Documents of the Administrative Radio Conference (CAR-59)

(Geneva, 1959)

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

- This PDF includes Document No. 101 - 200.
- The complete set of conference documents includes Document No. 1 - 915, DT No. 1 – 875 (incomplete).

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 101-E
25 August, 1959.

C O R R I G E N D U M

to Document No. 75-E

Minutes of the second meeting of the Heads of Delegations

18 August, 1959, at 10.30 a.m.

Page 1: Add to the list of Heads of Delegations present:

"Union of South Africa and Territory of South West Africa".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 102-E
25 August 1959

COMMITTEE 5

SUMMARY RECORD

First meeting Committee 5

(Frequency Registration Procedure
and International Frequency List)

Thursday, 20 August 1959 at 11.30 a.m.

Reference: Agenda of 19 August 1959, Document No. DT/4-E

The Chairman of Committee 5, Dr. Joachim (Czechoslovakia), thanked the members of the Conference for the honour they had done him in choosing him as Chairman of the Committee. He said that he would do everything in his power to further the Committee's work and, after outlining its scope, and the Committee's relationship with Committee 4, he invited the delegates to "roll up their sleeves".

1. Nomination of Rapporteurs

At the Chairman's request, the French delegation nominated Mr. Barrailler as French-language Rapporteur, and the United States delegation nominated Mr. Donald as English-language Rapporteur. In addition, the I.F.R.B. nominated Mr. Dellamulla and Mr. Petit to give the necessary technical assistance to the Committee.

The Delegate of Colombia observed that the translation of the reports into Spanish did not always correspond to the French text, and he requested that a Spanish-language rapporteur should be nominated. His delegation was prepared to nominate a rapporteur, unless one of the larger delegations was ready to do so.

The Delegate of Argentina said that he was prepared to nominate a member of his delegation to assist the principal Rapporteur.

The Chairman accepted Argentina's nomination of Mr. Julio J. Etulain as Spanish-language Rapporteur.

The Delegate of Mexico drew the Committee's attention to the fact that the Steering Committee had decided that there should be only one rapporteur for each committee. The rapporteurs for the other languages would simply check the original text.

The Delegate of the United Kingdom supported the delegate of Mexico. The Chairman said that there would be only one official Rapporteur, in French, and that the texts for submission to the Drafting Committee would be prepared by a group composed of the Rapporteurs for the three working languages.

2. Terms of Reference of the Committee and documents to be studied

The Chairman said that the Committee's terms of reference had been defined in Document No. 52-E, and that it was unnecessary to go over them again.

The following documents would be studied:

Radio Regulations, Chapter IV, pages 68 to 82

E.A.R.C. Agreement, Chapter VII, pages 58 to 72

Proposals by various Countries, Yellow Book, pages 266 to 311

Document No. 2, Annex I and particularly pages 10 to 16

Document No. 1, Report by the Administrative Council

Document No. 20, Report by the I.F.R.B.

Document No. 35, to be treated as urgent.

The Delegate of Spain asked whether the proposals not yet published would be considered by the Committee. Whereupon the Chairman said that the proposals would be considered as and when they appeared.

3. Organization of work

The Chairman gave it as his opinion that the main problems would have to be considered in a plenary meeting of the Committee and then referred to working parties.

The Delegate of Portugal felt that the Committee could suitably split up into two working parties, one to deal with frequency notification procedure, and the other to study the frequency list.

The first working party could meet without more ado. The second would have to await certain decisions by Committee 4 before it could begin.

The Delegate of the Federal People's Republic of Yugoslavia thought that the first documents to be considered should be the report by the International Frequency Registration Board and the report by the Administrative Council.

The Delegate of Italy supported him.

No objection being forthcoming, the Committee decided to consider, first of all, the reports by the I.F.R.B., and the Administrative Council, together with Document No. 35, so as to give definite instructions to the working parties to be set up later.

The Delegate of the United Kingdom of Great Britain and Northern Ireland recalled that at the third plenary meeting of the Conference, Document No. 35 had been referred to Committee 4 only, and not to Committee 5.

Various speakers spoke (Mr. Charles J. Acton, Chairman of the Conference, and the Delegates of Colombia, Italy, the Federal People's Republic of Yugoslavia, the United States, and the People's Republic of Poland), and it was decided to see what the outcome was of the study made of Document No. 35 by Committee 4, so that Committee 5 might act accordingly.

Before Item 4 was considered, the Delegate of the United States, recalled the statement of the delegate of Portugal on the appointment of working groups, and remarked that they should begin as soon as possible.

The Chairman stated that the Committee had decided to examine Documents Nos. 1 and 20 before forming the groups.

4. Any other business

None.

The meeting rose at 12.35 p.m.

The Rapporteurs:

J. Barrailler
D. D. Donald

The Chairman:

Dr. Joachim

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 103-E
25 August, 1959

SUB-COMMITTEE 7B.

REPORT

Working Group to Combine Proposals
1661, 1662, 1663, 4102 and 1664

571 2) For this purpose aircraft stations must use the frequencies allocated to the maritime mobile service.

However, Administrations shall take whatever steps may be necessary to prevent aircraft flying at high altitudes and using frequencies in the bands above 30 mc/s. from interfering with communications of the maritime mobile service.

Rapporteur:

G.F. WILSON

25 August, 1959.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 104-E
25 August 1959

SUMMARY RECORD

Sub-Committee 7 D - Radiotelegrams

First Meeting - 24 August, 1959

Chairman: Mr. A. Caruso (Italy)

1. Appointment of the Rapporteur of the Sub-Committee and the drafting group.

2. Examination of the terms of reference and organization of the work of the Sub-Committee.

3. Article 38 of the Regulations (proposals Nos. 2566 - 2567 - 2568 - 2569 - 2570).

4. Article 39 of the Regulations (proposals Nos. 2571 - 2572 - 2573).

5. Any other business.

The Chairman invited the Belgian delegation to nominate a rapporteur. Mr. Adam was appointed.

The Chairman then requested the Argentine and the United States delegations to nominate a member of their respective delegations to serve in the drafting group. Mr. Iturrioz and Mr. Chandler were appointed.

The Chairman announced that Mr. J. A. Kunz and Mr. Wang would represent the General Secretariat and the I.F.R.B. respectively in the Sub-Committee.

The Sub-Committee would have to study the proposals in Articles 38, 39, 40, 41 and Appendix 14, as well as all proposals relating to the Additional Radio Regulations. The proposals were set out in the Book of Proposals, Volume II, pages 631 to 656, 808 to 809 and 828 to 869. He asked to have any ommissions pointed out to him at the following meeting.

The Chairman raised the question of the setting-up of a number of working groups to examine the more important proposals. Although it was impossible for him to make a forecast at that stage, he felt that a working group should be set up to examine the proposals relating to Article 41; he asked the United Kingdom delegation to provide a chairman for the group. The Delegate of the United Kingdom, taken aback, was unable to put forward a name immediately; the Chairman would be informed of the choice later.

He felt that the group should also examine Article 4 of the Additional Regulations.

The Chairman then introduced proposals Nos. 2566 - 2567 - 2568 and 2570 for discussion.

The Delegate of Sweden asked that, before taking a decision on proposal 2566 submitted by the United Kingdom, the Sub-Committee should consider his all-embracing general proposal sufficient on its own to cover the operation of the maritime mobile radiotelephone service (see Page 6, No. 13, Volume of Proposals No. I.).

In reply, the Chairman stated that general proposals would be discussed at a plenary meeting of the Committee.

Mr. Ehnle, Chairman of Committee 7, confirmed that that was so.

The United Kingdom proposal No. 2566 was adopted unanimously.

Proposals Nos. 2567 - 2568 and 2570 gave rise to a lengthy discussion in which the delegates of the Argentine Republic, Belgium, France, the United States, the United Kingdom and Switzerland, in particular took part. Since opinion was divided, the Argentine delegate suggested that a working party should be set up forthwith to work out a solution acceptable to all.

The Chairman endorsed the suggestion and appointed Mr. Carli to preside over the small working group composed of the Argentine, French and United Kingdom delegates.

A solution was quickly found and on resumption of the meeting, Mr. Carli (Argentine) requested the rapporteur to communicate the text to the Chairman. The new text was submitted for approval and adopted.

The Chairman then asked the rapporteur to record in the Minutes the following new text of No. 950 of the Regulations:

The term "communication" as used in this Article refers to radiotelegrams as well as to radiotelephone calls. The order of priority of communications in the mobile service shall be as follows:

1. Distress calls, distress messages and distress traffic.

2. Communications preceded by the urgency signal.

3. Communications preceded by the safety signal.

4. Communications relative to radio directional bearings.

5. Communications relative to navigation and safe movement of aircraft.

6. Communications relative to the navigation, movements and needs of ships, and weather observation messages destined for a meteorological service.

7. Government communications for which priority has been claimed.

8. Service radiotelegrams relating to the working of the radiocommunication service or to communications previously transmitted.

9. All other communications.

The Italian proposal No. 2568 was then adopted subject to a more detailed discussion of the order of priority in points 10 and 13.

The Chairman then presented for discussion proposals Nos. 2571 - 2572 and 2573, submitted by the Netherlands.

The Delegate of Belgium considered that proposal No. 2572 consisted of two separate parts, the first dealing with messages from and the second with messages to mobile stations. He thought that it would be more appropriate to incorporate the second part in No. 2007 of Article 2 of the Additional Radio Regulations. Moreover, he felt that land station users could not be expected to know the call sign of a mobile station.

The Delegate of the United Kingdom fully endorsed that view and stated that the word "must" in proposal No. 2572, line four, was too imperative and that his Administration could not accept it. It would, moreover, give rise to difficulties in the acceptance of telegrams to mobile stations.

The Chairman proposed that the status quo should be maintained for the first part of the proposal (see No. 951) and that the second part be dealt with again when Article 2 of the Additional Radio Regulations was examined.

The delegates of the Argentine Republic, Belgium, Canada, France, the United Kingdom, Netherlands, Sweden and the United States agreed with the stand taken.

The delegate of China made a statement concerning No. 951 of the Regulations dealing with the radiotelephone service.

The Chairman invited the Chinese delegation to submit a written proposal on the matter. It was so agreed.

The Chairman recalled that proposal No. 2569 from Japan would be discussed after a decision had been taken on proposals Nos. 2562 and 2565, likewise submitted by that country.

Since there were no further items on the Agenda, the meeting rose at 5.55 p.m.

Rapporteur:
A. Adam

Chairman:
A. Caruso

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 105-E
25 August, 1959

COMMITTEE 4

LIBYA

Proposal

The following is the text of a letter addressed to me by the Head of the Delegation of Libya :

"Dear Sir,

The Libyan Delegation will very much appreciate your kindly submitting to your esteemed Committee the following proposals in connection with Article 9 of Chapter 3 of Radio Regulations :

No. of proposal

5289 252 b) to read :

The whole of the area in Region 1 contained between the parallel 35° N. and 35° S. and Region 3 contained between 30° N. and 35 ° S. etc., and to add to Article 9,

5289bis para. 245/2 the following new para. :

Countries sharing broadcasting frequencies in the medium wave band with other countries in the same or an adjacent Region, and which have developed a system of VHF coverage, should whenever possible relinquish some frequencies or accept limitations or power to assist those countries which for geographical or other reasons are precluded from employing a VHF system of coverage."

Gunnar PEDERSEN
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 106-E
25 August 1959

U.S.S.R.

Proposals

ARTICLE 5

Table of Frequency Allocations - 27.5 to 10 500 Mc/s

Number of proposal	Frequency Band and (Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5290	27.5 - 28.0 x) (0.5)	a) Fixed b) Mobile	
5291	28.0 - 29.7 x) (1.7)	Amateurs	
5292	29.7 - 41.0 x) (11.3)	a) Fixed b) Mobile	The use of the band between 29.7 and 33.0 Mc/s is recommended in the case of radio circuits using ionospheric scatter propagation. The frequency 40.68 Mc/s + 0.05% might be used for scientific, medical and industrial services. The use of the frequency bands: 38-44 Mc/s, 46-48 Mc/s is recommended in the case of radio circuits using ionospheric scatter propagation. The use of the band 44-46 Mc/s is recommended for the land mobile service on metric waves.
5293	41.0 - 48.5 x) (7.5)	a) Fixed b) Mobile	
5294	49.5 - 56.5 (8.0)	Broadcasting (Television)	
5295	56.5 - 58.0 (1.5)	Fixed	The use of the band between 56.75 and 57.75 Mc/s is recommended for radio circuits using ionospheric scatter propagation.

Number of proposal	Frequency Band (and Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5296	58.0 - 66.0 (8.0)	Broadcasting (television)	
5297	66.0 - 73.0 (7.0)	Broadcasting	
5298	73.0 - 76.0 x)	Aeronautical radionavigation	
5299	76.0 - 100.0 (24.0)	Broadcasting (television)	
5300	100.0 - 108.0 xx) (8.0)	Aeronautical mobile	
5301	108.0 - 118.0 xx) (10.0)	a) Aeronautical radionavigation b) Aeronautical mobile	
5302	118.0 - 132.0 x) (14.0)	Aeronautical mobile R	
5303	132.0 - 144.0 xx) (12.0)	Aeronautical mobile OR	
5304	144.0 - 146.0 x) (2)	Amateur	
5305	146.0 - 148.0 xx) (2.0)	Aeronautical mobile OR	
5306	148.0 - 150.0 x) (2.0)	Mobile	
5307	150.0 - 156.0 x) (6.0)	a) Fixed b) Mobile	
5308	156.0 - 174.0 x) (18.0)	a) Fixed b) Mobile, except aeronautical mobile	The band between 156.025 and 162.025 Mc/s could be used for the maritime mobile service.
5309	174.0 - 230.0 xx) (56)	Broadcasting (television)	

Number of Proposal	Frequency Band and (Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5310	230.0 - 235 xx) (5.0)	Aeronautical radionavigation	
5311	235 - 328 x) (93)	a) Fixed b) Mobile	The band between 305 and 315 Mc/s might be used for the expansion of the land mobile service on metric waves. The band between 322 and 329 Mc/s is recommended for radioastronomy.
5312	328 - 336 x) (8.0)	Aeronautical radionavigation	
5313	336 - 420 x) (84.0)	a) Fixed b) Mobile	
5314	420 - 450 x) (30.0)	a) Amateur b) Aeronautical radionavigation	
5315	450 - 470 x) (20.0)	a) Fixed b) Mobile	
5316	470 - 582 x) (112.0)	Broadcasting (television)	
5317	582 - 605 xx) (23.0)	Radionavigation	
5318	605 - 960 x) (355)	Broadcasting (television)	
5319	960 - 1215 x) (255)	Aeronautical radionavigation	
5320	1215 - 1300 x) (85)	a) Amateur b) Fixed	
5321	1300 - 1550 x) (250)	a) Aeronautical radionavigation b) Fixed c) Mobile	The band between 1400 and 1427 Mc/s is recommended for radio-astronomy

Number of proposal	Frequency Band and (Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5322	1550 - 2000 x) (450)	Fixed	The band between 1645 and 1675 Mc/s is recommended for radioastronomy
5323	2000 - 2300 x) (300)	a) Fixed b) Mobile	
5324	2300 - 2450 xx) (150)	a) Fixed b) Mobile	The use of industrial, scientific and medical stations is authorized in the band between 2325 and 2425 Mc/s
2325	2450 - 2700 x) (250)	a) Fixed b) Mobile	
5326	2700 - 2900 x) (200)	Aeronautical radionavigation	
5327	2900 - 3400 x) (500)	Radionavigation	The band between 3165 and 3195 Mc/s is recommended for radioastronomy
5328	3400 - 3900 x) (500)	Fixed	The band between 3400 and 3900 Mc/s is recommended for the development of radio relay systems
5329	3900 - 5000 x) (1100)	a) Fixed b) Mobile	The band between 4800 and 4810 Mc/s is recommended for radioastronomy
5330	5000 - 5250 x) (250)	Aeronautical radionavigation	
5331	5250 - 5650 x) (400)	Radionavigation	
5332	5650 - 5800 x) (150)	Amateur	
5333	5800 - 8700 x) (2900)	a) Fixed b) Mobile	The frequency bands between 5800 and 5815 Mc/s and between 8680 and 8700 Mc/s are recommended for radioastronomy

Number of proposal	Frequency Band and (Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5334	8700 - 9800 x) (1100)	Radionavigation	
5335	9800 - 10000 x)	a) Fixed b) Radionavigation	
5336	10000 - 10500 x) (500)	Amateur	

Notes:

1. Services using the frequency bands marked with an asterisk (x) in the first column are recommended to be operated on a world-wide basis.

2. Services using the frequency bands marked with two asterisks are recommended to be operated in a particular area.

3. Services using the other frequency bands not marked with an asterisk are included in the Radio Regulations in the form of a footnote to the Table authorizing their use by the countries concerned.

Table of Frequency Allocations - 10 500 to 40 000 Mc/s

Number of proposal	Frequency Band and (Bandwidth) Mc/s	Allocation to Services	Comments for insertion in the Radio Regulations
	1	2	3
5337	10500 - 13500 (3000)	a) Fixed b) Mobile	
5338	13500 - 14175 (675)	Radionavi-gation	
5339	14175 - 19000 (4825)	a) Fixed b) Mobile	
5340	19000 - 20000 (1000)	Radionavi-gation	The frequency band between 19900 and 20000 Mc/s is recommended for testing industrial, scientific and medical apparatus.
5341	20000 - 24000 (4000)	a) Fixed b) Mobile	The use of the frequency band between 21000 and 22000 Mc/s is authorized for the amateur service.
5342	24000 - 25000 (1000)	Radionavi-gation	
5343	25000 - 29500 (4500)	a) Fixed b) Mobile	
5344	29500 - 31000 (1500)	Mobile	
5345	31000 - 33000 (2000)	a) Fixed b) Mobile	
5346	33000 - 34500 (1500)	Aeronavi-gation	
5347	34500 - 40000 (5500)	a) Fixed b) Mobile	

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 107-E
CORRIGENDUM No. 2
10 September, 1959

PLENARY MEETING

AMENDMENT BY THE CHINESE DELEGATION OF THE DRAFT MINUTES OF THE SECOND PLENARY MEETING DOCUMENT NO. 107-E

On page 4, the 6th paragraph, 30th line,
replace the sentence:

"The Peking Government, which deprived the Chinese people of basic liberties, was guilty of oppression and could not possibly represent China."

by:

"The régime installed in Peiping, which deprives the Chinese people of fundamental liberties, and which is guilty of the worst oppression internally and of repeated aggressions internationally, cannot pretend to represent China and the interests of the Chinese people."

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 107-E
CORRIGENDUM No. 1
7 September, 1959

PLENARY MEETING

AMENDMENT BY THE UNITED KINGDOM DELEGATION
OF THE DRAFT MINUTES OF THE SECOND PLENARY MEETING
DOCUMENT NO. 107-E

1st Amendment

In accordance with the actual contribution to the discussion made by the Delegate of the United Kingdom on page 5 of the document an additional sentence should be added at the end of the paragraph as follows:

" The Administrative Radio Conference had a very heavy agenda to consider and it would be as well to proceed with that work. "

2nd Amendment

On page 7 immediately after the contribution by Mr.Gerald C.Gross (Acting Secretary-General) to add the following contribution made by the Delegate of the United Kingdom:

" The Delegate of the United Kingdom of Great Britain and Northern Ireland referred to the Bulgarian proposal to admit four groups of observers from non-Member countries. In the view of the Delegation it was not within the competence of the Conference to do so, and he supported the point of order submitted by the Delegate of the United States. "

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 107-E
25 August, 1959

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Tuesday, 18 August 1959, at 3.15 p.m.

Chairman: Mr. Charles J. Acton (Canada)

Vice-Chairmen: Mr. Juan B. Autelli (Argentine Republic)
Dr. M.B. Sarwate (Republic of India)

Secretary of the Conference: Mr. Gerald C. Gross

Deputy Secretary: Mr. Clifford Stead

AGENDA:

Election of an Honorary Chairman of the Conference

1. Reference to Article 11 and Annex 5 of the Convention
2. Proposals by the Chairman for Chairmen and Vice-Chairmen of Committees
3. Invitations to the Conference (Documents Nos. 3 and 18)
4. Situation of certain countries with respect to the Convention (Documents Nos. 4 and 18)
5. Admission of international organizations (Document No. 5)
6. Working hours for the Conference
7. Schedule of meetings
8. Any other business.

The following Members of the Union were represented:

The People's Republic of Albania, the Argentine Republic, the Commonwealth of Australia, Austria, Belgium, the Bielorussian Soviet Socialist Republic, the Kingdom of Cambodia, Burma, Brazil, the Bulgarian People's Republic, Canada, Ceylon, China, the Vatican City, the Republic of Colombia, Colonies, Territories, Oversea Territories and Territories under Mandate or Trusteeship of the United Kingdom of Great Britain and Northern Ireland, the Belgian Congo, the Republic of Korea, Cuba, Denmark, French Oversea Territories, Ecuador, Spain, the United States, Ethiopia, Finland, France, Ghana, Greece, the Republic of India, the Republic of Indonesia, the Republic of Ireland, Iceland, Israel, Italy, Japan, Liberia, Libya, Luxembourg, Malaya, Morocco, Mexico, Monaco, Nicaragua, Norway, New Zealand, Pakistan, Paraguay, the Netherlands, the Republic of the Philippines, the People's Republic of Poland, Portugal, Portuguese Oversea Provinces, the Federal German Republic, the Federal People's Republic of Yugoslavia, the Ukrainian Soviet Socialist Republic, the United Kingdom of Great Britain and Northern Ireland, Sweden, Switzerland, Czechoslovakia, United States Territories, Thailand, Tunisia, Turkey, the Union of South Africa, the Union of Soviet Socialist Republics.

Associate Members:

British East Africa, British West Africa.

Recognized Private Operating Agencies:

Transradio Española.

Election of an Honorary Chairman of the Conference

The Chairman said that as the headquarters of the Union were in Switzerland it would be appropriate for the Conference to honor Switzerland by electing Mr. A. Wettstein, Head of the Swiss Delegation, as Honorary Chairman of the Conference.

It was so decided by acclamation.

The Delegate of Switzerland, expressing his appreciation, said that Mr. Wettstein was likely to be absent during most of the Conference. He would, however, see that Mr. Wettstein was apprised of the honour done to him and to his country.

1. Reference to Article 11 and Annex 5 to the Convention

Mr. Gerald C. Gross (Acting Secretary-General) said that traditionally, the rules of procedure for conferences given in Annex 5 to the Convention had sufficed. No changes seemed called for, and he would suggest that the Conference, for the time being, simply take note of those rules as they stood and be governed by them.

The Delegate of France observed that Rule 22, paragraph 1, decreed that passages added to the texts reviewed by the Conference should provisionally be numbered "bis", "ter", etc.

Unfortunately, few could boast of knowing what came after six or seven in that series, which was clumsy and also entirely unfamiliar in many countries. Hence he would propose that the Conference use the series a), b), c), d), etc., for the purposes in question.

It was so decided.

Subject to this amendment, the rules of procedure given in Annex 5 to the Convention were adopted by the Conference.

2. Proposals by the Chairman for Chairmen and Vice-Chairmen of Committees (Document No. 45)

The Delegate of the United States proposed that the Conference adopt the list of Chairmen and Vice-Chairmen set forth in Document No. 45. The Delegate of the Union of Soviet Socialist Republics seconded the motion.

It was so decided.

The Chairman, expressing gratification at the speed with which the matter had been disposed of, pointed out that the list in Document No. 45 would ensure a balanced representation of the various countries of the world.

3. Invitations to the Conference (Documents Nos. 3 and 18)

The Delegate of the Union of Soviet Socialist Republics said that the Conference was called on to take some very important decisions regarding the future use of the radio spectrum. A new international frequency list had to be drawn up and order introduced into the ether. Quite clearly, such questions could not be settled in the absence of representatives from a great country which possessed extensive radio networks and broadcasting services, namely, China.

The situation obtaining with regard to the representation of China was gravely abnormal and was liable to undermine the prestige of the Union.

The representatives of the clique of Chiang Kai-Shek did not represent China and had no right to sign the final acts of the Conference on behalf of China. The only rightful representatives of that country were those appointed by the Central People's Government of the People's Republic of China (For verbatim text, see Annex).

The Delegate of the People's Republic of Bulgaria observed that the Conference was the first Administrative Radio Conference to be held for twelve years, and the decisions it took would have a great influence on the future of telecommunication. The more countries were represented in the Conference the greater would be the hope of success. All countries, whether Members of the Union or not, should be represented when decisions of such importance had to be taken.

The German Democratic Republic, the People's Republic of Mongolia, the People's Democratic Republic of Korea, and the People's Republic of Viet-Nam - all of them countries possessing extensive radio communications with other countries - had not been invited to send representatives. He would propose that they be invited to attend the Conference in the capacity of observers. (For verbatim text, see Annex).

The Delegate of China said that Article 10, paragraph 2, of the Buenos Aires Convention clearly showed that the tasks of ordinary administrative conferences were in fact purely administrative. It was no part of the duties of the Administrative Radio Conference to concern itself with political matters.

The Delegate of the Union of Soviet Socialist Republics had been perfectly aware, in making his statement, that the China referred to in Annex 1 to the Convention was the Republic of China which he (the Delegate of China) represented.

A similar proposal had been made and decisively rejected at the Buenos Aires Plenipotentiary Conference. Such moves were so much political propaganda.

The Chinese Administration sought co-operation with other Administrations and was concerned to improve the services offered to the public. The government of the Republic of China was freely elected, and was doing its best to restore hope and dignity to Chinese people at present crushed by the communist yoke. The Peking Government, which deprived the Chinese people of basic liberties, was guilty of oppression and could not possibly represent China.

The use of the word "clique" to describe the government of the Republic of China, was entirely inadmissible. (For verbatim text, see Annex).

The Delegate of the People's Republic of Poland was surprised that the General Secretariat had not seen fit to invite the People's Republic of China to a conference of such importance. It was common knowledge that the People's Republic of China had a population of some six hundred million souls and a considerable radio network, and maintained permanent radio contact with many other countries. The attitude adopted

by the I.T.U. Administrative Council in the matter was not conducive to attainment of the ends pursued by the Union.

He would second the Bulgarian proposal in favour of inviting the German Democratic Republic (already represented at many international conferences), the People's Republic of Mongolia, the People's Democratic Republic of Korea, and the People's Republic of Viet-Nam, to send observers. (For verbatim text, see Annex).

The Delegate of the United States said that questions of Membership in the Union came within the exclusive province of the Plenipotentiary Conference, acting in accordance with recommendations by the Administrative Council. He would propose that the discussion be terminated.

The Delegate of the Bielorussian Soviet Socialist Republic strongly supported the Bulgarian proposal.

The Delegate of the United Kingdom of Great Britain and Northern Ireland equally strongly backed the United States motion. The Administrative Radio Conference was not the right place to discuss questions of Membership or the interpretation of the Convention and General Regulations. Such matters were for the Plenipotentiary Conference (or for the Administrative Council between sessions of the Plenipotentiary Conference) to decide.

The Delegate of the Republic of India pointed out that radio waves were no respecters of frontiers either political or geographical. It was true that, in the view of certain speakers, such matters were outside the terms of reference of the Conference; but the arguments used to support the Bulgarian proposal could not be lightly set aside. And, surely, the existing position with regard to the representation of China (a country with twenty-two per cent of the world's population) was anomalous. (For verbatim text, see Annex).

The Delegate of the Federal People's Republic of Yugoslavia felt that the Union was an international organization in which every country could and should collaborate. Modern telecommunication represented a single, organic system.

It was extremely unfortunate, both for the countries concerned and for the Union itself, that the countries not represented could take no part in the work of the Conference.

Hence his Delegation felt that all countries which wished to be represented at the Conference as observers should be invited. (For verbatim text, see Annex).

Mr. Gerald C. Gross (Acting Secretary-General) said that the General Secretariat, composed of international civil servants, had to abide strictly by the letter of the law.

The Buenos Aires Convention, ratified by an overwhelming majority of the Members of the Union, gave a clear ruling (Annex 5, Part I, Chapter 1, paragraph 5) as to the prerogatives of the Administrative Council in proposing the invitation of non-contracting governments.

In Decision D 208, the Council had clearly decreed that invitations to attend the Plenipotentiary Conference and Administrative Radio Conference should be sent only to the countries listed in Annexes 1 and 2 to the Convention, and to the countries acceding thereto.

The Delegate of the United States said that it was out of order for the Radio Conference to invite non-Member countries.

The Delegate of the People's Republic of Bulgaria emphasized that the question of admission to Membership did not arise. His proposal was that the four countries in question should be invited to send observers, without the right to vote. The matter was one which could perfectly well be settled by the Conference.

The Delegate of the Union of Soviet Socialist Republics, welcoming the Bulgarian proposal as a valuable contribution to the success of the Conference, observed that a number of countries which had not ratified the Convention had been invited to attend the Conference, not only as observers, but as full Members with the right to vote. What was the explanation of that?

The Chairman said that the countries alluded to by the previous speaker all appeared in Annex 1 to the Convention, and hence were covered by the Administrative Council's specific ruling in Decision D 208.

Mr. Gerald C. Gross (Acting Secretary-General) again referred to Administrative Council Decision D 208.

Since invitations were first sent out, Bolivia had deposited its instrument of ratification of the Convention, and hence was a full Member of the Union; so had Kuwait. The General Secretariat had been informed that instruments of ratification were on their way from two other countries, Colombia and Costa Rica.

The Delegate of the Republic of Colombia apologized for the late despatch of the instrument whereby his country had ratified the Buenos Aires Convention.

He quite agreed that from the strictly legal point of view, the Conference had to abide by the rules given in the Convention for the handing-in of instruments of ratification and accession. Nevertheless, such technicalities did sometimes mean that countries which had taken an active part in I.T.U. activities for many years - and Colombia was in that position - were temporarily deprived of the right to vote. He intended to raise the matter in the Plenipotentiary Conference.

The Delegate of the People's Republic of Poland asked how paragraph 3 e) of Chapter 2 of the General Regulations annexed to the Convention, which laid down that "according to circumstances", observers from non-contracting countries could be admitted to administrative conferences as observers, was to be reconciled with the explanations given by the Acting Secretary-General.

Mr. Gerald C. Gross (Acting Secretary-General) said that the position clearly was that, as stated in Chapter 1, paragraph 5, of the General Regulations, non-contracting governments could be invited to send observers only "in agreement with or on a proposal by" the Administrative Council. The point had been put to the Council at its Fourteenth Session, and the Council, by Decision D 208, had ruled that such countries should not be invited. It was not, in his view, open to the Conference to go back on that decision.

The Chairman then put to the vote the United States motion to the effect that the Bulgarian proposal was out of order and that discussion thereof be discontinued.

The motion was carried by forty-three votes to nine, with eleven abstentions.

In favour:

The Argentine Republic; Australia; Austria; Belgium; Bolivia; Brazil; Canada; China; the Vatican City; Colonies, Territories, Overseas Territories and Territories under Mandate or Trusteeship of the United Kingdom of Great Britain and Northern Ireland; the Belgian Congo; the Republic of Korea; Cuba; Denmark; French Oversea Territories; Spain; the United States of America; Finland; France; Greece; the Republic of Ireland; Italy; Japan; Libya; Luxembourg; Malaya; Mexico; Monaco; Nicaragua; Norway; New Zealand; Paraguay; the Netherlands; the Republic of the Philippines; Portugal; Portuguese Oversea Provinces; the Federal German Republic; the United Kingdom of Great Britain and Northern Ireland; Sweden; United States Territories; Thailand; Turkey and the Union of South Africa.

Against:

The People's Republic of Albania; the Bielorussian Soviet Socialist Republic; the People's Republic of Bulgaria; India; Iraq; the People's Republic of Poland; the Ukrainian Soviet Socialist Republic; Czechoslovakia and the Union of Soviet Socialist Republics.

Abstentions:

Burma; Ceylon; Ethiopia; Ghana; the Republic of Indonesia; Israel; the Kingdom of Morocco; Pakistan; the Federal People's Republic of Yugoslavia; Switzerland and Tunisia.

4. Situation of Certain Countries with Respect to the Convention (Documents Nos. 4 and 18)

The Chairman ruled that Item 4 had already been covered by the discussion on Item 3.

5. Admission of International Organizations (Document No. 5)

Mr. Gerald C. Gross (Acting Secretary-General) recommended that the Conference simply decide to admit the organizations listed in Document No. 5 as observers. All of them, except COSPAR, had been exempted by the Administrative Council from a share in defraying the expenses of the Conference, subject to the grant by them of similar reciprocal exemptions to the I.T.U. In addition, the International Astronautical Federation, mentioned in Document No. 44, should be included.

It was so decided.

6. Working hours for the Conference

The Chairman, speaking on behalf of the heads of delegations, recommended that to begin with, the Conference agree to work from ten o'clock to half-past twelve, and from three o'clock to six. The Steering Committee would shortly be meeting to hear the views of the Chairmen of Committees as to the time the Committees would require. It would then be in a position to recommend any necessary changes.

It was so decided.

7. Schedule of Meetings

It was decided that the Steering Committee should meet on Wednesday, 20 August, 1959, at 10 a.m.

It agreed that in view of the important part to be played by the International Frequency Registration Board in the work of the Conference, and especially in that of Committee 5, the Chairman and Vice-Chairman of that body should be allowed to attend the Steering Committee as observers.

8. Any other business

i) Date for the end of the Conference

The Delegate of the United States thought the Steering Committee should recommend a definite date for the end of the Conference. The Committees, he considered, should finish by, say, 15 or 30 November at the latest.

The Delegate of the Union of Soviet Socialist Republics said that the Administrative Council, at its Thirteenth Session, had already decided that the Conference should last one month less than had been originally expected. Further reductions, in his view, were possible.

Firstly, the Conference had to do considerably less than had been accomplished at Atlantic City.

Secondly, many proposals were merely matters of drafting, or had been settled already by previous radio conferences. Many of the purely technical decisions had been taken in Los Angeles by the Ninth Plenary Assembly of the International Radio Consultative Committee.

Thirdly, a great deal of preparatory work had been done by the General Secretariat. And, fourthly, the Chairmen and Vice-Chairmen of Committees were highly experienced men.

Hence he would propose that the duration of the Conference be reduced by thirty days and end on 16 November 1959.

The Chairman entirely agreed that it was most important to reduce expenses by keeping the Conference as short as possible. He suggested that the question of a target date for the end of the Conference be examined by the Steering Committee.

It was so decided.

ii) Announcement about the International Broadcasting Organization

The Delegate of Czechoslovakia, speaking as the International Broadcasting Organization observer, expressed his pleasure at the admission of the body he represented.

At a plenary assembly of the International Broadcasting Organization held in Helsinki (July, 1959), it had been decided to change the name of the organization to "International Broadcasting and Television Organization". Hence the requisite changes should be made in the documents of the Conference.

The meeting rose at 5.30 p.m.

Rapporteur:	Chairman:	Secretary of the Conference:
N. Langford	Charles J. Acton	Gerald C. Gross

Annex : 1

A N N E X

The following statements were handed in. They deal with the matters discussed under item 3 of the agenda (invitations to the Conference).

1. The Union of Soviet Socialist Republics:

"The Administrative Radio Conference has to solve some exceedingly important questions connected with the future use of the radio spectrum, the preparation of the new international frequency list, and introduction of the necessary order into the other.

"It is quite evident for us that such questions cannot be solved without the participation in our work of representatives of the People's Republic of China, a country with powerful radiocommunication and broadcasting media. Decisions taken without account being taken on the interests of the radio services of the People's Republic of China will not be valid.

"Hence the Soviet Delegation feels it necessary to draw attention to this abnormal situation which is prejudicial to the authority of the Union.

"The delegates of the Chiang Kai-Shek clique at this Conference do not represent the whole of China and are not entitled to sign the Final Acts of the Conference on behalf of China.

"The representatives designated by the Government of the People's Republic of China are the only legitimate representatives of China in the I.T.U.".

2. China:

Having inquired whether the statements he had just heard did indeed come under Item 3 of the Agenda, and after having affirmed that the invitations to the Conference had been despatched by the Acting Secretary-General in accordance with decisions taken by the Administrative Council, which was alone competent to decide in such matters, the Delegate of China declared:

"The International Telecommunication Convention (Buenos Aires, 1952), which governs all activities of the Union, defines (Article 10, paragraph 2) the tasks confronting the Conference.

"These tasks are of a purely administrative nature: review of the Radio Regulations and Additional Radio Regulations of Atlantic City, treatment of all other matters considered necessary subject to the Convention and General Regulations and the instructions given by the Plenipotentiary Conference, etc.

"The statement just made by the Delegate of Soviet Russia throws doubt on the legitimate representation of China. It is entirely inadmissible.

"The Soviet Delegate knows full well that the China mentioned in Annex 1 to the International Telecommunication Convention is represented by the Government of the Republic of China. He will recall that at Buenos Aires, the Soviet proposal in favour of entering the name of the régime called the "People's Republic of China" was rejected by the Plenipotentiary Conference. All Soviet endeavours to deny the legitimate representation of China in our Union, as in all the other international organizations similarly fell through. This is purely political propaganda, fallacious and repeated ad nauseam. It will be as fruitless as it has always been.

"The Chinese Telecommunication Administration seeks international co-operation within the Union of which it is a Member. It is constantly endeavouring to improve its services and to extend their use by the public. The legal government of China, issued from free elections and based on a constitution freely adopted by the Chinese people, is trying to increase the well-being and prosperity of the Chinese people. It will spare no effort, thanks to the union of the hearts and minds of all Chinese wherever they may be, to restore dignity and freedom to those of them who, to-day, bow beneath the yoke of the communist régime in continental China.

"This régime, installed in Peiping and called the "People's Republic of China", is Chinese neither by its origin or by its nature. It has been guilty of repeated acts of aggression, direct or indirect, abroad, and of the vilest oppression at home, and cannot claim to represent China, the people of which country it is depriving of man's most fundamental liberties.

"Mr. Chairman, I do not wish to stray too far afield. I must, however, observe that the Soviet Delegate, in his statement, used an inadmissible expression. President Chiang Kai-Shek is the revered head of the Chinese State. If clique there be, it must be that which exists in Soviet Russia, which has familiarized us with the 'cliques' of Stalin, Beria, Malenkov, and others.

"The Administrative Radio Conference is faced with a heavy task which will call for at least four months of work. The first few minutes of its time are just as valuable as the last. Here I shall cut short

the few comments - in reality exceedingly brief - which I have felt obliged to make after hearing the statement made by the Soviet Delegate. Kindly, Mr. Chairman, include them in the Minutes of this meeting".

3. The People's Republic of Bulgaria:

"The Delegation of the People's Republic of Bulgaria notes with keen regret that the People's Republic of China is taking no part in the Radio Conference and that its place is taken by delegates who represent nobody.

"It is a well-known fact that the People's Republic of China is a vast country, covering a major part of Asia, and with a population exceeding six hundred million souls.

"Whatever decisions this Conference may take, they cannot be fully applied if they are not accepted by the People's Republic of China.

"True international co-operation in the field of radio is impossible without the participation of the People's Republic of China.

"The Delegation of the People's Republic of Bulgaria feels that the time is ripe to liquidate this absurd state of affairs and to enable the representatives of the People's Republic of China to take their rightful places in this Conference.

"Kindly bring this statement to the notice of the delegates to this Conference".

4. The Federal People's Republic of Yugoslavia:

"The Delegation of the Federal People's Republic of Yugoslavia considers that the International Telecommunication Union is an international organization within which all countries throughout the world can and should co-operate. It is a fact that modern telecommunications constitute a unified, organic system.

"Hence it is a pity for the countries not represented here, and it is a pity for our Union, that these countries are unable to take part in the work of our Conference.

"Hence the Yugoslav Delegation favours an invitation being sent to all countries which wish to be represented at the Conference as observers".

5. The People's Republic of Poland:

"The Polish Delegation is very astonished, that the Delegation of the Chinese People's Republic was not invited by the Secretary-General

of the I.T.U. to the work in our very serious Conference, which has to solve the principal questions of radicommunication.

"It is well known, that the Chinese People's Republic - the country of six hundred million population, has the highly developed radiocommunication services for home and international connections.

"Besides them it should be pointed out, that many of the Administrations represented here, have direct radio connection with the People's Republic of China.

"Considering the above-mentioned arguments, in the opinion of the Polish Delegation, it would be difficult to solve many problems of radiocommunication, frequency assignments, and other questions, without taking into account the opinion of the Chinese People's Republic.

"The Polish Delegation would like to point out, that the position taken by the Administrative Council of the I.T.U., regarding the representation of the People's Republic of China in the Radio Administrative Conference, is not in accordance with the principles of international co-operation in the radiocommunication field.

"The Polish Delegation would like to support the proposal made by the Bulgarian Delegation, regarding to the admittance as observers in our Conference of some countries, not Members of the I.T.U., and among them the representatives of the German Democratic Republic, similarly as they have taken part in such a character during B.N.R.C. conference in Göteberg, 1955 and during the H.M.R.C. conference in The Hague, 1957".

6. The People's Republic of Albania:

"The Delegation of the People's Republic of Albania to its very keen regret has to observe that the People's Republic of China is taking no part in the work of the Administrative Radio Conference, and that the place which by rights should be occupied by the delegation of this great country with more than six hundred million people is now occupied by the representatives of the clique of Chiang Kai-Shek, who represent nobody but themselves.

"The Delegation of the People's Republic of Albania declares that the fact that the People's Republic of China is not represented by its own delegation at this Conference is not only a very grave injustice towards this country, but is also prejudicial to the work of our Conference, since, on the one hand, we shall be unable to profit from the great experience accumulated by the delegation of this great country, and, on the other, the decisions that will be taken will not be capable of world-wide application if People's China does not accept them.

"In our view, it is high time that an end were made of this ridiculous situation, by enabling the representatives of the People's Republic of China to take their rightful places in our Conference.

"On behalf of the Delegation of the People's Republic of Albania, I should be obliged, Mr. Chairman, if you would kindly acquaint the delegations present at this Conference with this statement.

7. The Republic of India:

"Mr. Chairman, I shall not take too much time of the meeting, but we have a very serious problem before us for discussion and decision. We are gathered here to discuss problems relating to the radio spectrum. As we all know, electromagnetic waves do not recognize boundaries or political considerations, and it is, therefore, not practicable to ignore a part of the world which contains nearly twenty-two per cent of the world's population - I mean, the Democratic People's Republic of China. We should, therefore, give careful attention to the Bulgarian proposal to invite as observers some countries including the People's Republic of China".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 108-E
25 August 1959

COMMITTEE 2

SUMMARY RECORD
OF THE SECOND MEETING OF COMMITTEE 2
(CREDENTIALS)

24 August, 1959, at 4.30 p.m. - Room E

Chairman: Dr. F. Nicotera, Head of the Italian Delegation.

Subject discussed : Credentials.

The Chairman thought it would be useful to summarize the situation with regard to the work of the Committee before carrying on with the examination of credentials.

In Chapter 5 of the General Regulations annexed to the International Telecommunication Convention (Buenos Aires, 1952) the following provisions are laid down:

1) delegations must be duly accredited to exercise their right to vote;

2) delegations must be furnished with full powers to sign the Final Acts;

3) delegations shall be accredited by instruments signed by the Head of State or by the Head of the Government or by the Minister of Foreign Affairs; or else, in the case of Administrative conferences, by the Minister responsible for the matters dealt with at the conference;

4) a special committee - credentials committee - shall be entrusted with the verification of the credentials of each delegation; this committee shall reach its conclusions within the period specified by the Plenary Assembly.

The Plenary Assembly had specified this period to be one month.

Taking into account the provisions of the Convention and the decisions of the Plenary Assembly, the Committee had adopted the following decisions in the course of its first meeting :

- With regard to credentials, it was decided that they should

explicitly mention their powers; so that they should be valid not only to exercise the right to vote but also to sign the Final Acts.

This was in accordance with the provisions of the General Regulations concerning full powers. Moreover such provisions met the legal requirements of such conferences and also the requirements of those Administrations which wished to limit the right to sign the Acts to a small number of delegates.

- With regard to the nature of credentials, it was agreed that telegrams could not be considered valid.

- With regard to the procedure to be followed for verifying credentials, the Committee decided that:

- During the meeting, the Secretary should give a general outline of the credentials in order to note the powers conferred by them : the right to take part in the Conference and vote therein and the right to sign the Final Acts.

- following on this preliminary examination, a first report should be submitted to the Plenary Assembly. This document should indicate the position of each delegation with regard to its credentials.

- a working group composed of the officers of Committee 2 and delegates who would like to take part in it would be entrusted with the detailed examination of those credentials which were considered satisfactory after being examined for the first time in the Committee.

It was generally understood that credentials which explicitly contained the power to vote as well as the power to sign Final Acts should be considered in order and complete.

Credentials which did not explicitly mention the power to sign would be considered in order but incomplete.

It was agreed that the expression "full powers" which appeared in some credentials should give the right to sign the Final Acts.

The Chairman added that during the second meeting the Committee should make some decisions on the further treatment of its work.

A. To begin with a decision should be made first on credentials which reached the Secretariat during the meetings of the Working Group and up to the date on which the Group presented its final report to the Committee.

In the opinion of the Chairman the examination of such documents could be carried out by the Working Group.

The Committee agreed to the procedure suggested by the Chairman.

B. The second decision to be taken concerned the date for submission of the Working Group's report.

The Chairman thought that the Working Group would be able to hand in its report three days before the final date fixed by the Conference for the presentation to the Plenary Assembly of the final report by the Committee.

The Committee agreed to the Chairman's suggestion.

The Chairman considered that, within its terms of reference, the Committee was not required to take any further decisions.

However, he felt he should point out that the Plenary Assembly would have to take decisions concerning :

- the final date for the submission of the necessary credentials for signing the Final Acts;

- the credentials - in general - reaching the Secretariat after the Committee had submitted its final report to the Plenary Assembly.

The Chairman asked whether the delegations had any comments to make on the summary record of the previous meeting.

Mr. Clifford Stead pointed out that the table on page 3 of Document No. 82 should be amended as follows :

- Burma should appear in Column 1.

- Column 3 - Colombia - add (1).

- Replace the text of note (2) by the following :

(2) Represented by an observer. Has not acceded to the Convention, or has not signed it.

- replace the text of note (3) by the following :

(3) Will not attend the Conference.

In reply to a question by the delegate of Paraguay, the Chairman said that at the end of the four-week period the situation would be as follows :

- Countries which had deposited full credentials;

- Countries which had deposited credentials limited to participation in the work and the voting.

- Countries which had not granted any powers.

In the case of the latter the position was clear according to the Convention : curtailment of the right to vote.

When this clarification had been made and the necessary corrections had been made in the summary record of the previous meeting, the Committee went on to the summary examination of credentials.

The following tables show the result of the examination of the requests to take part which were submitted to the Committee :

1)

Countries which granted full powers	Countries which granted limited powers for participation in committee work and voting	Countries which did not grant any power
The Bielorussian Soviet Socialist Republic,	Pakistan	Panama 1)
Colonies, Protectorates, Overseas Territories under Mandate or Trusteeship of the United Kingdom of Great Britain and Northern Ireland,	Paraguay	Spanish Provinces in Africa
Denmark,	Sweden	United Arab Republic
New Zealand	Territories of the United States of America	Federal People's Republic of Yugoslavia
Peru	Thailand	Federation of Rhodesia and Nyasaland 1)
Philippines (Republic of)	Venezuela	Sudan
Poland		Turkey
Portugal		Uruguay
Portuguese Overseas Territories		Viet-Nam
Federal German Republic		Yemen
Ukranian Soviet Socialist Republic		
Roumanian People's Republic		
United Kingdom of Great Britain and Northern Ireland		
Switzerland		
Czechoslovakia		
Tunisia		
Union of South Africa and Territory of South-West Africa		
Union of Soviet Socialist Republics		

1) Not taking part.

2) ASSOCIATE MEMBERS

Participating	Not participating
British West Africa British East Africa	Bermuda - British Caribbean Group Singapore - British Borneo Group

Trusteeship Territory of Somaliland under Italian Administration: had not replied to the invitation

The credentials deposited by the Netherlands, in Dutch, would be examined when they had been translated by the Head of the Netherlands Delegation into the working languages of the Union.

The Delegate of Cuba said he would abstain regarding that decision.

After a general discussion in which a number of delegates took part, including those of Australia, Canada, Cuba, Spain, the United Kingdom and Pakistan, the Chairman agreed that the invitations to Conferences addressed to the various governments should mention what the credentials should include for them to be considered complete.

The Chairman asked the delegations to appoint the members of the working group which, apart from members of the secretariat, consisted of the delegates of the Argentine, the United States of America, the United Kingdom of Great Britain and Northern Ireland, the Federal German Republic and Spain.

The Chairman said that the working group would meet on Tuesday, 25 August, at 4.30 p.m. in Mr. Clifford Stead's office.

At the express request of Mr. Guillani, Delegate of the Argentine Republic, it was agreed that the statement he had made during the discussions should be included in the summary record, as follows:

"Mr. Guillani, Argentine Republic, said: "Since we are continuing to discuss a matter that was settled at the committee meeting on 20 August, I feel it necessary to state that if the credentials give full powers to the delegates, those powers confer on them the right to sign the Final Acts, even though the fact is not explicitly mentioned therein."

The meeting rose at 6.15 p.m.

Rapporteur:

J.F. Martinez

Approved:

F. Nicotera
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No.109-E
26 August, 1959

CORRIGENDUM

to Document No. 37

Does not concern the English text.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 110-E
26 August, 1959

PLENARY MEETING

MINUTES

OF THE

THIRD PLENARY MEETING

19 August, 1959 at 3.20 p.m.

Chairman	:	Mr. Charles J. Acton (Canada)
Vice Chairmen	:	Mr. Juan B. Autelli (Argentine Republic) Dr. M.B. Sarwate (Republic of India)
Secretary of the Conference	:	Mr. Gerald C. Gross
Deputy Secretary of the Conference	:	Mr. Clifford Stead

Subjects discussed :

1. Adoption of the Agenda (Document No. 51)
2. Welcome to the Delegation of Kuwait
3. Terms of reference of Committees (Document No. 52)
4. Report of the Administrative Council to the Conference (Document No. 1)
5. Report of the I.F.R.B. to the Conference (Document No. 20)
6. Proposals for the work of the Conference (Document No. 6)
7. Resolution No. 31 of the Buenos Aires Plenipotentiary Conference (Document No. 35)
8. Time limit for the work of the Credentials Committee
9. Programme of work of the Conference.

Present :

Members of the Union

Albania (People's Republic of); Argentina (Republic); Australia (Commonwealth of); Austria; Belgium, Bielorussian S.S.R.; Burma (Union of) Brazil; Bulgaria (People's Republic of); Cambodia (Kingdom of); Canada; Ceylon; Chili; China; Vatican City (State of); Colombia (Republic of); Colonies, Protectorates, Overseas Territories and Territories under mandate or Trusteeship of the United Kingdom of Great Britain and Northern Ireland; Belgian Congo and Territory of Ruanda-Urundi; Korea (Republic of) Cuba ; Denmark; Group of the different Territories represented by the French Overseas Postal and Telecommunication Agency; Ecuador; Spain; United States of America; Ethiopia; Finland; France; Ghana; Greece; India (Republic of); Indonesia (Republic of) Iraq (Republic of); Ireland; Iceland; Israel (State of) Italy; Japan; Kuwait; Liberia; Libya (United Kingdom of) Luxembourg; Malaya (Federation of); Mexico; Monaco; Nicaragua; Norway; New Zealand; Pakistan; Paraguay; Netherlands, Surinam, Netherlands Antilles, New Guinea; Philippines (Republic of); Portugal; Federal German Republic; Ukrainian S.S.R.; Roumanian People's Republic; United Kingdom of Great Britain and Northern Ireland; Sweden; Swiss Confederation; Territories of the United States of America; Tunisia; Turkey; Union of South Africa and Territory of South-West Africa; Union of Soviet Socialist Republics.

Associate Members

British West Africa; British East Africa.

Recognized Private Operating Agencies

British Broadcasting Corporation.

---

1. Adoption of the Agenda (Document No. 51)

The Chairman drew attention to the Agenda for the meeting (Document No. 51).

The Delegate of the United Kingdom said that his delegation was not yet in a position to comment on Documents Nos. 1, 20 and 35, relating to items 2, 3 and 5 of the Agenda respectively. He reserved his delegation's right to comment on them in detail at later Plenary Meetings.

The Delegate of France said that his delegation was in much the same position as that of the United Kingdom. The reports of the Administrative Council (Document No. 1) and the I.F.R.B. (Document No. 20) needed considerable study, and he pointed out that it had been decided at the previous Plenary Meeting to set up committees to consider those reports. The request of Iraq contained in Document No. 35 would also have to be

studied by the relevant committee before it was submitted to a Plenary.

The Delegate of Colombia said that he agreed with what had been said by the delegates of the United Kingdom and France.

The Chairman agreed that the documents referred to by the delegates of the United Kingdom and France would have to be studied in detail by the relevant committees, but pointed out that it was the duty of the Plenary Assembly to give such documents cursory consideration and then to refer them to the Committees. He therefore proposed that the Agenda be followed without any decision of substance being taken on items 2, 3 and 5.

It was so agreed.

2. Welcome to the Delegation of Kuwait

The Chairman said that the present conference was the first to be attended by Kuwait as a Member of the Union. On behalf of the Meeting, he wished to extend the warmest welcome to the Delegation of Kuwait.

The Delegate of Kuwait said that his country, which fully appreciated the importance of the Union as an organization for promoting friendship throughout the world, was very gratified to be attending its first Union Conference.

3. Terms of reference of Committees (Document No. 52)

The Chairman pointed out that Document No. 52, which gave the terms of reference for Committees 4, 5, 6 and 7, embodied the proposals that had been agreed on in the Steering Committee.

The Delegate of Colombia said that he had not yet had sufficient time to study Document No. 52 in detail. He hoped that it would be possible for further items to be included in the Committees' terms of reference at a later stage.

The Chairman replied that it was always possible for the Plenary Assembly to add further items to the Committees' terms of reference.

It was decided to approve the terms of reference for Committees 4, 5, 6 and 7, given in Document No. 52.

4. Report of the Administrative Council to the Conference (Document No. 1)

The Chairman proposed that for the present the Plenary take note of the report of the Administrative Council and refer it to Committees 4 and 5 for detailed consideration.

It was so agreed.

5. Report of the I.F.R.B. to the Conference (Document No. 20)

The Chairman asked the Chairman of the I.F.R.B. to introduce the report.

Mr. Sundaram, Chairman of the I.F.R.B. then made the following statement :

"I am grateful to you, Sir, for giving me this opportunity to introduce on behalf of the International Frequency Registration Board our report to this Conference. As the delegates are aware, one of the tasks of the Conference is to review the activities of the I.F.R.B. To facilitate this task, the Board has prepared, in the three working languages of the Union, a report of its activities since the last Ordinary Administrative Radio Conference, and it is now presented to you as Document No. 20. For the sake of convenience of the various Committees and Working Groups, the report has been divided into suitable sections and each section is generally self-contained for easy reference.

" In the report, certain comments and views of the Board have been expressed in the light of its experience, which the Board trusts, will be of assistance to the Conference and which can perhaps be taken into consideration by the Committees or Working Groups dealing with the particular questions concerned.

" The Board deferred the issue of this report till a late stage as it felt that it would be useful to the Conference to indicate the latest developments in the matter of registration of frequencies up to the 1st July, 1959. With your permission, Sir, further developments which have taken place since that date will be indicated directly to the appropriate Committee or Working Group at a later date.

" The members of the I.F.R.B. collectively and individually are at your disposal for any further information and assistance.
Thank you, Sir."

The Chairman, thanking the I.F.R.B. for the excellent way in which the report had been presented, proposed that the meeting take note of it and refer it to Committees 4 and 5 for detailed consideration.

The Delegate of the United Kingdom pointed out that certain parts of the report would have to be considered by Committees 6 and 7. He believed the report as a whole to be an extremely valuable and interesting document.

The Delegate of India said that he hoped that the information which the Chairman of the I.F.R.B. had said would be submitted to

committees at a later stage would be in document form so that it could be studied by all delegations.

It was decided to take note of the report of the I.F.R.B. and to refer it to Committees 4, 5, 6 and 7 for detailed consideration.

6. Proposals for the work of the Conference (Document No. 6)

The Secretary of the Conference, referring to Document No. 6, explained that the decisions to extend the closing date for the submission of proposals till 27 January 1959 and to issue a second series on 24 July and a third series during the early days of the Conference had all been necessitated by the fact that a greater number of proposals had been received than had been expected (about 4,500 in all), a large number of them after the closing date. Further proposals would be issued as Conference documents.

The Delegate of Italy said that the action taken by the Secretary of the Conference in his capacity as Acting Secretary-General amounted to a violation of the Convention, since it was stated explicitly in paragraph 3 of Chapter 3 of the General Regulations that "The Secretary-General shall assemble and coordinate the proposals received, and shall communicate them, at least three months before the opening of the Conference, to all Members and Associate Members". He could not but deplore such a violation, and reserved the right to raise the matter at the Plenipotentiary Conference.

The Secretary of the Conference said that he found it difficult to believe that the delegate of Italy was speaking seriously. He had been informed by Mr. Studer, the Counsellor responsible for preparing the book of Proposals for the Radio Conference that it had been held open an extra few weeks at the special request of Italy so that the Italian proposals could be included. In spite of the delay thereby caused, the volume had been despatched to Administrations three months before the opening of the Conference, as was required by the Regulation to which the delegate of Italy had referred. In that way, the Convention had been scrupulously respected. It thus seemed that the only grounds for the delegate of Italy's complaint were that the additional proposals received after the closing date had been despatched less than three months before the Conference. Would the delegate of Italy seriously contend that those additional proposals should have been ignored or returned to the government concerned? He could only conclude that the delegate of Italy had been misinformed.

The Delegate of Italy said that the fact that the Convention might have been violated at Italy's request did not make it any less a violation. In fact, however, at the time to which the Secretary of the Conference referred, Italy had not asked for the book of Proposals to be held open, but had simply inquired whether it was still open, and on being informed that it was, had submitted its proposals. The fact

remained that a series of proposals had been despatched to Administrations only three weeks before the opening of the Conference, which was not in accordance with the relevant provisions of the General Regulations.

The Secretary of the Conference, stressing that the main volume of Proposals had been despatched at the time required by the General Regulations, said that he still could not believe that the delegate of Italy would have wished the additional proposals received after the closing date not to be distributed.

The Chairman said that the important thing was that the Conference was in possession of all the proposals. Possibly, he added in a jocular vein, a special "working group" consisting of Dr. Nicotera and Mr. Gross could continue the discussion after the meeting. (Laughter).

7. Resolution No. 31 of the Buenos Aires Plenipotentiary Conference (Document No. 35)

The Delegate of Iraq said that the request which his country had submitted to be included in the European area was based on its desire to use its frequency bands for educational purposes. At present, Iraq was sharing frequency bands with European countries, which had led to considerable interference and therefore inconvenience for listeners in Iraq. The fact was that the geographical position of Iraq made it imperative, for all practical and technical purposes, to have the Iraqi Republic included within the European area. Moreover, the present boundary of the European area as defined in No. 107 of the Radio Regulations, included a part of the Iraqi Republic. The request for the inclusion of Iraq in the European area had already been made at the Buenos Aires Conference, and he hoped that the present Conference would view the request sympathetically, since it was of a completely non-politcal nature and merely involved the rectification of the inadequate definition made at Atlantic City.

The Chairman drew the Meeting's attention to the first operative paragraph of Resolution No. 31 of the Buenos Aires Conference, which invited "the next Administrative Radio Conference to examine the possibility of including Iraq in the European area as defined in the Radio Regulations". Since that involved a number of technical considerations, he thought that the request should be submitted to Committees 4 and 5 which could draw up a report for consideration at a future Plenary Meeting.

The Delegate of Pakistan said that his delegation was extremely sympathetic towards the Iraqi request. He wished to know what the I.F.R.B. had done in the way of giving "special assistance to Iraq in order to solve the frequency problems arising from the fact that Iraq is outside the European area" as it was requested to do in the second operative paragraph of Resolution No. 31. He hoped that the Committee which dealt with the Iraq request would give it very high priority.

The Chairman of the I.F.R.B. said that the special assistance which the I.F.R.B. rendered to Iraq was of a purely technical nature and did not affect its boundary status as defined in the Radio Regulations.

The Delegate of Iraq said that, in view of the fact that it was only possible for him to attend one week of the Conference, he hoped that the request could be dealt with at the Plenary Meeting and would not have to be referred to a Committee.

The Delegate of Yugoslavia said that he sympathized with the Iraq request, and fully understood the reason why the delegate of Iraq had asked that it should be dealt with at the Plenary meeting. However, if some delegations found it difficult to adopt a definite position at present, he would propose that the Committee which dealt with the question do so at the earliest possible opportunity.

The Delegate of the U.S.S.R. said that his delegation fully supported the Iraq request and believed that it could be dealt with at the present meeting.

The Delegate of Colombia said that he also sympathized with the Iraq request and understood the anxiety of the delegate of Iraq to have the matter dealt with as soon as possible. However, he did not feel that that could be done at the present meeting for reasons of procedure. Since the Conference was called upon to revise the Radio Regulations in general, it would be premature for the present meeting to take up the question of the definition of areas. He thus agreed with the Chairman that the matter should be submitted to Committees 4 and 5 to be dealt with as soon as possible.

The Delegate of the United Kingdom said that it was impossible to treat the Iraq request in isolation. He reminded the meeting that his delegation had submitted Proposal 3503 to adopt the European Maritime Area as defined at the European Regional Convention for the Maritime Mobile Radio Service, Copenhagen, 1948. He thus supported the view that the Iraq request be referred to the relevant Committees to be dealt with immediately.

The Delegate of Denmark, speaking as Chairman of Committee 4, said that, in accordance with the terms of reference for committees which had been adopted earlier in the meeting, it would be for Committee 4 to deal with the Iraq request. He suggested that Committee 4 take up the matter at its first meeting the following Friday afternoon.

The Chairman asked the delegate of Iraq whether the solution suggested by the Chairman of Committee 4 would be acceptable to his delegation.

The Delegate of Iraq, replying in the affirmative, said that he wished to thank the meeting for the sympathy and consideration it had given to his delegation's request.

It was decided to refer the Iraq request to Committee 4 for consideration at its first meeting.

8. Time limit for the work of the Credentials Committee

The Chairman drew attention to paragraph 4 of Chapter 5 of the General Regulations, in which it was stated that "A special committee shall be entrusted with the verification of the credentials of each delegation; this committee shall reach the conclusions within the period specified by the Plenary Assembly." In accordance with that paragraph, he proposed that the meeting decide that the Credentials Committee should finish its work within four weeks.

The Delegate of Italy, speaking as Chairman of Committee 2, supported the Chairman's proposal.

The Delegate of the United States of America said that he assumed that the adoption of the proposed time limit for the work of the Credentials Committee would not mean that a time limit was being imposed for the acceptance of credentials.

The Chairman said that the United States delegate's assumption was correct.

It was decided to adopt the Chairman's proposal.

9. Programme of work of the Conference

The Secretary of the Conference drew attention to the schedule of meetings from 20 to 30 August (Documents Nos. 56 and 57).

The Chairman asked Chairmen of Committees to be good enough to produce agendas at least for their opening meetings.

The Delegate of Yugoslavia said that he hoped every effort would be made to ensure that Committees 4, 5 and if possible 6 did not meet at the same time. He believed, that in expressing that hope, he was speaking for all small delegations.

The Chairman recalled that suggestions had been made at the previous meeting that either the Committees should finish their work by 15 November and, alternatively, that the Conference should endeavour to finish its work by that date. The Steering Committee had decided that it was impossible at the present stage to recommend a closing date for the

Conference, but that the technical committees (Committees, 4, 5, 6 and 7) should be asked to complete their work by 15 November. It would then depend on the extent to which those committees had prepared their texts for the Drafting Committee how long that Committee would have to continue work. The whole position would be kept under review by the Steering Committee.

It was decided to adopt the decision of the Steering Committee.

The Chairman drew attention to Rule 25 of Chapter 9 of the General Regulations, in which it was stated that "Official releases to the press about the work of the Conference shall be issued only as authorized by the Chairman or a Vice-Chairman of the Conference." He announced that he would shortly issue a press release prepared by the Public Relations Office in co-operation with the Vice-Chairmen, the Secretary of the Conference and the Chairmen of Committees.

The meeting rose at 5 p.m.

Rapporteurs:	Secretary of the Conference:	Chairman:
C. Mackenzie S. Vittèse	Gerald C. Gross	Charles J. Acton

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 111-E
26 August 1959

CORRIGENDUM

to the Minutes of the First Meeting of Heads of Delegations (Doc. 49) and the First Plenary Meeting (Doc. 55)

To the list of Delegations present at the above two meetings, add:

Costa Rica

in the appropriate alphabetical order.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 112-E
26 August 1959

SUB-COMMITTEE 7A

SUMMARY RECORD

First Meeting of Sub-Committee 7A (General Operating Questions)

Monday, 24 August, 1959, at 10 a.m., Palais des Expositions, Room D

Chairman: Mr. P. Bouchier (Belgium)

Vice-Chairman: Mr. Martin Flores Cantero (Mexico)

The Chairman, welcoming the members of his sub-committee, read out the items with which it would have to deal and said he would suggest a classification thereof.

The Swiss Delegation, asked to provide a rapporteur, nominated Mr. R. Monnat. The drafting party also included Mr. W. Blow (United Kingdom of Great Britain and Northern Ireland), for English, and Mr. F. Carcaño Alonso (Spain) for Spanish.

The Chairman suggested that the sub-committee also have recourse to the services of Mr. J. A. Kunz (General Secretariat) and Mr. R. Page, a member of the I.F.R.B.

The Chairman, having read out the terms of reference of the sub-committee, stated that the distribution of work among the three sub-committees would possibly have to be somewhat amended. He proposed that the questions be divided into three categories: small, medium and big. They would not be classified in their actual order of importance but rather according to the number of proposals relating to each article.

The first category would be dealt with in plenary session, while the questions falling into the remaining two categories would first of all be examined by the sub-committee itself and then, whenever necessary, referred to working groups for study.

He then read out the list of documents to be dealt with and said that it would be annexed to the Summary Record of the first meeting (see Annex). He asked to have any omissions pointed out to him at the following meeting, and suggested that the work should be divided as follows:

a) small questions to be examined in plenary session:

Article 15 and Appendix 2
Article 21
Article 22
Article 23
Article 26 of the Radio Regulations
Article 43
and Article 45 and Appendix B

b) medium and big questions which might have to be referred to working groups set up for the purpose:

Article 25
and Article 42 of the Radio Regulations

c) big questions

Article 19
Article 20
and Article 24 of the Radio Regulations.

The sub-committee then went on to examine the items listed in a) following the numerical order of the Radio Regulations.

The Delegate of the United States introduced his country's proposal No. 1343 relating to Article 15 of the Radio Regulations. The proposal was referred to the drafting Committee.

A discussion took place on proposal No. 1344 submitted by India and supported by Indonesia, to the effect that No. 392, paragraph 1, Article 15 of the Radio Regulations, should be made binding.

The Delegate of the United Kingdom, supported by the Delegates of the United States and France, thought that the existing text should be maintained.

A vote was taken. Five delegations were in favour of amending the text, seventeen in favour of maintaining it as it stood and five abstained from voting.

On resumption of the meeting after a break, the Delegate of France said that the sub-committee should await the results of discussion on Articles 13 and 14 of the Radio Regulations to which Appendix 2 also referred, before taking a final decision on Article 15.

Discussion of Article 21 of the Radio Regulations was postponed owing to lack of material.

The Chairman suggested that Articles 21, 29, 23 and 25 of the Radio Regulations should be examined at the following meeting.

Agreed.

The members of the sub-committee were requested, as far as possible, to arrive in time for the opening of the meetings, or to inform the Chairman whenever they wished for the discussion of a specific item to be postponed in order to enable them to be present.

The summary records would be brief; speakers who wanted their statements recorded in full or in part were requested to hand them in to the rapporteur.

The meeting rose at 12.15 p.m.

Approved
Chairman:

P. Bouchier

Rapporteur:

R. Monnat

Annex : 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

LIST OF THE DOCUMENTS TO BE STUDIED BY THE SUB-COMMITTEE

Nos. and Arts. of the RR	Proposals in the yellow book and documentation
- Art. 15 Reports of Infringements Nos. 392-393-394	United States of America India (Republic of) pages 319 Rev. and 320
- App. 2 : Report of an irregularity or of an infringement of the Telecommunication Convention or of the Radio Regulations	United States of America France, French Overseas Territories, and Morocco pages 679.1 to 680.1
- Art. 21 Secrecy Nos. 488 to 492	Federal German Republic, page 369 cf. Article 32, Buenos Aires Convention
- Art. 22 Licences Nos. 488 to 492	Germany, France, French Overseas Territories, Morocco, United States, United Kingdom, Switzerland, Czechoslovakia, Australia (pages 370 to 371.1) (Appendix 8 should not be forgotten; the licence is among the documents with which ships and aircraft should be provided)
- Art. 23 Inspection of Mobile Stations Nos 493 to 499	Italy, United Kingdom, Czechoslovakia, France, French Overseas Territories, Morocco, United States (372 Rev. 1 to 376) (Appendix 8 should not be forgotten; licence among documents with which ships and aircraft should be provided)
- Art. 26 Authority of the Master Nos. 565 to 567	Finland, Denmark, Norway, Sweden, United States, pages 410 and 411 Rev. 1
- Art. 43 Experimental Stations Nos. 1008 to 1015	United Kingdom, Czechoslovakia pages 659 Rev. 1 and 659.1
- Art. 45 Special Services Nos. 1034 to 1057	France, French Overseas Territories, Morocco, Belgium, United Kingdom pages 663 to 666
- App. B : Standard Frequency and Time Signal Broadcasts	United Kingdom, Czechoclovakia
Recommendation No. 2	cf. Also circular 772 I.T.U. page 28 circular 775 I.T.U. (CE VII) page 4

Nos. and Arts. of the RR	Proposals in the yellow book and documentation
- Art. 19 Call Signs Section I Allocation and Notification Nos. 412 to 418	United States of America, United Kingdom of Great Britain and Northern Ireland, Germany, France, French Overseas Territories, Morocco, Spain. Doc. 42, Spain Pages 334 Rev.1 to 335.1
Section II Allocation of International Series No. 419	Comment by the General Secretariat Belgian Congo, United States of America, France, French Overseas Territories, Iran, Italy, Japan, Morocco, Pakistan, Sudan Pages 224.1 to 229 Rev.2
Section III Formation of Call Signs	United States of America, Italy, Netherlands, France, French Overseas Territories, Morocco, United Kingdom, Japan, Sweden, USSR, India, China
- Art. 20 Service Documents Nos. 446 to 484, except 447-448 and 470	United States of America[1], France, French Overseas Territories, Morocco, United Kingdom, Belgium, Italy, Netherlands, Czechoslovakia, Australia, India, USSR, Germany, Spain (Doc. No.43) Pages 352 Rev.1 to 359. [1] United States general proposal for Chap. VIII.
- App. 6 (List 1) Service Documents	United States, France, French Overseas Territories, United Kingdom, India, Belgium, Morocco, Netherlands, Finland, Pakistan Pages 706 Rev.1 to 726.1
- App. 7 Service Document Symbols	Australia, Denmark, Finland, Iceland, Norway, Sweden, United States, France, French Overseas Territories, Morocco, India Pages 727 Rev.1 to 732 (English 727 to 732)
- App. 8 Documents with which Ship and Aircraft Stations must be provided	France, French Overseas Territories, Belgium, United States, Finland, United Kingdom, Australia, Denmark, Iceland, Norway, Sweden, USSR Pages 733 to 740 See also: E.A.R.C. Resolution No. 8 (page 131) Resolution No. 7 of the Baltic and North Sea Radiotelephone Conference Circular No. 766 of the I.T.U. General Secretariat For Articles 19 and 20: Circular No. 775 page 4, SG.VII Recommendation 323

Nos. and Arts. of the RR	Proposals of the yellow book and documentation
- Art. 24 Operators' Certificates for Ship and Aircraft Stations Nos. 500 to 555	United Kingdom, United States, France, French Overseas Territory, Netherlands, Morocco, Italy, India, Germany, Czechoslovakia, Finland, Australia, U.S.S.R., Pakistan (in relation to Appendix 8) pages 376 to 406 Rev. 2
- Art. 25 Class and Minimum Number of Operators for Ship and Aircraft Stations Nos. 556 to 564	France, French Overseas Territory, Czechoslovakia, United States, United Kingdom, Morocco, Netherlands, Finland, Pakistan, German Federal Republic, Poland pages 406 Rev. 2 to 410
- Art 42. Amateur Stations Nos. 1,000 to 1,007	Australia, Morocco, United Kingdom, Czechoslovakia, France, French Overseas Territory, India Pages 656 to 658

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 113-E
26 August, 1959.

