)
Mr.Chef (Committee 5)
Mr.Betts (Committee 6)
Mr. Fry (Committee 7)
Miss Florence Trail (United States)
Mr.Kunz (Secretariat of the Conference).

Approval of Report of the Sixteenth Meeting (Aer-Document No.167)

The following paragraph should be inserted under (3):

"It was agreed that texts to be included in the Final Report should be signed by the Chairman of the Editorial Committee, or, in his absence, by the Chairman of the Conference."

Disposal of Aer-Document No.166.

It was agreed to refer pages 1 and 2 of this document (proposal on the form of the frequency list as applied to R bands) to Committee 6.

It was agreed that pages 3-6 (proposal concerning agenda item 4 and proposal concerning agenda item G) should be brought to the attention of a future Plenary Meeting when the Chairman of Committees 6 and 7 considered that the time was ripe to do so.

Final Documents of the Conference:

It was agreed that the final report of the Conference should be produced by the means at the disposal of the Secretariat, in rounded copies, using paper of the same size and quality as that employed for ordinary documents of the Conference.

In the discussion which followed, attention was drawn to the difficulty of producing a document containing two languages on one page and two on the following page, using both sides of the paper. Attention was also drawn to the bulk of the document so produced.

Mr.Veres (Committee 2), supported by Mr.Betts (Committee 6) suggested that the most practical solution, within the terms of Aer-Document No.185, as amended by the seventh Plenary Meeting, would be to produce the document in each of the four languages, and to unite them as four independent sub-divisions of a single volume.

Mr.Falgarone (Committee 3), supported by Mr.Chef (Committee 5) considered that such a procedure would be entirely contrary to the spirit

(Aer-105-1)
of the decision taken by the seventh Plenary Meeting.

Mr. Fry (Committee 7) in view of the fact that these present were equally divided in their opinions, suggested that the matter be referred to the Editorial Committee, which should be empowered to come to a decision.

This course was approved by a majority of the Committee, but it was pointed out that according to Aer-Document No.4, duly adopted by the Plenary Meeting, any delegation might be represented on the Editorial Committee at any time.

Mr. Falgarone (Committee 3) said that if Committee I or Committee 3 adopted the course proposed by Mr. Veres, he would at once request that a Plenary Meeting be called to consider the matter again.

It was agreed that the Chairman should be empowered to call a Plenary Meeting, should the Chairman of Committee 3 so request.

Schedule of Meetings:

The Committee drew up a schedule of meetings for Monday and Tuesday, July 19 and July 20, 1948, and decided to meet again on Tuesday, July 20, at 5.30 p.m..

Interpreters:

In view of the great lack of interpreters, it was agreed that strong representations should be made to the Chief of the Linguistic Service.

The Meeting rose at 8.45 p.m.

Reporter:

N.Langford.

Chairman:

A.L. Lebel.

1. Page 1, line 1, replace Mr. Petit (I.F.R.B.) by: Mr. PETIT (I.F.R.B.)
2. Last line, page 1, the speech attributed to Mr. ARCIUCH (Poland) should form a new paragraph.
3. Page 4, line 6, delete " 5 absences "; read " 4 absences ".
4. Page 4 - In the column headed "For" in the list of votes, after "Czechoslovakia", add "Union of Soviet Socialist Republics".
5. Line 15, replace "Mastership" by " trusteeship "-
6. Line 23, after the list of abstentions, delete "(7 votes)".
7. Page 5, sixth line from the bottom, replace "prepararbtion" by "preparation".
8. Page 6, line 9, replace "the life of Committee 6" by
"the life of Committee 7"

* * * * *



SUMMARY RECORD OF THE SEVENTH PLENARY MEETING
held in the Maison des Congrès, Geneva,
on Thursday, 15 July, 1948, at 8.45 p.m.

CHAIRMAN : Mr. Arthur L. LEBEL (United States)

APPROVAL OF MINUTES OF THE FIFTH PLENARY MEETING (Aer-Document No 161)

Mr. Petit (I.F.R.B.) said that the second sentence of his statement on page 5 :

"It was certain that neither the P.F.D., which had much to do in connection with the maritime bands, nor any other body . . ."

should read :

"It was certain that neither the P.F.B., which had much to do in connection with the bands for which it was responsible, nor any other body . . ."

This amendment was adopted.

Aer-Document No 161 . . . as amended, was unanimously adopted.

FINAL DOCUMENTS OF THE CONFERENCE (Aer-Document No 165)

Mr. LURASCHI (Argentina) referring to points I and II of Aer-Document No 165, said that although the conclusions of the Conference were not such as to modify the Atlantic City Regulations, the P.F.B. would have no authority to amend them, nor indeed would the special administrative conference to be convened in 1949, unless it was a conference of plenipotentiaries.

Article 15 of the Convention laid down that the final documents of plenipotentiary and administrative conferences were to be published in the five official languages.

The resolution was inconsistent. If, as was maintained in the first line of (a) in the operative part, the Final Acts of the Conference were merely to have the status of a working document, it seemed strange that a proposal should be made to publish it in four languages, instead of the three officially recognized working languages of the conference.

He would therefore move the following amendments :

Delete points 1, 2 and 5; in the first line of (a), delete the words : "in the form of a working document", and amend the second sentence of (a) I (General Report) to read as follows : "This part of the report shall be in the following official languages : French, English, Spanish, Russian, two languages to be on one page, two on the following, the texts to be equivalent in form and content".

Mr. KALUZYSKI (Poland) said it was clear from page 28 of the Recommendations and Resolutions of Atlantic City that the Conference had the status of a special international administrative aeronautical conference. As such, they could not escape the provisions of Article 15, page 17, of the Convention, requiring the publication of final documents in the five official languages; such documents could only be signed when so submitted. Mr. ARCIUCH (Poland) said that paragraph (f) was contrary

to the provisions of Chapter 6, Rule 25 of Annex 2 (Final Acts of the Atlantic City Conference).

There could be no objection if the delegate of one country authorized the delegate of another to sign the final acts in his name. Certain delegations might wish to do this at the end of the Conference. But no decision taken by the Conference as a whole could compel a delegate to forego his right of signature, and this right he personally was not prepared to renounce.

Mr. COFFEY (Canada) thought that undue significance was being read into paragraph (f). It was laid down in Chapter 6, item 4, of the Atlantic City Acts that the minutes of the final Plenary Meeting should be examined and approved by the Chairman of the Conference. It would be sufficient if the Chairman signed the minutes of the Plenary Meeting at which the final frequency allotment plan was approved.

Mr. JAROV (U.S.S.R.) said it was a waste of time to discuss the status of the Conference. It was obvious from PC-Aer-Document No 1, from the various resolutions of the Atlantic City Conference, and from decisions taken by the Administrative Council in February, 1948, that they enjoyed all the rights and privileges of a full administrative conference.

Mr. FALGARONE (France) said the Conference had already settled the problem of signing the final documents. Paragraph (c) of the Resolution, which proposed to invalidate all previous decisions on that point, should therefore be deleted forthwith.

The final report would be more than a working document; it would represent the final acts of an administrative conference, and must be published in all the official languages. There might be some material difficulty in the case of Chinese, but as Chairman of the Editorial Committee he was convinced that publication in the other four languages was possible. Therefore he would second the Argentine amendment to Aer-Document No 165.

Mr. RAO (India) said that if they were going to consider themselves as a full administrative conference, and observed the letter of the law, they would have to wait until the final acts appeared in Chinese before they could sign.

The Conference was not, in fact, a full administrative one. It was a special conference of administrations convened to deal with aeronautical bands, and as such could make its own rules of procedure. This, at any rate, was the opinion of most administrations, who were under the impression that a special administrative conference would be called to approve, and by implication, to amend, any conclusions they might reach.

Mr. SATHAR (Pakistan) said that when the Administrative Council discussed the advisability of calling an aeronautical conference, the member for Pakistan had suggested that P.F.B. was competent to undertake the allotment of aeronautical frequencies itself. If this was so, it was difficult to see how any conference calling itself an administrative one could submit its conclusions to such a body.

Mr. LALUNG-BONNAIRE (Overseas France) said that if the question was dispassionately considered, it was obvious that the Conference was an administrative one. The wording of Article 6 (c), page 28, of the Atlantic City Resolutions was quite

unequivocal. In addition, the Conference had taken upon itself to deal with the question of public correspondence in the aeronautical mobile bands. Reference to Chapter III, Article 9, paragraph 4 of the Radio Regulations would show that only an aeronautical administrative council was competent to take the necessary decisions in this matter.

The P.F.B. would have no authority to modify their plan of frequency allotment provided that the plan kept strictly within the limits of the aeronautical bands.

Mr. WHITE (United States) said that the resolution they were discussing aimed at producing the sort of document that could be produced reasonably, cheaply and quickly, leaving decisions on the publication of a final document to the Administrative Council.

As to the role of the P.F.B., it was laid down on page 29 (e) of the Resolutions that that body should be responsible for integrating all the plans it had itself prepared with any plans which might be prepared by administrative conferences. This must mean that the P.F.B. could modify such plans, and that being so, it was difficult to see how any document produced by the Conference could be considered final.

At the last Plenary Meeting, it had been tentatively decided to produce a document in three working languages, with three languages per page in parallel translation. That seemed an unnecessary cumbersome and expensive procedure to the United States delegation for the sort of edition the conference itself would need. It would be worse if they decided to do the same with four languages, and worse still if they were all going to wait until such a document was ready for formal signature. Some feeling seemed to have been aroused by (c), which recommended that all previous decisions of the Conference conflicting with the resolution should be disregarded. It seemed to him that if the resolution was adopted, such a result would automatically follow. He would therefore agree to the deletion of (c).

Mr. FALGARONE (France) said that as Chairman of the Editorial Committee, he had studied the question of time and expense involved. If the document was produced with the means at the disposal of the Secretariat, as had been decided, the cost would be negligible. The addition of texts in a fourth language would make no great difference. It would in fact be cheaper to produce such a document with the means at their disposal rather than to have it printed later.

Mr. COSTA (Brazil) said that the Atlantic City Convention could not be changed. This laid down (page 17, article 15) that the final acts should be published in five languages.

Article 12 (page 15), however, laid down that each Conference should adopt its own rules of procedure, "with such modifications as it thinks fit". They could, therefore, dispense with signatures.

The CHAIRMAN remarked that arguments drawn from the Atlantic City Convention were not invulnerable, in view of the fact that the Convention was not in force in its entirety.

Mr. WHITE (United States) said that in accordance with Article 16 of the General Regulations, Chapter 6, he would demand a vote by roll call.

The CHAIRMAN then put the following amendments, as a whole, to the vote :

(22-19-22)

delete 1, 2 and 5, delete "in the form of a working document"; in the operative part, I (General Report) delete "in four separate volumes", and read : "in one single volume"; delete (c).

The above amendments to the United States resolution contained in Aer-Documents No 165 were put to the vote and adopted by 19 votes to 17, with 7 abstentions and 5 absences.

For : People's Republic of Albania, Argentine Republic, the Bielorussian Soviet Socialist Republic, Brazil, Bulgaria, Chile, Colombia (Republic of), Colonies, Protectorates and Overseas Territories under French Mandate, Cuba, Ecuador, France, Honduras (Republic of), Poland, French Protectorates of Morocco and Tunisia, People's Federal Popular Republic of Yugoslavia, the Ukrainian Soviet Socialist Republic, Roumania, Czechoslovakia.
(19 votes)

Against : Australia (Commonwealth of), Canada, Colonies, Protectorates, Overseas Territories and Territories under Mandate or Mastership of the United Kingdom of Great Britain and Northern Ireland, Denmark, United States of America, Ireland, Iceland, Italy, Norway, New Zealand, Netherlands-Curacao and Surinam, Philippines (Republic of the), Portugal, United Kingdom of Great Britain and Northern Ireland, Sweden, Territories of the United States of America, Union of South Africa and the mandated territory of South-West Africa. (17 votes).

Abstentions : Portuguese Colonies, Egypt, India, Netherlands Indies, Nicaragua, Pakistan, Syria. (7 votes).

Absent : China, Dominican Republic, Haiti, Switzerland (Confederation).

Mr. JAROV (U.S.S.R.) seconded by Mr. JOUK (Bielorussia) and Mr. FALGARONE (France), moved that paragraph (f) be deleted forthwith, in view of the fact that its adoption would involve a derogation from rules of procedure duly adopted.

After some discussion, it was agreed to consider paragraph (f) as a separate item.

Aer-Document No 165, as amended, without paragraph (f), was put to the vote and adopted by 37 votes to 0, with 5 abstentions.

Mr. PETIT (I.F.R.B.) suggested that paragraph (f) be amended to read as follows :

"to transmit officially one copy of the above report to the P.F.B., together with a letter signed by the Chairman of the Conference".

Such wording would not imply that the report in question would not be signed by all delegations.

Mr. FALGARONE (France), seconded by Mr. SATHAR (Pakistan), moved that paragraph (f) be amended in this sense.

The French amendment to paragraph (f) of Aer-Document No 165 was put to the vote and adopted by 25 votes to 8, with 8 abstentions.

Paragraph (f), as amended, was put to the vote and adopted by 38 votes to 2, with 1 abstention.

Mr. PETIT (I.F.R.B.) said that there seemed to be some uncertainty as to the role of the P.F.B. The P.F.B., by its terms of reference, was charged with incorporating into its own plans the frequency allotment plan prepared by the Conference. It was unlikely to modify the conclusions of the Conference, partly because that did not come within its terms of reference, partly because it was already fully occupied with other problems.

PROGRESS REPORTS OF COMMITTEES 4, 6 AND 7.

a) Committee 4

Mr. SELIS (Netherlands) said that Committee 4 had completed its task.

b) Committee 6

Mr. BETTS (Australia) said that the major task still outstanding for Committee 6 was the compilation of a coordinated allocation plan for the R frequencies.

Work on the Major World Air Route Areas had been completed, the principles recommended by the Preparatory Committee having been followed as far as possible. The plan might have to be revised to make more frequencies available to the Regions if the requirements of Major World Air Route Areas and those of Regions were to be equitably satisfied. He was in a position to say definitely that the allocations tentatively made to the Major World Air Route Areas would have to be reduced; he could not, however, say by how much.

Agreement had not yet been reached on the final distribution of frequencies to Regions within either hemisphere, but the problem might be settled within a day or two as far as the Western hemisphere was concerned. For the Eastern hemisphere, the position was not so clear. The main difficulty likely to arise in dealing with both hemispheres was to reach agreement on allocation of spectrum space between the requirements of regional domestic services and those of Major World Air Route Areas.

Within the Committee itself, action had been taken to eliminate delay in the production of documents, so that if the Conference was prepared to grant the Committee an extension of life, its work might be completed as quickly as possible.

It was agreed to extend the life of Committee 6.

c) Committee 7

Mr. FRY (United Kingdom) said that the work remaining to be done by Committee 7 comprised the completion of skeleton frequency allotment plans, the drafting of texts for the Committee's final report, and the preparation of complete frequency lists from the skeleton allotment plans.

The skeleton plans had been prepared largely by considering the Regions separately. Plans for Regions 1 and 3 might be completed within a few days, but that for Region 2 might take longer.

The preparation of texts for the Committee's final report would take about a

week. They would be drafted by members of Committee 7 in conjunction with representatives of the Editorial Committee.

The compilation of a complete list was largely a lengthy mechanical process, lasting possibly for several weeks, and would require the supervision of technical experts. He would therefore suggest that Committee 7 be granted an extension of life in order to complete its skeleton plans and final report, and that a small group be left behind after the end of the Conference to finish the work left outstanding by the Committee.

It was agreed that the life of Committee 6 should be extended and that the Chairman of Committee 7 should present the final report of the Committee as drafted by a joint group of Committees 3 and 7, to the Plenary Meeting direct.

It was further agreed that the Chairman of Committee 7 should submit, as a document, his proposals on the formation of a group for post-conference work.

ANNEX B OF AER-DOCUMENT No 142

Mr. BETTS (Australia) as Chairman of Committee 6, said that his Committee would shortly present a resolution on that part of Annex B which fell within its province.

It was agreed to postpone consideration of Aer-Document No 142, Annex B.

The meeting rose at 12.05 a.m.

Reporter :

N. Langford

Chairman :

A.L. LEBEL

Report
of the Committee on the Allotment of OR Frequencies

(Committee 7)
25th Meeting
14 July, 1948.

Chairman: Mr. A. Fry (United Kingdom)

1. The meeting opened at 14.30 hrs.

The following countries were represented:

Argentina	Netherlands East Indies
Australia	New Zealand
Brazil	Philippines (Republic of the)
Canada	Poland
Chile	Pakistan
Egypt	Portugal
France	Ukranian S.S.R.
Honduras (Republic of)	United Kingdom
India	U.S.A. and Territories
Mexico	U.S.S.R.
Netherlands	

2. The Chairman stated that the first item of business was consideration of the French proposal contained in Doc. 168 and requested Mr. de Calan (France) to explain the proposals.

Mr. de Calan (France) wished to amend the words "the basis of a system of priority" in line 3 of paragraph 2, page 1, into "a secondary basis". He pointed out that wherever the word "priority" occurred in the document, it should be understood in this sense. He then explained the proposals in Doc. 168 and pointed out that all that the proposal envisaged was some orderly method of registration and avoidance of chaos.

The delegates of Mexico and Argentina seconded the proposals.

3. Discussion ensued in which the delegates of U.S.S.R., France, Australia, Brazil, U.S.A., Mexico, Poland, Argentina, Chile and Pakistan took part. It was clarified in the discussion that

- i) the concept of "secondary" assignment may be used where possible and necessary when the number of frequencies available is insufficient to meet the requirements reasonably,
- ii) the proposed system of "secondary" assignments is permissive and not obligatory or mandatory,
- iii) the work so far done by the Committee will not be gone over; and if any country feels that this principle can be applied to the work already done, it should do so by itself, subject, of course, to the general approval of the results by all the countries concerned,



iv) no frequencies shall be specially classified as "secondary" or primary.

4. The delegate of U.S.S.R. then moved the following amendment to paragraph 3, page 1 of Doc. 168:

3(a) "that the power of a station operating the frequency on a "secondary" basis, be less than that of the stations using the same frequency on a primary basis."

(b) "that these stations be separated by a distance of not less than half the distance required to have a protection ratio of 20 db for the given powers of the stations concerned".

Discussion on the amendments ensued in which the delegates of U.S.S.R., Chile, Poland, U.S.A., Australia, Argentina and Pakistan participated.

5. The amendments were accepted unanimously.

6. The following resolution was then proposed by the delegate of U.S.S.R., seconded by the delegate of France:

"Committee 7 recognises that in establishing a frequency assignment plan, in cases when it appears necessary and possible, the proposal of the French Delegation contained in Doc. 168 may be applied, in each particular case, on agreement between the countries having interest in the utilization of a given frequency."

The resolution was passed unanimously.

7. The Chairman then stated that the investigation regarding the missing Forms 2 of Columbia has been completed and it has been found that the forms were erroneously marked "R" and therefore proposed that these requirements be admitted.

The delegate of Australia seconded the proposal, which was accepted unanimously.

8. The meeting recessed for 10 minutes at 16.05 hours.

9. On reassembling, the Chairman stated that the pending documents will be taken up for disposal.

Doc. 113, the report of the 16th meeting was taken up. The following amendments were proposed:

Chairman: Read "Mr. M.A. Fry" as
"Mr. A. Fry"

Poland: Page 3, paragraph 6, line 1: between the words "against" and "but" add the following:

"The delegate of Poland declared that he would vote against, in view of the fact that the needs of OR frequencies were very ill-defined; under these conditions even countries which had not given the necessary data should have their requirements satisfied."

As the Chairman's proposal was such as to bring both sides together, he would propose that it be examined first.

Doc. 113 was adopted with the above amendments.

10. Doc. 123, the report of the 17th meeting was then taken for consideration.

The following amendment was proposed:

Australia: Page 3, last paragraph, line 4:
Read "0.02R" as "0.02%"

Document 123 was adopted with the above amendment.

11. Document 124, the report of the 18th meeting was then adopted.
12. The delegate from Australia wished to place on record the appreciation of the Committee of the services of Commandant G. Sarre as reporter. The Chairman associated himself with the same and it was agreed unanimously.
13. Document 138, the report of the 19th meeting, was taken for consideration and the following amendment was proposed:

U.S.A.: Page 7, Annex 'C', heading, read "Group 7B2"
as "Group 7B1"

The document was approved with the above amendment.

14. Document 136, the report of the 20th meeting, was taken for consideration. The following amendments were proposed:

Australia: Page 2, line 1, read "7B(1)" as "7B(2)"
2 " "7B(1)" as "7B(2)"
3 " "7B(1)" as "7B(2)"
4 " "7B(2)" as "7B(1)"
17 " "7B(2)" as "7B(1)"
" " "7B(1)" as "7B(2)"
18 " "7B(2)" as "7B(1)"
24 " "7B(1)" as "7B(2)"
28 " "7B(1)" as "7B(2)"
41 " "7B(2)" as "7B"
45 " "7B(2)" as "7B(1)"
Page 3, line 15 " "7B(2)" as "7B(1)"
34 " "7B(2)" as "7B(1)"
36 " "7B(2)" as "7B(1)"
Page 4, line 3 " "7B(2)" as "7B(1)"
22 " "7B(2)" as "7B(1)"

Chairman: Page 4, para. 14: line 1, delete existing line and substitute:
"It was agreed unanimously that, in the future work of".
Line 3, delete: "This was adopted unanimously".

The delegates from France and Argentina pointed out that paragraph 6 was entirely omitted in the French and Spanish texts and promised to supply the same.

Doc. 136 was adopted with the above amendments, on the understanding that, if need be, it will be reconsidered so far as paragraph 6 is concerned, after the French and Spanish texts have been corrected to include this paragraph.

15. Doc. 137, the report of the 21st meeting was taken for consideration. The delegate from New Zealand pointed out a number of typographical errors.

Chairman: Page 3, para. 16, last line: delete the words "for working group 7" and substitute "for the Representatives of Committee 7 on the joint working group of Committee 6."

Doc. 137 was adopted with the above amendments

16. Doc. 155, the report of the 22nd meeting, was next taken for consideration. The following amendments were proposed:

Australia: Page 7, note: line 3; read "10 Mc/s" as "6 Mc/s".

France: Amendment to Para. 4 concerns only French text.

The document was adopted with the above amendments.

17. The delegate from Australia drew attention to page 6 of Doc. 155, paras. 1 and 2 and enquired if, in view of the work that has so far been done by Committee 7, it was still necessary to produce the results for the 11, 13, 15 and 18 Mc/s bands. After discussion, it was decided that it was not necessary.

18. The meeting adjourned at 1700 hrs.

The Reporter:
V. Sundaram.

The Chairman:
A. Fry.

20 July, 1948

Committee 7

Report

of the Committee on the allotment of OR frequencies

(Committee 7)
26th Meeting
July 19, 1948

1. The Chairman, Mr. A. Fry (U.K.) opened the meeting at 14:45.

Those present included delegates from the following countries :

Argentina	Netherlands East Indies
Australia	New Zealand
Brazil	Pakistan
Canada	Philippines (Republic of)
Chile	Poland
Cuba	Portugal
France	United States of America and
Honduras (Republic of)	Territories
India	Ukrainian S.S.R.
	U.S.S.R.

2. Aer-Document No. 160 was approved by the Committee with the following corrections and additions :

1. To the list of delegations present, add New Zealand.
2. Page 1, para.2 (1) change "mercatorial projection map" to read "the surface".

3. In connection with the question of the consideration of the requirements of Colombia, the following motion was adopted unanimously by the Committee :

"That the statement of requirements submitted by Colombia be considered on a primary basis as far as practicable. Where this is not practicable the requirements will be considered on a secondary basis only."

4. The question of the action to be taken with respect to new requirements which had been received after the closing date was discussed. It was stated that a number of such new requirements had been received by the convener of Working Group 7A. The suggestion of the Chairman, as follows, was adopted unanimously:

All requirements or information relative thereto, and supplementary requirements or information not considered by this Conference should be passed to the I.F.R.B. Priority of consideration will be determined by the date of receipt.

5. After some discussion of the skeleton frequency plan, it was considered that a coordinator should be appointed to expedite the completion of this plan with the following terms of reference:



Compile and post on the wall in Room III a large copy of the skeleton frequency plan. Also prepare and publish as a conference document the skeleton frequency plan with an explanatory note or foreword:

If any delegation wishes any change in the skeleton frequency plan, such changes must be supported by technical data and agreed to by the countries concerned.

The above terms of reference were approved unanimously with the delegation of Chile abstaining. Colonel Flashman was appointed coordinator for this matter. The Chilean delegation submitted the statement, attached hereto as appendix A, in connection with its abstention.

6. The question of reduction of the power used by Aer.M (OR) stations at night was discussed. This matter was referred to Working Group 7C for study and recommendation
7. The meeting rose at 16:55.

The Reporter :
Mr. H. B. Krause

The Chairman :
A. Fry

APPENDIX A

Mr. A. Schwerter (Chile) made the following declaration:

"The delegation of Chile has followed with keen interest what has been said in connection with the demands for and allotment of frequencies in general, especially those in the 13-15 and 18 Mc/s bands.

In this connection I would like to point out:

1) Chile's demands in OR frequencies were restricted to bands below 11 Mc/s and were reduced to the minimum required to satisfy her needs, in view of the limited amount of spectrum space available for satisfying the requirements of all countries.

My country does not want to make distasteful comparisons with the demands presented by other countries which probably find themselves in a similar position.

Its demands are however the minimum necessary for Chile's OR services.

2) The territory of Chile is four thousands (4.000) kms long, and she therefore ^{has} a fairly pressing need for frequencies in the 13 - 15 and 18 Mc/s bands, but she has submitted more concrete demand. It was considered necessary to attend this Conference, so that once the technical principles underlying frequency distribution had been decided upon, and the demands of other countries, possibly more urgent, had been satisfied, Chile's own preoccupations might be considered.

My country has taken due note of the fact, that there are countries with territories far distant from their metropolis, and that logically speaking these deserve a certain priority. The aircraft of such a country, to reach these distant territories, have to fly over extensive areas which are not under the control of the country concerned. Hence such a country could not solve the problem by switching from one control to another such as might be done by countries differently placed.

Now, however, the demands of such countries have been satisfied. I am sure I can count on the support of all in submitting my country's requirements, restricted as they are by the figures adopted, in the case of each frequency, for protection ratio and repetition distance."

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Conférence internationale administrative
des Radiocommunications aéronautiques

GENEVE, 1948

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronáuticas

GINEBRA, 1948

Aer-Document No. 189-E
Aér-document No. 189-F
Documento Aer. No. 189-S

21 July, 1948

21 juillet, 1948

21 de julio de 1948

	Room: Salle: Sala: B	Room: Salle: Sala: I	Room: Salle: Sala: II	Room: Salle: Sala: III
Wednesday, 21 July Mercredi, 1 ^{er} 21 juillet Miércoles, 21 de julio				
08.30				
10.00	6			
14.30				
15.00	3			
17.30	1			
Thursday, 22 July Jeudi, 1 ^{er} 22 juillet Jueves, 22 de julio				
08.30				
14.30	(Plenary Meeting Assemblée Plénière Sesión Plenaria		
Friday, 23 July Vendredi, 1 ^{er} 23 juillet Viernes, 23 de julio				
08.30				
14.30				
15.00	3			
Saturday, 24 July Samedi, 1 ^{er} 24 juillet Sábado, 24 de julio				
08.30				
14.30				
15.00	3			

(Committee 6 (6D); see notice-board)
(Commission 6 (6D); les réunions seront affichées)
(Comisión 6 (6D); las sesiones serán anunciadas)

(Committee 7; see notice-board)
(Commission 7; sur affichage au tableau)
(Comisión 7; las sesiones serán anunciadas)



21 July, 1948
21 juillet 1948
21 de julio de 1948

AGENDA FOR THE EIGHTH PLENARY MEETING

Thursday, 22 July, 1948, at 2.30 pm

- 1) Minutes of the Sixth Plenary Meeting (Aer-document No. 176)
- 2) Proposal by Chairman of Committee 7 (Aer-document No. 181)
- 3) Letter from the representative of ICAO (Aer-document No. 177)
- 4) United States proposals (Aer-document No. 166)
- 5) Coordination between maritime and aeronautical services in the field of telecommunications (Aer-document No. 146), with the frequencies 3203.5 and 5680 kc/s inserted at the bottom of page 2.
- 6) Proposal by the Polish delegation (Aer-document No. 182).

ORDRE DU JOUR DE LA 8^e SEANCE PLENIERE

Jeudi 22 juillet, 1948, à 14 h 30

- 1) Approbation du procès-verbal de la 6^e séance plénière (Doc. Aér. No. 176)
- 2) Rapport du Président de la Commission 7 (Doc. Aér. No. 181)
- 3) Communication du représentant de l'O.A.C.I. au Président de la Conférence (Doc. Aér. No. 177)
- 4) Propositions des Etats-Unis d'Amérique (Doc. Aér. No. 166)
- 5) Proposition de la Commission de direction en ce qui concerne la coordination des services aéronautiques et maritimes dans le domaine des télécommunications (Doc. Aér. No. 146)
- 6) Communication de la délégation polonaise en matière de distribution des fréquences moyennes (Doc. Aér. No. 182)

ORDEN DEL DIA DE LA 8a SESION PLENARIA

Jueves, 22 de julio de 1948 a las 14 h 30

- 1) Acta de la 6a Sesión Plenaria (Documento-Aer. No. 176)
- 2) Propuesta presentada por el Presidente de la Comisión 7 (Documento-Aer. No. 181)
- 3) Comunicación del representante de la OACI (Documento-Aer. No. 177)
- 4) Propuestas presentadas por la Delegación de los Estados Unidos.
- 5) Coordinación entre los servicios aeronáuticos y marítimos en el campo de las telecomunicaciones (Documento-Aer. No. 146)
Página 2, léase: 3203.5 y 5680 kc/s
- 6) Propuesta presentada por la Delegación de Polonia (Documento-Aer. No. 182)

Committee I

REPORT OF THE STEERING COMMITTEE

(Committee I)
18th meeting
20th July, 1948, at 5.30 p.m.

Chairman: Mr. Arthur L. LEBEL (Chairman of the Conference).

Present: Mr. Jarov (Vice-Chairman of the Conference)
Mr. Souto Cruz (Committee 2)
Mr. Falgarone (Committee 3)
Mr. Coffey (Committee 4)
Mr. Chef (Committee 5)
Mr. Betts (Committee 6)
Mr. Fry (Committee 7)
Miss Florence Trail (United States)

FINAL DOCUMENTS OF THE CONFERENCE.

Mr. FALGARONE (Committee 3) said that a proposal had been made to leave behind a working group to complete the detailed task of frequency allotment, after the Conference itself had dispersed. The time available to the Editorial Committee was very limited. For these reasons, it would hardly be possible to submit the final report for signature in its definitive form, or to present each delegate with a copy on leaving. He would suggest that Committee 3 be authorized to prepare the necessary texts in four languages; these might be signed by delegates at the final Plenary Meeting, and subsequently produced as a coherent whole, in accordance with the decisions already taken by the Editorial Committee. This procedure would present a further advantage, in so far as amendments which might be proposed by the Plenary Meeting would be the more easily introduced into the text.

It was agreed that the Editorial Committee should be authorized to proceed on this basis.

FINAL REPORT OF COMMITTEE 6.

It was agreed that the final text, when available in three languages, and subject to approval by Committee 6, should be submitted to the Plenary Meeting. On approval by the latter, the document would then be taken up by the Editorial Committee as in the case of the conclusions of Committee No. 4.

PLENARY MEETING OF THE CONFERENCE

An agenda was drawn up for a Plenary Meeting, to be held on Thursday, July 22, 1948, at 2.30 p.m. (see Aer-Documents No. 190).

It was agreed that if the agenda were not exhausted by 6 p.m., the Plenary Meeting should be adjourned and re-convened at a later date.

ACCELERATION OF THE WORK OF THE CONFERENCE

Mr. JAROV (Vice-Chairman of the Conference), supported by Mr. FALGARONE (France), hoped that all delegates would find it possible to assist in the intensive work attendant upon the closing phase of the Conference.

It was agreed that the Chairman should raise this matter at the next Plenary Meeting.