COMMITTEE 4

SUMMARY RECORD

Third Meeting - Committee 4 (Frequency Allocation Committee)

Monday, 24 August at 15.00 hours Room A

1. The Chairman pointed out at the commencement of the meeting that the Agenda for this meeting would be paragraphs 3 and 4 of Document No. DT 7 which remained uncompleted from Friday's meeting.

Following the procedure previously agreed Proposals 378, 381 and 382 were approved. Following some discussion of Proposal 385 and the related Proposal 386 it appeared that there was some divergence of opinion on the United Kingdom proposals which, as explained, were intended to streamline Article 4. There was also some discussion on proposals to reduce the lower frequency limit from 5060 kc/s to 4000 kc/s and it was eventually agreed that these proposals should be passed to a working group who would discuss them in the general context of Article 4. In this connection it was also agreed that all the specific proposals concerning Radio Regulations 91-96 should be discussed by that working group. In this connection there was further discussion of Proposal 394 concerning the amount of force which should be placed in No. 96 of the Radio Regulations and it was agreed that the Working Party would also examine this point.

2. The meeting proceeded to a discussion of paragraph 4 of the Agenda dealing with Radio Regulations 97-108 in Article 5 and the discussion commenced with the heading of the Article which in the French and Spanish texts refers to "Allocation of frequency bands" but in the English text refers to "Frequency Allocation". The meeting noted that there were these discrepancies and it was agreed that this point must be taken up by a working group.

On the question of the actual frequencies to be inserted in the heading the meeting agreed that a decision would be taken later and would depend on the outcome of the discussions on the Frequency Allocation Table; in response to the Chairman's request it was agreed in principle that the Frequency Allocation Table should be extended to 40,000 mc/s.

The Chairman observed that with the exception of Proposal 412 which is a drafting point concerning only the French text there appeared to be no proposals to modify Nos. 97-106 of the Radio Regulations. This was confirmed.

In connection with the decision already taken to include Iraq in the European area the Chairman proposed the following text as an addition to No. 107 of the Radio Regulations:-

> "it also includes that part of the Republic of Iraq lying outside those limits."

This was agreed.

In response to a question from the delegate of Spain the Chairman explained that the European Broadcasting Conference in Copenhagen had adopted for broadcasting purposes a European zone identical with that defined in No. 107 of the Radio Regulations whereas the Copenhagen Maritime Conference in order to include a number of ports, for example, in the Black Sea and in Northern U.S.S.R., had found it necessary to define the limits for a European maritime area which was different. As a comment on this the delegate of Yugoslavia agreed that it was necessary for practical reasons that areas should be defined in a manner most suitable to the services concerned and expressed his view that in any definition of areas the whole of a country should be included within one area.

The meeting accepted Proposals 3502 and 3503. In dealing with Proposal 3503 bis it was considered that deliberations of Committee 5 might affect the outcome of the discussion. However the Chairman proposed a tentative addition to No. 107 of the Radio Regulations in the following terms:

> "The African area includes that part of Region I lying to the South of the parallel 30° North. It also includes that part of the territory of Saudi Arabia situated to the North of that parallel"

and this was agreed, subject to the approval of Committee 5.

3. The meeting having finished its Agenda for the day, the Chairman announced that he had arranged with the Secretariat to produce an Agenda which for the convenience of delegates would list all proposals affecting the Frequency Allocation Table in numerical order of frequencies. The next meeting of the Committee would be on Tuesday afternoon, 25 August and would commence with a study of the Frequency Allocation Table starting at 10 kc/s and not going beyond 4,000 kc/s.

It was agreed to set up a Working Group to be called Working Group 4A with the following terms of reference "to consider Articles 3, 4, 5 Radio Regulations 86-108, taking into consideration the discussions

in Committee 4". This was agreed and the delegate of France accepted an invitation by the Chairman to provide a Chairman of this Working Group. It was further agreed that this Working Group 4A would not meetoon Tuesday 25 August but that delegations would be invited at the meeting of Committee 4 on that day to indicate their interest in this Working Group. There being no further business the Chairman adjourned the meeting.

Rapporteur:

A. James Bourne

Gunmar Pedersen

Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 114-E
26 August 1959

PLENARY ASSEMBLY
COMMITTEE 4

PORTUGAL

Proposal

ARTICLE 5

Number of proposal		
5352	21850 - 22000 kc/s.	In the "World-wide" column, read: a) Fixed b) Aeronautical mobile (R)

Reasons:

Intensive listening shows that very few FAX stations use this band. Its use by stations in the fixed-service would prove useful for long-distance communications.

M. AMARO VIEIRA
Head of the Delegation

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No.115-E
26 August, 1959

PLENARY MEETING
COMMITTEE 4

PERU

Proposal

ARTICLE 5

Number of proposal

5348 The Peruvian Delegation hereby informs Committee 4 of the ordinary Administrative Radio Conference that it is against any change in the frequency assignment table between 4 and 27.5 megacycles. This attitude relates to the frequency assignment table in general, and to the columns headed: "World-wide" and "Region 2" in particular.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 116-E
26 August, 1959

PLENARY MEETING
COMMITTEE 4

ISRAEL

Proposals relating to paragraphs 86, 87 and 88

Number of proposal		
		In our opinion above paragraphs are rather repetitive, therefore we suggest the rewording of paras. 86 and 87 and the deletion of para. 88, as follows :
5349	Para. 86 :	Members and Associate Members of the Union agree not to assign frequencies to their stations in derogation of either the Table of Frequency Allocations given in this chapter or the provisions of these Regulations, except on the express condition that no harmful interference be caused to services operating in accordance with the provisions of the Convention and the Radio Regulations.
5350	Para. 87 :	Each assignment of frequency and each change in frequency usage shall be made in such a manner as to avoid causing harmful interference with services carried out on frequencies assigned in conformity with the provisions of these Regulations.
5351	Remark :	In order to avoid repetition of phrases as : "Member and Associate Member of the Union" we should like to suggest to prepare a list of abbreviations to the Radio Regulations. For example :

Member - Member and Associate Member of the Union

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 117-E
26 August, 1959

MEXICO

Proposal

Appendix 1

Number of proposal

5353 Read as follows:

NOTIFICATION TO THE I.F.R.B. OF A CHANGE IN FREQUENCY USAGE

e) Number
f) Date
g) Reference

a) Notifying government MEXICO

b Addition | c Amendment | d Cancellation

FOR USE BY THE I.F.R.B
h

** 1. Frequency ---------/s.

33 2b date of use

3 Call-sign

**4 Class of station and type of service

**5a Site of transmitter

**5b Geographical position

5c Country

**6 Point or area of reception	**7 Range	**8 Bandwidth and emission	**9 kind of emission	**10 Power kW	**11 Hours of operation G.M.T.	**12 Season and phase of operation	**13a Azimuth of maximum radiation	**13b Angular amplitude of beam	**13c Antenna gain	14 Additional information
	kms									

15.- Centralizing office

16.- Administration or operating agency

17.- Cable address & postal address

18. Comments

** Basic characteristic

* Amended data are underlined

Some notes of explanation regarding the change proposed by Mexico in Appendix 1 to the Radio Regulations, in order to make the new form of Appendix 1 consistent with its "proposed amendments, additions, deletions, etc., to the Radio Regulations". The present form has been taken as a basis.

Point a: Same as No.1 in present form.

Point b: Shall be marked with a "X" if it concerns a new or additional assignment.

Point c: Shall be marked with an "X" if it concerns a change in frequency or in any other characteristic of an existing assignment.

For points b and c the definition applied, in each case, is that of "change in frequency usage" given in the "Proposed amendments, additions, deletions, etc., to the Radio Regulations".

Point d: Shall be marked with an "X" if the notice refers to the cancellation of an assignment in all the characteristics notified.

Point e: The number of the notice.

Point f: The date of dispatch of the notice.

Point g: Any reference to the notice.

Point h: Any comments by the I.F.R.B.

Column 1: As is the present No. 4.

Column 2b: Date of the effective entry into use of the corresponding station, in accordance with the characteristics notified.

Column 3: Call-sign assigned under Article 19.

Column 4: As in the present Nos. 11 and 12 with the corresponding note "f".

Column 5: a) Locality
b) Geographical position
c) Country

Column 6: Geographical location of the points or areas of reception, in accordance with the "opinions of the I.F.R.B." for the various cases.

Column 7: Length of the circuit (point to point communications), or effective range (radio beacons, mobile stations operating with base stations), as laid down in the I.F.R.B. Opinions.

Column 8: As in the present Nos. 6 and 5 with the latter's note "a".

Column 9: As in No. 17 with note "j".

Column 10: As in the present No. 7.

Column 11: Maximum hours of use of the frequency for each period specified by the "Season and Phase of Solar Activity" for which the frequency is likely to be most useful, in accordance with Column 12. Must be expressed in G.M.T.

Column 12: Season and phase during which the frequency is likely to be most useful. The phases and seasons to be taken into account when drawing up this information are as follows:

Phases:	Seasons:
High	June
Medium	Equinox
Low	December

Column 13: Characteristics of the transmitting antenna:

a) Azimuth of maximum radiation, in degrees from true North (clockwise).

b) Angular width of the main lobe in the horizontal plane in degrees.

c) Gain in decibels (db) in direction of maximum radiation a the assigned frequency.

Column 14: Additional information judged by the notifying Administration to be either useful or necessary, about the operating characteristics of the frequency.

Column 15: Centralizing office controlling radio services.

Column 16: No. 18 is retained in its present form.

Column 17: No. 19 is retained in its present form, with note "k".

Column 18: No. 20 is retained in its present form, with note "l".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 118-E
25 August, 1959

SUB-COMMITTEE 7C

SUMMARY RECORD

First Meeting - Sub-Committee 7C (Safety and Distress)

Tuesday, 25 August 1959, at 3.00 p.m.

Reference: Agenda of 25 August 1959, Document No. DT 14-E.

The Chairman opened the meeting expressing the honour he felt for himself and country in being appointed Chairman of this Committee, and expressed his pleasure in having Mr. Sven Gejer named as Vice-Chairman to assist him. He expressed his thanks in having the technical assistance of Mr. M.T.K. Wang of the I.F.R.B. and Mr. Jean Kunz of the I.T.U.

1. Appointment of the Rapporteur of the Sub-Committee and the drafting group.

The Delegate of the U.S.A. named Mr. R.T. Brown as Rapporteur for Sub-Committee 7C. The Delegate of France named M. Fontaine and the Delegate of Spain named Sr. F. Carcano to assist in the translations.

2. Terms of reference for Sub-Committee 7C.

The Chairman stated the terms of reference were as stated in Document 2, page 19; that Document 95 had not been acted on by Committee 7, and any changes as a result thereof would be brought up at the next meeting.

3. Organization of Sub-Committee 7C.

The Chairman apologized for not having a more detailed Agenda, with the various proposals listed and suggested that a run-down be made of the items to ascertain which would require working groups to be set up.

4. Items to be considered by the Sub-Committee as a whole or to be assigned to working groups.

(a) The first item to be discussed was paragraph 232 of the Radio Regulations. The following proposals have been received:

1005	China	p.244
1006	France, French OPTA	p.244
1007	Morocco	p.244
1008	United Kingdom	p.244
1009	U.S.S.R.	p.244

The Delegate of the United Kingdom, seconded by the Delegate of the United States, recommended Class B emissions be forbidden in all stations. The consensus appeared to be in accord, but the Delegates of France and the Netherlands stated that paragraph 865 would have to be taken into consideration.

The Chairman recommended that the item be tabled for further discussion at the next meeting.

(b) The Chairman stated that the C.C.I.R. Recommendations 124-219-224-250-252 would be taken up and discussed later.

(c) Article 8, paragraph 240, was brought up for discussion, with proposals 1023 through 1032, and 3648. The Delegate of the United Kingdom recommended that, inasmuch as all the proposals were in accord with setting up an adequate guard band for the frequency 2182 kc/s, the Rapporteur, with the assistance of the French and Spanish assistants, draw up a text for consideration at the next meeting. The Delegate of India stated that proposal 1040 should be considered with paragraph 252. The Delegate of Israel requested an exact agenda be prepared for future meetings to enable delegates to be better prepared. The Delegate of Malaya wanted proposal 2221 also to be considered, as a second distress frequency for the tropics; and supported the proposal made by the Delegate of Israel. The Delegate of the U.S.S.R. recommended that paragraph 240 should be more fully discussed before any further action is taken.

The Chairman recommended that the meeting be adjourned and stated that a detailed agenda would be completed for distribution before the next meeting.

There being no objection, the meeting adjourned at 3.30 p.m.

Rapporteur:
R.T. Brown

G. Van A. Graves
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 119-E
CORRIGENDUM No. 1
11 September, 1959

COMMITTEE 5

CORRIGENDUM

Summary Record of the Second Meeting of Committee 5

Monday, 25 August, 1959 (Document No. 119)

On page 4 of Document No. 119, delete the statement attributed to Mr. René Petit, Member of the International Frequency Registration Board, and read, in lieu thereof:

"Mr. Petit, representing the I.F.R.B., thanked the Committee for considering the I.F.R.B. Report at so early a stage, and briefly outlined the contents thereof. At that stage, the Committee should do no more than discuss the report as a whole. Matters of detail could be considered later when Committee 5's working groups were considering proposals for amendment of the Regulations".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 119-E
27 August 1959

COMMITTEE 5

SUMMARY RECORD

Second meeting of Committee 5

(Frequency Registration Procedure and International Frequency List)

Monday, 24 August 1959 at 10 a.m.

The Chairman opened the meeting, and the agenda was adopted (Working Document 11).

1. Document No. 35, point 2 of Buenos Aires Resolution No. 31
Setting up of a Working Party

The Chairman referred to the decision taken at the first meeting, and asked the Committee whether a Working Party should be set up forthwith.

Mr. Pedersen, Chairman of Committee 4, then announced the results of the work done by his Committee on this question. He thought that, until those results had been forwarded to the Plenary Assembly, it would be preferable for Committee 5 to postpone its study.

The Delegate of Spain made the following statement:

"The Spanish Delegation was unable to explain its attitude to this question in Committee 4, because during the break, when a meeting of the Working Party was held, the Spanish delegates who are members of that committee had a meeting with the Secretary-General, and by the time it was ended the meeting had been resumed and the question raised by Iraq had been settled.

"Having taken note of the text drafted by the Working Party, the Spanish Delegation hastened to point out that it was naturally in favour of including Iraq in the European Area. It nevertheless thinks that, according to its terms of reference, Committee 4 is not responsible for deciding whether or not the Copenhagen Plan should be revised, and in the circumstances that committee should have expressed its opinion without adding its views on a possible revision of the plan in question, since it is the province of Committee 5 and not Committee 4 to study this matter.

"Spain therefore wishes to make it clear that, in its opinion, the text in question should not imply that the Copenhagen conventions and the broadcasting and maritime service plans should be definitively adopted by this Conference; it should merely envisage the possibility of the Conference entrusting the revision of those plans to special conferences.

"If the text in question signifies that the admission of Iraq implies the definite maintenance of the Copenhagen Plans (for example, with the intention of adopting them as a frequency list) Spain could not agree to the text, although it is in no way opposed to the inclusion of Iraq in the European Area. Moreover, with regard to the Copenhagen Plans, Spain has submitted proposals (see Document No. 40) in which it explains the need for revision and maintains that special conferences will have to be held to this end.

"The Spanish Delegation would like this statement included in the summary record.

"It also proposes that Committee 4, which is empowered to give its opinion as to whether the Copenhagen Plans should or should not be revised, should postpone its study of this question until a later date, and treat it separately from the question of including Iraq in the European Area."

The Delegate of Italy gave the Delegate of Spain some details as to the terms of the decision reached by Committee 4.

The Delegate of Switzerland supported the statement made by the Chairman of Committee 4.

The Chairman rallied the delegates to the proposal made by the Chairman of Committee 4, that Committee 5 delay consideration of this question until after the Plenary Assembly of the Conference has considered the report of Committee 4.

2. Document No. 1 - General

The Chairman asked a delegate who was a member of the Administrative Council to introduce Document No. 1.

The Delegate of Italy, Mr. Nicotera, a member of the Administrative Council, consented to introduce the document. He briefly reviewed the Administrative Council's work and the measures it had taken to implement the Atlantic City decisions. He drew particular attention to the practical results of the E.A.R.C. held in Geneva in 1951 and the outstanding work done by the I.F.R.B. He informed the delegates of the financial implications of the preparation of the draft plans for the high-frequency broadcasting service and suggested that the financial aspects of their decisions to entrust extra work to the organ responsible for the registration of frequencies be considered.

The Delegate of Spain pointed out several mistakes which he had found in the report of the Administrative Council and in particular with regard to the results of the E.A.R.C., Annex I, Item 1.6.

The Delegate of Cuba asked whether the I.F.R.B. could possibly give an explanation of the method of assigning frequencies.

The Chairman stated that this question would be studied under Item 3 of the Agenda and gave fuller details to the Delegate of Spain on the French text of the Administrative Council's report which was more explicit than the Spanish text.

The Delegate of Colombia asked if the I.F.R.B. could supply a short document giving the present status of the frequency bands.

The Chairman deferred this question until Item 3 of the Agenda.

The Delegate of Yugoslavia thought that the Administrative Council's report gave a very good historical survey of the steps that had been taken to draw up plans and in his opinion it was above all the lack of means and the want of discipline on the part of administrations which had sometimes prevented the I.F.R.B. from carrying out its task. He gave his approval to this report.

The Chairman considered that the delegations now had a general picture of the Administrative Council's report and that questions of detail in this report could be taken into consideration when the proposals for the amendment of the Regulations came to be examined.

There being no objection, this proposal was adopted.

3. Document No. 20. General Discussion.

The Delegate of the U.S.A. recalled that his country originated the proposal to set up the I.F.R.B. He was happy to say that this body carried out its duties to the full despite the lack of means and personnel. He congratulated the I.F.R.B. on the work accomplished.

The Delegate of Portugal thanked the I.F.R.B. for the work which had been done and stressed the importance of frank cooperation between the I.F.R.B. and the administrations to ensure that the Master Record gave a good picture of the actual use made of the frequency spectrum.

The Delegate of Mexico stated that his country was satisfied with the work of the I.F.R.B. It was inevitable that there should be some criticism: this would be made during the discussion of the proposals for amending Article 11. But that did not mean that with the means at its disposal the I.F.R.B. had not carried out its task to the full. He suggested that questions of detail should be discussed in the Working Groups of Committee 5.

Mr. Petit, representative of the I.F.R.B., after thanking the Committee for studying the I.F.R.B. report at the outset of its work, outlined briefly the contents of the report. He thought that, at the present stage, the Committee should examine the report as a whole and only go into questions of detail when discussing the proposals for amending the Regulations at working group level.

The Delegate of New Zealand supported the U.S. and Portuguese statements as well as certain statements made by the Delegate of Mexico. He paid tribute to the I.F.R.B. and its staff for the enormous task it had accomplished and felt that, had there been no I.F.R.B., the radio spectrum would now be in a state of chaos.

The Delegate of Colombia endorsed the statements made by the Delegates of Portugal, Mexico and New Zealand and emphasized the difficulties which had confronted the I.F.R.B. and the way in which it had overcome them. He again asked if the I.F.R.B. could not publish a list indicating the present status of the frequency bands.

The Delegate of Pakistan found the conclusions reached by the I.F.R.B. satisfactory on the whole. Nevertheless, he felt that that body might have done better in certain fields, such as the assignment of frequencies to young and underdeveloped countries. His delegation would submit concrete proposals suggesting amendments. However, he agreed that the establishment of the I.F.R.B. had served a very useful purpose.

The Argentine Delegate said that his delegation had studied with interest the report submitted by the I.F.R.B. and felt that, if the results were incomplete, it was hardly the fault of that body. He endorsed the views expressed by the delegations which had taken the floor before him.

The Delegate of India congratulated the I.F.R.B. for the clarity with which the report had been drafted. The report would be most useful when the proposals for amendment were discussed.

The Delegate of Brazil congratulated the I.F.R.B. and supported the statements made.

The Delegate of the Federal German Republic stressed the usefulness of the I.F.R.B.

The Delegate of Australia shared the views expressed.

The Delegate of the Philippines made the following statement:

"The Republic of the Philippines would like to add its word of appreciation for the accomplishments of the I.F.R.B. as ably summarized by Mr. Miles of the U.S.A. and by the other delegations that have spoken earlier. We are conscious of the difficult task that the I.F.R.B. has undertaken. Our country has closely collaborated in the work of the

P.F.B. for almost two years since 1948 by sending one of our experts to collaborate with the radio experts of the other members of the Union and also by sending two delegates to the E.A.R.C. in Geneva in 1951. While the work of the I.F.R.B. is not entirely satisfactory to all Administrations, nevertheless, it has to be congratulated for its efforts in bringing about a work that started an orderly registration and assignment of radio frequencies to the different radio services that may be considered practical and efficient in many respects. It is to be recognized, and our Administration is aware, that the work of assigning frequencies to all types of radio services in each member country is not only difficult but also a most delicate and ticklish one. It is our feeling that this problem has been partially solved by past conferences and it is hoped that the present and future conferences will move forward even to a minor extent in the proper solution of the urgent problems at present experienced by the different delegations.

"We feel that the best consolation of the I.F.R.B. in its task of solving problems of this nature is that, as years go on, progress and development of the radio art will be experienced thru-out the world and will gradually ease up the work of the I.F.R.B. It might be five years or ten years from now but certainly we are optimistic that this period will see revolutionary changes in equipment manufacture, operating techniques and many other products of research which will inevitably allow Administrations to make less use of the HF band in the operation of their radio services and will henceforth solve materially the congestion in this band.

"May we advance the theory, that in the near future, great strides in the use of the VHF and SHF as well as substantial use of coaxial cable circuits in big land mass countries will all help to solve our common problems on less and less use of the HF band in services which can suitably use other frequencies of the whole spectrum.

"On the part of the Republic of the Philippines, may we state that it has drafted a five-year program, to start early in 1960, of inter-connecting its 7,000 islands by the substantial use of the VHF and/or microwave circuits with the idea of making available its present HF assignments to the other radio services in our country which badly need them. May we state farther that our acute HF problem is aggravated by the fact that because of the peculiar circuit requirements we can only use efficiently from 2 to 9 megacycles for all our local circuits and that this band, as all Administrations know, is difficult to use, not only because of the problem of interference, but also of high noise level in the lower HF band which is a characteristic of Region 3.

"The Delegation's purpose in bringing out these facts is to show our efforts in cooperation with other administrations in partly solving the HF problems faced by all of us and to picture the limitations and difficulties of our Government in the operation of our urgent radio services brought about by insufficient HF assignments to our Country."

The delegate of the United Kingdom of Great Britain and Northern Ireland endorsed the statements extolling the virtues of the I.F.R.B. Would it be possible for that body to publish a document summarizing all the suggestions contained in the report ?

Because of the large number of proposals for amending the Regulations before the Committee, it would be advisable to restrict the number of working groups set up. Like the Portuguese delegate, he felt that these should be limited to two; one to deal with the frequency notification procedure and one to cope with the frequency list.

The meeting rose at 12.30; further discussion of item 3 and the rest of the Agenda was adjourned.

J. Barrailler

D.D. Donald

Rapporteurs

M. Joachim

Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 120-E
27 August, 1959

PLENARY SESSION

FIRST REPORT OF COMMITTEE 4 TO THE PLENARY ASSEMBLY

Inclusion of the Republic of Iraq in the "European Area" (RR 107 refers)

Committee 4 at its second meeting on 21st August adopted unanimously the following report:

Committee 4, having examined the proposals of the Republic of Iraq contained in Document No. 35, the situation arising from No. 107 of the Radio Regulations and from No. 10 of E.A.R.C., and Resolution No. 31 of the Plenipotentiary Conference of Buenos Aires 1952 (proposal No. 413), and having taken cognisance of the technical arguments presented by the Delegate of Iraq, is of the unanimous opinion that the inclusion of Iraq in the "European Area" is acceptable subject to the condition that such inclusion shall not lead to the revision at this Conference of either the Copenhagen or the Stockholm plans or of any other regional plans including those of the Maritime Service. This decision of Committee 4 has been taken with the assent and valuable collaboration of the Delegate of France.

GUNNAR PEDERSEN
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 121-E
27 August 1959

COMMITTEE 4

SUMMARY RECORD

Fourth Meeting - Committee 4 (Frequency Allocation Committee)

Tuesday, 25 August at 15.00 hours - Room A

The Chairman introduced the Agenda Document No. DT 16 which was accepted.

1. The 1st report of the Committee (Document No. 80) was approved.

2. The Chairman pointed out that the Annex to Document No. DT 16 is based solely on the substance of the proposals and differs from the list on pages 237 Rev. 2 - 243.1 Rev. 1 which is based on the numbering as given by the Administrations. The Chairman asked that any omissions in the Annex would be notified by the Delegates as the items came under discussion. He also drew attention to Proposal 5098 contained in Document No. 61 which would need to be considered. He pointed out that some of the numbers listed in the Annex do not represent amendments in form or substance.

3. 10 - 14 kc/s

In this frequency band there arose for the first time the question of the new service "Radiopositioning" and there was some discussion as to whether discussions on frequencies involving this service should be deferred until Committee 6 had produced a definition. However after the Delegate of the U.S. had stated that the basic concept of radiopositioning could be expressed as "that part of Radiolocation other than Radionavigation" and had further expressed his view that this basic concept could be used to facilitate the work of the Committee, it was agreed to proceed on this basis. It was also agreed to ask Committee 6 to give priority to their task of establishing a definition of Radiopositioning.

After a little discussion Proposal 3278 was approved.

Proposal 628 by India to reduce the lower limit of the band to 9,975 c/s was discussed and on a proposal by Colombia this figure was further reduced to 9 kc/s and this was generally approved.

After a consequential amendment of the figure of 10 kc/s to 9 kc/s, Proposal 5098 by the Federal German Republic was agreed.

4. 14 - 70 kc/s

The Chairman pointed out that the substantial proposals in this band came under three headings, to amend No. 110 of the Radio Regulations, to introduce "Standard frequencies", and the U.S.S.R. proposal to allow the band 60 - 80 kc/s to be used for industrial use in U.S.S.R.

There was some discussion on Proposal 3279 and it was agreed that this would be deferred for later study.

After some discussion on Proposal 3280 it was agreed that this would be delt with by a Working Group.

Proposal 889 was accepted.

5. 70 - 90 kc/s

The Chairman pointed out that any references to previous subjects, for example No. 110 of the Radio Regulations would be treated as previously agreed.

There was discussion on Proposal 417 which was supported by Australia, Pakistan, U.K., India and Portugal; contrary views were expressed by Argentina and by U.S., the latter stating their view that all proposals affecting 70 - 130 kc/s should be considered together. This view was supported by Canada. It was agreed that the question should be left for later study.

Proposals 726, 891 and 4617 were deferred for a Working Group. There was some discussion as to whether Proposal 3508 was covered by the general provisions of No. 88 of the Radio Regulations and it was finally agreed that this Proposal will also be studied by a Working Group.

6. 90 - 110 kc/s

After a brief summary of the proposals had been made it was agreed to refer them to a Working Group.

7. 110 - 130 kc/s and 130 - 150 kc/s

After discussion on various proposals affecting the bands it was agreed that they all should be considered by a Working Group.

8. The time now being 17.15 hours, the Chairman proposed to adjourn the meeting but before doing this he asked the Delegations present to indicate their wish to take part in the proceedings of Working Group 4 A.

The following is the List of States :

United States of America, Philippines, U.S.S.R., United Kingdom, Belgium, Indonesia, China, Argentina, Ireland, Israel, Spain, South Africa, Luxembourg, Canada, Yugoslavia, Morocco, Norway, Sweden, Portuguese Overseas Provinces, Brazil, Austria, Saudi Arabia, Libya, Hungary, India, Pakistan, New Zealand, Paraguay, Japan, Colombia, Mexico, Greece, and the following International Organization : C.I.R.M.

The Chairman of Working Group 4 A said that the Group would meet on Wednesday, 26 August at 10.00 hours in Room E. Before the adjournment, the Delegate of Czechoslovakia drew attention to a difference between the French and English texts of Proposal 895 and the U.S.S.R. stated that in this case the French text is correct.

The Chairman thanked the Delegate of U.S.S.R. and the meeting was then adjourned.

The Rapporteurs :

A. James Bourne
F. Dreyfus

The Chairman :

Gunnar Pedersen

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 122-E
27 August, 1959

COMMITTEES 4, 5, 6, 7,

APPLICATION OF THE PROVISIONS OF CHAPTER 18 OF THE GENERAL REGULATIONS

In order to meet the wishes expressed on various occasions during committee meetings, the complete text of Radio Division Circular No. 775 dated 1 July 1959, is distributed herewith, together with a corrigendum sheet.

Circular No. 775 having replaced Circular No. 772 with the exception of Annex 5, the text of Annex 5 to the latter is also distributed herewith.

For the Secretary of the Conference
C. Stead
Deputy Secretary

Annexes: 2

GENERAL SECRETARIAT
INTERNATIONAL TELECOMMUNICATION UNION

RADIO DIVISION

Circular No. 775

Geneva, 1 July, 1959

Application of Provisions
of Chapter 18 of the General Regulations

To

The Director-General :

Dear Sir,

Radio Division Circular No. 772 of 21 March 1959 contained a report on the action taken in application of the provisions of Chapter 18 of the General Regulations annexed to the International Telecommunication Convention, Buenos Aires, 1952.

I have the honour to forward herewith, for your information, a further report on this matter which has been prepared as a result of the discussions during the IXth Plenary Assembly of the C.C.I.R., Los Angeles, 1959.

Yours faithfully,

Jean Persin
Senior Counsellor
For the Acting Secretary-General
By Direction

GENERAL SECRETARIAT
INTERNATIONAL TELECOMMUNICATION UNION

RADIO DIVISION

Circular No. 775

Geneva, 1 July, 1959

Application of Provisions
of Chapter 18 of the General Regulations

To

The Director-General :

Dear Sir,

Radio Division Circular No. 772 of 21 March 1959 contained a report on the action taken in application of the provisions of Chapter 18 of the General Regulations annexed to the International Telecommunication Convention, Buenos Aires, 1952.

I have the honour to forward herewith, for your information, a further report on this matter which has been prepared as a result of the discussions during the IXth Plenary Assembly of the C.C.I.R., Los Angeles, 1959.

Yours faithfully,

Jean Persin
Senior Counsellor

For the Acting Secretary-General
By Direction

SECRÉTARIAT GÉNÉRAL DE L'UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

DIVISION DES RADIOCOMMUNICATIONS

GENERAL SECRETARIAT INTERNATIONAL TELECOMMUNICATION UNION

RADIO DIVISION

SECRETARÍA GENERAL DE LA UNIÓN INTERNACIONAL DE TELECOMUNICACIONES

DIVISIÓN DE RADIOCOMUNICACIONES

CORRIGENDUM

à la Circulaire N° 775 de la Division des radiocommunications

Les corrections qui suivent doivent être apportées aux annexes de ladite circulaire.

ANNEXE A10. *Sous le titre, remplacer la référence:* (Question nº 81 et Programme d'étude nº 85) *par* [Question No. 3 (III) et Programme d'études nº 128 (III)].

ANNEXE A20. *Sous le titre, remplacer:* (Question nº 104 revisée) *par:* [Question nº 187 (VIII)].

ANNEXE A21. *Page 4, à la fin de la Remarque 1, remplacer:* le Rapport nº 436 *par:* le Rapport nº 136.

ANNEXE A21 b. *Page 4, alinéa* b), *3e ligne, remplacer:* ... par chaque ligne *horizontale* *par* ... par chaque ligne *inclinée.*

ANNEXE A31. *Page 6, sous 65, remplacer:* ... des champs produits *par* ... des densités du flux de puissance.

ANNEXE A31. *Page 6, sous 65, biffer:* pour que le champ y soit inversément proportionnel à la distance.

Remarque du Directeur du C.C.I.R.

Plusieurs Administrations ont réservé leur opinion au sujet du Rapport nº 173 du C.C.I.R. qui avait été mis en circulation après la clôture de la IXe Assemblée plénière à fin de commentaires.

CORRIGENDUM

to Radio Division Circular N° 775

The following corrections should be made to the annexes of said circular.

ANNEX A10. *Reference under title, replace:* (Question No. 81 and Study Programme No. 85) *by* [Question No. 3 (III) and Study Programme No. 128 (III)].

ANNEX A20. *Under title, replace:* (Question No. 104 Revised) *by:* [Question No. 187 (VIII)].

ANNEX A21. *Page 4, end of first Note, replace:* to Report No. 436 *by:* to Report No. 136.

ANNEX A21 b. *Page 4, para.* b), *2nd line, replace:* ... allocation shown along each *horizontal* line *by* ... allocation shown along each *inclined* line.

ANNEX A21 c. *Under title, replace:* Recommendation No. 270 *) *by* Recommendation No. 278 *).

ANNEX A23. *First page, Note* *), *replace:* Recommendation No. 72 *by* Recommendation No. 217.

ANNEX A31. *Page 6, item 65, replace:* ... field strengths produced *by* ... power flux densities produced.

ANNEX A31. *Page 6, item 65, delete:* for the field strength to be inversely proportional to the distance.

Note by the Director of the C.C.I.R.

Several Administrations have reserved their opinion on C.C.I.R. Report No. 173 which was circulated for comment after the close of the IXth Plenary Assembly.

CORRIGENDUM

a la Circular núm. 775 de la División de Radiocomunicaciones

Modifíquense los Anexos a esta circular en la forma que a continuación se indica.

ANEXO A10. *Título. Sustitúyase la referencia* (Cuestión núm. 81 y Programa de estudios núm. 85) *por* [Cuestión núm. 3 (III) y Programa de estudios núm. 128 (III)].

ANEXO A20. *Título. Sustitúyase la referencia:* (Cuestión núm. 104, revisada) *por:* [Cuestión núm. 187 (VIII)].

ANEXO A21. *Página 4, inciso* b), *3ª linea, sustitúyase:* ... por cada línea *horizontal* *por* ... por cada línea *inclinada.*

ANEXO A21 b. *Página 4, inciso* b), *3ª linea, sustitúyase:* ... por cada línea *horizontal* *por* ... por cada línea *inclinada.*

ANEXO A31. *Página 6, sous 65, remplacer:* ... des champs produits *par* ... des densités du flux de puissance.

ANEXO A31. *Página 6, sous 65, biffer:* pour que le champ y soit inversément proportionnel à la distance.

Nota del Director del C.C.I.R.

Varias administraciones han reservado su opinión sobre el Informe núm. 173 del C.C.I.R., que se les envió después de clausurada la IXª Asamblea plenaria para que formulasen los comentarios que estimaran oportunos.

JOINT REPORT BY THE SPECIALIZED SECRETARIAT OF THE C.C.I.R.

AND THE GENERAL SECRETARIAT

Preparation of Proposals for the Ordinary Administrative Radio Conference, Geneva, 1959

In Circular 772 a Joint Report was given on the preparation of proposals for the Ordinary Administrative Radio Conference (Geneva, August 1959).

In point 5 on page 6 of the circular it was mentioned that a supplement to this Report would be prepared, containing the new findings of the IXth Plenary Assembly of the C.C.I.R. (Los Angeles, April 1959), in order that the Radio Conference might be informed of the latest opinions of the C.C.I.R.

Now that this Plenary Assembly has taken place it would appear that such a supplement would be so large, that it would be preferable totally to redraft the first part of the original Report, as the contents would thus be more comprehensive.

The following Report therefore replaces the joint report of Circular 772, plus its annexes 1 - 4.

Some of the Recommendations, etc., are those appearing in Volume I of the documents of the VIIIth Plenary Assembly (Warsaw, 1956), but the majority are new recommendations which have not yet been printed, so these latter items will be given as annexes to the report (Annexes A1 - A30). The first category is indicated by an (*) preceding the title of the item.

In many cases the numbers of the recommendations mentioned in Annex 5 to Circular 772 have been changed during the Los Angeles meeting. However, the substance of the subjects discussed has, in general, remained unchanged, despite the introduction of the new items. Therefore, to avoid an unnecessary increase of annexes to this document, no attempt has been made to give a corrigendum list to Annex 5. It can be considered as still valid in substance, and can therefore be renumbered as Annex B to this present document.

Study Group I (Transmitters) :

The following items might be used for modification of the Radio Regulations :

	* Recommendation No. 129	: Method of specifying the power supplied to an antenna by a radio transmitter.
Annex A1	Recommendation No. 230	Spectra and bandwidth of emissions
" A2	" " 231	Definition of bandwidth of emissions
" A3	" " 232	Spurious emissions
" A4	" " 233	Frequency stabilisation of transmitters

The following Recommendations can be submitted for information.

	* Recommendation	No. 130	:	Power relationships for modulated emissions
Annex A5	Recommendation	No. 228	:	Study of relationships between peak power and mean power.
" A6	"	" 249	:	Arrangement of channels in multi-channel radio-telephone transmissions for long-range circuits operating on frequencies below about 30 Mc/s
" A7	"	" 246	:	Frequency shift keying
" A8	"	" 247	:	Four-frequency diplex systems
" A9	"	" 248	:	Classification of multi-channel radio-telephone systems for long-range circuits operating on frequencies below about 30 Mc/s, and designation of the channels in these systems.

Study Group II (Receivers) :

Study Group II has no specific Recommendations to present, but proposes that No. 396 of the Radio Regulations should be amended as follows :

"396. para. 2 : However, as far as is compatible with practical considerations, the choice of transmitting, receiving and measuring equipment should be based on the most recent advances in the art as indicated, inter alia, in the C.C.I.R. Recommendations and, particularly as regards receivers, on the tables which are annexed to the Recommendations and which give the values of the various receivers characteristics."

Study Group III (Fixed Service Systems) :

The following items might be used for modification of the Radio Regulations :

	* Recommendation	No. 40 :	Intercontinental radio-telephone systems and use of radio links in international telephone circuits.
	* Recommendation	No. 74 :	Principles of the devices used for achieving privacy of radiotelephone conversations.
	* Recommendation	No.100 :	Reduction of occupied bandwidth and transmitter power in radio telephony.
Annex A10	Recommendation	No. 241 :	The concept of transmission loss in radio systems studies.

Study Groups IV and V[1] (Ground-Wave and Tropospheric Propagation) :

Study Groups IV and V of the CCIR are concerned with the continuous study of the manner in which radio-waves are propagated over the irregular and inhomogeneous surface of the earth, and through the troposphere. National Administrations are recommended to refer to the latest documents of the Plenary Assembly of the CCIR as containing a summary of the present state of technical knowledge which can be of use in the planning of telecommunication services of all types.

Particular attention is drawn to the following Recommendations :

Annex A 11	Recommendation	No.	312	: Tropospheric wave propagation curves
" A 12	"	"	307	: Ground-wave propagation curves below 10 Mc/s
" A 13	"	"	308	: Ground-wave propagation over inhomogeneous earth.
" A 14	"	"	310	: Definitions of terms relating to propagation in the troposphere,

and to the two atlases of ground-wave propagation curves for frequencies between 30 and 300 Mc/s and between 30 and 10,000 Mc/s respectively, published in accordance with Resolutions No. 11 and No. 22.

(NOTE : See also two items, listed under Study Group VI, mentioned in Note (2)).

Study Group VI (Ionospheric Propagation) :

By its nature, and especially by its more recent history, Study Group VI has no current recommendations of a suitable nature for direct incorporation into the Radio Regulations, in accordance with Chapter 18 of the General Regulations. The Study Group has, however, prepared two Recommendations and a Report, which it desires to present to the forthcoming Radio Conference. These are as follows :

Annex A 15	Recommendation	No.	314	: Protection of frequencies used for radio-astronomical measurements.
" A 16	"	"	239[2]	: Selection of frequencies used in telecommunication with and between artificial earth satellites and other space vehicles.
" A 17	Report	"	115[2]	: Factors affecting the selection of frequencies for telecommunication with and between space vehicles.

---

(1) At the IXth Plenary Assembly of the CCIR in Los Angeles (April, 1959), the work of Study Groups IV and V was combined, under the Chairman of Study Group V.

(2) These two items refer to questions that are also on the programme of Study Group V.

Moreover, the Study Group wishes to advise the Radio Conference that such topics involving ionospheric propagation as, for example :

- MUF prediction,
- field-strength calculation, and
- levels of atmospheric radio noise,

are under continuous study, so that Administrations should refer to the latest documents of the Plenary Assembly of the CCIR for information on the present state of technical knowledge of these matters, which are of importance in the planning of radio services. As a particular example it might be noted that Report No. 65 : Revision of atmospheric radio noise data - is in Recommendation No. 315 recommended for use, with some caution, for assessing the level of atmospheric radio noise throughout the world, until sufficient new data to justify a revision have been accumulated and made available.

In conclusion, the Study Group expresses the view that the information on ionospheric propagation, contained in Appendix 2 to the Annex to the Resolution adopted by the Atlantic City International Radio Conference, relating to the preparation of the New International Frequency List, is out of date and unsuitable for further use.

Study Group VII (Standard Frequencies and Time Signals) :

The following items are submitted to the Administrative Radio Conference :

Annex A 18	Recommendation No. 320	:	Standard Frequency transmissions and time signals in additional frequency bands.
" A 19	Resolution " 53	:	Standard frequency and time signal transmissions in Band 4.

Study Group VIII (International Monitoring) :

The following items might be used for modification of the Radio Regulations :

*Recommendation No. 19 (paragraph 5)	:	Organisation of an international monitoring service. (The substance of paras. 1 to 4 of this Recommendation is already included in the Radio Regulations.)
*Recommendation No. 22	:	Form of report for frequency and field-strength measurements made at monitoring stations.
Annex A 20 Recommendation No.323	:	Identification of radio stations.

Study Group IX (Radio Relay Systems) :

Study Group IX draws the attention of the Administrative Radio Conference to :

Annex A 21 Resolution No. 55[3]	Radio relay systems for television and telephony. Preferred frequency bands and centre frequencies for radio-relay links for international connections.

Study Group X (Broadcasting), XI (Television) and XII (Tropical Broadcasting) have no items that would influence the Radio Regulations.

Study Group XIII (Mobile services) :

The following items might be considered in the revision of the Radio Regulations :

* Recommendation No. 124 :	Watch on the radiotelephony distress frequency of 2182 kc/s. (Attention is also drawn to Resolution No. 4 of the Baltic and North Sea Radio-Telephone Conference (1955): Watchkeeping by ships on the distress and calling frequency 2182 kc/s).
* Recommendation No. 219 :	Alarm signal for use on the maritime radiotelephony distress frequency of 2182 kc/s. (Attention is also drawn to paragraphs 34 to 42 inclusive of the supplementary Radio Regulations of the Baltic and North Sea Radio Telephone Conference : Alarm Signal).
* Recommendation No. 224 :	Testing of 500 kc/s radiotelephony auto-alarm receiving equipment on board ships (para. 7).
Annex A 22 Recommendation No. 250[4]:	Signals "May-day" and "Pan".

---

(3) In the notes following this Resolution, attention is drawn to the following items, which are also added to the annexes of this document :

Annex A 21 a Recommendation No. 303 :	Radio relay systems using tropospheric scatter propagation Radio-frequency channel arrangements.
Annex A 21 b Report No. 136 :	Radio relay systems using tropospheric scatter propagation.
Annex A 21 c Recommendation No. 278 :	Radio relay systems for television and telephony. Radio-frequency interconnection of systems for 600 to 1800 telephone channels, or the equivalent, operating in the 2000 and 4000 Mc/s band.
Annex A 21 d Study Programme No.160 :	Radio relay systems for television and telephony. Preferred characteristics for auxiliary radio relay systems for the provision of service channels.

(4) This Recommendation can be considered to be the response to Atlantic City Recommendation No. 5 to the C.C.I.R.

Annex A 23	Recommendation No. 252	: Use of 8364 kc/s for radio direction-finding (para. 7 and first sentence of para. 8)
" A 24	" " 251	: Addition to Appendix 9 of Radio Regulations.
" A 25	" " 254	: Technical characteristics of frequency-modulated VHF(metric) maritime equipments. (Parts 1.2, 1.4, 1.5, 1.7.1, 1.7.2, 1.7.3, 1.7.5, 1.8 and from 1.1.1 the phrase : "At present the frequency deviation should not be greater than ± 15 kc/s", and the following part of 1.1.1, beginning : "The maximum deviation ... " should be used as a footnote.
Annex A 26	Recommendation No. 256	: Interference due to intermodulation products in the VHF(metric) mobile maritime radio-telephone service (paras. 5, 6, 7, 8 and 9).
" A 27	" " 253	: Bearing and position classification for direction finding.
" A 28	" " 258	: Single sideband aeronautical and maritime mobile radiotelephone equipments.
" A 29	" " 255(5)	: Spurious emissions from frequency-modulated VHF(metric) maritime mobile equipment.

Study Group XIII moreover proposes that the attention of the Safety of Life at Sea Conference be drawn to the following Recommendations :

* Recommendation No. 218	: Prevention of interference to radio reception on ships.
* Recommendation No. 224	: Testing of 500 kc/s radiotelegraph auto-alarm receiving equipment on board ships.
* Recommendation No. 45	: Avoidance of interference from ships' radar to other radiocommunication apparatus on board.

Annex A 23	Recommendation No. 252	: (paras. 9 and 11)	The titles are given above.
" A 26	" " 256	: (para. 8)	
" A 27	" " 253	:	

Study Group XIV (Vocabulary) :

The following items might be helpful in the revision of the Radio Regulations :

Annex A 30	Recommendation No. 324	: Nomenclature of frequency and wavelength bands used in radiocommunications.
" A 31	Report No. 173	: Possible amendments to the definitions in the Radio Regulations. Act. 1.

---

(5) The following item is mentioned in the Recommendation :

Annex A 29 a	Report No. 113	: Spurious emissions of frequency-modulated VHF(metric) maritime mobile equipment.

Annex No.	Item	Los Angeles Doc. No.
A 1	Recommendation 230	487
A 2	" 231	486
A 3	" 232	651
A 4	" 233	584
A 5	" 228	488
A 6	" 249	518
A 7	" 246	652
A 8	" 247	646
A 9	" 248	570
A 10	" 241	618
A 11	" 312	526
A 12	" 307	443
A 13	" 308	444
A 14	" 310	489
A 15	" 314	437
A 16	" 259	531
A 17	Report No. 115	662
A 18	Recommendation 320	548
A 19	Resolution No. 53	612
A 20	Recommendation 323	549
A 21	Resolution No. 55	613
A 21 a	Recommendation 303	693
A 21 b	Report No. 136	727
A 21 c	Recommendation 278	643
A 21 d	St. Programme 160 (IX)	597
A 22	Recommendation 250	582
A 23	" 252	Rec. 217 (rev.)
A 24	" 251	659
A 25	" 254	645
A 26	" 256	557
A 27	" 253	559
A 28	" 258	581
A 29	" 255	583
A 29 a	Report No. 113	678
A 30	Recommendation 324	615
A 31	Report No. 173	774

A N N E X A 1

RECOMMENDATION No. 230 *)

SPECTRA AND BANDWIDTHS OF EMISSIONS

(Question No. 1 (1))

(Stockholm, 1948 - Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that it is of the utmost importance to ensure economy of the radio spectrum by reducing the spacing between assigned frequencies;

b) that, to this end, it is necessary to reduce the spectrum space occupied by each emission, in compliance with the rules of Art. 13, para. 4 of the Radio Regulations; that moreover, the Radio Regulations have prescribed in Art. 17, para. 2, that the bandwidths mentioned in App. 5 must be considered as a guide, until more recent recommendations of the C.C.I.R. are published;

c) that for the determination of a spectrum of minimum width, the whole transmission circuit as well as all its technical working conditions, and particularly, propagation phenomena, must be taken into account;

d) that one cannot, strictly speaking, mention bandwidth without having previously adopted quantitative definitions of the various bandwidths by fixing well determined points on the complete spectrum;

e) that the definition of the bandwidth occupied, being the only definition mentioned in the Radio Regulations and satisfying the previous conditions, is useful to specify a given emission;

f) that, however, this definition does not suffice when consideration of the complete problem is involved; and that one should be in a position to establish general rules limiting, on the one hand, the bandwidth occupied to the value strictly necessary in each case and, on the other hand, the amplitudes of the emitted components in that part of the spectrum which could interfere with adjacent channels;

g) that one can thus realise the usefulness of three concepts :

- the necessary bandwidth;
- the bandwidth occupied;
- the emitted spectrum outside the necessary bandwidth;

---

*) This Recommendation replaces Recommendation No. 145.

which can be defined and applied according to the following principles;

g.1 the necessary bandwidth should be established at the smallest value possible, while including the spectrum components useful to a good receiver to ensure communication with the quality required by the two correspondents (that is to say, for example, maintaining the telephone quality laid down, or the percentage of errors admitted in telegraphy), in the presence of given technical conditions;

g.2 the bandwidth occupied, as defined in the Radio Regulations, enables the operating agencies, and the national and international organizations to carry out measurements of the bandwidth actually occupied by a given emission and so to ascertain, by comparison with the necessary bandwidth that such an emission does not occupy an excessive bandwidth in view of the service to be provided, and is, therefore, not likely to create harmful interference beyond the limits laid down for this class of emission. The use of this concept appears then to be a useful way of requiring the operating agencies to restrict the emitted energy outside the necessary bandwidth;

g.3 the emitted spectrum outside the necessary bandwidth must be determined by reconciling the following requirements :

- the necessity to limit to a strict minimum the interference caused to the adjacent channels;
- the technical and practical possibilities of transmitter design;
- the limitation to a permissible value of the shaping or distortion of the signal;

h) that, however, one must always bear in mind the fact that the three concepts are not independent and that given a specific emission, the knowledge of each one provides partial information on the emitted spectrum; the emission is completely determined only by its entire spectrum;

unanimously recommends

1. Definitions

That the following definitions and explanatory notes should be employed as convenient conventions to facilitate and clarify the consideration of bandwidth problems.

1.1 Bandwidth occupied by an emission

The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to one half percent of the total mean power radiated by the emission (see Note 5).

1.2 Necessary bandwidth

For a given class of emission, the minimum value of the frequency bandwidth such that, below its lower and above its upper frequency limits the mean powers radiated, are each equal to one half per cent of the total mean radiated power, this minimum value being sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions (see Note 5).

1.3 Out-of-band radiation of an emission

The power radiated by an emission outside the necessary bandwidth (see Note 1). The out-of-band radiation does not include emissions on remote frequencies such as spurious emissions (see Notes 2, 3 and 4).

1.4 Build-up time of the signal

The time during which the telegraphic current passes from one tenth to nine tenths (or vice versa) of the value reached at the steady state (see Note 6).

1.5 Note 1 - Such radiation useful for the good functioning of the receiving equipment, as for example, the radiation corresponding to the carrier of reduced-carried systems should be included in the necessary bandwidth, and not in the out-of-band radiation.

Note 2 - It is not intended that radiation on frequencies remote from the useful part of the emission, such as radio-frequency harmonics, be included in the defined out-of-band radiation , as these are covered by separate regulations (see App. 4, Radio Regulations).

Note 3 - The bandwidth occupied by an emission which would be considered as perfect from the standpoint of bandwidth economy equals the necessary bandwidth. In this case the total power of the out-of-band radiation equals 1% of the total radiated power. If the bandwidth occupied is larger than the necessary bandwidth, this percentage is higher

Note 4 - The concept of out-of-band radiation gives a convenient means to indicate the relative imperfection of an emission. However, a complete description of the spectrum of the out-of-band radiation is indispensable for the determination of interference caused on adjacent channels.

Note 5 - In some cases, e.g. (radiotelephony and frequency division multiplex, especially for microwave systems) the percentage of power of 0.5% chosen may lead to certain difficulties in the practical application of the definitions of occupied and necessary bandwidths. In such cases a different figure may prove useful.

Note 6 - In the case of asymmetric signals, two different values corresponding to this definition can exist, representing the build-up times at the beginning and end of the signal.

2. Limitations of the emitted spectra

That, since some present emissions (particularly class A1 emissions) occupy an unduly wide bandwidth, administrations should endeavour, with the minimum practicable delay, to limit the emitted spectra to those shown below for various classes of emissions.

The telegraph speed in bauds (later referred to as B) used in the following text is the maximum speed used by the corresponding transmitter. In the case of a transmitter operating at a speed lower than this maximum speed, the build-up time should be increased to keep the occupied bandwidth at a minimum in order to comply with Art. 17, para. 2 (No. 398) of the Radio Regulations.

2.1 Class A1 emissions with fluctuations

Under conditions where large short-period variations of the received field are present the specifications given below for single-channel, amplitude-modulated, continuous-wave telegraphy (class A1) represent desirable performance that can be obtained from transmitters with adequate input filters and sufficiently linear amplifiers, following that in which keying takes place.

2.1.1 Necessary bandwidth

The necessary bandwidth is equal to five times the telegraph speed in bauds with an attenuation of the components at the edges of the band equal to at least 3 db, in comparison with the level of the same components of the spectrum representing a series of equal rectangular dots and spaces at the same telegraph speed. This relative level of - 3db corresponds to an absolute level of 27 db below the level of a continuous mark.

2.1.2 Spectrum of the out-of-band radiation

Outside the bandwidth defined above, the envelope of the spectrum should lie below a curve starting at the point $(\pm \frac{5B}{2}$, - 27 db) defined above, and presenting a slope of 30 db per octave and extending over at least one octave, that is out to the points ($\pm$ 5 B, - 57 db). From these points onward, the level of all the components emitted should be below - 57 db.

2.1.3 Build-up time of the signal

The build-up time of the transmitted signal depends essentially on the shape of the signal at the input of the transmitter, on the exact structure of the filters to which this signal is applied, on filtering and non-linear effects which may take place in the transmitter itself (assuming that the antenna has no influence on the shape of the signal). As a first approximation it can be accepted that a spectrum curve close to the limiting spectrum defined in para. 2.1.1 and 2.1.2, corresponds to a build-up-time of order of 20% of the initial duration of the telegraph dot, i.e. of the order of $\frac{1}{5B}$.

2.2 Class A1 emissions, without fluctuations

For amplitude-modulated, continuous-wave telegraphy, in conditions where short-period variations of the receiver field strength do not affect transmission quality, the necessary bandwidth can be reduced to three times the keying speed in bauds.

2.3 Class A2 emissions

For single-channel modulated telegraphy keyed on both the carrier and the modulating frequency, the percentage of modulation being 100% or less and the modulation frequency higher than twice the keying frequency ($F > B$), the specifications given below represent desirable performance that can be obtained from transmitters with fairly simple input filters and approximately linear stages.

2.3.1 Spectrum

Outside a band with a width equal to twice the modulating frequency (referred to as F) plus five times the telegraph speed in bauds, the envelope of the spectrum should lie below a curve starting at the points of abscissae $\pm \left(F + \frac{5B}{2}\right)$ and ordinates - 24 db, presenting a slope of 12 db per octave, and extending over at least one octave, that is out to the points of abscissae $\pm (F + 5B)$ and ordinate - 36 db.

From these points onward the level of all the components emitted should be below - 36 db.

The reference level is the carrier level during a steady dash.

2.3.2 Modulation depth

With a view to reducing the components due to the harmonics of the modulating frequency it is recommended that, in general, the depth of modulation should not exceed 80%.

2.3.3 Necessary bandwidth

The necessary bandwidth depends on the telegraph speed, on the frequency and depth of modulation and on non-linear effects. It must, therefore, be determined for each specific case.

2.4 Class A3 emissions

The limitations given below for radiotelephone emissions have been deduced from measurements made by different methods. In one of these methods two pure audio-frequency tones of equal amplitude are applied to the input of the transmitter and the amplitude of modulation products outside the normal bandwidth of the transmitter is measured at the output. In other methods, the output voltage from a recording of conversational speech, or a white noise voltage, is substituted for the two audio-frequency tones. These fundamentally different methods do not lead to the same result; however, the known results of measurements are within the limiting spectra specified below. In the curves defined in paras. 2.4.1 and 2.4.2, the ordinates represent the energy intercepted by a receiver of a bandwidth practically equal to 3 kc/s, the central frequency of which is tuned to the frequency plotted on the abscissa, as compared with the energy which would be intercepted by the same receiver, if it were tuned to the central frequency of the occupied band. Note 5 of para. 1.5 should be applied to the emissions of this class. A percentage of power slightly higher than 99% would probably give necessary and occupied bandwidth figures near to the currently accepted figures for necessary bandwidth, as defined by a spectrum component level criterion.

2.4.1 Class A3 emissions, double-sideband

2.4.1.1 Necessary bandwidth

The necessary bandwidth is in practice equal to twice the highest audio frequency M which it is desired to transmit with a specified small attenuation.

2.4.1.2 Power within the necessary band

To estimate statistically the distribution of power within the necessary band when no privacy equipment is connected with the transmitter, the distribution shown by the C.C.I.F. for the "commercial circuit psophometer" can be used (Recommendation No. 5, 16th Plenary Assembly, Volume VI); in addition, the relative power level of speech frequencies should be taken into account. In cases where the transmitter is used in connection with a frequency inversion privacy equipment the same data can be used with appropriate frequency inversion of the resulting spectrum.

If a band-splitting privacy equipment is used, it has to be assumed that the statistical distribution of power is uniform within the frequency band.

2.4.1.3 Power outside the necessary band

2M being the necessary bandwidth, if a logarithmic abscissa frequency scale and an ordinate amplitude scale in decibels are used, the distribution curve of power outside the necessary band should lie below two straight lines starting from the points ($\pm$ M, 0 db) to the points ($\pm$ 1.4 M, - 20 db). Beyond these points, and down to the level of - 60 db, this curve should lie below two straight lines starting from the latter points and presenting a slope of 12 db per octave. Thereafter, the same curve should lie below the level - 60 db.

The reference level corresponds to the level of a single pure tone which, when applied to the input of the transmitter, gives the peak modulation of the transmitter.

2.4.2 Class A3a, A3b, etc. emissions, independent-sidebands and reduced-carrier

2.4.2.1 Necessary bandwidth

The necessary bandwidth 2F is in practice equal to the difference of the two radio frequencies defining the limits of the necessary band. These two frequencies correspond to the extreme modulating frequencies which it is desired to transmit with a specified small attenuation in the outer channels of the emission.

2.4.2.2 Power within the necessary band

The distribution of power within the necessary band is determined as for double-sideband transmitters. However, one must consider that independent-sideband transmitters are, in general, used with a band-splitting privacy equipment; it has then to be assumed that power distribution is, in general, statistically uniform within each of the sidebands.

2.4.2.3 Power outside the necessary band

The power outside the necessary band is dependent on the number and position of the active channels. The curves described below are appropriate when all channels are active simultaneously. When some channels

are idle the power outside the necessary band is less. 2F being the necessary bandwidth, if a logarithmic abscissa frequency scale and an ordinate amplitude scale in decibels are used, the distribution curve of power outside the necessary band should lie below two straight lines starting from the points ($\pm$ F, 0 db) to the points ($\pm$ 1.4 F, - 30 db).

Beyond these points, and down to the level of - 60 db, this curve should lie below two straight lines starting from the latter points and presenting a slope of 12 db per octave. Thereafter, the same curve should lie below the level - 60 db. The reference level cofresponds to the level of a single pure tone which, when applied to the input of one of the transmitter sidebands, gives the peak power of the transmitter.

2.5 Class F1 emissions

For Class F1, frequency-shift telegraphy, with or without fluctuations :

2.5.1 Necessary bandwidth

The frequency shift, or difference between mark and space frequencies being 2D and m being the modulation index 2D/B, the necessary bandwidth is given by one of the following formulae, the choice depending on the value of m :

2.6 D + 0.55 B	for $1.5 < m < 5.5$	within 10%
2.1 D + 1.9 B	for $5.5 \leqslant m \leqslant 20$	within 2%

2.5.2 Spectrum of the out-of-band radiation

Outside the bandwidth defined above, the envelope of the spectrum should lie below a curve of constant slope in db per octave starting from points situated at the limiting frequencies for the necessary bandwidth. The curve extends to the level of - 60 db. The levels are indicated by comparison with a zero level corresponding to the amplitude of the emission. The starting ordinates of the curve and its slopes are given in the following table, the entry depending on the modulation index :

Modulation index	Starting ordinates (db)	Slope (db per octave)
$1.5 \leqslant m < 6$	- 15	13 + 1.8 m
$6 \leqslant m < 8$	- 18	19 + 0.8 m
$8 \leqslant m < 20$	- 20	19 + 0.8 m

On the frequencies more remote from the median frequency than those where the curve reaches the - 60 db level, the level of all emitted components should lie below - 60 db.

2.5.3 Build-up time of the signal

A spectrum curve close to the limiting spectrum described in paras. 2.5.1 and 2.5.2 corresponds to a build-up time equal to about 8% of the duration of the initial telegraph dot, i.e. about 1/(12 B) provided that an adequate filter is used for signal shaping.

2.5.4 Bandwidth occupied, in the case of unshaped signals

Only for comparison purposes with the formulae above, it may be mentioned that for a sequence of equal and rectangular (zero build-up time) mark and space signals, the occupied bandwidth is given by the following formulae :

2.6 D + 1.4 B	for $2 \leqslant m \leqslant 8$	within 2%
2.2 D + 3.1 B	for $8 \leqslant m \leqslant 20$	within 2%

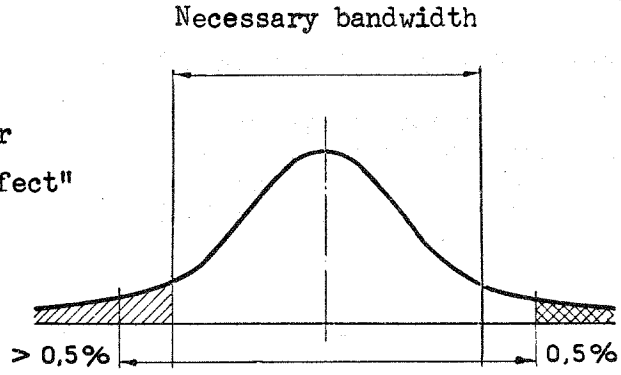
A N N E X

EXAMPLES OF SPECTRA FOR ILLUSTRATION OF THE DEFINITION OF NECESSARY BANDWIDTH

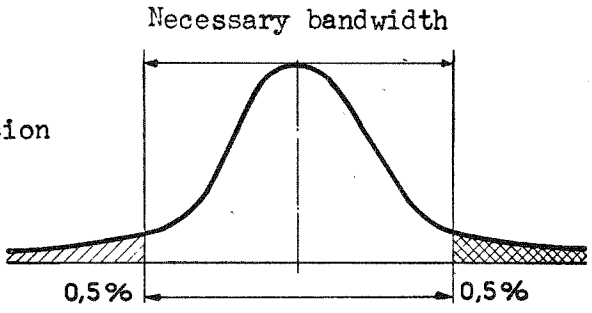
Abscissae : frequencies
Ordinates : power, per unit frequency

The spectra are assumed to be symmetrical

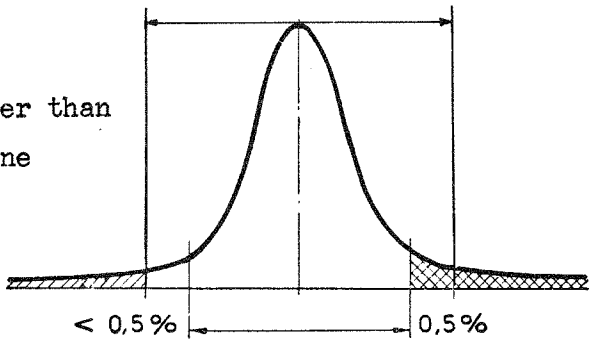
Emission wider than the "perfect" one



"Perfect" emission



Emission narrower than the "perfect" one



Hatched areas represent the out-of-band radiation (see definition 1.3)

Cross-hatched areas represent radiation outside the occupied band (see definition 1.1)

ANNEX A 2

RECOMMENDATION No. 231 *)

DEFINITION OF BANDWIDTH OCCUPIED BY AN EMISSION

(Study Programme No. 126 (I))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the criterion of the power contained in the band is the one likely to provide results which will be well correlated even if traffic and measurement conditions vary;

b) that the ratio of the power outside the occupied band to the total radiated power gives an estimate of the upper limit of the interference;

c) that satisfactory methods of direct measurement of bandwidth occupied exist;

d) that no existing measuring method takes account of any discrete component outside the band comprising 99% of the power;

unanimously recommends

1. that the bandwidth occupied by an emission be defined as the band of frequencies comprising 99% of the total radiated power;

2. that the bandwidth occupied by an emission should in general leave 0.5% of the power below its lower limit and 0.5% above its upper limit;

3. that where a more complete description of the emitted spectrum is necessary, the bandwidth corresponding to percentages of power different from 99%, in particular to the percentages of 98% and 99.5%, be indicated;

4. that any new definition should exclude reference to the discrete components;

---

*) This Recommendation replaces Recommendation No. 146.

5. that the following draft definition be submitted to the next Administrative Radio Conference :

Bandwidth occupied by an emission

The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to one half per cent of the total mean power radiated by the emission.

6. that the following draft definition be submitted to the same Conference for the purpose of making it possible, whenever necessary, to place with exactitude a given emission in the spectrum of the radio frequencies.

Frequency band occupied by an emission

The frequency band in the radio frequency spectrum such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to one half per cent of the total mean power radiated by the emission.

7. that in some cases (e.g. radiotelephony and frequency-division multiplex, especially for microwave systems), the percentage of power of 0.5% chosen may lead to certain difficulties in the practical application of the definitions of occupied and necessary bandwidth. In such cases a different figure may prove useful.

8. that the Administrative Radio Conference examine the preceding proposals in relation with the other proposed definitions submitted to it :

- in Recommendation No. 230, para. 1.2 (Necessary bandwidth);
- in Recommendation No. 233, para. 1 (Frequency band assigned to a station, assigned frequency, characteristic frequency of an emission, reference frequency, frequency tolerance).

ANNEX A 3

RECOMMENDATION No. 232 *)

SPURIOUS EMISSIONS

(Question No. 1(I), para. A.b)

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that Appendix 4 of the Radio Regulations 1947 specifies the maximum level of harmonics and parasitic emissions of all transmitters (except those mentioned in Note 1 of this Appendix) operating in the frequency band 10 to 30,000 kc/s in terms of power supplied to the antenna on the frequency of the harmonic, or of the parasitic, emission;

b) that Article 17, para. 2 (398), of the Radio Regulations, states that:

> "the bandwidths of emissions, level of radio-frequency harmonics, and non-essential emissions must be kept at the lowest value which the state of technique and the nature of the service permit. Appendices 4 and 5 must be considered as a guide in this respect, until more recent recommendations of the C.C.I.R. are published";

c) that measurements of the amount of power at frequencies other than the fundamental frequencies supplied to a transmitting antenna or to a dummy load are useful in the analysis of transmitter performance with reference to purity of emissions under specific conditions, and that such measurements will encourage the use of certain means of reducing spurious emissions;

d) that the relation between the power of the spurious emission supplied to a transmitting antenna and the field-strength of the corresponding signals at locations away from the transmitter may differ greatly due to such factors as the horizontal and vertical antenna directivity at the unwanted frequencies, propagation over various paths and radiation from parts of the transmitting apparatus other than the antenna proper;

e) that field-strength measurements of spurious emissions at locations distant from the transmitter are recognized as the direct means of expressing the intensities of interfering signals due to such radiations;

f) that in dealing with emissions on the fundamental frequencies, administrations customarily establish the power supplied to the antenna, and measure the field-strength at a distance to aid in determining when an emission is causing interference with another authorized emission; that a similar procedure would be helpful in dealing with spurious emissions (see Article 13, No. 376, of the Radio Regulations);

---

*) This Recommendation replaces Recommendation No. 147
France reserved its opinion on this Recommendation.

g) that for the most economic use of the frequency spectrum it is necessary to lay down general maximum values of spurious emissions while recognizing that specific services may need tighter tolerances for technical and operational reasons;

recommends

1. Terminology and definitions

That the following terms and definitions be used to designate what are regarded as spurious emissions;

1.1 Spurious emission

emission on a frequency or frequencies which are outside the necessary band, and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions and intermodulation products, but exclude emissions in the immediate vicinity of the necessary band, which are a result of the modulation process for the transmission of information;

1.2 Harmonic emission

spurious emission on frequencies which are whole multiples of those comprised in the band occupied;

1.3 Parasitic emission

spurious emission accidentally generated at frequencies which are independent both of the fundamental frequencies and of frequencies appearing in the course of generation of the fundamental frequencies;

1.4 Intermodulation products and emissions other than harmonic and parasitic

1.4.1 spurious emission at frequencies resulting from intermodulation between the fundamental frequencies or the harmonic frequencies of an emission and the fundamental frequencies or the harmonic frequencies of one or several other emissions originating from the same or different stations;

1.4.2 spurious emission at frequencies resulting from intermodulation between several frequencies appearing in the course of generation of the fundamental frequencies of one or several emissions, which is not covered by the definition in 1.4.1 above;

1.4.3 spurious emission at frequencies or the harmonics of frequencies used in the course of generation of a fundamental frequency.

2. Application of tolerances

2.1 That the tolerances for spurious emissions continue to be expressed by the power supplied to the antenna at the frequencies of the spurious emission considered;

2.2 that in the event of the standards of performance in para. 3 below being adopted by an Administrative Radio Conference as revised tolerances for Appendix 4 of the Radio Regulations, a period of at least 3 years from the coming into force of the revised Regulations might be necessary to enable all Administrations to achieve these tolerances for new transmitters.

3. Tolerances for the intensity of spurious emissions (see Notes 1 and 2)

3.1 that the following tolerances are realisable on new transmitters with fundamental frequencies between 10 kc/s and 30,000 kc/s:

- for any spurious emission the mean power supplied to the antenna should be at least 40 db below the power of the fundamental, without exceeding the value of 50 mW (see Notes 3, 4 and 5);

3.2 that the following tolerances are realisable on new transmitters with fundamental frequencies between 30 Mc/s and 235 Mc/s;

3.2.1 Stations with output power at the fundamental frequencies greater than 25 W

for any spurious emission, the mean power supplied to the antenna should be at least 60 db below the power of the fundamental without exceeding the value of 1 mW (see Note 6);

3.2.2 Stations with output power at the fundamental frequencies less than 25 W

for any spurious emission, the mean power supplied to the antenna should be at least 40 db below the power of the fundamental without exceeding the value of 25 mW:

3.3 that the tolerances adopted by the Administrative Radio Conference should also be shown in the Radio Regulations in the form of a graph as indicated in Fig. 1;

3.4 Notes

1. It is recognized that specific services may need tighter tolerances for technical and operational reasons.

2. These tolerances are not applicable to lifeboats, survival craft, and aeronautical and maritime emergency (reserve) transmitters.

3. For transmitters which can operate on two or more frequencies, covering a frequency range approaching an octave or more, it may not always be practicable to achieve a suppression greater than 60 db.

4. For some hand-portable equipments of power less than 5 W, it may not be practicable to achieve a suppression of 40 db, in which case a suppression of 30 db should apply.

5. A limit of 50 mW may not be practicable for mobile transmitters, in which case the spurious emission should be at least 40 db below the fundamental without exceeding the value of 200 mW.

6. In some areas where the interference problem is not serious a limit of 10 mW may be sufficient.

4. Methods of measurement of spurious emissions by measurement of power supplied to the antenna

That, together with other known methods of measuring the power of spurious emissions, either the substitution method, or a direct power measuring method should be used, when the transmitter is operated under normal conditions and when connected to its normal antenna or to a dummy load;*)

4.1 Substitution method

In the substitution method an auxiliary generator of which the output power can be varied is employed and its frequency is adjusted to be equal to the mean frequency of the spurious emission in question. This auxiliary generator is used as follows:

The generator is substituted for the radio transmitter and is adjusted in power output and internal impedance until it produces the same field on the spurious emission frequency as was produced by the radio transmitter, both as to intensity and polarisation. This field is measured by means of a radio receiver tuned to the spurious emission and located at a distance of several wavelengths from the transmitting antenna. The power supplied by the generator is then equal to the power ordinarily supplied by the transmitter itself, on condition that non-linearity of the radiating system does not introduce harmonic radiation. In order to obtain the same conditions with the generator, account must be taken of any stray coupling from the original transmitter to the radiating system and of any direct radiation from the transmitter as from feeder lines or other apparatus that may become excited by direct coupling. It is also necessary to take into account the possibility of the power of a spurious emission being supplied in a push-pull or push-push mode or combination of both. More than one generator may be necessary when the method of excitation is complex. It is also necessary to determine the impedance of the feeder input circuit at the spurious frequencies in order that the power supplied to the antenna may be accurately measured. It is advisable that several sets of measurements be made when using different receiver locations;

When a dummy load is used, an indicator coupled to the load is required.

---

*) Relevant documents are: Docs. 65, 80, 101, 124, 130 and 340 of London, 1953; Doc. 313 of Warsaw, 1956; and Docs. I/22, I/28 and I/34 of Geneva, 1958.

4.2 Direct methods of power measurement

The two following direct methods of measurement can be used:

First method: using a test probe, the voltage, current and power factors are determined at one point on the feeder, using a selective radio receiver tuned to the mean frequency of the spurious emission concerned.

Second method: using a directional coupler and a selective radio receiver tuned to the mean frequency of the spurious emission concerned, the forward and reflected powers are determined. The difference between these two powers gives the spurious power supplied to the antenna on their frequencies of the spurious emission.

5. Radiation from parts of the transmitting system, other than the antenna

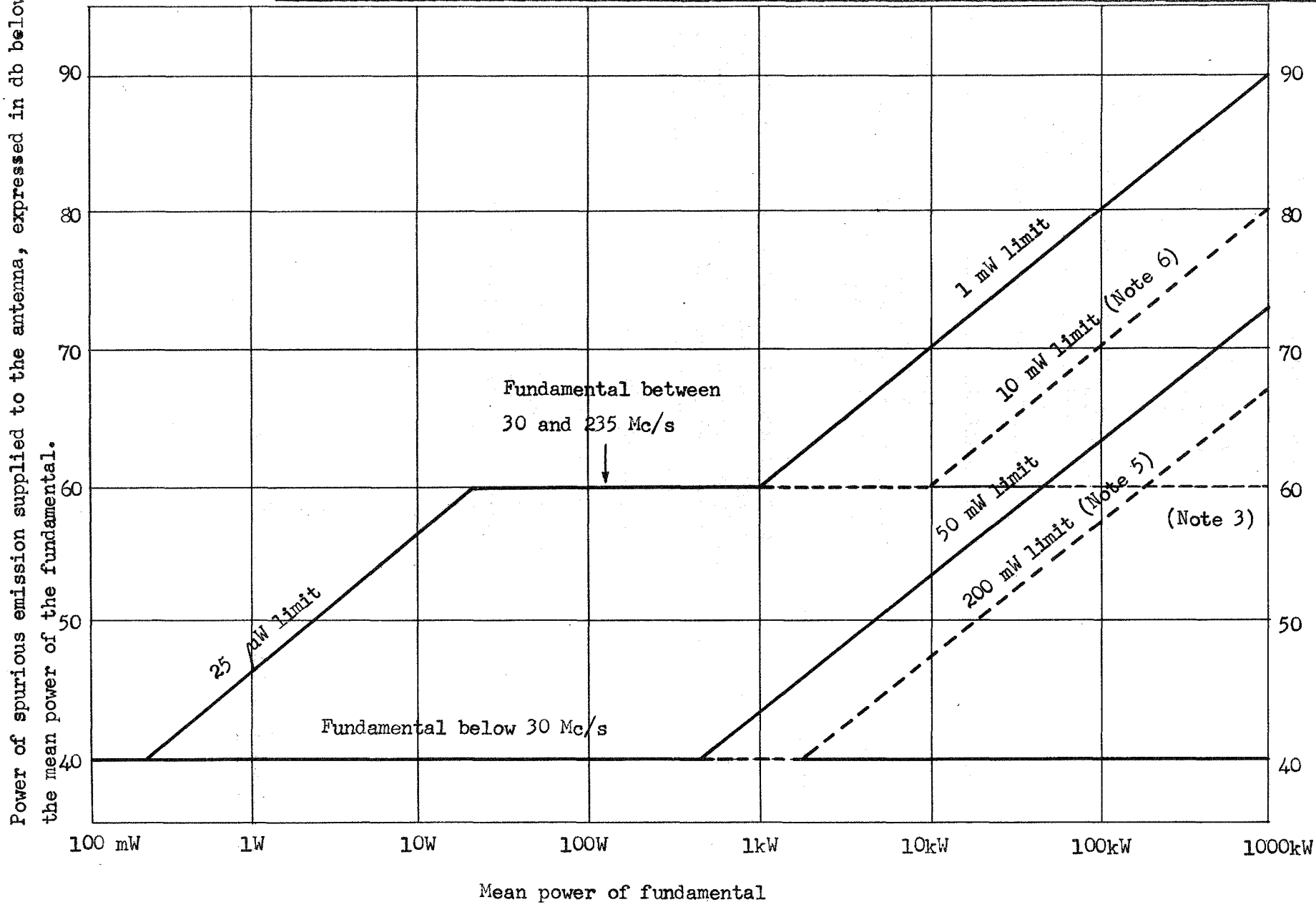
That spurious radiation from any part of the system other than the antenna should not have an effect greater than that due to radiation from the antenna when the mean power supplied to the antenna at the spurious frequency is the maximum specified.

6. Further improvements

That Administrations and private operating agencies should continue to improve the degree of suppression of spurious emissions where this is economically possible in order to reduce interference to other services to a greater extent than that provided for in the Table of Tolerances in App. 4 of the Radio Regulations, by, for example:

- the use of low-pass or other output filters;
- suitable coupling circuits;
- screening of various stages in transmitters, filters and other parts of the equipment, which otherwise might emit spurious radiations directly or by coupling.

Figure 1 TOLERANCES FOR THE INTENSITY OF SPURIOUS EMISSIONS (SEE PARA. 3.3) (MEAN POWER SUPPLIED TO THE ANTENNA)



ANNEX A 4

RECOMMENDATION No. 233 *)

FREQUENCY STABILISATION OF TRANSMITTERS

(Question No. 1c(I))

(London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that in certain frequency bands a large number of transmitters at present in use are more stable than is required by Appendix 3 of the Radio Regulations, Atlantic City, 1947;

b) that it seems possible and desirable that new transmitters for these frequency bands should comply with more stringent tolerances;

c) that the additional cost of ensuring that these new transmitters comply with the new tolerances is small compared with the total cost and operating expenses of the equipment;

d) that certain paragraphs in the Radio Regulations, especially No. 271 and No. 274 a) of Article 9, and the heading of the table of tolerances, are likely to deprive the frequency tolerances of all practical significance;

recommends

1. Terminology and definitions

that the following terms and definitions be used when questions of frequency assignment and frequency tolerances are dealt with :

1.1 Assigned frequency

The centre of the frequency band assigned to a station.

1.2 Frequency band assigned to a station

The frequency band, the centre of which coincides with the frequency assigned to the station, and the width of which equals the necessary bandwidth, plus twice the absolute value of the frequency tolerance.

---

*) This Recommendation replaces Recommendation No. 148.
India reserved its opinion on this Recommendation.

1.3 Characteristic frequency of an emission

A frequency which can be easily identified and measured in a given emission.

1.4 Reference frequency

A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the centre of the frequency band occupied by the emission.

Note 1 - The idea of a reference frequency is made necessary by the fact that the centre frequency of certain classes of emission is not easily identified and measured.

Note 2 - For certain classes of emission it is necessary to specify the value of one or more reference frequencies as well as the assigned frequency. For example, in the case of television broadcast stations, the characteristic frequencies are those of the vision and sound carriers, and the figures for the corresponding reference frequencies should be specified.

1.5 Frequency tolerance

The maximum permissible deviation, with respect to the frequency assigned to a station, of the centre frequency of the frequency band occupied by the corresponding emission, or, with respect to the reference frequency, of the characteristic frequency of the emission. The frequency tolerance is expressed in C/s or as a fractional value of the assigned frequency;

2. that the next Administrative Radio Conference consider revising or deleting No. 271 and No. 274 a) of Article 9 in the Radio Regulations;

3. that the frequency tolerances shown in the following table are technically realisable on new transmitters and should be considered by the next Administrative Radio Conference revising the Regulations.

4. that in the table of frequency tolerances the frequency bands be designated only by the figures corresponding to the limits of these bands, and that other lettering or numbering be avoided.

5. that a period of three years from the coming into force of the new Regulations might be necessary to enable all administrations to achieve these tolerances for new transmitters.

Table of frequency tolerances

Frequency tolerances are expressed in parts in 10^6 or in cycles per second

Frequency bands and classes of station (1)	Tolerances adopted at Atlantic City 1947	Tolerances recommended for the future, the effective date to be determined by the Administrative Radio Conference (2)
1	2	3
Band : 10 to 535 kc/s		
1. Fixed stations :		
- 10 to 50 kc/s	1000	1000
- from 50 kc/s to end of band	200	200
2. Land stations :		
a) coast stations		
- power 200 W or less	500	500
- power above 200 W	200	200
b) aeronautical stations	200	100
3. Mobile stations :		
a) ship stations	1000	1000
b) emergency (reserve) transmitters on ships, and lifeboat, life raft and survival craft transmitters.	5000	5000
c) aircraft stations	500	500
4. Radionavigation stations :	200	100
5. Broadcasting stations :	20 c/s	10 c/s
Band : 535 to 1605 kc/s		
Broadcasting stations:	20 c/s	10 c/s(3)
Band : 1605 to 4000 kc/s		
1. Fixed stations :		
- power 200 W or less	100	100
- power above 200 W	50	50

1	2	3
2. Land stations :		
- power 200 W or less	100	100
- power above 200 W	50	50
3. Mobile stations :		
a) ship stations	200	200
b) transmitters aboard lifeboats, life rafts and survival craft		500
c) land mobile stations	200	200
d) aircraft stations	200	100
4. Radionavigation stations :		
- power 200 W or less	100	100
- power above 200 W	50	50
5. Broadcasting stations :	50	20
Band : 4000 to 29,700 kc/s		
1. Fixed stations :		
- power 500 W or less	100	50
- power above 500 W	30	15
2. Land stations :		
a) coast stations		
- power 05 kW or less	50	50
- power above 0.5 kW and below 5kW	50	30
- power 5 kW and above	50	15
b) aeronautical stations		
- power 0.5 kW or less	100	100
- power above 0.5 kW	50	50
c) base stations		
- power 0.5 kW or less	100	100
- power above 0.5 kW	50	50
3. Mobile stations :		
a) ship stations :		
i) Class A1 emission	200	200
ii) emissions other than Class A1		
- power 50 W or less		100 (4)
- power above 50 W	50	50

1	2	3
b) transmitters aboard lifeboats, life rafts and survival craft	200	200
c) aircraft stations	200	100
d) land mobile stations	200	200
4. Broadcasting stations :	30	15
Band : 29.7 to 100 Mc/s		
1. Fixed stations		
- power 200 W or less	200	50
- power above 200 W	200	30
2. Land stations :		
- power 15 W or less	200	50
- power above 15 W	200	20
3. Mobile stations :		
- power 5 W or less	200	100
- power above 5 W	200	50
4. Radionavigation stations :	200	200
5. Broadcasting stations (other than television) :		
- power 50 W or less		50
- power above 50 W	30	20 c/s
6. Broadcasting stations (television sound and vision) :		
- power 50 W or less		100
- power above 50 W	30	1000 c/s(10)
Band : 100 to 470 Mc/s		
1. Fixed stations :		
- power 50 W or less	100	50
- power above 50 W	100	20
2. Land stations :		
a) coast stations	100	20
b) aeronautical stations	100	50
c) base stations		
- power 5 W or less	100	50
- power above 5 W	100	20

1	2	3
3. Mobile stations :		
a) ship stations and transmitters aboard lifeboats, life rafts and survival craft :		
- 156-174 Mc/s (5)	100	20
- outside this band	100	50 (6)
b) aircraft stations	100	50
c) land mobile stations		
- power 5 W or less	100	50
- power above 5 W	100	20
4. Radionavigation stations :	200	50 (7)
5. Broadcasting stations (other than television) :	30	20
6. Broadcasting stations (television : sound and vision) :		
- power 100 W or less		100
- power above 100 W	30	1000 c/s (10)
Band : 470 to 2450 Mc/s		
1. Fixed stations :		
- power 100 W or less	7500	300 (9)
- power above 100 W	7500	100 (8)
2. Land stations :	7500	300
3. Mobile stations :	7500	300
4. Radionavigation stations :	7500	500 (7)
5. Broadcasting stations (other than television) :	7500	100
6. Broadcasting stations (television, sound and vision) : 470-960 Mc/s		
- power 100 W or less	7500	100
- power above 100 W	7500	1000 c/s (10)
Band : 2450 to 10,500 Mc/s		
1. Fixed stations :		
- power 100 W or less	7500	300 (9)
- power above 100 W	7500	100 (8)

1	2	3
2. Land stations :	7500	300
3. Mobile stations :	7500	300
4. Radionavigation stations :	7500	2000 (7)
Band : frequencies above 10,500 Mc/s		
Fixed stations :		500

Notes

1. The power shown for the various classes of stations is the mean power as defined in Article 1 of Radio Regulations.

2. It is recognised that certain services may need tighter tolerances for technical and operational reasons.

3. It is recognized that in the area covered by the North American Regional Broadcasting Agreement (N.A.R.B.A.), it may be desirable to continue the tolerance of 20 c/s.

4. For certain ship transmitters using only frequencies below 13 Mc/s in tropical regions, the tolerance of 100 can be increased to 200. These transmitters are sometimes used in these parts of the world in the same circumstances as those of the band 1605 to 4000 kc/s.

5. The limits of the band 156-174 Mc/s shown are in accordance with the Agreement of the International Maritime VHF Radiotelephone Conference, The Hague, 1957, for use in Europe. The limits of the corresponding band may be different in other regions.

6. This tolerance is not applicable to the frequency 243 Mc/s where a special guard band is proposed.

7. Where specific frequencies are not assigned to radar stations the bandwidth occupied by the emission shall be maintained wholly within the band allocated to the service and the indicated tolerance does not apply.

8. This tolerance applies only to such emissions for which the maximum bandwidth is 3 Mc/s; for larger bandwidth emissions a tolerance of 300 applies.

9. For certain transmitters using time division multiplex the tolerance of 300 may be increased to 500.

10. Certain administrations desire to adopt a tolerance of 500 c/s for the vision transmitters while retaining the tolerance of 1000 c/s for the sound transmitters.

ANNEX A 5

RECOMMENDATION No. 228 *)

STUDY OF RELATIONSHIPS BETWEEN PEAK POWER AND MEAN POWER

(Question No. 22)

(Geneva, 1951 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the Radio Regulations, Atlantic City, 1947, Art. 1, Section IV, Nos. 60 to 64, call for the use of "peak power" in specifying the power of a radio transmitter, but allow the additional use of "mean power" in cases where the peak power specification is not satisfactory or adequate;

b) that in many cases it will be possible to measure the peak power directly and in others it will be possible to derive the peak power from measurements made under suitably arranged test conditions;

c) that a specification of radiated power is advantageous for use in calculations of radio propagation, channel spacing, signal-to-interference ratios and signal-to-noise ratios involved in radio communications;

d) that for administrative purposes or for the calculations referred to in (c), the specification of peak power as defined in the Radio Regulations, Atlantic City, 1947, is not sufficient to evaluate adequately the interference-producing capabilities of a signal;

e) that in monitoring or field-intensity recording of the strength of radio signals the use of automatic recorders frequently involves measurements of average rather than peak field strength; for some types of modulated signal the mean field intensity is not affected by the modulation;

f) that consequently it is necessary for the field strength as measured by use of monitoring equipment to be interpreted consistently in terms of the rated power of the transmitter;

---

*) This Recommendation replaces Recommendation No. 73

g) that information on transmitter power expressed in terms of peak or mean power alone, as defined in the Radio Regulations, Atlantic City, 1947, is adequate only for certain types of emission and for certain uses; in many cases it is desirable to use power ratings expressed otherwise;

unanimously recommends

that the Table attached in the Annex, which presents, for each type of emission specified in the Radio Regulations, Atlantic City, 1947, the relationships between peak power and mean power, and also the power under conditions of no modulation should, wherever practicable, supersede the Annex to Question No. 22.

A N N E X

CONVERSION TABLE FOR RELATIONSHIPS BETWEEN PEAK POWER AND MEAN POWER

1. In the following Table the symbols Pp and Pm indicate peak power and mean power, respectively, as defined in Art. 1 of the Radio Regulations, Atlantic City, 1947, which states that:

1.1 peak power of a radio transmitter is the mean power supplied to the antenna during one radio-frequency cycle at the highest crest of the modulation envelope, taken under conditions of normal operation;

1.2 the mean power of a radio transmitter is the power supplied to the antenna during normal operation, averaged over a time sufficiently long compared with the period corresponding to the lowest frequency encountered in actual modulation (in general a time 1/10 second, during which the mean power is a maximum, will be selected).

2. In the following Table the average power which a transmitter supplies to its antenna during one radio-frequency cycle under conditions of no modulation is considered to have a value of unity. Conditions of no modulation are specified in the Table. With these conditions as a reference, relative values of Pm and Pp for various modulated emissions are indicated by conversion factors under the columns Pm and Pp, where applicable.

3. Specification of modulating wave form is essential for conversions between peak power ratings and power ratings of other types. Accordingly, one or more "characteristic modulations" are assumed and described for each class of emissions evaluated in the following Table. To permit proper evaluation of potential geographical interference ranges, these "characteristic modulations" are chosen, as far as possible, to give maximum ratios of Pp to Pm.

Type of modulated emission	Characteristic modulation	Condition of no modulation	Conversion factors (See para.2 of this Annex)	
			Pm	Pp
Amplitude modulation				
A1 (On-off telegraphy)	Series of rectangular dots; equal marks and spaces; zero space amplitude	Key down	0.5 (Note 1)	1
A2 (Telegraphy with keying of audio-frequency modulating tone, or of modulated emission)	Series of rectangular dots; equal marks and spaces; single sine-wave audio-frequency modulating tone; 100% modulation			
	a) Modulating tone keyed	a) Key up (tone removed)	a) 1.25	a) 4
	b) Modulated emission keyed	b) Key down (tone removed)	b) 0.75	b) 4
A3 (Double-sideband telephony, full carrier)	a) Single sine-wave audio-frequency modulating tone; 100% modulation	a) Carrier only (Note 2)	a) 1.5	a) 4
	b) Smoothly read text	b) Carrier only (Note 2)	b) 1 to 1.08	b) 4
A3a (Single-sideband reduced carrier)	See Supplementary Table I and Note 3			
A3b (Two independent sidebands, reduced carrier)	See Supplementary Table II and Note 3			
A4 (Facsimile)	Black and white checker-board picture giving square modulating wave; 100% modulation	Full carrier amplitude	0.5 (Note 6)	1 (Note 6)
A5 (Television)	(See Note 4)			

Type of modulated emission	Characteristic modulation	Condition of no modulation	Conversion factors (See para. 2 of this Annex)	
			Pm	Pp
Frequency or phase modulation				
F1	(For all types of frequency or phase modulated transmissions the modulation changes the distribution of power in the frequency band of the emissions while leaving the total power of the emissions unchanged)		1	1
F2			1	1
F3			1	1
F4			1	1
F5			1	1
F6			1	1
F9			1	1
Pulse modulation				
P1 (Simple telegraphy)	Pulse train keyed on and off; mark and space equal; rectangular pulses, constant amplitude and duty cycle	Key down (Note 5)	0.5 (Note 5)	1/duty cycle
	Audio-frequency tone-modulated telegraphy. Series of equal rectangular marks and spaces; single sine-wave audio-frequency modulating tone; 100% modulation			
P2d (Pulses, amplitude-modulated; constant duty cycle)	a) Modulating tone keyed	a) Key up (tone removed) (Note 5)	a) 1.25	a) 4/duty cycle
	b) Modulated emission keyed	b) Key down (tone removed) (Note 5)	b) 0.75	b) 4/duty cycle
P2e (Pulses, width or duration modulated; constant amplitude)	a) Modulating tone keyed	a) Key up (tone removed) (Note 5)	a) 1	a) 1/average duty cycle
	b) Modulated emission keyed	b) Key down (tone removed) (Note 5)	b) 0.5	b) - do -
P2f (Pulses, position or phase modulated; constant amplitude)	a) Modulating tone keyed	a) Key up (tone removed) (Note 5)	a) 1	a) 1/average duty cycle
	b) Modulated emission keyed	b) Key down (tone removed) (Note 5)	b) 0.5	b) - do -

Type of modulated emission	Characteristic modulation	Condition of no modulation	Conversion factors (See para. 2 of this Annex)	
			Pm	Pp
P3d (Pulses, amplitude modulated; constant duty cycle)	Telephony			
	a) Single sine-wave audio frequency modulating tone; 100% modulation	a) Pulse carrier only (Note 5)	a) 1.5	a) 4/duty cycle
	b) Smoothly read text	b) Pulse carrier only (Note 5)	b) 1 to 1.08	b) -do-
P3e (Pulses, width or duration modulated; constant amplitude)	Single sine-wave audio-frequency modulating tone; 100% modulation; rectangular pulses	Pulse carrier only (Note 5)	1	1/average duty cycle
P3f (Pulses, position or phase modulated; constant amplitude)		Pulse carrier only (Note 5)	1	1/average duty cycle

Note 1

For Morse: Pm = 0.49 Pp.
For International Alphabet No. 2: Pm = 0.58 Pp.

Note 2

The peak power of double-sideband transmitters is nominally four times the power of the unmodulated carrier. To determine the proper level for applying speech two tones are employed, as in the single-sideband case described in Note 3. In a well-constructed transmitter, this should result in reasonably high percentages of modulation.

It has been found in connection with smoothly-read text that a reading of 2 (VU*) meter readings) corresponds to a mean power of zero dbm **) measured in the audio-frequency band, nominally up to 3000 or 4000 cycles/second.

---

*) This refers to readings of a VU meter, which is a volume indicating device having certain specific dynamic characteristics, and which is described in Proc. I.R.E. 28.1 (January 1940). Such a device reads zero for a 1000-cycle tone delivering 1 milliwatt to a load impedance of 600 ohms. When speech volume is measured by it according to I.R.E. standards, a reading of zero corresponds to zero VU.

**) dbm defined as "power in decibels referred to one milliwatt".

Note 3

The two-tone method of rating the power of single-sideband radiotelephone transmitters consists of setting the level of each of two equal tones applied to the audio-frequency input so that the resulting cross-modulation term $(2f_1 - f_2)$ is 25 db below the level of either tone, measured in the r.f. output of the transmitter; the peak power rating of the transmitter is taken as four times the r.f. power output, after removal of one of the two tones. Single channel speech is applied at the audio-frequency input at a VU level equal numerically to the mean dbm level of one of the two aforementioned tones. For multichannel single-sideband transmission, the level of each channel is reduced 0.5 (N -1) db, where N is the number of channels, up to a total of about four.

Note 4

Depending on the standards used, the condition of no modulation may not apply. For any particular case, the ratio of mean power to peak power can be calculated, for the extreme conditions of all-black and all-white pictures, by taking into account the relative amplitudes and durations of blanking signals, synchronizing pulses and picture signals. As examples, in the 525 line, 60-field system used at present in the United States, this results in a ratio of Pm to Pp of 0.164 for an all-white picture and 0.608 for an all-black picture; in the 405-line, 50-field system now used in the United Kingdom, the ratios are 0.800 for an all-white picture and 0.080 for an all-black picture.

Note 5

The average power which a pulse transmitter supplies to its antenna during one pulse period of an unmodulated pulse train (PO conditions) is considered to have a value of unity.

Note 6

The values listed here are based upon direct facsimile scanner modulation of the main radio-frequency carrier. When the output of the facsimile scanner modulates a sub-carrier, and this sub-carrier is then applied as amplitude or frequency modulation of the main carrier, the resultant emission has A3, A3a, A3b or F3 characteristics and the appropriate power relationships, therefore, must be sought in the corresponding section of the Table.

Supplementary Table I

Ratio of Pm to Pp for A3a emission

Condition of no modulation		Characteristic modulation	
Carrier level referred to peak power of sideband	*Single sine-wave audio-frequency modulating tone; transmitter fully loaded	**Smoothly-read text, transmitter fully loaded	***"Other" programme material; transmitter fully loaded
- 10 db	0.636 (-1.97 db)	0.149 (-8.27 db)	0.115 (-9.39 db)
- 20 db	0.835 (-0.78 db)	0.139 (-8.57 db)	0.091 (-10.4 db)
- 30 db	0.940 (-0.27 db)	0.150 (-8.24 db)	0.095 (-10.2 db)
- ∞ (fully suppressed)	1.000 (0 db)	0.158 (-8.00 db)	0.100 (-10.0 db)

Supplementary Table II

Ratio of Pm to Pp for A3b emission

Condition of no modulation	Characteristic modulation			
Carrier level, referred to peak power of either sideband	*Single sine-wave audio-frequency modulating tone on each sideband; transmitter fully loaded	**Each sideband fully loaded by smoothly-read text; transmitter fully loaded	***Each sideband fully loaded by "other" programme material; transmitter fully loaded	Sideband 1 smoothly-read text and sideband 2 "other" programme material
- 10 db	0.392(-4.07 db)	0.078(-11.1 db)	0.056(-12.5 db)	0.067(-11.8db)
- 20 db	0.456(-3.41 db)	0.074(-11.3 db)	0.048(-13.2 db)	0.061(-12.1db)
- 30 db	0.485(-3.14 db)	0.077(-11.1 db)	0.049(-13.1 db)	0.063(-12.0db)
- ∞ (fully suppressed)	0.500(-3.01 db)	0.079(-11.0 db)	0.050(-13.0 db)	0.065(-11.9db)

*)
**) (See page 8.)
***)

*) For a single sine-wave audio-frequency modulating tone, the mean radio-frequency power of each sideband is equal to its peak radio-frequency power (Atlantic City definition), but is 3 db below its maximum instantaneous radio-frequency power: this 3 db difference corresponds to the 3 db difference between the mean and the instantaneous peak audio-frequency power levels of the impressed modulation.

**) For smoothly-read text, it is assumed that the mean radio-frequency power of each sideband is 8 db below its peak radio-frequency power (Atlantic City definition), or 11 db below its maximum instantaneous radio-frequency power; the corresponding underlying assumption of an 11 db difference between the mean and equivalent instantaneous peak audio-frequency power levels of the impressed modulation is made in accordance with the most recent information available.

***) For conversational speech and certain programme material other than smoothly-read text, it is assumed that the mean radio-frequency power of each sideband is 10 db below its peak radio-frequency power (Atlantic City definition), or 13 db below its maximum instantaneous radio-frequency power: the corresponding underlying assumption of a 13 db difference between the mean and equivalent peak radio-frequency power levels of the impressed modulation is made in accordance with the most recent information available.

ANNEX A 6

RECOMMENDATION No. 249 *)

ARRANGEMENT OF CHANNELS IN MULTI-CHANNEL RADIOTELEPHONE TRANSMITTERS FOR LONG RANGE CIRCUITS OPERATING ON FREQUENCIES BELOW ABOUT 30 Mc/s

(Question No. 46)

(London, 1951 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the lack of uniformity in the arrangement and designation of the channels in multichannel transmitters for long-range circuits operating on frequencies below about 30 Mc/s may give rise to certain difficulties when one transmitting station has to work with several receiving stations;

b) that, since it is necessary to economise in the use of the radio spectrum when considering inter-continental circuits consisting mainly of single long-distance radio links operating on frequencies less than 30 Mc/s, it is desirable :

- to use independent-sideband transmissions to the maximum extent possible;
- to transmit a band less than the 300 to 3400 c/s recommended by the C.C.I.F. for land-line circuits;
- to reduce the upper frequency to 3000 c/s below but to not less than 2600 c/s, except in special circumstances;

c) that there are already in operation international multichannel radiotelephone circuits in which the bandwidth allocated to each channel is 3000 c/s actually transmitting a speech band of 250 to 3000 c/s;

d) that, in general, the outer channels are liable to cause and receive more interference to and from stations operating on adjacent assigned frequencies; the outer channels being those located furthest from the assigned frequency;

e) that there are numerous transmitters in service which, when operated on a twin channel basis, give rise to excessive cross-talk unless one of the channels is placed away from the carrier;

---

*) This Recommendation replaces Recommendation No. 149.

f) that there are transmitters in service which permit the addition of a third channel when it is desirable to provide additional traffic capacity;

g) that there may be advantages in adopting channel arrangements which are the same in all parts of the frequency range from 3 to 30 Mc/s;

unanimously recommends

1. that standard channel arrangements should be adopted for multi-channel radiotelephone systems;

2. that the effective speech channel allocation should be 3000 c/s;

3. that the transmitted band in each speech channel should be from 250 to 3000 c/s;

4. that in four-channel systems the channel arrangement should be as shown in Fig. 1 a);

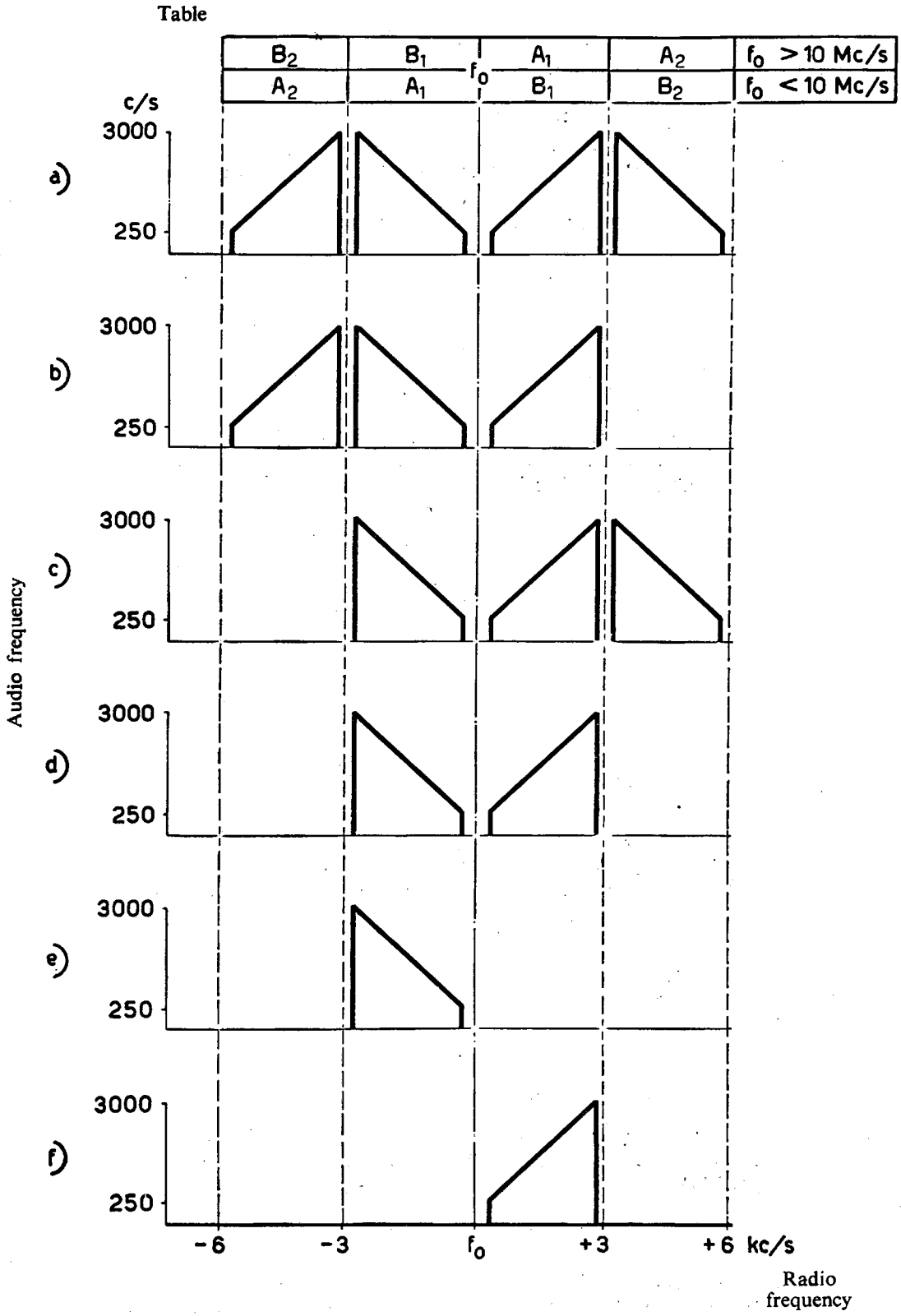
5. that in four-channel systems the channel designation should be as shown in the upper part of the Table when the reference frequency f_o corresponding to the reduced carrier is above 10 Mc/s and in the lower part when below 10 Mc/s. The same table shall be used when less than four channels are employed;

6. that when less than four channels are used the channels nearest to the carrier should be selected according to the arrangements shown in Figs. 1b), c), d), e) or f);

7. that with some transmitters in service that do not give satisfactory operation with the arrangement shown in Fig. 1d), a channelling arrangement such as that shown in Fig. 2 may be used to minimise cross-talk;

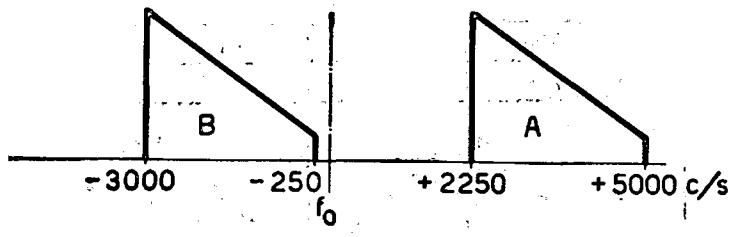
8. that with some transmitters in service that do not give satisfactory operation with the arrangements shown in Figs. 1b) or 1c), a third channel may be provided as shown in Fig. 3;

9. that, whenever practicable, new transmitters should be designed to maintain the same channel arrangements in all parts of their frequency range.

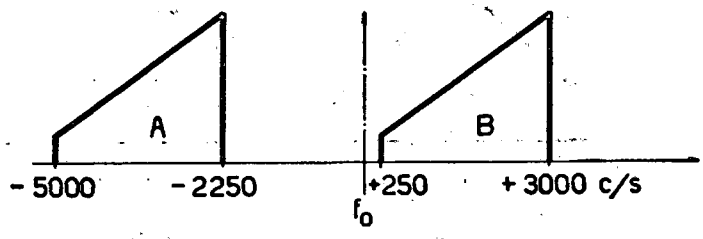


These figures represent the relationship between the audio frequencies and the radio frequencies for the various channel arrangements

FIGURE 1

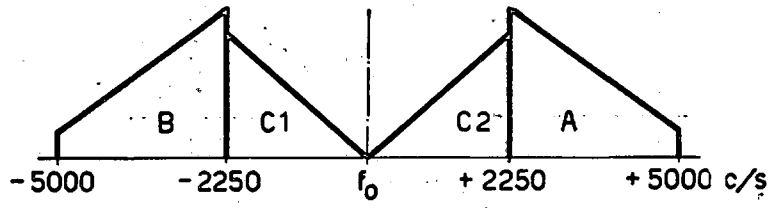


Reference frequency above 10 Mc/s

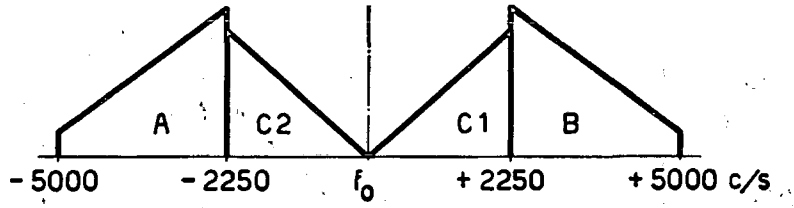


Reference frequency below 10 Mc/s

FIGURE 2



Reference frequency above 10 Mc/s



Reference frequency below 10 Mc/s

It is necessary that the subdivision of channel C into two parts C1 and C2 as well as the arrangement of these parts should be agreed upon by operating organisations.

FIGURE 3

ANNEX A 7

RECOMMENDATION No. 246 *)

FREQUENCY-SHIFT KEYING

(Question No. 183 (III))

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that frequency-shift keying is employed in radio telegraphy in the fixed service and that its use has also been extended to the mobile service;

b) that it is desirable to adapt the frequency shift used to the telegraph speed;

c) that traffic interruptions should be reduced to a minimum by avoiding frequent changes of the shift employed;

d) that it is often necessary to employ the same radio transmitter to work with more than one receiving station;

e) that it is desirable to standardize the main operating characteristics of systems employing frequency shift keying;

f) that various technical factors influence the choice of operating characteristics in such systems, in particular:

- the economy of bandwidth and the consequent need to control the shape of the transmitted signals;
- the signal distortion due to propagation conditions;
- the instability of the characteristics of certain transmitter and receiver elements (such as oscillators, filters or discriminators); this instability being one of the reasons for the relatively large shift employed in many existing equipments;

g) that difficulties can arise from the use of terms "mark" and "space" in the case of teletype circuits and also that the C.C.I.T., at its VIIth Plenary Assembly, issued Recommendation No. 1.4 introducing new terms; these terms have been published by the I.T.U. in the "List of Definitions of essential Telecommunication terms", Part I, June 1957;

---

*) This Recommendation replaces Recommendation No. 150

unanimously recommends

1. that it is too early to standardize the actual values of frequency shift, but that every effort should be made to achieve this as quickly as possible for emissions using only two frequencies; that to assist in this, the characteristics shown below should be used as far as possible;

2. that the value of the frequency shift employed should be the lowest compatible with the maximum telegraph speed regularly used, the propagation conditions and the equipment stability;

3. that for frequency-shift systems working on two conditions only (i.e. single-channel and time-division multiplex systems) and operating between about 3 Mc/s and 30 Mc/s the preferred values of frequency shift are 200 c/s, 400 c/s and 500 c/s*);

4. that the values 140 c/s, 280 c/s and 560 c/s may be used provisionally but 560 c/s should not be adopted for new systems;

5. that the value of the frequency shift should, if possible, be maintained within ±3% of its nominal value and, in any case, within ±10%;

6. that for circuits using the Morse code, the higher frequency should correspond to the Mark signal, and the lower frequency should correspond to the Space signal;

7.**) that for circuits using the International Alphabet No. 2 code with start-stop apparatus, the higher frequency should correspond to the start signal (position A) and the lower frequency to the stop signal (position Z);

---

*) For long-distance communication see Question No. 181(III)

**) In those cases where modification of equipment is required, it is recognized that it may take some time before the recommendations of these paragraphs can be implemented on circuits between different Administrations.

8.*) that, for Telex circuits using the International Alphabet No. 2 code directly on the radio circuit, the higher frequency should correspond to the C.C.I.T.T. "free circuit conditions" (position A) and the lower frequency to the C.C.I.T.T. "idle-circuit condition" (position Z).

9.*) that for channels of a 7-unit automatic repetition system, which are referred to in the Annex to Recommendation No. 167 as directly keyed channels (e.g., channel A of a two-channel system), the higher frequency should correspond to the code elements shown as letter A and the lower frequency to the code elements shown as letter Z. For the channels which are to have reversed keying (e.g. channel B of a two-channel system) the higher frequency should correspond to the code elements shown as letter Z and the lower frequency to the code elements shown as letter A.

---

*) In those cases where modification of equipment is required, it is recognized that it may take some time before the recommendations of these paragraphs can be implemented on circuits between different Administrations.

ANNEX A 8

RECOMMENDATION No. 247 *)

FOUR-FREQUENCY DIPLEX SYSTEMS

(Question No. 183 (III))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that there are in use, in the fixed radiotelegraph services operating between 2 Mc/s and 27 Mc/s, four-frequency diplex (or twinplex) systems in which each of four frequencies is used to transmit one of the four possible combinations of signals corresponding to two telegraph channels; it being understood that either one, or both of the two telegraph channels may be sub-channelled by time-division methods and that the use of such systems may be extended;

b) that it is desirable to standardise the main characteristics of four-frequency diplex systems;

c) that it may sometimes be necessary to employ the same radio transmitter to work with more than one receiving station;

d) that circuit interruptions should be reduced to a minimum by avoiding frequent changes of the spacing between adjacent frequencies and of the correspondence between the frequencies and the significant conditions of the channels;

e) that various technical factors influence the choice of operating characteristics in such systems, in particular :

- economy of bandwidth and the consequent need to control the shape of the transmitted signals;
- a relatively wide spacing between adjacent frequencies may be necessary for high telegraph speeds;
- the signal distortion due to propagation conditions;
- the instability of the characteristics of certain receiver and transmitter elements such as oscillators, filters or discriminators;

---

*) This Recommendation replaces Recommendation No. 152.

f) that many existing four-frequency diplex systems each use one of four values of spacing between adjacent frequencies with corresponding telegraph speeds;

g) that it is desirable to use only one coding system, the simpler the better.

unanimously recommends

1. that the following preferred values shall be adopted for the spacing between adjacent frequencies :

Spacing between adjacent frequencies (c/s)	Nominal telegraph speed of each channel (bauds)
1000	over 300
500 *)	200 to 300
400 *)	100 to 200
200 or 250	below 100

2. that the following coding system should be adopted : **)

Frequency of emission	Channel 1		Channel 2	
	Teleprinter	Morse	Teleprinter	Morse
f_4 (highest frequency)	A	Mark	A	Mark
f_3	A	Mark	Z	Space
f_2	Z	Space	A	Mark
f_1 (lowest frequency)	Z	Space	Z	Space

where f_1, f_2, f_3, f_4 designate the frequencies of the emissions; the spacings between adjacent frequencies, $(f_4 - f_3)$, $(f_3 - f_2)$, $(f_2 - f_1)$ being equal.

A represents the start signal of the teleprinter.
Z represents the stop signal of the teleprinter.

---

*) Lower telegraph speeds may be used with both these spacings at present.

**) In those cases where modification of equipment is required, it is recognized that it may take some time before the coding system indicated in this paragraph can be implemented on circuits between different Administrations.

3. that the value of the frequency separation between adjacent frequencies employed should be the lowest of the preferred values compatible with the maximum telegraph speeds regularly used, the propagation conditions and the equipment stability;

4. that in cases where the two channels are not synchronised it is desirable to limit the maximum rate of change of frequency in order to minimise the bandwidth of the emission;

5. that in order to designate this type of emission, the classification F6 may be used provisionally.

ANNEX A 9

RECOMMENDATION No. 248 *)

CLASSIFICATION OF MULTICHANNEL RADIO-TELEGRAPH SYSTEMS FOR LONG-RANGE CIRCUITS OPERATING ON FREQUENCIES BELOW ABOUT 30 Mc/s, AND DESIGNATION OF THE CHANNELS IN THESE SYSTEMS

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that there exists a large number of long-range multichannel radio-telegraph systems using frequencies below about 30 Mc/s and that it is desirable to classify them in categories;

b) that the lack of uniformity in the arrangement and designation of the channels in these systems may give rise to certain difficulties when one transmitting station has to work with several receiving stations;

c) that the increasing use of multichannel telegraph systems makes it desirable to adopt a uniform designation of channels in such systems;

unanimously recommends

1. that the systems should be classified, and the different categories designated by letters, as follows :

1.1 Time-division multiplex systems: Capital letter T (For example, synchronous systems, such as Baudot, RCA and TOR Multiplex and Double current cable code).

1.2 Frequency-division multiplex systems:

1.2.1 Systems with constant frequency arrangements of significant conditions: Capital letter U
(For example: Voice frequency multiplex with frequency shift).

1.2.2 Systems with variable frequency arrangements of significant conditions: Capital letter V
(For example: Four-frequency diplex)

1.3 Multichannel systems using a combination of these processes:

*) This Recommendation replaces Recommendation No. 153 and Report No. 39.

1.3.1	Frequency-division systems, with constant frequency arrangement, combined with a time-division multiplex	) combination of the above-mentioned letters (always beginning with frequency-division letters U or V)
1.3.2	Four-frequency diplex system combined with a time-division multiplex system	)

2. when a multichannel telegraph signal is applied to a multichannel telephone transmitter the designation of the telephone channel should come first in the sequence and should be in accordance with Recommendation No.149;

3. when a multichannel telegraph signal is applied to an independant sideband transmitter used solely for telegraphy, the designation of the sideband should come first in the sequence. The letter H shall denote the upper sideband, and the letter L the lower sideband;

4. that in time-division systems the telegraph channels should be designated by capital letters A, B, C, D, etc.; in the case of sub-division, the sub-channels should be designated by A1, A2, A3, A4, B1, B2, B3, B4, etc.;

5. that in frequency-division systems the telegraph channels should be designated by figures ;

6. that in a combination of multichannel processes the telegraph channels should be designated by a letter and figure sequence.

For example :

When using a frequency-division system with constant frequency arrangement of significant conditions (letter U), and modulating the 3rd channel of this latter system with a time-division multiplex (letter T), channel B of this latter system would be indicated by

"U3TB".

In the case where channel B of the time-division system is sub-divided and sub-channel 2 is in use, the designation would be

"U3TB2".

If the above-mentioned system is applied to channel B of an independent-sideband telephone transmitter, the corresponding designation would be

"BU3TB" or "BU3TB2".

If the above-mentioned system is applied to the upper sideband of an independent sideband multichannel transmitter used solely for telegraphy, the corresponding designation would be

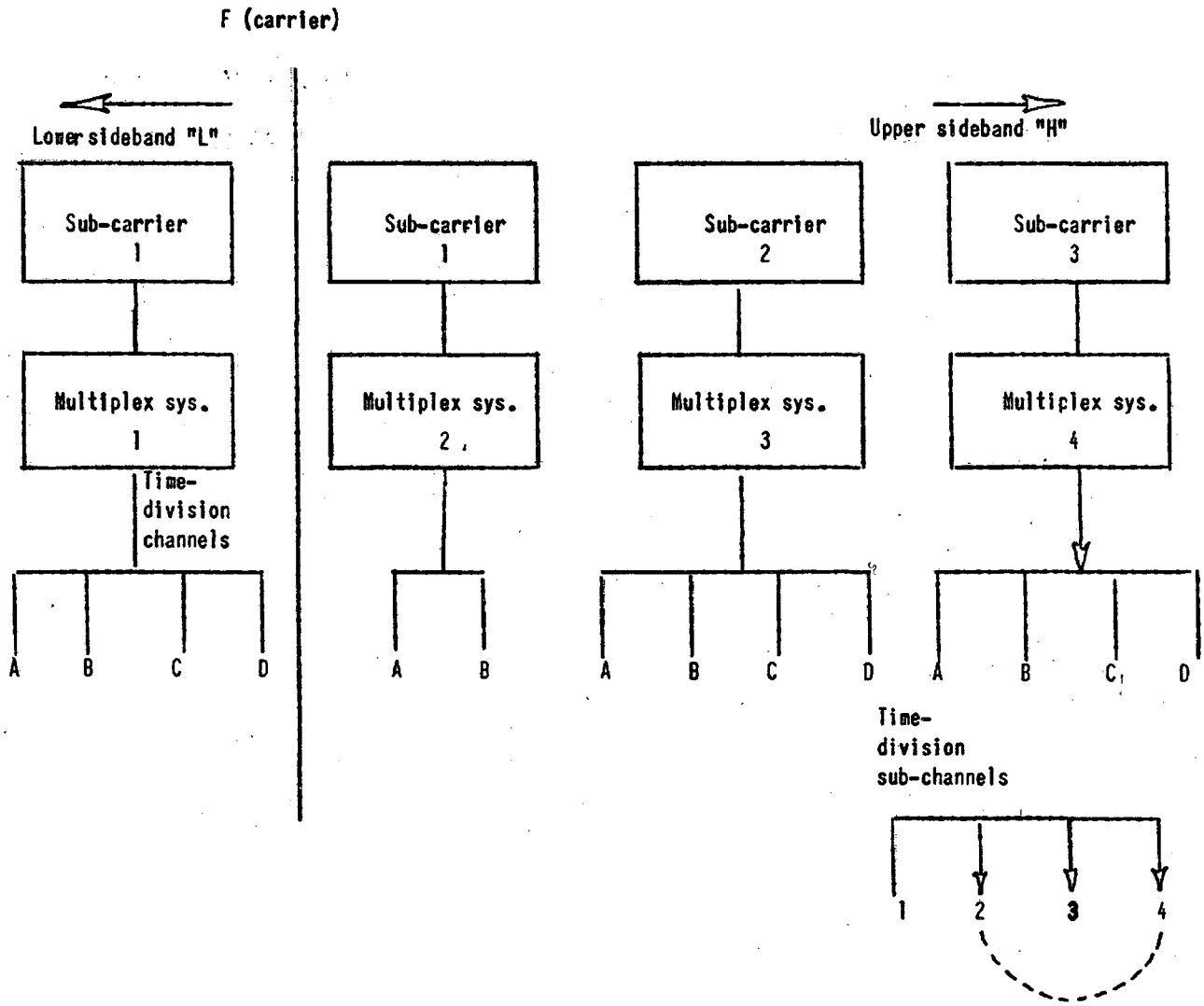
"HU3TB" or "HU3TB2".

Where additional information is required, the multiplex system may be identified by a number inserted between the letters T and B, and where two sub-channels (quarter-channels) are linked together to form a half-speed sub-channel (half-channel), each quarter-speed sub-channel component may be designated by the use of numbers separated by an oblique stroke. The full designation

"HU3T4B2/4"

would be applicable to the arrangement shown diagrammatically below.

MULTICHANNEL INDEPENDENT SIDEBAND RADIOTELEGRAPH TRANSMITTER



Note: Sub-carriers are numbered sequentially in both upper and lower sidebands, starting with the number 1, adjacent to the carrier (radiated or suppressed).

ANNEX A 10

RECOMMENDATION NO. 241

THE CONCEPT OF TRANSMISSION LOSS IN RADIO SYSTEMS STUDIES

(Question No. 81 and Study Programme No. 85)

(Los Angeles, 1959)

The C.C.I.R.

considering

a) that the radio frequency signal power, P_a, available*) at the terminals of a receiving antenna for a given power input, P_t, to the terminals of a transmitting antenna provides a measure which is useful in determining at the terminals of the receiving antenna the service from or the interference produced by a radio system involving a transmitting antenna, a receiving antenna, and the intervening propagation medium;

b) that the ratio, p_t/p_a, which will be called the system loss, is a convenient dimensionless form for expressing this measure of the combined radio propagation and the circuit loss characteristics of such a system;

c) that the available power at the terminals of the receiving antenna is sometimes a simpler and more directly useful concept than that of the effective field strength, especially where the effective field is the resultant of a large number of received field components corresponding to several modes of propagation arriving at the receiving antenna with different angles and possibly with different polarizations;

d) that the relationship between the system loss and the conditions in the neighbourhood of the receiving antenna does not depend solely on the received field strength because the impedance of the antenna is itself dependant upon the conditions in its neighbourhood;

e) that the power P_t' radiated from the transmitting antenna required for satisfactory reception in the presence of noise is precisely determined for a system with transmission loss L by the simple relation: $P_t' = L + P$; P is the minimum signal power that is required to provide satisfactory reception (as defined in Report No. 65), available from an equivalent lossless receiving antenna.*)

---

*) The available power p_a is the power which would go to the load if it were matched to the antenna impedance.

f) that it is desirable to standardize on terminology and notation for describing system loss and its various components;

unanimously recommends

that the terminology and notation given in the Annex be adopted for use by the C.C.I.R., in accordance with the further discussion of the use of these terms given in Report No. 112.

ANNEX

1. System Loss (L_s)

The system loss of a radio circuit consisting of a transmitting antenna, receiving antenna, and the intervening propagation medium is defined as the ratio, p_t/p_a, where p_t is the radio frequency power input to the terminals of the transmitting antenna and p_a is the resultant radio frequency signal power available at the terminals of the receiving antenna. Both p_t and p_a are expressed in watts. The system loss is usually expressed in decibels:*)

$$L_s = 10 \log_{10}(p_t/p_a) = P_t - P_a$$

Note that the system loss, as above defined, excludes any transmitting or receiving antenna transmission line losses since it is considered that such losses are readily measurable. On the other hand, the system loss includes all of the losses in the transmitting and receiving antenna circuits, including not only the transmission loss due to radiation from the transmitting antenna and re-radiation from the receiving antenna, but also any ground losses, dielectric losses, antenna loading coil losses, terminating resister losses in rhombic antennas, etc. The inclusion of all of the antenna circuit losses in the definition of system loss provides a quantity which can always be accurately measured and which is directly applicable to the solution of radio system problems.

2. Transmission Loss (1)

The transmission loss of a radio circuit consisting of a transmitting antenna, receiving antenna, and the intervening propagation medium is defined as the dimensionless ratio, p_t/p_a', where p_t is the radio frequency power radiated from the transmitting antenna, and p_a' is

---

*) Throughout this recommendation, capital letters are used to denote the ratios, expressed in decibels, of the corresponding quantities designated with lower-case type; e.g., $Pt = 10 \log_{10} pt$. P_t is the input power to the transmitting antenna expressed in decibels above one watt.

the resultant radio frequency signal power which would be available from the receiving antenna if there were no circuit losses other than those associated with its radiation resistance. The transmission loss is usually expressed in decibels:

$$L = 10 \log_{10}(p_t'/p_a') = L_s - L_{tc} - L_{rc}$$

where L_{tc} and L_{rc} are the losses, expressed in decibels, in the transmitting and receiving antenna circuits, respectively, excluding the losses associated with the antennae radiation resistances; i.e., the definitions of L_{tc} and L_{rc} are $10 \log_{10}(r'/r)$ where r' is the resistive component of the antenna circuit and r is the radiation resistance.

3. Basic Transmission Loss (L_b)

The basic transmission loss (sometimes called path loss) of a radio circuit is the transmission loss expected between ideal, loss-free, isotropic, transmitting and receiving antennae at the same locations as the actual transmitting and receiving antennae.

4. Path Antenna Directivity Gain (G_p)

The path antenna directivity gain is equal to the increase in the transmission loss when lossless, isotropic, antennae are used at the same locations as the actual antennae:

$$G_p = L_b - L$$

5. Path Antenna Power Gain (G_{pp})

The path antenna power gain is equal to the increase in the system loss when lossless isotropic antennae are used at the same locations as the actual antennae:

$$G_{pp} = L_b - L_s = G_p - L_{tc} - L_{rc}$$

Note that G_{pp} will be negative when the antenna circuit losses exceed the path antenna directivity gain.

In some idealized situations the path antenna power gain, G_{pp}, is simply the sum $(G_{tp} + G_{rp})$ of the free space power gains, G_{tp} and G_{rp}, of the transmitting and receiving antennae relative to lossless isotropic antennae. However, in most practical situations G_{pp} is less than $(G_{tp} + G_{rp})$ because of the complex nature of the received field. The path antenna power gain may be measured by determining the increase in the system loss when both the transmitting

and receiving antennae are replaced simultaneously by simple standard antennae such as short electric or magnetic dipoles, and then adding the calculated path antenna power gain corresponding to the use of the standard antennae. In the case of ionospheric or tropospheric scatter propagation, the path antenna power gain is sometimes substantially smaller than the sum of the free space power gains ($G_{tp} + G_{rp}$); in such cases the path antenna power gain cannot be defined by the sum of the effective power gains of the transmitting and receiving antennae (as determined by replacing first one antenna and then the other successively by a standard antenna) since such effective power gains depend upon the gain of the antenna used at the other terminal.

In the case of ionospheric or tropospheric propagation, the transmission loss L, the basic transmission loss L_b, and the path antenna gain G_p, are all random variables with respect to time, and tend to be normally distributed about their expected values. Typically, L and G_p are negatively correlated with each other, and thus the variance of L_b is usually substantially less than the sum of the variances of L and of G_p; for this reason it will often be more practical simply to measure the system loss with the particular antennae intended for use rather than attempt to calculate the expected system loss and its variance with time in terms of the measured or calculated values of the basic transmission loss, the path antenna gain, and the losses L_{tc} and L_{tr}.

Note also that the path antenna gain may actually be negative. For example, the path antenna gain will usually be negative for ground wave or tropospheric wave propagation between a vertically polarized and a horizontally polarized antenna, and the concept of path antenna gain should prove to be useful for expressing the results of such cross polarization measurements.

6. Propagation Loss (L_p)

The propagation loss is the system loss expected if the antennae gains and circuit resistances were the same as if the antennae were located in free space:

$$L_p = L_s - L_t - L_r$$

L_t and L_r are defined by $10 \log_{10} (r'/r_f)$ where r' is the actual antenna resistance and r_f is the resistance the antenna would have if it were in free space and there were no losses other than radiation losses.

A N N E X A 11

RECOMMENDATION No. 312 *)

TROSPOSPHERIC WAVE PROPAGATION CURVES **)

(Geneva, 1951 - London, 1953 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that there is a need to give a guide to engineers in the planning of services in the VHF and UHF bands, in particular for television and other broadcasting in these bands;

b) that in the case of stations working in the same or adjacent frequency channels the determination of the minimum geographical distance of separation required to avoid intolerable interference due to long-distance tropospheric transmission is a matter of great importance;

c) that the annexed curves are based on the statistical analysis of a considerable amount of experimental data (see Report No. 145);

unanimously recommends

that the revised curves given in Annex II be adopted for provisional use, subject to the conditions stated in Annex I.

ANNEX I

1. The curves of Annex II were prepared from data obtained mainly in the United States of America and Western Europe; many more measurements have been made for distances up to about 400 kilometers than for greater distances, and the curves have their greatest reliability up to, say, 500 kilometers;

---

*) This Recommendation replaces Recommendation No. 111.

**) It must be emphasized that the curves of this Recommendation are intended for use in the planning of broadcasting services for the solution of interference problems over an extended area; they should not be used for point-to-point communication links, for which systems the actual terrain profile may be determined and methods of field strength prediction of higher accuracy may be used.

2. the curves are expressed in db above 1 μV/m for 1 kW effective power radiated from a half-wave dipole, either vertical or horizontal;

3. the curves of Annex II refer specifically to propagation over land paths which are not mountainous in character;

4. all of the curves of Annex II are to some extent dependent upon frequency. It is, however, difficult to assess this dependence quantitatively since it is influenced by the nature of the terrain, climatic conditions and aerial height. From the data so far available it has not been possible to determine a definite variation of the field strength at various distances with frequency, and the curves are intended to apply at all frequencies between 40 Mc/s and 600 Mc/s; but it must be emphasized that further data for frequencies exceeding 300 Mc/s may ultimately require a frequency dependence to be shown;

5. it is probable that the curves will give too low field strengths for very smooth paths such as those which are entirely over sea, especially if the terminals are on clear open sites. There are indications that, in such circumstances, field strengths exceeding those given in the curves by as much as 10 db may occur;

6. it is probable that many of the field strength measurements used to determine the curves were made under relatively favourable receiving conditions; and there is some evidence that in typical conditions of domestic reception somewhat lower field strength, perhaps by several decibels, could be obtained. Until further information is available on this point, however, it is inadvisable to apply a correction to the curves;

7. the curves may be taken to apply to a receiving aerial height of 10 meters above ground at the receiving location, and to a transmitting aerial height of 300 meters: the transmitting aerial height being somewhat arbitrarily defined as the height of the aerial above the average level of the ground between distances of 3 km and 15 km from the transmitter, over the sector in which it is required to know the magnitude of the interfering fields. From the data available it is not considered possible to give a precise indication of the effect of changing the transmitter height, but, as a first approximation, for transmitter heights differing significantly from 300 meters a correction may be applied on the following basis. To obtain the field strength at a distance of x km for a transmitting aerial height of h meters the curves should be read for the distance $(x + 70 - 4.1\sqrt{h})$ km. This correction should not be applied, however, if the receiving point is visible from or near the horizon of the transmitter.

8. the curves of Figure 1 show, as a function of distance, for any frequency in the band 40 to 600 Mc/s, the field strengths exceeded for 1%, 10% and 50% of the time for at least 50% of the receiving locations within the sector of interest, subject to the reservation given in para. (6);

9. Figure 2 relates the field strength exceeded at 50% of receiving locations to that exceeded at any other required percentage of receiving locations. From the data at present available, it appears that the same curve may be used to obtain approximate results for all of the frequencies, and distances covered by Figure 1. The curve corresponds to an average standard deviation of 8 db; but in practice the standard deviation may vary from 5 db to 11 db, depending on the degree of roughness of the terrain;

10. it is known that the median field strength varies in different climatic regions, and data for a wide range of such conditions in the United States of America and Western Europe show that it is possible to correlate the observed median fields with the refractive index gradient in the first 1000 meters of the atmosphere above ground level. If ΔN is defined as $10^6 (n_{1000} - n_s)$ where n_s and n_{1000} are the refractive indices at the surface and at a height of 1000 meters respectively, then, in a standard atmosphere, $\Delta N \simeq -40$, and the median curve of Figure 1 refers to this case. If the mean value of ΔN in a given region is appreciably different from -40, a correction factor of $-0.5 \cdot (\Delta N + 40)$ db should be applied to the curves to give the appropriate median field strengths for all distances. If ΔN is not known, but information concerning the mean value of N_s is available, where $N_s = 10^6 (n_s - 1)$, an alternative correction which may be used at least for temperate climates, is $0.2 (N_s - 310)$ db. Whilst these corrections have so far only been established for the geographical areas referred to above, they may serve as an approximate guide to the corrections which may be necessary in other geographical areas. The extent to which it is reliable to apply similar corrections to the curves for field strengths exceeded 1% and 10% of the time is not known. It is expected, however, that a larger correction will be required for the 1% and 10% values in regions where super-refraction is prevalent for an appreciable part of the time.

Explanation of Figure 1

Frequency range : 40 to 600 Mc/s. Values of field strength for 50% of locations for 1 kW radiated power by a half-wave dipole with vertical or horizontal polarization exceeded for 1%, 10% and 50% of the time. (The dashed portions of the curves are less reliable than the portions shown in full lines).

Annex 11

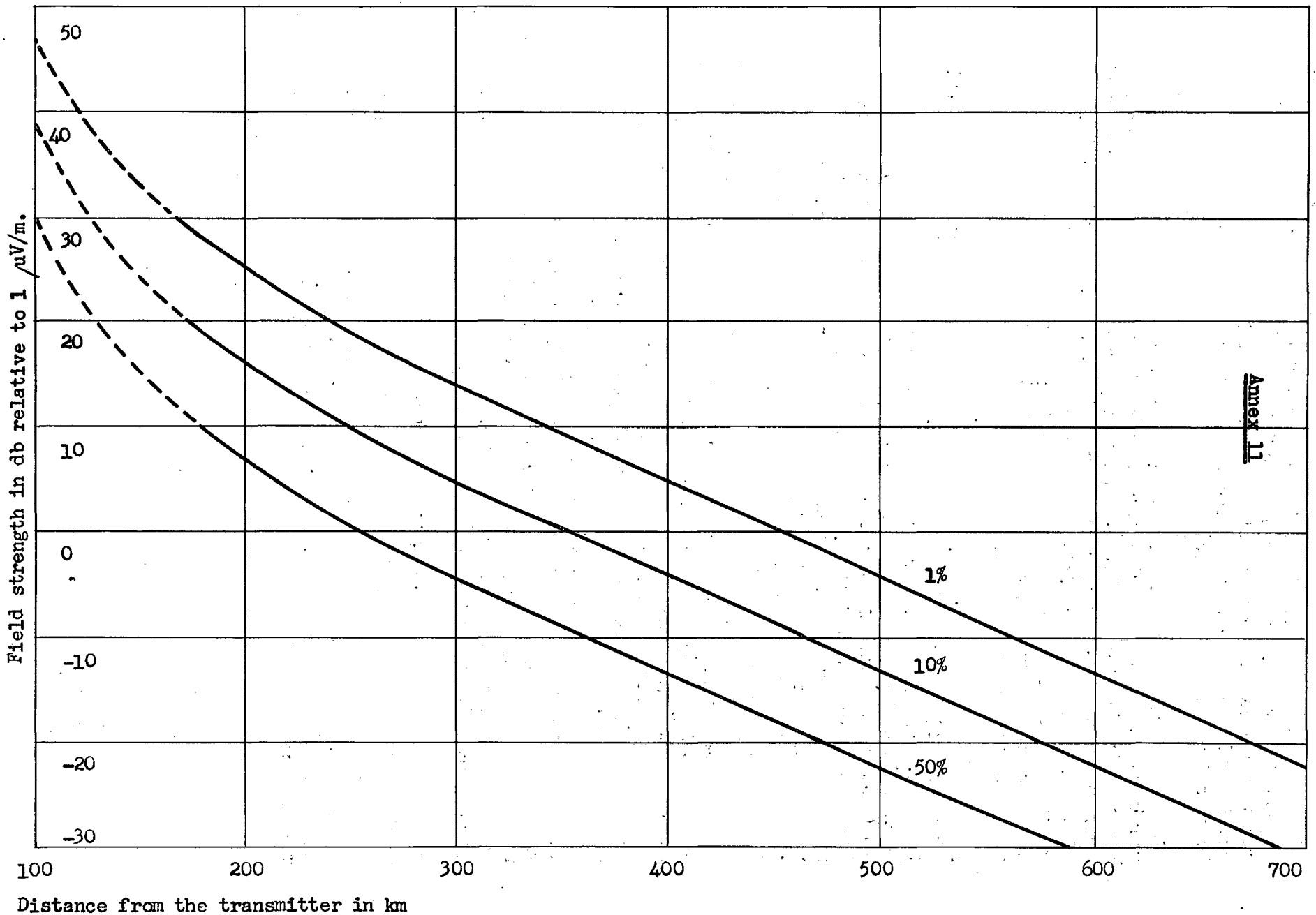


Figure 1

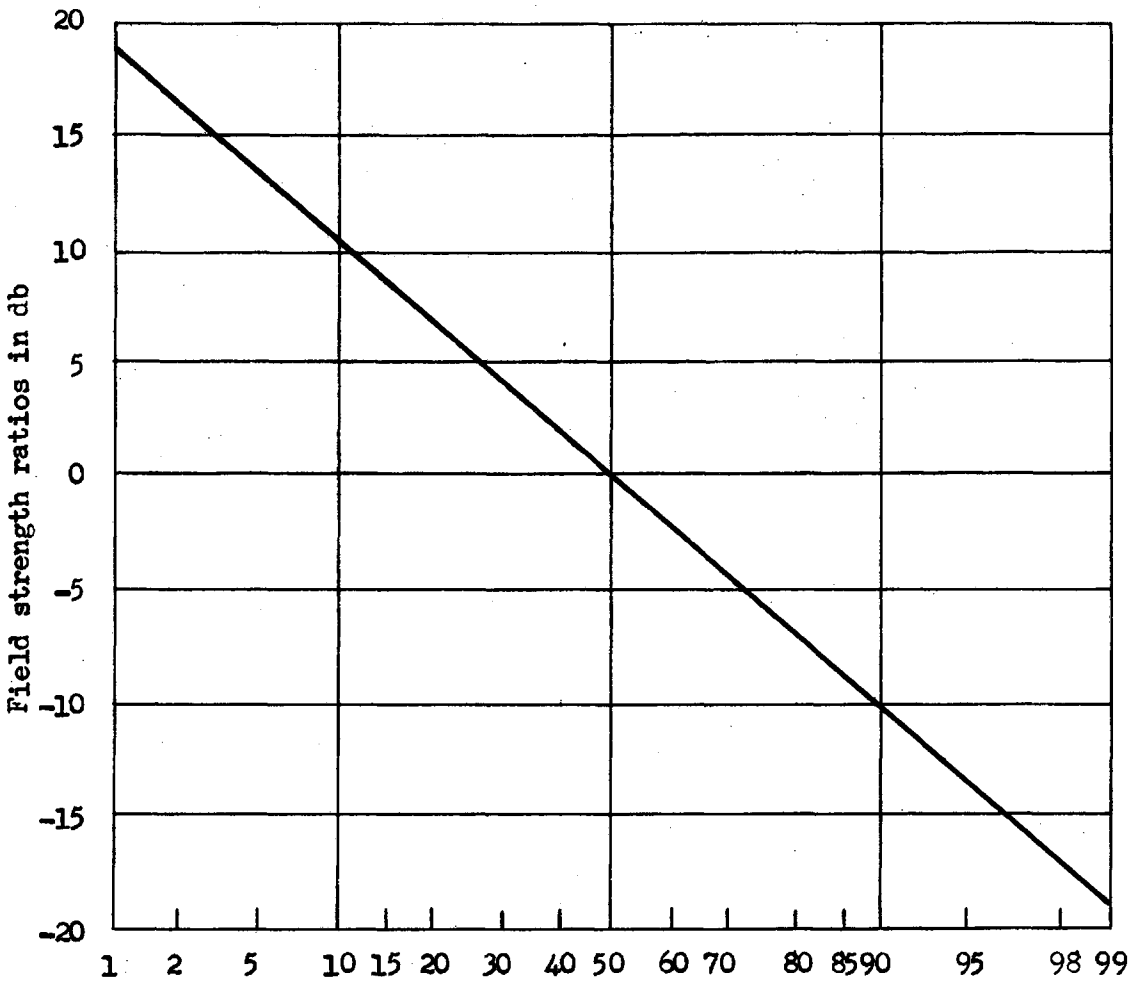


Figure 2

Ratios of the field strengths exceeded at the stated percentages of receiving locations to that exceeded at 50 % of locations

A N N E X A 12

RECOMMENDATION No. 307 *)

GROUND-WAVE PROPAGATION CURVES BELOW 10 Mc/s

(Question No. 184(1))

(Geneva, 1951 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that ground-wave propagation curves for an extended range of frequencies are of continued importance for all types of radio communication including navigational aids;

b) that such curves for a range of land conductivities are needed for the varying conditions along the land paths met with in practice;

unanimously recommends

1. that the curves in the Annex hereto used for the determination of ground-wave field strength on frequencies below 10 Mc/s under the conditions stated;

2. that these curves supersede the existing C.C.I.R. (1937) curves for frequencies below 10 Mc/s.

---

*) This Recommendation replaces Recommendation No. 52

ANNEX

The attached curves apply to propagation on frequencies below 10 Mc/s.