Reporter:
N. Langford

Chairman:
A.L. LEBEL

C O M M I T T E E 6

SUMMARY OF RECOMMENDATIONS

1. Frequency Allocation Plan (Aer-document No. 98, paragraph 10)

"It is recommended that the plan of frequency allocation as developed by the Preparatory Committee be adopted with the clear understanding that due consideration must be given to present and indicated future requirements and that the plan may be modified for instance with respect to the treatment of the equatorial zone or the regional frequency allocation plan, but without changing other basic principles as the work of the Committee progresses. In carrying out this plan, the Committee recognises the principle that the greatest freedom possible must be given to the respective administrations concerned to provide whatever system of communication they feel will best meet the needs of the aircraft operating agencies."

(In favour 18
Against 11
Abstentions 0)

2. Allocation of frequencies (Doc. 107 Para b)

"This Conference should allot frequencies to serve specific Major World Air Route Areas but must not attempt to dictate which aeronautical ground stations shall be assigned these frequencies. It is essential that the administrations and regions concerned have full responsibility for determining which ground stations shall serve an operation for which frequencies have been provided. It is most important that this concept should not be lost sight of and that it should form part of the final report of Committee 6."

Adopted unanimously.

3. Provision for future developments in aircraft services. (Doc. 127 P 3)

"As far as Committee 6C is concerned, no special account shall be taken of future developments in aircraft services except in those cases where a development of major magnitude is likely to occur within the next three months and materially affect the rational allocation of frequencies to areas.

Relative information must be supplied in appropriate form to Working Group 6C by Friday June 25th, 1948".

Carried unanimously with 6 abstentions.

4. Non-scheduled Loading (Doc. 127 as amended in Doc. 128)

"THE COMMITTEE RECOMMENDS that the number of flights in column 5 in the Flight Information Tables (Doc. 71) be increased by 33 1/3% to represent the probable total loading (scheduled plus non-scheduled flights), including military traffic) which will have to be accommodated on the air routes indicated except in a very limited number of special cases as determined

by Committee 6C where the number of non-scheduled flights is so large and of such regular character that it will definitely have a bearing on the number of families of frequencies to be allotted."

(For 15
Against 1
Abstentions 13)

5. Peak loading within Major World Air Route Areas (Doc. 128 page 4).

"THE COMMITTEE CONSIDERS that the following formula is satisfactory for general application on the Major World Air Route Areas but that it may be necessary to determine another "Probable Concentration Factor" in estimating probable peak densities in cases where a number of low density routes or areas are served by one frequency or family of frequencies:

N = number of aircraft per hour (probable peak loading) =

$$K \left(\frac{\text{Route miles} \times \text{scheduled flights per week}}{200 \times 7 \times 24} + \% \text{ allowed for non-scheduled operations} \right)$$

K is the "probable concentration factor" = 2.4 for inter-continental routes.

This formula is subject to review by Committee 6 if found necessary.

(For 21
Against 1
Abstentions 12)

Reservations: U.S.S.R., Yugoslavia, Poland.

6. Utilization of Space between R and OR Bands (Docs. 142 and 153)

The Committee unanimously adopted the following recommendations in connection with the utilization of the space between the R and OR bands.

Band	Separation	Unallotted Space kc/s			Fractional Channel Width	Proposed allocation			Remarks
		R	OR	Total		R	Common	OR	
2850-3155	7	6.5	3.5	10	0.93	0.5	-	A3(10kc/s)	- centered at 3023.5
5480-5730	7.5	4.75	4.25	9	0.633	0.566	-	A3(9kc/s)	- centered at 5680
6525-6765	7.5	1.75	4.25	6	0.232	0.566	-	2A-1	centered at 6685 and 6787.5
8615-9040	8.5	4.75	6.25	11	0.56	0.735	A-1	A3	centered at 8961.5 and 8967
11175-11400	9.5	0.75	4.25	5	0.079	0.447		A1	centered at 11273
15010-15100	10.0		(8)*			(0.8)*	-	2A-1	centered at 15092.5 and 15096.5
17900-18030	10.0	8.5	8.5	17.0	0.85	0.85	A3	A1	centered at 17966.5 and 17975

Total 27kc/s 29 kc/s 3.284 channels 3.664

* 110-15100 kc/s exclusively "OR" therefore these figures not included in totals.

SUMMARY: For Common 2 A3 channels

For "R" Service 1 A3 and 1 A1 channel

For "OR" Service 1 A3 and 4 A1 channels

- 1) In connection with the common channels 3023.5 and 5680 kc/s, the decision as to the type of emission which may be used on these channels, namely A3 and A1 or A3 and A1 mixed, will be made at a later date of the Conference.
- 2) In connection with the 17966.5 high capacity channels, it is agreed that the general decision regarding the use of the different emissions on other high capacity channels is applicable also to this channel.
- 3) It is necessary that the equipment having a high degree of stability be used on the A1 channel at 8961.5 kc/s.

7. Use of Common Channels (3023.5 and 5680 kc/s) (See also Doc. 169 adopted by P.S.)

"IT IS RECOMMENDED that the common channels centred at 3023.5 and 5680 kilocycles be authorized worldwide for the following uses:

- a) Aboard aircraft for
 - (1) communication with approach and aerodrome control.
 - (2) communication with aeronautical stations when other frequencies are either unavailable or unknown.
- b) At aeronautical stations for aerodrome and approach control under the following conditions:
 - (1) for approach control with the 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.
 - (2) 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.
 - (3) attention should be paid to the polarization used in order to avoid harmful interference.
- c) For use for intercommunication between aircraft, mobile surface vehicles and ships engaged in coordinated search and rescue operations at the scene of a disaster.
- d) The specific applications of these common channels for these purposes may be decided at regional aeronautical conferences.
- e) With respect to the use of the 5680 kilocycles for approach and aerodrome control, it is recognized that it is not an appropriate frequency for that purpose and that it should be abandoned as soon as possible and that it should be used with careful regard to its propagation characteristics.

IT IS FURTHER RECOMMENDED that these channels be available for A1 or A3 emission in accordance with regional agreement but that they be not subject to subdivision."

Adopted unanimously.

8. Meteorological Broadcast Frequencies (Doc. 172)

It is proposed to provide two families of frequencies from the "R" bands for ground/air meteorological broadcast - each family to consist of no more than three frequencies of the approximate order of 3, 6 and 9 Mc/s.

The primary assignments of these frequencies to be as follows:

- (a) one family to serve Major World Air Routes traversing the Pacific Ocean Area
- (b) one family to serve ^{Major}World Air Routes traversing the Atlantic Ocean Area

Duplication of these primary families for the purpose of meteorological broadcast through other parts of the world to be based on accepted frequency separation standards and possible time channel arrangements.

In any case, because of the particular requirements of the European Area ~~the family of frequencies assigned to the Pacific Ocean Area~~ to be made available to ground/air meteorological broadcasts in the European Major World Air Route Area.

(For	24
Against	7
Abstentions	3)

9. Lowering of Standards: (Doc. 184)

"Whereas it is evident that it will not be possible for the Committee to prepare a frequency allotment plan which will satisfy the minimum requirements of the regions and the Major World Air Route Areas using the standards recommended by Committee 4;

Committee 6 agrees that it will be necessary to lower these recommended standards in respect of the Protection and or Channel loading factors to the extent necessary to provide satisfactorily the Regions and Major World Air Route Areas requirements."

Adopted unanimously.

10. Proposal regarding a method of approach to the definition of Major World Air Route Areas. (Doc. 144 para. 4)

- 1) Working Groups to define the geographical limits of the Major World Air Route Areas.
- 2) That a Major World Air Route Area be established for Europe.
- 3) That frequencies be allotted to the European Major World Air Route Area on the same basis as for other areas.
- 4) That for loading purposes aircraft operations in adjoining areas extending into the European area will be charged to the adjoining area to the point of first landing in the European Area.

Loading will be applied to the European area from the point of first landing within that area to any point within the European area.

- 5) In establishing the boundaries of the Major World Air Route Areas the areas of authorized frequency utilization be overlapped to the extent operationally required.
- 6) The extent of the overlap to be kept as small as possible consistent with operational requirements, so that the necessity for protection of the frequency in the area will not destroy the possibility of duplication elsewhere in the world.

The resolution was approved unanimously with the following delegations stating that they reserved their opinion for the future and were abstaining: Yugoslavia, Albania, Bielorussia, and the U.S.S.R.

11. Major World Air Route Areas (Doc. 152)

"That we accept the boundaries as now outlined on the Globe except that to the Eu-Med frequency protection areas now provided for Major World Air Routes entering Europe, we add Copenhagen, Oslo and Stockholm.

The boundaries of the various Major World Air Route Areas may be extended by means of regional agreements to the extent that these modifications do not interfere with the possibilities of frequency repetition as derived from initial boundaries."

(For	24
Against	4
Abstentions	1)

12. Long Distance Communications (Doc. 180 page 3)

"Whereas a requirement exists for long distance communication between aircraft and their terminal locations in certain areas, for the carrying out of operational control and obtaining terminal flight information.

"And whereas in certain areas the existing Aeronautical Fixed Service is inadequate and cannot at present meet the operational requirement.

"It is recommended that two adjacent channels in the 22 Mc/s bands, each of bandwidth of 12 kc/s, be made available and afforded worldwide protection, for use by those administrations requiring such facilities.

"It is believed that the requirement will no longer exist when a satisfactory world wide aeronautical fixed service is provided.

"It is recommended that the P.F.B. be notified for information."

Mr. Jouk (Bielorussia) requested that a decision on this subject be deferred until a later meeting.

Mr. Rowland (U.K.) proposed that the document be adopted subject to any later remarks by the delegate of Bielorussia.

The Chairman, in the absence of any objections, ruled that the document was adopted, provisionally, subject to any later remarks of the delegate of Bielorussia.

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Corrigendum No. 2 to Aer-Doc. No. 193-E

Table 10 (issued with Corrigendum No. 1, dated 26 July, 1948)

Amend "Band 10 Mc/s" to read

"Band 18 Mc/s".

Corrigendum No. 2 au Doc. Aér. No. 193-F

Tableau 10 (publié avec le corrigendum No. 1, 26 juillet 1948)

au lieu de "bande 10 Mc/s" lire

"bande 18 Mc/s".

Corrigendum No. 2 al Doc. Aer. No. 193-S

Tabla 10 (publicada con corrigendum Numero 1, 26 de julio de 1948)

Sustituir: "Banda 10 Mc/s" por

"Banda 18 Mc/s".

International Aeronautical Radio Conference
GENEVA, 1948.

Corrigendum: Aer-Doc.No.193.
26 July 1948
26 juillet 1948
26 de julio de 1948

Committee 7

Corrigendum to Aer.Doc.No.193.

Page 1. Para.6. Amend Tables 1-9 to read 1-10.
Para.7. Amend Tables 8 and 9 to read 8, 9 and 10.

Table 3. Under "OR" Service, Service and Interference Ranges and Repetition Distances for Different Powers and Latitudes.

add: "Calculated for the Point of 30° from Day/Night Line."

Insert Table 10 attached.

Corrigendum au Document Aér.No.193. Commission 7

Page 1. ... me que le texte anglais.

Tableau 3. Sous "Service "OR", portées de service et de brouillage, distances de répétition des fréquences pour différentes puissances et latitudes."

ajouter: "calculées pour l'émetteur situé à 30° de la ligne jour/nuit."

Insérer le tableau 10 ci joint.

Corrigendum al doc.Aer No.193. Comisión 7

Página 1. No concierne al texto español.

Cuadro 3. Debajo de: "Servicio OR: alcances de Servicio y de Interferencia"

Añadir: "Calculados para el Punto de 30° desde la línea día-noche."

Insertar el cuadro 10 adjunto.

- E -



Table 10

Tableau 10

Tabla 10

OR SERVICE

SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES

BAND 10 Mc/s

20 db Protection ratio

SERVICE OR

PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES

BANDE 10 Mc/s

Rapport de protection 20 db

SERVICIO OR

ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES

BANDA 10 Mc/s

Coeficiente de proteccion 20 db

Calculated at the subsolar point

-

Calculées au point sub-solaire

-

Calculados al punto subsolar

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
0°	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
	20	55	75	20	55	75	20	47	67	20	47	67	19	41	60	19	41	60	15	33	48	15	33	48	13	27	40	13	27	40
	20	55	75	20	55	75	20	47	67	20	47	67	19	41	60	19	41	60	15	33	48	15	33	48	13	27	40	13	27	40
	21	60	81	22	71	73	20	51	71	21	60	81	19	45	64	20	53	73	15	36	51	16	43	59	13	30	43	14	35	49
	23	73	96	27	85	112	20	62	82	23	72	95	19	55	74	22	64	86	15	44	59	18	51	69	13	37	50	15	42	57
	27	81	108	35	106	141	24	69	93	31	90	121	20	61	81	26	79	105	16	49	65	21	64	85	14	40	54	18	53	71
	28	83	111	45	130	175	24	71	95	38	110	148	21	62	83	34	98	132	17	50	67	27	78	105	14	42	56	22	65	87
	29	86	115	57	173	230	25	73	98	48	147	195	22	64	86	43	130	173	17	52	69	34	104	138	14	43	57	29	86	115
70°	30	90	120	64	265	329	25	76	101	54	226	280	22	67	89	48	199	247	18	54	72	38	159	197	15	45	60	32	132	164

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repeticion

22 July, 1948

TABLE OF RESULTS PRODUCED BY
WORKING GROUPS 7B1 AND 7C

Appended herewith are the table of results of these working groups, on the basis of which the groups made recommendations to Committee 7 for the assignment of frequencies in the Aero mobile (OR) bands.

Annex A is a sample of the graphs constructed to obtain average day and night-time service ranges. The squared portion of the graph represents requirement distribution by latitude. The dashed line at 47° N bisects the area enclosed by this graph. The distances at which this dashed line intersected the day and night service range curves, are the distances employed as average day and night service ranges.

Using these service ranges, interference ranges were then read off the appropriate charts. Annex B is a tabulation of these service and interference ranges.

Using these service and interference ranges, patterns were next drawn on transparent paper, (see samples at Annex C) and by overlaying these transparencies on a world map, the useful repetition possibilities of each frequency band for protection ratios of 20, 25 and 30 db were observed. These results are given in columns 4 and 6 of Annex D.

By presuming that all the available channels (Column 3) would be available for (a) daytime use
(b) night-time use,

the total possible assignments were calculated (Columns 5 and 7). Comparing these with the requirements (Column 8) the percentage of satisfaction of requirements was obtained (Columns 9 and 10).

Recommendations were made to and accepted by Committee 7 on the basis of this work and as a result the group prepared tables 1 - 9 of service range, interference range and repetition distance for varying powers and for each 10° of latitude for each of OR frequency bands. To facilitate the work these distances were shown as degrees of latitude and longitude.

Tables 1 - 7 were based on propagation conditions 30° from the day-night line while tables 8 and 9 were based on conditions at the subsolar point. This was done since frequencies above 13 Mc/s are useable for limited daytime operation only.

In calculating the distances appropriate to varying powers the formulae one db decrease in power is equivalent to 4% decrease in distance was employed.

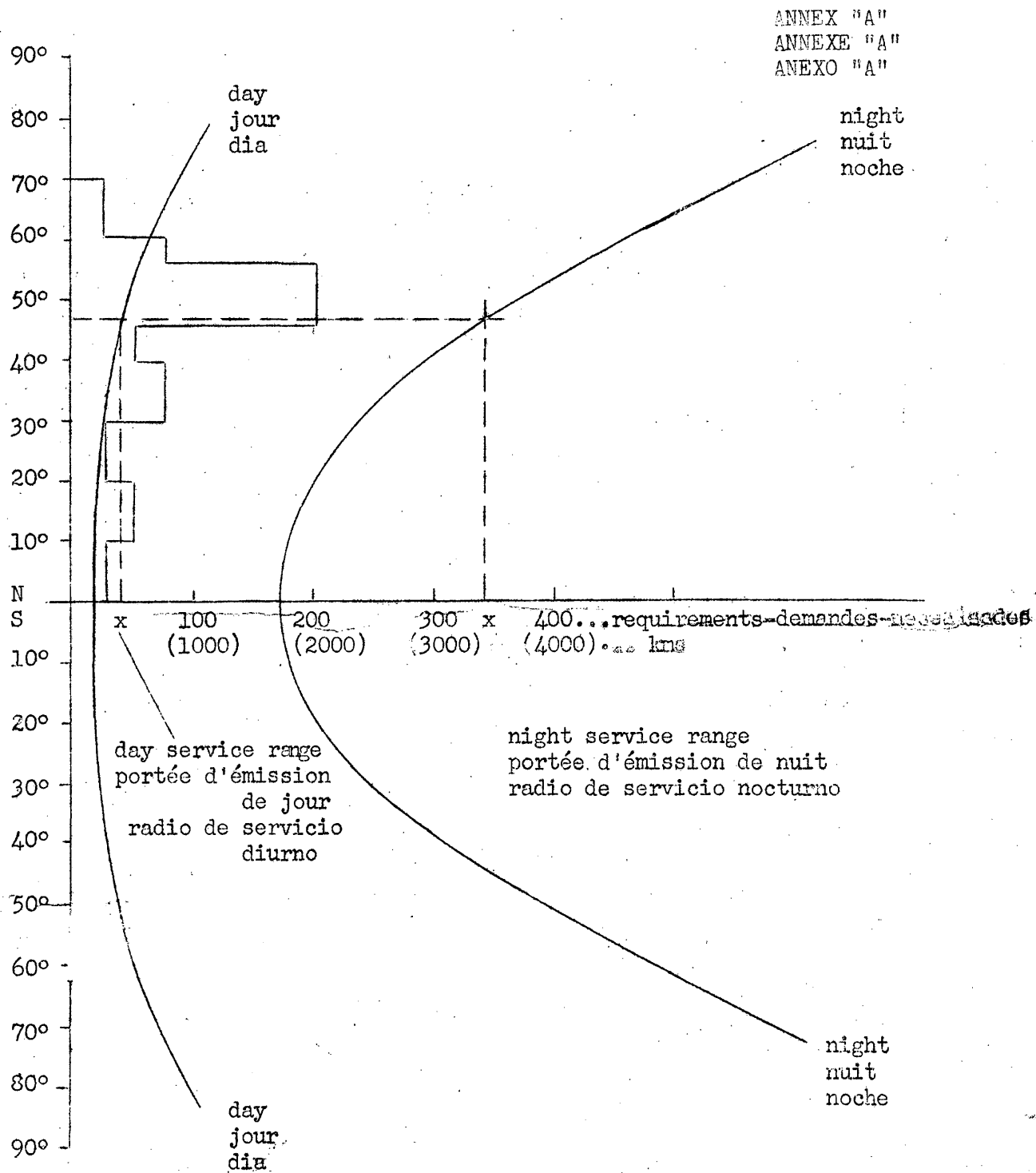
In all calculations the worst propagation conditions were employed, service ranges being taken from sunspot maximum range charts and interference distances from sunspot minimum range charts.

J. D. Furze

Chairman 7B1 - 7C

References : PC-Aer. Doc. 5 and Aer-Doc. 131





Annex A to Aer-Document No.193-E
Annexe A au Aer-Document No.193-F
Anexo A al Aer-Documento No.193-S

N O R T H E R N H E M I S P H E R E
H E M I S P H E R E N O R D
H E M I S F E R I O S E P T E N T R I O N A L

B A N D B A N D E B A N D A	D A Y - J O U R - D I A							N I G H T - N U I T - N O C H E			
	Averaged service range Moyenne de portée utile Alcance de servi- cio medio	I N T E R F E R E N C E R A N G E P O R T E E D E B R O U I L L A G E A L C A N C E D E I N T E R F E R E N C I A						Averaged service range Moyenne de portée utile Alcance de servi- cio medio	I N T E R F E R E N C E R A N G E P O R T E E D E B R O U I L L A G E A L C A N C E D E I N T E R F E R E N C I A		
		2 0		2 5		3 0			2 0	2 5	3 0
		N S	E W	N S	E W	N S	E W				
		N S	E O	N S	E O	N S	E O				
3025 - 3155	200	900	1000	1000	1500	1200	1900	1010	7200	10000	13500
4700 - 4750	350	1100	1200	1400	1500	1700	2000	1100	7300	10200	14000
5680 - 5730	550	1800	2100	2000	2600	2400	3300	2000	10500	13500	16500
6685 - 6765	700	2000	2500	2300	3400	2600	4800	1700	8600	12000	15500
8965 - 9040	1150	3900	5900	4800	9400	5800	13000	2900	12000	15000	>16000
11175 - 11275	1650	5100	9500	6200	13500	7500	16800	4000	15000	>16000	>16000
13200 - 13260	2000	7100	11300	9500	16400	12000	>16000	>4000	>15000	>16000	>16000
15010 - 15100	2300	7800	12600	10000	>16000	12400	>16000	>4000	>16000	>16000	>16000
17970 - 18030	2500	9000	14000	11400	>16000	13700	>16000	>4000	>16000	>16000	>16000

ANNEX
ANNEX
ANNEX

ANNEX B
ANNEXE B
ANEXO B

[illegible]

3 Mc/s day 25 db protection ratio
Sharing pattern based on average service range

Jour 3 Mc/s Rapport de protection 25 db
 Type d'assignation multiple basée sur la moyenne de portée utile

Día 3 Mc/s Coeficiente de protección 25 db
Tipos de compartición basados en el alcance de servicio medio

20°
of
longitude

ANNEXE C
ANNEXE C
ANNEXE C

N
45°

30°

15°

0°

20°
of
longitude

3 Mc/s night 25 db protection ratio
Sharing pattern based on average service range

Nuit 3 Mc/s Rapport de protection 25 db
Type d'assignation multiple basée sur la moyenne de portée utile

Noche 3 Mc/s Coeficiente de protección 25 db
Tipos de compartición basados en el alcance de servicio medio

ANNEX C
ANNEXE C
ANEXO C

Frequency Band	Protection Ratio	Channels Available	Daytime Repetitions possible	Total daytime assignments possible	Night time Repetitions possible	Total night time assignments possible	Total requirements (Forms 2)	Percentage of requirements satisfied Pourcent des demandes satisfaites Porcentaje de necesidades satisfechas	
Bande de fréquence	Rapport de protection	Voies disponibles	Jour - Répétitions possibles	Total des assignations possibles pendant le jour	Nuit - Répétitions possibles	Total des assignations possibles pendant la nuit	Total des demandes (Formules 2)	Daytime protection ratio	Night time protection ratio
Banda de frecuencia Kc/s	Coefficiente de protección db.	Canales disponibles	Día - Repeticiones posibles	Total de asignaciones posibles durante el día	Noche - Repeticiones posibles	Total de asignaciones posibles durante la noche	Total de solicitudes (Formulario 2)	Jour - Rapport de protection Día - Razon de protección	Nuit - Rapport de protection Noche - Razon de protección
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
3025 - 3155	20	18	172	3100	7	125	1005	306	12.5
	25		130	2340	6	108		230	10
	30		77	1385	5	90		137	9
4700 - 4750	20	7	122	854	7	49	643	132	7.6
	25		98	686	5	35		106	5.5
	30		66	462	2	14		72	2.2
5680 - 5730	20	6	53	318	4	24	323	99	7.5
	25		40	240	3	18		74	5.6
	30		30	180	2	12		56	3.7
6685 - 6765	20	10	40	400	4	40	672	60	6
	25		26	260	3	30		39	6.5
	30		22	220	2	20		32	3
8965 - 9040	20	8	7	56	3	24	275	20	9
	25		6	48	2	16		17	5
	30		4	32	2	16		12	6
11175 - 11275	20	10	8	80	2	20	258	31	8
	25		4	40	2	20		15	8
	30		3	30	2	20		12	8
13200 - 13260	20	6	6	36	2	12	225	16	5
	25		4	24	2	12		11	5
	30		3	18	2	12		8	5
15010 - 15100	20	8	3	24	-	8	138	17	-
	25		3	24	-	8		17	-
	30		3	24	-	8		17	-
17070 - 18030	20	5	3	15	-	5	215	7	-
	25		3	15	-	5		7	-
	30		3	15	-	5		7	-

(Ver-193-F - F - S)
(Annex 'D')
(Annexe 'D')
(Anexo 'D')

TABLE 1

TABLEAU 1

TABLA 1

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

BAND 3 Mc/s
30 db Protection Ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUE A 30° de la ligne jour/nuît

BANDE 3 Mc/s
Rapport de protection 30 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Línea Día/Noche

BANDA 3 Mc/s
Coeficiente de Protección 30 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	1.8	11	13	1.8	17	19	1.5	9	11	1.5	14	15	1.5	8	10	1.5	12	14	1	5	6	1	10	11	1	5	6	1	10	11
10°	1.8	11	13	2	17	19	1.5	9	11	2	14	16	1.5	8	10	2	12	14	1	5	6	1	10	11	1	5	6	1	10	11
20°	1.8	11	13	2	18	20	1.5	9	11	2	15	17	1.5	8	10	2	13	15	1	5	6	1	10	11	1	5	6	1	10	11
30°	1.8	11	13	2	20	22	1.5	9	11	2	17	19	1.5	8	10	2	15	17	1	5	6	1	11	12	1	5	6	1	11	12
40°	1.8	11	13	2.5	22	24	1.5	9	11	2.5	19	21	1.5	8	10	2.5	16	19	1	5	6	1	12	13	1	5	6	1	12	13
50°	1.8	11	13	3	27	30	1.5	9	11	3	22	25	1.5	8	10	3	20	23	1	5	6	1.5	15	17	1	5	6	1.5	15	17
60°	1.8	11	13	3.6	34	38	1.5	9	11	3.6	28	31	1.5	8	10	3.6	25	29	1	5	6	2	18	20	1	5	6	2	18	20
70°	1.8	11	13	5	50	55	1.5	9	11	5	42	47	1.5	8	10	5	36	41	1	5	6	2.6	26	28	1	5	6	2.6	26	28

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

Note SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

Nota SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repetición

TABLE 2

TABLEAU 2

TABLA 2

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

BAND 3 Mc/s
20 db Protection Ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUÉ A 30° de la ligne jour/nuît

BANDE 3 Mc/s
Rapport de protection 20 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Línea Día/Noche

BANDA 3 Mc/s
Coeficiente de Protección 20 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	1.8	8	10	1.8	9	11	1.5	6.8	8.6	1.8	7.6	9.4	1.5	5.4	7.0	1.5	6.4	8	1	4	5	1	4.5	5	1	4	5	1	4.5	5
10°	1.8	8	10	2	9	11	1.5	6.8	8.6	2	7.6	10	1.5	5.4	7.0	2	6.4	8.5	1	4	5	1	4.5	5	1	4	5	1	4.5	5
20°	1.8	8	10	2	10	12	1.5	6.8	8.6	2	8	10	1.5	5.4	7.0	2	7	9	1	4	5	1	5	6	1	4	5	1	5	6
30°	1.8	8	10	2	10.5	12	1.5	6.8	8.6	2	9	11	1.5	5.4	7.0	2	7.5	9.5	1	4	5	1	5.5	6	1	4	5	1	5.5	6
40°	1.8	8	10	2.5	12	14	1.5	6.8	8.6	2.5	10	12	1.5	5.4	7.0	2.5	8	10	1	4	5	1	6	7	1	4	5	1	6	7
50°	1.8	8	10	3	14	17	1.5	6.8	8.6	3	12	15	1.5	5.4	7.0	3	10	13	1	4	5	1.5	7	9	1	4	5	1.5	7	9
60°	1.8	8	10	3.6	18	21	1.5	6.8	8.6	3.6	15	19	1.5	5.4	7.0	3.6	14	16	1	4	5	2	9	11	1	4	5	2	9	11
70°	1.8	8	10	5	26	31	1.5	6.8	8.6	5	22	27	1.5	5.4	7.0	5	18	23	1	4	5	2.6	13	16	1	4	5	2.6	13	16

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

Note SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

Nota SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repeticion

Table 3

Tableau 3

Tabla 3

OR SERVICE

SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES

BAND 4.7 Mc/s

25 db Protection ratio

SERVICE OR

PORTÉES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES

BANDE 4.7 Mc/s

Rapport de protection 25 db

SERVICIO OR

ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES

BANDA 4.7 Mc/s

Coeficiente de proteccion 25 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	2.3	12.6	15	2.3	15.3	17	2	10.8	13	2.0	13	15	1.7	9.5	11	1.7	11.7	13	1.4	7.2	8.6	1.4	9	10	1	6.3	7.3	1	7.2	8
10°	2.3	12.6	15	2.4	15.3	18	2	10.8	13	2.0	13.1	15	1.7	9.5	11	1.8	11.8	13	1.4	7.2	8.6	1.4	9.1	11	1	6.3	7.3	1	7.3	8
20°	2.7	12.6	15.5	3	16	19	2.3	10.8	13	2.5	13.5	16	2	9.5	11.5	1.9	12	14	1.7	7.2	9	1.7	9.4	11	1.4	6.3	7.7	1.5	7.5	9
30°	2.8	12.6	15.5	3.4	17.8	21	2.4	10.8	13	2.8	15	18	2	9.5	11.5	2	13.6	17	1.7	7.5	9	1.8	10.4	12	1.5	6.3	7.8	1.6	8.3	10
40°	3.2	13	16	4	20.5	24	2.7	11	14	3.5	14.5	18	2.5	9.7	12	3	17	20	2	7.8	10	2.3	12.4	15	1.6	6.5	8	1.9	10	12
50°	3.6	13.5	17	6	24.5	30	3.0	11.4	14	5	20.8	26	2.8	10	13	4	19	23	2.2	8.1	10	3	14.8	18	1.9	6.7	9	2.7	12	15
60°	4.4	14.4	19	9	33	42	3.7	12.3	16	7.5	28	35	3.3	10.8	14	6	24.5	30	2.6	8.6	11	5	19.8	25	2.2	7.2	9	4	16	20
70°	5.0	15.3	20	18	50	68	4.2	13	17	13	43	56	4	11.4	15	10	38	48	3	9	12	8	30	38	2.6	7.7	10	7	25	32

Note SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repeticion

TABLE 4

TABLEAU 4

TABLA 4

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

BAND 5.7 Mc/s
20 db Protection Ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE; DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUÉ A 30° de la ligne jour/nuit

BANDE 5.7 Mc/s
Rapport de protection 20 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Línea Día/Noche

BANDA 5.7 Mc/s
Coeficiente de Protección 20 db

	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	3.6	15.8	19	3.6	18	22	3.6	13.4	17	3.6	15.3	19	3.2	11.8	15	3.2	13.5	17	2.6	9.5	12	2.6	10.8	13	2	7.9	10	2	9	11
10°	3.6	15.8	19	3.6	18.2	22	3.6	13.4	17	3.6	15.4	19	3.2	11.8	15	3.3	13.6	17	2.6	9.5	12	2.6	10.9	13	2.2	7.9	10	2	9.1	11
20°	4	16	20	4.4	19.7	24	4	13.6	18	4	16.7	21	3.2	12	15	3.4	14.8	18	2.6	9.6	12	2.8	11.8	14	2	8	10	2.3	9.8	12
30°	4.3	16	20	5	21.4	26	4	13.6	18	4.2	18.1	22	3.2	12	15	4	16	20	2.6	9.6	12	3	12.8	16	2	8	10	2.5	10.7	13
40°	4.5	16.2	21	6	25.3	31	4	13.8	18	5	21.5	26	3.3	12.2	15.5	4.4	19	24	2.7	9.7	12	3.5	15.2	19	2.2	8.1	10.3	3	12.7	16
50°	5	16.7	22	8	31	39	4.2	14.2	18.5	6.6	26.4	33	3.5	12.5	16	6	23	29	3	10	13	4.6	18.6	23	2.5	8.3	11	4	15.5	19
60°	6	17.1	23	12	43.8	56	5	14.6	20	10	37	47	4.3	12.8	17	9	32.8	42	3.5	10.2	14	7	26.2	33	3	8.5	11.5	5.8	21.5	27
70°	7	18	25	18	66	85	6	15.3	21	17	56	73	5	13.5	18	15	49.5	54	4	10.8	15	12	38.5	44	3.2	9.0	12	10	33	43

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

Note SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

Nota SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repeticion

TABLE 5

TABLEAU 5

TABLA 5

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

BAND 6.6 Mc/s
20 db Protection ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUE A 30° de la ligne jour/nuit

BANDE 6.6 Mc/s
Rapport de protection 20 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Línea Día/Noche

BANDA 6.6 Mc/s
Coeficiente de protección 20 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	5	16	21	5	20	25	5	14	19	5	17	22	5	12	17	5	15	20	4	10	14	4	12	16	3	8	11	3	10	13
10°	5	16	21	5	20	25	5	14	19	5	17	22	5	12	17	5	15	20	4	10	14	4	12	16	3	8	11	3	10	13
20°	6	17	23	6	23	29	5	15	20	6	19	25	5	13	18	5	17	22	4	10	14	4	14	18	3	8	11	3	11	14
30°	6	17	23	7	26	33	5	15	20	6	22	28	5	13	18	5	19	24	4	10	14	4	16	20	3	9	12	3	13	16
40°	6	17	23	8	30	38	5	15	20	7	25	32	5	13	18	6	22	28	4	10	14	5	18	23	3	9	12	4	15	19
50°	7	18	25	11	36	47	6	15	21	9	31	40	5	14	19	8	27	35	4	11	15	6	22	28	3	9	12	5	18	23
60°	8	18	26	16	49	65	7	16	23	13	42	55	6	14	20	12	37	49	5	11	16	9	39	48	4	9	13	8	24	32
70°	9	19	28	26	74	100	8	16	24	21	63	84	6	14	20	19	55	74	5	11	16	15	44	59	4	9	13	13	37	50

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repetición

TABLE 6

TABLEAU 6

TABLA 6

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'ENETTEUR SITUE A 30° de la ligne jour/nuite

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Linea Dia/Noche

BAND 9 Mc/s
20 db Protection Ratio

Bande 9 Mc/s
Rapport de protection 20 db

BANDA 9 Mc/s
Coeficiente de Proteccion 20 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	8	32	40	8	50	58	8	27	35	8	42	50	8	24	32	8	37	45	5	19	24	5	30	35	4	16	20	4	25	29
10°	8	32	40	8	50	58	8	27	35	8	42	50	8	24	32	8	37	45	5	19	24	5	30	35	4	16	20	4	25	29
20°	8	33	41	9	54	63	8	28	36	8	46	54	8	25	33	8	40	48	5	20	25	5	32	37	4	16	20	4	27	31
30°	10	36	46	11	63	74	9	31	40	9	53	62	8	27	35	8	47	55	6	22	28	7	38	45	5	18	23	5	32	37
40°	11	38	49	14	82	96	9	32	41	12	69	81	8	28	36	10	61	71	7	23	30	8	49	51	5	19	24	7	41	48
50°	12	46	58	18	103	121	10	39	49	15	88	103	9	34	43	13	78	91	7	28	35	11	62	73	6	23	29	9	51	60
60°	13	49	62	25	140	165	11	42	53	21	120	141	10	37	47	19	106	125	8	29	37	15	84	99	6	24	30	12	70	82
70°	14	50	64	40	221	261	12	43	55	34	188	222	10	38	48	30	166	196	8	30	38	24	132	156	7	25	32	20	110	130

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de Service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repeticion

TABLE 7

TABLEAU 7

TABLA 7

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 30° from Day/Night Line

BAND 11 Mc/s
20 db Protection Ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUÉ A 30° de la ligne jour/nuite

BANDE 11 Mc/s
Rapport de protection 20 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 30° de la Línea Día/Noche

BANDA 11 Mc/s
Coeficiente de Protección 20 db

Latitude Latitude Latitud	1 kw			500 w			250 w			100 w			50 w		
	NS		EW	NS		EW	NS		EW	NS		EW	NS		EW
	Distance in degree		Distance in degree	Distance in degree		Distance in degree	Distance in degree		Distance in degree	Distance in degree		Distance in degree	Distance in degree		Distance in degree
	Distance en degré		Distance en degré	Distance en degré		Distance en degré	Distance en degré		Distance en degré	Distance en degré		Distance en degré	Distance en degré		Distance en degré
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	11	39	50	11	64	75	11	33	44	11	54	65	11	29	40
10°	11	39	50	11	64	75	11	33	44	11	55	66	11	29	40
20°	12	40	52	13	71	84	12	34	46	13	60	73	11	30	41
30°	14	44	58	16	90	106	12	37	49	14	77	91	11	33	44
40°	16	46	62	21	115	126	14	39	53	18	98	116	12	34	46
50°	17	47	64	26	142	168	14	40	54	22	121	143	13	35	48
60°	18	49	67	35	193	228	15	42	57	30	164	194	13	36	49
70°	19	51	70	57	315	360	16	43	59	48	268	316	14	38	52

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR- Alcances de servicio
IR- Alcances de Interferencia
RD- Distancia de repeticion

(43-43-22)

TABLE 8

TABLEAU 8

TABLA 8

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 90° from Day/Night Line ((Sub Solar Point)

Band 13 Mc/s
20 db Protection Ratio

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUÉ A 90° de la ligne jour/nuit (point sub-solaire)

Bande 13 Mc/s
Rapport de protection 20 db

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 90° de la Línea Día/Noche (Punto Subsolar)

Banda 13 Mc/s
Coeficiente de Protección 20 db

Latitude Latitude Latitud	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	15	39	54	15	39	54	15	33	48	15	33	48	13	29	42	13	29	42	11	23	34	11	23	34	9	19	28	9	19	28
10°	15	39	54	15	39	54	15	33	48	15	33	48	13	29	42	13	29	42	11	23	34	11	23	34	9	19	28	9	19	28
20°	15	39	54	16	41	57	15	33	48	16	39	55	13	29	42	14	30	44	11	23	34	12	25	37	9	19	28	10	20	30
30°	17	43	60	20	50	70	15	37	53	18	42	60	14	32	46	16	37	53	11	25	36	13	30	43	9	21	30	11	25	36
40°	20	46	66	25	60	85	16	39	55	21	51	72	15	34	49	19	45	64	12	27	39	15	36	51	10	23	33	13	30	43
50°	20	46	66	32	73	105	17	39	56	27	62	89	15	34	49	24	54	78	12	28	40	19	44	63	10	23	33	16	36	52
60°	22	49	71	43	100	143	18	42	60	36	84	120	16	36	52	32	75	107	13	29	42	26	60	86	11	24	35	21	50	71
70°	23	50	73	67	145	212	19	43	62	56	125	181	17	37	54	50	110	160	14	30	44	40	87	127	11	25	36	33	72	105

NOTE SR - Service Range
IR - Interference Range
RD - Repetition distance

NOTE SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

NOTA SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repetición

TABLE 9

TABLEAU 9

TABLA 9

OR SERVICE SERVICE AND INTERFERENCE RANGES AND REPETITION DISTANCES FOR DIFFERENT POWERS AND LATITUDES
CALCULATED FOR THE POINT OF 90° from Day/Night Line (Sub Solar Point)

SERVICE OR PORTEES DE SERVICE ET DE BROUILLAGE, DISTANCES DE REPETITION DES FREQUENCES POUR DIFFERENTES PUISSANCES ET LATITUDES
CALCULEES POUR L'EMETTEUR SITUÉ A 90° de la ligne jour/nuît (point sub-solaire)

SERVICIO OR ALCANCES DE SERVICIO Y DE INTERFERENCIA Y DISTANCIAS DE REPETICION PARA DIFERENTES POTENCIAS Y LATITUDES
CALCULADOS PARA EL PUNTO SITUADO A 90° de la Línea Día/Noche (Punto Sub-solar)

BAND : 15 Mc/s
20 db Protection Ratio

BANDE : 15 Mc/s
Rapport de Protection 20 db

BANDA : 15 Mc/s
Coeficiente de proteccion 20 db

	1 kW						500 w						250 w						100 w						50 w					
	NS			EW			NS			EW			NS			EW			NS			EW			NS			EW		
	Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree			Distance in degree		
	Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré			Distance en degré		
	Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados			Distancia en grados		
	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD	SR	IR	RD
0°	17	51	68	17	51	68	17	43	60	17	43	60	15	38	53	15	38	53	12	30	42	12	30	42	10	25	35	10	25	35
10°	17	51	68	17	51	68	17	43	60	17	43	60	15	38	53	15	38	53	12	30	42	12	30	42	10	25	35	10	25	35
20°	18	53	71	19	57	76	17	45	62	18	48	66	16	40	56	16	42	58	12	32	44	13	34	47	10	26	36	11	28	39
30°	20	56	76	23	65	88	18	47	65	21	55	76	16	42	58	18	48	66	13	33	46	15	39	54	11	28	39	12	32	44
40°	22	60	82	29	77	106	19	51	70	25	65	90	17	45	62	22	57	79	13	36	49	17	46	63	11	30	41	15	38	53
50°	23	61	84	37	86	133	20	52	72	31	81	112	18	46	64	27	71	98	14	36	50	22	57	79	12	31	43	18	48	66
60°	25	64	89	50	128	178	21	54	75	42	108	150	18	48	66	37	96	133	15	38	53	29	77	106	12	32	44	25	64	89
70°	26	68	94	77	200	277	22	58	80	65	170	235	19	50	69	57	150	207	16	40	56	45	120	165	13	34	47	38	100	138

NOTE SR - Service Range
IR - Interference Range
RD - Repetition Distance

Note SR - Portée de service
IR - Portée de brouillage
RD - Distance entre les répétitions

Nota SR - Alcance de servicio
IR - Alcance de interferencia
RD - Distancia de repetición

(43-43-22)

REPORT OF THE EDITORIAL COMMITTEE
(Committee 3)

3rd Meeting
19 July, 1948

1. The Chairman, Mr. M. Falgarone (France), declared the meeting open at 5 p.m.

2. The following delegations were represented :

Mr. Luraschi	Argentina
Mr. Olano	"
Mr. Schwerter	Chile
Mr. Quijano	Colombia (Republic of)
Mr. Lebel	U.S.A.
Miss Florence Trail	"
Mr. Chef	France
Mr. Lalung-Bonnaire	Overseas France
Mr. Basilio de Telepnef	Honduras (Republic of)
Mr. Fry	United Kingdom
Mr. Jarov	U.S.S.R.
Mr. Kunz	Secretariat

3. The Chairman said that at the last Plenary Meeting a decision had been taken on the United States proposal (Aer-Document No. 165) dealing with the publication of a Final Report in French, English, Spanish and Russian, as amended by the Delegation of Argentina. The task of the present Meeting was to determine how that decision should be interpreted.

Since the minutes of the 7th meeting of the Plenary Meeting were not available, he would request the delegate of Argentina to give the exact text of the resolution as finally adopted.

4. Mr. Luraschi (Argentina) said that as far as he knew the full text of the amended resolution was as follows :

"The International Administrative Aeronautical Radio Conference,
considering :

- 1) that the production or even the planning of a final document in the five official languages of the Union would prolong the conference considerably and would complicate the preparation of its final report,
- 2) that the production of such a document would also involve considerable expense for the Union and would add to the expense of the administrations wishing to obtain additional copies of the report of the Conference, over and above the free distribution,

DECIDES :

- a) to prepare a report of its conclusions as follows :

I General Report : Foreword, resolutions, recommendations, technical and operational standards, explanatory texts to the plans for the allotment of "R" and "OR" bands, explanatory texts to the frequency selection charts.

This part of the Report shall be published in the following official languages : French, English, Spanish and Russian, two of these languages appearing on one page, the other two on the following page, the 4 texts being equivalent in form and content.

II Annex I : Frequency selection charts arranged in such a manner that each chart will be placed on the right (odd-numbered pages) and that legend pertaining to it in the four languages mentioned above will be placed on the left hand page (even-numbered pages).

III Annex II : Allotment plan for "R" bands including geographical charts, but without explanatory texts and with indications in the same four languages.

IV Annex III : Allotment plan for the OR bands, also with column headings in the same four languages.

- b) to prepare the Report on paper of the same quality as that used for the documentation of the Conference, except that, in the case of frequency selection charts or maps, the task of reproducing them shall be entrusted to a commercial firm to be done on paper of sufficiently good quality to ensure a reasonably satisfactory presentation;
- c) to refer all matters of detail, interpretation and application of this resolution to the Steering Committee;
- d) to transmit officially to the P.F.B. a copy of the above Report, accompanied by a letter signed by the Chairman of the Conference."

5. Mr. Fry (United Kingdom) said that at the last meeting of the Steering Committee, on July 16, 1948, opinions had been equally divided on the interpretation to be given to the amendment which had been adopted by the 7th Plenary Meeting. He had therefore suggested, and it had been so decided, that the matter be referred to the Editorial Committee.

He had no intention of contesting the decision taken by the Plenary Meeting, but he would like to recall the two reasons put forward for the arrangement of two languages per page.

The first was the need to avoid delay in the publication of one of the languages such as occurred in the Spanish edition of the Atlantic City documents.

The second was to ensure as complete a conformity of content and form as possible between the four languages.

One drawback of that solution was that for people speaking any one of the four languages, such a document would be highly inconvenient to use. In practice, only a quarter of such a volume would be used by any given reader, and such a lay-out would make it impossible to reduce its weight and bulk by separating off the text in any one language.

At the last meeting of the Steering Committee, it had been suggested that the two conditions mentioned above would be met equally well by the terms of the first United States proposal.

While respecting the spirit of the decision taken by the Plenary Meeting, they might be able to come to some sort of compromise solution.

6. The Chairman, thanking Mr. Fry for his statement, said that it did, in fact, accurately reflect the way in which the question had been discussed by the Steering Committee.
7. Mr. Arthur L. Lebel (United States), Chairman of the Conference, agreed with the delegate of the United Kingdom that they should try to find a satisfactory compromise. When putting the amendment to the vote in the Plenary Meeting, he had omitted that part of the text which defined the exact lay-out of the four languages in the Final Report. He admitted, however, that the delegate of Argentina had given an accurate version of the text as finally adopted.
8. Mr. Quijano (Colombia) said that, in a previous Plenary Meeting, the lay-out of three languages on the same page had already been explicitly adopted for the Final Report. The amendment submitted by the Argentine delegation simply aimed at confirming this for the four languages.

No other interpretation could possibly be put on the decision taken by the Plenary Meeting. It would be irregular not to conform to it.

Production of the final document with the means at present available to the Secretariat was not the best solution. It would entail the use of thick paper, of type which was not very clear, and the use of personnel already overworked and materials in short supply. On the other hand, according to Mr. Dostert, head of the Secretariat, a more speedy and economical method (OFFSET) did exist. This would enable a quadrilingual edition to be produced easily and to be small in size.

9. Mr. A. Lebel (United States), on behalf of his government, said that it would formally reserve its right not to share in the cost of producing a document which would be four times as large as an edition in a single language.
10. The Chairman said that the Committee was faced with a perfectly clear and explicit decision, which it was bound to respect.

As head of the French delegation, he would like to point out that Spanish, Russian and French-speaking countries would also have to put up with the inconveniences of a quadrilingual edition, as just enumerated by the delegations of the United Kingdom and the United States. Those countries would, however, accept them, as a price to be paid for the privilege granted to their languages.

11. The United Kingdom delegate thought that the solution of a facsimile by languages offered the same advantages as the other solution. It would also mean greater ease of reference to the document in any one language.

He would therefore ask the Argentine delagation what the real reason was for the solution which it recommended.

12. The Argentine delegate replied by quoting the example of the Spanish edition of the Atlantic City documents. That edition was, in fact, useless, both because of the divergences and lack of conformity of the text with those of the other languages and also because of the numerous numbering errors, etc., which made it difficult to compare it with the bilingual document. That, on the other hand, was faultless. Only the solution adopted by the Plenary Assembly avoided all those disadvantages. By using the "OFFSET" system already mentioned, such a solution would present no difficulty.

Furthermore, the Spanish speaking countries paid the Union their due part of the subscription, on an equal basis with the U.S.A. Therefore expenses were covered equally by all Members of the Union.

The Final Report was destined for the P.F.B., and then for the special administrative conference, which had to approve the list of frequencies; from this point of view it was not, therefore, a simple working document, but a real conference document.

He agreed with the delegate of the United Kingdom that the bulk of the document was of secondary importance.

A volume with a separate section for each language would be the same as a monolingual document and therefore not in conformity with the decision taken by the Plenary Assembly. The main aim of his amendment was precisely to obtain a truly quadrilingual lay-out.

Finally, he questioned the so-called difficulties the Secretariat would encounter in the production of such a document.

13. Mr. Basilio de Telepnef (Honduras), supporting the delegates of Argentina and Colombia, said that the explanations they had given showed that the quadrilingual edition produced by the "OFFSET" method would not be more expensive than any other system, but might even be cheaper.
14. Mr. Jarov (U.S.S.R.) asked whether the estimate of 800 pages for a document in four languages was still exact, and what would be the approximate difference in price between the two solutions.
15. The Chairman said that, in his opinion, the Committee was in duty bound to consider the interests of the numerous other Member States of the Union which spoke none of the official languages. It might be that in such countries recourse would be had to the text in several of the languages used, in order to grasp more fully the sense of any particular passage. This was another very important reason why the decision taken by the Plenary Meeting should be scrupulously respected.

The two solutions proposed would mean a number of pages approximately equal and the cost in both cases would be almost exactly the same. If the Committee were to decide not to conform to the decision taken, it could only do so by submitting the question to a new Plenary Meeting; he would therefore ask Mr. Lebel whether, as Chairman of the Conference, he thought such a procedure would be desirable.

16. Mr. Lebel (United States) said that it was better not to reopen discussion on that question. But according to Article 15 of the Convention, the United States were not obliged to buy such an edition, and they would reserve the right to produce an English edition themselves, for their own use.
17. Mr. Kunz (Secretary of the Conference) said that the general question of how the cost of Union documents should be shared was at present being studied by the Administrative Council.

It was not true that the "OFFSET" method offered any advantages from the point of view of economy and speed. This system had been at one time considered, but had had to be abandoned, except for the reproduction of charts and graphs intended for the Final Report. This method cost about twice as much as the methods available to the Secretariat. Moreover, a delay of about three weeks would have to be allowed for printing of documents after the proofs had been submitted to the editor.

18. Mr. Lebel (United States) reminded the Committee that the question of the method by which the Final Report should be printed had been entrusted by the Plenary Meeting to the Steering Committee. Only the Steering Committee, therefore, was empowered to take a decision.
19. Mr. Quijano (Colombia) remarked that the information Mr. Kunz had given on the cost of the "OFFSET" process did not agree with what the Chairman of the budgetary committee of the P.F.B. had said in that connection. Until it was proved otherwise, he considered that this process was the most economical and rapid of all for the production of a suitable edition in the four languages.
20. After very considerable discussion, the Committee unanimously decided to conform strictly to the directives contained in the decision of the Plenary Meeting on the lay-out of the four languages in the Final Report of the Conference.

The Chairman observed that it was for the Steering Committee to decide on the system of reproduction to be used.

The next meeting of the Editorial Committee was fixed by common consent for the following day at 3 p.m.

The meeting closed at 8 p.m.

Reporter:

M. Chef

Chairman:

M. Falgarone

INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE
GENEVA, 1948

Addendum to:
Aer-Document n° 195-E
29 July 1948

COMMITTEE 7

The attached lists should be added to
Aer-Document N° 195.

CONFERENCE INTERNATIONALE ADMINISTRATIVE
DES RADIOCOMMUNICATIONS AERONAUTIQUES
GENEVE, 1948

Addendum au:
Aér-Document n° 195-F
29 juillet 1948

COMMISSION 7

Les listes ci-jointes doivent être annexées au
Aér-Document N° 195.

CONFERENCIA ADMINISTRATIVA INTERNACIONAL
DE RADIOCOMUNICACIONES AERONAUTICAS
GINEBRA, 1948

Addendum al:
Aer-Documento N° 195-S
29 de Julio de 1948

COMISION 7

Las listas adjuntas deben ser unidas al
Aer-Documento N° 195.



SHARED BAND - REGION 1.

- 23200 - 23350 Kc/s (OR)

A	B	C	D	E	F
France Morocco Algeria Tunisia A.O.F. A.E.F. Madagascar Fr.Somaliland	Netherlands	U.S.A. U.S.A. Territories	France Algeria	U.S.A. U.S.A.Territories	

SHARED BAND - REGION 2 .

23200 - 23350 Kc/s

A	B	C	D	E	
Argentina	N.W.I. Alaska Hawaii	U.S.A U.S.A; Territories	Alaska	U.S.A. U.S.A. Territories	Brazil U.S.A. Pacific only

Shared Band - Region 3
23200 - 23350 Kc/s.

	a	b	c	d	e	f
	FR.INDO CHINA	N.E.I. MIDWAY/U.S.A. JOHNSTON/U.S.A.	U.S.A. U.S.A. Territories	U.S.A. Pacific _____	U.S.A. U.S.A. Territories	_____

(26-23-26)

Shared Bands - Region 3

3155 - 3200 Kc/s

3200-3230 Kc/s

	a	b	c	d	e	a
	FR.INDO CHINA (1KW) FR.AUSTRALASIA(1KW) PHILIPPINES-NORTH (300W) AUSTRALIA (5 KW)	CEYLON/U.K.(2.5 KW) SINGAPORE (2.5 KW) HONGKONG (2.5 KW) PHILIPPINES-SOUTH (300W) AUSTRALIA (500W)	GOA (100W) DILLI (100W) MACAO (100W) PHILIPPINES-SOUTH (300W) AUSTRALIA-SOUTH (500W)	FR.INDO CHINA(1KW) FR.AUSTRALASIA (1KW) PHILIPPINES-NORTH (300W) AUSTRALIA (500W)	CEYLON/U.K.(2.5KW) SINGAPORE (2.5KW) HONGKONG (2.5KW) PHILIPPINES-SOUTH (300W) AUSTRALIA (300W)	PHILIPPINES-NORTH (300W) AUSTRALIA (500W)

SHARED BAND - REGION 2.

4438 - 4650 Kc/s.

A	B	C	D	E	F	G
Canada Mexico Brazil Argentina (S of 45° S)	U.S.A. Caribbean/U.S.A. Greenland/U.S.A. New Foundland/U.S.A. Alaska Hawaii Bermuda/U.S.A. Argentina.	Argentina Colombia U.S.A. Alaska Brazil (N. of 10°S and E of 50° W)	Mexico.. Canada Brazil (except South- Riogrande) Chile Cuba (500 W) (E of Santa Clara)	Brazil Mexico Canada Chile (S of 35° S)	Argentina U.S.A. Caribbean/U.S.A. Alaska New Foundland/ U.S.A. Hawaii.	A Argentina Brazil (N of 15°S) Guadeloupe Martinique Nicaragua U.S.A. Alaska Hawaii..

Shared Bands - Region 3

3900 - 3950 Kc/s

5430 - 5480 Kc/s

	a	b	c	a	b	c
	PHILIPPINES-SOUTH (300W) AUSTRALIA	PHILIPPINES-SOUTH (300W) AUSTRALIA	PHILIPPINES-NORTH (300W) AUSTRALIA	COLOMBO SINGAPORE HONGKONG PAKISTAN PHILIPPINES-SOUTH AUSTRALIA NEW ZEALAND FIJI.	FR. INDO CHINA FR. AUSTRALASIA (500W) INDIA (500W) N.E.I. (500W) MACAO (100W) TIMOR (100W) PHILIPPINES (200W)	CHINA (1KW) GOA (100W) AUSTRALIA (500W) U.S. PACIFIC (1KW) (NOT SHANGHAI)

International administrative
Aeronautical Radioconference
GENEVA, 1948

Aer. Doc. No. 195-E
23rd July, 1948
COMMITTEE 7

SKELETON FREQUENCY ASSIGNMENT PLAN FOR "OR" BANDS

COMMITTEE 7

1. Attached herewith is the skeleton frequency assignment plan for the Aeronautical Mobile "OR" bands, as at 23 July 1948.

A. Fry

Chairman Committee 7

Conférence internationale administrative
des Radiocommunications aéronautiques
GENEVE, 1948

Aér. Doc. No. 195-F
23 juillet 1948

COMMISSION 7

SCHEMA GENERAL D'ASSIGNATION DE FREQUENCES DANS LES BANDES "OR"

COMMISSION 7

1. Les annexes contiennent le schéma général d'assignation des fréquences dans les bandes du service mobile aéronautique OR, arrêté à la date du 23 juillet 1948.

A. Fry

Président de la Commission 7

Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronáuticas.
GINEBRA, 1948

Documento Aer. No. 195-S
23 de julio de 1948

COMISION 7.

ESQUEMA DEL PLAN DE ASIGNACION DE FRECUENCIAS PARA LAS BANDAS OR

COMISION 7

1. Los anexos a este documento contienen un esquema del plan de asignación de frecuencias para las bandas móviles aeronáuticas OR, tal y como se encuentra el 23 de julio de 1948.

A. Fry

Presidente de la Comisión 7.

(9-9-25)



B A N D

3025 - 3155 Kc/s

Region	3032	3039	3046	3053	3060	3067	3074	3081	3088
O	Fr.Somaliland (350 w) U.S.S.R. - Siberia(1 Kw) Europe France Algeria Tunisia Morocco	U.S.S.R. - Middle Asia (500 w) Caucasus France Algeria Morocco Tunisia Bielorussia Yugoslavia Norway A.E.F. A.O.F. Madagascar Egypt Iraq	U.S.S.R. - Europe Siberia(1Kw) France Portugal Czechoslovakia Algeria Iceland A.E.F. A.O.F. Cameroons Madagascar Fr.Somaliland	U.S.S.R. - Siberia (1Kw) France Portugal Azores Albania Ukraine A.E.F. A.O.F. Cameroons Madagascar Togo Denmark	U.S.S.R. - Europe Middle Asia Siberia(1Kw) Portugal Azores A.E.F. A.O.F. Madagascar Syria Germany/USA	U.S.S.R. - Europe Germany/USA Roumania Sweden Portugal Syria	U.S.S.R. - Europe M.Asia(1 Kw) U.K. Portugal Bulgaria Sweden Gibraltar Tunisia France Azores Port.Terr. Africa Suez Canal Zone/UK	U.S.S.R. - Europe Siberia(1Kw) U.K. Germany/UK Portugal Finland Roumania Azores Malta Suez Canal Zone/UK Arabia/UK Iraq/UK Libya/UK Cyprus/UK Br.Somaliland Kenya Sudan/UK	U.S.S.R. - Europe M.Asia(1Kw) Germany/UK Ukraine Portugal South Africa Egypt U.K.
N									
E									

Region	3095	3102	3109	3116	3123	3130	3137	3144	3151
O	U.S.S.R. - Middle Asia (1 Kw) Caucasus Siberia(1 Kw) U. K. Switzerland Gibraltar Poland France Malta Suez Canal Zone/UK Arabia/U.K. Iraq/U.K. Libya/U.K. Cyprus/U.K. Br.Somaliland Kenya Sudan/U.K. S.Rhodesia	*U.S.S.R. - Caucasus U. K. Gibraltar Malta South Africa Egypt	*U.S.S.R. - Europe Sweden Italy U. K. Morocco/U.S.A. South Africa Egypt	U.S.S.R. - Europe M.Asia(1 Kw) Caucasus *Siberia(1 Kw) U. K. Czechoslovakia Algeria Tunisia Suez Canal Zone/U.K. South Africa	U.S.S.R. - Europe Siberia(N.of 46°N. & W.of 170°E.) Ukraine Netherlands U.K.(N.) Italy Morocco/U.S.A. Egypt	U.S.S.R. - Europe Siberia(1 Kw) Netherlands U.K.(N.) Egypt	U.S.S.R. - Europe M.Asia(1 Kw) Caucasus Siberia(1 Kw) Netherlands Bulgaria Egypt	U.S.S.R. - Europe Caucasus Ukraine Yugoslavia Germany/U.S.A. Egypt Morocco Algeria Tunisia A.O.F. A.E.F. Madagascar Camerouns	U.S.S.R. - Europe Siberia(1 Kw) Germany/France Bulgaria Egypt Morocco Algeria Tunisia A.O.F. A.E.F. Madagascar Camerouns
N									
E									

*This frequency will also be used in the U.S.S.R. Zone of Germany.

BAND 3900-3950 Kc/s Region One Only

4.

Region	3904	3911	3918	3925	3932	3939	3946
O N E	USSR Europe	UK	USSR Europe	UK	UK	Poland	Algeria
	USSR M.Asia	Morocco	USSR Siberia	France	*) USSR Europe	UK	Morocco
	Yugoslavia	USSR Europe	USSR M.Asia	Portugal	USSR Siberia	*) USSR Caucasus	USSR Europe
	Germany/UK	USSR Siberia	Albania	Germany/UK	Austria/Fr.	USSR Siberia	USSR Siberia
	Iceland	Yugoslavia	UK	Malta	South Africa		Poland
	South Africa	France	France	Egypt	Fr. Morocco		Norway
	Egypt	AEF	Algeria	USSR Siberia	Algeria		France
	Fr. Morocco	AOF	Morocco	USSR Europe	Tunisia		South Africa
	Algeria				A.O.F.		
	Tunisia	Madagascar	South Africa		A.E.F.		
	A.O.F.				Madagascar		
	A.E.F.				Cameroons		
	Madagascar	Egypt	Egypt		Fr. Somaliland		
	Cameroons						

*) These frequencies may be used in GERMANY/USSR

(29-43-42)

Region	3032	3039	3046	3053	3060	3067	3074	3081	3088
T	Argentina Colombia Guatemala Brazil - Between 42° to 51°W & N. of 9°S.	Brazil Nicaragua Martinique Guadeloupe Argentina(S. of 43°S) U. S. A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA Hawaii	Argentina Haiti(500 w) Colombia - (S. of 5°N.) Mexico Canada Hawaii	Argentina Panama Cuba Brazil(Between 55° to 64°W & N. of 7°S) U.S.A.(W of 98° W.) Canada(E of 98° W.) Alaska Hawaii	Brazil Guadeloupe Martinique Chile(S. of 41° S.) Mexico Canada Hawaii	Argentina (S. of 34°S.) Brazil(Between 12° to 21°S. & 46° to 53°W.) Br. Guiana/USA Cuba/USA Canal Zone/USA Puerto Rico/ USA Trinidad/USA Peru(S. of 12°S) U.S.A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA Bermuda/USA Hawaii	Argentina San Salvador Brazil(E. of 42° W. & N. of 10°S.) Colombia(N. of 4°N.) U.S.A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA Bermuda/USA	Paraguay Ecuador Fr. Guiana Cuba Argentina(S. of 44°S.) Brazil(Between 10° to 18°S. & E. of 43°W.) Canada Hawaii	Brazil(With night use lim- ited to 7° to 16°S. & W. of 56°W.) - Chile(S. of 32° S.) U.S.A. Cuba/USA Canal Zone/USA Puerto Rico/ USA Greenland/USA Labrador/USA Newfoundland/ USA Bermuda/USA Hawaii Alaska
W									
O									

Region	3095	3102	3109	3116	3123	3130	3137	3144	3151
T	Argentina(S.of 28°S. W.of 66°W.)	Brazil Martinique	Chile Brazil(Between 40°to 50°W.& 9° to 17°S.)	Chile Venezuela	Bolivia Br.Guiana/USA Argentina(S.of 35°S.)	Uruguay Peru	Chile Venezuela Brazil(E.of 46° W.& 18°to 24°S.)	Argentina Br.Guiana/USA Canal Zone/USA Puerto Rico/ USA	Argentina) Chile) Uruguay) Paraguay) Brazil)
	Brazil(Between 42°to 57°W.& N.of 9°S.)	Guadeloupe Honduras	U.S.A. Alaska Br.Guiana/USA Canal Zone/USA	Brazil(E.of 46° w.& 18 to 24° S.)	Brazil(E.of 43° W.& 10°to 18° S.)	Surinam Curaçao	U.S.A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA	Trinidad/USA Brazil(E.of 42° W.& N.of 10°S)	Bolivia) Peru) Ecuador) Colombia) Venezuela)
W	Peru(N.of 9°S.)	Chile(S.of 36°S)	Puerto Rico/ USA	Mexico	U.S.A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA	Cuba Costa Rica	Greenland/USA Labrador/USA Newfoundland/ USA	U.S.A. Alaska Greenland/USA Labrador/USA Newfoundland/ USA	Dominican Rep. Canada
	México	U.S.A.	Trinidad/USA Cuba/USA Greenland/USA Labrador/USA Newfoundland/ USA	Canada	Bermuda/USA Hawaii	Chile(S.of 43° S.)	Bermuda/USA Hawaii		
	Canada	Alaska							
	Hawaii	Greenland/USA Labrador/USA Newfoundland/ USA Bermuda/USA				Canada Hawaii			
O									

Aircraft Only

B A N D

3025 - 3155 Kc/s

7.