The following points are to be especially noted with regard to them:

a) they refer to a smooth homogeneous earth, as in the corresponding C.C.I.R. (1937) curves;

b) no account is taken of tropospheric effects on these frequencies, i.e. they are calculated for the actual radius of the earth. It is realised that the troposphere exerts some influence below 10 Mc/s, but experimental evidence suggests that on medium frequencies the usually assumed 4/3 earth's radius over-estimates the effect of normal refraction in the troposphere. Moreover, mathematical analysis shows that with decreasing wavelengths the concept of an effective earth's radius is no longer strictly valid as the necessary transformation involves not only the frequency used, but also the conductivity of the earth. It was therefore decided to retain the use of the actual earth's radius as in the case of the C.C.I.R. (1937) curves, and the consideration of the effect of the troposphere is accordingly made the subject of Study Programme No. 87(IV);

c) the frequency range has been extended down to 10 kc/s in view of the suggested use of very low frequencies for navigational aids;

d) in order to cater more adequately for the differences of land conductivity met with in practice, the curves for the value 10^{-13} e.m.u. of the conductivity σ have been supplemented by curves for the further values of $10^{-12.5}$, $10^{-13.5}$ and 10^{-14} e.m.u. The value of the permittivity assumed is $\varepsilon = 4$ as in the C.C.I.R. (1937) curves, but it may be stated that the precise value assumed is not of practical significance for the frequency range under consideration. For the sea curves, the value $\sigma = 4 \times 10^{-11}$ e.m.u. and $\varepsilon = 80$ have been retained;

e) it should be pointed out that the sea curves and the land curves for $\sigma = 10^{-13}$ e.m.u. differ from the C.C.I.R. (1937) curves only in the extension of the frequency range and in the slightly modified method of presentation, as they are based on the same rigid analysis of the problem given by van der Pol and Bremmer;

f) the presentation is given in two forms:

1. with a linear scale of distance cut to 2000 km as abscissa and an ordinate scale which is linear in decibels above a field strength of 1 μV/m. A subsidiary scale reading

directly in μV/m is added on the right-hand side. The linear distance scale has been retained to exhibit the linear aspect of the curves in the diffraction region where the field strength is approximately exponentially attenuated with distance. The linear scale in decibels replaces the logarithmic scale for μV/m used in the C.C.I.R. (1937) curves in view of its greater convenience in most engineering applications;

2. with a logarithmic distance scale for distances up to 10,000 km. This has been done to make the curves more useful in the neighbourhood of the transmitter where they are very steep when the linear distance scale is used. It should be noted that at the shorter distance it is not practicable to include all the curves down to 10 kc/s where they differ very little from one another and from the unattenuated inverse distance curve;

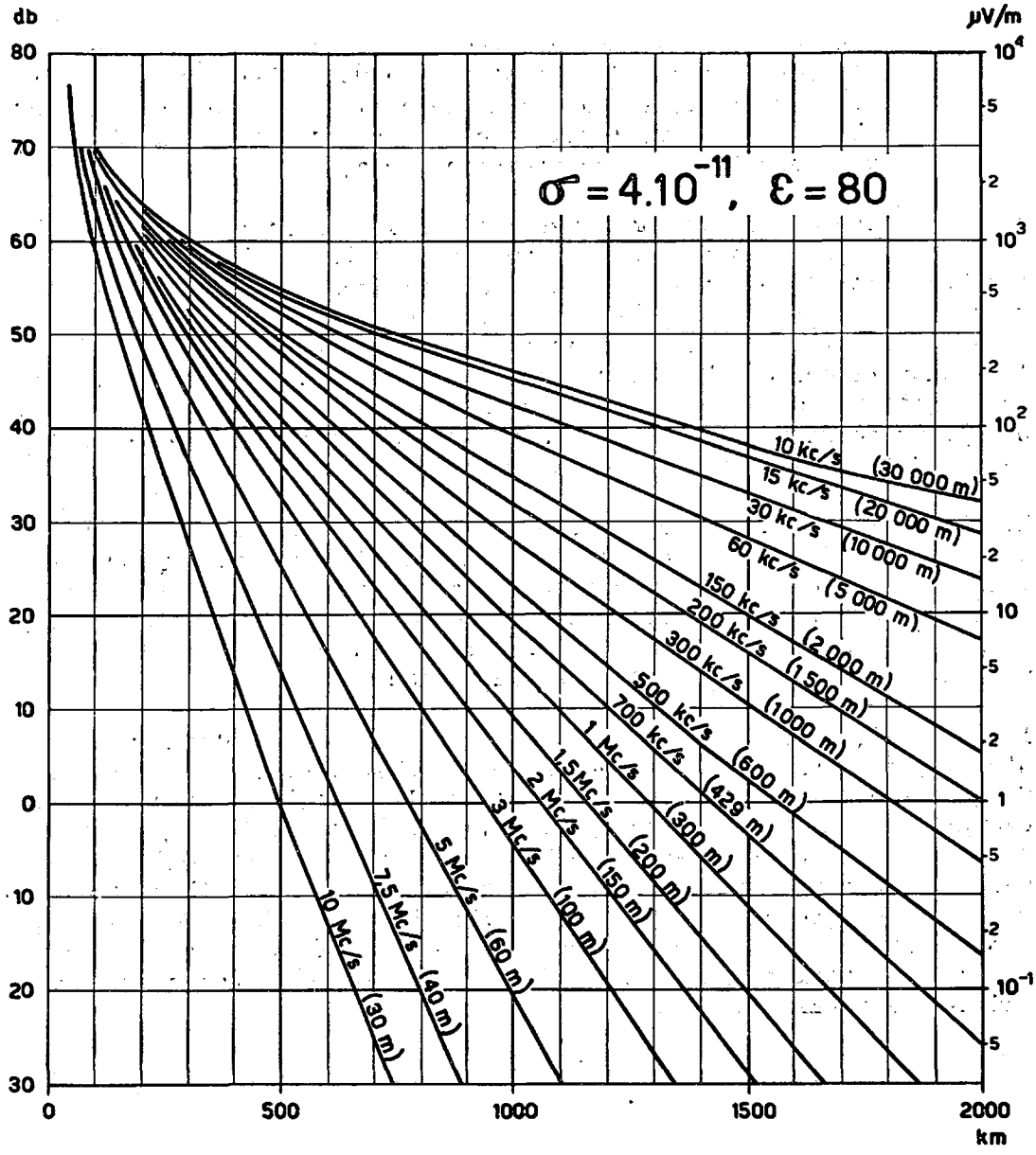
g) the curves are no longer referred to a radiated power of 1kW, but to what has been called an unattenuated field strength of $3 \times 10^5/D$ in μV/m where D is the distance from the transmitter in kilometres. This field would actually correspond to the case of a vertical antenna, shorter than one quarter wavelength, radiating 1 kW when placed on the surface of a perfectly conducting plane earth. The engineer should regard as an auxiliary problem the determination of the appropriate value of the unattenuated field in a given practical case and the value of the necessary multiplier;

h) the transmitter and receiver are both assumed to be on the ground. In most practical cases in the frequency range concerned, the height-gain effects with elevated antennae would not be significant. Although height-gain curves exist which refer to this frequency range, their restriction to the diffraction region makes them of very limited use, and it was decided not to include them;

i) the curves should, in general, be used to determine field strength only when it is known that ionospheric reflections of the frequency under consideration will be negligible in amplitude - for example, propagation in daylight between 150 kc/s and 2 Mc/s and for distances of less than about 2000 km. However, under conditions where the sky wave is comparable with, or even greater than, the ground wave, the curves are still applicable when the effect of the ground wave can be separated from that of the sky wave by the use of pulse transmissions, as in some forms of direction-finding systems and navigational aids.

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

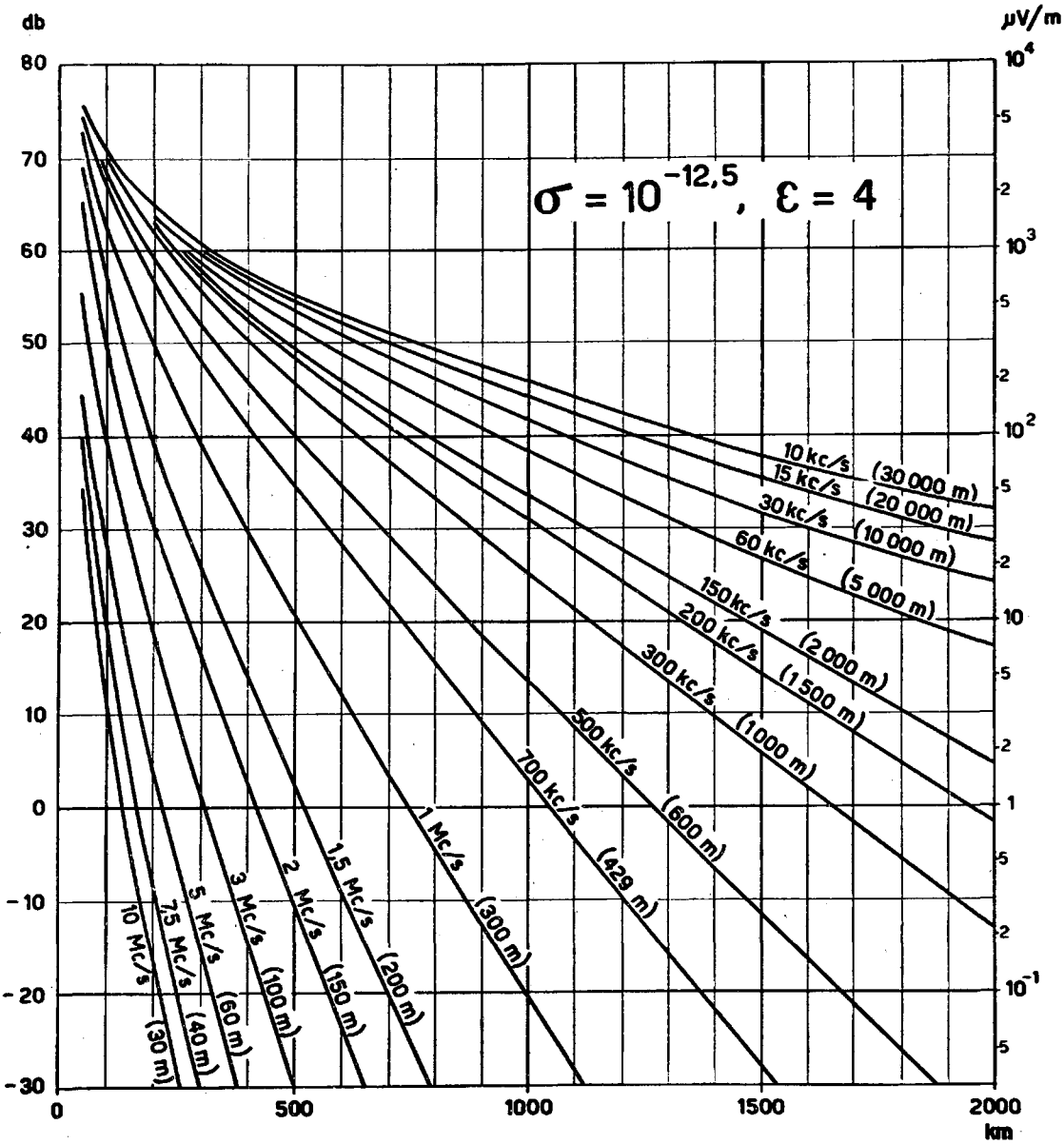


Propagation over sea (conductivity $\sigma = 4 \times 10^{-11}$ e.m.u., dielectric constant $\epsilon = 80$ e.s.u.)

FIGURE 1

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

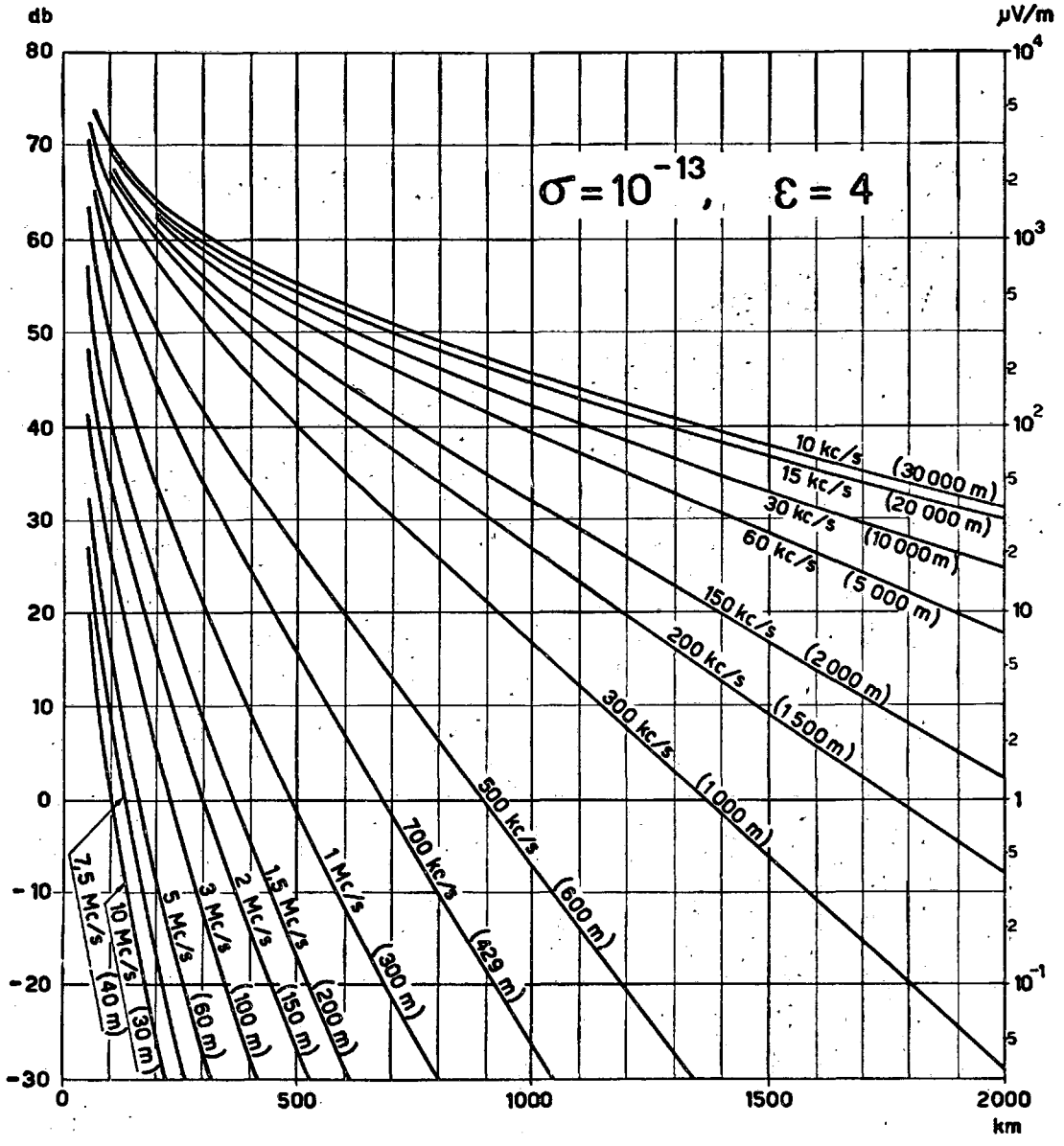


Propagation over land (conductivity $\sigma = 10^{-12,5}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 2

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

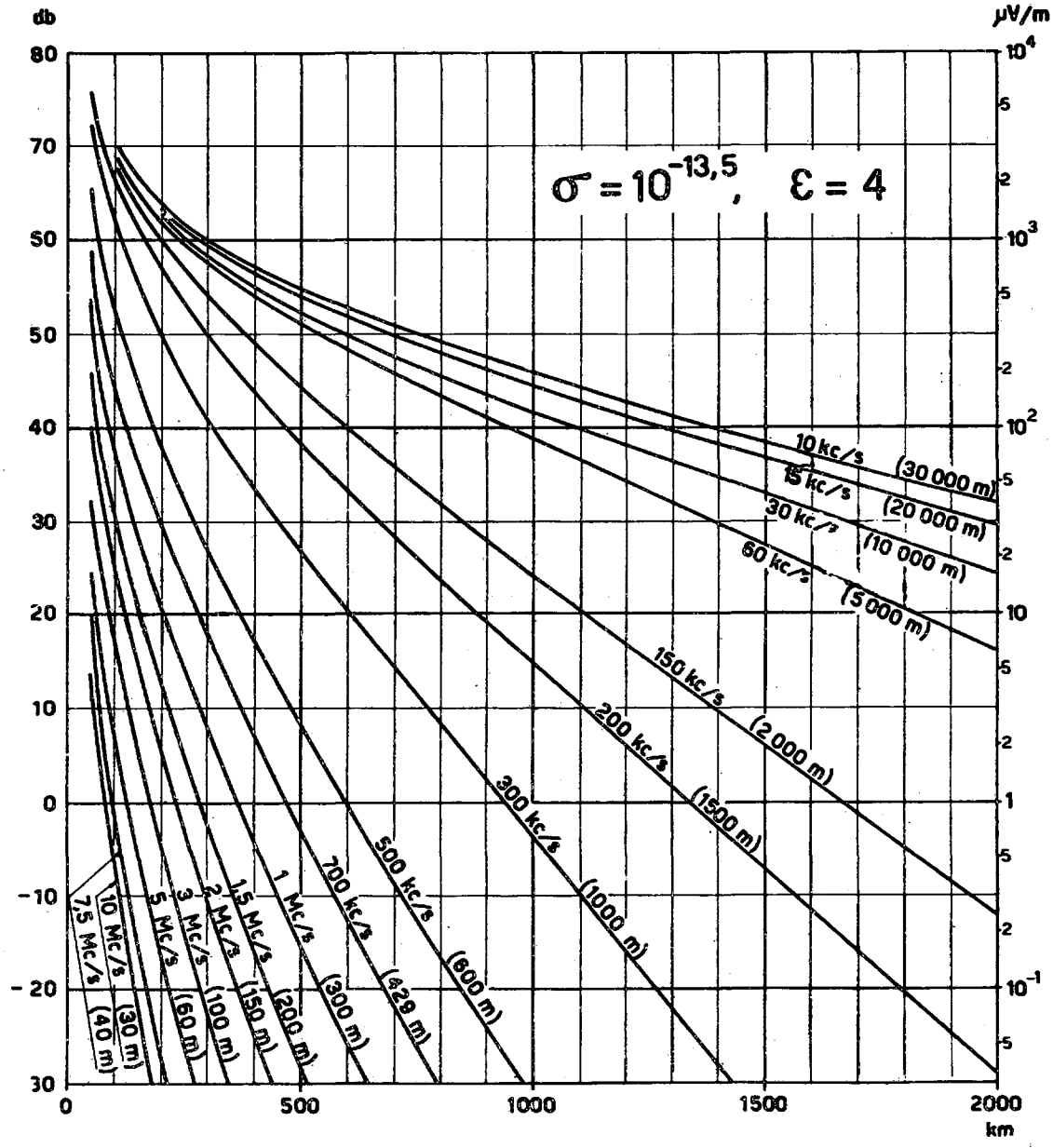


Propagation over land (conductivity $\sigma = 10^{-13}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 3

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

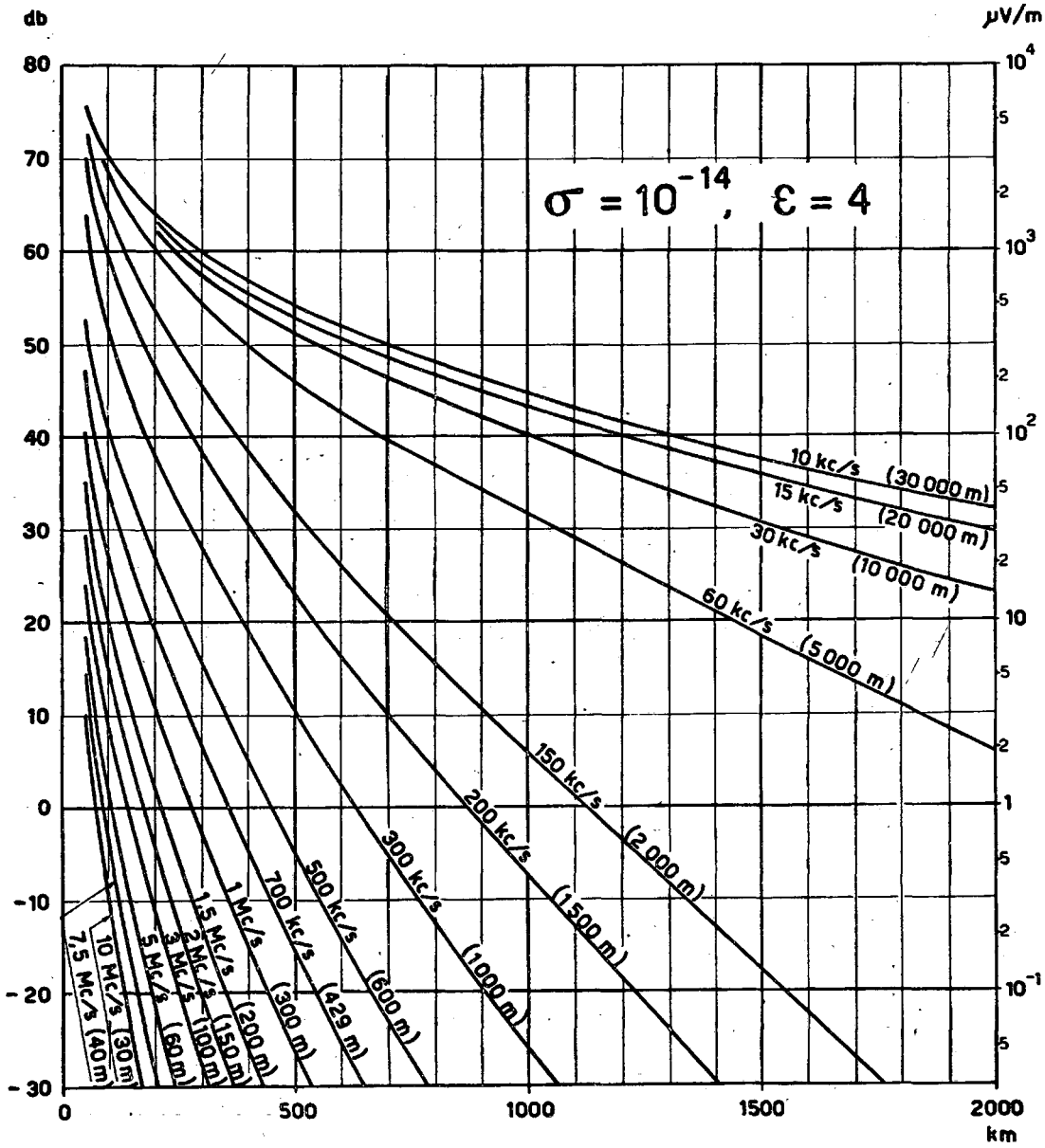


Propagation over land (conductivity $\sigma = 10^{-13,5}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 4

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m



Propagation over land (conductivity $\sigma = 10^{-14}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 5

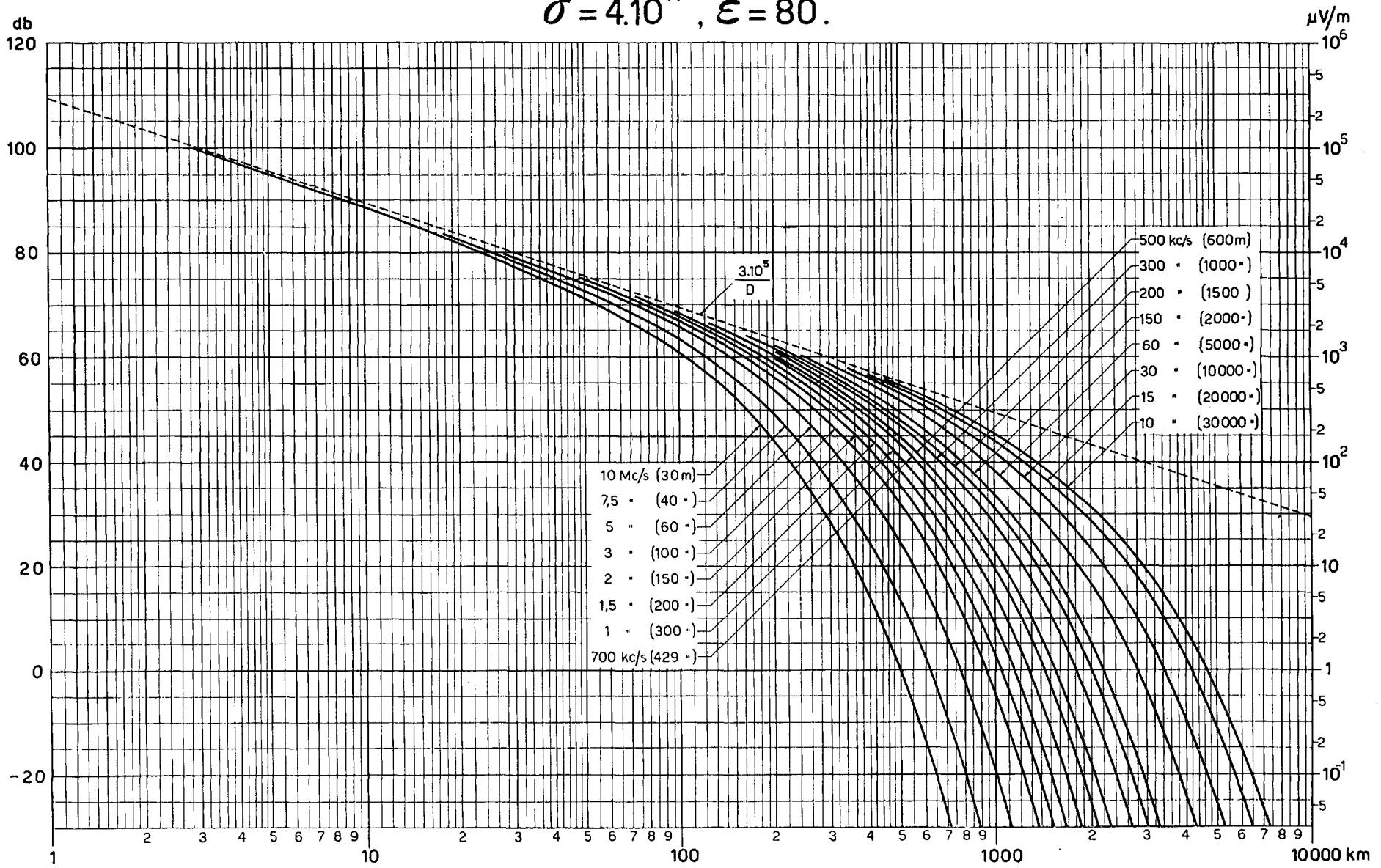

σ = 4.10^-11 , ε = 80.
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^1
3.10^5 / D
500 kc/s (600m)
300 " (1000 ")
200 " (1500)
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 6

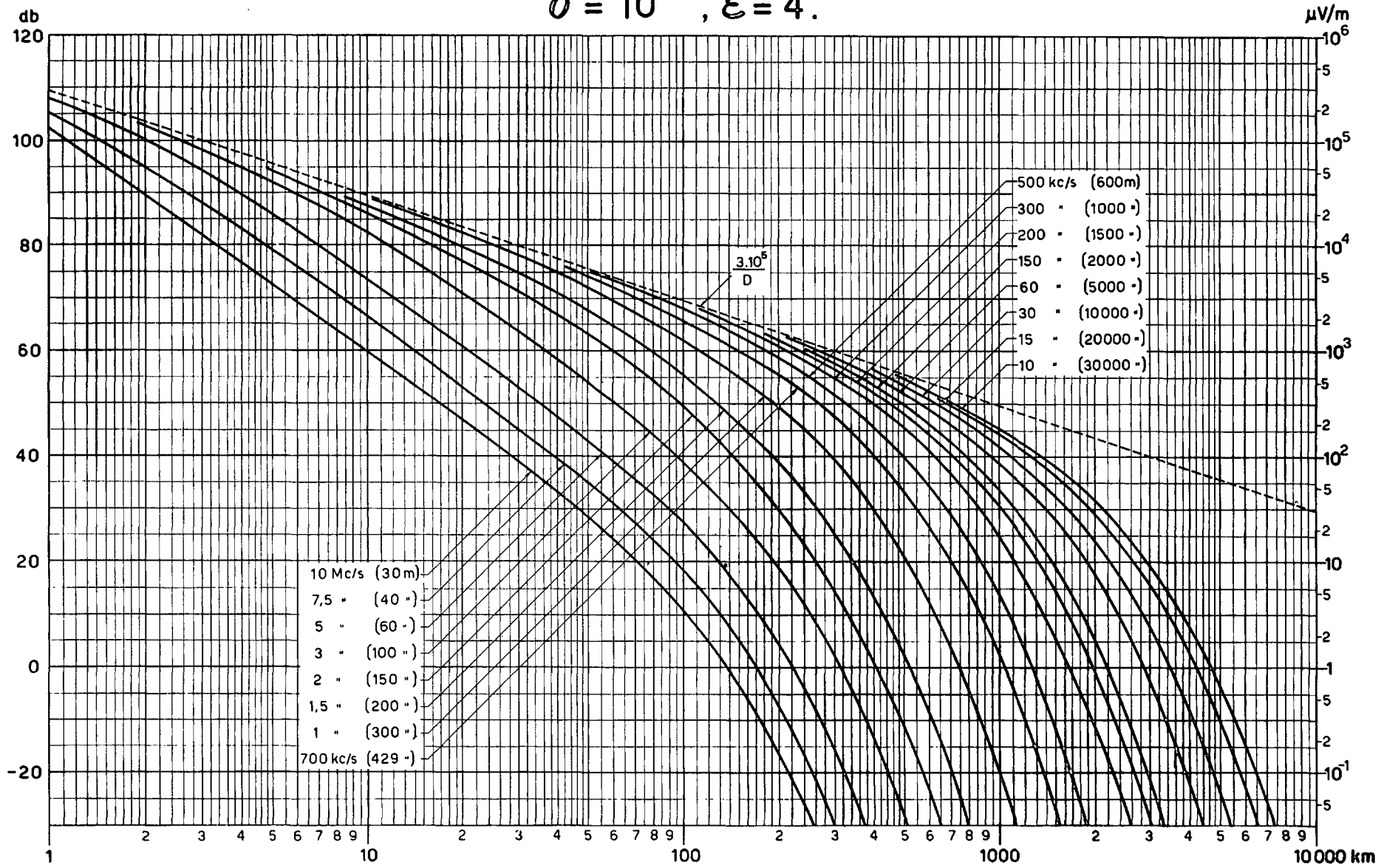

σ = 10^-12,5, ε = 4.
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^-1
3.10^5 / D
500 kc/s (600m)
300 " (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 7

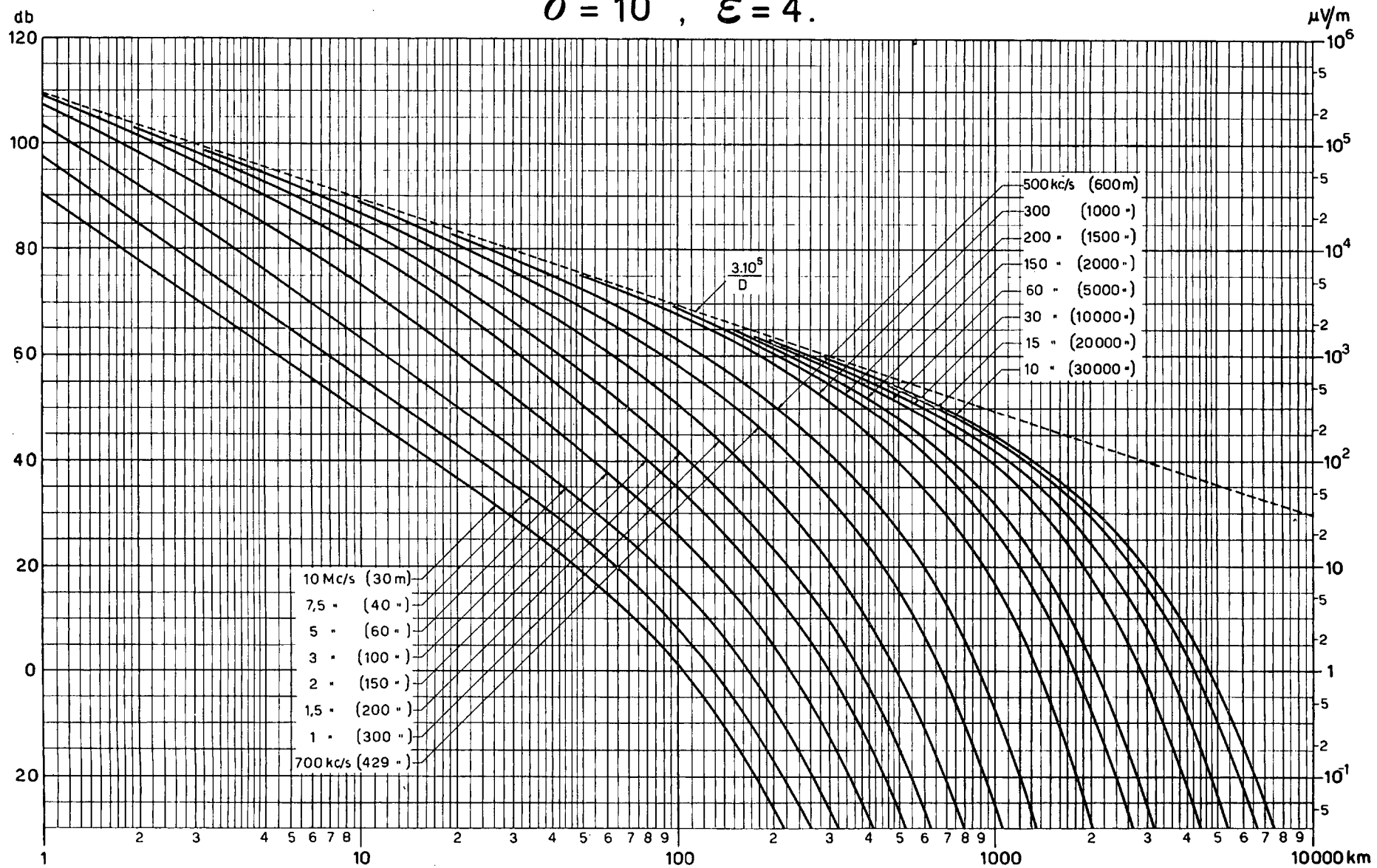

$\sigma = 10^{-13}$, $\varepsilon = 4$.
db
μV/m
120
100
80
60
40
20
0
20
10^6
10^5
10^4
10^3
10^2
10
1
10^{-1}
$\frac{3.10^5}{D}$
500 kc/s (600 m)
300 (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30 m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 8

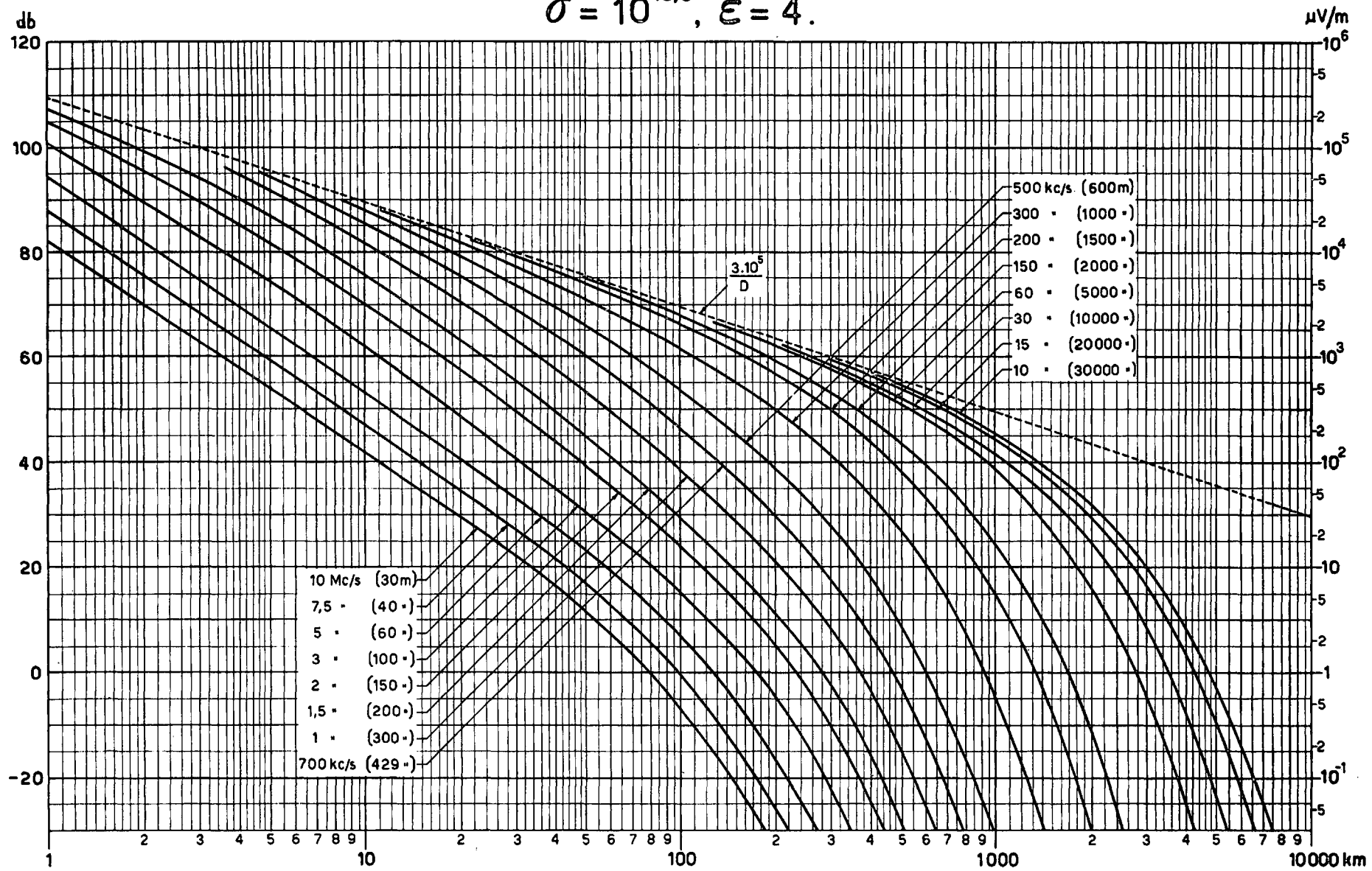

$\sigma = 10^{-13,5}$, $\varepsilon = 4$.
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^{-1}
$\frac{3.10^5}{D}$
500 kc/s (600m)
300 " (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 9

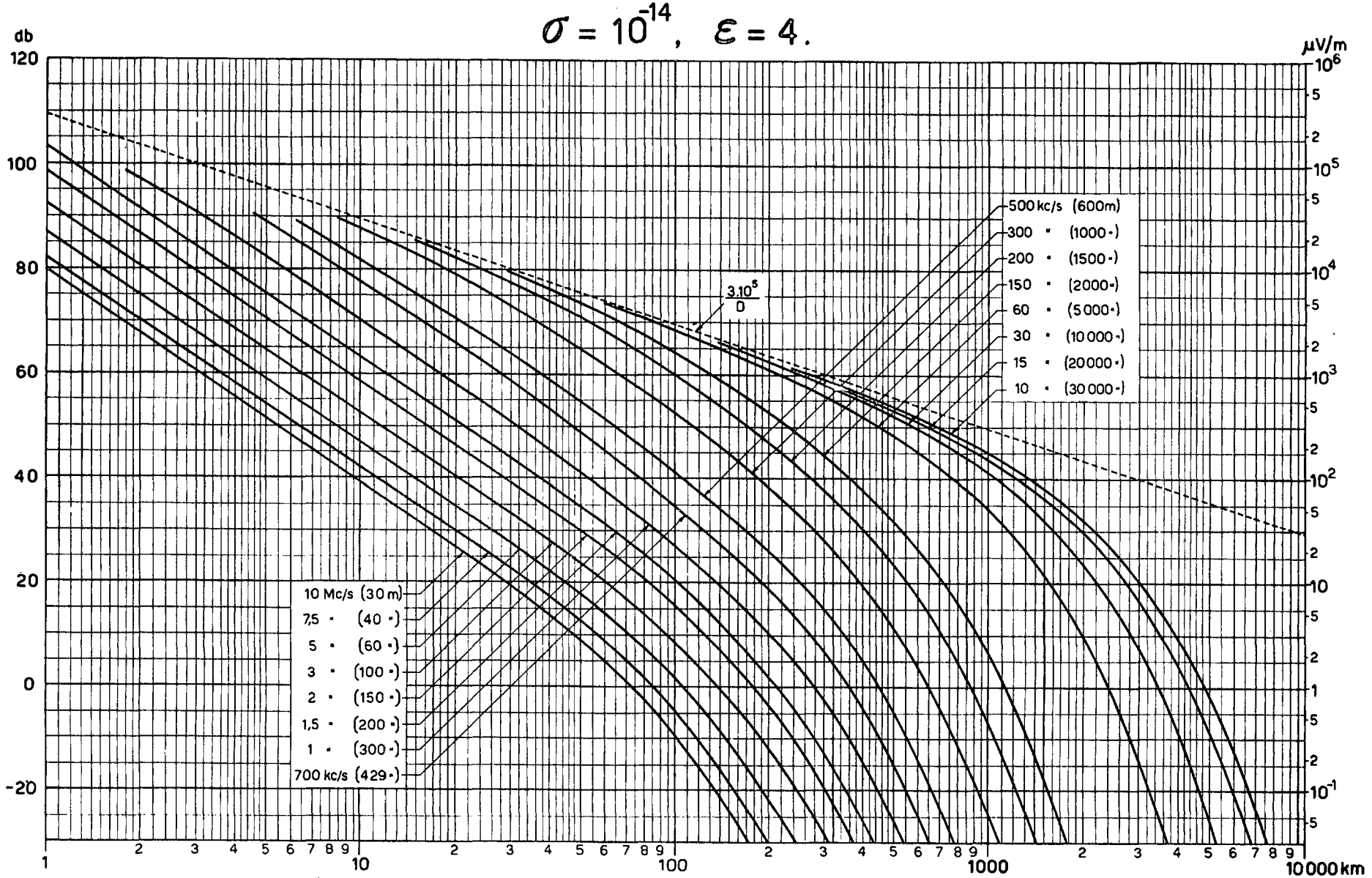

σ = 10⁻¹⁴, ε = 4.
db
μV/m
120
100
80
60
40
20
0
-20
10⁶
10⁵
10⁴
10³
10²
10
1
10⁻¹
3.10⁵/D
500 kc/s (600m)
300 • (1000 •)
200 • (1500 •)
150 • (2000 •)
60 • (5000 •)
30 • (10000 •)
15 • (20000 •)
10 • (30000 •)
10 Mc/s (30 m)
7,5 • (40 •)
5 • (60 •)
3 • (100 •)
2 • (150 •)
1,5 • (200 •)
1 • (300 •)
700 kc/s (429 •)
1
10
100
1000
10000 km

FIG. 10

ANNEX A 13

RECOMMENDATION No. 308 *)

GROUND-WAVE PROPAGATION OVER INHOMOGENEOUS EARTH

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the calculation of ground-wave field-strengths and phases for propagation over inhomogeneous earth, such as part land and part sea, is a matter of great importance in determining the service areas of radio transmitters and in the use of medium and low frequencies for navigational aids;

b) that the mathematical analysis has now been reduced in some special cases of well-defined homogeneous sections to a graphical form convenient for use in the solution of practical problems (see section E of the Bibliography in Report No. 141);

c) that the influence of a gradual transition between two homogeneous sections has in some special cases been investigated theoretically (see references C.1 and A.16 of the Bibliography in Report No. 141);

d) that the closely related problem of propagation over a surface with small undulations has been analysed by an analogous mathematical technique (see section C of the Bibliography in Report No. 141);

e) that, nevertheless, for the general case, calculations based on a rigid mathematical analysis are laborious;

f) that, in many cases, the variations in the electrical constants in both horizontal and vertical directions result in changes of the equivalent surface impedance of the ground which are gradual, ill-defined or imperfectly known;

g) that computations made from the mathematical analysis confirm the results of well-defined experiments;

h) that the semi-empirical methods which are in use (see section F of the Bibliography in Report 141) give good agreement within the range of their application with a rigorous theoretical analysis and field-strength measurements made under well-defined conditions;

---

*) This Recommendation replaces Recommendation No. 169.

unanimously recommends

1. that for cases for which the mathematical analysis has been reduced to a convenient form for practical application such methods should be used;

2. that, for other cases, the semi-empirical methods should be employed with due regard to the limitations of their use.

ANNEX A 14

RECOMMENDATION No. 310 *)

DEFINITIONS OF TERMS RELATING TO PROPAGATION IN THE TROPOSPHERE

(Geneva 1951 - Los Angeles 1959)

The C.C.I.R.,

considering

that it is well known that the propagation of waves of frequencies greater than 30 Mc/s is greatly influenced by meteorological conditions in the troposphere;

unanimously recommends

that the list of definitions annexed hereto be adopted for incorporation in the vocabulary in accordance with Resolution No. 5.

VOCABULARY OF TERMS USED IN RADIO PROPAGATION THROUGH THE TROPOSPHERE

	Term	Definition
1.	Troposphere	The lower part of the earth's atmosphere extending upwards from the earth's surface, in which temperature decreases with height except in local layers of temperature inversion.
2.	Tropopause	The upper boundary of the troposphere, above which the temperature increases slightly with respect to height, or remains constant.
3.	Temperature inversion	In the troposphere; an increase in temperature with height.
4.	Modified refractive index	For a given height above sea level: the sum of the refractive index of the air at this height and the ratio of this height to the radius of the earth.
5.	Refractive modulus	One million times the amount by which the modified refractive index exceeds unity.

*) This Recommendation replaces Recommendation No. 54.

6. M unit	A unit in terms of which refractive modulus is expressed in accordance with the preceding definition.
7. M curve	A curve showing the relationship between refractive modulus and height above the earth's surface.
8. Standard refractive modulus gradient	That uniform variation of refractive modulus with height above the earth's surface which is regarded as a standard for comparison. The gradient considered as normal has a value of 0.12 M units per metre (3.6 M units per hundred feet).
9. Standard radio atmosphere	For tropospheric propagation: an atmosphere having the standard refractive modulus gradient.
10. Basic reference atmosphere	An atmosphere defined by the relationship $n(h) = 1 + 289 \times 10^{-6} \cdot e^{-(0.136h)}$; where h is the height above sea-level in kilometres. Note: The refractive index in the first kilometre the basic reference atmosphere is very nearly equal to that in an atmosphere corresponding to an earth of effective radius of 4/3 the real radius.
11. Standard refraction	The refraction which would occur in a standard radio atmosphere (see Figure 1).
12. Super-refraction	Refraction greater than standard refraction (see Figure 1).
13. Sub-refraction	Refraction less than standard refraction (see Figure 1).
14. Standard propagation	The propagation of radio waves over a smooth sperical earth of uniform electrical characteristics under conditions of standard refraction in the atmosphere.
15. Tangential wave path	In radio-wave propagation over the earth: a path of propagation of direct wave, which is tangential to the surface of the earth. The tangential wave path is curved by atmospheric refraction.
16. Radio horizon	The locus of points at which direct rays from the transmitter become tangential to the earth's surface.

17. Effective radius of the earth — The radius of a hypothetical earth for which the distance to the radio horizon assuming rectinlinear propagation is the same as that for the actual earth with an assumed uniform vertical gradient of refractive index. (For the standard atmosphere, the effective radius is 4/3 that of the actual earth).

18. Tropospheric radio duct — A stratum of the troposphere within which an abnormally large proportion of any radiation of sufficiently high frequency is confined and over part or all of which there exists a negative gradient of refractive modulus. The upper bounding surface is determined by a local minimum value of the refractive modulus. The lower bounding surface is either the surface of the earth or a surface parallel to the local stratification of refractive properties at which the refractive modulus has the same values as that at the local minimum value of the refractive modulus (see Figures 2, 3 and 4).

19. Surface duct
Ground-based duct — A tropospheric radio duct having the earth as its lower boundary and in which the modified refractive index is everywhere greater than the value at the upper boundary (see Figures 2 and 3).

20. Elevated duct — A tropospheric radio duct of which the lower boundary is an elevated surface at which the modified refractive index has the same value as at the upper boundary (see Figure 4).

21. Duct thickness
Duct width — The difference in height between the upper and lower boundaries of a tropospheric radio duct.

22. Duct height — The height above the surface of the earth of the lower boundary of an elevated duct (See Figure 4).

23. Tropospheric mode — Any one of the possible modes of propagation in the troposphere.

24. Trapped mode — A mode of propagation in which the energy is substantially confined within a tropospheric radio duct.

25. Mixing ratio — The ratio of the mass (in grammes) of water vapour in a given volume of the atmosphere to the mass (in kilogrammes) of the dry air in the same volume.

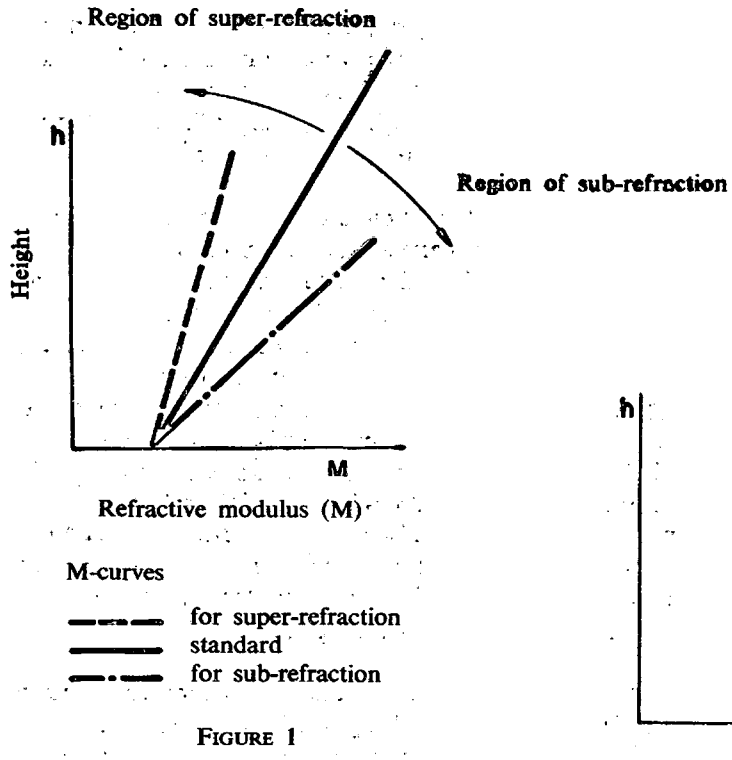
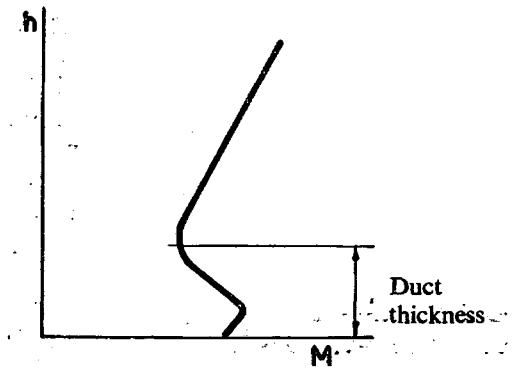
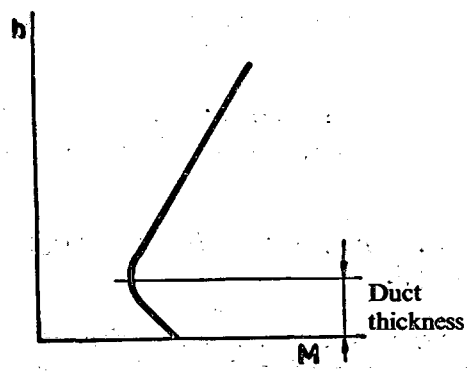


FIGURE 1



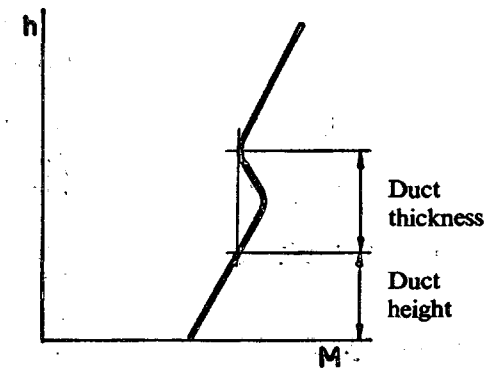
Surface duct

FIGURE 2



Surface duct

FIGURE 3



Elevated duct

FIGURE 4

ANNEX A 15

RECOMMENDATION No. 314 *)

PROTECTION OF FREQUENCIES USED FOR RADIO ASTRONOMICAL MEASUREMENTS

(London 1953 - Warsaw 1956 - Los Angeles 1959)

The C.C.I.R.,

considering

a) that the development of radio astronomy has already led to major technological advances, particularly in receiving techniques, and to improved knowledge of fundamental radio noise limitations of great importance to radio communication, and promises further important results;

b) that protection from interference on certain frequencies is absolutely essential to the advancement of radio astronomy and the associated measurements;

c) that, for the observation of known spectral lines, certain bands at specific frequencies are of particular importance;

d) that account should be taken of the Doppler shifts of the lines, resulting from the motion of the sources which are in general receding from the observer;

e) that for other types of radio astronomical observations a certain number of frequency bands are in use, the exact positions of which in the spectrum are not of critical importance;

f) that the sensitivity of radio astronomical receiving equipment, which is still steadily improving, greatly exceeds the sensitivity of communications and radar equipment;

g) that a considerable degree of protection can be achieved by appropriate frequency assignments on a national rather than an international basis;

h) that, nevertheless, it is impracticable to afford adequate protection without some international agreement;

---

*) This Recommendation replaces Recommendation No. 173.

unanimously recommends

1. that radio astronomers should be encouraged to choose sites as free as possible from interference;

2. that Administrations should afford all practicable protection to the frequencies used by radio astronomers in their own and neighbouring countries;

3. that particular care should be taken to give complete international protection from interference to observations of emissions known or thought to occur in the following bands :

Line	Line frequency (Mc/s)	Band to be protected (Mc/s)
Deuterium	327.4	322 - 329
Hydrogen	1420.4	1400 - 1427
OH	1667	1645 - 1675

4. that the bands allocated for standard frequency and time signal emissions at 2.5, 5.0, 10.0 and 20.0 Mc/s should not include anything other than the standard frequency and time signal emissions, thus permitting their use for reception in radio astronomy;

5. that consideration be given to securing adequate international protection of a number of narrow frequency bands throughout the spectrum above 30 Mc/s for the purpose of reception in radio astronomy;

6. that Administrations, in seeking to afford protection to particular radio astronomical observations, should take all practicable steps to reduce to the absolute minimum amplitude harmonic radiations falling within bands of frequencies to be protected for radio astronomy.

Note

Radio astronomers in a number of countries have indicated their desire to use for this purpose one frequency band at each of the following approximate positions (not necessarily in harmonic relation)

Frequency (Mc/s)	Bandwidth (Mc/s)
40	± 0.75
80	± 1.0
160	± 2.0
640	± 2.5
2560	± 5.0
5120	± 10.0
10240	± 10.0

ANNEX A 16

RECOMMENDATION No. 259

SELECTION OF FREQUENCIES USED IN TELECOMMUNICATION WITH AND BETWEEN ARTIFICIAL EARTH SATELITTES AND OTHER SPACE VEHICLES

(Questions No. 168 (V) and 169 (VI))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that transmission of radio signals between the earth and artificial earth satellites and other space objects is now an established fact;

b) that such extraterrestrial objects may well be consecutively above different countries of the world, thus necessitating international collaboration;

c) that radiocommunication between extraterrestrial objects and the earth and among extraterrestrial objects will be of importance;

d) that such radiocommunication will be affected by the terrestrial troposphere and ionosphere, and by ionization, radio-frequency noise, and man-made interference in space, as well as by relative velocities;

e) that the study of the effects of the ionosphere on such communications may be facilitated by comparison of HF signals with VHF or UHF signals since the ionospheric effects are larger on the lower frequencies;

f) that while frequencies for communication with objects in extraterrestrial space are being selected at present on the basis of particular communication requirements and technological capabilities, the inevitable increase in this type of communication is likely to lead to a chaotic situation in the radio spectrum;

g) that no provision for such communication was made in the Table of Frequency Allocations (Atlantic City).

h) that Report No. 115 presents a treatment of the technical factors affecting the selection of frequencies for telecommunication with an between space vehicles;

unanimously recommends

1. that consideration be given to the provision of a number of small frequency-bands well spaced throughout the HF and higher bands for telecommunication services with and between space vehicles;

2. that for services involving communication among space vehicles in inter-planetary space, additional consideration be given to the use of frequencies which do not significantly penetrate the terrestrial ionosphere or troposphere (roughly below 1 Mc/s or above 50,000 Mc/s respectively);

3. that special and particular consideration be given to the provision of at least two narrow frequency bands between 19 and 54 Mc/s to permit study of the effects of the ionosphere on communications passing through it;

4. that in determining the widths of allocated bands particular account be taken of Doppler shifts in frequency associated with high relative velocities.

ANNEX A 17

REPORT No. 115*)

FACTORS AFFECTING THE SELECTION OF FREQUENCIES FOR TELECOMMUNICATION WITH AND BETWEEN SPACE VEHICLES

(Questions No. 168 and 169)

(Los Angeles, 1959)

The purpose of this report is to summarize the frequency dependence of radio propagation and certain other technical factors which influence communication with or navigation and guidance of space vehicles. The results provide a basis for the selection of frequencies for these purposes. Optimum frequencies can be selected on the basis of the signal-to-noise ratio for a given transmitter power, and of minimum distortion of phase and amplitude, etc. It is recognized that diffraction and other distortions may cause problems in tracking and location; however, the treatment here takes signal-to-noise ratio as the sole criterion for frequency selection.

Factors Affecting the Selection of Frequencies

1. Only modest transmitter power will be initially available in the space vehicle.

2. All communication between earth and outer space must pass through the earth's atmosphere (including the troposphere and ionosphere). Communication between satellites will primarily involve radio paths outside the influence of the earth's atmosphere.

3. The atmosphere is frequency selective, allowing some frequencies to pass through readily while severely attenuating others. A range of frequencies in which waves readily penetrate the atmosphere is often called a "window".

4. Two principal ranges of frequencies pass readily through the atmosphere. They are:

4.1 The range between ionospheric critical frequencies and frequencies absorbed by rainfall and gases (about 10 to 10,000 Mc/s).

4.2 The combined visual and infra-red ranges (about 10^6 to 10^9 Mc/s).

5. The atmosphere is known to be partially transparent in a third range below about 300 kc/s. Waves are propagated through the ionosphere in this range by what is sometimes called the "whistler mode". Propagation in this mode is not yet well understood.

---

*) This Report was adopted unanimously.

6. The range 10 Mc/s to 10,000 Mc/s is the most practical for communication purposes considering the present state of development in radio frequency power generation. The upper limit of this range may be as low as 5000 to 6000 Mc/s during heavy rainstorms and the lower limit may be as high as 80 to 100 Mc/s depending upon the degree of solar activity, the location of the earth terminal and the geometry of the signal path. On the other hand, the "window" may extend from as low as 2 Mc/s for polar locations during night-time periods to as high as 50,000 Mc/s at high altitude rain-free locations.

7. In the mid-portion of this "window" favourable propagation conditions exist and circuit performance can be estimated on the basis of free-space propagation conditions by the following relation:

$$P_t' \propto \left(\frac{P_r' f^2 d^2}{G_t G_r} \right)$$

where:

P_t' = Required transmitter power

P_r' = Minimum permissible receiver input power

f = Frequency

d = Distance between transmitter and receiver

G_t = Transmitting antenna gain in the pertinent direction

G_r = Receiving antenna gain in the pertinent direction

8. Actual propagation conditions vary substantially from this free space assumption at frequencies near the edge of the radio "window", and it is necessary to correct for ionospheric and tropospheric effects to obtain a true estimate of frequency dependence. This correction requires an estimate of tropospheric absorption at the higher frequencies and an estimate of ionospheric absorption at the lower frequencies. In addition to estimating ionospheric absorption, an estimate of the probability of radio signals penetrating the ionosphere must be made.

9. To determine optimum frequencies, the variation of background radio noise within the radio "window" must also be considered:

9.1 Cosmic noise predominates at the lower edge of the radio "window" and decreases with frequency until noise within the receiving equipment predominates.

9.2 At the current state of equipment development receiving equipment noise will predominate between about 100 to 200 Mc/s for antennas directed toward average sky noise areas and between about 300 to 500 Mc/s for antennas directed toward high cosmic noise areas such as the "milky way".

9.3 If low noise receiving equipment such as the MASER amplifier is used, cosmic noise will predominate up to about 1000 Mc/s.

9.4 Noise within the receiver normally increases slowly as the operating frequency is increased.

10. For antennas of fixed physical size, high frequencies have the advantage of greater gain but the disadvantage of narrow beamwidths and associated tracking problems.

11. High speed vehicles travelling so that the distance between transmitter and receiver is rapidly changing, have apparent frequencies differing from the actual transmitter frequencies by the "doppler" frequency shift.

12. Within the solar system there is evidence of appreciable densities of electrons out to great distances from the sun.

13. Transmission time delay will become substantial in outer space communications, e.g., 2.6 seconds are required for a round trip radio signal to the moon. This time delay is essentially independent of operating frequency.

14. Bolometers have been developed which can detect signals in the optical and infra-red frequency range as low as 160 db below one watt at a "fairly-high rate of signalling".

15. Although great distances are involved, the propagation medium in space beyond the first 500 miles of the earth's atmosphere is believed to be essentially transparent to radio waves. Thus we may estimate performance on the basis of free-space propagation. Frequency dependence of receiver input power under free-space propagation conditions depends upon the type of antenna at the transmitter and receiver. This frequency dependence is shown by the following free-space propagation relation:

$$P_r \propto \frac{P_t G_t G_r}{f^2 d^2}$$

where:

P_r is receiver input power

P_t is transmitter power

Other symbols have the same meaning as before

Frequency dependence of receiver input power for free space propagation conditions can be summarized as follows:

15.1 If both the transmitting and receiving terminals of a free-space communication link use non-directive antenna (e.g. two vehicles in space) or if beamwidths at both terminals are fixed, the receiver input signal power increases as the frequency is decreased:

$$\left\{ P_r \propto \frac{P_t}{f^2 d^2} \right\}$$

15.2 If one terminal of a free-space communication link uses a directive antenna of fixed physical size and can operate with narrower and narrower beamwidths as frequency increases and the other terminal uses a nondirective antenna or a fixed beamwidth antenna, e.g., a directive antenna on the earth's surface ($G_t \propto f^2$) and a nondirective antenna on a space vehicle, the receiver input signal power is independent of frequency $\left(P_r \propto \frac{P_t}{d^2} \right)$.

15.3 If both terminals of a free-space communication link use directive antennas of fixed physical size and can operate with narrower and narrower beamwidths as frequency increases, e.g., a directive antenna on the earth's surface, and a directive antenna on a more elaborate space vehicle ($G_t \propto f^2$ and $G_r \propto f^2$), the receiver input signal power increases as the frequency is increased $\left(P_r \propto \frac{P_t f^2}{d^2} \right)$.

DISCUSSION

16. Frequency dependence for practical space-communication circuits requires that atmospheric effects be included. Receiver input signal power and receiver input noise power for a directive receiving antenna and nondirective transmitting antenna are shown in Fig. I. The receiver input power includes ionospheric and tropospheric effects for a 1000 mile propagation path tangential to the earth's surface for summer midday operation during periods of high solar activity and for moderate rain conditions such as experienced 1% of the time in the Washington, D.C. area. This is typical of the most adverse propagation conditions normally encountered in the absence of sudden ionospheric disturbances, instances of intense sporadic E, areas of auroral activity or rain conditions of cloudburst proportions. During more favourable propagation conditions, such as a propagation path normal to the earth's surface during the night at the lower frequencies, or in a high altitude rain-free location for the higher frequencies, the receiver input power can be expected to be essentially independent of frequency over a wider range of frequencies. The receiver input power as shown between 100 and 500 Mc/s in Fig. I will be typical over a much wider frequency range during these favourable propagation periods.

17. Figure II shows essentially the same information as Fig. I, except that the distance is increased to 300,000 miles, the receiving antenna diameter is increased to 120 feet, the use of cooled amplifiers such as the MASER is anticipated, quasi-maximum values of cosmic noise for high gain antennas are given, and receiver input power for a vertical path in dry rain-free location is shown.

Figure III shows the theoretical improvement at the higher frequencies if a directive antenna is used on the space vehicle. Although receiver input power is shown only for a 15-foot diameter parabolic antenna on the space vehicle, this improvement with increased frequency applies for all directive antennas of fixed physical size. Since the increase in antenna gains at the higher frequencies more than offsets the slightly increased power requirement due to increased receiver noise at these frequencies, the first impression is that the higher the frequency the better the expected circuit performance as long as the frequency is below the upper limit of the radio "window". (About 6000 Mc/s for oblique paths during moderate rainfall and up to 50,000 Mc/s for high altitude rain-free location). The physical problem of antenna design and tracking, however, establishes minimum permissible antenna beamwidths and is believed to place practical limits on this upper frequency at much lower values.

19. Theoretical effective power requirements for greater distances are shown in Fig. IV as a function of frequency. Power requirements shown are the minimum detectable radiated power (6 db S/N ratio) from a space vehicle to a 60 feet diameter earth-based antenna under the most adverse propagation conditions normally encountered. Allowances for fading and antenna beamwidth limitations are not shown by the chart. Approximate distances from earth to the moon, the sun, certain planets and to typical man-made satellites are shown.

20. For communication between vehicles in outer space, free-space propagation conditions apply over a wide frequency range. Frequencies above or below the earth's radio "window" can be expected to minimise interference problems with operations on earth. These frequencies will be below about 10 Mc/s or above about 10,000 Mc/s. Selection of an optimum frequency can be based on free-space propagation but requires an estimate of noise powers in outer space, particularly as to the radio noise at frequencies between 2 and 10 Mc/s. Frequencies below 2 Mc/s are considered impractical because of antenna sizes required and the substantial plasma frequencies probably occurring in outer space during periods of severe magnetic storms. If radio noise is excessive below 10 Mc/s and if antenna orientation problems limit the use of high gain antennas, the optimum frequency for communication between space vehicles may fall within the 10 to 10,000 Mc/s radio "window".

21. For space vehicles using essentially omnidirectional antennas communicating with earth terminals using directive antennas, the receiver input power will be constant with frequency over much of the 70 to 6000 Mc/s band and the background noise level and beamwidth requirements to assure tracking determines the optimum frequency. Background noise from sources within the antenna beam (cosmic noise) predominates at the lower edge of the band and noise generated within the first stages of the receiver predominates at the upper edge of the band. The crossover point for the curves representing these noise sources determines the frequency with the maximum signal-to-noise ratio and therefore, the optimum frequency for communication if antenna beamwidths are satisfactory at these frequencies. These optimum frequencies are about as follows:

21.1 100 to 200 Mc/s for conventional receivers with antennas directed toward average cosmic noise sources;

21.2 300 to 500 Mc/s for conventional receivers with high gain antennas directed toward high cosmic noise sources such as the "milky way";

21.3 1000 to 3000 Mc/s if the receiver is equipped with cooled amplifiers such as the MASER;

21.4 Antenna beamwidths must always be considered and compromises made between beamwidth and optimum signal-to-noise ratios. Since receiver noise increases only slowly with frequency and receiver input power is constant up to about 6000 Mc/s, higher frequencies may be used with only slight decrease in S/N ratio but at the expense of increased tracking difficulty.

22. As more elaborate space vehicles capable of maintaining attitude and employing directive antennas are developed, the receiver input power will increase with frequency and the background noise level will no longer determine the optimum frequency. The optimum frequency will be governed by a compromise between maximum practical physical antenna size and the minimum antenna beamwidth consistent with acquisition and tracking techniques. If attitude control of the space vehicle and acquisition and tracking limitations of the ground stations establish minimum antenna beamwidths at both terminals, the fixing of the maximum practical antenna size at either terminal will establish the optimum frequency and antenna size for the other terminal. As attitude control and tracking techniques improve the optimum frequency increases. As larger antennas become practical the optimum frequency decreases. The optimum frequency is therefore closely associated with particular applications and can be selected once the physical antenna size and minimum beamwidths are established. For a one-degree minimum beamwidth for the earth antenna and a 20-degree minimum beamwidth for the space vehicle antenna, optimum combinations of frequencies and antenna sizes are as follows:

EARTH ANTENNA DIA. (ft)	OPTIMUM FREQUENCY (M/cs)	SPACE VEHICLE OPTIMUM ANTENNA DIA. (ft)
30	2400	1½
60	1200	3
120	600	6

23. The optimum frequency for communication between outer space vehicles is unknown. It will depend upon radio noise in outer space and upon the ability of the vehicles to maintain attitudes and thereby use directional antennas. For omnidirectional antennas or for any fixed antenna beamwidth the optimum frequency will be the lowest frequency consistent with the practical antenna size and outer space radio noise levels. Since operation at frequencies outside the radio "window" will tend to minimise the radio interference problem between the space vehicles and earth, space vehicles with omnidirectional or broad beamwidth antennas should be assigned trial frequencies below 10 Mc/s if antennas at these frequencies are practical. For more elaborate space vehicles with the ability to properly orient antennas with very narrow beamwidths, operation at frequencies above or near the upper edge of the radio "window" is recommended (above 10,000 Mc/s). If physical antenna size bars the use of frequencies below 10 Mc/s and if the ability to orient antennas bars the use of frequencies above 10,000 Mc/s, antenna size and antenna beamwidth compromises will determine optimum frequencies. Frequencies may then be selected by the use of Fig. IV in the same manner as for communication between space vehicles and earth, when both terminals use directive antennas except that the earth's ionospheric and tropospheric limitations will no longer apply.

BIBLIOGRAPHY

1) Burgess, E. "Satellites and Space Flight". The Macmillan Co. 1957.

2) Bean, B.R., and Abbott, R., "Oxygen and Water Vapor Absorption of Radio Waves in the Atmosphere". Geofisica Pura E Applicata. Milano. Vol. 37, pp. 127-144. 1957.

3) Radio Astronomy Issue, Proceedings of the IRE, Vol. 46, No.1, New York, January 1958.

4) Laitinen, P.O., and Haydon, G.W., "Analysis and Predictiohs of Sky Wave Fields Intensity", Radio Propagation Agency Technical Report No.9. August 1950, U.S. Army Signal Radio Propagation Agency, Fort Monmouth, N.J.

5) Norton, K.A., "Maximum Range of a Radar Set". Proceedings of the IRE, January 1947.

6) Clarke, A.C., "Electronics and Space Flight", Journal of the British Interplanetary Society, Vol. 7, No. 2, p. 49. March 1948.

7) Smith, George O., "Radio Communications Across Space, Ship to Ship, and Ship to Planet". Journal of the British Interplanetary Society. Vol. 12, No. 1., p. 13, 1953.

8) Prew, Henry., "Space Exploration - The New Challenge to the Electronics Industry". IRE Transactions on Military Electronics. Vol. MIL-1 No.2. p. 43. December 1957.

9) Griffiths. "Doppler Effect in Propagation". Wireless Engineer. June 1947.

10) Chvojkova, E., "Propagation of Radio Waves from Cosmical Sources", Nature 11 January 1958.

11) Bremmer, H., "Terrestrial Radio Waves". Elsevier Publishing Company, New York, 1949.

12) Castruccio, Peter A., "Communications and Navigation Techniques of Interplanetary Travel". IRE Transactions on Aeronautical and Navigational Electronics. December 1957.

13) Wheelon, Albert D., "Mid-Course Guidance Techniques for Space Vehicles". 1958 National Conference of Aeronautical Electronics.

14) Mengel, J.T., "Tracking the Earth Satellite and Data Transmission by Radio". Proceedings of the IRE, 44, pp. 755-760, June 1956.