Region	3032	3039	3046	3053	3060	3067	3074	3081	3088
T	Australia(500w) New Zealand (1 Kw) New Hebrides (1 Kw) New Caledonia (1 Kw)	Australia S. (500 w) New Zealand (1 Kw) Fr.Territories (250 w) N.E.I.(500 w)	Australia S. (500 w) New Zealand (1 Kw) Fiji (1 Kw) N.E.I.(500 w) Saigon(250 w)	Australia(500w) New Zealand (1 Kw) Fiji (1 Kw) N.E.I.(500 w) India(350 w)	Australia(500w) N.E.I.(500 w) Hanoi (500 w) Philippines - Baler(200 w)	Australia S. (500 w) N.E.I.(500 w) Fr.Indo China (350 w) Iran(350 w) Manila/USA(1 Kw) Japan/USA(1 Kw) Guam/USA(1 Kw) Marshall's/USA (1 Kw) Wake/USA Marianas/USA Carolines/USA Midway/USA Johnston/USA	Australia(5Kw) Singapore (2.5 Kw) Hong Kong (2.5 Kw) Ceylon/U.K. (2.5 Kw) Pakistan East (500 w) Karachi(500 w) China Reg.7 (3 Kw) Manila/USA Marshall's/USA Wake/USA Marianas/USA Carolines/USA Midway/USA Johnston/USA	Australia(5 Kw) New Zealand (1 Kw) Fiji(1 Kw) Singapore (2.5 Kw) Ceylon/UK (2.5 Kw) Hong Kong/UK (2.5 Kw) Arabia/UK(2.5Kw) Philippines - Labo(200 w) China Reg.2 (3 Kw)	Australia(1 Kw) U.S.Pacific - Not Shanghai (1 Kw) Marshall's/USA Wake/USA Marianas/USA Carolines/USA Midway/USA Johnston/USA
H	Oceania(1 Kw) Fr.Indo China (350 w) India (350 w) Philippines - Porto Princessa (300 w)	India(350 w) Philippines - Aparri(200 w) China Reg.8 (3 Kw)	N.E.I.(500 w) Pakistan(250 w) Philippines - Mindoro(200w) China Reg.5 (500 w) Iran(250 w) U.S.Pacific - Excl.Philippines & Japan(1 Kw)	Philippines - Zamboanga (300 w) China Reg.6 (3 Kw) Iran(250 w) Marshall's/USA Wake/USA Marianas/USA Carolines/USA Midway/USA Johnston/USA	Midway Is/USA Johnston Is/USA				
R	China Reg.5 (3 Kw) Marshall Is/USA Wake Is./USA Marianas Is./ USA Caroline Is./ USA Midway Is/USA Johnston Is/USA								
E									
E									

B A N D

3025 - 3155 Kc/s : Continued

8.

Region	3095	3102	3109	3116	3123	3130	3137	3144	3151
T	Australia(5Kw)	Australia(500w)	Australia S.	Australia(500w)	Australia S.	Australia S.	Australia S.	Australia(500w)	Australia
	New Zealand	Singapore	(500 w)	Singapore	(500 w)	(500 w)	(5 Kw)		(500 w)
	(1 Kw)	(2.5 Kw)	N.E.I.(1 Kw)	(2.5 Kw)	New Zealand	New Zealand	Goa (100 w)	U.S.Pacific	N.E.I.(500 w)
	Fiji(1 Kw)	Ceylon/UK	Pakistan West	Ceylon/UK	(1 Kw)	(1 Kw)	Dilli(100 w)	(1 Kw)	
H	Singapore	(2.5 Kw)	(250 w)	(2.5 Kw)	Fiji(1 Kw)	Fr.Australasia	Philippines -		Philippines -
	(2.5 Kw)	Hong Kong	China Reg.3	Hong Kong(2.5Kw)	N.E.I.(500 w)	(1 Kw)	Cebu(400 w)		Cagayan(400w)
	Ceylon/UK	(2.5 Kw)	(3 Kw)	Philippines -	Pakistan(350w)	N.E.I.(500 w)	China 6(3 Kw)		Misamis(400w)
	(2.5 Kw)	Pakistan(250 w)	U.S.Pacific	Cagayan	China 1(3 Kw)	Pakistan -	Manilla/USA		
R	Hong Kong	China Reg.7	(1 Kw)	(400 w)	U.S.Pacific	Karachi(1.5Kw)	(1 Kw)		China 4(3 Kw)
	(2.5 Kw)	(3 Kw)		Misamis	(1 Kw)	Philippines -	Marshalls/USA		
	Arabia/UK	U.S.Pacific -		(400 w)		Cebu(300 w)	Wake/USA		
	(2.5 Kw)	<u>Not</u> Shanghai				China 4(3 Kw)	Marianas/USA		
	Pakistan East	(1 Kw)					Caroline/USA		
	(250 w)						Midway/USA		
E	Philippines -						Johnston/USA		
	Cebu(200 w)								
	China Reg.2								
	(3 Kw)								
E									

4.7 Mc/s (OR)

9.

Re- gion	4703.5	4710.5	4717.5	4724.5	4731.5	4738.5	4745.5
O N E	U.K. Malta Suez Canal Zone/UK Poland USSR Siberia USSR Caucasus Gibraltar Libya/UK Cyprus Iraq/UK Arabia/UK South Africa Kenya Br.Somaliland Sudan/UK	U.K. Malta Germany/UK Suez Canal Zone/UK Yougoslavia USSR Europe USSR M.Asia Morocco/USA Libya/UK Cyprus Iraq/UK Arabia/UK South Africa Kenya Br.Somaliland Sudan/UK	Netherlands Portugal USSR Europe USSR M.Asia USSR Siberia Tunisia Azores Ukraine Albania Portugese Territories Africa Fr.Somaliland A.E.F.Ft.Lamy(1Kw) Cameroons- Douala (750w)	Germany/USA Portugal USSR Siberia USSR Europe USSR Caucasus Azores Italy Egypt Portugese Territoriss Africa Fr.Somaliland A.E.F.Ft.Lamy(1Kw) Cameroons Douala (750w)	France USSR Europe USSR Caucasus Marocco Algeria Tunisia Lebanon Sweden Bulgaria Czechoslovakia South Africa A.O.F. A.E.F. A.E.F. Madagascar Fr.Somaliland	France Germany Fr. Austria Fr. Portugal Norway Bulgaria USSR M.Asia USSR Caucasus Bielorussia Egypt A.O.F. A.E.F. South Africa Madagascar Azores	Poland USSR Suberia * Algeria Egypt Switzerland French African Territories

* Note: This frequency will also be used in USSR Zone of Germany.

4.7 Mc/s (OR)

10.

Re- gion	4703.5	4710.5	4717.5	4724.5	4731.5	4738.5	4745.5
T W O	Canada Mexico Ecuador Chile (S of 33°S) Brazil (E of 57°W) Hawaii	U.S.A. Caribbean/USA Br.Guiana/USA Canal Zone/USA Paraguay Chile (S of 41°S) Greenland/USA Newfoundland/USA Alaska Labrador/USA Bermuda/USA	U.S.A. Argentina Columbia Greenland/USA Newfoundland/USA Labrador/USA Bermuda/USA Hawaii	U.S.A. Caribbean/USA Br.Guiana/USA Canal Zone/USA Argentina Alaska (1Kw) Greenland/USA Newfoundland/USA Bermuda/USA	Fr.Guiana Greenland/USA Caribbean/Fr. Newfoundland/USA Cuba (500w) Labrador/USA Peru Bermuda/USA Uruguay Hawaii USA (Except E of 98°W & S of 36° N) Alaska	Canada Mexico Guadaloupe) Martinique) (300w) Brazil Argentina (S of 45°S) Hawaii	U.S.A.(except Florida) Florida (300w) Chile Venezuela Honduras (300w) Greenland/USA Newfoundland/USA Bermuda/USA Hawaii

Re- gion	4703.5	4710.5	4717.5	4724.5	4731.5	4738.5	4745.5
T	Ceylon/UK	Australia	Singapore	Australia S. (except Brisbane)	Australia S.	Australia	Australia
H	Singapore	New Zealand	Hong Kong		China	New Zealand	N. Phillipines
R	Hong Kong	Fiji	Australia	Pakistan	India (except Sadhiya)	Fiji	New Zealand
E	Australia S.	India	Cebu	U.S.A. Pacific		Japan/USA	Fiji
E	S. Phillipines	NEI	E. Pakistan	W. Java	NEI	Mariana's Is.	India
	E & N.W. Pakistan	French Indo-China	Karachi	Goa	Fr. Australasia	Caroline Is.	Iran
	New Zealand	USA Pacific	Ceylon/UK	Dilli	Mariana's USA	China (Regions 4, 5 & 6)	Fr. Indo-China 500 w
	Fiji		Mariana's U.S.A.	French Territories	Marshall Is. USA	India (S. of 30°N & W of 90° E)	Mariana's USA
	Goa		Marshall Is. USA	Far East	Johnston Is. USA	Singapore	Marshall Is. USA
	Dilli				Wake Is. USA	Marshall Is. USA	Johnston Is. USA
	Macao				Midway Is. USA	Johnston Is. USA	Wake Is. USA
	China (Reg. 2)		Johnston Is. USA			Wake Is. USA	Midway USA
	Johnston Is. (US)		Wake Is. USA			Midway Is. USA	
	Carolines (US)		Midway Is. USA				
	Marianas (US)						
	Marshalls (US)						
	Midway Is. (US)						
	Wake Is. (US)						

5.7 Mc/s (OR) Band

12.

Re- gion	5688	5695.5	5703	5710.5	5718	5725.5
O	U.K. Germany/UK Bielo Russia Albania USSR Caucasus)	U.K. Gibraltar Malta Libya/UK Cyprus	Netherlands Portugal Yougoslavia Bielo Russia USSR Europe USSR Siberia (1 Kw)	France Morocco Algeria Tunisia Poland Norway	France Morocco Algeria Tunisia Egypt Germany/Fr. Austria/Fr.	Italy Sweden USSR Europe *) USSR Caucasus (1Kw) Egypt Iceland South Africa Ukraine
N	USSR M.Asia) (500w) USSR Siberia)	Czechoslovakia USSR Europe USSR Siberia (1Kw)	Egypt Azores A.O.F. A.E.F. Togo Cameroons Madagascar Fr. Somaliland	Syria USSR M.Asia (50 w) Iraq South Africa French African Territories	Bulgaria USSR Europe USSR M.Asia USSR Caucasus USSR Siberia (50w) South Africa French African Territories	Cameroons (750 w) Madagascar (750 w) (N of 20°S)
E	Portugal Egypt Azores Portugese Terri- tories Africa	Iraq Suez Canal Zone/UK Br.Somaliland South Africa Arabia/UK (500 w) (W of 55°E) Kenya Sudan/UK A.O.F.(W of 0°) (750w) A.E.F.(S of 5°N) (750w) Cameroons-Douala (750w) Madagascar(750w) (N of 20°S)				

*) NOTE ! - This frequency will also be used in USSR Zone of Germany

5.7 Mc/s (OR) Band

13.

Re- gi on	5688	5695.5	5703	5710.5	5718	5725.5
T	Canada	U.S.A.	Canada	U.S.A.	Canada	U.S.A.
W	Mexico	Bolivia	Mexico	Alaska	Cuba (400 w)	Alaska
O	Curacao) (500w)	Argentina(S of 41°S)	Colombia	Guadeloupe (300w)	Brazil	Br.Guiana/USA
	Surinam)	Venezuela(N of 8°N)	Argentina	Martinique (300w)	Chile (S of 41°S)	Canal Zone/USA
	Peru	Alaska		Brazil (E of 55°W)		Caribbean/USA
	Argentina (S of 36°S)	Bermuda/USA		Chile		Chile
		Greenland/USA		Colombia		Bermuda/USA
		Labrador/USA		Greenland/USA		Greenland/USA
		Newfoundland/USA		Newfoundland/USA		Newfoundland/USA
				Labrador/USA		Labrador/USA

(43- 28-29)

5.7 Mc/s (OR) Band

14.

Re- gion	5688	5695.5	5703	5710.5	5718	5725.5
T H R E E	China (Regions 4, 5 & 6) (1 Kw) S.Philippines(400w) Fr. Australasia (500 w) Australia (500 w) Java (1 Kw) Sumatra (1 Kw) India (S of 30°N) (350 w) Marianas Is. (1 Kw) Wake Is. (1 Kw)	Australia (5 Kw) Singapore (2.5 Kw) Ceylon/UK (2.5 Kw) Hong Kong (2.5 Kw) Pakistan (500 w) New Zealand (1 Kw) Fiji (1 Kw)	Australia S. (500w) N.Philippines)400w) Cebu (400 w) NEI (500 w) India (350 w) New Zealand (1 Kw) Fiji (1 Kw) Iran (500 w) Macao (100 w)	China (3 Kw) S.Philippines(400w) Australia S. (500w) Singapore (2.5 Kw) Goa (100 w) Dilli (100 w)	French Indo-China (500 w) Australia (5 Kw) USA Pacific (1 Kw) New Zealand (1 Kw) Fiji (1 Kw) Karachi	French Indo-China (500 w) Fr. Australasia (500 w) Australia (1 Kw) India (350 w) USA Pacific (1 Kw)

(43-28-29)

6.7 Mc/s (OR)

15.

Re- gion	6685 (A ₁)	6687.5 (A ₁)	6693	6700.5	6708	6715.5
O N E	Portugal	U.K.	U.K.	U.K.	U.K.	France
	Norway	Albania	Bulgaria	Germany/UK	Yugoslavia	Germany/Fr.
	Switzerland	Finland	Gibraltar	Gibraltar	USSR Europe	Austria/Fr.
	USSR M.Asia *)	Egypt	Malta	Malta	USSR Siberia (1 Kw)	Algeria
	USSR Siberia	Azores	Cyprus	Cyprus	Malta	Tunisia
	USSR Caucasus	South Africa	Libya/UK	Libya/UK	Cyprus	Morocco
	Portuguese Territories Africa	Yugoslavia	Suez Canal Zone/UK	Suez Canal Zone/UK	Libya/UK	USSR
	Arabia/UK (S of 20°N)		Iraq/UK	Iraq/UK	Suez Canal Zone/UK	French African Territories
			Arabia/UK	Br. Somaliland	Iraq/UK	
			Br. Somaliland	Kenya	Br. Somaliland	
			Kenya	Sudan/UK	Kenya	
			Sudan/UK	Arabia/UK (2.5 Kw)	Sudan/UK	
			USSR Siberia	USSR Siberia (1 Kw)	S. Africa	

*) NOTE : - This frequency will also be used in the USSR Zone of Germany

(43-28-29)

Re- gion	6723	6730.5	6738	6745.5	6753	6760.5
O	Netherlands	Portugal	U. K.	France	France	Iceland
	Morocco/USA	Germany/USA	Czechoslovakia	Algeria	Algeria	France
	Egypt	Roumania	Morocco	Tunisia	Tunisia	Algeria
N	USSR Europe	Iceland	USSR Caucasus (1Kw)	Morocco	Morocco	Tunisia
	USSR Caucasus(1Kw)	Portugese	Egypt	Finland	Egypt (500w)	Morocco
E	S. Africa	Territories Africa		Poland	USSR Europe	Bielo Russia
		USSR M.Asia (500w)		Egypt	French African Territories	Ukraine
		Syria (300w)		USSR Europe		A. O. F.
				USSR Siberia		A. E. F.
				French African Territories		Cameroons
						Togo
						Madagascar
						USSR Caucasus
						USSR M.Asia (1Kw)
						Arabia/UK (S of 20°N)

6.7 Mc/s (OR)

17.

Re- gion	6685 (A ₁)	6687.5 (A ₁)	6693	6700.5	6708	6715.5
T	Canada	U. S. A.	Canada	U. S. A.	Canada	Canada
W	Mexico	Brazil	Cuba	USA Caribbean	Brazil	Mexico
O	Brazil	Alaska	Fr. Guiana	Argentina	Mexico	Brazil
			Guadaloupe	Canal Zone/USA		
			Martinique	British Guiana/ USA		
			Argentina	Hawaii		
				Bermuda/USA		
				Greenland/USA		
				Labrador/USA		
				Newfoundland/USA		

Re- gion	6723	6730.5	6738	6745.5	6753	6760.5
T W O	U. S. A. Alaska USA Caribbean Argentina Br. Guiana/USA Canal Zone/USA Greenland/USA Labrador/USA Newfoundland/USA Bermuda/USA	U. S. A. Alaska USA Caribbean Argentina Canal Zone /USA Br. Guiana/USA Greenland/USA Labrador/USA Newfoundland/USA Bermuda/USA	U. S. A. Alaska Honduras Chile Hawaii Bermuda/USA	Canada Cuba Fr. Caribbean (100 w) Bolivia Chile (100 w) (S of 33°S)	Canada Mexico Brazil Chile (S of 41°S) (300 w)	Alaska U. S. A. Curacao Argentina Hawaii Bermuda/USA

6.7 Mc/s (OR)

19.

Re- gion	6685 (Λ_1)	6687.5 (Λ_1)	6693	6700.5	6708	6715.5
T H R E E	Hong Kong Singapore Ceylon/UK Fr. Indo-China (500 w) Australia (500 w)	Fr. Australasia (500 w) USA Pacific (3 Kw) Fiji (1 Kw) Australia South (500 w) India (350 w)	New Zealand (1 Kw) Fiji (1 Kw) Australia (5 Kw) Singapore Ceylon/UK Hong Kong India (N of 25°N) (E of 75°E)	S. Philippines (400 w) Australia (5 Kw) Singapore (2.5 Kw) Ceylon/UK (2.5 Kw) Hong Kong (2.5 Kw) Pakistan (400 w)	New Zealand (1 Kw) Fiji (1 Kw) Australia S. (500w) NEI (1 Kw) Ceylon/UK (250 w) Pakistan (1 Kw) Macao (100 w)	S. Philippines (400 w) New Zealand (1 Kw) Fiji (1 Kw) Australia (500 w) (Except Darwin) Java Goa (100 w) Dilli (100 w) China (Region 4, 5 & 6) (1 Kw)

(43- 28-29)

6.7 Mc/s (OR) - Cont'd

20.

Re- gion	6723	6730.5	6738	6745.5	6753	6760.5
T H R E E	USA Pacific (3Kw) New Zealand (1Kw) Fiji (1 Kw) Australia (Except Pt.Moresby)(1Kw) Singapore (2.5 Kw) India (500w)	USA Pacific (3Kw) India (S of 30°N) Singapore (2.5Kw) Australia (Except Pt.Moresby)(5 Kw)	Fr. Australasia (1 Kw) Australia (1 Kw) Singapore (2.5 Kw) Karachi (400 w) China (3 Kw) Ceylon/UK (2.5 KW)	Fr. Indo-China (500 w) Iran (500 w) Philippines (400w) New Zealand (1 Kw) Fiji (1 Kw) Australia (Except Derwin) (5 Kw) India (500 w)	Fr.Indo-China(1Kw) Fr. Australasia (1Kw) Cebu (400 w) US Pacific (Except Manila) (1 Kw) New Zealand (500w) Australia (Except Brisbane and Pt.Moresby)(500w) Java (500 w) India (Except Sadhiya) (500w)	Japan/USA Marianas/USA Caroline Is. Marshall Is. Wake Is. Australia (Except Darwin) (500w) Singapore (1Kw) Goa (100w) Dilli (100w) China (Regions 4, 5 & 6) (1 Kw) Midway/USA Johnston Is./USA

9 Mc/s (OR)

21.

Region	8967	8975.5	8984	8992.5	9001	9009.5	9018	9026.5	9035
O N E	UK	USSR	France	Poland	Netherlands	UK	France	Egypt	Italy
	UK Terri- tories	Azores	French Afri- can Terri- tories	Portugal	Norway	Bulgaria	French Afri- can Terri- tories	Czechoslo- vakia	Denmark
	South Africa	South Africa	Lebanon	Portuguese Territories Africa	Egypt	Yugoslavia		Madagascar (400 w)	Poland
		Morocco/USA (1 Kw)	USSR M.Asia	Bielorussia		USSR Siberia	Ukraine		Morocco/ USA
				Azores	AEF	AEF (500 w)		Reunion (400 w)	
				USSR Europe	Cameroons	Cameroons (500 w)		USSR M.Asia	
				USSR Siberia (50 w)	Madagascar	Madagascar (500 w)		USSR Cauca- sus	
					Reunion			AOF-Dakar (400 w)	
						Reunion (500 w)		AEF-Brazza- ville (400 w)	
								Germany/USA	

9 Mc/s (OR)

22.

Re- gion	8967	8975.5	8984	8992.5	9001	9009.5	9018	9026.5	9035
T	Canada	USA (1 Kw)	USA	Canada	USA	Canada	Alaska	USA	Alaska
W	Mexico	Argentina	Hawaii/USA	Cuba	Cuba (300w)	Mexico	Hawaii/USA	USA Caribbean	USA
O	Brazil	Curaçao	USA Caribbean	Chile	Brazil	Brazil	Mexico	Br. Guiana/USA	Colombia
	Hawaii/USA	Surinam	Bermuda/USA		Alaska		French Carib- bean Terri- tories	Canal Zone/ USA	(300 w) Chile
			Alaska				Bolivia	Bermuda/USA	Newfoundland/ USA
			Argentina				Chile (300 w) (S of 41°S)	Greenland/USA (750w)	Labrador/USA
			Greenland					Labrador/USA (1 Kw)	
								Newfoundland/ USA (1 Kw)	
								Alaska	
								Argentina	

9 Mc/s (OR)

23.

Re- gion	8967	8975.5	8984	8992.5	9001	9009.5	9018	9026.5	9035
T	UK Territories	Australia	French Indo- China	India	India	Iran	China	Portuguese India	Pakistan
H	Australia	Ceylon/UK	Marshall Is.	Philippines	Philippines	NEI	French Austra- lasian Terri-	Hong Kong	Portuguese Timor
R	New Zealand	French Indo- China	Wake Is.	New Zealand	USA Pacific except Phi-	New Zealand	tories	Singapore	N. China
E	Fiji		Australia (500 w)	Fiji	lippines	Fiji	W. Pakistan	USA Pacific	USA Pacific
E	Midwy Is.						Singapore	Australia (500 w)	
							Johnston Is. (1 Kw)		
							Darwin, Aust. (500 w)		

11 Mc/s (OR)

24.

Re- gion	11180.5	11190	11199.5	11209	11218.5	11228	11237.5	11247	11256.5	11266	11273(A ₁)
O	Norway	USSR	U.K.	France	France	USA Terri- tories	USSR	U.K.	Netherlands	Portugal	Roumania
N	Portugal (250 w)	Morocco	U.K. Terri- tories	French African Territo- ries	French Territo- ries		South Afri- ca	Denmark	USSR Siberia	Germany/USA	Bulgaria
E	Poland	Algeria						USSR M.Asia	USSR M.Asia	Morocco/USA	USSR Europe
	Azores	A.O.F.						USSR Siberia	USSR Caucasus	USSR Europe (500 w)	USSR M.Asia
	Portuguese Territories	A.E.F.		USSR Siberia				Gibraltar	Ukraine		USSR Caucasus
	Africa	Cameroons						Malta			
	Egypt	Madagascar						Cyprus (500w)			
		Reunion						Libya			
		Fr.Somaliland						Suez Canal Zone/UK			

11 Mc/s (OR)

25.

Re- gion	11180.5	11190	11199.5	11209	11218.5	11228	11237.5	11247	11256.5	11266	11273(41)
T	Alaska	Mexico	USA	Canada	French Terri- tories	U.S.A.	Mexico	Canada(350w)	USA	Argentina	Canada
W	USA	Chile	Hawaii/USA	Cuba	Hawaii/USA	USA Terri- tories	Argentina	Mexico(400w)	Brazil	Alaska	Mexico (400 w)
O	Argentina	Newfound- land/USA (1 Kw)	Bermuda/USA Brazil	Chile	USA	Chile	Newfoundland/ USA (1 Kw)	Brazil		USA	Brazil
	Curaçao				Alaska		Labrador/USA (1 Kw)			Labrador/USA	
	Colombia	Labrador/ USA (1 Kw)			Labrador/USA		Bermuda/USA (1 Kw)			Newfoundland/ USA	
					Newfoundland/ USA					Greenland/USA	
					Greenland/USA					Caribbean/USA	
					Bermuda/USA					Br. Guiana/USA	
					Argentina					Canal Zone/USA	
										Bermuda/USA	

11 Mc/s (OR)

26.

Re- gion	11180.5	11190	11199.5	11209	11218.5	11228	11237.5	11247	11256.5	11266	11273(A ₁)
T H R E E	India USA Pacific	NEI	UK Territo- ries Australia Midway Is.	Australia French Indo- China	French Terri- tories Midway Is.	USA Terri- tories Pakistan	Philippines Australia (500 w)	Australia Singapore Hong Kong Ceylon/UK	NEI	India USA Pacific	Philippines

(43-24-28)

13 Mc/s (OR)

27.

Region	13205.5	13215.5	13225.5	13235.5	13245.5	13255.5
O	UK	USA Territories	USSR	France	USSR	Norway
N	UK Territories	Egypt	French African Territories (300 w)	French Territories	Poland	Portugal
E					AOF-Dakar(750 w)	Portuguese Territories Africa
					Cameroons-Doula (750 w)	
					AEF-Brazzaville (750 w)	
					Bangui (750 w)	
					Madagascar(750 w)	
					Reunion (750 w)	

13 Mc/s (OR)

28.

Region	13205.5	13215.5	13225.5	13235.5	13245.5	13255.5
T W O	Argentina	USA	Canada (350 w)	Bermuda/USA (300 w)	USA	Roumania
	Mexico	USA Territories	Cuba (300 w)	Greenland/USA (300 w)	Brazil	Netherlands
	Curacao (300 w)	Argentina (300 w)	Brazil	Newfoundland/USA (400 w)	Labrador/USA (1 Kw)	Canada
	Hawaii/USA (1 Kw)			Labrador/USA (400 w)	Newfoundland/USA (1 Kw)	Mexico
	Alaska			Alaska	Bermuda/USA (1 Kw)	Argentina
				USA		Hawaii/USA
				USA Caribbean(300 w)		
				Argentina (300 w)		
				French Territories		
				USSR Middle Asia (100 w)		

13 Mc/s (OR)

29.

Region	13205.5	13215.5	13225.5	13235.5	13245.5	13255.5
T	UK Territories	USA Territories	Australia (500 w)	USA Pacific	USA Pacific	NEI
H	Australia	Pakistan	Fr. Indo-China	French Territories	(except Philippines)	India
R	Midway Is.		(100 w)		Philippines	Midway Is.
E	(1 Kw)					Johnson Is.
E	Johnson Is.					
	(1 Kw)					

15 Mc/s (OR)

30.

Re- gion	15016	15026	15036	15046	15056	15066	15076	15086	15092.5(A ₁)	15096.5(A ₁)
O N E	U.S.A. Terri- tories	USSR Portugese Colonies	USSR A.O.F. A.E.F. Cameroons Madagascar Reunion Morocco (200w) (Secondary basis) Algeria (200w) (Secondary basis)	U.K.	Norway South Africa Morocco/USA	France French Afri- can Territo- ries USSR Siberia USSR M.Asia (50 w)	France French Terri- tories	USSR Poland Denmark	USSR Siberia U.K.	Netherlands

(43-29-22)

15 Mc/s (OR)

31.

Re- gion	15016	15026	15036	15046	15056	15066	15076	15086	15092.5(A ₁)	15096.5(A ₁)
T W O	U.S.A. Terri- tories U.S.A. Argentina(300w) (S of 30°S)	Argentina Mexico(400 w) (N of 19°N)	Brazil Mexico(300 w) (N of 19°N) Labrador/USA Newfoundland/ USA Greenland/USA	Argentina Cuba(300 w) Alaska (1 Kw)	U.S.A. Argentina (300 w) Alaska Bermuda/USA	U.S.A. USA Carib- bean Br.Guiana/ USA Canal Zone/ USA Chile (300w) Bermuda/USA	U.S.A. Alaska Argentina (300w)	Mexico Brazil (300 w) (S of 5°S & E of 55°W) Hawaii/USA(1Kw)	Brazil Mexico(300 w) (N of 19° N)	U.S.A. Curaçao Alaska Argentina (300 w)

(25.43-29-22)

15 Mc/s (OR)

32.

Re- gion	15016	15026	15036	15046	15056	15066	15076	15086	15092.5(Λ_J)	15096.5(Λ_L)
T H R E E	U.S.A. Terri- tories	Portuguese Colonies		Pakistan Australia	USA Pacific India	Australia French Indo- China (Aircraft) (50 w)	French Terri- tories U.S.A. Paci- fic	Australia (50 w)	Philippines (300 w)	N.E.I.

(43- 29-22)

18 Mc/s (OR)

33.

Re- gion	17975	17983.5	17993.5	18003.5	18013.5	18023.5
O N E	Italy	UK	France	USSR	France	USSR
	Portuguese-Terr.	UK Overseas Territories	French Territories	Poland	French Africa Terr.	
	USSR (50 w)		Netherlands		USA Territories	
	Germany / USA					
	Morocco / USA					

(25-25-24)

18 Mc/s (OR)

34.

Re- gion	17975	17983.5	17993.5	18003.5	18013.5	18023.5
T H R E E	Portuguese Terr.	UK Overseas Territories Australia Pakistan	USA Pacific French Terr.	Australia (400 w)	USA Territories	N.E.I.

(43- 29-22)

18 Mc/s (OR)

35.

Re- gion	17975	17983.5	17993.5	18003.5	18013.5	18023.5
T W O	U. S. A. Argentina (300 w) Alaska Hawaii/USA (1 Kw) Greenland/USA Newfoundland/USA Labrador/USA Bermuda/USA	Brazil Alaska	Argentina French Terr. Alaska	Argentina Mexico	U. S. A. USA Territories Chili (300 w)	U. S. A. (1 Kw) Brazil Greenland/USA Newfoundland/USA Labrador/USA Bermuda/USA

(43- 29-22)

SHARED BANDS

3155 - 3200

3200 - 3230

and 3800 - 3900 Kc/s

36.

Region	A	B	C	D	E	F	G
O	U.K.	U.K.	Netherlands	France	Portugal	Germany(French)	Germany (U.S.A)
	Malta	Malta		Norway	France	France	France
				Portuguese Terr.Africa	Netherlands	Algeria	Algeria
N						Morocco	Morocco
						Tunisia	Tunisia
						A.E.F.	A.E.F.
E						A.O.F.	A.O.F.
						Madagascar	Madagascar
						Fr.Somaliland	Fr.Somaliland

S H A R E D B A N D

4750 - 4850 Kc/s

37.

Region	A	B	C	D	E
O	U. K.	U. K.	U. K.	France	France
	Malta	Morocco	Suez Canal Zone/UK	Morocco	Morocco
N	Suey Canal Zone/UK	Italy	Algeria	Egypt	Algeria
			Yougoslavia		Tunisia
E					Sweden

S H A R E D B A N D 5430 - 5480 Kc/s

38.

Region	A	B	C
O	Netherlands	France	Switzerland
	Portugal	Morocco	United Kingdom
N	Yugoslavia	Tunisia	
	Azores	Algeria	
E		Egypt	

(29-43-42)

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948
Conférence internationale administrative
des Radiocommunications aéronautiques
G E N E V E, 1948
Conferencia Administrativa Internacional
de Radiocomunicaciones Aeronauticas
G I N E B R A, 1948

Aer-Document No. 196 - E
24 July, 1948

Aér-Document No. 196 - F
24 juillet, 1948

Documentow Aer No. 196 - S
24 de julio de 1948

Schedule of Meetings

Monday to Thursday, July 26 - July 29, 1948.

Committee 3 to meet at 3 p.m. daily

Working Groups of Committees 6 and 7 to meet by arrangement.

Tuesday, July 27 : 0830 ; 6 (Room B) ; 7 (Room III)

Thursday, July 29 : 0830 ; Plenary Meeting ; then Committee I
(Room B)

Horaire des séances

Lundi à jeudi, 26 - 29 juillet, 1948

La Commission 3 se réunira à 15 h. chaque jour.

Les groupes de travail des Commissions 6 et 7 décideront eux-mêmes de
leurs séances.

Mardi, 27 juillet : 8 h. 30 : 6 (Salle B) : 7 (Salle III)

Jeudi, 29 juillet : 8 h. 30 : séance plénière : puis la Commission I.
(Salle B)

Programa de sesiones

Lunes - jueves, 26 - 29 de julio de 1948.

La Comisión 3 se reunirá a las 3 p.m. diariamente.

Los grupos de trabajo de la Comisión 6 y 7 decidirán ellos mismos de sus
sesiones.

Martes, 27 de julio : 8 h. 30 : 6 (Sala B) : 7 (Sala III)

Jueves, 29 de julio : 8 h. 30 : Sesión Plenaria : después la Comisión
(Sala B) Ejecutiva



REPORT OF THE AD HOC COMMITTEE
FOR THE EASTERN HEMISPHERE

(1st Meeting)
July 22, 1948

1. Chairman: Major G.A. Harvey

Present: Representatives from:

Australia	Pakistan
Biellorussian S.S.R.	Poland
Czechoslovakia	Sweden
Egypt	Union of South Africa
France	United Kingdom
French Protectorates of	United States of America
Morocco and Tunisia	U.S.S.R.
Italy	Yugoslavia
Netherlands East Indies	I.C.A.O.
Norway	I.A.T.A.

The meeting was convened at 9.15 a.m., the Chairman giving a resumé of the terms of reference as decided at yesterday's meeting of Committee 6. The task of the group would be to see if it would be possible to adjust the parameters for the equitable distribution of frequencies between MWARA's and regions.

2. Protection ratio. It was decided to work on the basis of a minimum of 15 db protection ratio for A3 channels with the frequencies at night time protected as follows:

Regions above 40° latitude: 3 and 3.5 Mc/s.

All other frequencies on daytime interference range.

Regions below 40° latitude: 3, 3.5 and 4.7 Mc/s.

All other frequencies on daytime interference range.

3. Loading factor. The Chairman quoted from the MWARA plan that was so far worked out, figures showing loading factors between approximately 12 and 18.

Considerable discussion took place regarding the loading factor and its dependence of the type of operation (A1 vs A3), local conditions etc. Some of the main points made are quoted below. Mr. Mitrovic (Yugoslavia) proposed the use of a loading factor of 24 for A3 channels while Mr. Layzell (I.A.T.A.) indicated that 12 would be a reasonable average figure for both A1 and A3 operations taking into account actual figures obtained in international aviation. Mr. Falgarone (France) thought that a better solution would be had if the spectrum were divided in A1 and A3 bands. He was in favour of A1 cross band operation. Mr. Mitrovic (Yugoslavia) said that if we desire cross band operation, we will have to review the whole work of Committee 6C. Mr. Rowland (United Kingdom) pointed out

that the present plan with one A3 channel = two A1 simplex channels or one adjacent channel cross band A1 (also called off-set simplex A1) provided for:

- a) Flexibility in transition from A1 to A3 or A4.
- b) Use of low stability A1 equipment initially.
- c) Use of adjacent channel cross band A1.

The Chairman also stressed the advantage of the flexibility of the plan and the ability to change system without the need for making new assignments. Mr. Jonk (Bielorussia) proposed that a loading factor of 24 be used for two simplex A1 channels together accommodated in one A3 channel. Two or three A3 families would thus be needed for the North Atlantic routes only. Mr. Shores (United States of America) pointed out the necessity of assessing the regional requirements in the same manner as had been done when dealing with the MWARA's. Further, it should be borne in mind that for the MWARA's, HF is the only means of communication while within the region. MF and often VHF are or could be used to a great extent.

- 4. The Chairman proposed to examine MWARA's and regions individually as set out in the terms of reference a) and started to go through the existing tables band for band (3 and 3.5 Mc/s bands).
- 5. Mr. Layzell (I.A.T.A.) suggested that the domestic requirements should be gone over by the group of Mr. Mitrovic in order to find out if more frequency repetition within countries could not be used in order to reduce the number of frequencies asked for.

Mr. Soeberg (Norway) thought that the domestic requirements in many cases were on the high side and that international frequencies often could be used instead of special domestic frequencies.
- 6. Mr. Rowland (United Kingdom) stated that in his opinion there will have to be a European conference to deal with the detailed assignment of frequencies within the region. Mr. Sathar (Pakistan) informed the meeting that a regional meeting of I.T.U. Region 3 was scheduled to take place late this year.

The Committee adjourned at 12.40 p. m.

Reporter:
G. Kruse

Chairman:
G.A. Harvey

CORRIGENDA TO ANNEX I (REVISED)
TO AER-DOCUMENT No. I98

Page 3 LIST OF COORDINATES

9th. line, amend : " 10°S 40°W" to read " 34°S 74°W"
10th. line, delete all reference



Corrigendum

Page 8. In geographic description
delete "Auckland
Wellington"
and replace by "New Zealand"

* * * * *

Corrigendum

Page 8. Dans la liste des points de repère,
remplacer "Auckland
Wellington"
par "Nouvelle-Zélande"

* * * * *

Corrigendum

Página 8. Descripción geográfica -
léase "Nueva Zelandia" en vez de "Auckland
Wellington"

* * * * *



Revised

ANNEX 1 TO FINAL REPORT OF COMMITTEE 6 C

Revised 13 August 1948 to include corrigenda

Major World Air Route Area -- "EU" EUROPE

The geographic description of this area is generally defined by the following locations:

Cairo	(Egypt)
Lydda	(Palestine)
Ankara	(Turkey)
Istanbul	(Turkey)
Warsaw	(Poland)
Helsinki	(Finland)
Hammerfest	(Norway)
Shannon	(Ireland)
Lisbon	(Portugal)
Tangier	
Tripoli	(Libya)
Casablanca	(French Protectorate of Morocco)

Addendum to description of European Area - Submitted by Soviet Delegation.

"The eastern boundary of the European area of major world air routes is drawn along the longitude of 30° E only for convenience of rendering. The actual eastern boundary of the European area of major world air routes follows the western state boundary of the U.S.S.R. and it is consequently understood that no part of the territory of the U.S.S.R. enters the European area of Major World Air Routes."

"E.U"

The precise boundaries of this area are defined by lines drawn on a great circle path between the coordinates of latitude and longitude as follows:

From 34° N	12° W	to	32° N	13° E
From 32° N	13° E	to	29° N	35 1/2° E
From 29° N	35 1/2° E	to	40° N	34° E
From 40° N	34° E	to	42° N	30° E
From 42° N	30° E	to	72° N	30° E
From 72° N	30° E	to	70° N	0° Longitude
From 70° N	0°	to	54° N	12° W
From 54° N	12° W	to	34° N	12° W

(The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5)

MAJOR WORLD AIR ROUTE AREA "NP" NORTH PACIFIC

The geographical description of this area is generally defined by the following locations:

Seattle	(U.S.A.)
Amchitka	(Aleutian Islands)
Tokyo	(Japan)
Anchorage	(Alaska)
Edmonton	(Canada)
Vancouver	(Canada)
Seattle	(U.S.A.)

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 46° N 122° W	to	50° N 170° W
From 50° N 170° W	to	33° N 138° E
From 33° N 138° E	to	38° N 138° E
From 38° N 138° E	to	50° N 166° E
From 50° N 166° E	to	55° N 110° W
From 55° N 110° W	to	46° N 122° W

(The total Peak traffic loadings for each megacycle order required for the various routes up to the halfway points are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA SOUTH ATLANTIC (S.A.)

The geographic description of this area is generally defined by the following locations:

Santiago	(Chili)	
Buenos Aires	(Argentina)	
Montevideo	(Uruguay)	
Sao Paulo	}	(Brazil)
Rio de Janeiro		
Recife		
Natal	}	(French West Africa)
Dakar		
Port Etienne	}	(Rio de Oro)
Villa Cisneros		
Geneva	(Switzerland)	
Frankfort	(Germany)	
Stockholm	(Sweden)	
Oslo	(Norway)	
Gloucester	(England)	
Lisbon	(Portugal)	
Canary Islands		
Natal	(Brazil)	
Santiago	(Chili)	

"S.A."

The precise boundaries of this area are defined by lines drawn on a great circle path between co-ordinates of Latitude and Longitude as follows:

From 34° S	74° W	to	36° S	52° W
From 36° S	52° W	to	13° N	15° W
From 13° N	15° W	to	50° N	15° E
From 50° N	15° E	to	60° N	20° E
From 60° N	20° E	to	61° N	05° E
From 61° N	05° E	to	47° N	17° W
From 47° N	17° W	to	25° N	25° W
From 25° N	25° W	to	03° S	40° W
From 03° S	40° W	to	10° S	40° W
From 10° S	40° W	to	34° S	74° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "NSAM-2"

"NORTH SOUTH AMERICA - 2"

The geographic description of this area is generally defined by the following locations:

Santiago	(Chile)
Buenos Aires	(Argentina)
Montevideo	(Uruguay)
Rio de Janeiro	(Brazil)
Belem	
Racife	
Natal	
Paramaribo	(Surinam)
Port of Spain	(Trinidad)
Bermuda Islands	
Montreal	(Canada)
New York	(U.S.A.)
Washington	
Miami	
Havana	(Cuba)
Bogota	(Colombia)
Cali	
Leticia	
Cuyaba	(Brazil)
Santiago	(Chile)

"NSAM -2" (2)

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 34° S	74° W	to	36° S	52° W
From 36° S	52° W	to	05° S	30° W
From 05° S	30° W	to	10° N	60° W
From 10° N	60° W	to	34° N	60° W
From 34° N	60° W	to	48° N	75° W
From 48° N	75° W	to	40° N	77° W
From 40° N	77° W	to	23° N	86° W
From 23° N	86° W	to	02° N	79° W
From 02° N	79° W	to	20° S	50° W
From 20° S	50° W	to	34° S	74° W

(The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "FE-1" "FAR EAST 1"

The geographic description of this area is generally defined as follows:

	(Australia)
Batavia	(Netherlands East Indies)
Colombo	(Ceylon)
Madras	(India)
Calcutta	(India)
Kuching	(Sarawak)
Darwin)	
Townsville)	(Australia)
Sydney)	
Melbourne)	

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 40° S 145° E	to	10° S 106° E
From 10° S 106° E	to	05° N 77° E
From 05° N 77° E	to	15° N 77° E
From 15° N 77° E	to	24° N 92° E
From 24° N 92° E	to	10° N 105° E
From 10° N 105° E	to	23° S 153° E
From 23° S 153° E	to	40° S 153° E
From 40° S 153° E	to	40° S 145° E

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

- 6 -
(Aer-N°198-E)

MAJOR WORLD AIR TOUTE AREA "FE-2" FAR EAST 2

The geographic description of this area is generally defined by the following locations :

Manila	(Philippines)
Shanghai)	
Kunming)	(China)
Calcutta	(India)
Singapore	
Batavia	(Netherlands East Indies)
Darwin	(Australia)
Nauru Island	
Biak	(New Guinea)
Manila	(Philippines)

FE - 2

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 12° N 124° E	to	33° N 133° E
From 33° N 133° E	to	35° N 132° E
From 35° N 132° E	to	24° N 88° E
From 24° N 88° E	to	08° S 105° E
From 08° S 105° E	to	15° S 130° E
From 15° S 130° E	to	15° S 158° E
From 15° S 158° E	to	00° 168° E
From 00° 168° E	to	00° 135° E
From 00° 135° E	to	12° N 124° E

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "CEP"

CENTRAL EAST PACIFIC

The geographic description of this area is generally defined by the following locations :

San Diego	(U.S.A.)
Hilo	(Territory of Hawai')
Honolulu	(Territory of Hawai')
Vancouver	(Canada)
Seattle	}
San Francisco	
Los Angeles	
San Diego	
	(U.S.A.)

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 32° N 117° W	to	16° N 159° W
From 16° N 159° W	to	22° N 159° W
From 22° N 159° W	to	50° N 122° W
From 50° N 122° W	to	38° N 120° W
From 38° N 120° W	to	32° N 117° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

8
(Aer-N°198-E)

MAJOR WORLD AIR ROUTE AREA "SP" (SOUTH PACIFIC)

The geographic description of this area is generally defined by the following locations :

Honolulu	(Territory of Hawai)	
Tahiti	(Society Islands)	
Chatham Islands		
Auckland	}	(New Zealand)
Wellington		
Hobart		(Tasmania)
Melbourne	}	(Australia)
Sydney		
Brisbane		
Nauru Island		
Honolulu	(Territory of Hawai)	

"SP"

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 22° N 158° W	to 20° S 145° W
From 20° S 145° W	to 50° S 170° W
From 50° S 170° W	to 50° S 145° E
From 50° S 145° E	to 38° S 145° E
From 38° S 145° E	to 28° S 152° E
From 28° S 152° E	to 0° 167° E
From 0° 167° E	to 0° 175° W
From 0° 175° W	to 22° N 158° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "NSAM"-1"

NORTH SOUTH AMERICA 1

The geographic description of this area is generally defined by the following locations :

Santiago	(Chile)	
Galapagos Islands		
San Francisco	}	(U.S.A.)
El Paso		
Miami		
Mexico City		(Mexico)
Havana		(Cuba)
Kingston		(Jamaica)
Panama		
Cali	}	(Colombia)
Barraquilla		
Benjamin Constant		(Brazil)
Antofagasta		(Chile)
Tucuman	}	(Argentina)
Buenos Aires		
Santiago		(Chile)

"NSAM-1"

The precise boundaries of this area are defined by lines drawn on a great circle path between co-ordinates of Latitude and Longitude as follows :

From 36° S 73° W	to	36° S 52° W
From 36° S 52° W	to	26° S 63° W
From 26° S 63° W	to	05° S 63° W
From 05° S 63° W	to	05° S 75° W
From 05° S 75° W	to	27° N 75° W
From 27° N 75° W	to	35° N 107° W
From 35° N 107° W	to	40° N 128° W
From 40° N 128° W	to	20° N 114° W
From 20° N 114° W	to	00° 93° W
From 00° 93° W	to	36° S 73° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "CWP"

CENTRAL WEST PACIFIC

The geographic description of this area is generally defined by the following locations :

Hilo	(Territory of Hawai')
Manila	(Philippines)
Hongkong	(China)
Shanghai	(China)
Tientsin	(China)
Tokyo	(Japan)
Honolulu	(Territory of Hawai')

The precise boundaries of this area are defined by lines drawn between coordinates of Latitude and Longitude as follows :

From 17° N 155° W	to	10° N 160° E
From 10° N 160° E	to	10° N 117° E
From 10° N 117° E	to	40° N 117° E
From 40° N 117° E	to	25° N 155° W
From 25° N 155° W	to	17° N 155° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA - "NA" NORTH ATLANTIC

The geographic description of this area is generally defined by the following locations:

Washington, D.C.	(U.S.A.)
Montreal	(Canada)
Goose Bay	(Labrador)
Reykjavik	(Iceland)
Oslo	(Norway)
Copenhagen	(Denmark)
Brussels	(Belgium)
Paris	(France)
Lisbon	(Portugal)
Azores Islands	
Bermuda	
Cuba	
Jamaica	
Miami)	(U.S.A.)
Washington)	

"N.A."

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 39° N 78° W	to	47° N 75° W
From 47° N 75° W	to	68° N 20° W
From 68° N 20° W	to	60° N 20° E
From 60° N 20° E	to	45° N 10° E
From 45° N 10° E	to	34° N 12° W
From 34° N 12° W	to	35° N 25° W
From 35° N 25° W	to	30° N 62° W
From 30° N 62° W	to	16° N 78° W
From 16° N 78° W	to	21° N 86° W
From 21° N 86° W	to	39° N 78° W

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

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(Aer-N°198-E)

MAJOR WORLD AIR ROUTE AREA "NSA-1" NORTH SOUTH AFRICA-1

The geographic description of this area is generally defined by the following locations :

Durban	(Africa)
Kimberly	(Africa)
Cape Verde Islands	
Lisbon	(Portugal)
Gloucester	(England)
Oslo	(Norway)
Copenhagen	(Denmark)
Stockholm	(Sweden)
Paris	(France)
Geneva	(Switzerland)
Rome	(Italy)
Algiers) (Africa)
Stanleyville	
Elizabethville	
Beira	
Durban	

"NSA-1"

From 31° S 35° E	to 31° S 24° E
From 31° S 24° E	to 16° N 26° W
From 16° N 26° W	to 40° N 12° W
From 40° N 12° W	to 52° N 06° W
From 52° N 06° W	to 60° N 10° E
From 60° N 10° E	to 60° N 20° E
From 60° N 20° E	to 43° N 16° E
From 43° N 16° E	to 37° N 12° E
From 37° N 12° E	to 00° 28° E
From 00° 28° E	to 11° S 28° E
From 11° S 28° E	to 20° S 35° E
From 20° S 35° E	to 31° S 35° E

The total peak traffic loadings for each megacycle order required up to the half way points on the various routes are listed at page 6 of Annex 5.

MAJOR WORLD AIR ROUTE AREA "ME" MIDDLE EAST

The geographic description of this area is generally defined by the following locations:

Colombo	(Ceylon)
Bombay	(India)
Cairo	(Egypt)
Lisbon	(Portugal)
Gloucester	(England)
Oslo	(Norway)
Copenhagen	(Denmark)
Stockholm	(Sweden)
Frankfurt	(Germany)
Amsterdam	(Holland)
Paris	(France)
Rome	(Italy)
Teheran	(Persia)
Calcutta	(India)
Madras	(India)
Colombo	(Ceylon)

"ME"

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 05° N 80° E	to 17° N 70° E
From 17° N 70° E	to 28° N 30° E
From 28° N 30° E	to 37° N 10° W
From 37° N 10° W	to 60° N 10° W
From 60° N 10° W	to 60° N 20° E
From 60° N 20° E	to 40° N 14° E
From 40° N 14° E	to 37° N 51° E
From 37° N 51° E	to 24° N 93° E
From 24° N 93° E	to 05° N 80° E

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

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(Aer^o-N°198-E)

MAJOR WORLD AIR ROUTE AREA "NSA-2" NORTH SOUTH AFRICA - 2

The geographic description of this area is generally defined by the following locations :

Durban	(Africa)
Mauritius Island	
Berbera	(Africa)
Cairo	(Africa)
Rome	(Italy)
Stockholm	(Sweden)
Copenhagen	(Denmark)
Oslo	(Norway)
Gloucester	(England)
Paris	(France)
Geneva	(Switzerland)
Tunis)
Lake Victoria)
Elisabethville) (Africa)
Durban)

"NSA - 2"

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 30° S	34° E	to	22° S 60° E
From 22° S	60° E	to	10° N 52° E
From 10° N	52° E	to	30° N 35° E
From 30° N	35° E	to	42° N 16° E
From 42° N	16° E	to	60° N 20° E
From 60° N	20° E	to	60° N 10° W
From 60° N	10° W	to	37° N 07° E
From 37° N	07° E	to	00° 28° E
From 00°	28° E	to	11° S 28° E
From 11° S	28° E	to	20° S 24° E
From 20° S	24° E	to	30° S 24° E
From 30° S	24° E	to	30° S 34° E

The total peak traffic loadings for each megacycle order required up to the halfway points on the various routes are listed at page 6 of Annex 5.

Corrigendum

Corrigenda to Annex 1 to Final Report
of Committee 6

Page 7 List of Coordinates

4th line, amend : "55° N 110° W" to read "50° N 166° E"

Between the 4th and 5th line insert: " From 50° N 166° E to 55° N 110° W"

Delete: 6 lines of the Addendum submitted by Soviet Delegation at the bottom of the page.

Page 8 Delete : "Fort de France (Martinique)."

Page 9 List of Coordinates

8th line, amend : "15° N 63° W" to read "03° S 40° W"

9th line, amend : "From 15° N 63° W to 06° S 36° W" to read
"From 03° S 40° W to 10° S 40° W"

10th line, amend : "06° S 36° W" to read "10° S 40° W."

Page 11 List of Coordinates

1st line, amend : "36° S 73° W" to read "34° S 74° W",

6th line, amend : "40° N 78° W" to read "40° N 77° W",

7th line, amend : "40° N 78° W" to read "40° N 77° W"

10th line, amend : "36° S 73° W" to read "34° S 74° W"

Page 12 List of Coordinates

2nd line, amend : "05° N 78° E" to read "05° N 77° E",

3rd line, amend : "From 05° N 78° E" to 15° N 78° E" to read
"From 05° N 77° E to 15° N 77° E".

4th line, amend : "15° N 78° E" to read "15° N 77° E".

Page 14. List of Coordinates

1st line, amend : " 32° N 124° E " to read " 33° N 133° E",

2nd line, amend : "From 32° N 124° E to 24° N 88° E" to read

"From 33° N 133° E to 35° N 132° E,

Between the 2nd and 3rd line insert : "From 35° N 132° E
to 24° N 88° E".

Page 16. Amend: "(Tranmania)" to read "(Tasmania)"

Page 18. Amend: "Barranquilla" to read "Baranquilla",

"Antifogosta" to read "Antofagasta",

On the bottom of the list add: "Santiago (Chile)".

Page 20. Between "Manila (Philippines)" and "Shangai (China)" insert

"Hong-Kong (China)".

List of Coordinates

1st and 5th lines, amend : "18° N 155° W" to read "17° N 155° W".

Page 22. List of Coordinates

5th and 6th line , amend : "35° N 10° W" to read "34° N 12° W".

Page 24. List of Coordinates

7th and 8th line, amend : "42° N 16° E" to read "43° N 16° E",

8th and 9th line, amend : "37° N 07° E" to read "37° N 12° E".

24 July, 1948

COMMITTEE 6

GENEVA, 1948.

FINAL REPORT OF COMMITTEE 6c.

To: Chairman of Committee 6.

From: Chairman of Committee 6c.

Please find attached the final report of Committee 6c which is a summary of all items adopted by the Committee. Work was commenced by Committee 6c on the 10th June and completed on 13th July, 1948.

23 July, 1948

G.A.Harvey
(Union of South Africa)

Chairman 6c.

E

(42- 3-42)

GENEVA, 1948.

COMMITTEE 6

FINAL REPORT OF COMMITTEE 6C

1. Chairman: M. G.A. Harvey (Union of South Africa)

2. The following countries and organizations were in attendance during the majority of the meetings.

Argentina	Ireland
Australia	Netherlands
Bielorussia (S.S.R.)	Netherlands East Indies
Bulgaria	New Zealand
Canada	Union of South Afrika
Chile	United Kingdom
China	U.S.A. and U.S.A. Territories
Columbia (Republic of)	U.S.S.R.
Cuba	Yugoslavia
France	I.C.A.O.
French Protectorate of Tunisia and Morocco	I.A.T.A.

3! The terms of reference as determined by Committee 6 were:

3.1) A working group 6C to be set up immediately to determine major World Air Route Areas. The Flight Information Tables and associated map shall be used for this purpose.

3.2.) The definitions follow:

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

3.2.2) Major World Air Route Area may therefore be defined as the area embracing a group of individual Major World Air Routes which generally follow the same traffic pattern and so related geographically that the same frequency families may logically be applied.

3.3) The definitions set out in para. 3.2 should be reviewed in the light of experience gained by working group 6C in carrying out their task, incorporating such modifications or changes as may be necessary for further processing by 6A.

3.4) When this information has been compiled the working group should:

3.4.1.) Use the propagation data available to determine the order of frequencies required to meet the communication requirements of the longest non-stop flight within each Major World Air Route Area.

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- 3.4.2.) Use the Flight Information Tables and formula adopted to determine the loading on each segment of the Major World Air Routes included in the Area, and the number of frequencies of each order required.
- 3.4.3.) Utilize agreed protection ratios and propagation data to plan the repetition of frequencies between Major World Air Route Areas so as to ensure that aircraft traversing several Major World Air Route Areas may operate on a minimum number of frequencies.

4. Annexe 1: Contains the definition of the Major World Air Route Areas as finally approved by Committee 6C. A world map giving a pictorial display of these areas is included. Qualifying notes submitted by the Soviet delegation have been attached to the definition of the European Area and the North Pacific. It should be added here that no improvement could be effected on the definitions quoted in paras 3.2.1. and 3.2.2.
5. Annexe 2: Contains the information pertaining to the orders of frequencies required and the numbers of each order for each of the Major World Air Route Areas.
6. Annexe 3: Contains the frequency list with the sharing plan for the Major World Air Route Frequencies based on protection ratio of 25 db and night-time interference ranges for 3.0, 3.5, 4.7, 5.6 and 6.6 Mc/s. Day time interference ranges for 9.0, 10.0 and 11.3 Mc/s time sharing for 13.3 and 18.0 Mc/s.
7. Annexe 4: Contains the revision necessary to the Flight information Tables brought about by careful scrutiny during the committees work. The revision is due to:
- 7.1) Flights which are considered to the regional rather than Major World.
- 7.2) Additional information submitted by delegates up to 5.0 p.m. 25th June 1948 on projected services to be operating within 3 months.
8. Annexe 5: Contains propagation data used by the propagation working group of 6C and the detailed information pertaining to Major World Air Routes embodied in each Major World Air Route Area.
9. Documents recording the activities of the Committee are:
- | | |
|------------------------------|----------------|
| 3rd meeting | Aer-Doc.No.132 |
| 4th " | Aer-Doc.No.143 |
| 5th " | Aer-Doc.No.144 |
| 6th " | Aer-Doc.No.152 |
| 7th " | Aer-Doc.No.170 |
| 8th " | Aer-Doc.No.180 |
| Report of Working Group 6C2. | Aer-Doc.No.145 |

Note:

No record was kept of the 1st, 2nd and 3rd meetings, as it was found unnecessary.

10.

Resolutions passed by the Committee are:

10.1) Aer.Doc.No.132. A small working group composed of the Delegates of Canada, United States and Belorussia; to be responsible for the preparation in the form of practical tables, the technical data furnished by Aer-Doc.No.116 giving frequency orders against distance for various latitudes and ionosphere zones. Working group to be known as 6CI.

10.2) Aer.Doc.No.143 A small working group 6C2 be created comprising of delegates from United Kingdom, France, Netherlands East Indies, I.C.A.O. and I.A.I.A. and to have the following terms of reference:

10.2.1.) Prepare a statement of operational requirements for long distance communication to provide operational control and terminal flight information.

10.2.2.) Prepare a statement in connection with the higher order of frequencies to be used on the Major World Air Routes with particular reference to the 22 Mc/s band.

10.3) Aer.Doc.No.144. The following resolution was proposed by the United States delegation and seconded by the Netherlands. The resolution was passed unanimously with following abstentions: Yugoslavia, Albania, Belorussia and the U.S.S.R.:

10.3.1.)

Working groups to define the geographical limits of the Major World Air Route Areas.

10.3.2.) That a Major World Air Route Area be established for Europe .

10.3.3.) That frequencies be allotted to the European Major World Air Route Area on the same basis as for other areas.

10.3.4.) That for loading purposes aircraft operations in adjoining areas extending into the European area will be charged to the adjoining area to the point of first landing in the European area. Loading will be applied to the European area from the points of first landing within that area to any point within the European area.

10.3.5.) In establishing the boundaries of the maps World Air Route areas the areas of authorized frequency utilization be developed to the extent operationally required.

10.3.6. The extent of the overlap to be kept as small as possible consistent with operational requirements, so that the necessity for protection of the frequency in the area will not destroy the possibility of duplication elsewhere in the world.

10.4. Aer.-Doc.152. The Delegation of the United States proposed the following resolution which was seconded by the Delegate of France.

10.4.1. "That we accept the boundaries as now outlined on the Globe except that to the European frequency protection areas now provided for Major World Air Routes entering Europe, we add Copenhagen, Oslo and Stockholm. "

10.4.2. The boundaries of the various Major World Air Route Areas may be extended by means of regional agreements to the extent that these modifications do not interfere with the possibilities of frequency repetition as derived from the initial boundaries.

10.5. Aer-Doc.180. The Delegate of the United Kingdom introduced a proposal for long distance communication on 22 Mc/s which was seconded by the Delegate of the United States. This was accepted with six abstentions on a provisional basis subject to later observations by the Delegate of Bielorussia.

"Whereas a requirement exists for long distance communication between aircraft and their terminal locations in certain areas, for the carrying out of operational control and for obtaining terminal flight information.

And whereas in certain areas the existing Aeronautical fixed service is inadequate and cannot at present meet the operational requirement.

It is recommended that two adjacent channels in the 22 Mc/s bands each of bandwidth of 12 Kc/s be made available and afford worldwide protection for use by those administrations requiring such facilities."

11.0. In conclusion, it should be stated that the airline operators requirement for the amount of airborne radio equipment to be kept to a minimum was constantly in mind when making any decisions regarding frequency allotment and definitions of Major World Air Route Areas.

ANNEX 1 TO FINAL REPORT OF COMMITTEE 6 C

Major World Air Route Area - "EU" EUROPE

The geographic description of this area is generally defined by the following locations :

Cairo	(Egypt)
Lydda	(Palestine)
Ankara	(Turkey)
Istanbul	(Turkey)
Warsaw	(Poland)
Helsinki	(Finland)
Hammerfest	(Norway)
Shannon	(Ireland)
Lisbon	(Portugal)
Tangier	
Tripoli	(Libya)
Casablanca	(French Protectorate of Morocco)

Addendum to description of European Area - Submitted by Soviet Delegation.

" The eastern boundary of the European area of major world air routes is drawn along the longitude of 30° E only for convenience of rendering. The actual eastern boundary of the European area of major world air routes follows the western state boundary of the U.S.S.R. and it is consequently understood that no part of the territory of the U.S.S.R. enters the European area of Major World Air Routes."

"E.U"

The precise boundaries of this area are defined by lines drawn on a great circle path between the coordinates of latitude and longitude as follows:

From 34° N 12° W	to	32° N 13° E
From 32° N 13° E	to	29° N 35 1/2° E
From 29° N 35 1/2° E	to	40° N 34° E
From 40° N 34° E	to	42° N 30° E
From 42° N 30° E	to	72° N 30° E
From 72° N 30° E	to	70° N 0° Longitude
From 70° N 0°	to	54° N 12° W
From 54° N 12° W	to	34° N 12° W

Major World Air Route Area "EU" route segments and accompanying segment peak traffic loadings are listed in Table I, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "NP" NORTH PACIFIC

The geographical description of this area is generally defined by the following locations:

Seattle	(U.S.A.)
Amchitka	(Aleutian Islands)
Tokyo	(Japan)
Anchorage	(Alaska)
Edmonton	(Canada)
Vancouver	(Canada)
Seattle	(U.S.A.)

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 46° N 122° W	to	50° N 170° W
From 50° N 170° W	to	33° N 138° E
From 33° N 138° E	to	38° N 138° E
From 38° N 138° E	to	55° N 110° W
From 55° N 110° W	to	46° N 122° W

Major World Air Route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Forms.

Addendum to description of North Pacific Area - Submitted by Soviet Delegation

"The foregoing description of the boundaries of the North Pacific Area of major world air routes is simplified. The actual boundaries of this area should nowhere cut the state boundaries of the U.S.S.R. and it is consequently understood that no part of the territory of the U.S.S.R. enters the North Pacific Area of Major World Air Routes."

The geographic description of this area is generally defined by the following locations :

Santiago	(Chile)
Buenos Aires	(Argentina)
Montevideo	(Uruguay)
Sao Paulo)	
Rio de Janeiro)	
Recife)	(Brazil)
Natal)	
Dakar)	
Port Etienne)	(French West Africa)
Villa Cisneros	(Rio de Oro)
Geneva	(Switzerland)
Frankfort	(Germany)
Stockholm	(Sweden)
Oslo	(Norway)
Gloucester	(England)
Lisbon	(Portugal)
Canary Islands	
Fort de France	(Martinique)
Natal	(Brazil)
Santiago	(Chili)

"SA"

The precise boundaries of this area are defined by lines drawn on a great circle path between co-ordinates of Latitude and Longitude as follows :

From	34° S	74° W	to	36° S	52° W
From	36° S	52° W	to	13° N	15° W
From	13° N	15° W	to	50° N	15° E
From	50° N	15° E	to	60° N	20° E
From	60° N	20° E	to	61° N	05° E
From	61° N	05° E	to	47° N	17° W
From	47° N	17° W	to	25° N	25° W
From	25° N	25° W	to	15° N	63° W
From	15° N	63° W	to	06° S	36° W
From	06° S	36° W	to	34° S	74° W

Major World Air Route Area "SA" route segments and accompanying segment peak traffic loadings are listed on Table 1, Frequency Allotment Forms.

Major World Air Route Area - "NSAM-2"

"NORTH SOUTH AMERICA - 2"

The geographic description of this area is generally defined by the following locations:

Santiago	(Chile)
Buenos Aires	(Argentina)
Montevideo	(Uruguay)
Rio de Janeiro) Belem) Recife) Natal)	(Brazil)
Paramaribo	(Surinam)
Port of Spain	(Trinidad)
Bermuda Islands	
Montreal	(Canada)
New York) Washington) Miami)	(U.S.A.)
Havana	(Cuba)
Bogota) Cali) Leticia)	(Colombia)
Cuyaba	(Brazil)
Santiago	(Chile)

"NSAM - 2" (2)

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 36° S 73° W	to	36° S 52° W
From 36° S 52° W	to	05° S 30° W
From 05° S 30° W	to	10° N 60° W
From 10° N 60° W	to	34° N 60° W
From 34° N 60° W	to	48° N 75° W
From 48° N 75° W	to	40° N 78° W
From 40° N 78° W	to	23° N 86° W
From 23° N 86° W	to	02° N 79° W
From 02° N 79° W	to	20° S 50° W
From 20° S 50° W	to	36° S 73° W

Major World Air Route Area "NSAM-2" route segments and accompanying segment peak traffic loadings are listed on Table I, Frequency Allotment Forms.