PRELIMINARY CONSIDERATIONS IN SELECTING FREQUENCIES FOR RADIO COMMUNICATION TO EARTH FROM A SPACE VEHICLE
BASED ON 1000 MILES (Typical Satellite Distance)
OMNIDIRECTIONAL VEHICLE ANTENNA - 30 AND 60 FOOT DIAMETER PARABOLID RECEIVING ANTENNA
1 WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

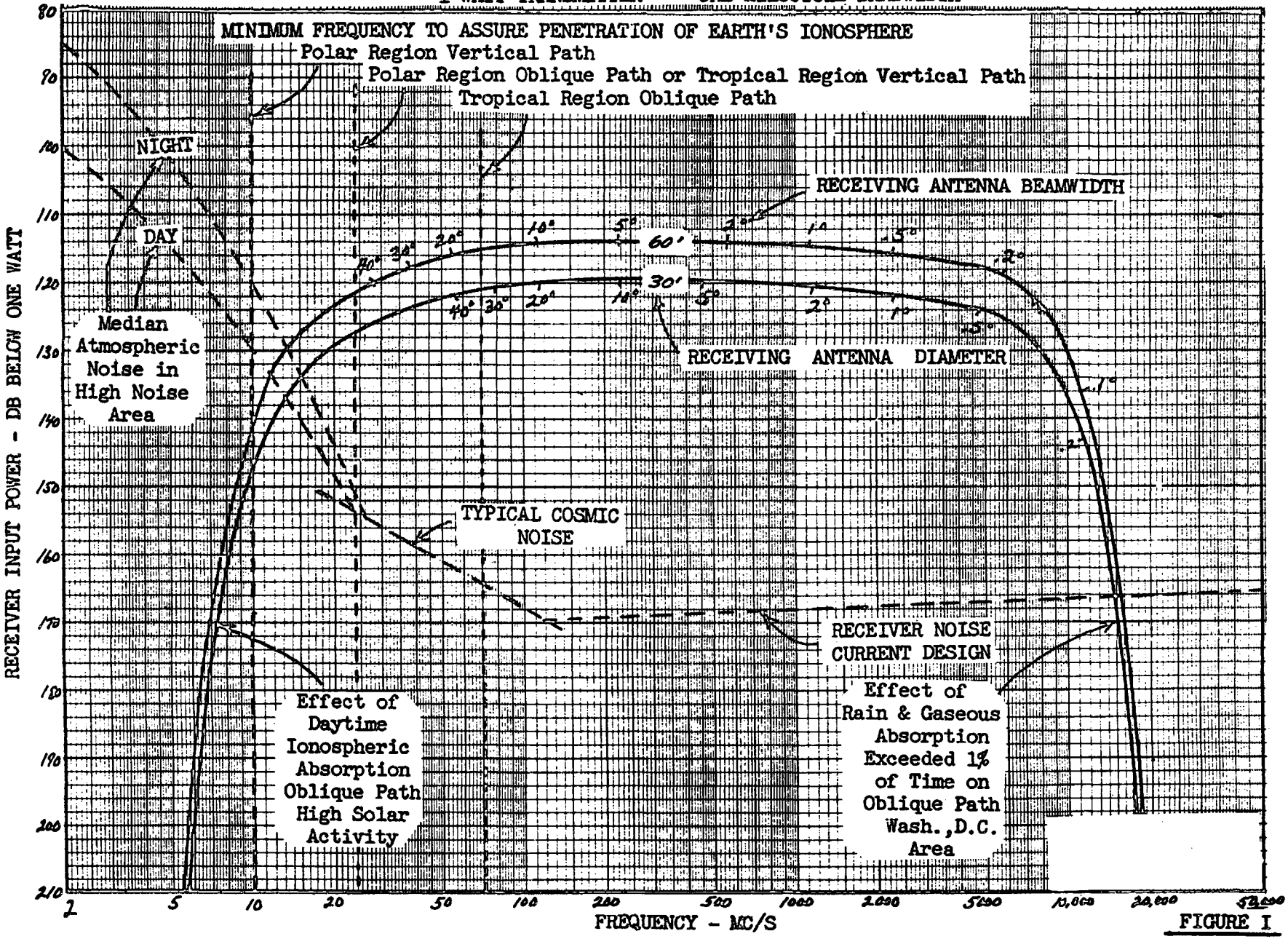


FIGURE I

PRELIMINARY CONSIDERATIONS IN SELECTING FREQUENCIES FOR RADIO COMMUNICATION TO EARTH FROM A SPACE VEHICLE
BASED ON 300,000 MILES (Distance to Circle Moon)
OMNIDIRECTIONAL VEHICLE ANTENNA - 60 and 120 FOOT DIAMETER PARABOLID RECEIVING ANTENNA
ONE WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

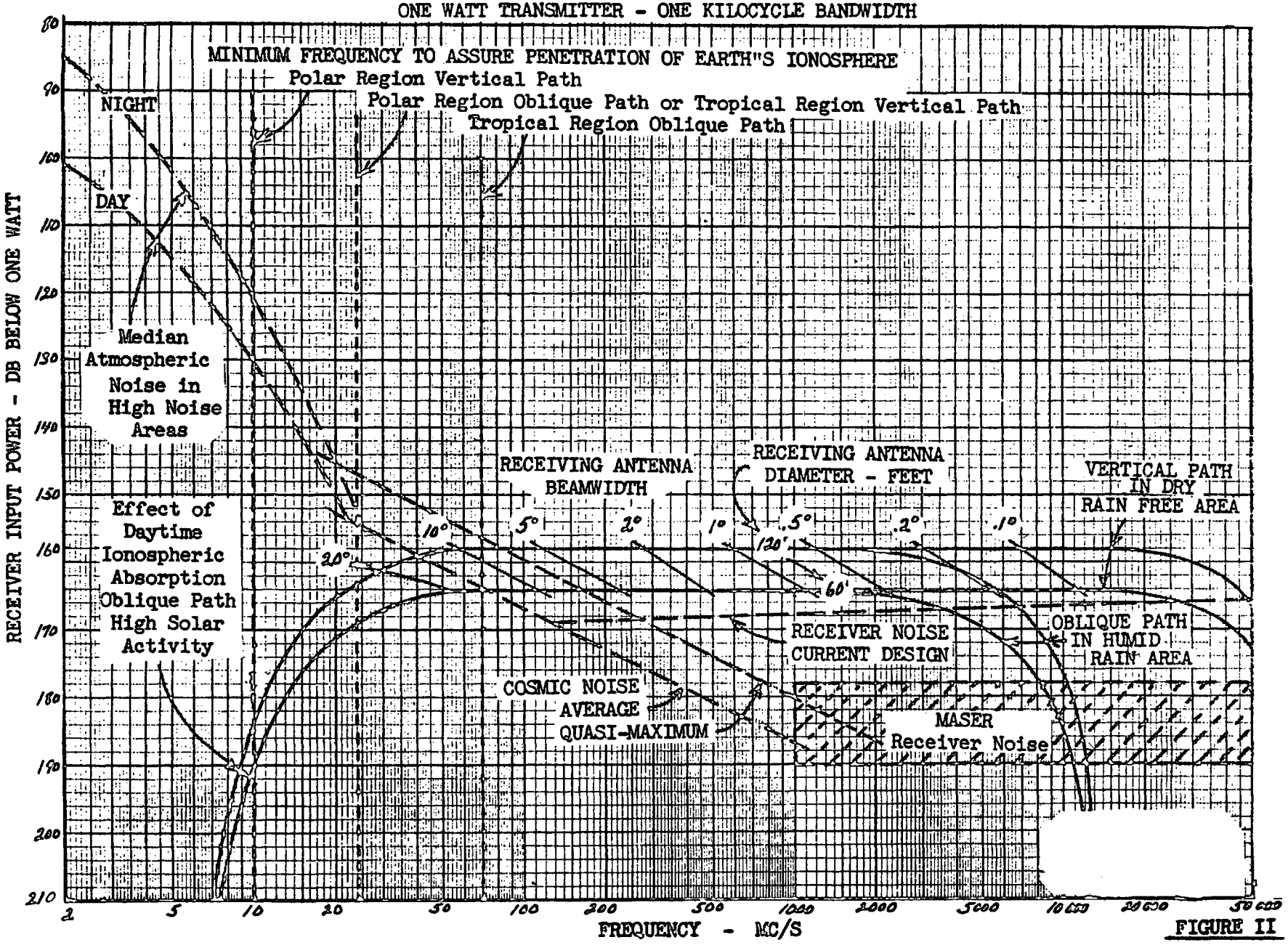


FIGURE II

PRELIMINARY CONSIDERATIONS IN SE[illegible]TING FREQUENCIES FOR RADIO COMMUNICA[illegible]N TO EARTH FROM A SPACE VEHICLE
BASE[illegible] ON 300,000 MILES (Distance to Circle Moon)
15 FOOT DIAMETER PARABOLIC VEHICLE ANTENNA - 60 FOOT DIAMETER PARABOLIC RECEIVING ANTENNA
1 WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

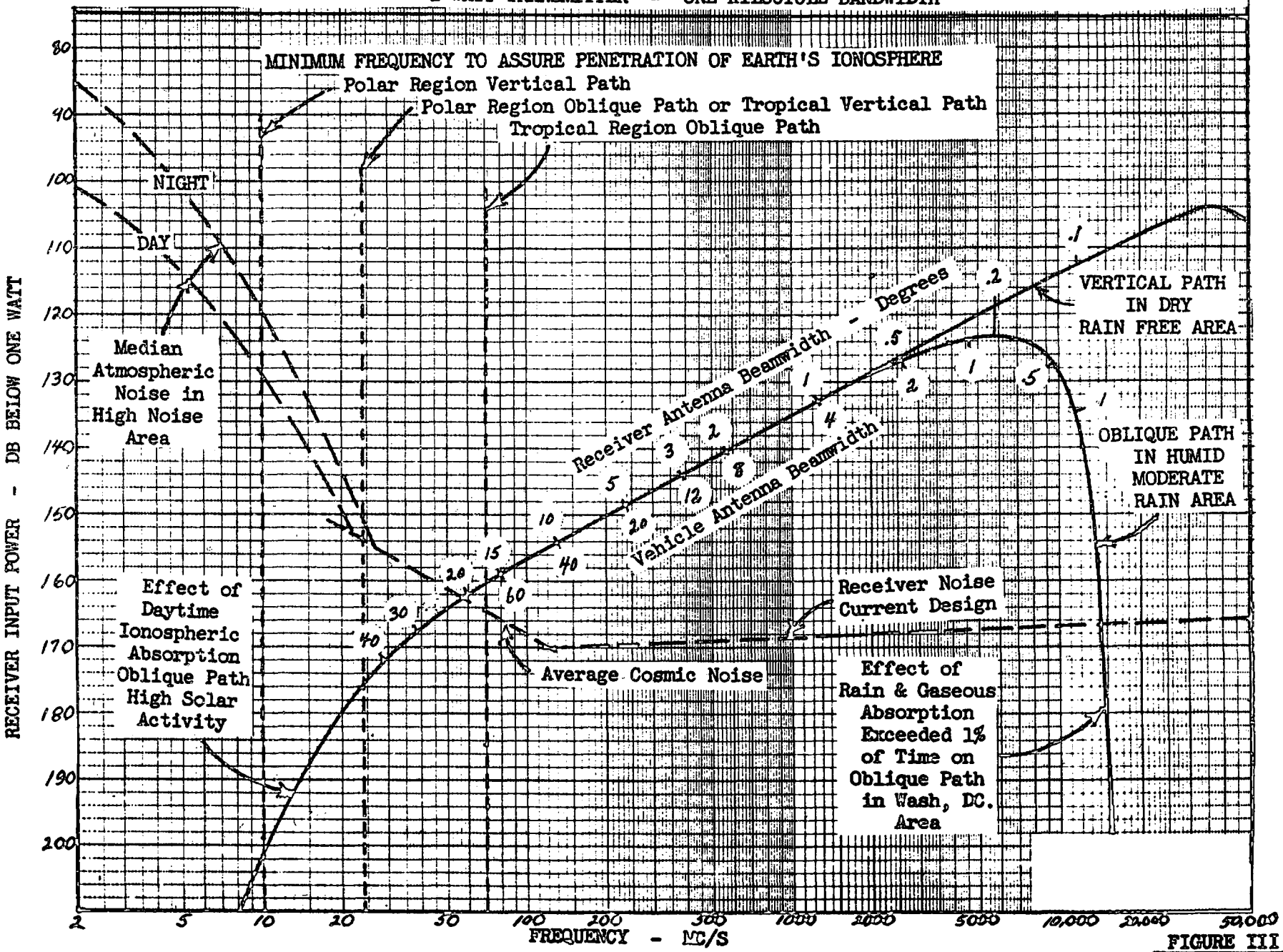


FIGURE III

THEORETICAL EFFECTIVE RADIATED POWER REQUIRED FROM SPACE VEHICLE TO PERMIT DETECTION ON EARTH
ONE KILOCYCLE BANDWIDTH - 6 DB SIGNAL-TO-NOISE RATIO - RECEIVING ANTENNA - 60 FOOT PARABOLID
DAYTIME OPERATION - HIGH SOLAR ACTIVITY - RAIN AND GASEOUS ABSORPTION BASED ON 1% OF TIME (WASH,DC)
RADIO PATH APPROXIMATELY HORIZONTAL TO EARTH - RECEIVERS OF CURRENT DESIGN

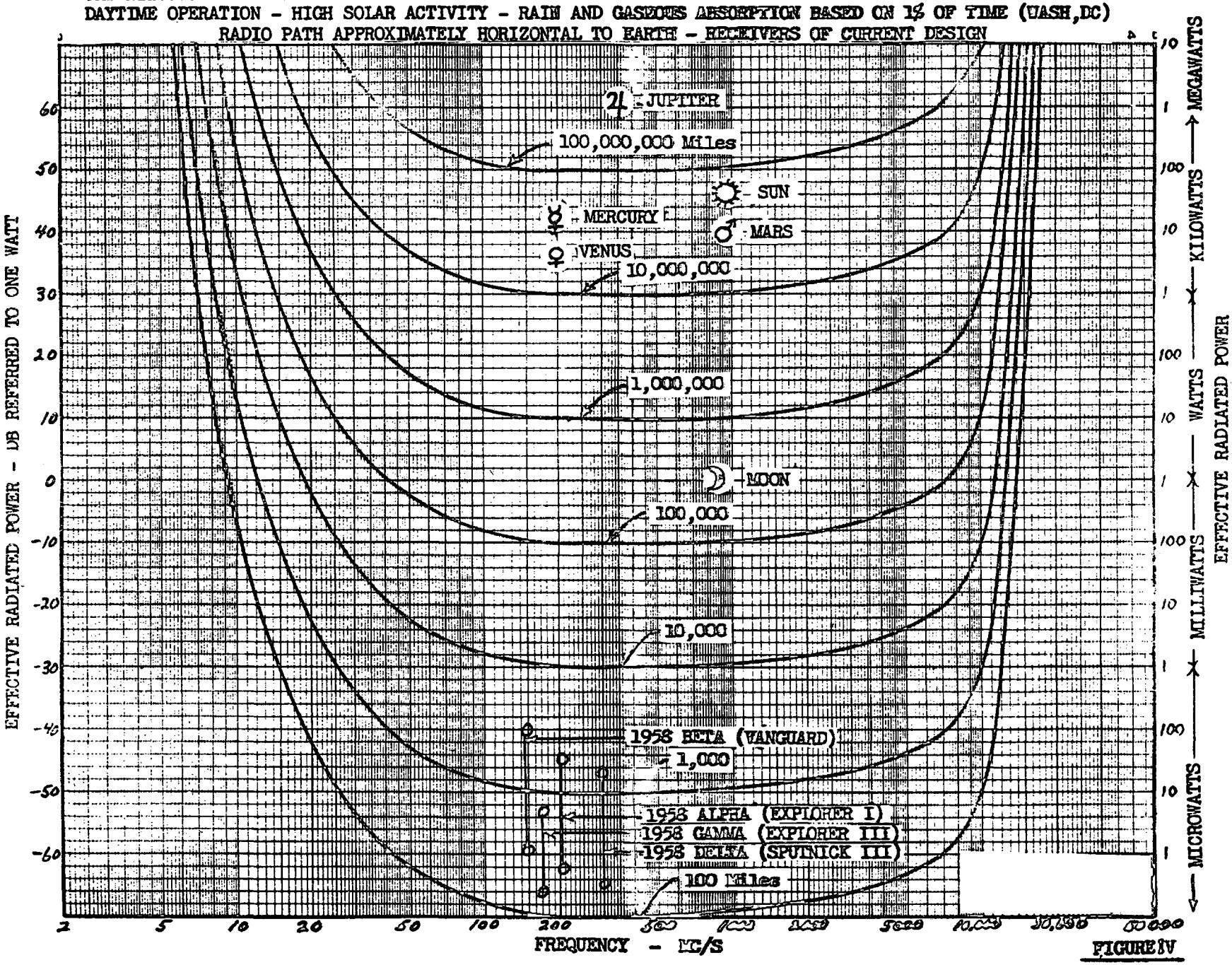


FIGURE IV

ANNEX A 18

RECOMMENDATION No. 320

STANDARD-FREQUENCY TRANSMISSIONS AND TIME SIGNALS IN ADDITIONAL FREQUENCY BANDS

(Question No. 142 (VII))

(Los Angeles 1959)

The C.C.I.R.,

considering

a) that Recommendation No. 314 refers only to the transmissions of standard-frequency and time signals allocated by the Radio Regulations, Atlantic City 1947, centred on the frequencies 2.5, 5, 10, 15, 20 and 25 Mc/s;

b) that propagation characteristics, interference and noise degrade considerably the short term accuracy obtainable in these frequency bands;

c) that in communications, research and industry, there is an increasing need for high accuracy of frequency and time measurements in a short period of time;

d) that measurements on controlled stations in Band 4 have demonstrated that a precision of frequency comparison of 1 part in 10^{-10} can be achieved in a period of a few hours during daylight at a range of 5000 km,*) at great ranges the precision decreases, but is still much greater than that obtainable in Bands 6 and 7;

e) that, therefore, the possibility exists of achieving a world-wide frequency reference of high precision in Band 4 between 15 and 25 kc/s by means of a single station or at most two or three transmitters operating on different frequencies;

f) that it may be possible by specialized techniques to provide a highly precise world-wide time reference by emissions in Band 4;

g) that studies employing highly stabilized transmissions in Band 4 provide valuable information regarding ionospheric and propagation conditions which is useful in scientific studies and in the design of long range navigation systems;

---

*) See Report No. 163 - Observations of a standard frequency service on 16 kc/s.

unanimously recommends

1. that as many stations as possible already in operation in Band 4 should be controlled with sufficient stability to permit an extension of present measurements of path phase stability;

2. that phase measurements in Band 4 at great distances, for example, near the antipodal points, be continued and refined to yield further information on the behaviour of such standard-frequency transmissions at extreme distances;

3. that the techniques for transmission and reception of standard-frequency and time signals in Band 4 be investigated with a view of avoiding interferences in the distribution of such a service;

4. that a band of 100 c/s in the neighbourhood of 20 kc/s (15 to 25 kc/s) would appear to be a suitable channel for an effective standard-frequency and time signals service;

5. that appropriate existing stations in Bands 5 and 6 be employed as much as possible for distribution of standard-frequency by precisely controlling their carrier frequency;

6. that existing broadcasting stations in Band 8, such as FM and television, be employed as much as possible for distribution of standard-frequency and time signals which can be added to the existing present modulation, without interference to the normal programme;

7. that any administration contemplating transmissions in accordance with the above proposals should first communicate the details to the Chairman and Vice-Chairman of Study Group VII.

ANNEX A 19

RESOLUTION No. 53

STANDARD FREQUENCY AND TIME SIGNALS TRANSMISSIONS IN BAND 4

(Question No. 142 (VII))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that considerable experience has now been obtained on the operation of a standard-frequency and time-signal service on the frequency bands allocated in accordance with Recommendation No. 2 adopted by the Administrative Radio Conference (Atlantic City, 1947);

b) that the accuracy obtainable in receiving the standard-frequency and time-signal service at great distances is not always sufficient for those users requiring the highest precision;

c) that it has been shown that a higher order of accuracy of standard-frequency reception at great distances can be obtained from transmissions in Band 4;

d) that it may be possible also to make narrow-band and higher precision transmissions of time signals in Band 4;

e) that intolerable interference would be produced if several standard-frequency and time-signal stations operated simultaneously on the same frequency in Band 4, and service would need to be carefully coordinated with a limited number of stations;

unanimously resolves

that the next Administrative Radio Conference be requested to provide for an international standard-frequency and time-signal service in Band 4, a suitable frequency being in the neighbourhood of 20 kc/s (15 to 25 kc/s) and the bandwidth required being about 100 c/s.

ANNEX A 20

RECOMMENDATION No. 323 *)

IDENTIFICATION OF RADIO STATIONS

(Question No. 104 Revised)

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that, in order to carry out an efficient monitoring service of radio stations, it is necessary for these stations to be identified as regularly as possible during their transmissions;

b) that in some types of radio systems the identification procedure used at present is satisfactory to operating agencies, regulating Administrations and monitoring services, as in the case of single-channel low-speed telegraphy;

c) that the Atlantic City Radio Regulations (Article 13, Section V, para. 10) set forth requirements for transmissions of radio call signs and state that each radio station provided with a call sign from the international series must, unless the Atlantic City Radio Regulations provide otherwise, transmit this call sign during the course of their transmission as frequently as is practicable and reasonable;

d) that certain types of radio stations are exempted from the necessity of having an international call sign, for example, stations which are easily identified by other means and whose signals of identification, or characteristics of emission, are published in international documents;

e) that satisfactory methods for identifying some multi-channel types of transmission have been evolved;

f) that the requirement of frequently transmitting an identifying signal by interrupting the traffic imposes difficulties on the operating agencies by reducing the operating time of a circuit, particularly where heavily loaded multi-channel or high-speed machine operation is employed;

---

*) This Recommendation replaces Recommendation No. 220.

The Bielorussian S.S.R, P.R. of Bulgaria, the P.R. of Rumania, the P.R. of Czechoslovakia, the Ukrainian S.S.R. and the U.S.S.R. reserved their opinions on this Recommendation.

g) that, when an identifying signal is transmitted simultaneously with traffic, it is desirable, for ease of identification, to transmit an appropriate signal from the International Q-Code to indicate that the identifying signal which follows is superimposed on another emission;

recommends

1. 1.1 that each radio station required to have an identifying signal under the provisions of the Atlantic City Radio Regulations, Article 19, should send such signal at the beginning and the end of a transmission, and as often as practicable and reasonable during such transmissions;

1.2 that, when a number of stations work simultaneously in a common circuit, either as relay stations, or in parallel on different frequencies, each station shall as far as is practicable and reasonable, transmit its own identifying signal; alternatively, each station should transmit the identifying signal or signals of all stations working as a group;

2. that for the purpose of identification, one of the following means should normally be used:

2.1 International Morse code using class A1, A2, F1, or F2 emission and transmitted preferably at hand speed;

2.2 Five-Unit Code (International Telegraph Alphabet No. 2) using class A1, A2, or F1 emission, at a speed appropriate to single-channel working and preferably at the standardized speed of 50 bauds;

2.3 speech in clear;

3. that the identifying signal should be transmitted non-simultaneously with the traffic and using one of the means in (2) above, or simultaneously with the traffic using the following methods:

3.1 for class F1 emissions, particularly for high-speed or multi-channel working, the superposition of the identifying signal in International Morse code by an additional frequency or phase modulation of the carrier;

3.2 for single-sideband emissions, by amplitude keying of the reduced carrier or of some other pilot frequency;

3.2.1 keying of the reduced carrier with a difference in level of 5 db gives a satisfactory compromise between the acceptable distortion of the traffic signals and the suitability for identification purposes, especially if the identifying signal is repeated;

3.3 for facsimile transmission employing class A4 emissions, by amplitude modulation, at a frequency below the lowest used for the facsimile modulation. Where single-sideband transmission is used, amplitude keying, as in 3.2 above, may be used;

4. for the transmission of the identifying signal simultaneously with traffic, as covered in para. 3 above or in other ways, the signal sent to indicate that the identifying signal which follows is superimposed on another transmission, should be sent in the same manner as the identifying signal, and the letters QTT should be used and incorporated in the International Q-Code (Radio Regulations, Atlantic City, 1947, App. 9) for this purpose;

5. that, in order to avoid additional complexity in the equipment and operating of transmitting stations, every reasonable effort should be made to provide monitoring stations with equipment suitable for the reception of identifying signals of all stations;

6. that, if the identifying signal cannot be transmitted frequently or continuously, it would facilitate the work of monitoring stations if the identifying signal were transmitted in the period from 10 minutes before to 10 minutes after the hour (G.M.T.), but not necessarily continuously during that 20-minute period;

7. that administrations be encouraged to co-operate directly with one another in carrying out tests of identification methods. Administrations are also invited to inform the I.F.R.B. in advance of such tests of new methods of identification in order to facilitate cooperative observations and also to afford other administrations the opportunity to become acquainted with such new methods for the identification of radio stations.

ANNEX A 21.

RESOLUTION No. 55.

RADIO RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

PREFERRED FREQUENCY BANDS AND CENTRE FREQUENCIES

FOR RADIO-RELAY LINKS FOR INTERNATIONAL CONNECTIONS

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that line-of-sight and near line-of-sight radio-relay links have already been established by many countries for international connections and that such networks are expanding;

b) that some countries may be considering the use of tropospheric-scatter links for international connections;

c) that the C.C.I.R. has recommended preferred radio-frequency interconnection arrangements for radio-relay links of capacity from 60 to 1800 telephone channels, or for television (Annex 1);

d) that for radio frequency interconnection of links in international networks, agreement is necessary on specific radio frequencies as well as on the arrangement of radio channels within a band;

e) that specific radio frequencies can readily be defined in terms of the centre frequency of the radio-frequency interconnection arrangement;

f) that for technical reasons, only certain preferred values of the centre frequency are acceptable in a given frequency band;

g) that there are various aspects of radio-wave propagation and equipment design that lead to the choice of particular frequency bands for certain capacities and types of radio-relay system;

h) that radio-relay links used for international connections must meet similar high standards of performance to those recommended by the C.C.I.T.T. for metallic circuits;

i) that it is essential to avoid interference to radio-relay links used for international connections, either from other radio-relay links or from other radio services (including harmonics), operated in the same or other countries;

unanimously resolves

that the attention of the Administrative Radio Conference be drawn to :

1. the technical advantages of international agreement on preferred frequency bands within which international line-of-sight and tropospheric-scatter radio-relay links may be established using the radio-frequency channel arrangements recommended by the C.C.I.R.;

2. the technical advantages of preferred values for the centre frequencies of bands for line-of-sight and tropospheric-scatter systems being established by international agreement;

3. the risk of interference between line-of-sight and tropospheric-scatter links if these operate in the same frequency band and in the same geographical zone;

4. the need to avoid interference to radio-relay links used for international connections from other radio services or harmonics radiated by them.

ANNEX 1

C.C.I.R. RECOMMENDATIONS FOR PREFERRED RADIO-FREQUENCY CHANNEL ARRANGEMENTS FOR RADIO-RELAY SYSTEMS USED FOR INTERNATIONAL CONNECTIONS(1)

Recommendation No.	Max. capacity of each radio carrier (telephone channels or television (TV))	Preferred "centre" (2) frequency f_o (Mc/s) (3)	Width of radio frequency band occupied (Mc/s)
Rec. 284	60/120	1808 2000 2203	200 200 200
Rec. 285	60/120	7558.5	300
Rec. 288	300 to 1800 or TV or equivalent	1903 2101	400 400
Rec. 277		4003.5(4)	400(4)
Rec. 278	600 to 1800 or TV or equivalent	6175	500

NOTES

1. The Recommendations referred to above apply to line-of-sight and near line-of-sight radio-relay systems. In the case of tropospheric-scatter systems, it has not yet been possible to formulate preferred radio frequency channel arrangements but the attention of the Administrative Radio Conference is drawn to Rec. No. 299 and to Report No. 436.

2. The "centre" frequency here means a frequency approximately in the middle of the band. For technical reasons the "centre" frequency is not precisely at the middle of the band.

3. Other centre frequencies may be used by agreement between the Administrations concerned.

4. In the case of radio-relay systems used in Regions 2 and 3 and operating in the 4000 Mc/s frequency band, an alternative radio frequency channel arrangement may be used (see the Note in Rec. No. 277).

5. The attention of the Administrative Radio Conference should be drawn also to Study Programme No. 159.

ANNEX A 21 a

RECOMMENDATION No. 303

RADIO-RELAY SYSTEMS USING TROPOSPHERIC SCATTER PROPAGATION

Radio-frequency channel arrangements.

(Study Programme No. 122(IX) and Question No. 148(IX))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that radio-relay systems using tropospheric scatter propagation are already in service and that systems of this type will come into more extensive use in the future;

b) that the high radiated power of tropospheric scatter systems and the long range of tropospheric scatter propagation may give rise to serious interference at distances extending beyond international boundaries, for example 1000 km;

c) that interference both between and within tropospheric scatter systems could be minimised by the co-ordination of radio-frequency channel arrangements over a large geographical area;

d) that many interfering effects between equipments at the same station could be minimised by a carefully planned arrangement of radio frequencies;

e) that some technical information for the planning of such systems exists, but that the design of tropospheric scatter radio-relay systems is subject to change;

f) that different methods of modulation are at present being used or proposed, among them frequency modulation and single-sideband amplitude modulation;

g) that at present no definite frequency bands are allocated to tropospheric scatter radio-relay systems;

h) that at the present time standardisation of preferred radio-frequency channel arrangements might therefore unduly restrict the future development of tropospheric scatter radio-relay systems;

i) that nevertheless a common basis for planning such systems is desirable;

unanimously recommends

1. that the radio-frequency channel arrangements for international interconnection of tropospheric scatter radio-relay systems should be agreed between the administrations concerned;

2. that the basis of planning of the radio-frequency channel arrangements for radio-relay systems using frequency modulation given in Report No. 136 may be used, where appropriate, as a guide.

ANNEX A 21 b

STUDY GROUP IX

REPORT No. 136

RADIO-RELAY SYSTEMS USING TROPOSPHERIC SCATTER PROPAGATION

Radio-frequency channel arrangements for systems using frequency modulation

(Study Programme No. 122, Question No. 148)

(Los Angeles, 1959)

1. Introduction

Study Programme No. 122 (Geneva, 1958) asks for a study of radio-frequency channel arrangements for tropospheric scatter radio relay systems. The studies carried out so far give valuable information on the problems to be taken into account for establishing such a radio frequency channel arrangement usable over a wide geographical area. Since the technique of using radio-relay systems on tropospheric scatter links is not yet fully developed, the results obtained do not yet allow an agreement on a preferred frequency arrangement for such systems but may serve as a guide in planning the frequency arrangements for systems that might be established in the near future.

2. Considerations on which a radio-frequency channel arrangement for tropospheric scatter radio relay systems might be based

2.1 The high radiated power of tropospheric-scatter systems and the long range of tropospheric-scatter propagation may give rise to serious interference at distances extending beyond international boundaries, for example 1000 km;

2.2 Interference both between and within tropospheric-scatter systems can be minimised by the co-ordination of radio-frequency channel arrangements over a large geographical area;

2.3 Many interfering effects between equipments at the same station can be minimised by a carefully planned arrangement of radio frequencies;

2.4 Radio-frequency channel arrangements should provide for various capacities of FDM telephony (e.g. from 12 to 300 telephone channels) and for television;

2.5 With the frequency deviations likely to be employed the band-width of the emission may range from a fraction of one megacycle per second for a few telephone channels, to 8 Mc/s or more for television;

2.6 To avoid undue interference between stations the minimum distance separating a receiving station from a transmitting station operating on the same frequency may have to be large, for example 1000 km or more depending on the power used and the orientations and polarizations of the antennae;

2.7 A useful reduction in the distance within which a station represents a potential source of interference is possible if the stations operate on frequencies which are slightly different, the minimum useful separation being of the order of 0.8 Mc/s for the narrower band frequency modulation systems (see Annex I) or perhaps for future single-side band amplitude modulation systems;

2.8 Different frequency allocations are discussed for tropospheric scatter radio relay systems, e.g. within two bands of 20 Mc/s, separated by a gap of 60 Mc/s and within a continuous band about 130 Mc/s to 200 Mc/s wide;

Technically feasible radio frequency channel arrangements for frequency modulation systems based on the above considerations

3.1 A basic pattern of the radio-frequency channel arrangements is proposed with a unit separation of 0.8 Mc/s, the spacings between the frequency allocations used in a given system or geographical area being integral multiples of 0.8 Mc/s;

3.2 At any station the minimum separation between transmitters could be 7 units (5.6 Mc/s); for systems with more than 36 channel capacity larger separation may be necessary;

3.3 The minimum separation of transmitters and receivers at any station should be about 50 Mc/s, but in any case an integral multiple of 0.8 Mc/s should be chosen; in some cases an appreciably greater spacing might be required in order to ensure that the necessary attenuation is obtained between the transmitter output and the receiver input;

3.4 For the case of two 20 Mc/s bands separated by 60 Mc/s, the arrangement of the radio-frequency channels could be as shown in Plan A, Figure 1;

3.5 Where a single band of up to 200 Mc/s is available, the arrangement of the radio-frequency channels could be as shown in Plan B, Figure 2;

3.6 Plan A would, in general, be used for low-capacity FDM telephony systems; it is therefore based on a unit spacing of 0.8 Mc/s. An example of the application of Plan A is shown in Fig. 1(b);

3.7 Plan B could be used for both low and high capacity FDM telephony and possibly for television; in the latter cases, the minimum spacing of radio-frequency allocations at one station might be several integral multiples of 5.6 Mc/s, say two (11.2 Mc/s) for 60 channels, three (16.8 Mc/s) for 120 channels and five (28 Mc/s) for television. Examples of the application of Plan B are shown in Fig.2(b);

3.8 Where several links are connected in tandem to form a longer route, a suitable allocation of frequencies to ensure maximum spacing between adjacent station frequencies would be in the order, 1, 5, 2, 6, 3, 7, 4, 1, etc. (as shown in Fig.2(b));

3.9 In order to avoid interference within a station the spacing of the transmit and receive frequencies should not be chosen near to the first IF of the receiver, i.e. not near to 35 or 70 Mc/s in cases where the IF corresponds to the preferred values given in Recommendation No.... (Doc. 424).

FIG. 1

Radio-frequency channel arrangements for tropospheric-scatter propagation systems.

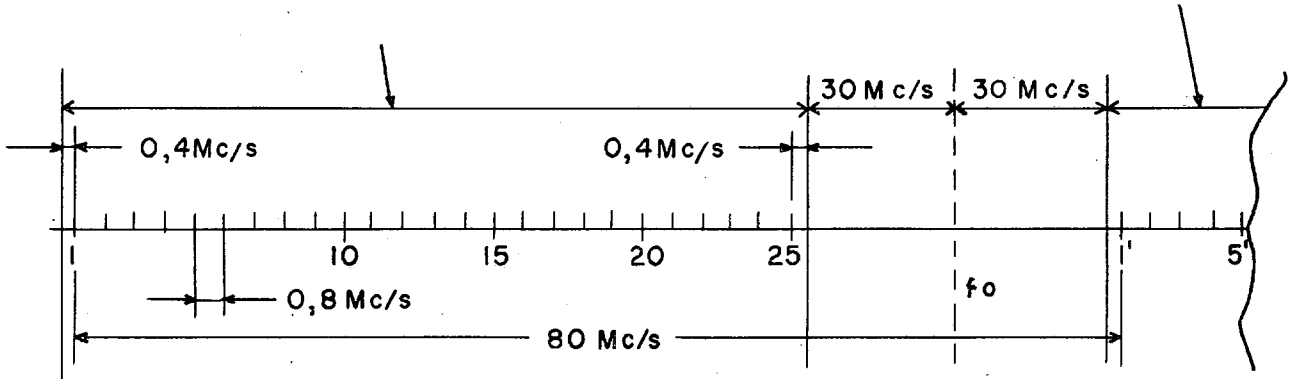
Dispositions de canaux radioélectriques pour les systèmes utilisant la propagation par diffusion troposphérique

Disposiciones de canales radioeléctricos para los sistemas que utilizan la propagación por dispersión troposférica

PLAN A

a) Basic pattern of radiofrequency channel arrangement
a) Modèle de disposition de canaux radioélectriques
a) Modelo de disposición de canales radioeléctricos

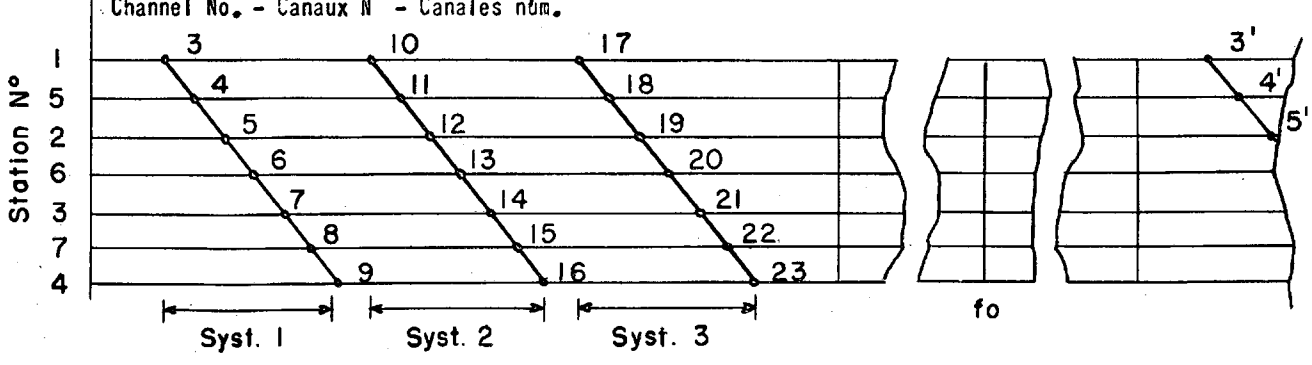
20 Mc/s band with 25 allocations for transmit/receive (receive/transmit)
Bande de 20 Mc/s avec allocations pour un sens (dito pour l'autre sens)
Banda de 20 Mc/s con 25 asignaciones para transmisión/recepción transmisión)



b) Example of application to three multihop telephony systems in the same geographical area (the frequency allocations shown along each horizontal line are used on different hops of each system, not necessarily in numerical order)

b) Exemple d'application à trois systèmes téléphoniques situés dans la même zone géographique et utilisant la propagation par plusieurs bonds (les attributions de fréquence indiquées par chaque ligne horizontale sont utilisées sur différents bonds dans chaque système mais pas nécessairement dans l'ordre indiqué)

b) Ejemplo de la aplicación a tres sistemas telefónicos situados en la misma zona geográfica que utilicen la propagación por saltos múltiples (las asignaciones de frecuencias indicadas por cada línea horizontal se utilizan con diferentes sistemas saltos en cada sistema, pero no necesariamente en el orden indicado)



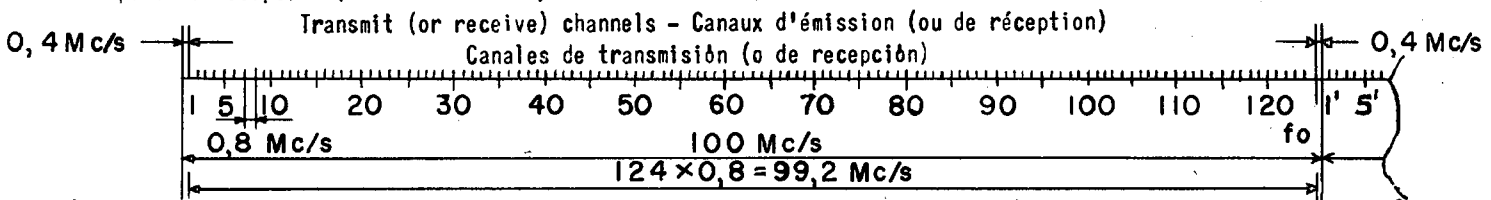
RADIO-FREQUENCY CHANNEL ARRANGEMENTS . TROPOSPHERIC-SCATTER PROPAGATION SYSTEMS - DIS. .TION DES CAMAUX RADIOELECTRIQUES POUR LES FAISCEAUX HERTZIENS UTILISANT LA PROPAGATION PAR DIFFUSION TROPOSPHERIQUE - DISPOSICIÓN DE LOS CANALES RADIOELÉCTRICOS PARA LOS SISTEMAS DE RELEVADORES RADIOELECTRICOS QUE UTILIZAN LA PROPAGACIÓN POR DISPERSION TROPOSFERICA -

PLAN B

a) Basic pattern of radio-frequency channel arrangement for transmit (or receive) in one half of band : similar arrangement for receive (or transmit) in other half.

a) Modèle de disposition des canaux radioélectriques pour l'émission (ou la réception) dans une moitié de la bande : disposition similaire pour la réception (ou l'émission) dans l'autre moitié.

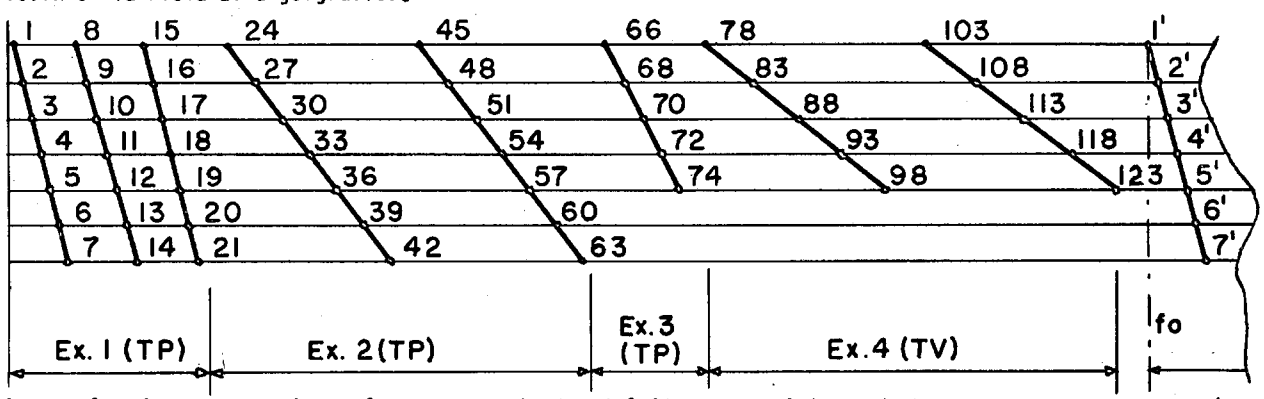
a) Modelo de disposición de los canales radioeléctricos para la emisión (o la recepción) en una mitad de la banda : disposición similar para la recepción (o la transmisión) en la otra mitad.



b) Examples of application to telephony systems of various bandwidths and to television in the same geographical area.

b) Exemples d'application aux faisceaux heriziens de téléphonie de largeurs de bande différentes et aux faisceaux hertziens de télévision dans la même zone géographique.

b) Ejemplos de aplicación a los sistemas de relevadores radioeléctricos telefónicos de anchuras de banda distintas y a sistemas de televisión en la misma zona geográfica.



Note : In each example, frequencies shown along any one horizontal line may, if desired, be used for transmitters (or receivers) at the same station, provided that bandwidths of filtering arrangements are appropriate.

Note : Dans chaque exemple, les fréquences indiquées sur une même ligne horizontale peuvent si on le désire, être utilisées par des émetteurs (ou des récepteurs) dans la même station, pourvu que les bandes des dispositifs de filtrage conviennent.

Nota : En cada ejemplo, las frecuencias indicadas en una misma línea horizontal pueden utilizarse, si así se desea, para los transmisores (o receptores) en la misma estación, a condición de que las bandas de los dispositivos de filtrado sean adecuadas.

FIG. 2

ANNEX I

Interference between adjacent radio-frequency channels of FM, F.D.M. radio-relay systems

The interference due to an unwanted modulated carrier at or near the wanted carrier frequency will depend upon the deviation which is being used. However, it will be clear that even for large deviations the interference falls as the carriers are separated by more than a few hundred kc/s.

In view of the wide area over which a tropospheric scatter signal can cause interference, and the relatively slow decay with distance of the scattered signal (say, 10 db at 60 miles), it is preferable to stagger frequencies by a small amount rather than re-use them exactly.

The attached curves (Fig. 3) show the way in which the interference changes as two carriers, each modulated with 36 channels FDM (12 - 156 kc/s), are separated. Four deviations are shown, 37*, 48**, 66* and 91** kc/s r.m.s. per channel. There is no significance in these particular deviations; the values arise from scaling from existing data on other bandwidths or deviations.

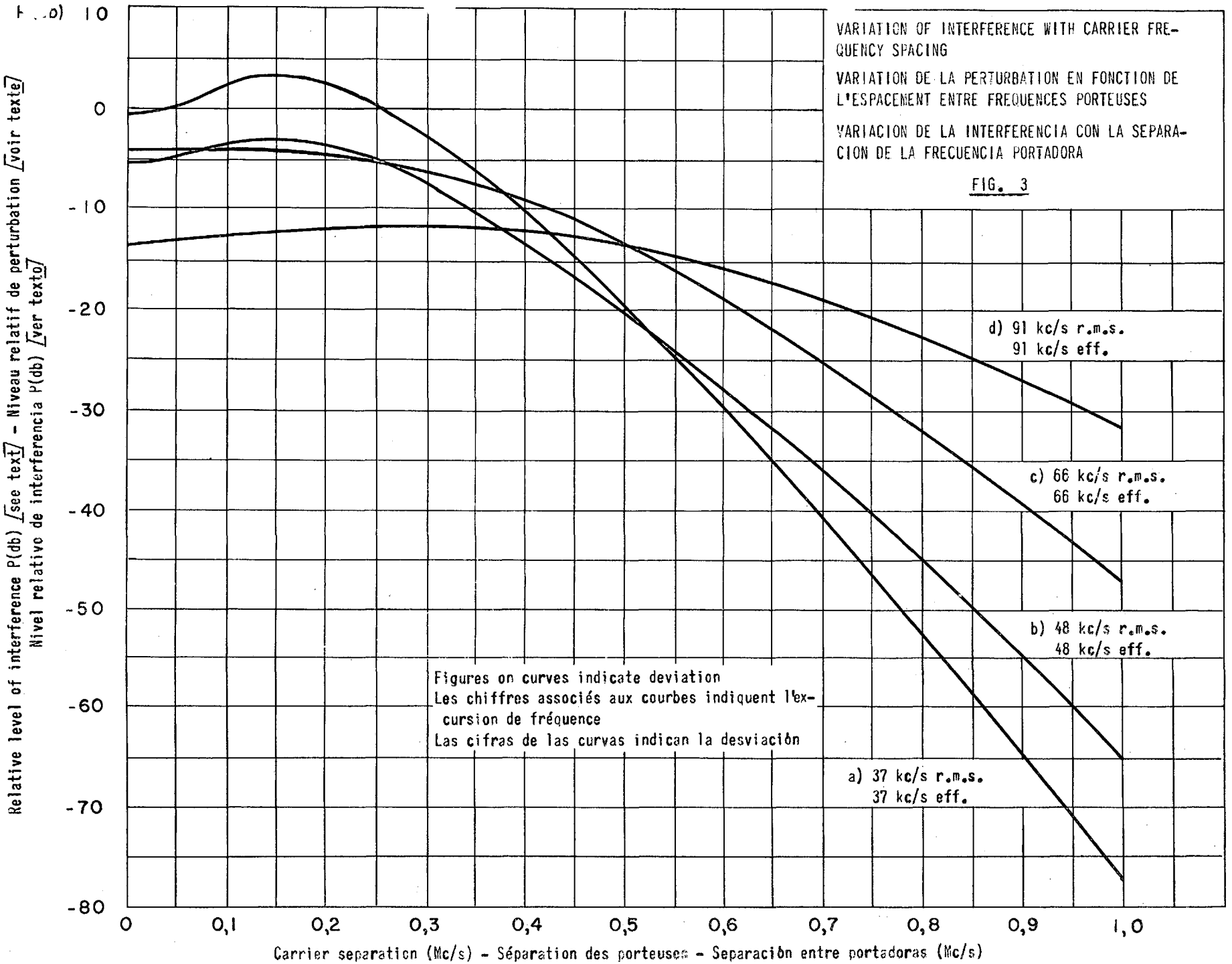
From the curves it is felt that a stagger frequency of 800 kc/s would show a worthwhile advantage for all likely deviations and this figure is therefore recommended.

The actual interference signal ratio in the top channel of the wanted transmission is given by $(P + 20 \log_{10} r)$ db where r is the relative amplitude of the unwanted carrier, expressed as the voltage ratio and P is given by the curves.

---

* Scaled from Medhurst, Hicks & Grosset, Proc. I.E.E. 105 Pt. B. p. 282, May, 1958.

** Scaled from Hamer & Acton, Electrical & Radio Engineer, 34, p. 246, July, 1957.


VARIATION OF INTERFERENCE WITH CARRIER FREQUENCY SPACING
VARIATION DE LA PERTURBATION EN FONCTION DE L'ESPACEMENT ENTRE FREQUENCES PORTEUSES
VARIACION DE LA INTERFERENCIA CON LA SEPARACION DE LA FRECUENCIA PORTADORA
FIG. 3
Relative level of interference P(db) [see text] - Niveau relatif de perturbation [voir texte]
Nivel relativo de interferencia P(db) [ver texto]
10
0
-10
-20
-30
-40
-50
-60
-70
-80
0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1,0
Carrier separation (Mc/s) - Séparation des porteuses - Separación entre portadoras (Mc/s)
d) 91 kc/s r.m.s.
91 kc/s eff.
c) 66 kc/s r.m.s.
66 kc/s eff.
b) 48 kc/s r.m.s.
48 kc/s eff.
a) 37 kc/s r.m.s.
37 kc/s eff.
Figures on curves indicate deviation
Les chiffres associés aux courbes indiquent l'excursion de fréquence
Las cifras de las curvas indican la desviación

ANNEX A 21 c

RECOMMENDATION No. 270 *)

RADIO RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

Radio-frequency interconnection of systems for 600 to 1800 telephone channels, or the equivalent, operating in the 2000 and 4000 Mc/s band

(Question No. 93 (IX))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that in certain cases it is desirable to be able to interconnect radio relay systems on international circuits at radio frequencies in the 2000 and 4000 Mc/s bands;

b) that in a frequency band 400 Mc/s wide it may be desirable to interconnect up to six go and six return radio-frequency channels;

c) that economies may be achieved if at least three go and three return channels can be interconnected between systems each of which uses common transmit-receive aerials;

d) that many interfering effects can be substantially reduced by a carefully planned arrangement of the radio frequencies in radio relay systems employing several radio-frequency channels;

e) that in certain cases it may be desirable to interleave additional radio-frequency channels between those of the main pattern;

recommends

1. that the preferred radio-frequency channel arrangement for up to six go and six return channels, each accommodating 600 to 1800 telephone channels, or the equivalent, and operating at frequencies in the 2000 and 4000 Mc/s bands, should be as shown in Fig. 2 and should be derived as follows:

Let f_o be the frequency of the centre of the band of frequencies occupied (Mc/s);

---

*) This Recommendation replaces Recommendation No. 194 ; it applies only to line-of-sight and near line-of-sight radio relay systems.

Italy reserved its opinion on this Recommendation.

f_n be the centre frequency of one radio-frequency channel in the lower half of the band (Mc/s);

f'_n be the centre frequency of one radio-frequency channel in the upper half of the band (Mc/s);

then the frequencies in Mc/s of individual channels are expressed by the following relationships :

lower half of band, $f_n = f_o - 208 + 29\ n$

upper half of band, $f'_n = f_o + 5 + 29\ n$

where n = 1, 2, 3, 4, 5 or 6;

2. that in a section over which the international interconnection is arranged all the go channels should be in one half of the band, and all the return channels should be in the other half of the band;

3. that for adjacent radio-frequency channels in the same half of the band, different polarisations should preferably be used alternatively; i.e. the odd numbered channels in both directions of transmission on a given section should use H(V) polarization, and the even numbered channels should use V(H) polarization, as shown in Fig. 1 below :

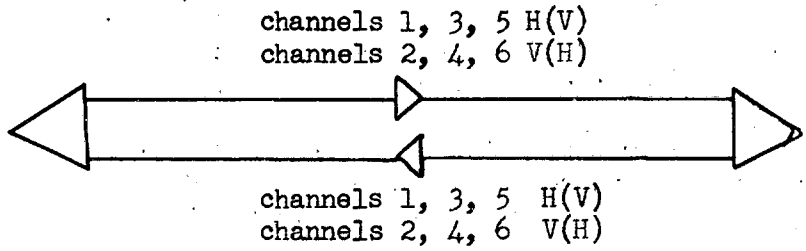


Fig. 1

4. that when common transmit-receive aerials are used and not more than three radio-frequency channels are accommodated on a single aerial it is preferred that the channel frequencies be selected by either making n = 1, 3 and 5 in both halves of the band or making n = 2, 4 and 6 in both halves of the band;

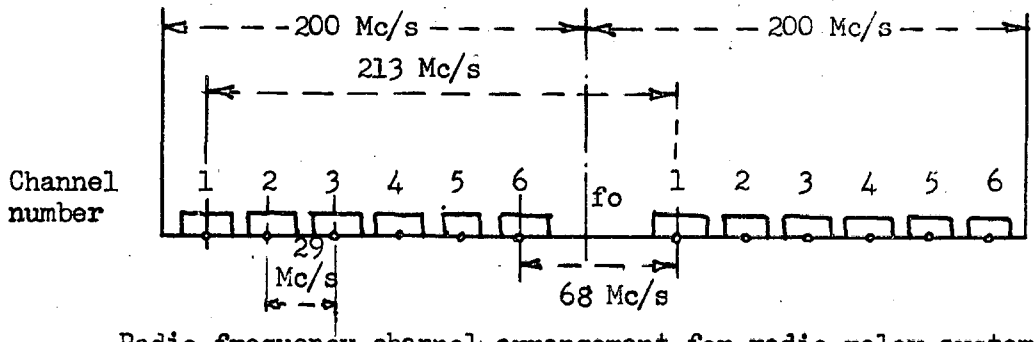


Fig. 2

Radio-frequency channel arrangement for radio-relay systems with capacities from 600 to 1800 telephone channels or equivalent operating in the 2000 and 4000 Mc/s bands, for use in international connections.

5. that when additional radio-frequency channels, interleaved between those of the main pattern, are required, the values of the centre frequencies of these radio-frequency channels should be 14.5 Mc/s below those of the corresponding main channel frequencies;*)

6. that in order to minimize interference within a system, the centre frequency f_o should preferably be as given below:

in the 2000 Mc/s band, f_o = 1903 or 2101 Mc/s

in the 4000 Mc/s band, f_o = 4003.5 Mc/s

Other centre frequencies may be used by agreement between the Administrations concerned.**)

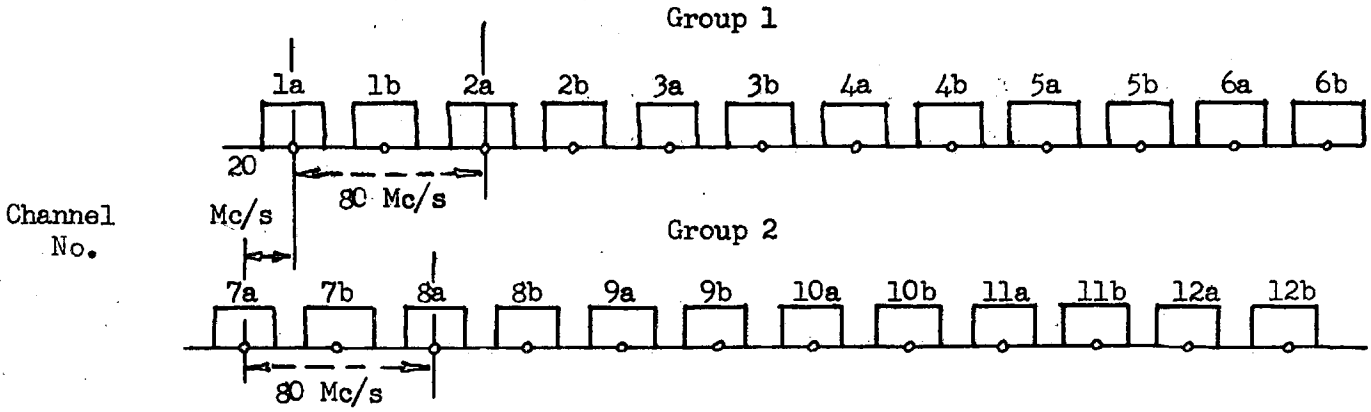
---

*) In the case of systems for 1800 telephone channels, or the equivalent, it may not be practicable, because of the wide bandwidth occupied by the modulated carrier, to use interleaved frequencies.

**) Interference due to certain harmonics of the shift frequency, which may fall near radio-frequency channel frequencies f_n in the case of radio-frequency repeaters, or may fall near $(f_n \pm 70)$ Mc/s in the case of repeaters using an intermediate frequency of 70 Mc/s, may in certain cases be serious. Such interference may be reduced by choosing a suitable value for f_o, such as those given in para. 6 above.

NOTE :

In the case of radio-relay systems of 600 telephone channels operating in the 4000 Mc/s band in Regions 2 and 3, the alternative radio frequency channel arrangement shown in Fig. 3 may be employed. The frequencies used for transmission in a given direction from a station are in either of two groups 1, 2, and are separated by 80 Mc/s centre-to-centre. The received frequencies are also separated from each other by 80 Mc/s and are located mid-way between the transmitting frequencies. Both groups 1 and 2 may be used on the same route if desired, with suitable arrangements. The radio-frequency channel arrangement shown in Fig. 3 is suitable for use with the preferred intermediate frequency of 70 Mc/s.



Alternative radio-frequency channel arrangement for 600-channel telephony system used in the 4000 Mc/s band in Regions 2 and 3

FIGURE 3

ANNEX A 21 d

STUDY PROGRAMME No. 160 (IX)

RADIO-RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

Preferred Characteristics for Auxiliary Radio-Relay Systems for the Provision of Service Channels

(Question No. 147(IX))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that an auxiliary radio-relay system for the provision of service channels for the maintenance, supervision and control of radio-relay links may be required;

b) that this auxiliary system may be arranged by combining it with the main system, as is shown in Recommendation No. 275;

c) that, on the other hand, it may be preferred to use an auxiliary radio-relay system quite independent of the main radio-relay system;

d) that the frequency band concerned and the exact frequency allocation plan must be chosen carefully in order to avoid interference with the main system;

e) that for this auxiliary radio-relay system the utmost reliability is essential because of the operational importance of the supervisory circuits;

f) that some factors affecting the bandwidth that is required for these circuits are discussed in the Annex;

g) that Recommendation No. 294 states the number and the function of the service channels that are required;

h) that economy in the use of the spectrum is important;

unanimously decides

that the following studies should be carried out:

determination of the characteristics (baseband, type of modulation and radio frequency arrangement) of a high reliability auxiliary radio-relay system.

ANNEX

In considering (e) above it is pointed out that a high degree of reliability is required for service channels; consequently it is probable a standby auxiliary radio frequency channel on each route is essential. These standby auxiliary channels could be provided on the same frequency as the main auxiliary channel or on a different frequency.

If the same frequency as the main auxiliary channel is used, the standby channel can be brought into circuit at any station by means of switches operated automatically by monitoring circuits on the equipment. The use of separate frequencies requires no monitoring circuits or switches and might therefore simplify the equipment and improve its reliability.

It sometimes occurs that a number of systems, each requiring supervisory circuits, converge at a point (including any connections with a local maintenance centre). On each route at such interconnection points, if the standby channel operates on a separate frequency, two pairs of frequencies in each direction of transmission will be required for the auxiliary relay system. The same frequency can often be used simultaneously for two transmitters or two receivers in opposite directions, but this cannot be done at frequencies below about 1000 Mc/s.

The necessary spacing between adjacent frequency allocations at any station depends on the frequency stability of the equipment as well as on the modulation characteristics used. These factors should be considered in relation to all the frequency bands which might be used for this purpose ranging from about 8500 Mc/s down to 1000 Mc/s or even lower.

A N N E X A 22

RECOMMENDATION No. 250 *

SIGNALS "MAYDAY" AND "PAN"

(Stockholm, 1948 - Los Angeles, 1959)

The C.C.I.R.,

considering

that the results of further tests carried out by administrations and the discussions thereon relating to the question of changing the radio telephone distress signal MAYDAY and the radio telephone urgency signal PAN indicate that insufficient advantage would result from the proposed use of SOS instead of MAYDAY and URGENT instead of PAN to justify making a change to the Radio Regulations;

unanimously recommends

that the present radio telephone distress signal MAYDAY and the radio telephone urgency signal PAN be retained.

---

* This Recommendation replaces Recommendation No. 23.

ANNEX A 23

RECOMMENDATION No. 252 *

USE OF 8364 KC/S FOR RADIO DIRECTION FINDING

(Geneva, 1951 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

(a) that the International Radio Conference of Atlantic City (1947) in No. 860 of the Radio Regulations states that

> "The frequency 8364 kc/s must be used by lifeboats, liferafts and other survival craft, if they are equipped to transmit on frequencies between 4000 and 23 000 kc/s, and if they desire to establish with stations of the maritime mobile service communications relating to search and rescue operations (see No. 600)" **;

(b) that land stations will, when the appropriate portions of Art. 33 of the Atlantic City Radio Regulations become effective, keep watch during their service hours on the band 8356 kc/s to 8372 kc/s; of which 8364 kc/s is the centre;

(c) that Regulations 13 and 14 of Chapter IV of the Safety of Life at Sea Convention (1948) indicate minimum specifications for automatic distress transmitters;

(d) that tests and operational experience have shown that radio direction finding on 8364 kc/s may be a valuable aid (in conjunction with direction finding on 500 kc/s), in finding the position of both aircraft and ships in distress and survival craft;

(e) that complete coverage cannot be obtained with direction finding on only one frequency in the HF (decametric) band because of the limitations caused by radio propagation conditions;

(f) that HF (decametric) radio direction finding requires apparatus as free as possible from local site error and polarisation error;

---

* This Recommendation replaces Recommendation No. 72. The P.R. of Poland reserved its opinion on this Recommendation.

** The use of 8364 kc/s for these purposes depends upon the implementation of the appropriate portion of the Atlantic City Table of Frequency Allocations.

(g) that the accuracy of the bearing will depend upon the field strength of the signal and the signal/noise ratio;

(h) that in view of the rapid variation of the apparent azimuth of the bearing which is frequently observed in HF (decametric) radio direction finding, measurements should be made over several minutes to obtain a more accurate mean bearing; and that the bearing and fix may be improved subsequently by a further series of measurements;

(i) that standardised distress transmissions are desirable;

(j) that it is essential to have a means of rapid communication between the watch-keeping station and the direction-finding stations;

recommends

1. that the site of the HF (decametric) radio direction-finding station should be, as far as possible :

1.1 flat and horizontal for a radius preferably of at least 200 metres, with the surrounding neighbourhood flat and free from obstruction;

1.2 of high and uniform ground conductivity;

1.3 free from large metallic masses and objects likely to resonate at frequencies near to 8364 kc/s;

2. that the aerial system should be as free as possible from wave polarisation error (e.g. Adcock systems and spaced-loop systems);

3. that the bandwidth of the direction-finding receiver used when bearings are taken should be as narrow as possible, compatible with the modulation and frequency stability of the signal on 8364 kc/s, and that a broader bandwidth position should also be incorporated in the receiver for watch-keeping purposes;

4. that the sensitivity of the direction-finding equipment should be such that it operates satisfactorily with a field strength as low as 5 V/m;

5. that the bearing should be determined by an aural-null method or by any other method of comparable or better accuracy;

6. that the direction-finding equipment should be adjusted, balanced and calibrated at frequent intervals on the frequency of 8364 kc/s;

7. that the signal radiated by survival craft should be as strong as possible and stable in frequency to ensure the greatest accuracy in determining the bearings;

8. that the signals transmitted by survival craft should preferably include long dashes sent over a period of not less than five minutes for direction-finding purposes. The attention of administrations should be drawn to the precise form and content of such signals proposed by France, U.S.A. and U.K., given in Documents Nos. 39 (France), 43 and 99 (U.S.A.) and 44 (U.K.) of Geneva, and to the question of whether it would be desirable to use a common form of signal for both 500 kc/s and 8364 kc/s;

9. that, in order to give as great an accuracy of fix as possible, several widely-spaced and interconnected direction-finding stations should be employed (see Annex);

10. that the attention of administrations concerned should be drawn to the advantage of their studying further;

10.1 the most suitable type of network for providing rapid communication between direction-finding stations and plotting centres;

10.2 the most suitable way in which information should be exchanged between different stations or networks (e.g. use of "Q" code);

10.3 the best way to evaluate the most probable fix (position) from bearings supplied by the direction-finding stations;

11. that the attention of administrations should also be drawn to the fact that world-wide direction-finding coverage cannot be obtained with only one frequency in the HF (decametric) band.

ANNEX

ACCURACY OF BEARINGS ON 8364 KC/S

At distances greater than about 1200 km the root-mean-square (r.m.s.) bearing error to be expected with a modern HF (decametric) direction-finding system is of the order of 3 to 5 degrees.

At distances less than 1200 km the error progressively increases with decrease of distance to values of the order of 5 to 10 degrees; at small distances, less than about 100 km, the error may be even greater than 10 degrees.

The above figures refer to the arithmetic mean of bearings spread over an interval of not more than about 10 minutes.

A N N E X A 24

RECOMMENDATION No. 251 *

ADDITION TO APPENDIX 9 OF THE RADIO REGULATIONS

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that a code should not be inserted in the Radio Regulations unless it provides a sufficiently accurate assessment of the quality of transmissions;

b) that it would be advisable for all the administrations to use the same codes, and that the number of officially recognised codes must consequently be as restricted as possible;

c) that the abbreviations in the Q code are in general inadequate for obtaining a clear idea of the quality of a transmission;

d) that the SINPO code has been used for several years by some administrations;

e) that the FRAME and RAFISBENQO codes have been used for a long time but:

- the SINPO code gives a more accurate description of the transmission quality than the FRAME code and is easier to us
- the SINPFEMO code is derived from the SINPO code by adding three letters relating to special features of telephone transmissions and is easier to use than the RAFISBENQO or RISAFMONE code;

f) that the information which is not included in the SINPO or SINPFEMO code may be transmitted satisfactorily by service message;

unanimously recommends

1. that the SINPO and SINPFEMO codes described in the Annex should be included in the Radio Regulations;

---

* This Recommendation replaces Recommendation No. 221

2. that, in the meantime, these signal codes may be placed in service by interested operating agencies or administrations at the earliest time that may be mutually arranged between them. In this respect, the Secretary General is asked to circularise all administrations to know if they are prepared to apply these codes by 1st January, 1952.

Special remarks

a) A signal report shall consist of the code word SINPO or SINPFEMO followed by a five or eight figure group respectively rating the five or eight characteristics of the signal code.

b) The letter X shall be used instead of a numeral for characteristics not rated.

c) Although the code word SINPFEMO is intended for telephony, either code word may be used for telegraphy or telephony as may be desired.

d) The overall rating for telegraphy shall be as indicated in tables I and II.

TABLE I

	Mechanised Operation
5 Excellent	4-channel time-division multiplex
4 Good	2-channel time-division multiplex
3 Fair	Marginal single start-stop printer
2 Poor	BK's, XQ's and call signs readable
1 Unusable	Unreadable

TABLE II

	Morse Operation
5 Excellent	High speed
4 Good	100 wpm
3 Fair	50 wpm
2 Poor	BK's, XQ's and call signs readable
1 Unusable	Unreadable

e) The overall rating for telephony shall be as indicated in Table III.

TABLE III

	Operating condition	Quality
5 Excellent	Signal quality unaffected	Commercial
4 Good	Signal quality slightly affected	
3 Fair	Signal quality seriously affected. Channel usable by operators or by experienced subscribers	Marginally commercial
2 Poor	Channel just usable by operators	Not commercial
1 Unusable	Channel unusable by operators	

ANNEX

SINPO SIGNAL REPORTING CODE

Rating scale	S	I	N	P	O
	Signal strength	Degrading effect of			Overall readability (QRK)
		Interference (QRM)	Noise (QRN)	Propagation disturbance	
5	Excellent	Nil	Nil	Nil	Excellent
4	Good	Slight	Slight	Slight	Good
3	Fair	Moderate	Moderate	Moderate	Fair
2	Poor	Severe	Severe	Severe	Poor
1	Barely audible	Extreme	Extreme	Extreme	Unusable

SINPFEMO SIGNAL REPORTING CODE

Rating scale	S	I	N	P	F	E	M	O
	Signal strength	Degrading effect of			Frequency of fading	Modulation		Overall rating
		Interference (QRM)	Noise (QRN)	Propagation disturbance		Quality	Depth	
5	Excellent	Nil	Nil	Nil	Nil	Excellent	Maximum	Excellent
4	Good	Slight	Slight	Slight	Slow	Good	Good	Good
3	Fair	Moderate	Moderate	Moderate	Moderate	Fair	Fair	Fair
2	Poor	Severe	Severe	Severe	Fast	Poor	Poor or nil	Poor
1	Barely audible	Extreme	Extreme	Extreme	Very fast	Very poor	Continuously overmodulated	Unusable

"Note: It is recommended that the figure P appearing in the Table in the Annex should be used only if it is quite certain that the insufficient intensity of the signal has been caused by a propagation disturbance in the circuit for which the quality report is being made. This could apply, for example, in the following cases:

1. for a circuit which is operated every day at a given time, if it is noted that the receiving and transmitting apparatus is in normal condition and that for normal ionospheric conditions, the transmission frequency does not exceed the maximum usable frequency (MUF) or is not close to the lowest usable high frequency (LUHF).

In this case, it is desirable to assess the degree of disturbance by the decrease in signal strength as compared with normal propagation conditions.

2. for a single observation of a circuit, if it is quite certain that, at a given moment in a given place, there is ionospheric propagation disturbance affecting all circuits in the frequency range which also contains the transmission frequency.

In this case, it is desirable to assess the degree of disturbance by the decrease in signal strength with respect to normal propagation on a regularly observed circuit following the same path approximately.

A report on ionospheric propagation disturbance should not be formulated simply because the disturbance information service has predicted a disturbance for the period in question, or because a disturbance has been noted on another circuit or in a different frequency range. In this case, the letter X is used."

A N N E X A 25

RECOMMENDATION No. 254 *)

TECHNICAL CHARACTERISTICS OF FREQUENCY-MODULATED VHF (METRIC) MARITIME EQUIPMENTS

(Questions No. 107, 161 and 164 XIII)

(Warsaw, 1956)

The C.C.I.R.,

considering

a) that the Radio Regulations, Atlantic City, Chapter XIII, Article 34, Nos. 830 to 834, stipulate the general procedure for the worldwide use by the maritime mobile service of the frequency 156.8 Mc/s and neighbouring frequencies;

b) that the use of VHF (metric) equipments in the maritime mobile service could reduce the use of MF (hectometric) maritime bands and thus tend to reduce congestion in these heavily loaded bands;

c) that the early introduction of the world-wide use of equipments operating on the frequency of 156.8 Mc/s and neighbouring frequencies could contribute to the safety of life at sea;

d) that it would be desirable to reach agreement upon essential technical characteristics for frequency-modulated VHF (metric) radiotelephone equipments for use in international maritime services in order to expedite the international use of such equipments;

e) that, in the informal agreement on standardisation of VHF (metric) channels for international maritime radiotelephone services that was reached among certain countries during the Baltic and North Sea Radiotelephone Conference, 1955 (see I.T.U. circular letter 1683/55/R, dated 13 December 1955), it was considered that the equipment should employ frequency modulation and be capable of operating ultimately with a frequency spacing of 50 kc/s;

f) that, without some further measure of agreement on channel allocations, it is not possible to decide all the technical characteristics needed to facilitate the design of equipment for international VHF (metric) maritime mobile services;

---

*) This Recommendation replaces Recommendation No. 223.

Belgium, France, the P.R. of Poland and the P.R. of Rumania reserved their opinion on this Recommendation.

g) that the International Maritime VHF Radiotelephone Conference (The Hague, 1957) had agreed among other matters, upon a frequency allocation table using 4.6 Mc/s separation for duplex operation in the VHF international maritime mobile radiotelephone service;

unanimously recommends

1. that the following characteristics for frequency-modulated VHF (metric) radiotelephone equipments for the international maritime mobile services operating on 156.8 Mc/s and neighbouring frequencies should be adopted by Administrations;

1.1 at present the frequency deviation should not be greater than ± 15 kc/s; and the maximum deviation should be reviewed later if it is found in practice that unacceptable adjacent channel interference occurs, particularly as the loading of the channels increases;

1.2 all receivers should be capable of receiving satisfactorily emissions having a maximum deviation of ± 15 kc/s;

2. vertical polarisation should be used;

3. in the absence of fading and local screening, the protection ratio for common-channel operation should be such that the desired signal level exceeds the interfering signal level by at least 10 db. Each Administration should provide for a further allowance, where appropriate, for fading and for fluctuations of a local nature (for instance, reflections from the terrain, sea, ships, docks, etc.);

4. the equipment should be designed for a frequency separation between adjacent channels of 50 kc/s;

5. the frequency separation between the transmitting and receiving frequencies for duplex working should be 4.6 Mc/s;

6. further study is required of means of selective calling. For this purpose reference is made to Question No. 160 (XIII);

7. other essential parameters :

7.1 frequency modulation with a pre-emphasis of 6 db/octave should be used (phase modulation) with subsequent de-emphasis in the receiver;

7.2 the output power of the ships' transmitters should generally not exceed 20 watts except in special circumstances to be determined by individual administrations;

7.3 Spurious emissions.

7.3.1. The power of spurious emissions due to harmonics of the carrier frequency shall not exceed 25μW, measured at the antenna terminals of the transmitter when loaded with a resistance equal to the nominal antenna impedance.