Major World Air Route Area "FE-1" "FAR EAST 1"

The geographic description of this area is generally defined as follows;

Melbourne	(Australia)
Batavia	(Netherlands East Indies)
Colombo	(Ceylon)
Madras	(India)
Calcutta	(India)
Kuching	(Sarawak)
Darwin	(Australia)
Townsville	
Sydney	
Melbourne	

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 40° S 145° E	to	10° S 106° E
From 10° S 106° E	to	05° N 78° E
From 05° N 78° E	to	15° N 70° E
From 15° N 78° E	to	24° N 92° E
From 24° N 92° E	to	10° N 105° E
From 10° N 105° E	to	23° S 153° E
From 23° S 153° E	to	40° S 153° E
From 40° S 153° E	to	40° S 145° E

Major World Air Route segments and segments peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "FE-2" FAR EAST 2

The geographic description of this area is generally defined by the following locations:

Manila	(Philippines)
Shanghai)	
Kunming)	(China)
Calcutta	(India)
Singapore	
Batavia	(Netherlands East Indies)
Darwin	(Australia)
Nauru Island	
Beak	(New Guinea)
Manila	(Philippines)

FE - 2

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 12° N 124° E	to	32° N 124° E
From 32° N 124° E	to	24° N 88° E
From 24° N 88° E	to	08° S 105° E
From 08° S 105° E	to	15° S 130° E
From 15° S 130° E	to	15° S 158° E
From 15° S 158° E	to	00° 168° E
From 00° 168° E	to	00° 135° E
From 00° 135° E	to	12° N 124° E

Major World Air Route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "CEP"

CENTRAL EAST PACIFIC

The geographic description of this area is generally defined by the following locations :

San Diego	(U.S.A.)
Hilo	(Territory of Hawai')
Honolulu	(Territory of Hawai')
Vancouver	(Canada)
Seattle)
San Francisco)
Los Angeles) (U.S.A.)
San Diego)

The precise boundaries of this area defined by lines drawn on a great circle path ~~between co-ordinates of Latitude and Longitude~~ as follows :

From 32° N 117° W	to	16° N 159° W
From 16° N 159° W	to	22° N 159° W
From 22° N 159° W	to	50° N 122° W
From 50° N 122° W	to	38° N 120° W
From 38° N 120° W	to	32° N 117° W

Major World Air Route segments and segments peak traffic loadings are listed in the accompanying Table 1, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "SP"

(SOUTH PACIFIC)

The geographic description of this area is generally defined
by the following locations :

Honolulu	(Territory of Hawai')
Tahiti	(Society Islands)
Chatham Islands	
Auckland)	
Wellington)	(New Zealand)
Hobart	(Tranmania)
Melbourne)	
Sydney)	(Australia)
Brisbane)	
Nauru Island	
Honolulu	(Territory of Hawai')

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"SP"

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 22° N 158° W	to 20° S 145° W
From 20° S 145° W	to 50° S 170° W
From 50° S 170° W	to 50° S 145° E
From 50° S 145° E	to 38° S 145° E
From 38° S 145° E	to 28° S 152° E
From 28° S 152° E	to 0° 167° E
From 0° 167° E	to 0° 175° W
From 0° 175° W	to 22° N 158° W

Major World Air Route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Form.

Major World Air Route Area "NSAM"-1"

NORTH SOUTH AMERICA 1

The geographic description of this area is generally defined by the following locations:

Santiago	(Chile)
Galapagos Islands	
San Francisco)	
El Paso)	(U.S.A.)
Miami)	
Mexico City	(Mexico)
Havana	(Cuba)
Kingston	(Jamaica)
Panama	
Cali)	
Barranquilla)	(Colombia)
Benjamin Constant	(Brazil)
Antifogosta	(Chile)
Tucuman)	
Buenos Aires)	(Argentina)

"NSAM-1"

The precise boundaries of this area defined by lines drawn on a great circle path between co-ordinates of Latitude and Longitude as follows:

From 36° S 73° W	to	36° S 52° W
From 36° S 52° W	to	26° S 63° W
From 26° S 63° W	to	05° S 63° W
From 05° S 63° W	to	05° N 75° W
From 05° N 75° W	to	27° N 75° W
From 27° N 75° W	to	35° N 107° W
From 35° N 107° W	to	40° N 128° W
From 40° N 128° W	to	20° N 114° W
From 20° N 114° W	to	00° 93° W
From 00° 93° W	to	36° S 73° W

Major World Air Route Area "NSAM-1" route segments and accompanying segment peak traffic loadings are listed on Table 1, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "CWP"

CENTRAL WEST PACIFIC

The geographic description of this area is generally defined by the following locations :

Hilo	(Territory of Hawai')
Manila	(Philippines)
Shanghai)	
Tientsin)	(China)
Tokyo	(Japan)
Honolulu	(Territory of Hawai')

The precise boundaries of this area are defined by lines drawn between coordinates of Latitude and Longitude as follows :

From 18° N 155° W	to	10° N 160° E
From 10° N 160° E	to	10° N 117° E
From 10° N 117° E	to	40° N 117° E
From 40° N 117° E	to	25° N 155° W
From 25° N 155° W	to	18° N 155° W

Major world air route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Forms.

Major World Air Route Area - "NA" NORTH ATLANTIC

The geographic description of this area is generally defined by the following locations:

Washington, D.C.	(U.S.A.)
Montreal	(Canada)
Goose Bay	(Labrador)
Reykjavik	(Iceland)
Oslo	(Norway)
Copenhagen	(Denmark)
Brussels	(Belgium)
Paris	(France)
Lisbon	(Portugal)
Azores Islands	
Bermuda	
Cuba	
Jamaica	
Miami)	
Washington)	(U.S.A.)

"NA"

The precise boundaries of this area are defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows:

From 39° N 78° W	to	47° N 75° W
From 47° N 75° W	to	68° N 20° W
From 68° N 20° W	to	60° N 20° E
From 60° N 20° E	to	45° N 10° E
From 45° N 10° E	to	35° N 10° W
From 35° N 10° W	to	35° N 25° W
From 35° N 25° W	to	30° N 62° W
From 30° N 62° W	to	16° N 78° W
From 16° N 78° W	to	21° N 86° W
From 21° N 86° W	to	39° N 78° W

Major World Air Route Area "NA" route segments and accompanying segment peak traffic loadings are listed on Table 1, Frequency Allotment Forms.

MAJOR WORLD AIR ROUTE AREA "NSA-1"

NORTH SOUTH AFRICA-1

The geographic description of this area is generally defined by the following locations:

Durban	(Africa)
Kimberly	(Africa)
Cape Verde Islands	
Lisbon	(Portugal)
Gloucester	(England)
Oslo	(Norway)
Copenhagen	(Denmark)
Stockholm	(Sweden)
Paris	(France)
Geneva	(Switzerland)
Rome	(Italy)
Algiers	(Africa)
Stanleyville	
Elizabethville	
Beira	
Durban	

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" N S A - 1 "

From 31° S 35° E	to	31° S 24° E
From 31° S 24° E	to	16° N 26° W
From 16° N 26° W	to	40° N 12° W
From 40° N 12° W	to	52° N 06° W
From 52° N 06° W	to	60° N 10° E
From 60° N 10° E	to	60° N 20° E
From 60° N 20° E	to	42° N 16° E
From 42° N 16° E	to	37° N 07° E
From 37° N 07° E	to	00° 28° E
From 00° 28° E	to	11° S 28° E
From 11° S 28° E	to	20° S 35° E
From 20° S 35° E	to	31° S 35° E

MAJOR WORLD AIR ROUTE AREA "ME" MIDDLE EAST

The geographic description of this area is generally defined
by the following locations :

Colombo	(Ceylon)
Bombay	(India)
Cairo	(Egypt)
Lisbon	(Portugal)
Gloucester	(England)
Oslo	(Norway)
Copenhagen	(Denmark)
Stockholm	(Sweden)
Frankfurt	(Germany)
Amsterdam	(Holland)
Paris	(France)
Rome	(Italy)
Teheran	(Persia)
Calcutta	(India)
Madras	(India)
Colombo	(Ceylon)

"ME"

The precise boundaries of this area is defined by lines drawn on a great circle path between coordinates of Latitude and Longitude as follows :

From 05° N 80° E	to	17° N 70° E
From 17° N 70° E	to	28° N 30° E
From 28° N 30° E	to	37° N 10° W
From 37° N 10° W	to	60° N 10° W
From 60° N 10° W	to	60° N 20° E
From 60° N 20° E	to	40° N 14° E
From 40° N 14° E	to	37° N 51° E
From 37° N 51° E	to	24° N 93° E
From 24° N 93° E	to	05° N 80° E

Major World Air Route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment forms.

MAJOR WORLD AIR ROUTE AREA "NSA-2. NORTH SOUTH AFRICA - 2

The geographic description of this area is generally defined by the following locations:

Durban	(Africa)
Mauritius Island	
Borabora	(Africa)
Cairo	(Africa)
Rome	(Italy)
Stockholm	(Sweden)
Copenhagen	(Denmark)
Oslo	(Norway)
Gloucester	(England)
Paris	(France)
Geneva	(Switzerland)
Tunis))))) (Africa)
Lake Victoria	
Elisabethville	
Durban	

" NSA - 2 "

The precise boundaries of this area are defined by lines drawn on a great circle path between co-ordinates of Latitude and Longitude as follows:

From 30° S 34° E	to	22° S 60° E
From 22° S 60° E	to	10° N 52° E
From 10° N 52° E	to	30° N 35° E
From 30° N 35° E	to	42° N 16° E
From 42° N 16° E	to	60° N 20° E
From 60° N 20° E	to	60° N 10° W
From 60° N 10° W	to	37° N 07° E
From 37° N 07° E	to	00° 28° E
From 00° 28° E	to	11° S 28° E
From 11° S 28° E	to	20° S 24° E
From 20° S 24° E	to	30° S 24° E
From 30° S 24° E	to	30° S 34° E

Major World Air Route segments and segment peak traffic loadings are as listed in the accompanying Table 1, Frequency Allotment Forms.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948

Annexes 2 & 3
Aer-Document No. 198 - E

C O R R I G E N D U M

The following sheets replace page 3 of the document :

Annexes 2 & 3
Aer-Document No. 198 - E

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TOTAL CHANNELS	17 9.0 Mc	10 10.0 Mc	13 11.3 Mc	10 13.3 Mc	7 18.0 Mc
8820 EU-CEP		10012 CEP-ME	11280.5 NSAM-2	13264.5 NA-FE2	17906.5 SA-NSAM2 NA-NSAM-1
8828.5		10021	11290	13274.5	17916.5
8837 SA-FE2		10030	11299.5	13284.5 NSAM-1-NSA2	
					17926.5 NP-CEP- CWP-SP
8845.5 EU-CEP		10039 CEP-SA	11309 NSAM2	13294.5 NA-CWP	17936.5 EU-NSA-1 NSA-2
		10048	11318.5	13304.5 NSA1-CEP	17946.5 -
8854		10057	11328	13314.5 NP-EU	17956.5 -
8862.5 NA		10066	11337.5 EU-CEP	13324.5 NA-CEP	17966.5 ME-FE1- FE2
8871 ME-SP		10075	11347	13334.5 SA-SP	
8879.5		20084	11356.5 CEP	13344.5 ME-NSAM2	
8888 NA-FE1		10093	11366	13354.5 NA-FE1	
8896.5 SA			11375.5		
8905			11385		
8913.5 NA-FE1			11394.5		
8922 NSAM-1-NSA2					
8930.5					
8939 NA-CWP					
8947.5 NSA-1-NP					
8956					
MWARA	11	2	4	9	4
REGIONS	6	8	9	1	3

NOTE: SHARING BASED ON

- 1) NIGHT TIME INTERFERENCE RANGES
FOR 3.0 3.5 4.7 5.6 6.6 mcs
- 2) DAY TIME INTERFERENCE RANGES
FOR 9, 10 & 11.3 mcs
- 3) TIME DIFFERENCE (APPROX 180° of LONGITUDE)
FOR 13.3 & 18 mcs.

Annex 2 to Final Report
of Committee 6 C

Families and orders of frequencies for Major World Air Route Areas:

AREA REGION	FREQUENCY ORDER ALLOTMENT ASSIGNATION PAR ORDRE DE FREQUENCES										MAJOR WORLD AIR ROUTE AREAS ZONES DE PASSAGE DES ROUTES AERIENNES MONDIALES PRINCIPALES AREAS DE GRANDES RUTAS MUNDIALES
AREA	ASIGNACION POR ORDEN DE FRECUENCIAS										
FREQUENCY FREQUENCE FRECUENCIAS	3.0	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	
Channels available Voies disponibles Canales disponibles	24	14	7	26	21	17	11	13	10	7	
South Pacific	1			1		1			1	1	
North Pacific	1			1		1			1	1	
Central East Pacific		4		2	2	2	2	2	2	1	
Central West Pacific	1			1		1			1	1	
Far East 1	2			2		2			1	1	
Far East 2	1			1		1			1	1	
Middle East	2			1	1	1	1		1	1	
N.S. Africa 2	1			1		1			1	1	
N.S. Africa 1		1		1		1			1	1	
Europe	2	2	2	1	2	2		1	1	1	
North Atlantic	4			4		4			4	1	
South Atlantic	1	1			3	2	1		1	1	
North South America 2	2	1		2				2	1	1	
North South America 1	1		1		1	1			1	1	

Annex 3 to Final Report
of Committee 6 C

Frequency allotment plan indicating sharing between Major World Air Route Areas:

TOTAL CHANNELS	24 3.0 Mc	14 3.5 Mc	7 4.7 Mc	26 5.6 Mc	21 6.6 Mc
2854 EU-FE1	3404.5 EU-CEP	4654.5 EU	5484 NSAM-2-FE1	6529.5 ME-NSAM-1	
2861	3411.5	4661.5	5491.5	6537	
2868	3418.5	4668.5	5499	6544.5	
2875 EU-FE1	3425.5 EU-CEP	4675.5 EU	5506.5 EU-FE1	6552 EU-CEP	
2882	3432	4682	5514	6559.5	
2889 NA-SP	3439.5	4689.5	5521.5 CEP-NA	6567	
2896 NSAM-2 ME	3446.5 CEP-NSA-1	4696.5 NSAM-1	5529	6574.5 SA-CEP	
2903	3453.5		5536.5 CEP-NSA-1	6582	
2910	3460.5			6589.5	
2917 NA	3467.5 CEP-SA		5544	6597 SA	
2924	3474.5		5551.5 ME-NSAM2		
2931	3481.5		5559	6604.5	
2938 NA-CWP	3488.5 NSAM-2		5566.5	6612	
2945	3495.5		5574 NSA-2-SP	6619.5 SA	
2952			5581.5	6627	
2959 NSAM-1-NSA-2			5589	6634.5	
2966			5596.5 NA-CWP	6642 NSAM-2	
2973			5604	6649.5	
2980 ME-NSAM-2			5611.5	6657	
2987			5619	6664.5 EU	
2994			5626.5	6672	
3001 SA-FE2			5634	6679.5	
3008			5641.5 NA-NP		
3015			5649		
			5656.5		
			5664 NA-FE2		
			5671.5		
MWARA	10	5	3	9	7
REGIONS	14	9	4	17	14

TOTAL CHANNELS	17 9.0 Mc	10 10.0 Mc	13 11.3 Mc	10 13.3 Mc	7 18.0 Mc
8820 EU-CEP		10012 CEP-ME	11280.5 NSAM-2	13264.5 NA-FE2	17906.5 SA-NSAM2 NS-NSAM-1
8828.5		10021	11290	13274.5	17916.5
8837 SA-FE2		10030	11299.5	13284.5 NSAM-1-NSA2	
					17926.5 NP-CEP- CWP-SP
8845.5 EU-CEP		10039 CEP-SA	11309 NSAM2	13294.5 NA-CWP	17936.5 EU-NSA-1 NSA-2
		10048	11318.5	13304.5 NSA1-CEP	17947.5
8854		10057	11328	13314.5 NP-EU	1796.5
8862.5 NA		10066	11337.5 EU-CEP	13324.5 NA-CEP	17966.5 ME-FE1- FE2
8871 ME-SP		10075	11347	13334.5 SA-SP	
8879.5		20084	11356.5 CEP	13344.5 ME-NSAM2	
8888 NA-FE1		10093	11366	13354.5 NA-FE1	
8896.5 SA			11375.5		
8905			11385		
8913.5 NA-FE1			11394.5		
8922 NSAM-1-NSA2					
8930.5					
8939 NA-CWP					
8947.5 NSA-1-NP					
8956					
MWARA	11	2	4	9	4
REGIONS	6	8	9	1	3

NOTE: SHARING BASED ON

- 1) NIGHT TIME INTERFERENCE RANGES
FOR 3.0 3.5 4.7 5.6 6.6 mcs
- 2) DAY TIME INTERFERENCE RANGES
FOR 9, 10 & 11.3 mcs
- 3) TIME DIFFERENCE (APPROX 180° of LONGITUDE)
FOR 13.3 & 18 mcs.

ANNEX 4 TO THE FINAL REPORT COMMITTEE 6 C

1) Revision of Flights Tables. Table No.1

The following routes have undergone transfer in whole or part from the classification of Major World Air Routes and must now be considered as Regional traffic. They are listed by Index Numbers with associated remarks where necessary.

1, 2, 3, 4, 5, 6, 7, 8, 9, 14, 18, 19, 20, 21, 23, 24, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, (add one France under column 6), 46, 48 (add ten France under column 6) 49, 51, (under column four transfer 20 of the 26 Air-France flights to Regional traffic and amend TAI flights to total four ² Regional, 2 Major World). This gives a figure of 8 in column 5 instead of 29. In column 6 of the 14 French flights transfer 8 to Regional traffic), 52, 54, 55, 56, 57, 58, 59, 60, 61, 63, 64, 65, 66, 67, 68, 70, 71, 73, 74, 75, 77, 78, 79, 80, 81, 82, 83, (under column 4 transfer 6 flights of KLM to Regional, making the figure under column 5 now 18), 87, 91, 92, 94, 95, 96, 97, 98, 99, 101, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 122, 123, 124, 125, 126, 127, 128, 129, (under column 4 transfer Air-France-1, CSA-2 and KLM-4 to Regional traffic, amending under column 5 figure 25 to 18) 130, 131, 132 (under column 4 transfer CSA-2 to Regional traffic, amending the figure 4 under column 5 to 2) 141, 142, 143, 144, 145, 146, 147, 148, 149, 151, 152, 155, 156, 157, 158, 161, 164, 166, 167, 170, 171, 172, 173, 174, 175, 181, 184, 185, 186, 187, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203 (under column 4 transfer PAA-14 to Regional traffic, making under column 5, 2 instead of 16 flights) 205, 206, 207, 208, 209, 210, 211, 212, 215, 216, 217, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 234, 235, 236, 237, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, (add 1 French under column 6), 276, 277, 278, 281, 282, 285, 287, 288, (under column 4 transfer BEA-22 to Regional traffic. Amend 26 to 4 under column 5) 289, 292, 293, 294, 299, 300, 301, 304, 305, 308, 310, 311, 312, 313, 314, 315 (increase SABENA to 4 and transfer 2 of these to Regional traffic, leaving 2 under column 5), 316, 317, 318, 319, 320, 321, 323, 324, 325, 326, 327, 328, 331, 332, 333, 334, 335, 336, 337, 338, 339, (transfer ALFA-20, CAUS A-18 under 14 of PAA-32 to Regional traffic. Amend IBERIA-4 to 2. The figure 90 now becomes 36 under column 5) 340, (amend ALFA-10 to 6 under column 4 and 10 to 6 under column 5), 341, 342, (under column 4 CRUZEIRO-4 and 4 of FAMA-10 go to Regional traffic and add to column 4 ALI-1. Under column 5 alter 18 to 11), 343 (under column 4 FAMA-14 and LAN-14 are transferred to Regional traffic. Under column 5 alter 44 to 16) 345, 347, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358 (under column 4 alter SYRIAN-7 to 3, making 11 instead of 15 under column 5) 360, 361, 362, (add SEOUDIAN-1 to column 4 making 5 instead of 4 in column 5) 368 (under column 4 transfer MISR-4 to Regional traffic making 4 instead of 8 under column 5) 369, 370, (under column 4 SABENA-1 and Air-France-1 go to Regional traffic. Add ALI-2 making 10 instead of 12 in column 5) 374, 375, 376, (amend TAA-4 to 6, making 26 instead of 24 in column 5) 382, 283, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 398, 399, 400, 401, (under column 4 KLM-24 and two of PAA-30 are transferred to Regional traffic. This reduces 54 to 2 under column 5) 403, 404, 405, (under column 4 Air-France-1 and BSAA-2 are transferred to Regional traffic. This reduces 5 to 2 under column 5) 407, 408, 409, 410, (add 1 French to column 6) 411, (transfer 14 of Air-France-24 and 1 of TAI-2 to Regional traffic, reducing 26 to 11 under column 5) 412, 414, 416, 417, 418, (under column 4 reduce PAA-6 to 4, and transfer Air-France-1 to Regional traffic, reducing figure 7 to 4 in column 5), 419 (under column 4 transfer KLM-4, and 27 of PAA-29 to Regional

traffic, reducing 33 to 2 in column 5); 420, 422, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 438, 439, 440, 442, 443, 444, 445, 446, 447, 448, 450, 451, 452, 454, 455, 456, 457, 458 (under column 4 Airways-2 is transferred to Regional traffic, reducing 12 to 10 in column 5); 461, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 478, 479, 480, 481, 482, 483, 484, 489, 490, 493, 494, 495, 498, 499, 505, 506, 508, 509, 510, 511, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 533, 534, 536, 537, 539, 540, 541, 542, 543, 544, 545, 546, 548, 549, 550, 551, 552, 553, 555, 557, 558, 559 (under column 4 transfer CSA-2 and BEA-10 to Regional traffic, reducing 26 to 14 in column 5); 561, 562, 563, 565, 566, 567, 572, 573, 574, 575, 576, 577, 578, 580, 581, 582, 583, 584 (in column 4 transfer Air-France-14 and Swissair-14 to the Regional traffic and reduce 44 to 16 in column 5); 585 (in column 4 transfer KLM-6 and SAS-1 to Regional traffic and reduce 25 to 18 in column 5); 588, 589 (in column 4, transfer BIA-6 to Regional traffic and amend PAA-6 to PAA-4, this reduces 12 to 4 in column 5); 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 609 (transfer 6 of PAA-20 to Regional traffic and reduce 20 to 14 in column 5); 610 (transfer 21 of PAA-28, TACA-1, Salvador-14 to Regional traffic, reducing 42 to 7 in column 5); 611, 612, 614, 615, 616, 617, 618, 619, 620, 622, 625, 626, 628, 629, 630, 632, 633, 634, 638, 640, 641, 642, 643, 644, 645 (transfer Clanways-2 to Regional traffic and reduce 4 to 2 in column 5); 646, 647, 648 (transfer Aerog-24, BEA-2 and SAS-18 to Regional traffic, reducing 50 to 6 in column 5); 649, 650, 651, 652, 658, 660, 665, 666, 668, 669, 670, 671, 672, 676, 677, 678, 681, 682, 683, 686, 688 (transfer 4 of BOAC-6 and SAA-4 to Regional traffic; reduce 10 to 2 in column 5); 693, 694, 695, 696, 697, 698, 703, 704, 706, 708, 709, 710, 711, 712, 713, 714, 715, 716, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 741, 742, 743, 744, 745, 746, 747 (DTA-2 transfer to Regional traffic, reducing 3 to 1 in column 5); 748 (transfer SABENA-4 to Regional traffic, reducing 5 to 1 in column 5); 750, 751, 752, 753, 754, 755, 759, 765, 766, 767, 769, 773, 774 (transfer Air-France-56, BEA-84 to Regional traffic, reducing 144 to 4 in column 5); 775 (transfer BEA-14, CSA-14 to Regional traffic, reducing 29 to 1 in column 5); 777, 779 (transfer ALI-6 to Regional traffic, reducing 80 to 74 in column 5); 780, 783, 788, 789, 791 (transfer MEA-6 and MISR-4 to Regional traffic, reducing 12 to 2 in column 5); 792, 798 (transfer IBERIA-2 and add ALI-1 and transfer this to Regional traffic, reducing 10 to 8 in column 5); 799, 801, 802, 803, 804, 808, 809, 810, 811 (transfer BEA-20 and MEA-2 to Regional traffic, reducing 24 to 2 in column 5); 813, 814, 815, 816, 817, 818, 820, 821, 823, 824, 826, 827, 828, 829, 830, 833 (transfer Eastern-14 to Regional traffic and increase PAA-14 to 16, reducing figure of 28 to 16 in column 5); 835, 836, 837, 838, 840, 847, 848, 850, 851, 852, 853, 854, 855, 856, 857, 858, 860, 861, 862, 868, 869, 870, 874, 875, 876, 877, 878, 879, 883, 884, 886, 887, 888, 889, 890, 891, 892, 895, 896 (transfer SAS-20 to Regional traffic and reduce 24 to 4 in column 5); 897, 898, 899, 900 (transfer Brasil-4 and Air-France-1 to Regional traffic, reducing 11 to 6 in column 5); 901, 903, 904 (transfer IRANAIR-2, Aviolinee-10, and 2 of Air-France-4 to Regional traffic, reducing 16 to 2 in column 5); 907, 908, 909, 910, 911, 912, 913, 914, 915, 919, 920 (transfer Cruzeiro-6, FAMA-6, 14 of PAA-18 and VARIG-6 to Regional traffic, reducing 36 to 4 in column 5); 922, 923, 925, 926, 927, 932, 933, 934, 935, 938, 940 (transfer Cruzeiro-6, FAMA-6, 10 of PAA-18, PAB-4, VARIG-6 to Regional traffic, reducing 42 to 10 in column 5); 941, 942, 943, 944, 945, 946, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 963, 965, 966, 967, 968, 969, 970, 973, 974, 975, 977, 978, 980, 981.

- 2) The following additions to Major World Air Routes were handed in before 5 p.m., June 25th, 1948. They are listed by means of supplementary Index Numbers.

- 3 -
Annex 4 to Aer-Doc.198-E

4 A	Abadan - Bahrein	-	BOAC	- 6
17 A	Addis-Abbaba-Cairo	-	EAL	- 2
88 A	Anchorage-Amchitka	-	Northwest	- 8
134 A	Actutaki - Samoa	-		
134 B	Actutaki - Ranotonga	-		
155 A	Baires-Lima	-		
182 A	Bangkok-Shanghai	-	KLM	- 1
218 A	Batavia-Balakpam	-	KLM	- 2
238 A	Belém - Laguara	-		
240 A	Belém - Natal			
315 A	Brussels - Athens			
329 A	Brussels - Tripoli			
339 A	Buenos-Aires - Natal			
370 A	Cairo - Teheran			
397 A	Canton Island - Samoa			
432 A	Christmas Island - Palmyra			
479 A	Curacao - Lima			
484 A	Dakar - Lagos		FAMA-2	
491 A	Damascus - Karachi		PAA-2	
536 A	El Paso - San Francisco			
538 A	Espirito Santo - Noumea		1 Non schedule	
571 A	Gander - Paris			
612 A	Guatemala - Guayaquil			
635 A	Hamilton - Havana			
635 B	Hamilton - Miami			
659 A	Honiara - Port Moresby			
662 A	Honolulu - Palmyra			
664 A	Honolulu - Wake Island	-	{ PAA 8, CNAC - 2	
			{ PAL - 4	
			{ Non schedule - 10	
675 A	Iwakuri-Shanghai	(BOAC - 2	
742 A	Laguayra - Natal			
746 A	Las Palmas - Natal			
746 B	Las Palmas - Madrid			
747 A	Leopoldville - Lagos	-	FAMA - 2	
757 A	Lima - Mexico City			
783 A	Lord Howe Island - Sydney			
808 A	Marqueta - Miami			
826 A	Mexico City - El Paso			
827 A	Mexico City - San Francisco			
829 A	Mexico - Miami			
835 A	Mogadiscio - Nairobi	-	BOAC - 2	
880 A	Norfold Island - Sydney			
898 A	Palermo - Tunis	-	SICULA - 2 (Regional traffic, (not Major World)	
917 A	Port Sudan - Wadi Halfa	-	BOAC - 2	
950 A	Samoa-Tongatapu	-	{ NCNAC - 1	
		(Non schedule - 1	

3) Alterations to Traffic Figures are as follows.

- 48 Include in column 6 - 10 (French)
- 153 In column 6 reduce 56 (UK) to 20 (UK)
- 154 In column 6 reduce 50 (UK) to 16 (UK)
- 170 In column 6 add 1 (French)
- 171 In column 6 add 2 (French)
- 172 In column 6 add 1 (French)
- 240 In column 4 increase PAA-12 to PAA-28, amend column 5
- 275 In column 6 add 1 (French)
- 279 In column 6 reduce 25 (UK) to 8 (UK)
- 283 In column 6 reduce 25 (UK) to 8 (UK)
- 364 In column 6 reduce 28 (UK) to 10 (UK) and alter figure outside of the brackets from 29 to 11
- 371 In column 6 reduce 84 (UK) to 30 (UK)
- 377 In column 6 reduce 25 (UK) to 8 (UK) and alter figure outside of the brackets from 27 to 10
- 379 In column 6 reduce 25 (UK) to 8 (UK)
- 406 In column 6 increase 2 (French) to 3 (French)
- 410 In column 6 add 1 French (Regional traffic)
- 441 In column 6 reduce 5 (UK) to 1 (UK)
- 569 In column 6 add 15 (Iceland)
- 574 In column 6 add 1 (French)
- 575 In column 6 add 1 (French)
- 604 Delete in toto
- 607 In column 6 delete 5 (US)
- 631 Delete in toto
- 657 In column 6 reduce 5 (UK) to 2 (UK)
- 667 Delete in toto
- 720 In column 6 alter 28 (UK) to 10 (UK) and amend figure outside brackets from 29 to 11
- 782 In column 6 reduce 84 (UK) to 31 (UK)
- 787 Delete in toto
- 876 In column 6 add 1 (French)
- 880 In column 6 add 1
- 880A In column 6 add 2
- 894 In column 6 add 2 (Iceland)
- 902 Delete in toto
- 917 Insert 1 in column 6
- 921 Delete in toto
- 928 In column 6 insert 11 (French)
- 936 In column 6 reduce 30 (UK) to 8 (UK)
- 961 In column 4 increase Northwest from 6 to 8 and add CNAC - 4, BOAC - 2, making a total of 14 in column 5
- 964 In column 4 delete QEA - 6 and reduce 12 to 6 in column 5
- 971 In column 4 reduce BCPA - 4 to 3, amend column 5 accordingly
- 972 In column 4 reduce NZNA-2 to 1 and insert 1 in column 6.

International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Corrigendum to Annex 5 to Aer-Document
N° 198-E
Corrigendum à l'Annexe 5 au document
Aér.N° 198-F
Corrigendum al Anexo 5 al Documento
Aer.N° 198-S

Page 6, against EU, in the 3 Mc/s column, replace 10.31 by 22.7

Page 6, en regard de EU, dans la colonne des 3 Mc/s,
remplacer 10.31 par 22.7

Página 6, frente a EU, en la columna de los 3 Mc/s,
sustituir 10.31 por 22.7

(12-12-44)



INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE

GENEVA, 1948

CONFERENCE INTERNATIONALE ADMINISTRATIVE
DES RADIOCOMMUNICATIONS AERONAUTIQUES

GENEVE, 1948

CONFERENCIA ADMINISTRATIVA INTERNACIONAL
RADIOCOMUNICACIONES AERONAUTICAS

GINEBRA, 1948

Annex 5 to Aer-Doc. No. 198-E

FINAL REPORT OF WORKING GROUP 6 C

Annexe 5 au Document Aér. No 198-F

RAPPORT FINAL DU GROUPE DE TRAVAIL 6 C

Annexo 5 al Documento Aer. núm. 198-S

INFORME FINAL DEL GRUPO DE TRABAJO 6 C

(44-22-43)



ZONE	LAT.	3 Mc/s	3.5 Mc/s	4.7 Mc/s	5.6 Mc/s	6.6 Mc/s	9 Mc/s	10 Mc/s	11.3 Mc/s	13.3 Mc/s	18 Mc/s
E	60 N	0-100			650		1400			2400	3200 ¹⁾
	60 N	0-100		0-500		900			2000		
	60 N	0-100		0-500		900		1700			
E	50 N	0-100			600		1250			2300	3100 ¹⁾
	50 N	0-100		0-400		750			1800		
	50 N	0-100		0-400		750		1500			
E	40 N	0-100 ²⁾			500		1200			2100	3000 ¹⁾
	40 N	0-100		0-400		700			1700		
	40 N	0-100		0-400		700		1400			
E	30 N	0-100			0-450		1050			1900	2600 ¹⁾
	30 N	0-100		0-300		600			1500		
	30 N	0-100			0-450			1250			
E	20 N	0-100			0-450		950			1700	2300 ¹⁾
	20 N	0-100		0-300		600			1300		
	20 N	0-100		0-300		600		1050			
E	10 N	0-100			0-400		900			1600	2300 ¹⁾
	10 N	0-100			0-400		900		1200		
	10 N	0-100		0-250		0-550		1050			
E	0	0-100			0-450		950			1700	2400 ¹⁾
	0	0-100			0-450		950		1350		
	0	0-100		0-300		0-550		1100			
E	10 S	0-100 ²⁾			0-400		900			1600	2250
	10 S	0-100			0-400		900		1250		
	10 S	0-100		0-250		0-550		1050			
E	20 S		0-100		0-400		900			1650	2300 ¹⁾
	20 S		0-100		0-400		900		1250		
	20 S		0-100			0-550		1050			
E	30 S		0-100		0-450		1050			1900	2600 ¹⁾
	30 S		0-100		0-450		1050		1500		
	30 S		0-100			0-600		1250			
E	40 S	0-100			0-500		1200			2100	3000 ¹⁾
	40 S	0-100			0-500		1200		1700		
	40 S	0-100		0-350		700		1400			

Note 1. Obtainable only at sunspot max.

Note 1. Distances valables lors d'une activité solaire max.

Note 1. Puede obtenerse solamente durante el periodo de máxima actividad Solar.

Note 2. May be changed to 3.5 Mc/s with slight increase in night minimum range.

Note 2. On peut employer 3,5 Mc/s avec une légère augmentation de la portée minimum de nuit.

Nota 2. Puede utilizarse la de 3.5 Mc/s con un ligero aumento del alcance mínimo nocturno.

MAXIMUM DISTANCE (km) OBTAINABLE THROUGHOUT SUSPOT CYCLE, WITH OVERLAP THROUGHOUT FAMILY, OR WITHIN A FEW PERCENT OF OVERLAP FOR VARIOUS FREQUENCIES, AT VARIOUS LATITUDES AND ZONES, BASED ON CURVES IN AERO. DOC. No. 116 - ORIGINAL PC-AER-DOC No. 5 (FIGS 21 - 32 INC.) -2-

DISTANCES MAX. (km) VARIABLES POUR UN CYCLE D'ACTIVITE SOLAIRE, AVEC UN CHEVAUCHEMENT DE FAMILLES DE FREQUENCES, OU AVEC UN PETIT NOMBRE DE CHEVAUCHEMENT POUR DIFFERENTES FREQUENCES, A DES LATITUDES ET DANS DES ZONES DIFFERENTES. OF. COURBES TRACEES AU DOC. AER. No 116 ET AU DOC. ORIGINAL AER. No 5 (FIGURES 21 A 32 INCL.)

DISTANCIA MAXIMA (Km) QUE PUEDE OBTENERSE DURANTE EL PERIODO DE ACTIVIDAD SOLAR, CON UN SOLAPO DE FAMILIA DE FRECUENCIAS, O CON UN PEQUEÑO PORCENTAJE DE SOLAPO PARA DIVERSAS FRECUENCIAS, EN DISTINTAS LATITUDES Y ZONAS, BASADA EN LAS CURVAS QUE FIGURAN EN EL DOC. AER. No. 116 - ORIGINAL CP-AER. DOC. No. 5 (FIGURAS 24 A 32 INCLUSIVE)

ZONE	IAT	3.0 Mc/s	3.5 Mc/s	4.7 Mc/s	5.6 Mc/s	6.6 Mc/s	9.0 Mc/s	10.0 Mc/s	11.3 Mc/s	13.3 Mc/s	18.0 Mc/s
I	20°N	0-150			700		1400			2400	3150 1)
	"	0-150		500		900			2000		
	"	0-150			650			1700			
I	50°N	0-100			550		1300			2300	3150 1)
	"	0-100		0-425		750			1850		
	"	0-100			550			1500			
I	40°N		0-100		500		1150			2100	3000 1)
	"		0-100	0-350		700			1700		
	"		0-100	0-350		700		1400			
I	30°N	0-100			0-450		1050			1900	2600 1)
	"	0-100		0-300		650			1500		
	"	0-100		0-300		650		1200			
I	20°N	0-100			0-400		900			1650	2300 1)
	"	0-100		0-300		550			1300		
	"	0-100		0-300		0-550		1100			
I	10°N	0-100			0-400		900			1600	2250 1)
	"	0-100		0-300		0-550			1250		
	"	0-100		0-300		0-550		1050			
I	0		0-100		0-450		900			1700	2350 1)
	"		0-100		0-450		900		1350		
	"		0-100	0-300		600		1100			
I	10°S		0-100			0-500		1000		1600	2250
	"		0-100			0-500			1200		
	"		0-100			0-500		1000			

- 2 -
Suite

ZONE	LAT	3.0 Mc/s	3.5 Mc/s	4.7 Mc/s	5.6 Mc/s	6.6 Mc/s	9.0 Mc/s	10.0 Mc/s	11.3 Mc/s	13.3 Mc/s	18.0 Mc/s
I	20°S	0-100			0-400		900			1650	2250
	"	0-100		0-300		0-550			1300		
	"	0-100			0-400			1050			
I	30°S	0-100			0-500		1100			1900	2600
	"	0-100		0-300		0-600			1500		
	"	0-100		0-300		0-600		1200			
I	40°S		0-100		0-500		1200			2200	3000
	"		0-100			700			1750		
	"		0-100			700		1450			

1)

COMMITTEE 6C
SOUS-COMMISSION 6C
SUBCOMISIÓN 6C

Note 1. Obtainable only at Sunspot Max.

Note 1. Distances valables lors d'une activité solaire max.

Nota 1. Puede obtenerse solamente durante el periodo de máxima actividad Solar.

ZONE	LAT.	3 Mc/s	3.5 Mc/s	4.7 Mc/s	5.6 Mc/s	6.6 Mc/s	9 Mc/s	10 Mc/s	11.3 Mc/s	13.3 Mc/s	18 Mc/s	3.3
W	60 N	0-100			700		1400			2420	3200 1)	
	60 N	0-100		0-450		900			2000			
	60 N	0-100		0-450		900		1700				
W	50 N	0-100			600		1250			2250	3180 1)	
	50 N	0-100		0-400		800			1800			
	50 N	0-100		0-400		800		1500				
W	40 N	0-100			550		1200			2100	3000 1)	
	40 N	0-100		0-350		700			1650			
	40 N	0-100		0-350		700		1400				
W	30 N	0-100 2)			500		1100			1900	2600 1)	
	30 N	0-100		0-300		650			1500			
	30 N	0-100		0-300		650		1250				
W	20 N		0-100		0-400		900			1700	2250 1)	
	20 N		0-100		0-400		900		1300			
	20 N		0-100			0-550		1100				
W	10 N	0-100			0-400		850			1550	2200 1)	
	10 N	0-100			0-400		850		1200			
	10 N	0-100		0-250		0-550		1050				
W	0	0-100			0-450		950			1700	2350 1)	
	0	0-100			0-450		950		1350			
	0	0-100		0-300		0-600		1150				
W	10 S	0-100			0-400		850			1550	2200 1)	
	10 S	0-100			0-400		850		1200			
	10 S	0-100		0-300		0-550		1000				
W	20 S	0-100			0-450		900			1650	2150 1)	
	20 S	0-100			0-450		900		1250			
	20 S	0-100		0-300		0-550		1050				
W	30 S	0-100			0-450		1050			1850	2550	
	30 S	0-100		0-300		0-600			1500			
	30 S	0-100			0-450			1250				
W	40 S	0-100			0-500		1200			2100	2900	
	40 S	0-100		0-350		0-700			1700			
	40 S	0-100		0-350		0-700		1700				

Note 1. Obtainable only at sunspot max.

Note 1. Distances valables lors d'une activité solaire max.

Nota 1. Puede obtenerse solamente durante el periodo de máxima actividad Solar.

(44-28-29)

Note 2. May be changed to 3.5 Mc/s with slight increase in night minimum range.

Note 2. On peut employer 3,5 Mc/s avec une légère augmentation de la portée minimum de nuit.

Nota 2. Puede utilizarse la de 3.5 Mc/s con un ligero aumento del alcance mínimo nocturno.

INTERFERENCE RANGES (NIGHT)
 PORTEE DE BROUILLAGE (NUIT)
 ALCANCE DE INTERFERENCIA (DE NOCHE)

Noise Grade (3.0)
 Degré des parasites atmos.(3.0)
 Grade de ruido(3.0)

Frequency	:Max. average service range (km):	:	Interference Range km.			
			Portée de brouillage km.			
Frecuencia	:Area media de servicio (max)(km):	:	Region de interferencia km.			
		:	Protection Ratio			
			Rapport de protection			
		:	Factor de proteccion			
			15 db	20 db	25 db	30 db
3.0	500	:	3500	5500	7500	11500
3.5	800	:	4000	6000	8500	12500
4.7	1400	:	5500	7000	11000	>15000
5.6	1800	:	6500	9000	12500	>15000
6.6	2200	:	8000	12000	>15000	>15000
9.0	3400	:	11000	>15000	>15000	>15000

INTERFERENCE RANGES (DAY)

PORTEE DE BROUILLAGE (JOUR)

ALCANCE DE INTERFERENCIA (DE DIA)

Noise Grade (3.0)

Degré des parasites atmos.(3.0)

Grade de ruido(3.0)

Frequency :Max. average service range (km) :		Interference Range km.			
Fréquence :Portée moyenne utile max. (km) :		Portée de brouillage km.			
Frecuencia:Area media de servicio(max) (km) :		Region de interferencia km.			
		Protection Ratio			
		Rapport de protection			
		Factor de proteccion			
		15 db	20 db	25 db	30 db
3 Mc/s)	:				
3.5 Mc/s)	:	700	1100	1500	1800
4.7 Mc/s :	:	1200	1400	1700	2000
5.6 Mc/s :	:	1500	1900	2400	3200
6.6 Mc/s :	:	1900	2400	3000	4200
9 Mc/s :	:	3800	5800	9200	> 10000
10 Mc/s :	:	5500	8000	10000	> 10000
11.3 Mc/s :	:	6000	8500	> 10000	> 10000
13.3 Mc/s :	:	7700	> 10000	> 10000	> 10000
18 Mc/s :	:	> 10000	> 10000	> 10000	> 10000

ANNEX 5, Aer. Doc. 198
 ANNEXE 5, Aér. Doc. 198
 ANEXO 5, Aer. Doc. 198

Frequency Allotment - Major World Air Route Areas

(Peak loading for each frequency order required by the various route segments to provide for communication up to the half-way points.)

Attribution de fréquences - Zones de passage des lignes aériennes mondiales principales

(Charge maximum requise pour les différents ordres de grandeur de fréquences et pour les différents tronçons de lignes, en une de permettre les liaisons jusqu'au milieu de chaque tronçon.)

Distribución de Frecuencias - Areas de Rutas Aéreas Más Importantes del Mundo

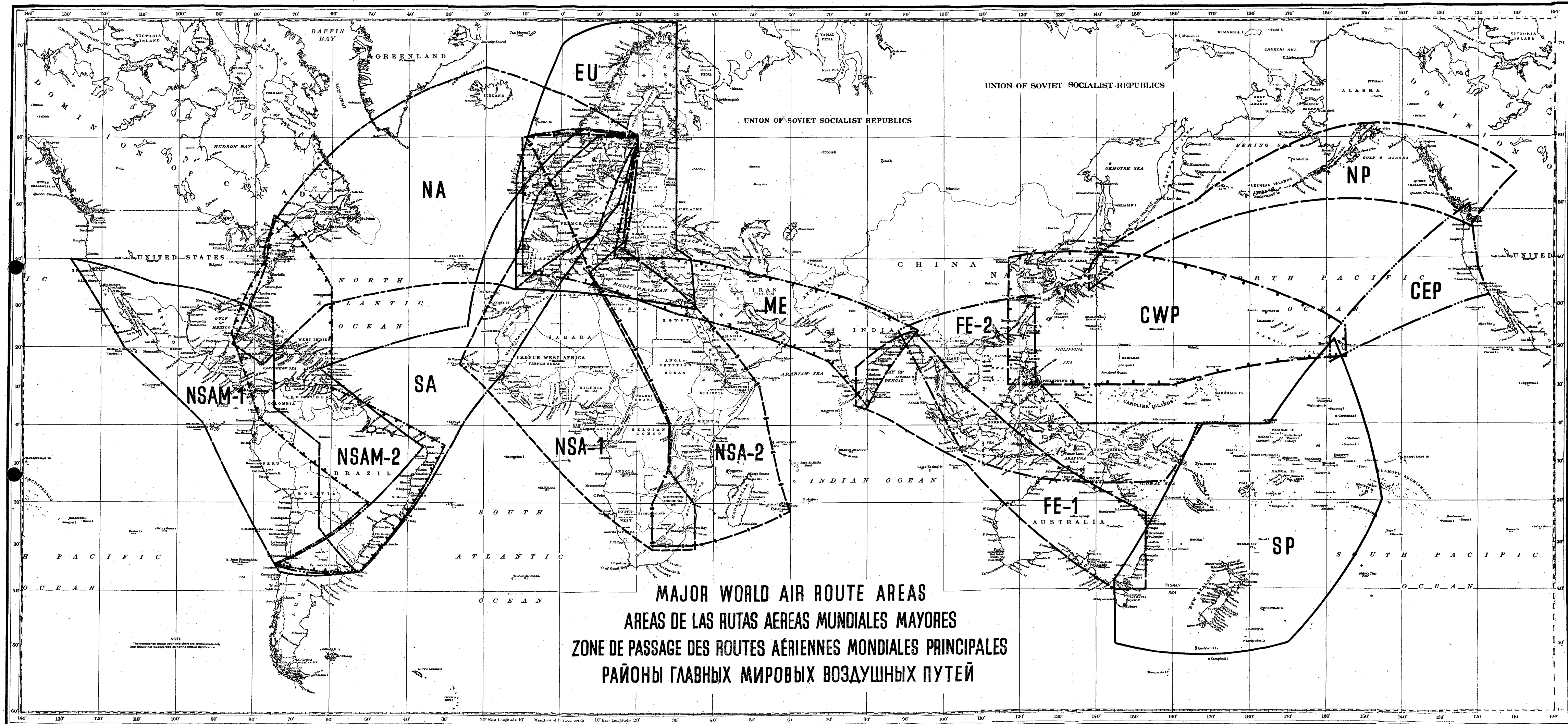
(Carga máxima para cada orden de frecuencias que los diversos segmentos de ruta requieren a fin de facilitar las comunicaciones hasta los puntos centrales del segmento.)

MWARA	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18
EU	10.31	28.78	19.09	29.45	14.73	20.24	-	7.30	-	-
NSAM-2	38.08	-	2.03	36.17	1.2	35.14	0.97	11.50	9.45	4.09
CEP	54.1	-	-	54.1	-	54.1	-	-	54.1	54.1
NSAM-1	17.36	.93	8.50	8.50	8.42	7.67	4.45	2.64	.38	-
NA	48.77	4.58	-	53.35	-	53.27	-	-	47.90	2.65
SA	28.65	3.92	8.97	23.60	8.97	23.35	2.54	9.82	11.98	1.25
NSA-1	13.359	2.216	.59	16.340	-	14.080	-	-	9.115	.39
NSA-2	11.837	1.51	-	12.337	.99	10.484	-	.92	3.464	.69
ME	30.048	-	-	30.048	-	28.981	-	-	8.33	2.132
FE-1	15.57	3.68	-	19.09	-	18.12	-	-	9.49	0.87
FE-2	12.53	-	-	12.53	-	12.43	-	-	3.48	-
SP	10.15	-	-	10.15	-	8.77	-	-	6.33	1.8
CWP	9.04	-	3.65	5.39	3.65	5.32	-	3.52	5.32	.5
NP	4.48	-	1.31	3.17	1.31	3.17	-	1.31	-	-

Appendix 1 to Aer-document No. 198-E

Appendice 1 au Doc - Aér. No. 198-F

Apendice 1 al Documento Aer. No. 198-S



MAJOR WORLD AIR ROUTE AREAS
AREAS DE LAS RUTAS AEREAS MUNDIALES MAYORES
ZONE DE PASSAGE DES ROUTES AERIENNES MONDIALES PRINCIPALES
РАЙОНЫ ГЛАВНЫХ МИРОВЫХ ВОЗДУШНЫХ ПУТЕЙ

Corrigendum to Aer-Doc. No. 199-E
Committee 6.

1. Page 3 - (Aer-Document No. 199-E). Region 2.-

Correct to read as follows :

From

North Pole to

70°N 32°E

then along the border between Finland and the U.S.S.R. to the Baltic Coast, and along the territorial waters of the U.S.S.R. Baltic Coast, to the boundary between the U.S.S.R. and Poland, thence along the border between the U.S.S.R. and the following countries: Poland, Czechoslovakia, and Rumania, to the Black Sea Coast at the meridian 30°E, and along the meridian to the Black Sea Coast of Turkey, along this coastline to the Caucasian border with Turkey and Iran, along the southern political border of the U.S.S.R. to a point 52°N 90°E (at the intersection of the Mongolia - China - U.S.S.R. borders) then along meridian 90°E to

55°N 90°E to
55°N 60°E to
North Pole.

2. Page 4 - (Aer-Document No. 199-E). Region 3.-

Correct to read as follows:

From

North Pole to

55°N 60°E to

55°N 90°E

Thence to a point 52°N 90°E (at the intersection of Mongolia - China - U.S.S.R. borders) then along the border between Mongolia and China, and U.S.S.R. and China, to the Coast, and then along the territorial waters between U.S.S.R. and Japan to

43°N 147°E to
50°N 165°E to
65°N 170°E to
North Pole.

3. Page 5 - (Aer-Document No. 199-E). Region 4.-

Change 30°N 32°W to read "30°N 39°W".

Correct last two lines to read:

"Atlantic Coast to a point 30°N 10°W, thence due west to close the area at 30°N 39°W".

- E -

(43-3-19)



4. Page 6 - (Aer.-Document No. 199-E). Region 5.

Correct to read as follows :

"From

41°N 40°E to

37°N 40°E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards, along the western boundary of Egypt, and Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards along the borders of the following countries, Uganda, Anglo-Egyptian Sudan, Kenya, and Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African Coast, from there to a point

02°S 41°E to

02°S 73°E

37°N 73°E

37°N 75°E

thence westwards along the southern boundary of the U.S.S.R. to

41°N 40°E.

5. Page 7 - (Aer.-Document No. 199-E). Region 6.-

Correct first and last coordinates to read: "52°N 90°E".

6. Page 3 - (Annex to Aer.-Document No. 199-E). Sub-Region 2B.

Correct to read as follows :

From

55°N 90°E to

55°N 60°E

47°N 53°E

thence along the Eastern Coast of the Caspian Sea to the Iran Coast, thence eastwards along the southern political border of the U.S.S.R. to a point 52°N 90°E (at the intersection of the Mongolia - China - U.S.S.R. territories) then along meridian 90°E to 55°N 90°E.

7. Page 3 - (Annex to Aer.-Document No. 199-E). Sub-Region 3A.-

Correct to read :

"From North Pole to

55°N 60°E to

55°N 90°E to

60°N 90°E to

60°N 110°E to

North Pole.

8. Page 4 (Annex to Aer.-Document No. 199-E). Sub-Region 3-C.

Correct to read :

From 60°N 90°E

thence to a point 52°N 90°E (at the intersection of Mongolia - China - U.S.S.R.) then along the border between Mongolia and China, and U.S.S.R. and China to the Coast. Then along the territorial waters between U.S.S.R. and Japan to

43°N 147°E to

60°N 147°E to

60°N 90°E.

9. Page 5 (Annex to Aer.-Document No. 199-E). Sub-Region 5-A.-

Correct to read:

"From 37°N 40°E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards, along the western boundary of Egypt, thence eastwards along the common border of Egypt and Anglo-Egyptian Sudan to the middle of the Red Sea, then southwards along this middle line to

12°N 44°E to

12°N 49°E to

30°N 49°E

thence along the border between Iran and Irak, and the border between Irak and Turkey to

37°N 40°E

10. Page 5 (Annex to Aer.-Document No. 199-E). Sub-Region 5-B.-

Correct to read :

"From 41°N 40°E to

37°N 40°E

thence eastwards along the border between Turkey, Syria and Irak, thence along the border between Irak and Iran to a point

30°N 49°E

thence along the middle of the Persian Golf to a point

24°N 60°E to

20°N 73°E to

36°N 73°E to

37°N 75°E

thence westwards along the southern boundary of the U.S.S.R. to

41°N 40°E

11. Page 6 (Annex to Aer.-Document No. 199-E). Sub-Region 5-D.-

Correct to read:

"From the junction point between Egypt, Libya and Anglo-Egyptian Sudan southwards along the western border of the Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards, along the borders of the following countries : Uganda, Anglo-Egyptian Sudan, Kenya, Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African Coast, from there to a point

02°S 54°E to

11°N 54°E to

10°N 43°E

thence northwest along the middle of the Red Sea to 24°N 37°E, thence along the southern border of Egypt to close the area.

12. Page 6 (Annex to Aer.-Document No. 199-E). Sub-Region ~~6~~^B

Correct first and last coordinates of latitude and longitude to read :

"52°N 90°E"

Correct last two lines of descriptive text to read :

"thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern boundary between China and the U.S.S.R., and along the border between China and Mongolia to

52°N 90°E".

13. Page 8 (Annex to Aer.-Document No. 199-E). Sub-Region 7-B.-

Delete the words "From South Pole to".

International Administrative
Aeronautical Radio Conference

GENEVA 1948

Revised Aer. Document No. 199-E

Corrigendum

Pen

- Page 1. Delete the second sentence, viz:
"the boundaries of thefinalised".
- Page 3. Fourth and third last lines amend to read:
China - U.S.S.R. borders) then along meridian 88° E to
 55° N 83° E to
- Page 4. Fifth line amend coordinate to read
 49° N 83° E
- Page 5. First and last coordinates amend to read
 30° N 39° W



International Administrative
Aeronautical Radio Conference
GENEVA, 1948

Aer. Doc. No.199 - E

Corrigendum

18 September, 1948

In defining the subareas 6A and 6D,
replace THAILAND by S I A M

Conférence Internationale
Administrative des Radiocommunications
Aéronautiques.
GENEVE, 1948

Doc. Aer. No.199 - F

Corrigendum

18 septembre, 1948

Dans la délimitation des subdivisions de zones 6 A et 6 D,
remplacer THAILLANDE par S I A M

Conferencia Administrativa
Internacional de Radio -
Comunicaciones Aeronáuticas
GINEBRA, 1948

Doc. Aer. No. 199 - S

Corrigendum

18 de septiembre de 1948.

Al definir las subáreas 6A y 6D (páginas 16 y 17 - Doc.Aer. No.199-Rev.)
substitúyase TAILAND por S I A M.

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948

Aer-Document No. 199 - E
Revised. To include corrigenda.
11 August, 1948

COMMITTEE 6

Description of Regional Boundaries

Eastern Hemisphere

The following sets out the boundaries of the Regions agreed by the Eastern Hemisphere working group for frequency allotment purposes.

The boundaries of the sub-regions tentatively defined have yet to be finalised.



Region 1

From

North Pole to

70° N 10° W

40° N 50° W to

30° N 37° W to

30° N 10° W to

then along the North African Coast, through Casablanca, Tangier, Algiers, Tunis, Tripoli, Benghazi, to the coastal border between Libya and Egypt, thence to Cairo, and eastward along the parallel to intersect the 40° E meridian, and north along the 40° E meridian to the South Coast of the Black Sea, thence west along the Black Sea coast of Turkey to intersect the 30° E meridian, then along the 30° E meridian to the border of Rumania and the U.S.S.R., thence along the border between the U.S.S.R. and the following countries : Rumania, Hungary, Czechoslovakia, Poland, along the U.S.S.R. Baltic Sea Coast, to boundary between Finland and the U.S.S.R. and from

70° N 32° E to the North Pole.

Region 2

From

North Pole to

70° N 32° E

then along the border between Finland and the U.S.S.R., to the Baltic Coast, and along the territorial waters of the U.S.S.R. Baltic Coast, to the boundary between the U.S.S.R. and Poland, thence along the border between the U.S.S.R. and the following countries : Poland, Czechoslovakia, Hungary, and Rumania, to the Black Sea Coast at the meridian 30° E, and along the meridian to the Black Sea Coast of Turkey, along this coastline to the Caucasean border with Turkey and Iran, along the southern political border of the U.S.S.R. to a point 49° N 88° E (at the intersection of the Mongolia-China - U.S.S.R. borders) then along meridian 80° E to

55° N 88° E to

55° N 60° E to

North Pole

Region 2

From

North Pole to

55° N 60° E to

55° N 80° E

thence to a point 49° N 80° E (at the intersection of Mongolia -China - U.S.S.R. borders), then along the border between Mongolia and China, and U.S.S.R. and China, to the Coast, and then along the territorial waters between U.S.S.R. and Japan to

43° N 147° E to

50° N 165° E to

65° N 170° W to

North Pole

Region 4

From

30° N 30° W to
10° N 20° W to
05° S 20° W to
05° S 12° E, thence

along the northern border of the Belgian Congo, excluding Kalunda territory, to the border between Anglo-Egyptian Sudan and French Equatorial Africa, thence northwards along the western border of Anglo-Egyptian Sudan, thence along the western border of Egypt, northwards to the Mediterranean and along the North African Mediterranean Coast and Atlantic Coast to a point 30° N 10° W thence due west to close the area at 30° N 30° W.

Region 5

From

41°N 40°E to

37°N 40°E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards along the western boundary of Egypt, and Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards along the borders of the following countries : Uganda, Anglo-Egyptian Sudan, Kenya, and Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African Coast, from there to a point

02°S 41°E to

02°S 73°E

37°N 73°E

37°N 75°E

thence westwards along the southern boundary of the U.S.S.R. to

41°N 40°E.

Region 6

From

49° N 83° E

along the common northwestern border between China and the U.S.S.R. to

37° N 72° E to

02° S 72° E to

02° S 92° E to

10° S 92° E to

10° S 141° E to

0° 141° E to

0° 170° W to

10° N 170° W to

50° N 165° E to

43° N 147° E,

thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern boundary between China and the U.S.S.R. and between China and Mongolia to

49° N 83° E

Region 7

From the South Pole to

05° S 20° W to

05° S 12° E

thence along the northern border of the Belgian Congo, including Kalunda territory, to the border between Uganda, Anglo-Egyptian Sudan, and between Kenya and the following countries : Anglo-Egyptian Sudan, Abyssinia, Italian Somaliland to

02° S 42° E to

02° S 60° E to

the South Pole

Region 8

From the South Pole to

02° S 60° E to

02° S 92° E to

10° S 92° E to

10° S 110° E to

the South Pole

Region 9

From the South Pole to

10° S 110° E to

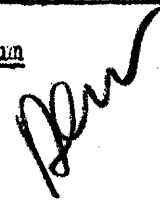
10° S 141° E to 0° 141° E to 0° 170° W to

10° N 170° W to 10° N 120° W to the South Pole

International Administrative
Aeronautical Radio Conference
GENEVA 1948

Annex to Aer. Document No. 199-E

Corrigendum



Page 4. Sub-Region 4 B, amend

Kalunda to read Kabinda

Page 7. Sub-Region 6 D, amend coordinates

20° N 130° E and 20° N 113° E


to read 21° N 130° E and

21° N 113° E respectively

Page 8. Sub-Region 7 B, amend

Kalunda to read Kabinda



DESCRIPTIONS OF BOUNDARIES OF SUB-REGIONS OF EASTERN HEMISPHERE(Normal) Region 1Sub-Region 1A

From	65° N	26° W	to
	40° N	50° W	to
	40° N	13° W	to
	60° N	13° W	to
	60° N	26° W	to
	65° N	26° W.	

Sub-Region 1B

From North Pole to

70° N	10° W	to
65° N	26° W	to
60° N	26° W	to
60° N	13° W	to
50° N	13° W	

thence eastward through territorial water between the Channel Islands and French Coastline and thence following the northeastern boundary of France, touching the following countries: Belgium, Luxembourg, and Germany. Thence along the border between Switzerland and Germany and from there to the Kiel Canal following the boundary between the Eastern and Western Occupied Zones of Germany and Austria, touching the Western border of Czechoslovakia. From Kiel along the parallel to a point 55° N 4° E, and then to the North Pole.

Sub-Region 1C

From North Pole to

55° N	4° E	to
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Kiel Canal then southward along the boundary between Eastern and Western Occupied Germany, then along the western border of Czechoslovakia to the boundary between the eastern and western Occupied Zone of Austria, thence eastward along the southern borders of Austria and Hungary and thence to the junction of the borders of Czechoslovakia, Hungary and Roumania, thence along the border between the U.S.S.R. and the following countries: Czechoslovakia, Poland, along the U.S.S.R. Baltic Sea coast, to boundary between Finland and the U.S.S.R. and from

70° N	32° E	to
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the North Pole.



Sub-Region 1D

From the junction of the borders of Czechoslovakia, Hungary and Roumania westward along the southern borders of Austria and Hungary to the borders between Switzerland and Italy and the border between France and Italy to the Mediterranean Sea and thence to a point

43° N	10° E	to
41° N	10° E	to
41° N	7° E	

thence along the 7th meridian east to the North African coast then along the North African coast, Tunis, Tripoli, Benghazi, to the coastal border between Libya and Egypt, thence to Cairo, and along Cairo parallel to intersect the 40° E meridian, and north along the 40° E meridian to the South Coast of the Black Sea, thence west along the Black Sea coast of Turkey to intersect the 30° E meridian then along the 30° E meridian to the border of Roumania and the Ukraine, to the junction of the borders of Czechoslovakia, Hungary and Roumania.

Sub-Region 1E

From	50° N	13° W	to
	40° N	13° W	to
	40° N	50° W	to
	30° N	37° W	to
	30° N	10° W	

then along the North African coast through Casablanca, Tangier, Algiers to intersect the 10th East meridian to

43° N 10° E.

thence to the border between Italy and France and between Italy and Switzerland, and between France and Germany, and France and Belgium to the Channel coast and westwards along the French coast line to the territorial waters between the Channel Islands and the French coast to

50° N 13° W.

Region 2

Sub-Region 2A

From North Pole to

70° N 32° E

then along the border between Finland and the U.S.S.R. to the Baltic Coast, and along the territorial waters of the U.S.S.R. Baltic Coast, to

55° N 20° E

- 3 -
(Annex to 199-E)

thence along the 55th parallel to

55° N 60° E to

the North Pole.

Sub-Region 2B

From 55° N 89° E to
 55° N 60° E to
 47° N 53° E

thence along the Eastern Coast of the Caspian Sea to the Iran coast
thence eastwards along the southern political border of the U.S.S.R.
to a point 49° N 89° E (at the intersection of the Mongolia-China
and U.S.S.R. territories) then along meridian 89° E to

55° N 89° E.

Sub-Region 2C

From 55° N 60° E to
 55° N 20° E

thence southwards along the boundary between the U.S.S.R. and Poland,
thence along the border between the U.S.S.R. and the following countries:
Poland, Czechoslovakia, and Roumania, to the Black Sea Coast at the
meridian 30° E, and along the meridian to the Black Sea Coast of Turkey,
along this coastline to the Caucasian border with Turkey and Iran, then
along the South Caspian Sea coast, thence northwards along the East
Caspian Sea coast to

47° N 53° E to
55° N 60° E.

Region 3

Sub-Region 3A

From North Pole to

55° N 60° E to
55° N 89° E to
60° N 89° E to
60° N 110° E to

North Pole.