7.3.2. The power of spurious emissions falling in any other International VHF Maritime Mobile channel due to products of modulation should not exceed 10μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

7.3.3. The power output of any other spurious emission on any discrete frequency within the International VHF Maritime Mobile Band should not exceed 2.5μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

7.3.4. In cases where Administrations permit exceptionally the use of higher powered transmitters, proportionate increases in the level of these spurious emissions may be tolerated.

7.4 the audio-frequency bandwidth should be limited to 3000 c/s;

7.5 the frequency tolerance of the transmitter should not exceed 0.002%;

7.6 to minimise interference, special attention should be paid to the following receiver characteristics :

- stability;
- selectivity;
- receiver radiation;
- intermodulation;

8. equipments should be designed so that frequency changes between assigned channels can be carried out rapidly, e.g., within a few seconds;

ANNEX A 26.

RECOMMENDATION No. 256 *)

INTERFERENCE DUE TO INTERMODULATION PRODUCTS IN THE VHF (METRIC) MOBILE MARITIME RADIOTELEPHONE SERVICE

(Question No. 164)

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that intermodulation products may cause serious interference in the operation of the VHF mobile maritime radiotelephone service;

b) that intermodulation products may be generated and radiated at receiving stations and transmitting stations, in the radio equipment itself or at external points (such as aerial systems) where there is electrical non-linearity;

c) that practical measures can be taken to minimise the generation of such intermodulation products and to mitigate their harmful effects;

unanimously recommends

1. that Recommendation No. 218, particularly parts 3, 4 and 15, should be followed for the purpose of minimising the generation of intermodulation products at points on ships external to the receiver;

2. that aerials, rigging, stays and structures likely to cause intermodulation products should be maintained in such condition as to minimise the generation of intermodulation products;

3. that care should be taken, in the design and development of receivers, to minimise the possibility of interference due to the generation of intermodulation products in the receivers themselves;

4. that the range of interference due to radiated intermodulation products should be limited to sea areas that are not normally navigated by ships and to shore areas that are clear of coast receiving stations;

---

*) This Recommendation terminates the study of Question No. 164.

5. that the siting of coast stations should take into account the factors mentioned in para. 4 above.

6. that frequency assignments in the VHF mobile maritime radiotelephone band should, as far as possible, take into account the possibility of interference from intermodulation products;

7. that where the service area permits, coast stations should use directive aerials;

8. that care should be taken in the use of the single-frequency channels to minimise interference, due to intermodulation products, to the common calling and safety channel of 156.80 Mc/s; and to the high-priority channels of The Hague VHF maritime radiotelephone frequency plan;

9. that frequency assignments to other services should, as far as possible, take into account the possibility of interference to the VHF mobile maritime radiotelephone service due to the generation of intermodulation products; in particular, powerful emissions from stations near coastal areas and with frequencies differing by about 4.6 Mc/s from one another, should be avoided if possible.

ANNEX A 27

RECOMMENDATION No. 253 *)

BEARING AND POSITION CLASSIFICATION FOR DIRECTION-FINDING

(Question No. 159 (XIII))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the procedure specified in Appendix 15, Sections 5 and 6, of the Radio Regulations, Atlantic City, 1947, applies to direction-finding bearings and positions in the 500 kc/s frequency band;

b) that there would be advantages in adopting an internationally agreed system for classifying the accuracy of bearings and positions for all frequency bands;

c) that there would be advantages in adopting an internationally agreed type of signal for direction-finding purposes;

unanimously recommends

1. that a common system of classification of bearings and positions should be used in all frequency bands;

2. that the accuracy of bearings should be classified as follows :

"Class A" : Probability of less than 1 in 20 that the error exceeds 2 degrees;

"Class B" : Probability of less than 1 in 20 that the error exceeds 5 degrees;

"Class C" : Probability of less than 1 in 20 that the error exceeds 10 degrees;

"Class D" : Bearings whose accuracy is less than Class C;

3. that the accuracy of positions determined from direction-finding bearings should be expressed as Class "N", where "N" is the error, or amount of uncertainty, in nautical miles, such that the chance that "N" is exceeded is 1 in 20;

---

*) This Recommendation terminates the study of Question No. 159.

4. that Report No. 93, and the references below, should be used as a guide in determining the accuracy of bearings and positions by the objective (statistical) method and the subjective (observational) method, and the Annex to the Report should be used as a guide to the accuracy of bearings to be expected from HF Adcock direction-finders;

5. that signals for direction-finding purposes should include long dashes, each of at least 5 seconds duration, but, where necessary, the direction-finding station should also be permitted to specify the type and duration of the signal.

References

1. Ross, W. "The estimation of the probable accuracy of high-frequency radio direction-finding bearings", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 722

2. Stansfield, R.G. "Statistical theroy of D.F. fixing", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 762

3. Barfield, R.H. "Statistical plotting methods for radio direction-finding", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 673

4. Hopkins, H.G. "D.F. plotting aid", Wireless Engineer, July 1956, Vol. 33, No. 7, p. 173

ANNEX A 28

RECOMMENDATION No. 258 *)

SINGLE SIDEBAND AERONAUTICAL AND MARITIME MOBILE RADIOTELEPHONE EQUIPMENTS

(Question No. 162)

(Los Angeles 1959)

The C.C.I.R.,

considering

a) that the main advantages of single-sideband working (SSB, i.e. A3a) compared with double-sideband (DSB, i.e. A3) for mobile radio telephony are as follows :

aa) reduction of bandwidth required per channel

ab) increase in signal-to-noise ratio or, alternatively, reduction in transmitter power (and hence antenna voltage) for the same signal-to-noise ratio, improvements dependent upon the degree of carrier suppression

ac) reduction of the type of distortion that is due to selective fading

ad) reduction of interference, particularly that due to beat notes between carriers dependent on the degree of carrier suppression

ae) reduction of interference, due to cross-modulation between adjacent channel transmissions

b) that the disadvantages of SSB compared with DSB for mobile radio telephony are as follows :

ba) more rigorous requirements for transmitter and receiver frequency stability

bb) greater complexity of apparatus

bc) higher prices of the equipment

bd) higher maintenance costs for the equipment

---

*) The P.R. of Poland, and the U.S.S.R. reserved their opinion on this Recommendation.

be) impracticability of conversion of existing mobile DSB equipments for SSB operation

bf) Doppler effects that are significant for very high speed mobile units

c) that the MF-Radiotelephony bands used in the maritime services (i.e. world-wide 1605 to 2850 kc/s and additionally in Region 1 3155 to 3800 kc/s):

ca) include the international calling and distress frequency 2182 kc/s

cb) are shared with fixed services

cc) are used by many low tonnage ships, some compulsorily and others voluntarily fitted exclusively with DSB MF-Radiotelephone equipments

d) that the parts of the HF bands (i.e. 4000 kc/s and 23000 kc/s for mobile maritime and 2850 kc/s to 24000 kc/s for aeronautical use) allocated to the respective services;

da) do not include any international distress frequency

db) are exclusively allocated to these services

e) that in the maritime mobile services the advantages of SSB operation predominate over the disadvantages to a greater extent in the HF than in the MF band:

f) that, in the maritime mobile services, in the interests of safety of life at sea, the introduction of SSB operation should not be allowed to discourage the extension of voluntary fitting of DSB MF-Radiotelephony equipment:

<u>recommends</u>

1. for the maritime mobile services:

1.1 that SSB operation be introduced as far as operationally required in the MF and HF Radiotelephony bands;

1.2 that coast stations be prepared to communicate with DSB and SSB ship-borne equipment;

1.3 that for SSB equipment the following technical characteristics be employed:

1.3.1 for an interim period the degree of carrier reduction should be 16 - 26 db below peak envelope power and every endeavour should be made to achieve a carrier suppression of at least 40 db as soon as possible;

1.3.2 the carrier frequency of the transmitters should be maintained within the following tolerances:

1.3.2.1 for coast stations ± 20 c/s

1.3.2.2 for ship stations the short term limits (of the orde of 15 minutes) should be ± 40 c/s

1.3.2.3 for ship stations long term limits of ± 350 c/s (in the 8, 12, 16 and 22 Mc/s bands and ± 100 c/s in the 2 and 4 Mc/s bands) should be permitted for an interim period and every endeavour should be made to achieve limits of ± 100 c/s as soon as possible in all bands

1.3.3 the carrier frequency stability of SSB receivers should be maintained within the following tolerances:

1.3.3.1 for coast stations ± 20 c/s

1.3.3.2 for ship stations the short term limits should be ± 40 c/s *)

1.3.3.3 if spot frequency (i.e. fixed frequency pre-tuned) shipborne receivers are used, long term limits of ± 350 c/s should be permitted for an interim period and every endeavour should be made to achieve limits of ± 100 c/s as soon as possible

1.3.4 the upper sideband should be used;**)

1.3.5 the channel arrangements should be such that two SSB channels are accommodated within each existing DSB channel and the band-width of the SSB emissions should be kept within such limits as will permit this to be done (it is proposed that the precise arrangement of these SSB channels should be further discussed at the Administrative Radio Conference);

1.3.6 the transmitter audio frequency band should be 350 to 2700 c/s with a permitted amplitude variation of 6 db;

1.3.7 the unwanted frequency modulation of the SSB carrier should be sufficiently low to prevent harmful distortion;

---

*) This value may be maintained either manually or by other means.

**) Exceptionally, in the 4-23 Mc/s bands independent sideband (ISB) may be used by special arrangement between Administrations.

1.3.8 in the MF maritime mobile Radiotelephony bands SSB ship stations should be able to insert a carrier at a level sufficient to permit satisfactory reception by DSB receivers when communicating with DSB stations;

1.3.9 in the particular case of transmissions on the radiotelephone calling and distress frequency 2182 kc/s all transmissions should be made either by DSB, or by SSB with carrier insertion sufficient to permit satisfactory reception by DSB receivers.

1.4 that the attention of Administrations should be drawn to the fact that there would be technical and operational advantages in designating certain frequencies for international common use for ship-shore and inter-ship working;

2. that for the aeronautical mobile service, the Director of the C.C.I.R. should:

2.1 formally acquaint the I.C.A.O. of the interest of the C.C.I.R. in the study of SSB working in the aeronautical and maritime mobile services;

2.2 invite the I.C.A.O. to advise the C.C.I.R. of any technical or operational problems on which they would like the assistance of the C.C.I.R.;

2.3 offer to keep the I.C.A.O. informed of progress made by the C.C.I.R. in the study of the application of SSB working in the maritime mobile services;

2.4 request the I.C.A.O. to keep the C.C.I.R. informed of progress made by the I.C.A.O. in the study of the application of SSB working in the aeronautical mobile services.

NOTE : This Recommendation concludes the study of Question No. 162

ANNEX A 29.

RECOMMENDATION No. 255 *)

SPURIOUS EMISSIONS FROM FREQUENCY-MODULATED V.H.F.

(METRIC) MARITIME MOBILE EQUIPMENT

(Question No. 161)

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that spurious emissions originating from frequency-modulated VHF Maritime Mobile equipment are likely to cause interference in the VHF International Maritime Mobile Radio-telephone bands if they are not adequately suppressed;

b) that Report No. 113 (Doc. 401) gives a statement about the study of the nature of such spurious emissions;

c) that it would be advisable to limit the spurious emissions generated in frequency-modulated VHF mobile maritime transmitting and receiving equipment as far as practicable;

recommends

1. that the study of the nature of such spurious emissions, falling within the band of frequencies used by the VHF Maritime Mobile Services, be continued. Attention is drawn to Report No. 113 (Doc. 401);

2. that for transmitters of the order of 20 watts :

2.1 any spurious emission due to products of modulation and falling in any International VHF Maritime Mobile channel other than the channel of the fundamental emission, should not exceed 10 μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

2.2 the output of any other spurious emission on any discrete frequency within the International VHF Maritime Mobile Bands should not exceed 2.5 μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

3. that in those cases where Administrations permit exceptionally the use of higher powered transmitters, proportionate increases in the level of these spurious emissions may be permitted.

---

*) The P.R. of Poland reserved its opinion on this Recommendation.

ANNEX A 29 a.

REPORT No. 113 *)

SPURIOUS EMISSIONS FROM FREQUENCY-MODULATED

VHF (METRIC) MARITIME MOBILE EQUIPMENT

(Question No. 161)

(Los Angeles, 1959)

Operation of VHF maritime mobile communications might be hampered by interference caused by spurious emissions falling within the band of frequencies used by this service.

Examples of such spurious emissions are mentioned in Docs. XIII/1, XIII/8, XIII/9 and XIII/13 of Los Angeles, 1959.

These spurious emissions may be caused by :

- Harmonics of oscillators of transmitters and receivers.
- Modulation products falling in adjacent channels.
- Intermodulation products produced at receiving stations or generated at transmitting stations and falling in adjacent channels.
- Intermodulation products caused by non-linear elements near the transmitting or receiving stations especially near to two transmitters operating simultaneously and having a frequency spacing of 4.6 Mc/s.
- Parasitic oscillations.
- Transmitter noise.

There are little data available yet about the extent of harmful interference caused by the above-mentioned phenomena and therefore Administrations are requested to continue the study of Question 161.

NOTE : "Spurious emissions" as used in this report do not include harmonic radiations.

---

*) This Report was adopted unanimously.

ANNEX A 30

RECOMMENDATION No. 324 *)

NOMENCLATURE OF THE FREQUENCY AND WAVELENGTH BANDS USED IN RADIOCOMMUNICATIONS

(Question No. 73)

(London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that it is appropriate to retain the subdivision of frequencies and of wavelengths adopted by the Administrative Radio Conference of Atlantic City (Radio Regulations, Article 2, para. 10) which has been shown to be of considerable practical value, since it is in fair agreement with the criterion of grouping together frequencies with common physical and propagation properties as well as a uniform equipment constructional technique;

b) that the merits of Heinrich Hertz (1857-1897) as a research worker on the basic phenonema of radio waves are universally recognized, as was confirmed at the centenary of his birth, and that as early as 1937 the I.E.C. adopted the Hertz (symbol : Hz) as a name for the unit of frequency (See, inter alia, the International Electrotechnical Vocabulary, publication 50/05, 1954 edition : 05-35-055, page 44, and 05-35-110, page 47);

c) that the C.C.I.T.T. also uses the Hertz (cf. Red Book, French version);

d) that in this Recommendation the table should be as synoptic as possible and that the expression of frequencies should be as concise as possible;

unanimously recommends

1. that the Hertz (Hz) be accepted for use alternatively with cycles per second (c/s) in C.C.I.R. documents as the name for the unit of frequency;

2. that it is proper to characterize bands by means of progressive whole numbers in accordance with the following table, intended to be substituted, at a later conference of the I.T.U., Article 2, paragraph 10 of the Radio Regulations of Atlantic City.

---

*) This Recommendation replaces Recommendation No. 225.

Band number	Frequency range (lower limit exclusive, upper limit inclusive)	Metric subdivision of waves
4	3 to 30 kc/s or kHz	Myriametric
5	30 to 300 kc/s or kHz	Kilometric
6	300 to 3000 kc/s or kHz	Hectometric
7	3 to 30 Mc/s or MHz	Decametric
8	30 to 300 Mc/s or MHz	Metric
9	300 to 3000 Mc/s or MHz	Decimetric
10	3 to 30 Gc/s or GHz	Centimetric
11	30 to 300 Gc/s or GHz	Millimetric
12	300 to 3000 Gc/s or GHz (or 3 Tc/s or THz)	Decimillimetric

Note 1 : "Band N" extends from 0.3×10^N to 3×10^N c/s (Hz)

Note 2 : When a service adopts a reference number or letter to designate a specific frequency band allocated to it and situated, wholly or for the most part, in "Band N" of the above nomenclature, the prefix N should normally precede the reference in question. For example, for the 41 to 68 Mc/s band, to which broadcast users give the reference "I", the appropriate designation is "broadcast band 8-I", since it refers to a part of "Band 8". This practice, applicable in the drafting of C.C.I.R. documents, is generally recommended for all cases where such a definition would obviate the risk of confusion in designating the numerous frequency bands and sub-bands.

Note 3 : Abbreviations; k = kilo (10^3), M = Mega (10^6), G = Giga (10^9), T = Tera (10^{12})

Note 4 : Abbreviations for adjectival band designators :
Band 4 = V.L.F., band 5 = L.F., band 6 = M.F.
band 7 = H.F., band 8 = V.H.F., band 9 = U.H.F.
band 10 = S.H.F., band 11 = E.H.F.

ANNEX A 31

RAPPORT N° 173 - REPORT No. 173 - INFORME N.° 173
(R. G. chap. 18)
MODIFICATIONS EVENTUELLES DE DEFINITIONS DU REGLEMENT DES RADIOCOMMUNICATIONS, ARTICLE I

POSSIBLE AMENDMENTS TO THE DEFINITIONS IN THE RADIO REGULATIONS, ARTICLE I

MODIFICACIONES QUE PODRIÁN EFECTUARSE EN LAS DEFINICIONES DEL ARTÍCULO I DEL REGLAMENTO DE RADIOCOMUNICACIONES

Parmi les termes et définitions que contiennent divers Avis du C.C.I.R., ceux dont l'importance semble justifier la modification de la liste de définitions donnée par l'Article I du Règlement des Radiocommunications sont donnés ci-après, dans les deux langues auxquelles se limitent pour le moment les travaux de la Commission d'études N° XIV : le français (colonne de gauche) et l'anglais (colonne de droite).

Dans la marge, à gauche, sont indiqués : d'abord, souligné, le numéro attribué par le Règlement des Radiocommunications à la définition correspondante, s'il s'agit d'une proposition de modification (par exemple: 58), ou un numéro suivi d'une lettre suffixe (par exemple 58 a) s'il s'agit d'une addition à intercaler à l'endroit approprié; puis, au-dessous, entre parenthèses, l'indication du Document C.C.I.R. de LOS ANGELES qui motive la proposition (par exemple : Doc. 253), suivi de la référence de l'Avis du C.C.I.R. jusqu'alors en vigueur (par exemple : "réf. 145" donne référence à l'Avis N° 145, que le texte du Doc. 253 est appelé à remplacer). Des parenthèses doubles sont utilisées pour indiquer que l'Avis en cause ne fournit pas textuellement la définition proposée, mais contient seulement les éléments qui ont servi de base à ladite définition.

Among the terms and definitions contained in C.C.I.R. recommendations, the ones which would appear to be sufficiently important to warrant modification of the list of definitions in Article I of the Radio Regulations are given below in the two languages at present used for its work by Study Group No. XIV, i.e. French (left column) and English (right column).

In the margin on the left are shown first, underlined, the number allotted by the Radio Regulations to the corresponding definitions in the case of a proposed modification (e.g. 58), or in cases where an additional insertion is to be made in the appropriate place a number followed by a letter (e.g. 58 a); then, below in brackets the indication of the C.C.I.R. Document of Los Angeles giving rise to the proposal (e.g. Doc. 253), followed by the reference to the C.C.I.R. Recommendation hitherto in force (e.g. "ref. 145" refers to Recommendation No. 145 which is to be replaced by the text in Doc. 253). Double brackets are used to indicate that the Recommendation in question merely provided the basis, and not the actual text, for the purposed definition.

Entre los términos y definiciones que figuran en distintas Recomendaciones del C.C.I.R., a continuación se indican, en los dos idiomas utilizados por el momento en los trabajos de la Comisión de estudios XIV, o sea, el francés (columna de la izquierda) y el inglés (columna de la derecha), aquellos cuya importancia parece justificar la modificación de la lista de definiciones del artículo I del Reglamento de Radiocomunicaciones.

En el margen izquierdo se indican: primeramente, subrayado, el número que lleve en el R.R. la definición correspondiente, si se trata de una proposición de modificación (por ejemplo, 58) o un número seguido de una letra como sufijo (por ejemplo, 58 a), si se trata de una adición que se ha de intercalar en el lugar apropiado; después, más abajo, y entre paréntesis, la indicación del documento C.C.I.R. de LOS ANGELES que motiva la proposición (por ejemplo, Doc. 253) seguida de la referencia a la Recomendación del C.C.I.R. hasta ahora en vigor (por ejemplo, "ref. 145", se refiere a la Recomendación núm. 145 que ha de ser sustituida por el texto del Doc. 253). Se utilizan paréntesis dobles para indicar que la Recomendación de que se trata no contiene textualmente la definición propuesta, sino solamente los elementos que han servido de base para la definición que se propone.

57	Fréquence assignée à une station : (transf. en 58 d, après 58 c)	Frequency assigned to a station : (transf. to 58 d, after 58 c)
57 a (Doc. 487 ref. 145)	Temps d'établissement d'un signal télégraphique: Temps pendant lequel le courant télégraphique passe du dixième aux neuf dixièmes (ou vice-versa) de la valeur qu'il atteint en régime établi.	Build-up time of a telegraph signal : The time during which the telegraphic current passes from one-tenth to nine-tenths (or vice versa) of the value reached at the steady state.
58 (Doc. 487 ref. 145) (Doc. 486 ref. 146)	Largeur de bande occupée par une émission : Largeur de la bande de fréquences telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance moyenne totale rayonnée par l'émission considérée.	Bandwidth occupied by an emission : The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to one half per cent of the total mean power radiated by the emission.
58 a (Doc. 487 ref. 145)	Largeur de bande nécessaire : Pour une classe d'émission donnée, valeur minimale de la largeur de la bande de fréquence telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance totale rayonnée, cette valeur minimale suffisant à assurer la transmission de l'information à la vitesse voulue et avec la qualité requise, dans des conditions techniques données.	Necessary bandwidth : For a given class of emission, the minimum value of the frequency bandwidth such that, below its lower and above its upper frequency limits the mean powers radiated, are each equal to one half per cent of the total mean radiated power, this minimum value being sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions.
58 b (Doc. 487 ref. 146)	Bande de fréquences occupée par une émission : Bande de fréquences du spectre hertzien telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite	Frequency band occupied by an emission : The frequency band in the radio frequency spectrum such that, below its lower and above its upper frequency limits, the mean power

supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance moyenne totale rayonnée par l'émission considérée.

radiated are each equal to one half percent of the total mean power radiated by the emission.

58 c (Doc. 584 ref. 148) Bande de fréquences assignée à une station : Bande de fréquences dont le centre coïncide avec la fréquence assignée à la station et dont la largeur est égale à la largeur de bande nécessaire augmentée du double de la valeur absolue de la tolérance de fréquences.

Frequency band assigned to a station : The frequency band, the centre of which coincides with the frequency assigned to the station, and the width of which equals the necessary bandwidth, plus twice the absolute value of the frequency tolerance.

58 d (Doc. 584 ref. 148) Fréquence assignée : Centre de la bande de fréquence assignée à une station.

Assigned frequency : The centre of the frequency band assigned to a station.

58 e (Doc. 584 ref. 148) Fréquence caractéristique d'une émission : Fréquence aisément identifiable et mesurable dans une émission donnée.

Characteristic frequency of an emission : A frequency which can be easily identified and measured in a given emission.

58 f(=59.1) (Doc. 584 ref. 148) Fréquence de référence : Fréquence ayant une position fixe et bien déterminée par rapport à la fréquence assignée. Le décalage de cette fréquence par rapport à la fréquence assignée est, en grandeur et en signe, le même que celui de la fréquence caractéristique par rapport au centre de la bande de fréquence occupée par l'émission.

Reference frequency : A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the centre of the frequency band occupied by the emission.

Note 1 - La notion de fréquence de référence est rendue nécessaire du fait que la fréquence centrale de certaines classes d'émissions n'est pas facile à identifier et à mesurer.

Note 1 - The idea of a reference frequency is made necessary by the fact that the centre frequency of certain classes of emission is not easily identified and measured.

Note 2 - Pour certaines classes d'émissions, il est nécessaire de spécifier la valeur d'une ou plusieurs fréquences de référence, en même temps que la fréquence assignée. Par exemple, dans le cas des stations de télévision les fréquences caractéristiques sont celles des porteuses d'image et de son, et les valeurs des fréquences de référence correspondantes doivent être spécifiées.

59 (Doc. 584 ref. 148) Tolérance de fréquence : Ecart maximum admissible entre la fréquence assignée à une station et la fréquence située au centre de la bande de fréquences occupée par l'émission correspondante ou entre la fréquence de référence et la fréquence caractéristique. La tolérance de fréquence est exprimée en c/s, ou en valeur relative par rapport à la fréquence assignée.

59.1 (Note sur "la notion de fréquence de référence"; à supprimer : cf. 58 f)

64 a' (Doc. 487 ref. 145) Rayonnement hors bande : Puissance rayonnée par l'émission en dehors de la bande nécessaire. Le rayonnement hors bande ne comprend pas les rayonnements sur des fréquences éloignées, tels que les rayonnements non essentiels.

64 a (Doc. 657 ref. 147) Rayonnement non essentiel : Rayonnement sur une (ou des) fréquence(s) située(s) hors de la bande nécessaire et dont le niveau peut être réduit sans affecter la transmission de l'information correspondante. Les rayonnements harmoniques, les rayonnements parasites et les produits d'intermodulation sont compris dans les rayonnements

Note 2 - For certain classes of emissions it is necessary to specify the value of one or more reference frequencies as well as the assigned frequency. For example, in the case of television broadcast stations, the characteristic frequencies are those of the vision and sound carriers, and the figures for the corresponding reference frequencies should be specified.

Frequency tolerance : The maximum permissible deviation, with respect to the frequency assigned to a station, of the centre frequency of the frequency band occupied by the corresponding emission, or, with respect to the reference frequency, of the characteristic frequency of the emission. The frequency tolerance is expressed in c/s or as a fractional value of the assigned frequency.

(Note on "the concept of a reference frequency"; to be deleted : cf. 58 f)

Out-of-band radiation of an emission : The power radiated by an emission outside the necessary bandwidth. The out-of-band radiation does not include radiations on remote frequencies such as spurious emissions.

Spurious emission : Emission on a frequency or frequencies which are outside the necessary band, and the level of which may be reduced without affecting the corresponding transmission or information. Spurious emissions include harmonic emissions, parasitic emissions and intermodulation products, but exclude emissions

non essentiels, mais les rayonnements au voisinage immédiat des limites de la bande nécessaire et qui sont le résultat du processus de modulation utile pour la transmission de l'information en sont exclus.

in the immediate vicinity of the necessary band, which are a result of the modulation process for the transmission of information.

64 b (Doc. 657 ref. 147) Rayonnement harmonique
Rayonnement non essentiel sur des fréquences qui sont des multiples entiers de celles comprises dans la bande occupée.

Harmonic emission :
Spurious emission on frequencies which are whole multiples of those comprised in the band occupied.

65 (ref. 168) Gain relatif d'une antenne, dans une direction donnée (1) :
Rapport, exprimé en décibels, des champs produits dans la direction considérée (1), en un point suffisamment éloigné pour que le champ y soit inversement proportionnel à la distance, par les rayonnements respectifs, pour une même puissance d'alimentation (2), de l'antenne qu'il s'agit de caractériser et d'un doublet en demi-onde, considéré dans son plan médian, isolé dans l'espace et sans pertes.

Relative gain of an antenna in a given direction (1)
The ratio, expressed in decibels, of the field strengths produced in the direction under consideration (1), at a point sufficiently distant for the field strength to be inversely proportional to the distance, by the respective radiations for the same input power (2) from the antenna under consideration and from a half-wave doublet, loss free, isolated in space and considered in its median plane.

MOTIFS : Ce rapport étant exprimé en décibels, c'était inutilement compliquer la définition que d'y introduire les champs par leurs carrés. La nouvelle définition proposée, vise en outre à plus de clarté et peut se simplifier beaucoup (cf. texte 65.2 et motifs correspondants).

REASONS FOR THE CHANGE : This ratio being expressed in decibels, it would complicate the definition needlessly if the squares of the field strengths were to be used. The new definition proposed tends to a greater clarity and may be considerably simplified (cf. text 65.2 and the corresponding reasons).

65.1 (ref. 168) /Note (1) au point 65/: En l'absence de la mention d'une direction spécifiée, il s'agit alors implicitement de la direction pour laquelle la grandeur prend sa valeur maximale.

/Note (1) to point 65/: In the absence of a specified direction being mentioned, it implies that the direction in which the field strength has its greatest value is taken.

MOTIFS : Unification de rédaction pour 65.1 et 66.1.

65.2 (ref. 168) /Note (2) du point 65/: Cette définition peut être notablement allégée. Tout le début, jusqu'aux mots "... même puissance d'alimentation (2), ...", peut être remplacé par "Rapport, exprimé en décibels, pour la direction considérée (1), des forces cymomotrices spécifiques nettes ...", la notion ainsi introduite étant elle-même définie de la manière suivante :

Force cymomotrice d'une antenne, dans une direction donnée (cf. note 65.1) : Produit exprimé en volts, du champ électrique de l'antenne en un point donné dans la direction considérée (cf.note 65.1), par la distance de l'antenne à ce point, celui-ci devant être assez éloigné pour que ce produit reste constant dans cette direction. La force cymomotrice est dite spécifique nette lorsque la puissance fournie à l'antenne a une valeur (de crête, ou moyenne,selon précisions à donner conformément aux définitions 61 à 64) de un kilowatt; elle est dite spécifique brute lorsque c'est la puissance rayonnée par l'antenne qui a cette valeur.

MOTIFS : L'Avis N° 168 du C.C.I.R., comme l'Avis N° 108 qu'il remplace, introduit cette notion de force cymomotrice spécifique (avec d'assez longs développements et d'une façon quelque peu différente) précisément comme base d'étude des diagrammes d'antennes, ce qui implique d'en tenir compte dans la définition des gains d'antennes, les diagrammes étant des représentations des gains.

REASONS : Unification of textes 65.1 and 66.1.

/Note (2) to point 65/: This definition may be shortened considerably. All the beginning, up to the words "... same input power (2) ..." may be replaced by "Ratio in decibels for the direction under consideration (1), of the specific nett cymomotive forces...", the idea introduced here is itself defined in the following manner :

Cymomotive force of an antenna in a given direction (see note to 65.1) : The product expressed in volts of the electric field of the antenna at a given point in the direction under consideration (see note to 65.1), and the distance of the antenna from this point, the antenna being sufficiently distant for the above product to remain constant in the direction given. This is defined as the specific nett cymomotive force if the power fed to the antenna has a value (peak, or mean according to the values to be specified in accordance with definitions 61 to 64) of one kilowatt; it is called specific gross if the power radiated from the antenna has this value.

REASONS : Recommendation No. 168 of the C.C.I.R. as well as Recommendation No. 108 which it replaces, introduces the conception of specific cymomotive force (with a fairly long development and in a slightly different manner) exactly as a basis for study of antenna radiation diagrams, which implies that if count is taken of this in the definitions of antenna gain, the diagrams will represent antenna gains.

Cette définition n'est toutefois proposée que sous forme de note pour tenir compte, conformément au procès-verbal de la dernière séance de la Commission d'études XIV du C.C.I.R. lors de la dernière Assemblée plénière, de ce qu'il n'y a pas unanimité au sujet de l'intérêt de cette notion.

This definition is however proposed only in form of a note in order to take into account, in accordance with the minutes of the final session of Study Group XIV of the C.C.I.R. during the last Plenary Assembly, that there was a lack of unanimity on the subject of the importance of this conception.

66 (ref. 168) Gain isotrope (ou gain absolu, ou coefficient de directivité) d'une antenne, dans une direction donnée (1) :
Même définition que ci-dessus en 65, en y remplaçant la fin, à partir des mots "... d'un doublet ..." par "d'une antenne isotrope, isolée dans l'espace et sans pertes".

MOTIFS : Les mêmes que pour le point 65.

Isotropic gain (absolute gain, or coefficient of directivity) of an antenna in a given direction (1):
The same definition as that of 65 above with the replacement of the phrase beginning with the words "... from a half-wave doublet..." by "from an isotropic antenna, loss free and isolated in space".

REASONS : The same as for point 65.

66.1 (ref. 168) /Note identique à la note 65.1 ci-dessus/
MOTIFS : Les mêmes que pour le point 65.1.

/Note identical with that of 65.1 above/
REASONS : The same as for point 65.1.

66.2 (ref. 168) /Note identique à la note 65.2 ci-dessus/
MOTIFS : Les mêmes que pour le point 65.2.

/Note identical with that of 65.2 above/
REASONS : The same as for point 65.2.

67 & 68 (ref. 168) /Texte commun/ Diagramme de directivité d'une antenne :
Représentation graphique, en coordonnées polaires ou cartésiennes du champ, de la force cymomotrice ou - sous forme logarithmique - du gain d'une antenne dans les différentes directions d'un plan ou d'un cone spécifiés, ou d'une famille de telles surfaces. Cette représentation est en général simplement relative, l'unité graphique correspondant à la valeur maximale (représentée avec la cote 1) de la quantité à représenter.

MOTIFS : Ils découlent de ceux qui sont donnés pour 65.2 ou 66.2.

/Common text/ Directivity diagram of an antenna :
A graphical representation, in polar or cartesian coordinates, of the field, of the cymomotive force, or - in logarithmic from - of the gain of an antenna in different directions in a given plane or a given cone, or of a family of such surfaces. This representation is generally purely relative, the unit of scale being taken as the maximum value (represented by the value 1) of the quantity represented.

REASONS : They derive from those which were given for 65.2 or 66.2.

73 a (*)	Système de relais radioélectriques : Système de radiocommunication travaillant généralement sur des fréquences très élevées, constitué par plusieurs sections reliées par des relais.	Radio relay system : Radiocommunication system usually operating at very high frequencies and consisting of a number of sections linked by relays.
73 b (*)	Faisceau hertzien : Système de radiocommunication travaillant sur des fréquences très élevées, en général des relais reliés par des faisceaux électromagnétiques de faible ouverture.	(No corresponding term in English)
73 a.1 (*)	(Note) : En fait, il est si général que les caractéristiques définies en 73 a et 73 b soient réunies qu'on se dispense, en pratique, de la préciser et que l'usage d'un seul terme est suffisant : faisceaux hertziens.	(Note) : In fact, the characteristics defined in 73 a and 73 b are so often found together that there is no distinction in practice and that the use of one term is enough.

(*) Pour l'ensemble de ces trois points, la proposition présentée ne s'appuie pas particulièrement sur l'un des Avis du C.C.I.R. : elle découle de l'ensemble de ceux des Avis du C.C.I.R. qui émanent de la Commission d'études IX (Ils utilisent tous, maintenant, la terminologie ici définie).

(*) For these three points, the proposition presented here does not particularly rely on a Recommendation of the C.C.I.R. it is derived from the majority of those Recommendations of the C.C.I.R. issued from Study Group IX (now they all use the terminology defined here above).

(*) En lo que se refiere a estos tres puntos, l proposición presentada aquí no se basa principalmente en la Recomendación del C.C.I.R., pero se deriva de la mayoría de ellas, las cuales provienen a su vez de la Comisión de Estudios IX (hoy en día, se usa generalmente la terminología empleada anteriormente).

(F) Une proposition a été omise dans la liste de "modifications éventuelles de définitions du Règlement des radiocommunications, Art. 1" qui fait l'objet du Rapport N° 173 (Doc. 774-E/F/S) établi par la commission d'études N° XIV (dernière séance : cf. Doc. 770, point 3, dernier alinéa). Il y a donc lieu d'insérer dans cette liste bilingue le texte complémentaire ci-après.

(E) A proposition has been omitted in the list of "possible modifications to the definitions in the Radio Regulations, Art. 1" which was the subject of Report No. 173 (Doc. 774-E/F/S) established by Study Group XIV (last meeting : see Doc. 770, point 3, last paragraph). The following additional matter should, therefore, be inserted in this bilingual list.

(S) Una proposición ha sido omitida en la lista de "modificaciones eventuales de definiciones del Reglamento de radiocomunicaciones, Art. 1" que hace el objeto del Informe N.° 173 (Doc. 774-E/F/S) establecido por la Comisión de estudios num. XIV (última sesión : cf. Doc. 770, punto 3, última linea). Ha lugar pues a insertar en esta lista bilingüe el texto complementario adjunto.

Def. 4. Radiocommunication : Télécommunication réalisée à l'aide d'ondes hertziennes librement propagées.	Def. 4. Radiocommunication : Telecommunication carried out by means of freely-propagated Hertzian waves.
Motifs : Cette proposition de modification ne se trouve pas dans tel ou tel signification ainsi précisée que doivent être compris tous les travaux du C.C.I.R.	Reasons : This proposition for a modification is not to be found in any particular Recommendation of the C.C.I.R., but all the work of the C.C.I.R. should be considered as having the signification given above.

ANNEX 5

RECOMMENDATIONS 1 TO 8 TO THE C.C.I.R. ISSUED BY THE ADMINISTRATIVE RADIO CONFERENCE (ATLANTIC CITY, 1947)

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1	International co-ordination of studies of propagation	A	This work is covered by C.C.I.R. Study Groups Nos. IV, V and VI, and it continues to increase; at present the three groups have respectively 11, 17 and 26 different items on their programmes. A number of recommendations has been issued by these groups, some containing ground wave propagation curves (10 kc/s —10 Mc/s), and some tropospheric propagation curves for metric waves. Two atlases have been edited, containing theoretical reference propagation curves for frequencies between 30 and 300 Mc/s and between 30 and 30,000 Mc/s. More specific results are the following:
	Standardization of symbols Ionospheric soundings	B 1 B 2	The symbols, presentation of results and methods of measurement of ionospheric soundings, have been well defined by the C.C.I.R. During the recent International Geophysical Year a great many stations have been operating. The C.C.I.R. has, in Resolution No. 26: " Ionospheric Sounding Stations after the International Geophysical Year ", expressed the desirability that a number of these stations be continued after the I.G.Y. This work is now in the hands of the U.R.S.I., with which organisation the C.C.I.R. maintains a close and fruitful cooperation. As far as the C.C.I.R. itself is concerned, these tasks can be considered as finished.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1 *(cont.)*	Coordination of investigations on absorption	B 3	This work is continuing in collaboration with the U.R.S.I. (see C.C.I.R. Study Programmes No. 97 (VI): " Pulse-Transmission Tests at Oblique Incidence ", No. 98 (VI): " Backscattering " and No. 99 (VI): " Estimation of Sky-Wave Field Strengths on Frequencies Above 1500 kc/s ".)
	Coordination of investigations of natural radio noise	B 4	Noise studies form part of the work of C.C.I.R. Study Group No. VI. Important results are given in C.C.I.R. Report No. 65: " Revision of Atmospheric Radio Noise Data ", which gives, amongst other things, in a number of charts, a review of the world noise distribution as a function of the hour and of the season. The W.M.O. has, at the request of the C.C.I.R., edited, in the form of tables and maps, statistical data on thunderstorms, the source of atmospheric noise. The C.C.I.R. has developed an apparatus for counting lightning flashes occurring at small distances, and is in contact with the W.M.O. in order to have these counters put into use over a world-wide network. The object is to have in the future more reliable data on the distribution of lightning all over the world. A close collaboration with the U.R.S.I. exists on the more theoretical aspects of noise problems. In general, work on noise is continually increasing.
	Determination of best practical means for rapid exchange, on international basis, of information of all kinds relating to propagation	B 5	The practical means for a rapid exchange of information on propagation has been developed (C.C.I.R. Recommendation No. 59: " Exchange of Information for the Preparation of Short-Term Forecasts and the Transmission of Ionospheric Disturbance Warnings "). Warnings for special ionospheric phenomena and regular information on solar and ionospheric phenomena are transmitted by radio and/or wire using special codes (e.g. Ursigrammes). This work is mainly in the hands of the U.R.S.I. now; the system was greatly extended during the I.G.Y. (for special alerts, etc.) and there is no need for great activity by the C.C.I.R. any longer.
	Publication of scientific and technical investigations; periodic publication of propagation forecasts, etc.	B 6	In response to this question, there exists at present C.C.I.R. Recommendation No. 116: " Presentation of Basic Propagation Prediction Charts ", standardising the scales to be used for basic propagation prediction charts. The work can be considered as finished, but the recommendation remains valid.
	Review of value of various phases of propagation work and of publications relating thereto	B 7	As a result of this recommendation there are two C.C.I.R. Reports, No. 43: " Review of Publications on Propagation " and No. 55: " Practical Uses and Reliability of Ionospheric Propagation Data ". Both reports are of interest, but the second is of greater importance and ensures that this work will be continued.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1 *(cont.)*	Any other new matter of general interest	B 8	The C.C.I.R. has taken a number of new subjects for study in the field of propagation. Sometimes these subjects have been introduced between plenary assemblies, using the procedure mentioned in Article 7, para. 2 of the Convention. We give as examples: Study Programme No. 79 (V) and Report No. 52: "Propagation Across Mountain Ridges"; Study Programme No. 95 (VI) and Report No. 64: "Ionospheric Scatter Propagation"; Study Programme No. 91 (V): "Tropospheric Scattering"; Questions 168 (V) and 169 (VI): "Protection of Frequencies Used by Artificial Earth Satellites ».
Rec. 2	Standard frequency broadcasts and time signals		C.C.I.R. Study Group No. VII has on its programme solely the subject of Recommendation No. 2 in all its aspects. The relevant recommendations, reports, questions and study programmes are always kept up to date, in collaboration with the B.I.H. and the U.R.S.I. (See C.C.I.R. Recommendation No. 179 and Report No. 66, both on the subject.) This important work will still need a great deal of effort devoted to it in the future, in view of the growing occupancy of the spectrum.
Rec. 3	International monitoring		This subject entirely fills the programme of C.C.I.R. Study Group No. VIII.
	Technical recommendations for a coordinated world-wide service	*a)*	The main service was organized in C.C.I.R. Recommendation No. 19: "Organisation of an International Monitoring Service", which is still in force without modification, though questions of detail need revision as time goes on.
	Technical standards and procedures of measurement to be adopted, etc.	*b)*	The accuracy of frequency measurements at monitoring stations is discussed in C.C.I.R. Recommendation No. 180: "Accuracy of Frequency Measurements at Monitoring Stations" and in Report No. 67: "Frequency Measurements Above 50 Mc/s at Monitoring Stations". The accuracy of field-strength measurements is given in Recommendation No. 181: "Accuracy of Field-Strength Measurements by Monitoring Stations".
	Form in which results of observations and measurements should be presented	*c)*	The "form" of the report has remained unchanged since C.C.I.R. Recommendation No. 22 was issued. Such questions as the identification of stations, automatic monitoring of spectrum occupancy, spectrum measurements, etc., are under study. The monitoring service will continue steadily to grow in importance in view of the ever-growing occupancy of the spectrum in the future.
Rec. 4	Review of Appendices 3, 4 and 5 of the International Radio Regulations		The review of Appendices 3, 4 and 5 of the Atlantic City Radio Regulations has been entrusted to C.C.I.R. Study Groups Nos. I, II and III. The main results are the following:

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 4 *(cont.)*	Bandwidth of emissions	1	C.C.I.R. Recommendation No. 88: " Bandwidth of Emission; Measurements made near the transmitter "; Recommendation No. 145: " Bandwidth of Emissions ";
	Bandwidth of receivers	2	Recommendation No. 155: " Selectivity of Receivers "; Recommendation No. 156: " Frequency Stability of Receivers "; Recommendation No. 154: " Noise and Sensitivity of Receivers ". (This last item is not explicitly mentioned in Atlantic City Recommendation No. 4, but cannot very well be separated from it).
	Harmonics, etc.	3	C.C.I.R. Recommendation No. 147: " Spurious Radiation "; Report No. 17: " Harmonics and Parasitic Emissions ". These studies, mentioned under 1, 2 and 3, are mainly being undertaken by C.C.I.R. Study Groups Nos. I and II, and the ever growing occupancy of the spectrum and new technical developments will necessitate the regular revision of the limits mentioned in the Recommendation. An item occurring in the title of Atlantic City Recommendation No. 4 must also be mentioned, namely the revision of Appendix 3 of the Radio Regulations. Though this item is very important it does not occur in the list of specific studies proposed to the C.C.I.R., in Rec. 4 It has, nevertheless been studied by the CCIR, resulting in CCIR Recommendation No. 148: " Frequency Stabilisation of Transmitters ".
		4	This subject has been studied by C.C.I.R. Study Group III. Results are given in: Recommendation No. 100: " Reduction of Occupied Bandwidth and Transmitter Power in Radio Telephony "; Recommendation No. 101: " Bandwidth Required at a Telegraph or Telephone Receiver Output "; Recommendation No. 161: " Bandwidths and Signal-to-Noise Ratios in Complete Systems "; Recommendation No. 162: " Use of Directional Antennae "; Recommendation No. 163: " Signal-to-Interference Protection Ratios ", and Recommendation No. 164: " Fading Allowances for the Various Classes of Service ". These studies are not yet completed.
Rec. 5	Study of the efficacy of signals MAYDAY and PAN		As far back as 1948 the C.C.I.R. issued Recommendation No. 23: " Signals MAYDAY and PAN ", which has remained valid up to this date. Hence C.C.I.R. study on this subject is finished.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 6	Relating to the watch on the distress frequency 2182 kc/s		The C.C.I.R. issued Recommendation No. 124: " Watch on the Distress Frequency of 2182 kc/s " on this subject. The alarm signal mentioned therein is defined in C.C.I.R. Recommendation No. 219: " Alarm Signal for Use on the Maritime Radiotelephony Distress Frequency 2182 kc/s ". At present this study is completed by the C.C.I.R. It might, however, appear again in connection with the possible use of the frequency 2182 kc/s as an air-sea and sea-air distress frequency, which possibility was not envisaged in the Radio Regulations of 1947, nor in the Convention of the Safety of Life at Sea.
Rec. 7	Relating to the standardization of performance requirements for radiophoto equipment		The subject was first studied by C.C.I.R. Study Group No. IX, and after 1953 by C.C.I.R. Study Group No. III. The results can be found in C.C.I.R. Recommendation No. 227: " Standardisation of Phototelegraph Apparatus for Use on Combined Radio and Metallic Circuits ". A joint C.C.I.T.T.-C.C.I.R. Study Group on Phototelegraphy, administered by the C.C.I.T.T., has been formed. Neither the studies in the C.C.I.R., nor in the Joint Group, are as yet completely terminated.
Rec. 8	Desired to undesired signal ratio for each one of services sharing a band of frequencies etc.		This subject has been studied by C.C.I.R. Study Group XII. Results can be found in C.C.I.R. Recommendation No. 48: " Choice of Frequency to Avoid Interference in the Bands Shared with Tropical Broadcasting "; Recommendation No. 49: " Choice of Site of Stations and of Type of Antennas to Avoid Interference, etc. "; Recommendation No. 214: " Limitation of Power of Transmitter in the Tropical Zone, etc. "; Recommendation No. 216: " Minimum Permissible Protection Ratio to Avoid Interference in the Bands, etc. ". The studies are not yet completed.

NOTE. — The outcome of the IXth Plenary Assembly at Los Angeles in 1959 will probably cause some modifications in the results of the studies as given above.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 123-E
27 August 1959

WORKING GROUP 6A

SUMMARY RECORD

First Meeting of Working Group 6A (Definitions)

Tuesday, 25 August 1959, at 10.00 a.m.

References: (1) Terms of Reference of Working Groups of Committee 6 (Document 81 dated 21 August 1959).

(2) Agenda for first meeting of Working Group 6A (Document DT 8 dated 21 August 1959).

The Chairman of Working Group 6A, Mr. Allen (U.S.A.), after appointing Mrs. Mooney (U.S.A.) informal reporter for Working Group 6A, distributed a draft temporary document entitled "Provisional List of Terms and Definitions", dated August 25, 1959, and proceeded to a consideration of the agenda items as follows:

1. Procedure for coordinating definitions appearing in the Convention and the Radio Regulations

It was decided that the working group could proceed with the substance of its work and defer to a later date the question of the coordination of definitions, appearing in both the Convention and the Regulations, with delegates to the Plenipotentiary Conference.

2. Priority list of definitions

Subject to the following changes, the draft temporary document entitled "Provisional List of Terms and Definitions" was accepted as a basic working paper:

1) the deletion of the word "complete" appearing in the first line of the document;

2) the substitution of the following paragraph c. for the paragraph c. appearing on page 1 of the document: "c. A proposed new term which may require definition.";

3) the addition of a new category at the bottom of page 1 of the document "d. Proposed deletions."

It was agreed to request the Secretariat to translate this draft temporary document into the two other languages and to distribute it as a Conference document so that it might be used as a basic working document by the Group.

3. Date of completion of priority list of definitions

It was agreed to defer the question of establishing deadlines for some, or all, of the definitions until the working parties which were to consider them had been established and could meet.

4. Agenda of Working Group 6A

Working Parties were established as shown in the attached list and their agenda were decided in a meeting between the Chairman of Working Group 6A and the Chairman of Working Group 6A1 to 6A9. The listed agenda includes only those matters contained in the terms of reference of Working Group 6A (Document 81) and the proposals printed in the I.T.U. Proposals for the International Radio Conference. Proposals and other items of the agenda which will appear as mimeographed documents in the Conference series will be considered by Working Group 6A and, if related to the agenda of a specific working party, may be assigned to that party by action of the Working Group after appearing first on its agenda.

5. Other Matters

It was agreed to recommend to the Chairman of Committee 6 that the three Working Groups of Committee 6 be reclassified as Sub-Committees 6A, 6B, and 6C, and that the "working parties" referred to above be reclassified as Working Groups. The attached list uses the new term Working Groups, as agreed to by the Chairman of Committee 6, so that it may be used in the future without confusion.

Reporter
Ann Mooney

E.W. Allen
Chairman, Working Group 6A

Annex: 1

A N N E X

WORKING GROUPS 6A1 TO 6A9

Working Group 6A1: Radio, Hertzian Waves, Radio Communication
Chairman: Mr. P.V. Akerlind (Sweden)
Agenda: Paragraphs 1/, 4, 5, 6
Proposals 2/, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47
C.C.I.R. Report # 173 (Radio Division Circular 77)

Working Group 6A2: (a) Space Service (b) Telegraphy
Chairman: Mr. F.M. Ryan (U.S.A.)
Agenda: (a) Paragraphs 1/, 6.20, 20.10, 20.20, 39.10, 39.20
Proposals 2/, 3204, 3215, 3216, 3223, 3224
(b) Paragraphs 1/, 7, 10, 10.10, 17.20, 18
Proposals 2/, 3205, 48, 49, 3206, 53, 54, 57, 85, 86, 88

Working Group 6A3: (a) Telemetering (b) Systems and Emissions (c) Modulation
Chairman: Mr. A.H. Tintant (France)
Agenda: (a) Paragraphs 1/, 7.10, 16.10, 56.10
Proposals 2/, 50, 4610, 56, 58, 77, 79, 139
(b) Paragraphs 1/, 18.90, 73.10 - 73.90
Proposals 2/, 80-83, 93, 267-281, 283-287
(c) Paragraphs 1/, 69.10, 69.20, 69.25, 69.30, 69.35
Proposals 2/, 219-223

Working Group 6A4: (a) Radiolocation (b) Harbour Mobile Service
Chairman: Mr. R.K. Starkie (Australia)
Agenda: (a) Paragraphs 1/, 11, 12, 12.10, 13, 14, 15, 16, 27-30, 48-53.10, 70-73
Proposals 2/, 59-62, 3207, 63, 64, 3208, 3209, 65, 66, 69, 71, 72, 3210, 74, 75, 76, 107, 108, 109, 3219, 110, 111, 3220, 3227, 3228, 3229, 3230, 3231, 130, 131, 3233, 132, 133, 134, 253-261
(b) Paragraphs 1/, 22.10, 24.10
Proposals 2/, 102, 105

1/ Paragraphs of the Radio Regulations and sub-paragraphs as identified in Document No. DT 21.

2/ Proposals are taken from the I.T.U. Proposals for the International Radio Conference. Other proposals arising in the Conference Documents may be added later.

Working Group 6A5:	Radio Frequency Registration	
Chairman:	Mr. N. Roberts (I.F.R.B.)	
Agenda:	Paragraphs 1/,	18.15, 18.20, 18.30, 18.40, 18.50, 18.55, 18.60, 18.65
	Proposals 2/,	3212, 3213, 3214, 94, 95, 96, 3705
Working Group 6A6:	Characteristics of Emissions	
Chairman:	Mr. C.C. Benton (United Kingdom)	
Agenda:	Paragraphs 1/,	57-59, 69.65, 69.70,
	Proposals 2/,	3234, 3235, 3236, 3237, 141, 142, 143, 3238, 144, 146, 147, 148, 149, 3239, 150-167, 3240, 168, 170, 172, 3248, 186, 187, 236, 241
Working Group 6A7:	Transmitter and Antenna Power	
Chairman:	Mr. W. Kranjager (Federal German Republic)	
Agenda:	Paragraphs 1/,	60-68.10
	Proposals 2/,	174-178, 180-182, 184, 188-206, 3245, 3246, 208-212
Working Group 6A8:	Radio Noise	
Chairman:	Mr. M.K. Basu (India)	
Agenda:	Paragraphs 1/,	69.75-69.95
	Proposals 2/,	242-246
Working Group 6A9:	Nomenclature of Frequencies	
Chairman:	Mr. M. Shimbori (Japan)	
Agenda:	Paragraphs 1/,	Radio Regulations Article II, Section III
	Proposals 2/,	361, 362, 363, 365, 366, 367, 368, 5097 (Doc. 60).

1/ Paragraphs of the Radio Regulations and sub-paragraphs as identified in Document No. DT 21.

2/ Proposals are taken from the I.T.U. Proposals for the International Radio Conference. Other proposals arising in the Conference Documents may be added later.

ADMINISTRATIVE RADIO
CONFERENCE

GENEVA, 1959

Document No. 124-E
28 August, 1959

SCHEDULE OF MEETINGS FROM 31 AUGUST TO 6 SEPTEMBER 1959

	Monday 31.8		Tuesday 1.9		Wednesday 2.9		Thursday 3.9			Friday 4.9	
	1000-1230	1500-1800	1000-1230	1500-1800	1000-1230	1500-1800	0900-1000	1000-1230	1500-1800	1000-1230	1500-1800
Committee 1	-	-	-	-	-	-	E	-	-	-	-
Committee 2 - Working group	-	-	-	-	-	-	-	-	-	-	Office 1 (at 16.30)
Committee 3 - Plenary	-	-	-	-	E	-	-	-	-	-	-
Committee 4 - Plenary	-	A	-	A	-	A	-	-	A	-	A
Committee 4 - Working groups	-	-	E	-	-	-	-	E	-	-	-
Committee 5 - Plenary	A	-	-	-	A	-	-	-	-	A	-
Committee 5 - Working groups	-	-	F	-	-	-	-	F	-	-	-
Committee 6 - Plenary	-	-	-	-	-	-	-	A	-	-	-
Working group 6 A	-	C	-	-	-	-	-	-	-	-	C
Working group 6 B	-	-	-	-	-	C	-	-	-	-	-
Working group 6 C	-	-	C	-	-	-	-	-	C	-	-
Committee 7 - Plenary	-	-	-	-	-	-	-	-	-	-	D
Sub-Committee 7 A	D	-	-	-	D	-	-	-	-	-	-
Sub-Committee 7 B	-	D	-	-	-	-	-	D	-	-	-
Sub-Committee 7 C	-	-	-	-	-	D	-	-	-	D	-
Sub-Committee 7 D	-	-	D	-	-	-	-	-	D	-	-
Committee 8	-	-	-	-	-	-	-	-	-	-	-

Note: The Chairmen of Working Groups and Sub-Groups not mentioned specifically in this programme will convene meetings of their groups or sub-groups directly as and when necessary.

ANNEX A 9

RECOMMENDATION No. 248 *)

CLASSIFICATION OF MULTICHANNEL RADIO-TELEGRAPH SYSTEMS FOR LONG-RANGE CIRCUITS OPERATING ON FREQUENCIES BELOW ABOUT 30 Mc/s, AND DESIGNATION OF THE CHANNELS IN THESE SYSTEMS

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that there exists a large number of long-range multichannel radio-telegraph systems using frequencies below about 30 Mc/s and that it is desirable to classify them in categories;

b) that the lack of uniformity in the arrangement and designation of the channels in these systems may give rise to certain difficulties when one transmitting station has to work with several receiving stations;

c) that the increasing use of multichannel telegraph systems makes it desirable to adopt a uniform designation of channels in such systems;

unanimously recommends

1. that the systems should be classified, and the different categories designated by letters, as follows :

1.1 Time-division multiplex systems: Capital letter T (For example, synchronous systems, such as Baudot, RCA and TOR Multiplex and Double current cable code).

1.2 Frequency-division multiplex systems:

1.2.1 Systems with constant frequency arrangements of significant conditions: Capital letter U
(For example: Voice frequency multiplex with frequency shift).

1.2.2 Systems with variable frequency arrangements of significant conditions: Capital letter V
(For example: Four-frequency diplex)

1.3 Multichannel systems using a combination of these processes:

*) This Recommendation replaces Recommendation No. 153 and Report No. 39.

1.3.1	Frequency-division systems, with constant frequency arrangement, combined with a time-division multiplex	) combination of the above-mentioned letters (always beginning with frequency-division letters U or V)
1.3.2	Four-frequency diplex system combined with a time-division multiplex system	)

2. when a multichannel telegraph signal is applied to a multichannel telephone transmitter the designation of the telephone channel should come first in the sequence and should be in accordance with Recommendation No.149;

3. when a multichannel telegraph signal is applied to an independant sideband transmitter used solely for telegraphy, the designation of the sideband should come first in the sequence. The letter H shall denote the upper sideband, and the letter L the lower sideband;

4. that in time-division systems the telegraph channels should be designated by capital letters A, B, C, D, etc.; in the case of sub-division, the sub-channels should be designated by A1, A2, A3, A4, B1, B2, B3, B4, etc.;

5. that in frequency-division systems the telegraph channels should be designated by figures ;

6. that in a combination of multichannel processes the telegraph channels should be designated by a letter and figure sequence.

For example :

When using a frequency-division system with constant frequency arrangement of significant conditions (letter U), and modulating the 3rd channel of this latter system with a time-division multiplex (letter T), channel B of this latter system would be indicated by

"U3TB".

In the case where channel B of the time-division system is sub-divided and sub-channel 2 is in use, the designation would be

"U3TB2".

If the above-mentioned system is applied to channel B of an independent-sideband telephone transmitter, the corresponding designation would be

"BU3TB" or "BU3TB2".

If the above-mentioned system is applied to the upper sideband of an independent sideband multichannel transmitter used solely for telegraphy, the corresponding designation would be

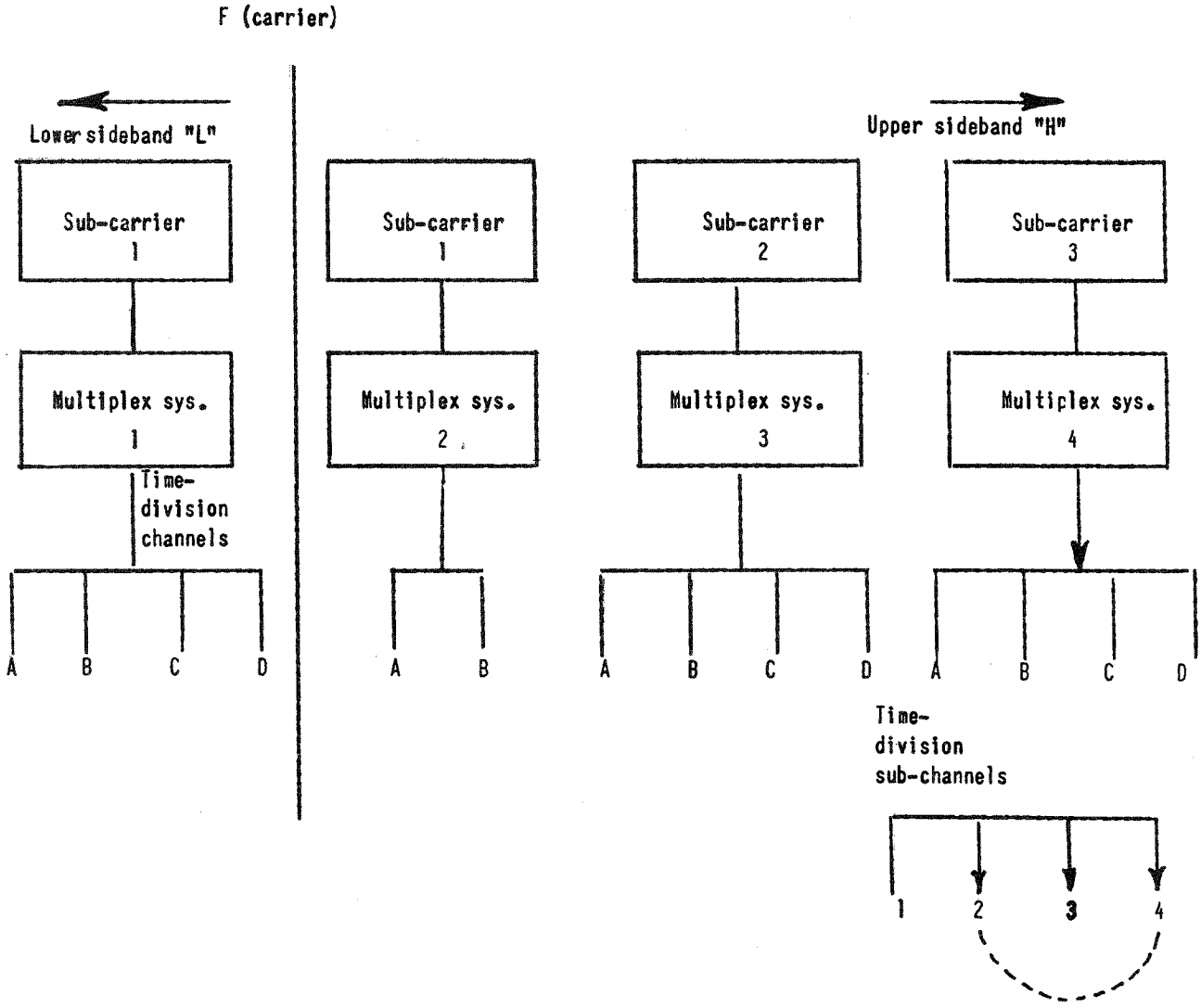
"HU3TB" or "HU3TB2".

Where additional information is required, the multiplex system may be identified by a number inserted between the letters T and B, and where two sub-channels (quarter-channels) are linked together to form a half-speed sub-channel (half-channel), each quarter-speed sub-channel component may be designated by the use of numbers separated by an oblique stroke. The full designation

"HU3T4B2/4"

would be applicable to the arrangement shown diagrammatically below.

MULTICHANNEL INDEPENDENT SIDEBAND RADIOTELEGRAPH TRANSMITTER



Note: Sub-carriers are numbered sequentially in both upper and lower sidebands, starting with the number 1, adjacent to the carrier (radiated or suppressed).

ANNEX A 10

RECOMMENDATION NO. 241

THE CONCEPT OF TRANSMISSION LOSS IN RADIO SYSTEMS STUDIES

(Question No. 81 and Study Programme No. 85)

(Los Angeles, 1959)

The C.C.I.R.

considering

a) that the radio frequency signal power, P_a, available*) at the terminals of a receiving antenna for a given power input, P_t, to the terminals of a transmitting antenna provides a measure which is useful in determining at the terminals of the receiving antenna the service from or the interference produced by a radio system involving a transmitting antenna, a receiving antenna, and the intervening propagation medium;

b) that the ratio, p_t/p_a, which will be called the system loss, is a convenient dimensionless form for expressing this measure of the combined radio propagation and the circuit loss characteristics of such a system;

c) that the available power at the terminals of the receiving antenna is sometimes a simpler and more directly useful concept than that of the effective field strength, especially where the effective field is the resultant of a large number of received field components corresponding to several modes of propagation arriving at the receiving antenna with different angles and possibly with different polarizations;

d) that the relationship between the system loss and the conditions in the neighbourhood of the receiving antenna does not depend solely on the received field strength because the impedance of the antenna is itself dependant upon the conditions in its neighbourhood;

e) that the power P_t' radiated from the transmitting antenna required for satisfactory reception in the presence of noise is precisely determined for a system with transmission loss L by the simple relation: $P_t' = L + P$; P is the minimum signal power that is required to provide satisfactory reception (as defined in Report No. 65), available from an equivalent lossless receiving antenna.*)

---

*) The available power p_a is the power which would go to the load if it were matched to the antenna impedance.

f) that it is desirable to standardize on terminology and notation for describing system loss and its various components;

unanimously recommends

that the terminology and notation given in the Annex be adopted for use by the C.C.I.R., in accordance with the further discussion of the use of these terms given in Report No. 112.

ANNEX

1. System Loss (L_s)

The system loss of a radio circuit consisting of a transmitting antenna, receiving antenna, and the intervening propagation medium is defined as the ratio, p_t/p_a, where p_t is the radio frequency power input to the terminals of the transmitting antenna and p_a is the resultant radio frequency signal power available at the terminals of the receiving antenna. Both p_t and p_a are expressed in watts. The system loss is usually expressed in decibels:*)

$$L_s = 10 \log_{10}(p_t/p_a) = P_t - P_a$$

Note that the system loss, as above defined, excludes any transmitting or receiving antenna transmission line losses since it is considered that such losses are readily measurable. On the other hand, the system loss includes all of the losses in the transmitting and receiving antenna circuits, including not only the transmission loss due to radiation from the transmitting antenna and re-radiation from the receiving antenna, but also any ground losses, dielectric losses, antenna loading coil losses, terminating resister losses in rhombic antennas, etc. The inclusion of all of the antenna circuit losses in the definition of system loss provides a quantity which can always be accurately measured and which is directly applicable to the solution of radio system problems.

2. Transmission Loss (1)

The transmission loss of a radio circuit consisting of a transmitting antenna, receiving antenna, and the intervening propagation medium is defined as the dimensionless ratio, p_t'/p_a', where p_t' is the radio frequency power radiated from the transmitting antenna, and p_a' is

---

**) Throughout this recommendation, capital letters are used to denote the ratios, expressed in decibels, of the corresponding quantities designated with lower-case type; e.g., $P_t = 10 \log_{10} p_t$. P_t is the input power to the transmitting antenna expressed in decibels above one watt.

the resultant radio frequency signal power which would be available from the receiving antenna if there were no circuit losses other than those associated with its radiation resistance. The transmission loss is usually expressed in decibels:

$$L = 10 \log_{10}(p_t'/p_a') = L_s - L_{tc} - L_{rc}$$

where L_{tc} and L_{rc} are the losses, expressed in decibels, in the transmitting and receiving antenna circuits, respectively, excluding the losses associated with the antennae radiation resistances; i.e., the definitions of L_{tc} and L_{rc} are $10 \log_{10}(r'/r)$ where r' is the resistive component of the antenna circuit and r is the radiation resistance.

3. Basic Transmission Loss (L_b)

The basic transmission loss (sometimes called path loss) of a radio circuit is the transmission loss expected between ideal, loss-free, isotropic, transmitting and receiving antennae at the same locations as the actual transmitting and receiving antennae.

4. Path Antenna Directivity Gain (G_p)

The path antenna directivity gain is equal to the increase in the transmission loss when lossless, isotropic, antennae are used at the same locations as the actual antennae:

$$G_p = L_b - L$$

5. Path Antenna Power Gain (G_{pp})

The path antenna power gain is equal to the increase in the system loss when lossless isotropic antennae are used at the same locations as the actual antennae:

$$G_{pp} = L_b - L_s = G_p - L_{tc} - L_{rc}$$

Note that G_{pp} will be negative when the antenna circuit losses exceed the path antenna directivity gain.

In some idealized situations the path antenna power gain, G_{pp}, is simply the sum $(G_{tp} + G_{rp})$ of the free space power gains, G_{tp} and G_{rp}, of the transmitting and receiving antennae relative to lossless isotropic antennae. However, in most practical situations G_{pp} is less than $(G_{tp} + G_{rp})$ because of the complex nature of the received field. The path antenna power gain may be measured by determining the increase in the system loss when both the transmitting

and receiving antennae are replaced simultaneously by simple standard antennae such as short electric or magnetic dipoles, and then adding the calculated path antenna power gain corresponding to the use of the standard antennae. In the case of ionospheric or tropospheric scatter propagation, the path antenna power gain is sometimes substantially smaller than the sum of the free space power gains ($G_{tp} + G_{rp}$); in such cases the path antenna power gain cannot be defined by the sum of the effective power gains of the transmitting and receiving antennae (as determined by replacing first one antenna and then the other successively by a standard antenna) since such effective power gains depend upon the gain of the antenna used at the other terminal.

In the case of ionospheric or tropospheric propagation, the transmission loss L, the basic transmission loss L_b, and the path antenna gain G_p, are all random variables with respect to time, and tend to be normally distributed about their expected values. Typically, L and G_p are negatively correlated with each other, and thus the variance of L_b is usually substantially less than the sum of the variances of L and of G_p; for this reason it will often be more practical simply to measure the system loss with the particular antennae intended for use rather than attempt to calculate the expected system loss and its variance with time in terms of the measured or calculated values of the basic transmission loss, the path antenna gain, and the losses L_{tc} and L_{tr}.

Note also that the path antenna gain may actually be negative. For example, the path antenna gain will usually be negative for ground wave or tropospheric wave propagation between a vertically polarized and a horizontally polarized antenna, and the concept of path antenna gain should prove to be useful for expressing the results of such cross polarization measurements.

6. Propagation Loss (L_p)

The propagation loss is the system loss expected if the antennae gains and circuit resistances were the same as if the antennae were located in free space:

$$L_p = L_s - L_t - L_r$$

L_t and L_r are defined by $10 \log_{10} (r'/r_f)$ where r' is the actual antenna resistance and r_f is the resistance the antenna would have if it were in free space and there were no losses other than radiation losses.

ANNEX A 11

RECOMMENDATION No. 312 *)

TROSPOSPHERIC WAVE PROPAGATION CURVES **)

(Geneva, 1951 - London, 1953 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that there is a need to give a guide to engineers in the planning of services in the VHF and UHF bands, in particular for television and other broadcasting in these bands;

b) that in the case of stations working in the same or adjacent frequency channels the determination of the minimum geographical distance of separation required to avoid intolerable interference due to long-distance tropospheric transmission is a matter of great importance;

c) that the annexed curves are based on the statistical analysis of a considerable amount of experimental data (see Report No. 145);

unanimously recommends

that the revised curves given in Annex II be adopted for provisional use, subject to the conditions stated in Annex I.

ANNEX I

1. The curves of Annex II were prepared from data obtained mainly in the United States of America and Western Europe; many more measurements have been made for distances up to about 400 kilometers than for greater distances, and the curves have their greatest reliability up to, say, 500 kilometers;

---

*) This Recommendation replaces Recommendation No. 111.

**) It must be emphasized that the curves of this Recommendation are intended for use in the planning of broadcasting services for the solution of interference problems over an extended area; they should not be used for point-to-point communication links, for which systems the actual terrain profile may be determined and methods of field strength prediction of higher accuracy may be used.

2. the curves are expressed in db above 1 uV/m for 1 kW effective power radiated from a half-wave dipole, either vertical or horizontal;

3. the curves of Annex II refer specifically to propagation over land paths which are not mountainous in character;

4. all of the curves of Annex II are to some extent dependent upon frequency. It is, however, difficult to assess this dependence quantitatively since it is influenced by the nature of the terrain, climatic conditions and aerial height. From the data so far available it has not been possible to determine a definite variation of the field strength at various distances with frequency, and the curves are intended to apply at all frequencies between 40 Mc/s and 600 Mc/s; but it must be emphasized that further data for frequencies exceeding 300 Mc/s may ultimately require a frequency dependence to be shown;

5. it is probable that the curves will give too low field strengths for very smooth paths such as those which are entirely over sea, especially if the terminals are on clear open sites. There are indications that, in such circumstances, field strengths exceeding those given in the curves by as much as 10 db may occur;

6. it is probable that many of the field strength measurements used to determine the curves were made under relatively favourable receiving conditions; and there is some evidence that in typical conditions of domestic reception somewhat lower field strength, perhaps by several decibels, could be obtained. Until further information is available on this point, however, it is inadvisable to apply a correction to the curves;

7. the curves may be taken to apply to a receiving aerial height of 10 meters above ground at the receiving location, and to a transmitting aerial height of 300 meters: the transmitting aerial height being somewhat arbitrarily defined as the height of the aerial above the average level of the ground between distances of 3 km and 15 km from the transmitter, over the sector in which it is required to know the magnitude of the interfering fields. From the data available it is not considered possible to give a precise indication of the effect of changing the transmitter height, but, as a first approximation, for transmitter heights differing significantly from 300 meters a correction may be applied on the following basis. To obtain the field strength at a distance of x km for a transmitting aerial height of h meters the curves should be read for the distance $(x + 70 - 4.1\sqrt{h})$ km. This correction should not be applied, however, if the receiving point is visible from or near the horizon of the transmitter.

8. the curves of Figure 1 show, as a function of distance, for any frequency in the band 40 to 600 Mc/s, the field strengths exceeded for 1%, 10% and 50% of the time for at least 50% of the receiving locations within the sector of interest, subject to the reservation given in para. (6);

9. Figure 2 relates the field strength exceeded at 50% of receiving locations to that exceeded at any other required percentage of receiving locations. From the data at present available, it appears that the same curve may be used to obtain approximate results for all of the frequencies, and distances covered by Figure 1. The curve corresponds to an average standard deviation of 8 db; but in practice the standard deviation may vary from 5 db to 11 db, depending on the degree of roughness of the terrain;

10. it is known that the median field strength varies in different climatic regions, and data for a wide range of such conditions in the United States of America and Western Europe show that it is possible to correlate the observed median fields with the refractive index gradient in the first 1000 meters of the atmosphere above ground level. If ΔN is defined as $10^6 (n_{1000} - n_s)$ where n_s and n_{1000} are the refractive indices at the surface and at a height of 1000 meters respectively, then, in a standard atmosphere, $\Delta N \simeq -40$, and the median curve of Figure 1 refers to this case. If the mean value of ΔN in a given region is appreciably different from -40, a correction factor of $-0.5 \cdot (\Delta N + 40)$ db should be applied to the curves to give the appropriate median field strengths for all distances. If ΔN is not known, but information concerning the mean value of N_s is available, where $N_s = 10^6 (n_s - 1)$, an alternative correction which may be used at least for temperate climates, is $0.2 (N_s - 310)$ db. Whilst these corrections have so far only been established for the geographical areas referred to above, they may serve as an approximate guide to the corrections which may be necessary in other geographical areas. The extent to which it is reliable to apply similar corrections to the curves for field strengths exceeded 1% and 10% of the time is not known. It is expected, however, that a larger correction will be required for the 1% and 10% values in regions where super-refraction is prevalent for an appreciable part of the time.

Explanation of Figure 1

Frequency range : 40 to 600 Mc/s. Values of field strength for 50% of locations for 1 kW radiated power by a half-wave dipole with vertical or horizontal polarization exceeded for 1%, 10% and 50% of the time. (The dashed portions of the curves are less reliable than the portions shown in full lines).

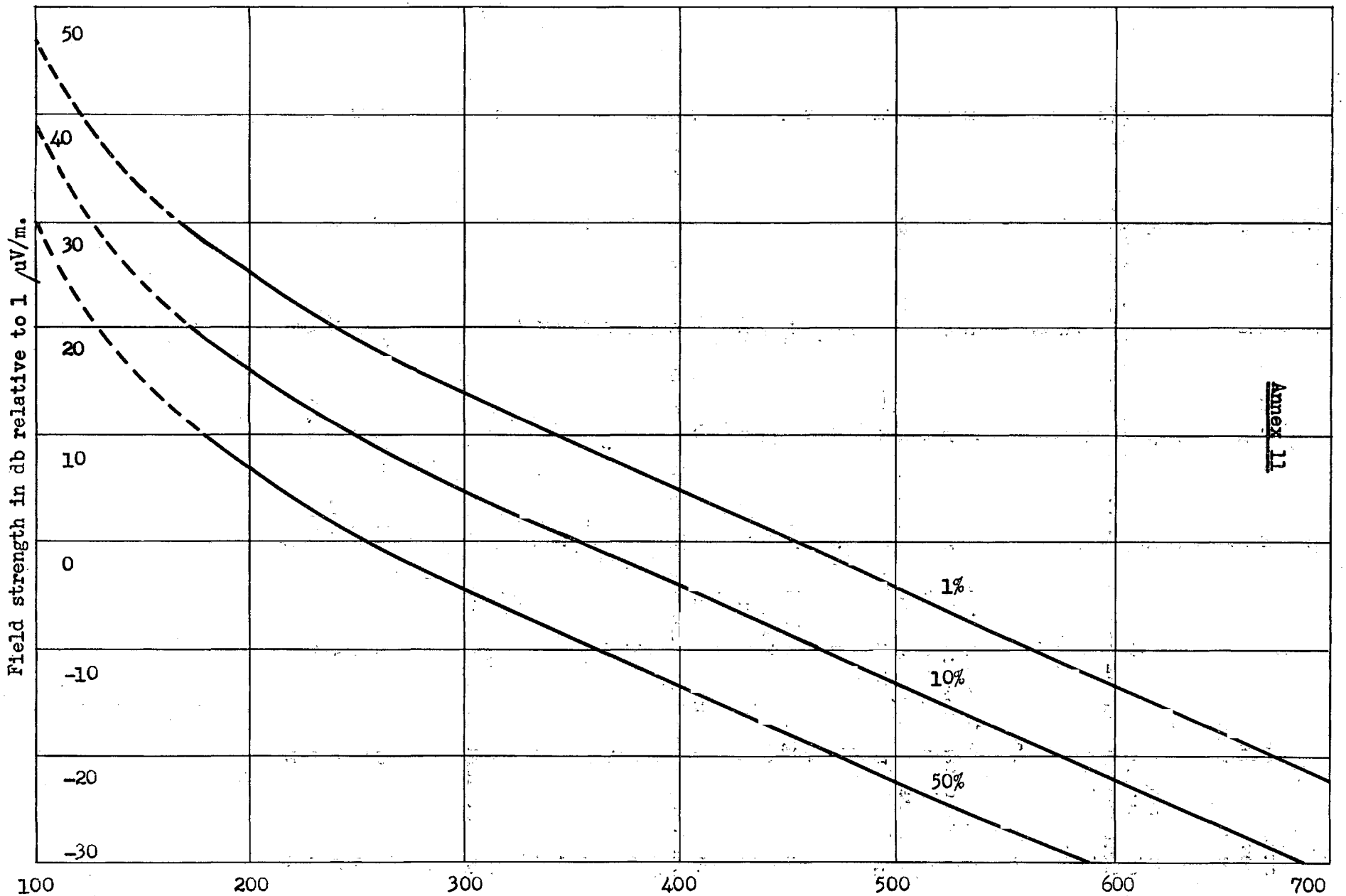

50
40
30
20
10
0
-10
-20
-30
Field strength in db relative to 1 uV/m.
1%
10%
50%
100
200
300
400
500
600
700
Distance from the transmitter in km

Figure 1

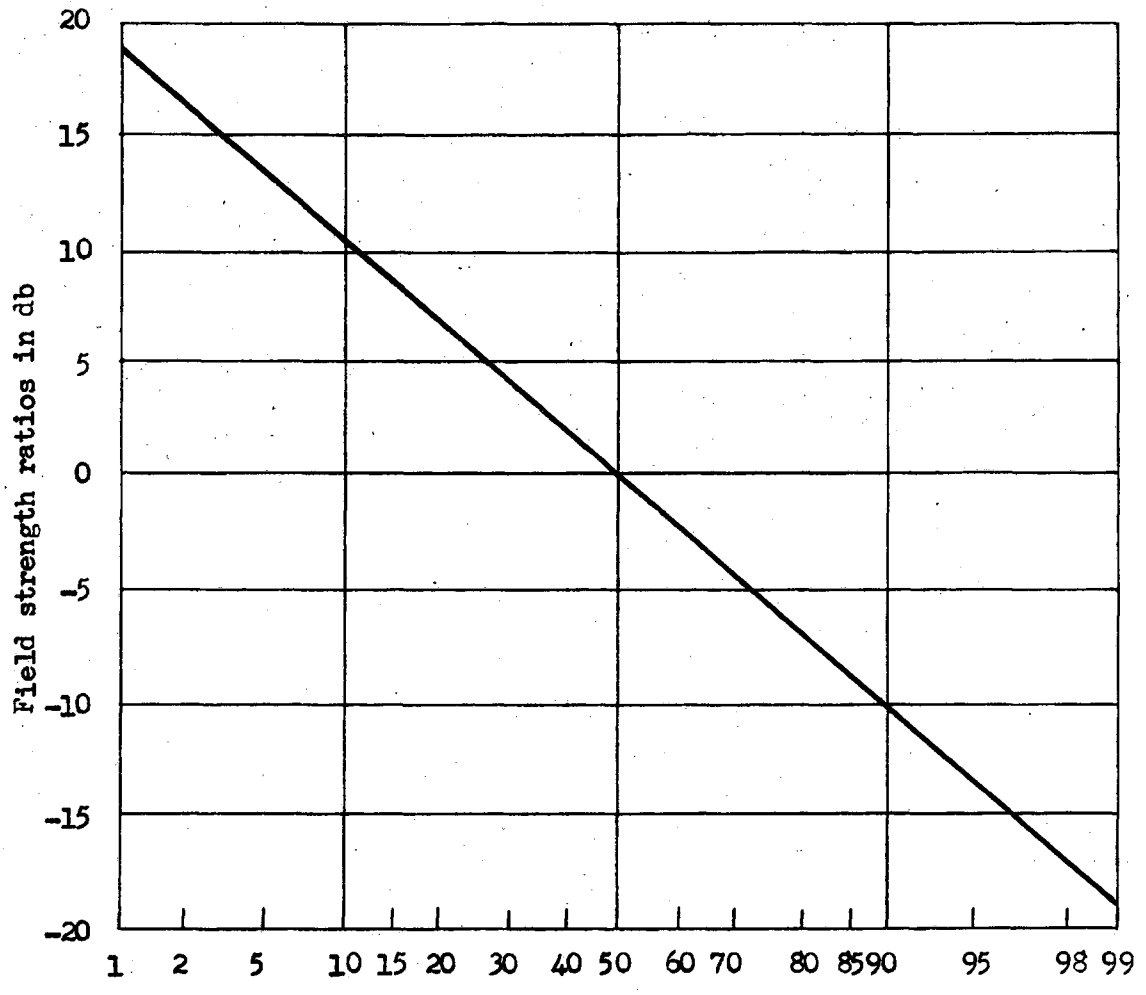


Figure 2

Ratios of the field strengths exceeded at the stated percentages of receiving locations to that exceeded at 50 % of locations

ANNEX A 12

RECOMMENDATION No. 307 *)

GROUND-WAVE PROPAGATION CURVES BELOW 10 Mc/s

(Question No. 184(1))

(Geneva, 1951 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that ground-wave propagation curves for an extended range of frequencies are of continued importance for all types of radio communication including navigational aids;

b) that such curves for a range of land conductivities are needed for the varying conditions along the land paths met with in practice;

unanimously recommends

1. that the curves in the Annex hereto used for the determination of ground-wave field strength on frequencies below 10 Mc/s under the conditions stated;

2. that these curves supersede the existing C.C.I.R. (1937) curves for frequencies below 10 Mc/s.

---

*) This Recommendation replaces Recommendation No. 52

ANNEX

The attached curves apply to propagation on frequencies below 10 Mc/s.

The following points are to be especially noted with regard to them:

a) they refer to a smooth homogeneous earth, as in the corresponding C.C.I.R. (1937) curves;

b) no account is taken of tropospheric effects on these frequencies, i.e. they are calculated for the actual radius of the earth. It is realised that the troposphere exerts some influence below 10 Mc/s, but experimental evidence suggests that on medium frequencies the usually assumed 4/3 earth's radius over-estimates the effect of normal refraction in the troposphere. Moreover, mathematical analysis shows that with decreasing wavelengths the concept of an effective earth's radius is no longer strictly valid as the necessary transformation involves not only the frequency used, but also the conductivity of the earth. It was therefore decided to retain the use of the actual earth's radius as in the case of the C.C.I.R. (1937) curves, and the consideration of the effect of the troposphere is accordingly made the subject of Study Programme No. 87(IV);

c) the frequency range has been extended down to 10 kc/s in view of the suggested use of very low frequencies for navigational aids;

d) in order to cater more adequately for the differences of land conductivity met with in practice, the curves for the value 10^{-13} e.m.u. of the conductivity σ have been supplemented by curves for the further values of $10^{-12.5}$, $10^{-13.5}$ and 10^{-14} e.m.u. The value of the permittivity assumed is $\varepsilon = 4$ as in the C.C.I.R. (1937) curves, but it may be stated that the precise value assumed is not of practical significance for the frequency range under consideration. For the sea curves, the value $\sigma = 4 \times 10^{-11}$ e.m.u. and $\varepsilon = 80$ have been retained;

e) it should be pointed out that the sea curves and the land curves for $\sigma = 10^{-13}$ e.m.u. differ from the C.C.I.R. (1937) curves only in the extension of the frequency range and in the slightly modified method of presentation, as they are based on the same rigid analysis of the problem given by van der Pol and Bremmer;

f) the presentation is given in two forms:

1. with a linear scale of distance cut to 2000 km as abscissa and an ordinate scale which is linear in decibels above a field strength of 1 μV/m. A subsidiary scale reading

directly in μV/m is added on the right-hand side. The linear distance scale has been retained to exhibit the linear aspect of the curves in the diffraction region where the field strength is approximately exponentially attenuated with distance. The linear scale in decibels replaces the logarithmic scale for μV/m used in the C.C.I.R. (1937) curves in view of its greater convenience in most engineering applications;

2. with a logarithmic distance scale for distances up to 10,000 km. This has been done to make the curves more useful in the neighbourhood of the transmitter where they are very steep when the linear distance scale is used. It should be noted that at the shorter distance it is not practicable to include all the curves down to 10 kc/s where they differ very little from one another and from the unattenuated inverse distance curve;

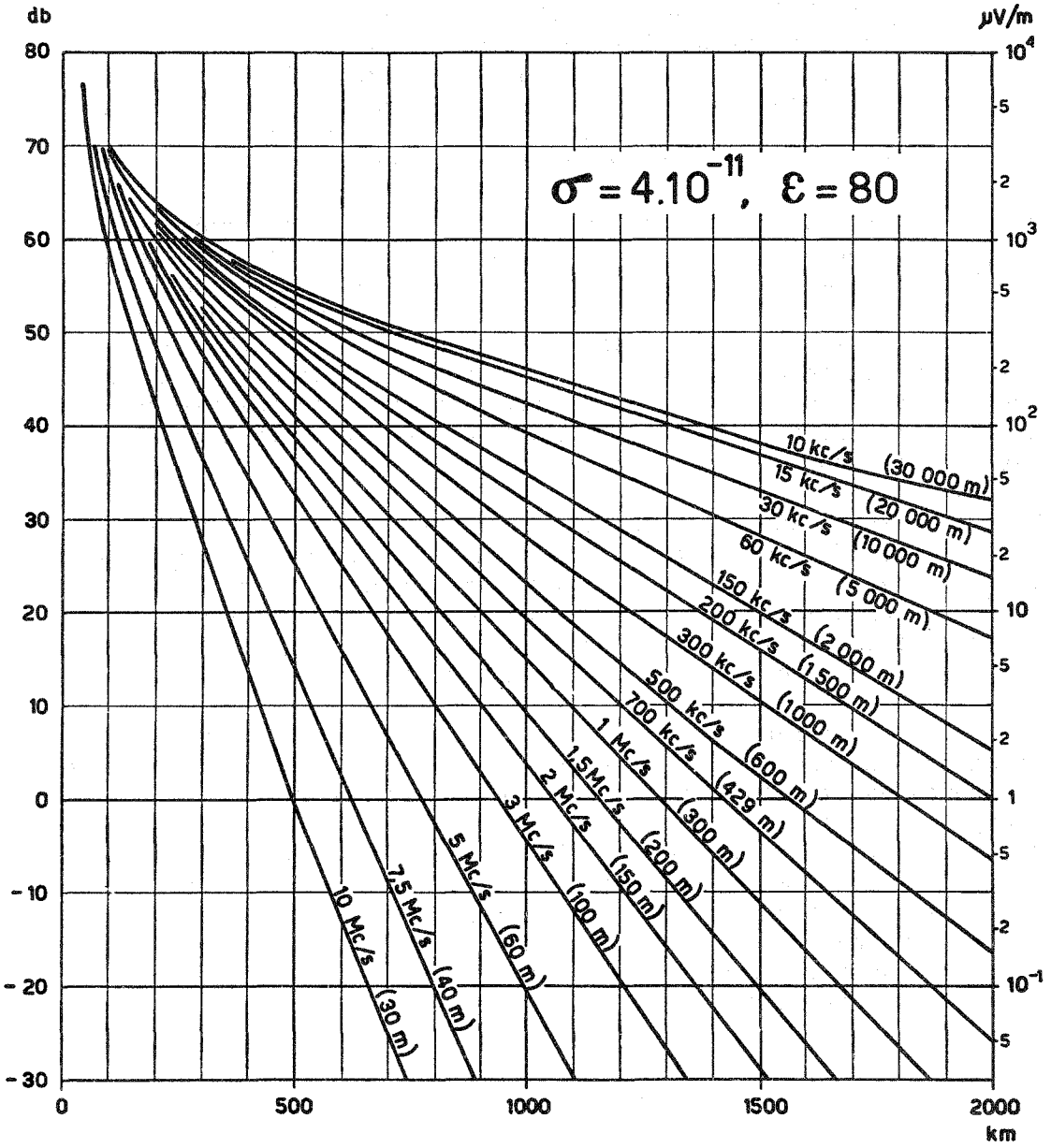
g) the curves are no longer referred to a radiated power of 1kW, but to what has been called an unattenuated field strength of $3 \times 10^5/D$ in μV/m where D is the distance from the transmitter in kilometres. This field would actually correspond to the case of a vertical antenna, shorter than one quarter wavelength, radiating 1 kW when placed on the surface of a perfectly conducting plane earth. The engineer should regard as an auxiliary problem the determination of the appropriate value of the unattenuated field in a given practical case and the value of the necessary multiplier;

h) the transmitter and receiver are both assumed to be on the ground. In most practical cases in the frequency range concerned, the height-gain effects with elevated antennae would not be significant. Although height-gain curves exist which refer to this frequency range, their restriction to the diffraction region makes them of very limited use, and it was decided not to include them;

i) the curves should, in general, be used to determine field strength only when it is known that ionospheric reflections of the frequency under consideration will be negligible in amplitude - for example, propagation in daylight between 150 kc/s and 2 Mc/s and for distances of less than about 2000 km. However, under conditions where the sky wave is comparable with, or even greater than, the ground wave, the curves are still applicable when the effect of the ground wave can be separated from that of the sky wave by the use of pulse transmissions, as in some forms of direction-finding systems and navigational aids.

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

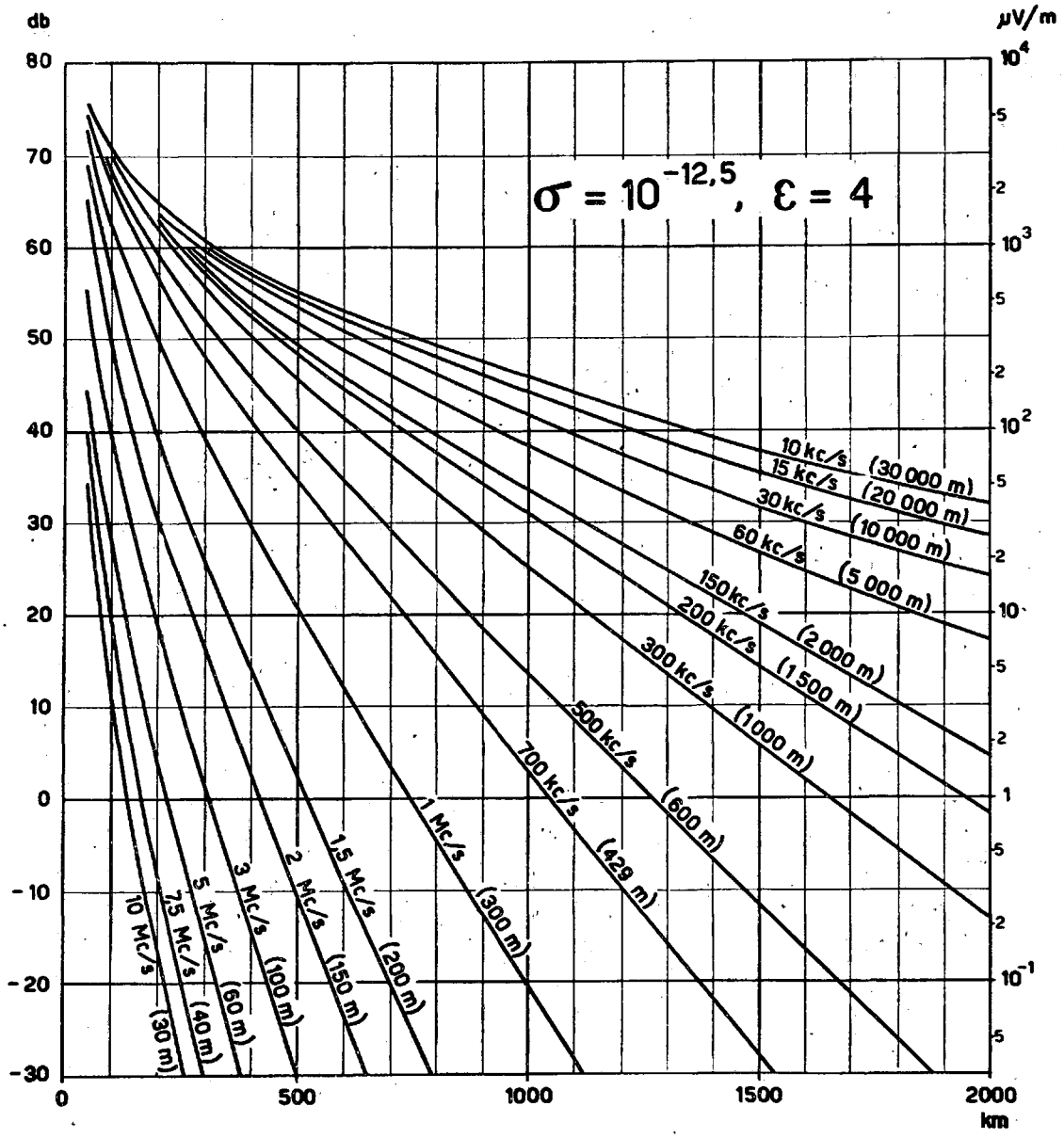


Propagation over sea (conductivity $\sigma = 4 \times 10^{-11}$ e.m.u., dielectric constant $\epsilon = 80$ e.s.u.)

FIGURE 1

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

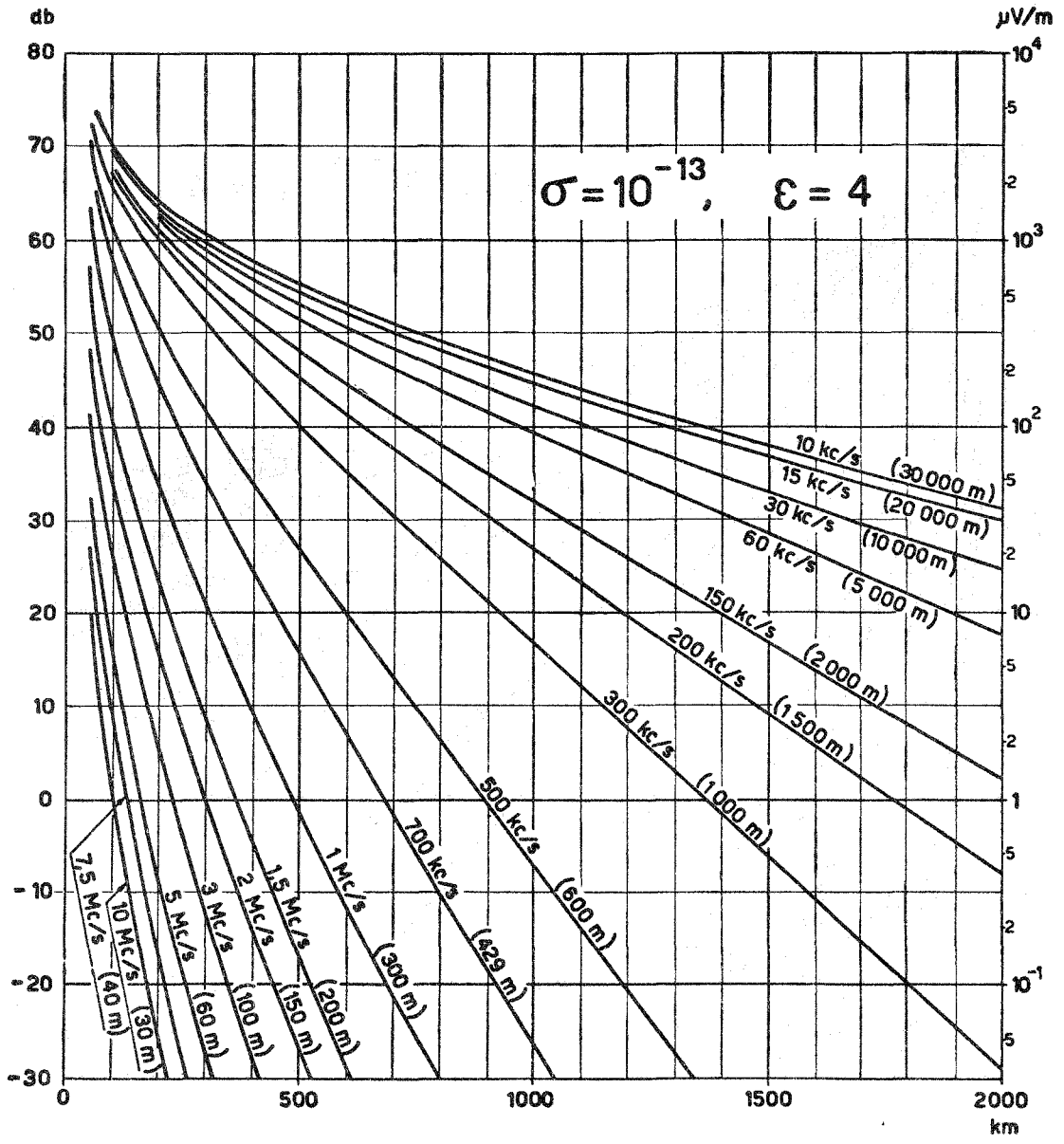


Propagation over land (conductivity $\sigma = 10^{-12,5}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 2

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

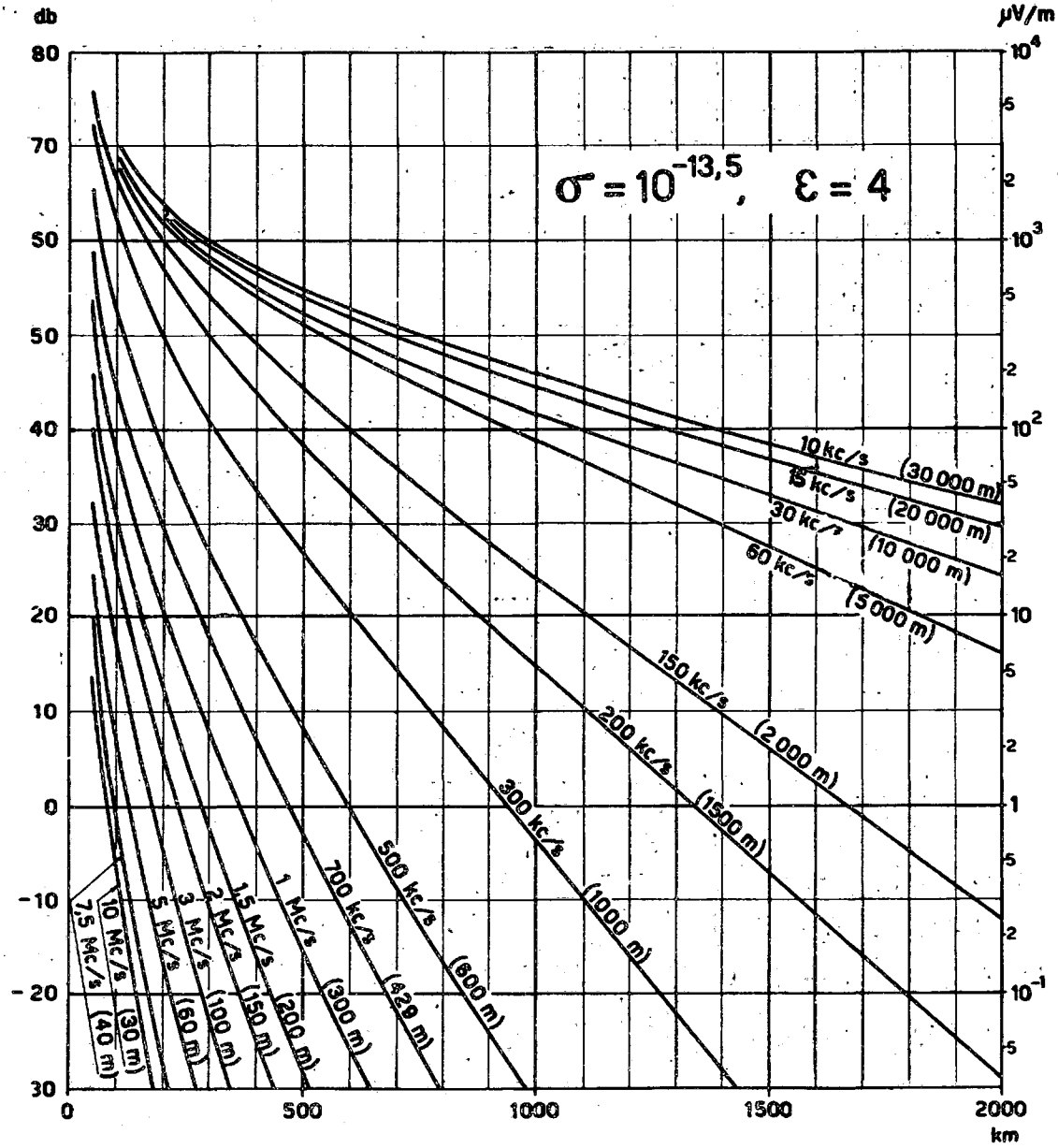


Propagation over land (conductivity $\sigma = 10^{-13}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 3

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m

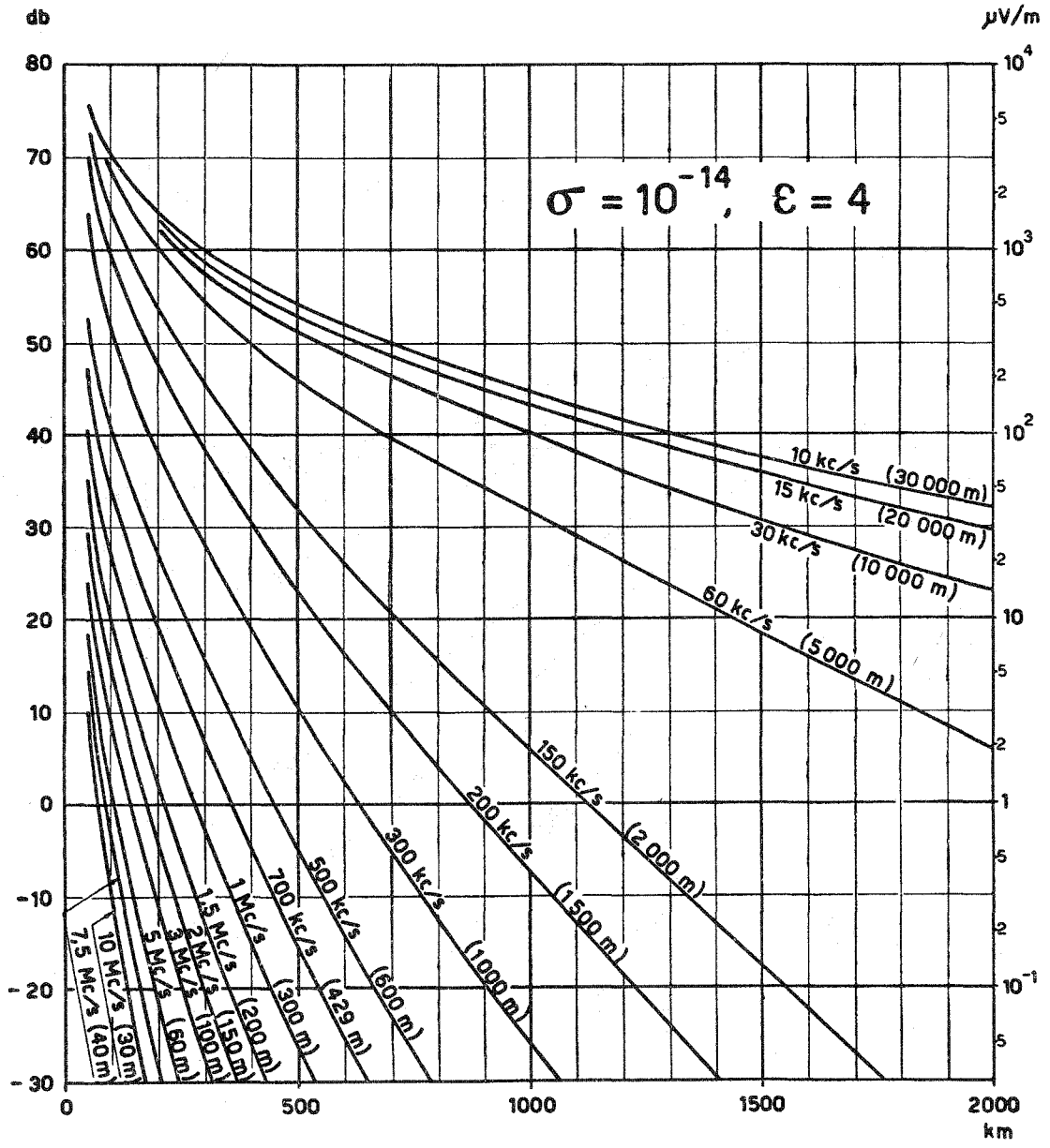


Propagation over land (conductivity $\sigma = 10^{-13,5}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 4

PROPAGATION CURVES

Ground wave corresponding to an unattenuated field of:
$3 \times 10^5 / D_{km}$ μV/m



Propagation over land (conductivity $\sigma = 10^{-14}$ e.m.u., dielectric constant $\epsilon = 4$ e.s.u.)

FIGURE 5

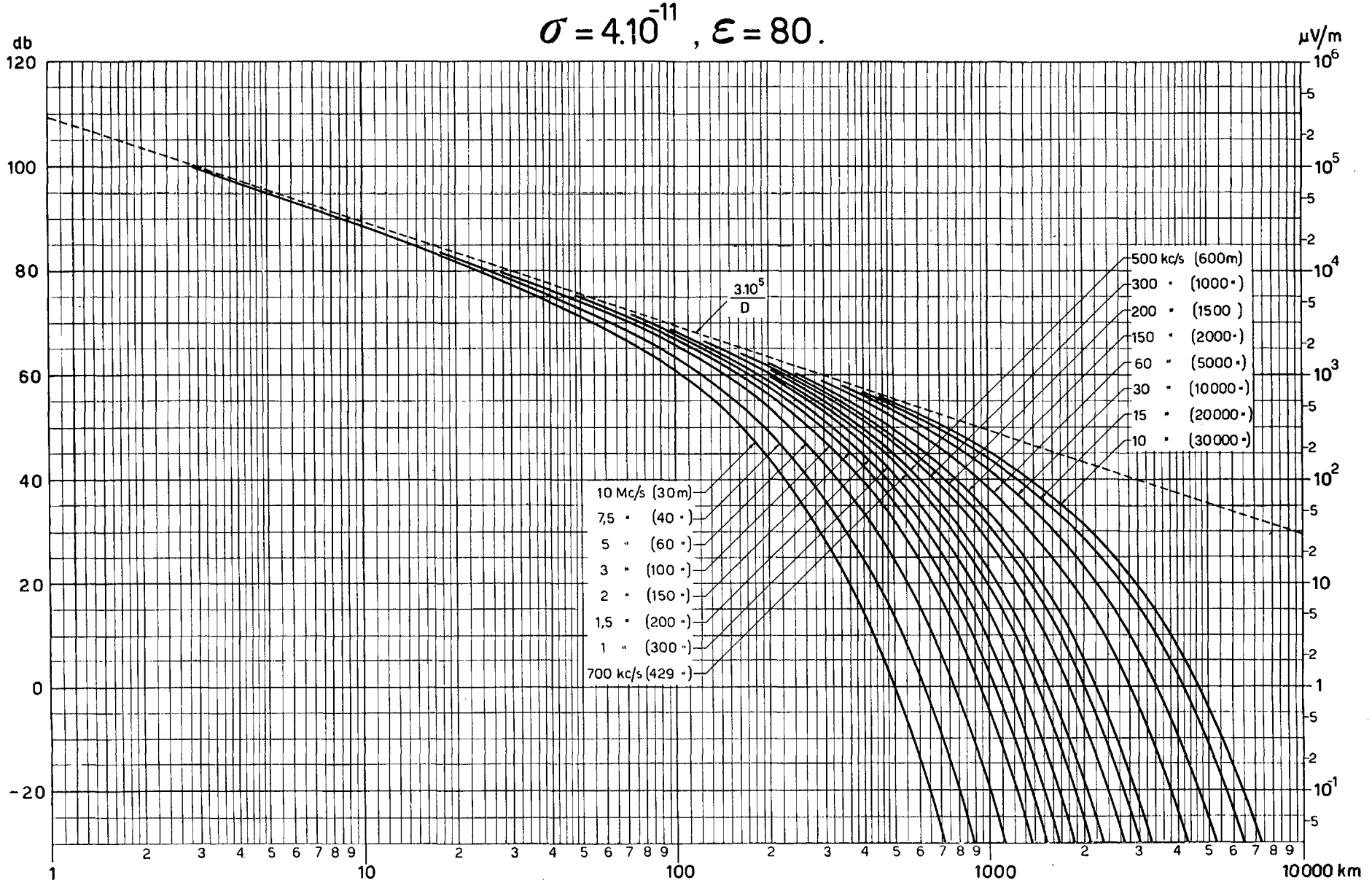

$\sigma = 4.10^{-11}$, $\varepsilon = 80$.
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^1
$\frac{3.10^5}{D}$
500 kc/s (600m)
300 " (1000 ")
200 " (1500)
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 6

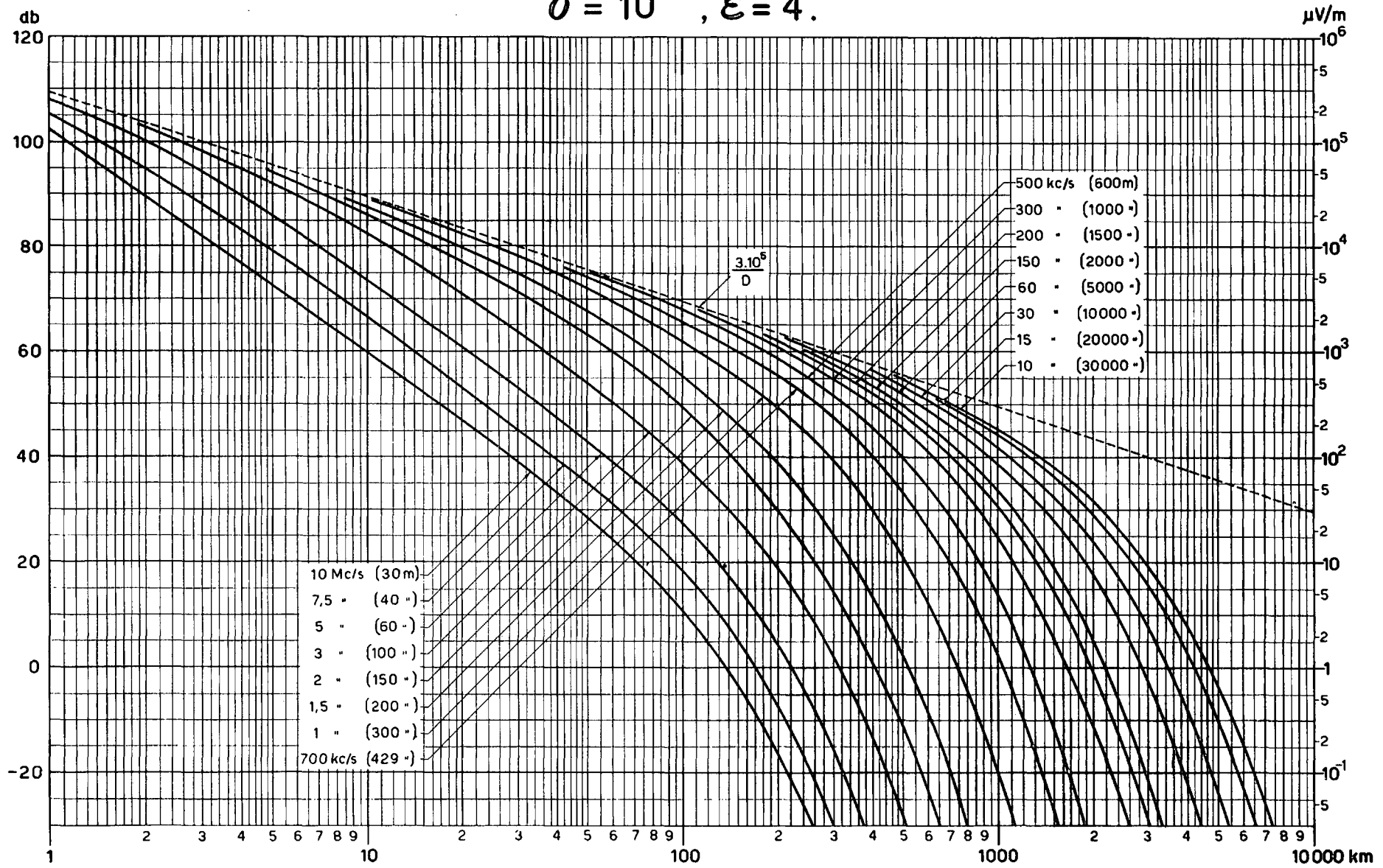

σ = 10^-12,5 , ε = 4 .
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^-1
3.10^5 / D
500 kc/s (600m)
300 " (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 7

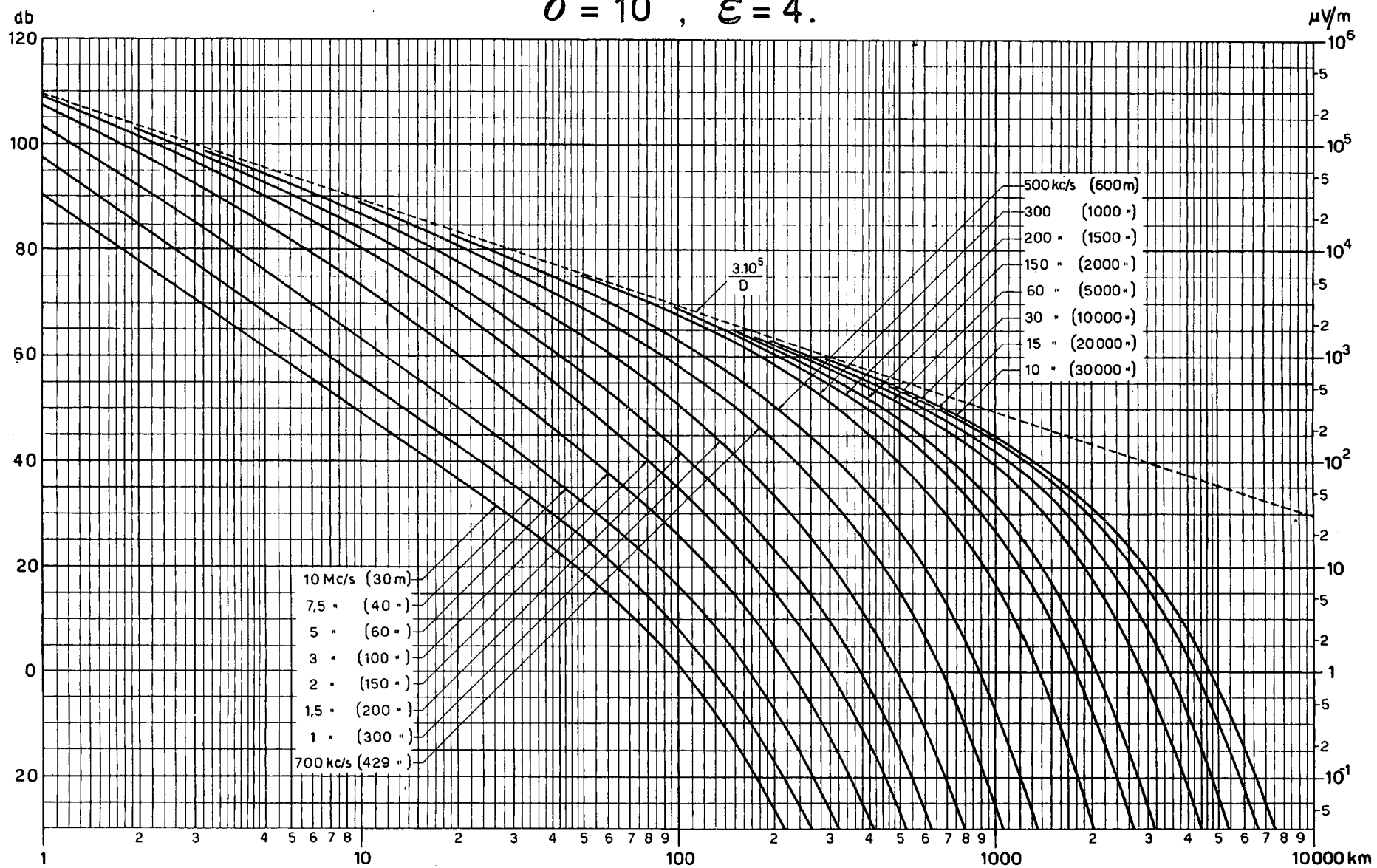

$\sigma = 10^{-13}$, $\varepsilon = 4$.
db
μV/m
120
100
80
60
40
20
0
20
10^6
10^5
10^4
10^3
10^2
10
1
10^{-1}
$\frac{3.10^5}{D}$
500 kc/s (600 m)
300 (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30 m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 8

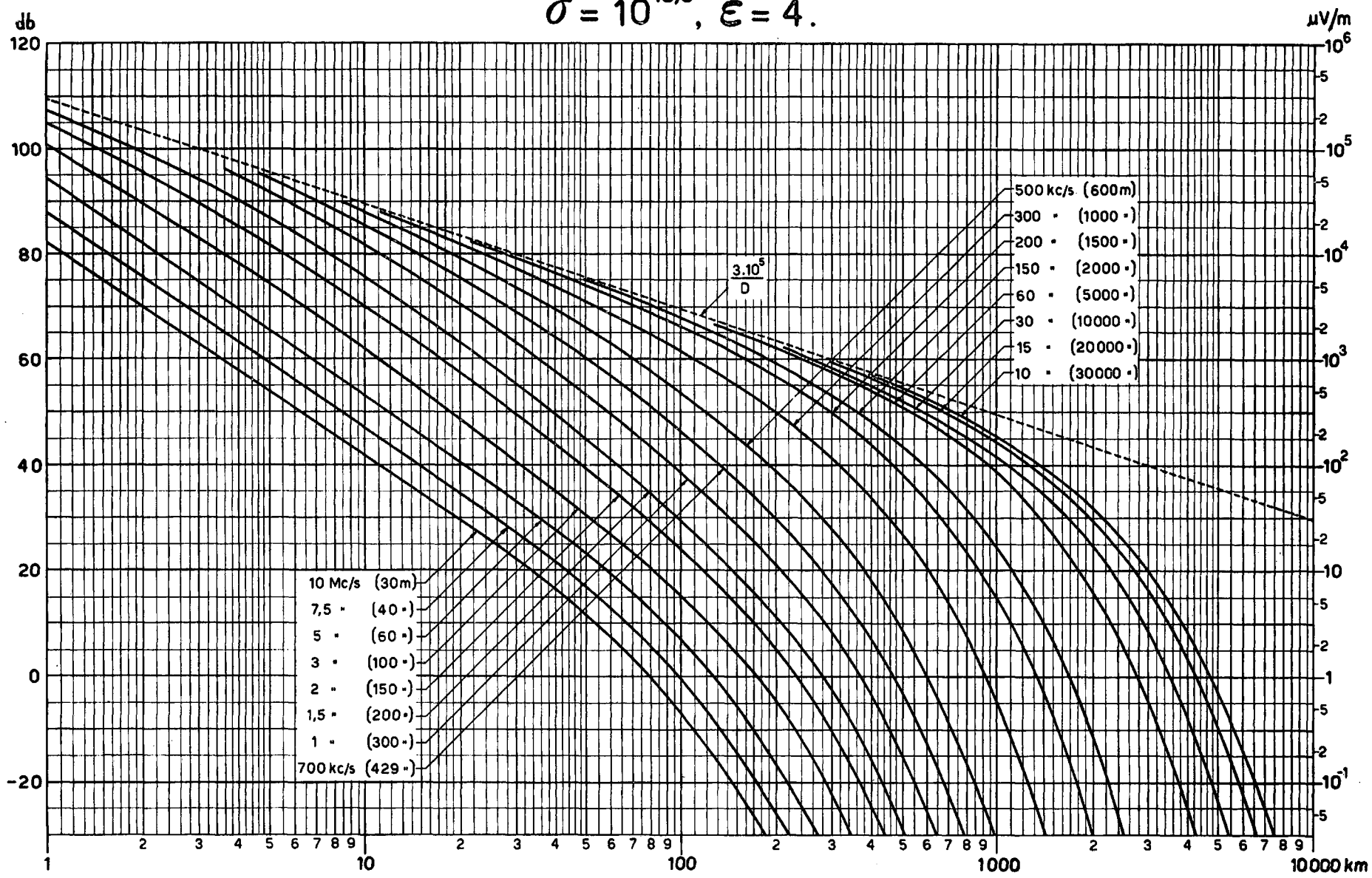

σ = 10^-13,5, ε = 4.
db
μV/m
120
100
80
60
40
20
0
-20
10^6
10^5
10^4
10^3
10^2
10
1
10^-1
3.10^5/D
500 kc/s (600m)
300 " (1000 ")
200 " (1500 ")
150 " (2000 ")
60 " (5000 ")
30 " (10000 ")
15 " (20000 ")
10 " (30000 ")
10 Mc/s (30m)
7,5 " (40 ")
5 " (60 ")
3 " (100 ")
2 " (150 ")
1,5 " (200 ")
1 " (300 ")
700 kc/s (429 ")
1
10
100
1000
10000 km

FIG. 9

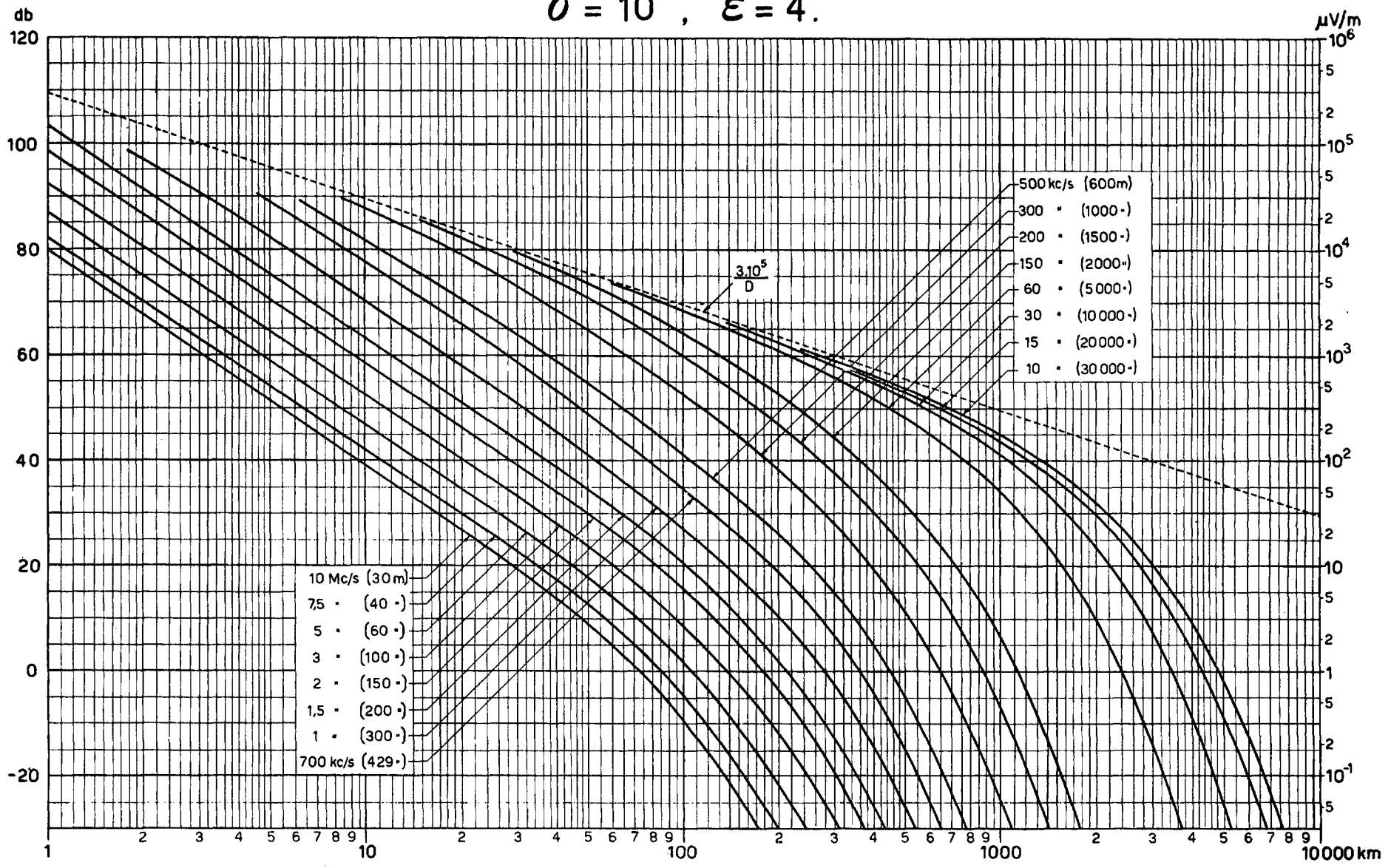

$\sigma = 10^{-14}$, $\varepsilon = 4$.
db
120
100
80
60
40
20
0
-20
μV/m
10^6
5
2
10^5
5
2
10^4
5
2
10^3
5
2
10^2
5
2
10
5
2
1
5
2
10^{-1}
5
$\frac{3.10^5}{D}$
500 kc/s (600m)
300 • (1000 •)
200 • (1500 •)
150 • (2000 •)
60 • (5000 •)
30 • (10000 •)
15 • (20000 •)
10 • (30000 •)
10 Mc/s (30m)
7,5 • (40 •)
5 • (60 •)
3 • (100 •)
2 • (150 •)
1,5 • (200 •)
1 • (300 •)
700 kc/s (429 •)
1 2 3 4 5 6 7 8 9
10
2 3 4 5 6 7 8 9
100
2 3 4 5 6 7 8 9
1000
2 3 4 5 6 7 8 9
10000 km

FIG. 10

ANNEX A 13

RECOMMENDATION No. 308 *)

GROUND-WAVE PROPAGATION OVER INHOMOGENEOUS EARTH

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the calculation of ground-wave field-strengths and phases for propagation over inhomogeneous earth, such as part land and part sea, is a matter of great importance in determining the service areas of radio transmitters and in the use of medium and low frequencies for navigational aids;

b) that the mathematical analysis has now been reduced in some special cases of well-defined homogeneous sections to a graphical form convenient for use in the solution of practical problems (see section E of the Bibliography in Report No. 141);

c) that the influence of a gradual transition between two homogeneous sections has in some special cases been investigated theoretically (see references C.1 and A.16 of the Bibliography in Report No. 141);

d) that the closely related problem of propagation over a surface with small undulations has been analysed by an analogous mathematical technique (see section C of the Bibliography in Report No. 141);

e) that, nevertheless, for the general case, calculations based on a rigid mathematical analysis are laborious;

f) that, in many cases, the variations in the electrical constants in both horizontal and vertical directions result in changes of the equivalent surface impedance of the ground which are gradual, ill-defined or imperfectly known;

g) that computations made from the mathematical analysis confirm the results of well-defined experiments;

h) that the semi-empirical methods which are in use (see section F of the Bibliography in Report 141) give good agreement within the range of their application with a rigorous theoretical analysis and field-strength measurements made under well-defined conditions;

---

*) This Recommendation replaces Recommendation No. 169.

unanimously recommends

1. that for cases for which the mathematical analysis has been reduced to a convenient form for practical application such methods should be used;

2. that, for other cases, the semi-empirical methods should be employed with due regard to the limitations of their use.

ANNEX A 14

RECOMMENDATION No. 310 *)

DEFINITIONS OF TERMS RELATING TO PROPAGATION IN THE TROPOSPHERE

(Geneva 1951 - Los Angeles 1959)

The C.C.I.R.,

considering

that it is well known that the propagation of waves of frequencies greater than 30 Mc/s is greatly influenced by meteorological conditions in the troposphere;

unanimously recommends

that the list of definitions annexed hereto be adopted for incorporation in the vocabulary in accordance with Resolution No. 5.

VOCABULARY OF TERMS USED IN RADIO PROPAGATION THROUGH THE TROPOSPHERE

	Term	Definition
1.	Troposphere	The lower part of the earth's atmosphere extending upwards from the earth's surface, in which temperature decreases with height except in local layers of temperature inversion.
2.	Tropopause	The upper boundary of the troposphere, above which the temperature increases slightly with respect to height, or remains constant.
3.	Temperature inversion	In the troposphere; an increase in temperature with height.
4.	Modified refractive index	For a given height above sea level: the sum of the refractive index of the air at this height and the ratio of this height to the radius of the earth.
5.	Refractive modulus	One million times the amount by which the modified refractive index exceeds unity.

*) This Recommendation replaces Recommendation No. 54.

6. M unit	A unit in terms of which refractive modulus is expressed in accordance with the preceding definition.
7. M curve	A curve showing the relationship between refractive modulus and height above the earth's surface.
8. Standard refractive modulus gradient	That uniform variation of refractive modulus with height above the earth's surface which is regarded as a standard for comparison. The gradient considered as normal has a value of 0.12 M units per metre (3.6 M units per hundred feet).
9. Standard radio atmosphere	For tropospheric propagation: an atmosphere having the standard refractive modulus gradient.
10. Basic reference atmosphere	An atmosphere defined by the relationship $n(h) = 1 + 289 \times 10^{-6} \cdot e^{-(0.136h)}$; where h is the height above sea-level in kilometres. Note: The refractive index in the first kilometre the basic reference atmosphere is very nearly equal to that in an atmosphere corresponding to an earth of effective radius of 4/3 the real radius.
11. Standard refraction	The refraction which would occur in a standard radio atmosphere (see Figure 1).
12. Super-refraction	Refraction greater than standard refraction (see Figure 1).
13. Sub-refraction	Refraction less than standard refraction (see Figure 1).
14. Standard propagation	The propagation of radio waves over a smooth sperical earth of uniform electrical characteristics under conditions of standard refraction in the atmosphere.
15. Tangential wave path	In radio-wave propagation over the earth: a path of propagation of direct wave, which is tangential to the surface of the earth. The tangential wave path is curved by atmospheric refraction.
16. Radio horizon	The locus of points at which direct rays from the transmitter become tangential to the earth's surface.

17. Effective radius of the earth — The radius of a hypothetical earth for which the distance to the radio horizon assuming rectinlinear propagation is the same as that for the actual earth with an assumed uniform vertical gradient of refractive index. (For the standard atmosphere, the effective radius is 4/3 that of the actual earth).

18. Tropospheric radio duct — A stratum of the troposphere within which an abnormally large proportion of any radiation of sufficiently high frequency is confined and over part or all of which there exists a negative gradient of refractive modulus. The upper bounding surface is determined by a local minimum value of the refractive modulus. The lower bounding surface is either the surface of the earth or a surface parallel to the local stratification of refractive properties at which the refractive modulus has the same values as that at the local minimum value of the refractive modulus (see Figures 2, 3 and 4).

19. Surface duct
Ground-based duct — A tropospheric radio duct having the earth as its lower boundary and in which the modified refractive index is everywhere greater than the value at the upper boundary (see Figures 2 and 3).

20. Elevated duct — A tropospheric radio duct of which the lower boundary is an elevated surface at which the modified refractive index has the same value as at the upper boundary (see Figure 4).

21. Duct thickness
Duct width — The difference in height between the upper and lower boundaries of a tropospheric radio duct.

22. Duct height — The height above the surface of the earth of the lower boundary of an elevated duct (See Figure 4).

23. Tropospheric mode — Any one of the possible modes of propagation in the troposphere.

24. Trapped mode — A mode of propagation in which the energy is substantially confined within a tropospheric radio duct.

25. Mixing ratio — The ratio of the mass (in grammes) of water vapour in a given volume of the atmosphere to the mass (in kilogrammes) of the dry air in the same volume.

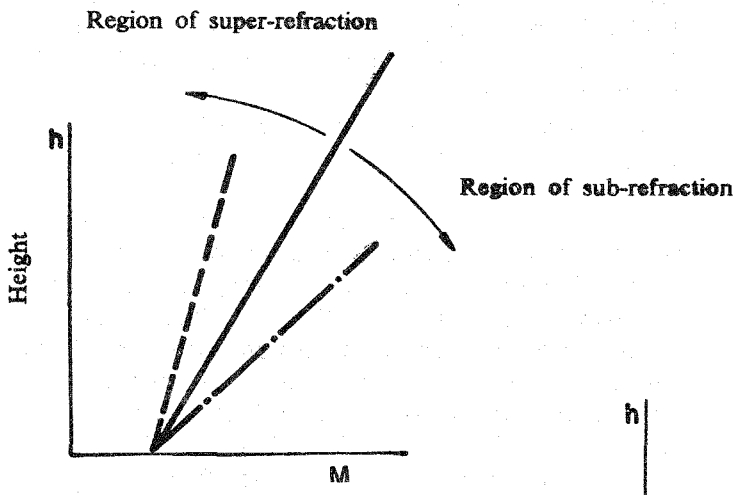
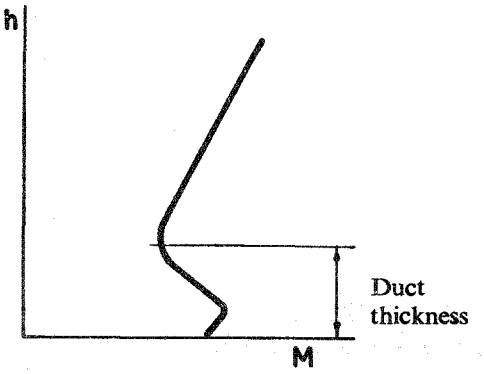
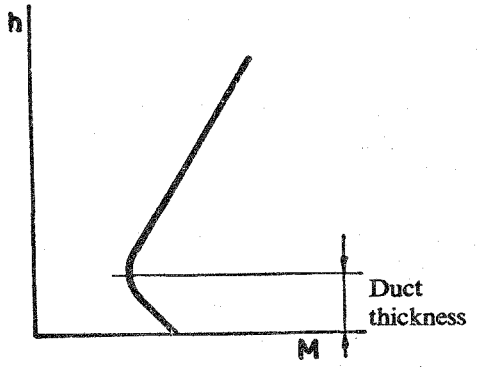


FIGURE 1



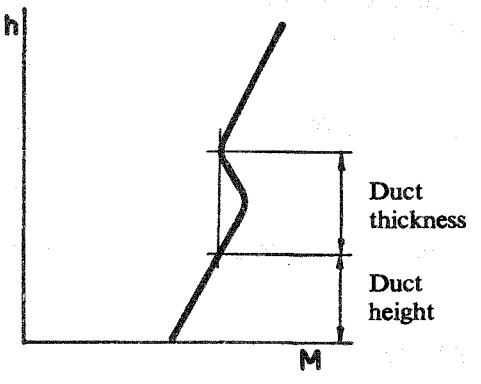
Surface duct

FIGURE 2



Surface duct

FIGURE 3



Elevated duct

FIGURE 4

ANNEX A 15

RECOMMENDATION No. 314 *)

PROTECTION OF FREQUENCIES USED FOR RADIO ASTRONOMICAL MEASUREMENTS

(London 1953 - Warsaw 1956 - Los Angeles 1959)

The C.C.I.R.,

considering

a) that the development of radio astronomy has already led to major technological advances, particularly in receiving techniques, and to improved knowledge of fundamental radio noise limitations of great importance to radio communication, and promises further important results;

b) that protection from interference on certain frequencies is absolutely essential to the advancement of radio astronomy and the associated measurements;

c) that, for the observation of known spectral lines, certain bands at specific frequencies are of particular importance;

d) that account should be taken of the Doppler shifts of the lines, resulting from the motion of the sources which are in general receding from the observer;

e) that for other types of radio astronomical observations a certain number of frequency bands are in use, the exact positions of which in the spectrum are not of critical importance;

f) that the sensitivity of radio astronomical receiving equipment, which is still steadily improving, greatly exceeds the sensitivity of communications and radar equipment;

g) that a considerable degree of protection can be achieved by appropriate frequency assignments on a national rather than an international basis;

h) that, nevertheless, it is impracticable to afford adequate protection without some international agreement;

---

*) This Recommendation replaces Recommendation No. 173.

unanimously recommends

1. that radio astronomers should be encouraged to choose sites as free as possible from interference;

2. that Administrations should afford all practicable protection to the frequencies used by radio astronomers in their own and neighbouring countries;

3. that particular care should be taken to give complete international protection from interference to observations of emissions known or thought to occur in the following bands :

Line	Line frequency (Mc/s)	Band to be protected (Mc/s)
Deuterium	327.4	322 - 329
Hydrogen	1420.4	1400 - 1427
OH	1667	1645 - 1675

4. that the bands allocated for standard frequency and time signal emissions at 2.5, 5.0, 10.0 and 20.0 Mc/s should not include anything other than the standard frequency and time signal emissions, thus permitting their use for reception in radio astronomy;

5. that consideration be given to securing adequate international protection of a number of narrow frequency bands throughout the spectrum above 30 Mc/s for the purpose of reception in radio astronomy;

6. that Administrations, in seeking to afford protection to particular radio astronomical observations, should take all practicable steps to reduce to the absolute minimum amplitude harmonic radiations falling within bands of frequencies to be protected for radio astronomy.

Note

Radio astronomers in a number of countries have indicated their desire to use for this purpose one frequency band at each of the following approximate positions (not necessarily in harmonic relation)

Frequency (Mc/s)	Bandwidth (Mc/s)
40	± 0.75
80	± 1.0
160	± 2.0
640	± 2.5
2560	± 5.0
5120	± 10.0
10240	± 10.0

A N N E X A 16

RECOMMENDATION No. 259

SELECTION OF FREQUENCIES USED IN TELECOMMUNICATION WITH AND BETWEEN ARTIFICIAL EARTH SATELITTES AND OTHER SPACE VEHICLES

(Questions No. 168 (V) and 169 (VI))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that transmission of radio signals between the earth and artificial earth satellites and other space objects is now an established fact;

b) that such extraterrestrial objects may well be consecutively above different countries of the world, thus necessitating international collaboration;

c) that radiocommunication between extraterrestrial objects and the earth and among extraterrestrial objects will be of importance;

d) that such radiocommunication will be affected by the terrestrial troposphere and ionosphere, and by ionization, radio-frequency noise, and man-made interference in space, as well as by relative velocities;

e) that the study of the effects of the ionosphere on such communications may be facilitated by comparison of HF signals with VHF or UHF signals since the ionospheric effects are larger on the lower frequencies;

f) that while frequencies for communication with objects in extraterrestrial space are being selected at present on the basis of particular communication requirements and technological capabilities, the inevitable increase in this type of communication is likely to lead to a chaotic situation in the radio spectrum;

g) that no provision for such communication was made in the Table of Frequency Allocations (Atlantic City).

h) that Report No. 115 presents a treatment of the technical factors affecting the selection of frequencies for telecommunication with an between space vehicles;

unanimously recommends

1. that consideration be given to the provision of a number of small frequency-bands well spaced throughout the HF and higher bands for telecommunication services with and between space vehicles;

2. that for services involving communication among space vehicles in inter-planetary space, additional consideration be given to the use of frequencies which do not significantly penetrate the terrestrial ionosphere or troposphere (roughly below 1 Mc/s or above 50,000 Mc/s respectively);

3. that special and particular consideration be given to the provision of at least two narrow frequency bands between 19 and 54 Mc/s to permit study of the effects of the ionosphere on communications passing through it;

4. that in determining the widths of allocated bands particular account be taken of Doppler shifts in frequency associated with high relative velocities.

ANNEX A 17

REPORT No. 115*)

FACTORS AFFECTING THE SELECTION OF FREQUENCIES FOR TELECOMMUNICATION WITH AND BETWEEN SPACE VEHICLES

(Questions No. 168 and 169)

(Los Angeles, 1959)

The purpose of this report is to summarize the frequency dependence of radio propagation and certain other technical factors which influence communication with or navigation and guidance of space vehicles. The results provide a basis for the selection of frequencies for these purposes. Optimum frequencies can be selected on the basis of the signal-to-noise ratio for a given transmitter power, and of minimum distortion of phase and amplitude, etc. It is recognized that diffraction and other distortions may cause problems in tracking and location; however, the treatment here takes signal-to-noise ratio as the sole criterion for frequency selection.

Factors Affecting the Selection of Frequencies

1. Only modest transmitter power will be initially available in the space vehicle.

2. All communication between earth and outer space must pass through the earth's atmosphere (including the troposphere and ionosphere). Communication between satellites will primarily involve radio paths outside the influence of the earth's atmosphere.

3. The atmosphere is frequency selective, allowing some frequencies to pass through readily while severely attenuating others. A range of frequencies in which waves readily penetrate the atmosphere is often called a "window".

4. Two principal ranges of frequencies pass readily through the atmosphere. They are:

4.1 The range between ionospheric critical frequencies and frequencies absorbed by rainfall and gases (about 10 to 10,000 Mc/s).

4.2 The combined visual and infra-red ranges (about 10^6 to 10^9 Mc/s).

5. The atmosphere is known to be partially transparent in a third range below about 300 kc/s. Waves are propagated through the ionosphere in this range by what is sometimes called the "whistler mode". Propagation in this mode is not yet well understood.

---

*) This Report was adopted unanimously.

6. The range 10 Mc/s to 10,000 Mc/s is the most practical for communication purposes considering the present state of development in radio frequency power generation. The upper limit of this range may be as low as 5000 to 6000 Mc/s during heavy rainstorms and the lower limit may be as high as 80 to 100 Mc/s depending upon the degree of solar activity, the location of the earth terminal and the geometry of the signal path. On the other hand, the "window" may extend from as low as 2 Mc/s for polar locations during night-time periods to as high as 50,000 Mc/s at high altitude rain-free locations.

7. In the mid-portion of this "window" favourable propagation conditions exist and circuit performance can be estimated on the basis of free-space propagation conditions by the following relation:

$$P_t' \propto \left(\frac{P_r' f^2 d^2}{G_t G_r} \right)$$

where: P_t' = Required transmitter power

P_r' = Minimum permissible receiver input power

f = Frequency

d = Distance between transmitter and receiver

G_t = Transmitting antenna gain in the pertinent direction

G_r = Receiving antenna gain in the pertinent direction

8. Actual propagation conditions vary substantially from this free space assumption at frequencies near the edge of the radio "window", and it is necessary to correct for ionospheric and tropospheric effects to obtain a true estimate of frequency dependence. This correction requires an estimate of tropospheric absorption at the higher frequencies and an estimate of ionospheric absorption at the lower frequencies. In addition to estimating ionospheric absorption, an estimate of the probability of radio signals penetrating the ionosphere must be made.

9. To determine optimum frequencies, the variation of background radio noise within the radio "window" must also be considered:

9.1 Cosmic noise predominates at the lower edge of the radio "window" and decreases with frequency until noise within the receiving equipment predominates.

9.2 At the current state of equipment development receiving equipment noise will predominate between about 100 to 200 Mc/s for antennas directed toward average sky noise areas and between about 300 to 500 Mc/s for antennas directed toward high cosmic noise areas such as the "milky way".