(Annex to 199-E)

Sub-Region 3B

From North Pole to

60° N	110° E	to
60° N	147° E	to
43° N	147° E	to
50° N	165° E	to
65° N	170° W	to

North Pole.

Sub-Region 3C

From 60° N 89° E

thence to a point 52° N 89° E (at the intersection of Mongolia, China and U.S.S.R.) then along the border between Mongolia and China, and U.S.S.R. and China, to the Coast, and then along the territorial waters between U.S.S.R. and Japan to

43° N	147° E	to
60° N	147° E	to
60° N	89° E.	

Region 4

Sub-Region 4A

From 30° N	37° W	to
21° N	31° W	to
12° N	22° E	

to the border between Anglo-Egyptian Sudan and French Equatorial Africa, thence northwards along the western border of Anglo-Egyptian Sudan, thence along the western border of Egypt, northwards to the Mediterranean and along the North African Mediterranean Coast and Atlantic Coast to a point 30° N 10° W thence due west to close the area at 30° N 37° W.

Sub-Region 4B

From 21° N	31° W	to
10° N	20° W	to
05° S	20° W	to
05° S	12° E	

thence along the northern border of Belgian Congo excluding Kalunda territory to the junction between Belgian Congo, Anglo-Egyptian Sudan and French Equatorial Africa to.

12° N	22° E	to
21° N	31° W.	

Region 5

Sub-Region 5A

From 41°N 40°E to
 37°N 40°E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards, along the western boundary of Egypt, thence eastwards along the southern border of Egypt and Anglo-Egyptian Sudan to the middle of the Red Sea, then southwards along this middle line to

12°N 44°E to
12°N 49°E to
30°N 49°E

thence along the border between Iran and the following countries: Irak, Turkey, thence along the border between Turkey and U.S.S.R. to

41°N 40°E

Sub-Region 5B

From 41°N 40°E

eastwards along the border between Turkey and the following countries: U.S.S.R. and Iran, thence along the border between Irak and Iran to a point

30°N 49°E

thence in the middle of the Persian Gulf to a point

24°N 60°E to
20°N 73°E to
36°N 73°E to
37°N 75°E

thence westwards along the southern boundary of the U.S.S.R. to

41°N 40°E

Sub-Region 5C

From 30°N 49°E to
 12°N 49°E to
 12°N 54°E to
 02°S 54°E to
 02°S 73°E to
 20°N 73°E to
 24°N 60°E

thence along the middle of the Persian Gulf to

30°N 49°E

Region 5

Sub-Region 5D

From the junction point between Egypt, Libya and Anglo-Egyptian Sudan southwards along the Western border of the Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards, along the borders of the following countries: Uganda, Anglo-Egyptian Sudan, Kenya, Anglo-Egyptian Sudan and Kenya, and Kenya Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African Coast, from there, to a point

02°S	54°E	to
11°N	54°E	to
10°N	43°E	

thence northwest along the middle of the Red Sea to 24°N 37°E and thence along the southern border of Egypt to close the area.

Region 6

Sub-Region 6A

From	37°N	75°E	to
	36°N	73°E	

thence along the Western border of Pakistan with Afghanistan and Iran to the Arabian Sea and thence eastwards along the southern coast of Pakistan to Bombay to

25°N	80°E	to
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Calcutta, thence along the coast of Burma to reach the border between Burma and Thailand, thence northwards along such borders and along the border between China and the following countries: Burma, Bhutan, Nepal, India to

37°N	75°E
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Sub-Region 6B

From	52°N	89°E
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along the common northwestern border between China and the U.S.S.R. to

37°N	75°E
------	------

thence along the border between China and the following countries: India, Nepal, Bhutan, Burma, French Indo-China to the coast of South China Sea, thence along the south territorial waters of Hainan Island to

20°N	113°E	to
20°N	176°W	to
50°N	165°E	to
43°N	147°E	

thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern boundary between China and the U.S.S.R. to

52°N	89°E.
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Region 6

Sub-Region 6C

From	20°N	130°E	to
	04°N	130°E	to
	04°N	117°E	

thence along the border between the British and Netherland Borneo to

03°N	106°E	to
10°S	106°E	to
10°S	141°E	to
0°	141°E	to
0°	170°W	to
10°N	170°W	to
20°N	176°W	to
20°N	130°E	

Sub-Region 6D

From the junction between China, Burma and French Indo-China southward along the border between Burma and Thailand to the coast of the Bay of Bengal, thence to

02°S	92°E	to
10°S	92°E	to
10°S	114°E	to
02°N	114°E	

thence along the border between the British and Netherland Borneo to

04°N	130°E	to
20°N	130°E	to
20°N	113°E	

thence southward around the island of Hainan, and along the border between China and French Indo-China, to close the area at the junction between China, Burma, and French Indo-China.

Sub-Region 6E

From

20°N	73°E	to
02°S	73°E	to
02°S	92°E	to
10°N	97°E	

thence along the coast of Burma to Calcutta to

25°N	80°E	to
20°N	73°E.	

Region 7

Sub-Region 7A

From the South Pole to

05° S	20° W	to
05° S	10° E	to
40° S	10° E	to
40° S	60° E	to

South Pole.

Sub-Region 7B

From South Pole to

05° S	10° E	to
05° S	12° E	

thence along the northern border of the Belgian Congo, including Kalunda territory, to the junction between Uganda, Belgian Congo and Anglo-Egyptian Sudan. Thence southward along the Eastern and Southern border of Belgian Congo and Angola to a point

17° S	10° E	to
05° S	10° E.	

Sub-Region 7C

From the junction between Uganda, Belgian Congo and Anglo-Egyptian Sudan along the border between Belgian Congo, Uganda and Tanganyika and along the border between Rhodesia and Mozambique to the Eastern Coast of Africa to

11° S	40° E	to
11° S	60° E	to
02° S	60° E	to

the eastern coast of Africa then northward along the border between Kenya and the following countries: Italian Somaliland, Abyssinia and Anglo-Egyptian Sudan to the above mentioned junction.

Sub-Region 7D

From the border of Tanganyika and Mozambique on the Lake Nyasa southward along the whole Western Mozambique border to the African Eastern Coast to

27° S	33° E	to
40° S	33° E	to
40° S	60° E	to
11° S	60° E	to
11° S	40° E	

thence along the Northern border of Mozambique to Lake Nyasa.

Sub-Region 7E

From	17° S	10° E	to
	40° S	10° E	to
	40° S	33° E	to
	27° S	33° E	

thence along the whole Western Mozambique border to Lake Nyasa, thence along the common border between Belgian Congo and Rhodesia and between Angola and Rhodesia and South-West Africa to

17° S 10° E.

Region 8

Sub-Region 8A

From the South Pole to

02° S	60° E	to
02° S	92° E	to
10° S	92° E	to
10° S	110° E	to

the South Pole.

Region 9

Sub-Region 9A

From

10° S	110° E	to
24° S	110° E	to
24° S	141° E	to
10° S	141° E	to
10° S	110° E.	

Sub-Region 9B

From

0°	141° E	to
24° S	141° E	to
24° S	170° W	to
0°	170° W	to
0°	141° E.	

Sub-Region 9C

From South Pole to

10° N	170° W	to
10° N	120° W	to

the South Pole.

Sub-Region 9D

From South Pole to

24° S	141° E	to
24° S	170° W	to

the South Pole.

Sub-Region 9E

From South Pole to

24° S	110° E	to
24° S	141° E	to

the South Pole.

2 August, 1948

Page 5, third line : instead of : 30° N 32° W
read : 30° N 37° W

last line : instead of :

the area of 30° N 32° W
read: the area of 30° N 37° W

2 août, 1948

Page 5, ligne 2 : au lieu de : 32° de long. 0
lire : 37° de long. 0

Entre la 3ème et la 4ème ligne, intercaler :

05° de lat. S, 20° de long. 0

Dernière ligne, au lieu de :

32° long. 0
lire: 37° long. 0

Página 5, línea 3, en vez de :

32° 0
léase: 37° 0

última línea, en vez de :

32° 0
léase 37° 0

INTERNATIONAL ADMINISTRATIVE
AERONAUTICAL RADIO CONFERENCE
G E N E V A, 1948


Amendment to Aer-Document N° 199-E

30 July, 1948

COMMITTEE 6

Amendment

Replace pages 2 and 7 by the attached sheets.

- E -



Region 1

Amendment.

From

North Pole to

70° N 10° W

40° N 50° W to

30° N 37° W to

30° N 10° W to

then along the North African Coast, through Casablanca, Tangier, Algiers, Tunis, Tripoli, Benghazi, to the coastal border between Libya and Egypt, thence to Cairo, and eastward along the parallel to intersect the 40° E meridian, and north along the 40° E meridian to the South Coast of the Black Sea, thence west along the Black Sea coast of Turkey to intersect the 30° E meridian then along the 30° E meridian to the border of Rumania and the Ukraine, thence along the border between the U.S.S.R. and the following countries: Rumania, Czechoslovakia, Poland, along the U.S.S.R. Baltic Sea Coast, to boundary between Finland and the U.S.S.R. and from

70° N 32° E to the North Pole.

Amendment

Region 6

From

49° N 89° N

along the common northwestern border between China and the U.S.S.R. to

37° N 75° E to
36° N 73° E

thence along the Western border of Pakistan with Afghanistan and Iran to the Arabian Sea and thence eastwards along the Southern coast of Pakistan to Bombay and thence southwards along the 73° East Meridian to

02° S 73° E to
02° S 92° E to
10° S 92° E to
10° S 141° E to
0° 141° E to
0° 170° W to
10° N 170° W to
50° N 165° E to
43° N 147° E,

thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern boundary between China and the U.S.S.R. to

49° N 89° E

International Administrative
Aeronautical Radio Conference
G E N E V A, 1948

Aer-Document No. 199 - E

24 July, 1948

Committee 6

Description of Regional Boundaries

Eastern Hemisphere

The following sets out the boundaries of the Regions agreed by the Eastern Hemisphere working group for frequency allotment purposes.

The boundaries of the sub-regions tentatively defined have yet to be finalised.



Region 1

From

North Pole to

70° N 10° W

40° N 50° W to

30° N 37° W to

30° N 10° W to

then along the North African Coast, (through Casablanca, Tangier, Algiers, Tunis, Tripoli, Benghazi) to the coastal border between Lib a and Egypt, thence to Cyprus , to the border between Turkey and Syria to intersect the 40° E meridian, and north along the 40° E meridian to the South Coast of the Black Sea, thence west along the Black Sea coast of Turkey to intersect the 30° E meridian then along the 30° E meridian to the border of Rumania and the Ukraine, thence along the border between the U.S.S.R. and the following countries : Rumania, Czechoslovakia, Poland, along the U.S.S.R. Baltic Sea Coast, to boundary between Finland and the U.S.S.R. and from

70° N 32° E to the North Pole.

Region 2

From

North Pole to

70° N 32° E

then along the border between Finland and the U.S.S.R., to the Baltic Coast, and along the territorial waters of the U.S.S.R. Baltic Coast, to the boundary between the U.S.S.R. and Poland, thence along the border between the U.S.S.R. and the following countries : Poland, Czechoslovakia, and Rumania, to the Black Sea Coast at the meridian 30° E, and along the meridian to the Black Sea Coast of Turkey, along this coastline to the Caucasian border with Turkey and Iran, along the southern political border of the U.S.S.R. to a point 49° N 89° E (at the intersection of the Mongolia-China and U.S.S.R. territories) then along meridian 89° E to

55° N 89° E to

55° N 60° E to

North Pole

Region 3

From

North Pole to

55° N 60° E to

55° N 89° E

thence to a point 49° N 89° E (at the intersection of Mongolia, China and U.S.S.R.) then along the border between Mongolia and China, and U.S.S.R. and China, to the Coast, and then along the territorial waters between U.S.S.R. and Japan to

43° N 147° E to

50° N 165° E to

65° N 170° W to

North Pole

Region 4

From

30° N 32° W to
10° N 20° W to
05° S 20° W to
05° S 12° E, thence

along the northern border of the Belgian Congo, excluding Kalunda territory, to the border between Anglo-Egyptian Sudan and French Equatorial Africa, thence northwards along the western border of Anglo-Egyptian Sudan, thence along the western border of Egypt, northwards to the Mediterranean and along the North African Mediterranean Coast and Atlantic Coast to a point 30° N 10° W thence due west to close the area at 30° N 32° W.

Region 5

From

41° N 40° E to

37° N 40° E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards, along the western boundary of Egypt, and Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards, along the borders of the following countries, Uganda, Anglo-Egyptian Sudan, Kenya, Anglo-Egyptian Sudan and Kenya, and Kenya Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African Coast, from there, to a point

02° S 41° E to

02° S 72° E

37° N 72° E

thence westwards along the southern boundary of the U.S.S.R. to

41° N 40° E

Region 6

From

49° N 89° E

along the common northwestern border between China and the U.S.S.R. to

37° N 72° E to

02° S 72° E to

02° S 92° E to

10° S 92° E to

10° S 141° E to

0° 141° E to

0° 170° W to

10° N 170° W to

50° N 165° E to

43° N 147° E,

thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern boundary between China and the U.S.S.R. to

49° N 89° E

Region 7

From the South Pole to

05° S 20° W to

05° S 12° E

thence along the northern border of the Belgian Congo, including Kalunda territory, to the border between Uganda, Anglo-Egyptian Sudan, and between Kenya and the following countries : Anglo-Egyptian Sudan, Abyssinia, Italian Somaliland to

02° S 42° E to

02° S 60° E to

the South Pole

Region 8

From the South Pole to

02° S 60° E to

02° S 92° E to

10° S 92° E to

10° S 110° E to

the South Pole

Region 9

From the South Pole to

10° S 110° E to

10° S 141° E to 0° 141° E to 0° 170° W to

10° N 170° W to 10° N 120° W to the South Pole

DESCRIPTIONS OF BOUNDARIES OF SUB-REGIONS OF EASTERN HEMISPHERE

(Normal)

Region 1Sub-Region 1A

From	65° N	26° W	to
	40° N	50° W	to
	40° N	13° W	to
	60° N	13° W	to
	60° N	26° W	to
	65° N	26° W.	

Sub-Region 1B

From North Pole to

70° N	10° W	to
65° N	26° W	to
60° N	26° W	to
60° N	13° W	to
50° N	13° W	

thence eastward through territorial water between the Channel Islands and French Coastline and thence following the northeastern boundary of France, touching the following countries: Belgium, Luxembourg, and Germany. Thence along the border between Switzerland and Germany and from there to the Kiel Canal following the boundary between the Eastern and Western Occupied Zones of Germany and Austria, touching the Western border of Czechoslovakia. From Kiel along the parallel to a point 55° N 4° E, and then to the North Pole.

Sub-Region 1C

From North Pole to

55° N	4° E	to
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Kiel Canal then southward along the boundary between Eastern and Western Occupied Germany, then along the western border of Czechoslovakia to the boundary between the eastern and western Occupied Zone of Austria, thence eastward along the southern borders of Austria and Hungary and thence to the junction of the borders of Czechoslovakia, Hungary and Roumania, thence along the border between the U.S.S.R. and the following countries: Czechoslovakia, Poland, along the U.S.S.R. Baltic Sea coast, to boundary between Finland and the U.S.S.R. and from

70° N	32° E	to
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the North Pole.

- E -

Sub-Region 1D

From the junction of the borders of Czechoslovakia, Hungary and Roumania westward along the southern borders of Austria and Hungary to the borders between Switzerland and Italy and the border between France and Italy to the Mediterranean Sea and thence to a point

43° N	10° E	to
41° N	10° E	to
41° N	7° E	

thence along the 7th meridian east to the North African coast then along the North African coast, Tunis, Tripoli, Benghazi, to the coastal border between Libya and Egypt, thence to Cairo, and along Cairo parallel to intersect the 40° E meridian, and north along the 40° E meridian to the South Coast of the Black Sea, thence west along the Black Sea coast of Turkey to intersect the 30° E meridian then along the 30° E meridian to the border of Roumania and the Ukraine, to the junction of the borders of Czechoslovakia, Hungary and Roumania.

Sub-Region 1E

From	50° N	13° W	to
	40° N	13° W	to
	40° N	50° W	to
	30° N	37° W	to
	30° N	10° W	

then along the North African coast through Casablanca, Tangier, Algiers to intersect the 10th East meridian to

43° N 10° E.

thence to the border between Italy and France and between Italy and Switzerland, and between France and Germany, and France and Belgium to the Channel coast and westwards along the French coast line to the territorial waters between the Channel Islands and the French coast to

50° N 13° W.

Region 2

Sub-Region 2A

From North Pole to

70° N 32° E

then along the border between Finland and the U.S.S.R. to the Baltic Coast, and along the territorial waters of the U.S.S.R. Baltic Coast, to

55° N 20° E

thence along the 55th parallel to

55° N 60° E to

the North Pole.

Sub-Region 2B

From 55° N 88° E to
 55° N 60° E to
 47° N 53° E

thence along the Eastern coast of the Caspian Sea to the Iran coast
thence eastwards along the southern political border of the U.S.S.R.
to a point 49° N 88° E (at the intersection of the Mongolia-China
and U.S.S.R. territories) then along meridian 88° E to

55° N 88° E

Sub-Region 2C

From 55° N 60° E to
 55° N 20° E

thence southwards along the boundary between the U.S.S.R. and Poland,
thence along the border between the U.S.S.R. and the following countries:
Poland, Czechoslovakia, Hungary and Roumania, to the Black Sea Coast at
the meridian 30° E, and along the meridian to the Black Sea Coast of
Turkey, along this coastline to the Caucasian border with Turkey and Iran,
then along the South Caspian Sea Coast, thence northwards along the East
Caspian Sea Coast to

47° N 53° E to
55° N 60° E

Region 3

Sub-Region 3A

From North Pole to

55° N 60° E to
55° N 88° E to
60° N 88° E to
60° N 110° E to

North Pole

Sub-Region 3B

From North Pole to

60° N	110° E	to
60° N	147° E	to
43° N	147° E	to
50° N	165° E	to
65° N	170° W	to

North Pole.

Sub-Region 3C

From 60° N 88° E

thence to a point 49° N 88° E (at the intersection of Mongolia-China & U.S.S.R. border) then along the border between Mongolia and China, and U.S.S.R. and China, to the Coast, and then along the territorial waters between U.S.S.R. and Japan to

43° N	147° E	to
60° N	147° E	to
60° N	88° E.	

Region 4

Sub-Region 4A

From 30° N	37° W	to
21° N	31° W	to
12° N	22° E	

to the border between Anglo-Egyptian Sudan and French Equatorial Africa, thence northwards along the western border of Anglo-Egyptian Sudan, thence along the western border of Egypt, northwards to the Mediterranean and along the North African Mediterranean Coast and Atlantic Coast to a point 30° N 10° W thence due west to close the area at 30° N 37° W.

Sub-Region 4B

From 21° N	31° W	to
10° N	20° W	to
05° S	20° W	to
05° S	12° E	

thence along the northern border of Belgian Congo excluding Kalunda territory to the junction between Belgian Congo, Anglo-Egyptian Sudan and French Equatorial Africa to

12° N	22° E	to
21° N	31° W.	

Region 5

Sub-Region 5A

From 37° N 40° E

then along the border between Turkey and Syria to the Mediterranean Coast, thence to the common border of Libya and Egypt on the North African Coast, then southwards, along the western boundary of Egypt, thence eastwards along the common border of Egypt and Anglo-Egyptian Sudan to the middle of the Red Sea, then southwards along this middle line to

12° N 44° E to
12° N 49° E to
30° N 49° E

thence along the border between Iran and Irak, and the border between Irak and Turkey to

37° N 40° E

Sub-Region 5B

From 41° N 40° E to
37° N 40° E

thence eastwards along the border between Turkey, Syria and Irak, thence along the border between Irak and Iran to a point

30° N 49° E

thence along the middle of the Persian Gulf to a point

24° N 60° E to
20° N 73° E to
36° N 73° E to
37° N 75° E

thence westwards along the southern boundary of the U.S.S.R. to

41° N 40° E

Sub-Region 5C

From	30° N	49° E	to
	12° N	49° E	to
	12° N	54° E	to
	02° S	54° E	to
	02° S	73° E	to
	20° N	73° E	to
	24° N	60° E	

thence along the middle of the Persian Gulf to

30° N 49° E

Region 5

Sub-Region 5D

From the junction point between Egypt, Libya and Anglo-Egyptian Sudan southwards along the western border of the Anglo-Egyptian Sudan to the border of the Belgian Congo, thence eastwards, along the borders of the following countries: Uganda, Anglo-Egyptian Sudan, Kenya, Abyssinia, and southwards between the borders of Kenya and Italian Somaliland, to the eastern African coast, from there to a point

02° S 54° E to
11° N 54° E to
10° N 43° E

thence northwest along the middle of the Red Sea to 24° N 37° E, thence along the southern border of Egypt to close the area.

Region 6

Sub-Region 6A

From 37° N 75° E to
36° N 73° E

thence along the western border of Pakistan with Afghanistan and Iran to the Arabian Sea and thence eastwards along the southern coast of Pakistan to Bombay to

25° N 80° E to

Calcutta, thence along the coast of Burma to reach the border between Burma and Thailand, thence northwards along such borders and along the border between China and the following countries: Burma, Bhutan, Nepal, India to

37° N 75° E

Sub-Region 6B

From 49° N 88° E

along the common northwestern border between China and the U.S.S.R. to

37° N 75° E

thence along the border between China and the following countries: India, Nepal, Bhutan, Burma, French Indo-China to the coast of South China Sea, thence along the south territorial waters of Hainan Island to

20° N 113° E to
20° N 176° W to
50° N 165° E to
43° N 147° E

thence eastwards along the territorial waters between Japan and the U.S.S.R. and then along the northeastern and northern border between China and the U.S.S.R., and along the border between China and Mongolia to

49° N 88° E

Region 6

Sub-Region 6C

From	20°N	130°E	to
	04°N	130°E	to
	04°N	117°E	

thence along the border between the British and Netherland Borneo to

03°N	106°E	to
10°S	106°E	to
10°S	141°E	to
0°	141°E	to
0°	170°W	to
10°N	170°W	to
20°N	176°W	
20°N	130°E	

Sub-Region 6D

From the junction between China, Burma and French Indo-China southward along the border between Burma and Thailand to the coast of the Bay of Bengal, thence to

02°S	92°E	to
10°S	92°E	to
10°S	114°E	to
02°N	114°E	to

thence along the border between the British and Netherland Borneo to

04°N	130°E	to
20°N	130°E	to
20°N	113°E	to

thence southward around the island of Hainan, and along the border between China and French Indo-China, to close the area at the junction between China, Burma, and French Indo-China.

Sub-Region 6E

From

20°N	73°E	to
02°S	73°E	to
02°S	92°E	to
10°N	97°E	

thence along the coast of Burma to Calcutta to

25°N	80°E	to
20°N	73°E	

Region 7

Sub-Region 7A

From the South Pole to

05° S	20° W	to
05° S	10° E	to
40° S	10° E	to
40° S	60° E	to

South Pole.

Sub-Region 7B

From

05° S	10° E	to
05° S	12° E	

thence along the northern border of the Belgian Congo, including Kalunda territory, to the junction between Uganda, Belgian Congo and Anglo-Egyptian Sudan. Thence southward along the Eastern and Southern border of Belgian Congo and Angola to a point

17° S	10° E	to
05° S	10° E.	

Sub-Region 7C

From the junction between Uganda, Belgian Congo and Anglo-Egyptian Sudan along the border between Belgian Congo, Uganda and Tanganyika and along the border between Rhodisia and Mozambique to the Eastern Coast of Africa to

11° S	40° E	to
11° S	60° E	to
02° S	60° E	to

the eastern coast of Africa then northward along the border between Kenya and the following countries: Italian Somaliland, Abyssinia and Anglo-Egyptian Sudan to the above mentioned junction.

Sub-Region 7D

From the border of Tanganyika and Mozambique on the Lake Nyasa southward along the whole Western Mozambique border to the African Eastern Coast to

27° S	33° E	to
40° S	33° E	to
40° S	60° E	to
11° S	60° E	to
11° S	40° E	

thence along the Northern border of Mozambique to Lake Nyasa.

Sub-Region 7E

From	17° S	10° E	to
	40° S	10° E	to
	40° S	33° E	to
	27° S	33° E	

thence along the whole Western Mozambique border to Lake Nyasa, thence along the common border between Belgian Congo and Rhodesia and between Angola and Rhodesia and South-West Africa to

17° S 10° E.

Region 8

Sub-Region 8A

From the South Pole to

02° S	60° E	to
02° S	92° E	to
10° S	92° E	to
10° S	110° E	to

the South Pole.

Region 9

Sub-Region 9A

From

10° S	110° E	to
24° S	110° E	to
24° S	141° E	to
10° S	141° E	to
10° S	110° E.	

Sub-Region 9B

From

0°	141° E	to
24° S	141° E	to
24° S	170° W	to
0°	170° W	to
0°	141° E.	

Sub-Region 9C

From South Pole to

10° N	170° W	to
10° N	120° W	to

the South Pole.

Sub-Region 9D

From South Pole to

24° S	141° E	to
24° S	170° W	to

the South Pole.

Sub-Region 9E

From South Pole to

24° S	110° E	to
24° S	141° E	to

the South Pole.

(Revised August 2nd, 1948)

PROPOSAL SUBMITTED BY THE AUSTRALIAN DELEGATION
IN CONNECTION WITH THE FINAL FREQUENCY ALLOTMENT
PLAN FOR THE "R" BANDS

1. INTRODUCTION:-

- .1 WHEREAS the Conference recognises that the final frequency allotment plan should satisfy fully the operational requirements of all categories of air service operations in the aeronautical mobile services; and
- .2 WHEREAS it would appear in the light of the requirements filed at the Conference that the spectrum space allocated exclusively to the aeronautical mobile service in the "R" bands is insufficient to permit total satisfaction of all requirements of the several categories of Air Service Operations; and
- .3 WHEREAS it has been agreed that in the final frequency allotment plan the international air service operations in the Major World Air Route Areas and the Regional and Domestic operations within the Regional and Domestic Air Route Areas must be considered on an equal footing; and
- .4 WHEREAS certain essential information is not available to this Conference in respect of the Regional/Domestic requirements and in consequence the Conference cannot, at this stage, determine the basic operational requirements of the Regional and Domestic Air Route Areas to the same degree of accuracy as has been possible in connection with the requirements of the Major World Air Route Areas; and
- .5 WHEREAS the basic data referred to in para .4) above cannot be assembled until action has been taken by the Aeronautical Telecommunication and ATC authorities concerned within each Regional and Domestic Air Route Area to coordinate their frequency requirements taking into consideration present practices and proposals in connection with the use of MF, HF, in the shared bands, and VHF; and
- .6 WHEREAS in view of the above it is believed that the Conference cannot formulate a final frequency allotment plan which will be acceptable to all States and at the same time provide for an equitable degree of satisfaction of the requirements of all classes of air service operations.

1'. IT IS RECOMMENDED THAT

.1 the Conference:

- a) Adopt the Major World Air Route Areas as defined in Annex 1 Doc 198 and specify the minimum frequency requirements to meet the needs of air traffic within these areas based on the application of ICAO Standards and Procedures and the recommendations of ICAO Regional Conferences.
- b) Adopt the common channels required for worldwide use and the conditions regarding the use of these channels as described in Doc. 169.

- c) Adopt the Regional and Domestic Air Route Areas as laid down in Docs. 199 and and associated map.
 - d) Specify the discreet frequencies and protection ratios desirable to ensure a minimum of harmful interference between the Major World Air Route Areas and the Regional and Domestic Air Route Areas.
 - e) Specify the conditions under which discreet frequencies allotted by this Conference to Major World Air Route Area operations can be duplicated in the Regional and Domestic Air Route Areas.
 - f) Allot the available discreet frequencies to individual Regional and Domestic Air Route Areas on the basis of information on hand concerning the requirements of these Areas in order that the Aeronautical Telecommunication Authorities concerned within each such area may complete planning action.
- .2 The Conference requests the Administrative Council to make arrangements in conjunction with I.C.A.O. where appropriate to have the regional/domestic problem within each Regional and Domestic Air Route Area properly examined by the Aeronautical Telecommunication Authorities concerned in order to enable them to prepare a coordinated plan for each Area prior to the Administrative Conference which will approve the final frequency list.
- .3 The attention of I.C.A.O. be invited to the plan for the Major World Air Route Areas and its advice requested as to any modifications considered desirable to this plan prior to the above-mentioned Conference.
- .4 Arrangements be made for an "Aeronautical Preparatory Committee" to be convened prior to the above-mentioned Conference to examine the plans submitted by the Regional and Domestic Air Route Areas and the Major World Air Route Areas and to make any adjustments to the basic plan then deemed necessary.
- .5 This Conference recommends to all Member States that the technical standards and any other pertinent data developed by it be taken into consideration by them when they are coordinating their plans for the Regional and Domestic Air Route Areas.

PROPOSAL SUBMITTED BY THE AUSTRALIAN DELEGATION IN
CONNECTION WITH THE FINAL FREQUENCY ALLOTMENT PLAN FOR
THE "R" BANDS.

WHEREAS the Conference recognises that the final frequency allotment plan should satisfy fully the operational requirements of all categories of air service operations in the aeronautical mobile services; and

WHEREAS it would appear in the light of the requirements filed at the Conference that the spectrum space allocated to the exclusive aeronautical mobile service in the "R" bands is insufficient to permit total satisfaction of all requirements; and

WHEREAS it has been agreed that the international air service operations in the Major World Air Route Areas should not be given preference over domestic operations in the final plan; and

WHEREAS the information available to this Conference in respect of the regional/domestic requirements is insufficient to enable the Conference to determine these requirements to the same degree of accuracy as has been possible in connection with the Major World Air Route Area requirements; and

WHEREAS in order to provide for the most efficient use of the frequencies available, it is essential that proper coordination in the use of the aeronautical mobile frequencies be effected within each region as well as within the Major World Air Route Areas; and

WHEREAS it is believed:

- a) that it is impossible for the Conference to formulate a final frequency allotment plan which will provide for an equitable degree of satisfaction of the requirements of all classes of air service operations and be acceptable to all States; and
- b) that a true appreciation of the regional requirements will not be available until action has been taken within the regions defined by the



Conference to have the regional domestic problems studied in detail in order that the minimum operational requirements may be determined, taking into consideration present practices and proposals in connection with the use of medium frequencies, high frequencies in the shared bands and VHF,

- c) that the information available to the Conference concerning operations within the Major World Air Route Areas is sufficient to enable it to determine with reasonable accuracy the minimum requirements of the international air service operations within these areas,

IT IS RECOMMENDED THAT

1. the Conference:

- a) Specify the boundaries of the Major World Air Route Areas.
- b) Specify the minimum frequency requirements to meet the needs of air traffic within these areas based on the application of ICAO Standards and Procedures.
- c) Specify such discreet channels as may be required for worldwide use for special purposes.
- d) Specify the protection ratio desirable to limit harmful interference between the Major World Air Route Areas and regions as may be considered necessary for planning purposes within the regions.
- e) Specify for planning purposes the conditions under which frequencies tentatively allotted to Major World Air Route operations can be duplicated.
- f) Allot for planning purposes within each region the remaining frequencies on the basis of available information concerning regional/domestic requirements.

- g) Define the limits of the regions and sub-regions referred to above and such restrictions as may be necessary in future planning to eliminate the possibility of harmful interference between the Eastern and Western Hemispheres.
2. The Conference requests the Provisional Frequency Board and/or the Administrative Council as appropriate to make such arrangements as are necessary for the convening of regional meetings in order that the regional domestic problem may be properly examined and the coordinated frequency requirements and assignment plans for each region determined by the Administrations concerned, and for the distribution of the reports and plans proposed by each region to the other regions concerned prior to the Administrative Conference which approves the final frequency plan.
3. The Administrative Council invites the attention of ICAO to the action taken and requests its advice as to any modifications considered desirable to the plan in respect to the Major World Air Route Areas prior to the above-mentioned Conference.
4. That any adjustments of the basic plan prepared by this Conference necessary to provide for an equitable degree of satisfaction of the operational requirements of all categories of air service operations be effected when the above-mentioned special Administrative Conference meets, and that the attention of ITU Member States be drawn to the necessity for them to furnish minimum essential information in connection with their requirements in cases where readjustments of the Major World Air Route Areas or regional plans are considered necessary.
5. The Administrative Council recommends to the regions that the technical standards and other pertinent data developed by this Conference be taken into consideration by them in the course of their studies as a useful material.

NOTE: The regions referred to above are those agreed by Committee 6 Working Groups.