9.3 If low noise receiving equipment such as the MASER amplifier is used, cosmic noise will predominate up to about 1000 Mc/s.

9.4 Noise within the receiver normally increases slowly as the operating frequency is increased.

10. For antennas of fixed physical size, high frequencies have the advantage of greater gain but the disadvantage of narrow beamwidths and associated tracking problems.

11. High speed vehicles travelling so that the distance between transmitter and receiver is rapidly changing, have apparent frequencies differing from the actual transmitter frequencies by the "doppler" frequency shift.

12. Within the solar system there is evidence of appreciable densities of electrons out to great distances from the sun.

13. Transmission time delay will become substantial in outer space communications, e.g., 2.6 seconds are required for a round trip radio signal to the moon. This time delay is essentially independent of operating frequency.

14. Bolometers have been developed which can detect signals in the optical and infra-red frequency range as low as 160 db below one watt at a "fairly-high rate of signalling".

15. Although great distances are involved, the propagation medium in space beyond the first 500 miles of the earth's atmosphere is believed to be essentially transparent to radio waves. Thus we may estimate performance on the basis of free-space propagation. Frequency dependence of receiver input power under free-space propagation conditions depends upon the type of antenna at the transmitter and receiver. This frequency dependence is shown by the following free-space propagation relation:

$$P_r \propto \frac{P_t G_t G_r}{f^2 d^2}$$

where:

P_r is receiver input power

P_t is transmitter power

Other symbols have the same meaning as before

Frequency dependence of receiver input power for free space propagation conditions can be summarized as follows:

15.1 If both the transmitting and receiving terminals of a free-space communication link use non-directive antenna (e.g. two vehicles in space) or if beamwidths at both terminals are fixed, the receiver input signal power increases as the frequency is decreased:

$$\left\{ P_r \propto \frac{P_t}{f^2 d^2} \right\}$$

15.2 If one terminal of a free-space communication link uses a directive antenna of fixed physical size and can operate with narrower and narrower beamwidths as frequency increases and the other terminal uses a nondirective antenna or a fixed beamwidth antenna, e.g., a directive antenna on the earth's surface ($G_t \propto f^2$) and a nondirective antenna on a space vehicle, the receiver input signal power is independent of frequency $\left(P_r \propto \frac{P_t}{d^2} \right)$.

15.3 If both terminals of a free-space communication link use directive antennas of fixed physical size and can operate with narrower and narrower beamwidths as frequency increases, e.g., a directive antenna on the earth's surface, and a directive antenna on a more elaborate space vehicle ($G_t \propto f^2$ and $G_r \propto f^2$), the receiver input signal power increases as the frequency is increased $\left(P_r \propto \frac{P_t f^2}{d^2} \right)$.

DISCUSSION

16. Frequency dependence for practical space-communication circuits requires that atmospheric effects be included. Receiver input signal power and receiver input noise power for a directive receiving antenna and nondirective transmitting antenna are shown in Fig. I. The receiver input power includes ionospheric and tropospheric effects for a 1000 mile propagation path tangential to the earth's surface for summer midday operation during periods of high solar activity and for moderate rain conditions such as experienced 1% of the time in the Washington, D.C. area. This is typical of the most adverse propagation conditions normally encountered in the absence of sudden ionospheric disturbances, instances of intense sporadic E, areas of auroral activity or rain conditions of cloudburst proportions. During more favourable propagation conditions, such as a propagation path normal to the earth's surface during the night at the lower frequencies, or in a high altitude rain-free location for the higher frequencies, the receiver input power can be expected to be essentially independent of frequency over a wider range of frequencies. The receiver input power as shown between 100 and 500 Mc/s in Fig. I will be typical over a much wider frequency range during these favourable propagation periods.

17. Figure II shows essentially the same information as Fig. I, except that the distance is increased to 300,000 miles, the receiving antenna diameter is increased to 120 feet, the use of cooled amplifiers such as the MASER is anticipated, quasi-maximum values of cosmic noise for high gain antennas are given, and receiver input power for a vertical path in dry rain-free location is shown.

Figure III shows the theoretical improvement at the higher frequencies if a directive antenna is used on the space vehicle. Although receiver input power is shown only for a 15-foot diameter parabolic antenna on the space vehicle, this improvement with increased frequency applies for all directive antennas of fixed physical size. Since the increase in antenna gains at the higher frequencies more than offsets the slightly increased power requirement due to increased receiver noise at these frequencies, the first impression is that the higher the frequency the better the expected circuit performance as long as the frequency is below the upper limit of the radio "window". (About 6000 Mc/s for oblique paths during moderate rainfall and up to 50,000 Mc/s for high altitude rain-free location). The physical problem of antenna design and tracking, however, establishes minimum permissible antenna beamwidths and is believed to place practical limits on this upper frequency at much lower values.

19. Theoretical effective power requirements for greater distances are shown in Fig. IV as a function of frequency. Power requirements shown are the minimum detectable radiated power (6 db S/N ratio) from a space vehicle to a 60 feet diameter earth-based antenna under the most adverse propagation conditions normally encountered. Allowances for fading and antenna beamwidth limitations are not shown by the chart. Approximate distances from earth to the moon, the sun, certain planets and to typical man-made satellites are shown.

20. For communication between vehicles in outer space, free-space propagation conditions apply over a wide frequency range. Frequencies above or below the earth's radio "window" can be expected to minimise interference problems with operations on earth. These frequencies will be below about 10 Mc/s or above about 10,000 Mc/s. Selection of an optimum frequency can be based on free-space propagation but requires an estimate of noise powers in outer space, particularly as to the radio noise at frequencies between 2 and 10 Mc/s. Frequencies below 2 Mc/s are considered impractical because of antenna sizes required and the substantial plasma frequencies probably occurring in outer space during periods of severe magnetic storms. If radio noise is excessive below 10 Mc/s and if antenna orientation problems limit the use of high gain antennas, the optimum frequency for communication between space vehicles may fall within the 10 to 10,000 Mc/s radio "window".

21. For space vehicles using essentially omnidirectional antennas communicating with earth terminals using directive antennas, the receiver input power will be constant with frequency over much of the 70 to 6000 Mc/s band and the background noise level and beamwidth requirements to assure tracking determines the optimum frequency. Background noise from sources within the antenna beam (cosmic noise) predominates at the lower edge of the band and noise generated within the first stages of the receiver predominates at the upper edge of the band. The crossover point for the curves representing these noise sources determines the frequency with the maximum signal-to-noise ratio and therefore, the optimum frequency for communication if antenna beamwidths are satisfactory at these frequencies. These optimum frequencies are about as follows:

21.1 100 to 200 Mc/s for conventional receivers with antennas directed toward average cosmic noise sources;

21.2 300 to 500 Mc/s for conventional receivers with high gain antennas directed toward high cosmic noise sources such as the "milky way";

21.3 1000 to 3000 Mc/s if the receiver is equipped with cooled amplifiers such as the MASER;

21.4 Antenna beamwidths must always be considered and compromises made between beamwidth and optimum signal-to-noise ratios. Since receiver noise increases only slowly with frequency and receiver input power is constant up to about 6000 Mc/s, higher frequencies may be used with only slight decrease in S/N ratio but at the expense of increased tracking difficulty.

22. As more elaborate space vehicles capable of maintaining attitude and employing directive antennas are developed, the receiver input power will increase with frequency and the background noise level will no longer determine the optimum frequency. The optimum frequency will be governed by a compromise between maximum practical physical antenna size and the minimum antenna beamwidth consistent with acquisition and tracking techniques. If attitude control of the space vehicle and acquisition and tracking limitations of the ground stations establish minimum antenna beamwidths at both terminals, the fixing of the maximum practical antenna size at either terminal will establish the optimum frequency and antenna size for the other terminal. As attitude control and tracking techniques improve the optimum frequency increases. As larger antennas become practical the optimum frequency decreases. The optimum frequency is therefore closely associated with particular applications and can be selected once the physical antenna size and minimum beamwidths are established. For a one-degree minimum beamwidth for the earth antenna and a 20-degree minimum beamwidth for the space vehicle antenna, optimum combinations of frequencies and antenna sizes are as follows:

EARTH ANTENNA DIA. (ft)	OPTIMUM FREQUENCY (M/cs)	SPACE VEHICLE OPTIMUM ANTENNA DIA. (ft)
30	2400	1½
60	1200	3
120	600	6

23. The optimum frequency for communication between outer space vehicles is unknown. It will depend upon radio noise in outer space and upon the ability of the vehicles to maintain attitudes and thereby use directional antennas. For omnidirectional antennas or for any fixed antenna beamwidth the optimum frequency will be the lowest frequency consistent with the practical antenna size and outer space radio noise levels. Since operation at frequencies outside the radio "window" will tend to minimise the radio interference problem between the space vehicles and earth, space vehicles with omnidirectional or broad beamwidth antennas should be assigned trial frequencies below 10 Mc/s if antennas at these frequencies are practical. For more elaborate space vehicles with the ability to properly orient antennas with very narrow beamwidths, operation at frequencies above or near the upper edge of the radio "window" is recommended (above 10,000 Mc/s). If physical antenna size bars the use of frequencies below 10 Mc/s and if the ability to orient antennas bars the use of frequencies above 10,000 Mc/s, antenna size and antenna beamwidth compromises will determine optimum frequencies. Frequencies may then be selected by the use of Fig. IV in the same manner as for communication between space vehicles and earth, when both terminals use directive antennas except that the earth's ionospheric and tropospheric limitations will no longer apply.

BIBLIOGRAPHY

1) Burgess, E. "Satellites and Space Flight". The Macmillan Co. 1957.

2) Bean, B.R., and Abbott, R., "Oxygen and Water Vapor Absorption of Radio Waves in the Atmosphere". Geofisica Pura E Applicata. Milano. Vol. 37, pp. 127-144. 1957.

3) Radio Astronomy Issue, Proceedings of the IRE, Vol. 46, No.1, New York, January 1958.

4) Laitinen, P.O., and Haydon, G.W., "Analysis and Predictiohs of Sky Wave Fields Intensity", Radio Propagation Agency Technical Report No.9. August 1950, U.S. Army Signal Radio Propagation Agency, Fort Monmouth, N.J.

5) Norton, K.A., "Maximum Range of a Radar Set". Proceedings of the IRE, January 1947.

6) Clarke, A.C., "Electronics and Space Flight", Journal of the British Interplanetary Society, Vol. 7, No. 2, p. 49. March 1948.

7) Smith, George O., "Radio Communications Across Space, Ship to Ship, and Ship to Planet". Journal of the British Interplanetary Society. Vol. 12, No. 1., p. 13, 1953.

8) Prew, Henry., "Space Exploration - The New Challenge to the Electronics Industry". IRE Transactions on Military Electronics. Vol. MIL-1 No.2. p. 43. December 1957.

9) Griffiths. "Doppler Effect in Propagation". Wireless Engineer. June 1947.

10) Chvojkova, E., "Propagation of Radio Waves from Cosmical Sources", Nature 11 January 1958.

11) Bremmer, H., "Terrestrial Radio Waves". Elsevier Publishing Company, New York, 1949.

12) Castruccio, Peter A., "Communications and Navigation Techniques of Interplanetary Travel". IRE Transactions on Aeronautical and Navigational Electronics. December 1957.

13) Wheelon, Albert D., "Mid-Course Guidance Techniques for Space Vehicles". 1958 National Conference of Aeronautical Electronics.

14) Mengel, J.T., "Tracking the Earth Satellite and Data Transmission by Radio". Proceedings of the IRE, 44, pp. 755-760, June 1956.

PRELIMINARY CONSIDERATIONS IN SELECTING FREQUENCIES FOR RADIO COMMUNICATION TO EARTH FROM A SPACE VEHICLE
BASED ON 1000 MILES (Typical Satellite Distance)
OMNIDIRECTIONAL VEHICLE ANTENNA - 30 AND 60 FOOT DIAMETER PARABOLID RECEIVING ANTENNA
1 WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

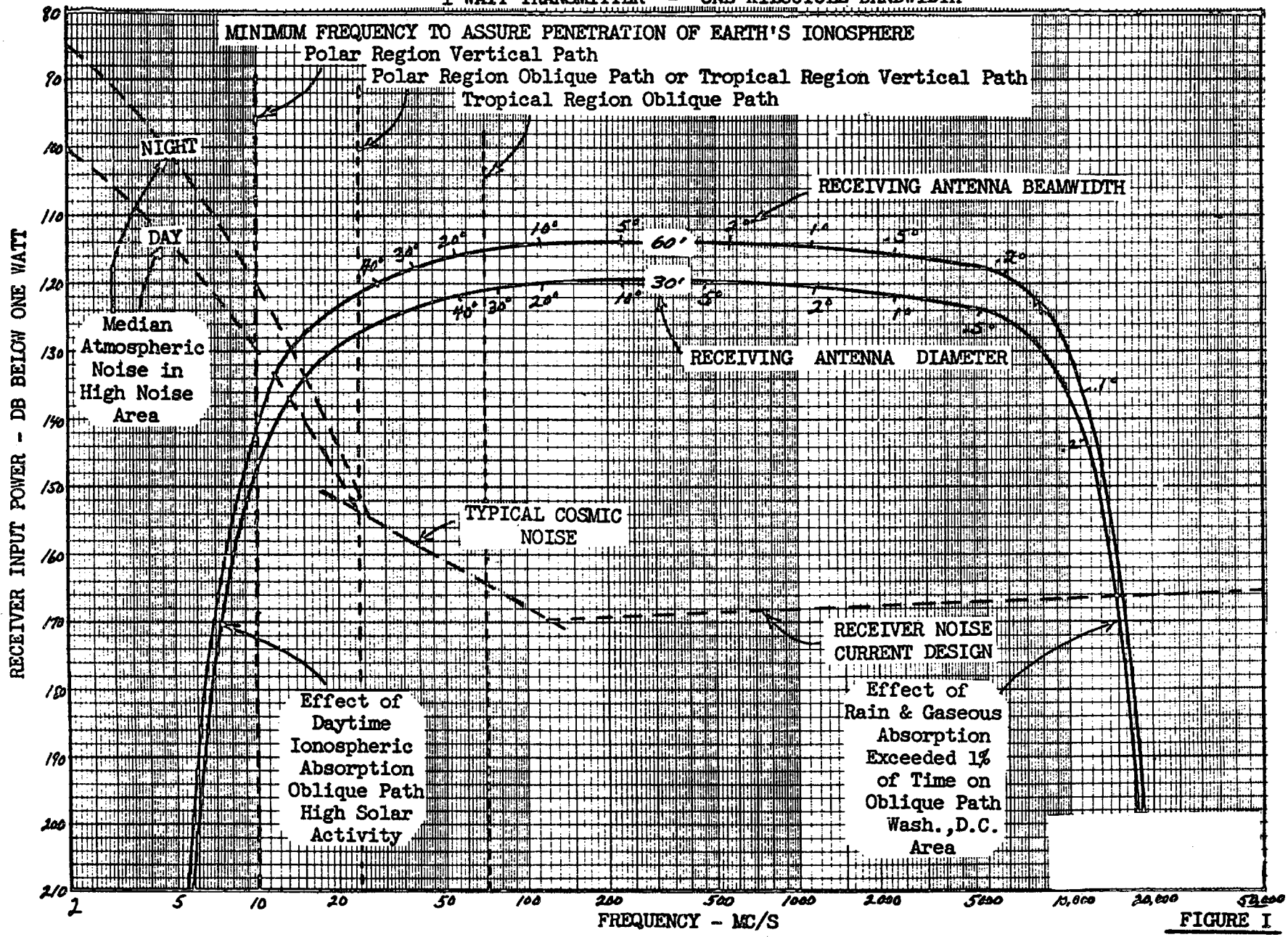


FIGURE I

PRELIMINARY CONSIDERATIONS IN SELECTING FREQUENCIES FOR RADIO COMMUNICATION TO EARTH FROM A SPACE VEHICLE
BASED ON 300,000 MILES (Distance to Circle Moon)
OMNIDIRECTIONAL VEHICLE ANTENNA - 60 and 120 FOOT DIAMETER PARABOLID RECEIVING ANTENNA
ONE WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

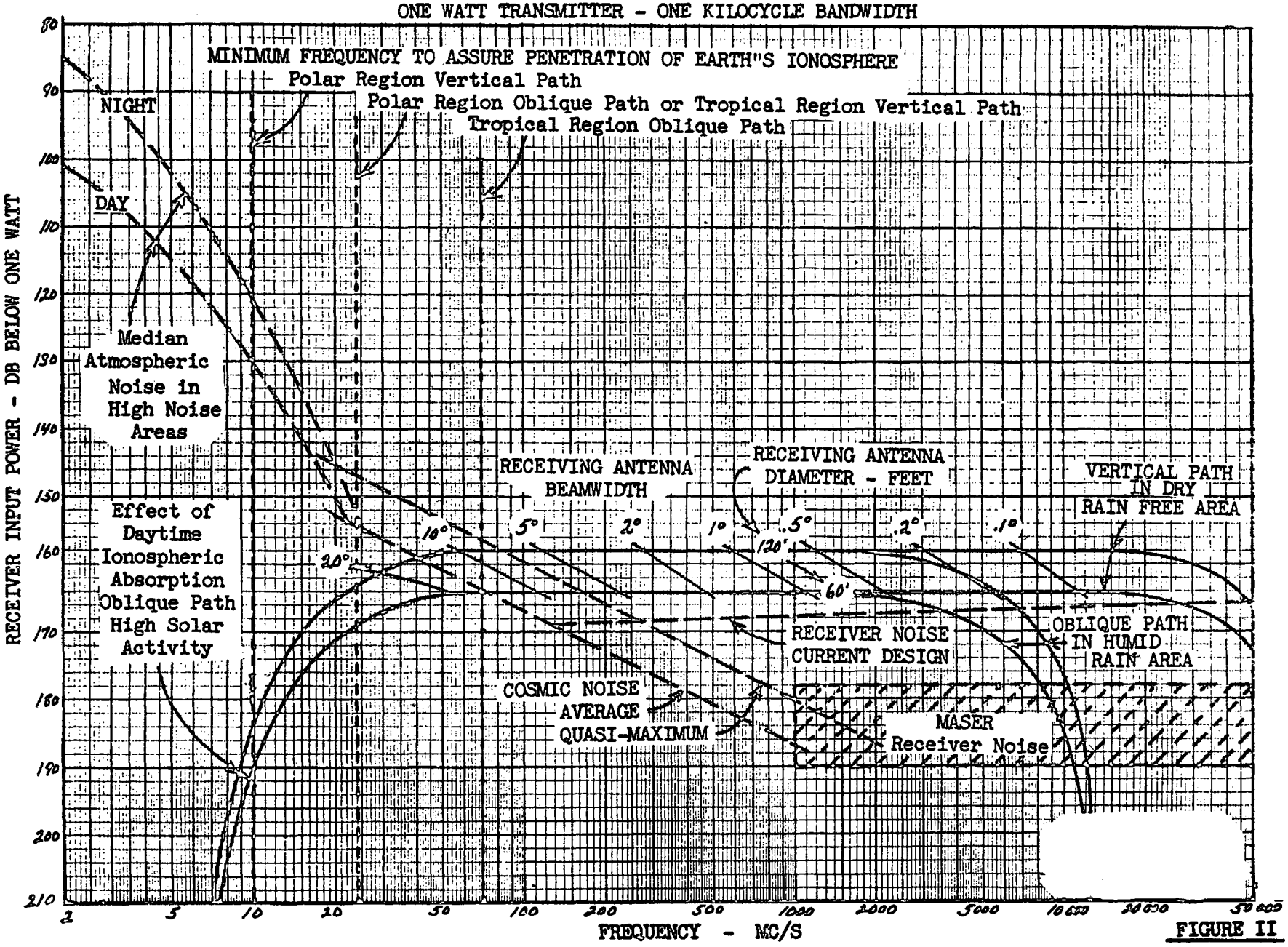


FIGURE II

PRELIMINARY CONSIDERATIONS IN SE TING FREQUENCIES FOR RADIO COMMUNICA N TO EARTH FROM A SPACE VEHICLE
BASED ON 300,000 MILES (Distance to Circle Moon)
15 FOOT DIAMETER PARABOLIC VEHICLE ANTENNA - 60 FOOT DIAMETER PARABOLIC RECEIVING ANTENNA
1 WATT TRANSMITTER - ONE KILOCYCLE BANDWIDTH

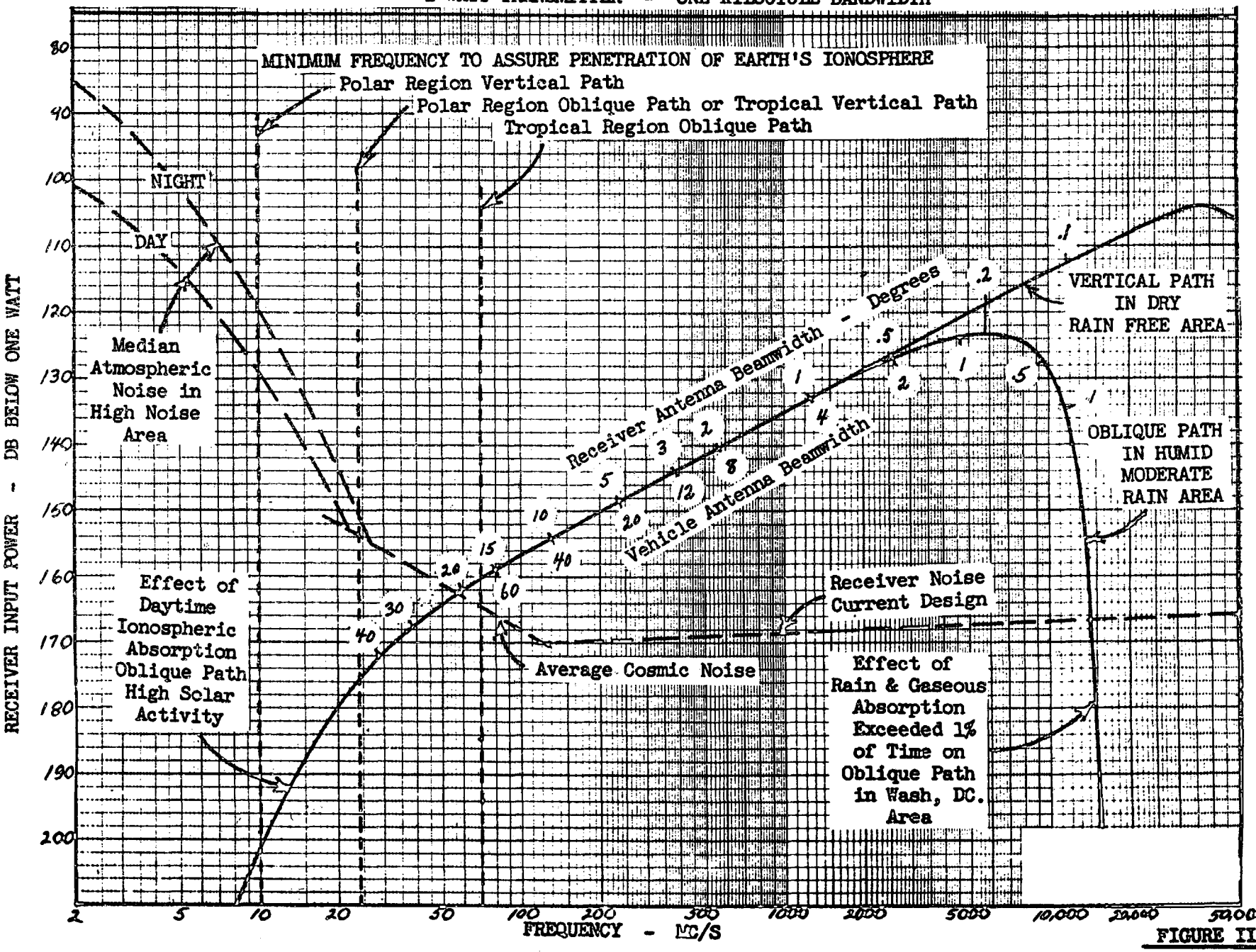


FIGURE III

THEORETICAL EFFECTIVE RADIATED POWER REQUIRED FROM SPACE VEHICLE TO PERMIT DETECTION ON EARTH
ONE KILOCYCLE BANDWIDTH - 6 DB SIGNAL-TO-NOISE RATIO - RECEIVING ANTENNA - 60 FOOT PARABOLID
DAYTIME OPERATION - HIGH SOLAR ACTIVITY - RAIN AND GASEOUS ABSORPTION BASED ON 1% OF TIME (WASH,DC)
RADIO PATH APPROXIMATELY HORIZONTAL TO EARTH - RECEIVERS OF CURRENT DESIGN

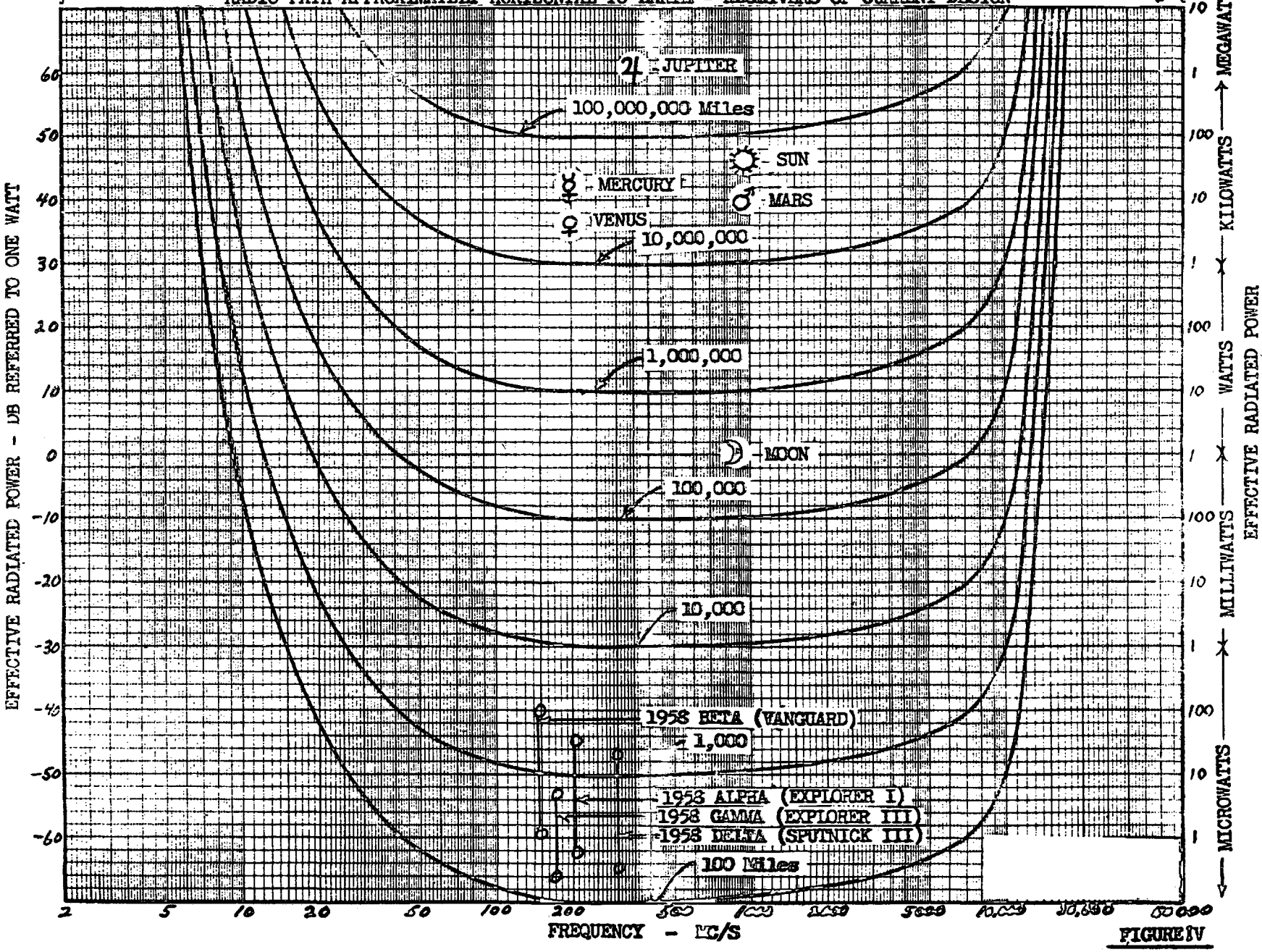


FIGURE IV

A N N E X A 18

RECOMMENDATION No. 320

STANDARD-FREQUENCY TRANSMISSIONS AND TIME SIGNALS IN ADDITIONAL FREQUENCY BANDS

(Question No. 142 (VII))

(Los Angeles 1959)

The C.C.I.R.,

considering

a) that Recommendation No. 314 refers only to the transmissions of standard-frequency and time signals allocated by the Radio Regulations, Atlantic City 1947, centred on the frequencies 2.5, 5, 10, 15, 20 and 25 Mc/s;

b) that propagation characteristics, interference and noise degrade considerably the short term accuracy obtainable in these frequency bands;

c) that in communications, research and industry, there is an increasing need for high accuracy of frequency and time measurements in a short period of time;

d) that measurements on controlled stations in Band 4 have demonstrated that a precision of frequency comparison of 1 part in 10^{-10} can be achieved in a period of a few hours during daylight at a range of 5000 km,*) at great ranges the precision decreases, but is still much greater than that obtainable in Bands 6 and 7;

e) that, therefore, the possibility exists of achieving a world-wide frequency reference of high precision in Band 4 between 15 and 25 kc/s by means of a single station or at most two or three transmitters operating on different frequencies;

f) that it may be possible by specialized techniques to provide a highly precise world-wide time reference by emissions in Band 4;

g) that studies employing highly stabilized transmissions in Band 4 provide valuable information regarding ionospheric and propagation conditions which is useful in scientific studies and in the design of long range navigation systems;

---

*) See Report No. 163 - Observations of a standard frequency service on 16 kc/s.

unanimously recommends

1. that as many stations as possible already in operation in Band 4 should be controlled with sufficient stability to permit an extension of present measurements of path phase stability;

2. that phase measurements in Band 4 at great distances, for example, near the antipodal points, be continued and refined to yield further information on the behaviour of such standard-frequency transmissions at extreme distances;

3. that the techniques for transmission and reception of standard-frequency and time signals in Band 4 be investigated with a view of avoiding interferences in the distribution of such a service;

4. that a band of 100 c/s in the neighbourhood of 20 kc/s (15 to 25 kc/s) would appear to be a suitable channel for an effective standard-frequency and time signals service;

5. that appropriate existing stations in Bands 5 and 6 be employed as much as possible for distribution of standard-frequency by precisely controlling their carrier frequency;

6. that existing broadcasting stations in Band 8, such as FM and television, be employed as much as possible for distribution of standard-frequency and time signals which can be added to the existing present modulation, without interference to the normal programme;

7. that any administration contemplating transmissions in accordance with the above proposals should first communicate the details to the Chairman and Vice-Chairman of Study Group VII.

ANNEX A 19

RESOLUTION No. 53

STANDARD FREQUENCY AND TIME SIGNALS

TRANSMISSIONS IN BAND 4

(Question No. 142 (VII))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that considerable experience has now been obtained on the operation of a standard-frequency and time-signal service on the frequency bands allocated in accordance with Recommendation No. 2 adopted by the Administrative Radio Conference (Atlantic City, 1947);

b) that the accuracy obtainable in receiving the standard-frequency and time-signal service at great distances is not always sufficient for those users requiring the highest precision;

c) that it has been shown that a higher order of accuracy of standard-frequency reception at great distances can be obtained from transmissions in Band 4;

d) that it may be possible also to make narrow-band and higher precision transmissions of time signals in Band 4;

e) that intolerable interference would be produced if several standard-frequency and time-signal stations operated simultaneously on the same frequency in Band 4, and service would need to be carefully coordinated with a limited number of stations;

unanimously resolves

that the next Administrative Radio Conference be requested to provide for an international standard-frequency and time-signal service in Band 4, a suitable frequency being in the neighbourhood of 20 kc/s (15 to 25 kc/s) and the bandwidth required being about 100 c/s.

ANNEX A 20

RECOMMENDATION No. 323 *)

IDENTIFICATION OF RADIO STATIONS

(Question No. 104 Revised)

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that, in order to carry out an efficient monitoring service of radio stations, it is necessary for these stations to be identified as regularly as possible during their transmissions;

b) that in some types of radio systems the identification procedure used at present is satisfactory to operating agencies, regulating Administrations and monitoring services, as in the case of single-channel low-speed telegraphy;

c) that the Atlantic City Radio Regulations (Article 13, Section V, para. 10) set forth requirements for transmissions of radio call signs and state that each radio station provided with a call sign from the international series must, unless the Atlantic City Radio Regulations provide otherwise, transmit this call sign during the course of their transmission as frequently as is practicable and reasonable;

d) that certain types of radio stations are exempted from the necessity of having an international call sign, for example, stations which are easily identified by other means and whose signals of identification, or characteristics of emission, are published in international documents;

e) that satisfactory methods for identifying some multi-channel types of transmission have been evolved;

f) that the requirement of frequently transmitting an identifying signal by interrupting the traffic imposes difficulties on the operating agencies by reducing the operating time of a circuit, particularly where heavily loaded multi-channel or high-speed machine operation is employed;

---

*) This Recommendation replaces Recommendation No. 220.

The Bielorussian S.S.R, P.R. of Bulgaria, the P.R. of Rumania, the P.R. of Czechoslovakia, the Ukrainian S.S.R. and the U.S.S.R. reserved their opinions on this Recommendation.

g) that, when an identifying signal is transmitted simultaneously with traffic, it is desirable, for ease of identification, to transmit an appropriate signal from the International Q-Code to indicate that the identifying signal which follows is superimposed on another emission;

recommends

1. 1.1 that each radio station required to have an identifying signal under the provisions of the Atlantic City Radio Regulations, Article 19, should send such signal at the beginning and the end of a transmission, and as often as practicable and reasonable during such transmissions;

1.2 that, when a number of stations work simultaneously in a common circuit, either as relay stations, or in parallel on different frequencies, each station shall as far as is practicable and reasonable, transmit its own identifying signal; alternatively, each station should transmit the identifying signal or signals of all stations working as a group;

2. that for the purpose of identification, one of the following means should normally be used:

2.1 International Morse code using class A1, A2, F1, or F2 emission and transmitted preferably at hand speed;

2.2 Five-Unit Code (International Telegraph Alphabet No. 2) using class A1, A2, or F1 emission, at a speed appropriate to single-channel working and preferably at the standardized speed of 50 bauds;

2.3 speech in clear;

3. that the identifying signal should be transmitted non-simultaneously with the traffic and using one of the means in (2) above, or simultaneously with the traffic using the following methods:

3.1 for class F1 emissions, particularly for high-speed or multi-channel working, the superposition of the identifying signal in International Morse code by an additional frequency or phase modulation of the carrier;

3.2 for single-sideband emissions, by amplitude keying of the reduced carrier or of some other pilot frequency;

3.2.1 keying of the reduced carrier with a difference in level of 5 db gives a satisfactory compromise between the acceptable distortion of the traffic signals and the suitability for identification purposes, especially if the identifying signal is repeated;

3.3 for facsimile transmission employing class A4 emissions, by amplitude modulation, at a frequency below the lowest used for the facsimile modulation. Where single-sideband transmission is used, amplitude keying, as in 3.2 above, may be used;

4. for the transmission of the identifying signal simultaneously with traffic, as covered in para. 3 above or in other ways, the signal sent to indicate that the identifying signal which follows is superimposed on another transmission, should be sent in the same manner as the identifying signal, and the letters QTT should be used and incorporated in the International Q-Code (Radio Regulations, Atlantic City, 1947, App. 9) for this purpose;

5. that, in order to avoid additional complexity in the equipment and operating of transmitting stations, every reasonable effort should be made to provide monitoring stations with equipment suitable for the reception of identifying signals of all stations;

6. that, if the identifying signal cannot be transmitted frequently or continuously, it would facilitate the work of monitoring stations if the identifying signal were transmitted in the period from 10 minutes before to 10 minutes after the hour (G.M.T.), but not necessarily continuously during that 20-minute period;

7. that administrations be encouraged to co-operate directly with one another in carrying out tests of identification methods. Administrations are also invited to inform the I.F.R.B. in advance of such tests of new methods of identification in order to facilitate cooperative observations and also to afford other administrations the opportunity to become acquainted with such new methods for the identification of radio stations.

A N N E X A 21.

RESOLUTION No. 55.

RADIO RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

PREFERRED FREQUENCY BANDS AND CENTRE FREQUENCIES

FOR RADIO-RELAY LINKS FOR INTERNATIONAL CONNECTIONS

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that line-of-sight and near line-of-sight radio-relay links have already been established by many countries for international connections and that such networks are expanding;

b) that some countries may be considering the use of tropospheric-scatter links for international connections;

c) that the C.C.I.R. has recommended preferred radio-frequency interconnection arrangements for radio-relay links of capacity from 60 to 1800 telephone channels, or for television (Annex 1);

d) that for radio frequency interconnection of links in international networks, agreement is necessary on specific radio frequencies as well as on the arrangement of radio channels within a band;

e) that specific radio frequencies can readily be defined in terms of the centre frequency of the radio-frequency interconnection arrangement;

f) that for technical reasons, only certain preferred values of the centre frequency are acceptable in a given frequency band;

g) that there are various aspects of radio-wave propagation and equipment design that lead to the choice of particular frequency bands for certain capacities and types of radio-relay system;

h) that radio-relay links used for international connections must meet similar high standards of performance to those recommended by the C.C.I.T.T. for metallic circuits;

i) that it is essential to avoid interference to radio-relay links used for international connections, either from other radio-relay links or from other radio services (including harmonics), operated in the same or other countries;

unanimously resolves

that the attention of the Administrative Radio Conference be drawn to :

1. the technical advantages of international agreement on preferred frequency bands within which international line-of-sight and tropospheric-scatter radio-relay links may be established using the radio-frequency channel arrangements recommended by the C.C.I.R.;

2. the technical advantages of preferred values for the centre frequencies of bands for line-of-sight and tropospheric-scatter systems being established by international agreement;

3. the risk of interference between line-of-sight and tropospheric-scatter links if these operate in the same frequency band and in the same geographical zone;

4. the need to avoid interference to radio-relay links used for international connections from other radio services or harmonics radiated by them.

ANNEX 1

C.C.I.R. RECOMMENDATIONS FOR PREFERRED RADIO-FREQUENCY CHANNEL ARRANGEMENTS FOR RADIO-RELAY SYSTEMS USED FOR INTERNATIONAL CONNECTIONS(1)

Recommendation No.	Max. capacity of each radio carrier (telephone channels or television (TV))	Preferred "centre" (2) frequency f_o (Mc/s) (3)	Width of radio frequency band occupied (Mc/s)
Rec. 284	60/120	1808 2000 2203	200 200 200
Rec. 285	60/120	7558.5	300
Rec. 288	300 to 1800 or TV or equivalent	1903 2101	400 400
Rec. 277		4003.5(4)	400(4)
Rec. 278	600 to 1800 or TV or equivalent	6175	500

NOTES

1. The Recommendations referred to above apply to line-of-sight and near line-of-sight radio-relay systems. In the case of tropospheric-scatter systems, it has not yet been possible to formulate preferred radio frequency channel arrangements but the attention of the Administrative Radio Conference is drawn to Rec. No. 299 and to Report No. 436.

2. The "centre" frequency here means a frequency approximately in the middle of the band. For technical reasons the "centre" frequency is not precisely at the middle of the band.

3. Other centre frequencies may be used by agreement between the Administrations concerned.

4. In the case of radio-relay systems used in Regions 2 and 3 and operating in the 4000 Mc/s frequency band, an alternative radio frequency channel arrangement may be used (see the Note in Rec. No. 277).

5. The attention of the Administrative Radio Conference should be drawn also to Study Programme No. 159.

A N N E X A 21 a

RECOMMENDATION No. 303

RADIO-RELAY SYSTEMS USING TROPOSPHERIC SCATTER PROPAGATION

Radio-frequency channel arrangements.

(Study Programme No. 122(IX) and Question No. 148(IX))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that radio-relay systems using tropospheric scatter propagation are already in service and that systems of this type will come into more extensive use in the future;

b) that the high radiated power of tropospheric scatter systems and the long range of tropospheric scatter propagation may give rise to serious interference at distances extending beyond international boundaries, for example 1000 km;

c) that interference both between and within tropospheric scatter systems could be minimised by the co-ordination of radio-frequency channel arrangements over a large geographical area;

d) that many interfering effects between equipments at the same station could be minimised by a carefully planned arrangement of radio frequencies;

e) that some technical information for the planning of such systems exists, but that the design of tropospheric scatter radio-relay systems is subject to change;

f) that different methods of modulation are at present being used or proposed, among them frequency modulation and single-sideband amplitude modulation;

g) that at present no definite frequency bands are allocated to tropospheric scatter radio-relay systems;

h) that at the present time standardisation of preferred radio-frequency channel arrangements might therefore unduly restrict the future development of tropospheric scatter radio-relay systems;

i) that nevertheless a common basis for planning such systems is desirable;

unanimously recommends

1. that the radio-frequency channel arrangements for international interconnection of tropospheric scatter radio-relay systems should be agreed between the administrations concerned;

2. that the basis of planning of the radio-frequency channel arrangements for radio-relay systems using frequency modulation given in Report No. 136 may be used, where appropriate, as a guide.

ANNEX A 21 b

STUDY GROUP IX

REPORT No. 136

RADIO-RELAY SYSTEMS USING TROPOSPHERIC SCATTER PROPAGATION

Radio-frequency channel arrangements for systems using frequency modulation

(Study Programme No. 122, Question No. 148)

(Los Angeles, 1959)

1. Introduction

Study Programme No. 122 (Geneva, 1958) asks for a study of radio-frequency channel arrangements for tropospheric scatter radio relay systems. The studies carried out so far give valuable information on the problems to be taken into account for establishing such a radio frequency channel arrangement usable over a wide geographical area. Since the technique of using radio-relay systems on tropospheric scatter links is not yet fully developed, the results obtained do not yet allow an agreement on a preferred frequency arrangement for such systems but may serve as a guide in planning the frequency arrangements for systems that might be established in the near future.

2. Considerations on which a radio-frequency channel arrangement for tropospheric scatter radio relay systems might be based

2.1 The high radiated power of tropospheric-scatter systems and the long range of tropospheric-scatter propagation may give rise to serious interference at distances extending beyond international boundaries, for example 1000 km;

2.2 Interference both between and within tropospheric-scatter systems can be minimised by the co-ordination of radio-frequency channel arrangements over a large geographical area;

2.3 Many interfering effects between equipments at the same station can be minimised by a carefully planned arrangement of radio frequencies;

2.4 Radio-frequency channel arrangements should provide for various capacities of FDM telephony (e.g. from 12 to 300 telephone channels) and for television;

2.5 With the frequency deviations likely to be employed the band-width of the emission may range from a fraction of one megacycle per second for a few telephone channels, to 8 Mc/s or more for television;

2.6 To avoid undue interference between stations the minimum distance separating a receiving station from a transmitting station operating on the same frequency may have to be large, for example 1000 km or more depending on the power used and the orientations and polarizations of the antennae;

2.7 A useful reduction in the distance within which a station represents a potential source of interference is possible if the stations operate on frequencies which are slightly different, the minimum useful separation being of the order of 0.8 Mc/s for the narrower band frequency modulation systems (see Annex I) or perhaps for future single-side band amplitude modulation systems;

2.8 Different frequency allocations are discussed for tropospheric scatter radio relay systems, e.g. within two bands of 20 Mc/s, separated by a gap of 60 Mc/s and within a continuous band about 130 Mc/s to 200 Mc/s wide;

Technically feasible radio frequency channel arrangements for frequency modulation systems based on the above considerations

3.1 A basic pattern of the radio-frequency channel arrangements is proposed with a unit separation of 0.8 Mc/s, the spacings between the frequency allocations used in a given system or geographical area being integral multiples of 0.8 Mc/s;

3.2 At any station the minimum separation between transmitters could be 7 units (5.6 Mc/s); for systems with more than 36 channel capacity larger separation may be necessary;

3.3 The minimum separation of transmitters and receivers at any station should be about 50 Mc/s, but in any case an integral multiple of 0.8 Mc/s should be chosen; in some cases an appreciably greater spacing might be required in order to ensure that the necessary attenuation is obtained between the transmitter output and the receiver input;

3.4 For the case of two 20 Mc/s bands separated by 60 Mc/s, the arrangement of the radio-frequency channels could be as shown in Plan A, Figure 1;

3.5 Where a single band of up to 200 Mc/s is available, the arrangement of the radio-frequency channels could be as shown in Plan B, Figure 2;

3.6 Plan A would, in general, be used for low-capacity FDM telephony systems; it is therefore based on a unit spacing of 0.8 Mc/s. An example of the application of Plan A is shown in Fig. 1(b);

3.7 Plan B could be used for both low and high capacity FDM telephony and possibly for television; in the latter cases, the minimum spacing of radio-frequency allocations at one station might be several integral multiples of 5.6 Mc/s, say two (11.2 Mc/s) for 60 channels, three (16.8 Mc/s) for 120 channels and five (28 Mc/s) for television. Examples of the application of Plan B are shown in Fig.2(b);

3.8 Where several links are connected in tandem to form a longer route, a suitable allocation of frequencies to ensure maximum spacing between adjacent station frequencies would be in the order, 1, 5, 2, 6, 3, 7, 4, 1, etc. (as shown in Fig.2(b));

3.9 In order to avoid interference within a station the spacing of the transmit and receive frequencies should not be chosen near to the first IF of the receiver, i.e. not near to 35 or 70 Mc/s in cases where the IF corresponds to the preferred values given in Recommendation No.... (Doc. 424).

FIG. 1

Radio-frequency channel arrangements for tropospheric-scatter propagation systems.

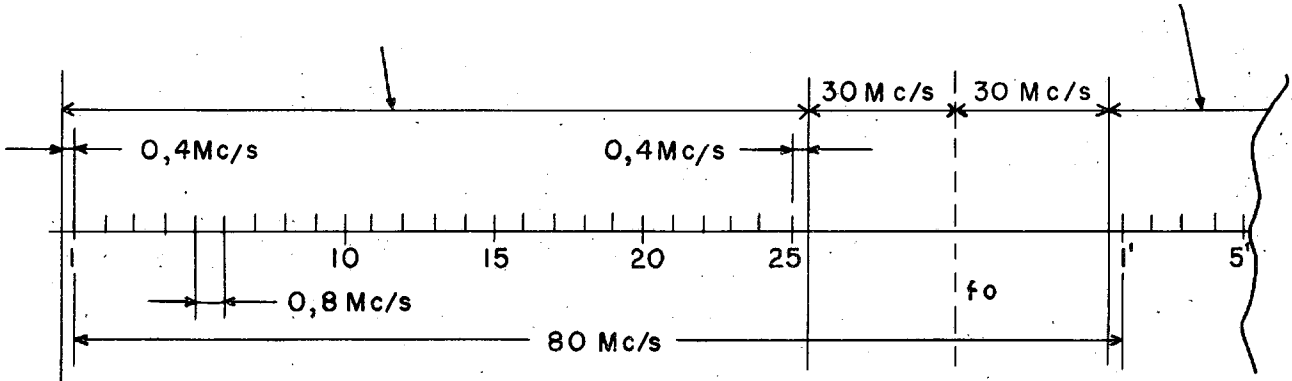
Dispositions de canaux radioélectriques pour les systèmes utilisant la propagation par diffusion troposphérique

Disposiciones de canales radioélectricos para los sistemas que utilizan la propagación por dispersión troposférica

PLAN A

a) Basic pattern of radiofrequency channel arrangement
a) Modèle de disposition de canaux radioélectriques
a) Modelo de disposición de canales radioeléctricos

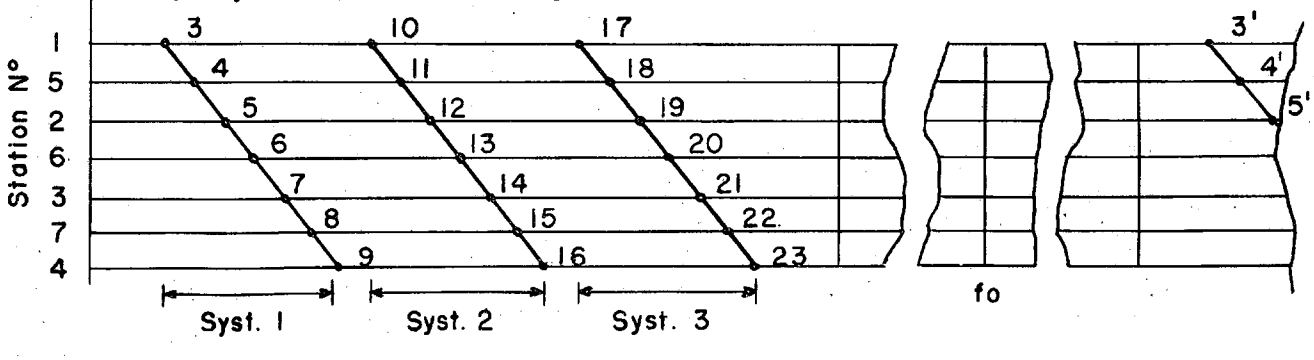
20 Mc/s band with 25 allocations for transmit/receive (receive/transmit)
Bande de 20 Mc/s avec allocations pour un sens (dito pour l'autre sens)
Banda de 20 Mc/s con 25 asignaciones para transmisión/recepción transmisión)



b) Example of application to three multihop telephony systems in the same geographical area (the frequency allocations shown along each horizontal line are used on different hops of each system, not necessarily in numerical order)

b) Exemple d'application à trois systèmes téléphoniques situés dans la même zone géographique et utilisant la propagation par plusieurs bonds (les attributions de fréquence indiquées par chaque ligne horizontale sont utilisées sur différents bonds dans chaque système mais pas nécessairement dans l'ordre indiqué)

b) Ejemplo de la aplicación a tres sistemas telefónicos situados en la misma zona geográfica que utilicen la propagación por saltos múltiples (las asignaciones de frecuencias indicadas por cada línea horizontal se utilizan con diferentes sistemas saltos en cada sistema, pero no necesariamente en el orden indicado)



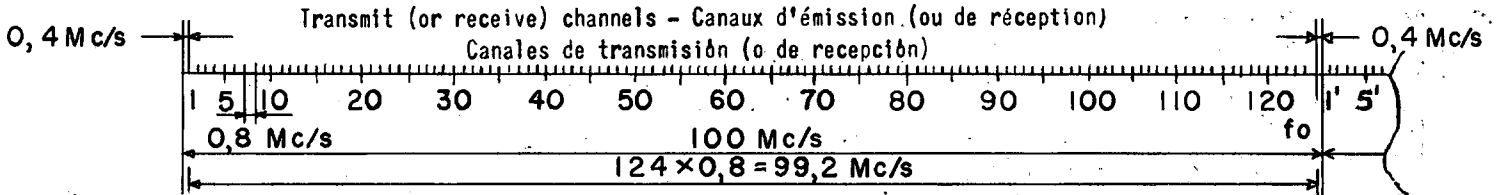
RADIO-FREQUENCY CHANNEL ARRANGEMENTS . TROPOSPHERIC-SCATTER PROPAGATION SYSTEMS - DIS. .TION DES CANAUX RADIOELECTRIQUES POUR LES FAISCEAUX HERTZIENS UTILISANT LA PROPAGATION PAR DIFFUSION TROPOSPHERIQUE - DISPOSICIÓN DE LOS CANALES RADIOELÉCTRICOS PARA LOS SISTEMAS DE RELEVADORES RADIOELECTRICOS QUE UTILIZAN LA PROPAGACIÓN POR DISPERSION TROPOSFERICA -

PLAN B

a) Basic pattern of radio-frequency channel arrangement for transmit (or receive) in one half of band : similar arrangement for receive (or transmit) in other half.

a) Modèle de disposition des canaux radioélectriques pour l'émission (ou la réception) dans une moitié de la bande : disposition similaire pour la réception (ou l'émission) dans l'autre moitié.

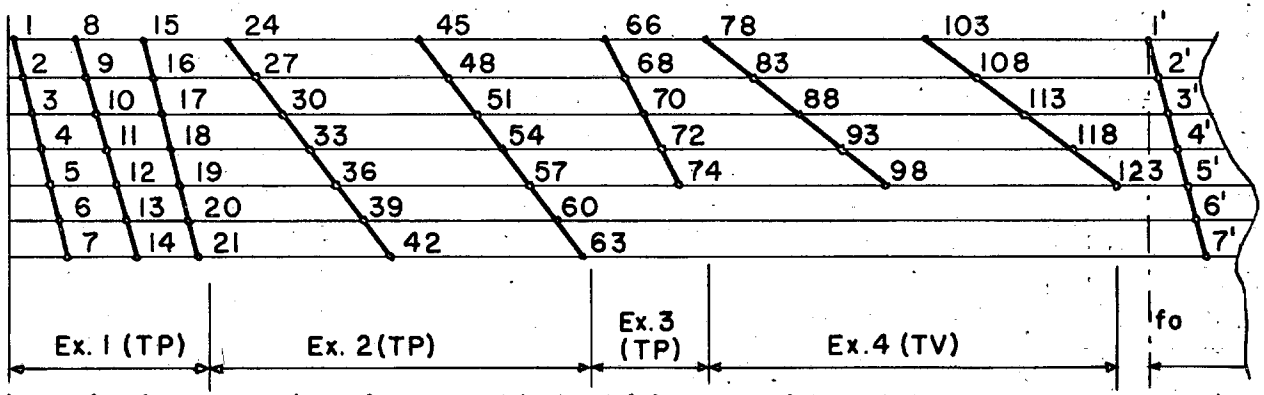
a) Modelo de disposición de los canales radioeléctricos para la emisión (o la recepción) en una mitad de la banda : disposición similar para la recepción (o la transmisión) en la otra mitad.



b) Examples of application to telephony systems of various bandwidths and to television in the same geographical area.

b) Exemples d'application aux faisceaux hertziens de téléphonie de largeurs de bande différentes et aux faisceaux hertziens de télévision dans la même zone géographique.

b) Ejemplos de aplicación a los sistemas de relevadores radioeléctricos telefónicos de anchuras de banda distintas y a sistemas de televisión en la misma zona geográfica.



Note : In each example, frequencies shown along any one horizontal line may, if desired, be used for transmitters (or receivers) at the same station, provided that bandwidths of filtering arrangements are appropriate.

Note : Dans chaque exemple, les fréquences indiquées sur une même ligne horizontale peuvent si on le désire, être utilisées par des émetteurs (ou des récepteurs) dans la même station, pourvu que les bandes des dispositifs de filtrage conviennent.

Nota : En cada ejemplo, las frecuencias indicadas en una misma línea horizontal pueden utilizarse, si así se desea, para los transmisores (o receptores) en la misma estación, a condición de que las bandas de los dispositivos de filtrado sean adecuadas.

FIG. 2

ANNEX I

Interference between adjacent radio-frequency channels of FM, F.D.M. radio-relay systems

The interference due to an unwanted modulated carrier at or near the wanted carrier frequency will depend upon the deviation which is being used. However, it will be clear that even for large deviations the interference falls as the carriers are separated by more than a few hundred kc/s.

In view of the wide area over which a tropospheric scatter signal can cause interference, and the relatively slow decay with distance of the scattered signal (say, 10 db at 60 miles), it is preferable to stagger frequencies by a small amount rather than re-use them exactly.

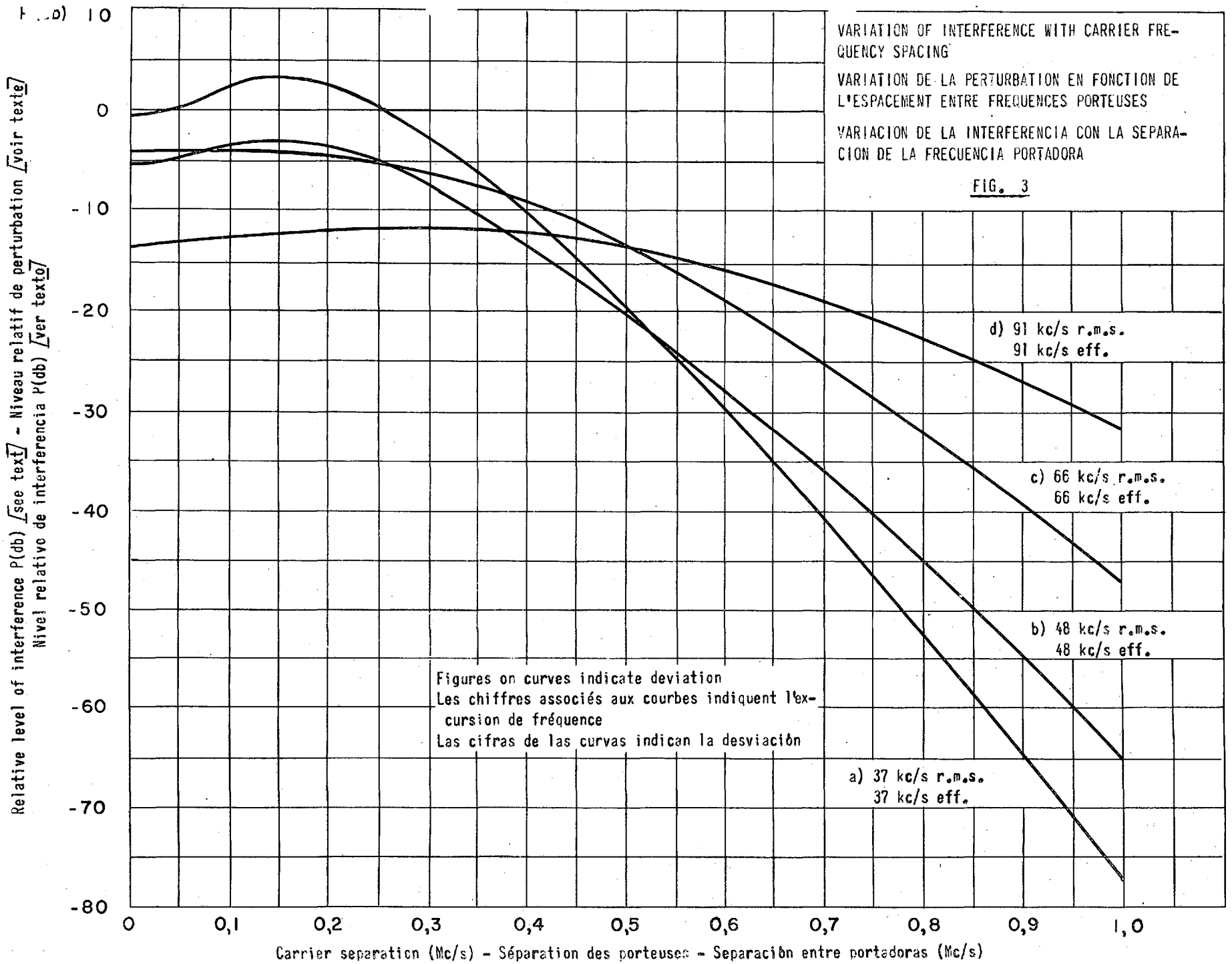
The attached curves (Fig. 3) show the way in which the interference changes as two carriers, each modulated with 36 channels FDM (12 - 156 kc/s), are separated. Four deviations are shown, 37*, 48**, 66* and 91** kc/s r.m.s. per channel. There is no significance in these particular deviations; the values arise from scaling from existing data on other bandwidths or deviations.

From the curves it is felt that a stagger frequency of 800 kc/s would show a worthwhile advantage for all likely deviations and this figure is therefore recommended.

The actual interference signal ratio in the top channel of the wanted transmission is given by $(P + 20 \log_{10} r)$ db where r is the relative amplitude of the unwanted carrier, expressed as the voltage ratio and P is given by the curves.

* Scaled from Medhurst, Hicks & Grosset, Proc. I.E.E. 105 Pt. B. p. 282, May, 1958.

** Scaled from Hamer & Acton, Electrical & Radio Engineer, 34, p. 246, July, 1957.


VARIATION OF INTERFERENCE WITH CARRIER FREQUENCY SPACING
VARIATION DE LA PERTURBATION EN FONCTION DE L'ESPACEMENT ENTRE FREQUENCES PORTEUSES
VARIACION DE LA INTERFERENCIA CON LA SEPARACION DE LA FRECUENCIA PORTADORA
FIG. 3
Relative level of interference P(db) [see text] - Niveau relatif de perturbation [voir texte]
Nivel relativo de interferencia P(db) [ver texto]
10
0
-10
-20
-30
-40
-50
-60
-70
-80
0
0,1
0,2
0,3
0,4
0,5
0,6
0,7
0,8
0,9
1,0
Carrier separation (Mc/s) - Séparation des porteuses - Separación entre portadoras (Mc/s)
d) 91 kc/s r.m.s.
91 kc/s eff.
c) 66 kc/s r.m.s.
66 kc/s eff.
b) 48 kc/s r.m.s.
48 kc/s eff.
a) 37 kc/s r.m.s.
37 kc/s eff.
Figures on curves indicate deviation
Les chiffres associés aux courbes indiquent l'excursion de fréquence
Las cifras de las curvas indican la desviación

ANNEX A 21 c

RECOMMENDATION No. 270 *)

RADIO RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

Radio-frequency interconnection of systems for 600 to 1800 telephone channels, or the equivalent, operating in the 2000 and 4000 Mc/s band

(Question No. 93 (IX))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that in certain cases it is desirable to be able to interconnect radio relay systems on international circuits at radio frequencies in the 2000 and 4000 Mc/s bands;

b) that in a frequency band 400 Mc/s wide it may be desirable to interconnect up to six go and six return radio-frequency channels;

c) that economies may be achieved if at least three go and three return channels can be interconnected between systems each of which uses common transmit-receive aerials;

d) that many interfering effects can be substantially reduced by a carefully planned arrangement of the radio frequencies in radio relay systems employing several radio-frequency channels;

e) that in certain cases it may be desirable to interleave additional radio-frequency channels between those of the main pattern;

recommends

1. that the preferred radio-frequency channel arrangement for up to six go and six return channels, each accommodating 600 to 1800 telephone channels, or the equivalent, and operating at frequencies in the 2000 and 4000 Mc/s bands, should be as shown in Fig. 2 and should be derived as follows:

Let f_o be the frequency of the centre of the band of frequencies occupied (Mc/s);

---

*) This Recommendation replaces Recommendation No. 194 ; it applies only to line-of-sight and near line-of-sight radio relay systems.

Italy reserved its opinion on this Recommendation.

f_n be the centre frequency of one radio-frequency channel in the lower half of the band (Mc/s);

f'_n be the centre frequency of one radio-frequency channel in the upper half of the band (Mc/s);

then the frequencies in Mc/s of individual channels are expressed by the following relationships :

lower half of band, $f_n = f_o - 208 + 29\ n$

upper half of band, $f'_n = f_o + 5 + 29\ n$

where n = 1, 2, 3, 4, 5 or 6;

2. that in a section over which the international interconnection is arranged all the go channels should be in one half of the band, and all the return channels should be in the other half of the band;

3. that for adjacent radio-frequency channels in the same half of the band, different polarisations should preferably be used alternatively; i.e. the odd numbered channels in both directions of transmission on a given section should use H(V) polarization, and the even numbered channels should use V(H) polarization, as shown in Fig. 1 below :

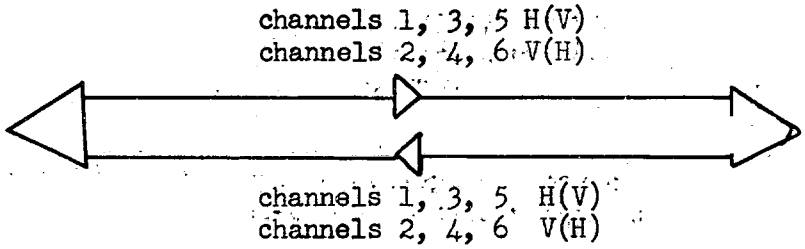


Fig. 1

4. that when common transmit-receive aerials are used and not more than three radio-frequency channels are accommodated on a single aerial it is preferred that the channel frequencies be selected by either making n = 1, 3 and 5 in both halves of the band or making n = 2, 4 and 6 in both halves of the band;

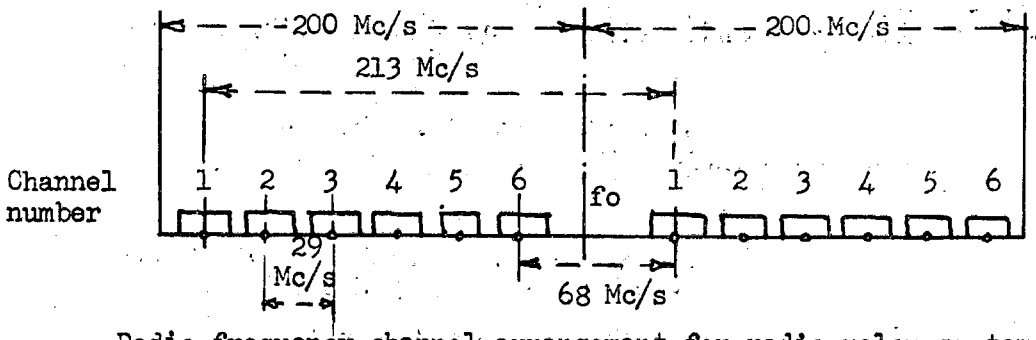


Fig. 2

Radio-frequency channel arrangement for radio-relay systems with capacities from 600 to 1800 telephone channels or equivalent operating in the 2000 and 4000 Mc/s bands, for use in international connections.

5. that when additional radio-frequency channels, interleaved between those of the main pattern, are required, the values of the centre frequencies of these radio-frequency channels should be 14.5 Mc/s below those of the corresponding main channel frequencies;*)

6. that in order to minimize interference within a system, the centre frequency f_o should preferably be as given below:

in the 2000 Mc/s band, f_o = 1903 or 2101 Mc/s

in the 4000 Mc/s band, f_o = 4003.5 Mc/s

Other centre frequencies may be used by agreement between the Administrations concerned.**)

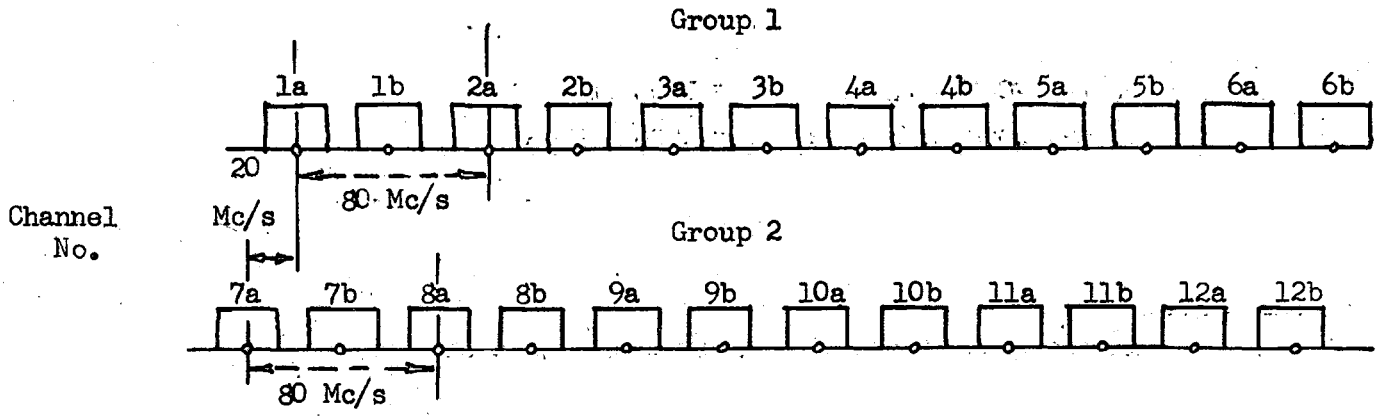
---

*) In the case of systems for 1800 telephone channels, or the equivalent, it may not be practicable, because of the wide bandwidth occupied by the modulated carrier, to use interleaved frequencies.

**) Interference due to certain harmonics of the shift frequency, which may fall near radio-frequency channel frequencies f_n in the case of radio-frequency repeaters, or may fall near $(f_n \pm 70)$ Mc/s in the case of repeaters using an intermediate frequency of 70 Mc/s, may in certain cases be serious. Such interference may be reduced by choosing a suitable value for f_o, such as those given in para. 6 above.

NOTE :

In the case of radio-relay systems of 600 telephone channels operating in the 4000 Mc/s band in Regions 2 and 3, the alternative radio frequency channel arrangement shown in Fig. 3 may be employed. The frequencies used for transmission in a given direction from a station are in either of two groups 1, 2, and are separated by 80 Mc/s centre-to-centre. The received frequencies are also separated from each other by 80 Mc/s and are located mid-way between the transmitting frequencies. Both groups 1 and 2 may be used on the same route if desired, with suitable arrangements. The radio-frequency channel arrangement shown in Fig. 3 is suitable for use with the preferred intermediate frequency of 70 Mc/s.



Alternative radio-frequency channel arrangement for 600-channel telephony system used in the 4000 Mc/s band in Regions 2 and 3

FIGURE 3

ANNEX A 21 d

STUDY PROGRAMME No. 160 (IX)

RADIO-RELAY SYSTEMS FOR TELEVISION AND TELEPHONY

Preferred Characteristics for Auxiliary Radio-Relay Systems for the Provision of Service Channels

(Question No. 147(IX))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that an auxiliary radio-relay system for the provision of service channels for the maintenance, supervision and control of radio-relay links may be required;

b) that this auxiliary system may be arranged by combining it with the main system, as is shown in Recommendation No. 275;

c) that, on the other hand, it may be preferred to use an auxiliary radio-relay system quite independent of the main radio-relay system;

d) that the frequency band concerned and the exact frequency allocation plan must be chosen carefully in order to avoid interference with the main system;

e) that for this auxiliary radio-relay system the utmost reliability is essential because of the operational importance of the supervisory circuits;

f) that some factors affecting the bandwidth that is required for these circuits are discussed in the Annex;

g) that Recommendation No. 294 states the number and the function of the service channels that are required;

h) that economy in the use of the spectrum is important;

unanimously decides

that the following studies should be carried out:

determination of the characteristics (baseband, type of modulation and radio frequency arrangement) of a high reliability auxiliary radio-relay system.

ANNEX

In considering (e) above it is pointed out that a high degree of reliability is required for service channels; consequently it is probable a standby auxiliary radio frequency channel on each route is essential. These standby auxiliary channels could be provided on the same frequency as the main auxiliary channel or on a different frequency.

If the same frequency as the main auxiliary channel is used, the standby channel can be brought into circuit at any station by means of switches operated automatically by monitoring circuits on the equipment. The use of separate frequencies requires no monitoring circuits or switches and might therefore simplify the equipment and improve its reliability.

It sometimes occurs that a number of systems, each requiring supervisory circuits, converge at a point (including any connections with a local maintenance centre). On each route at such interconnection points, if the standby channel operates on a separate frequency, two pairs of frequencies in each direction of transmission will be required for the auxiliary relay system. The same frequency can often be used simultaneously for two transmitters or two receivers in opposite directions, but this cannot be done at frequencies below about 1000 Mc/s.

The necessary spacing between adjacent frequency allocations at any station depends on the frequency stability of the equipment as well as on the modulation characteristics used. These factors should be considered in relation to all the frequency bands which might be used for this purpose ranging from about 8500 Mc/s down to 1000 Mc/s or even lower.

ANNEX A 22

RECOMMENDATION No. 250 *

SIGNALS "MAYDAY" AND "PAN"

(Stockholm, 1948 - Los Angeles, 1959)

The C.C.I.R.,

considering

that the results of further tests carried out by administrations and the discussions thereon relating to the question of changing the radio telephone distress signal MAYDAY and the radio telephone urgency signal PAN indicate that insufficient advantage would result from the proposed use of SOS instead of MAYDAY and URGENT instead of PAN to justify making a change to the Radio Regulations;

unanimously recommends

that the present radio telephone distress signal MAYDAY and the radio telephone urgency signal PAN be retained.

---

* This Recommendation replaces Recommendation No. 23.

ANNEX A 23

RECOMMENDATION No. 252 *

USE OF 8364 KC/S FOR RADIO DIRECTION FINDING

(Geneva, 1951 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

(a) that the International Radio Conference of Atlantic City (1947) in No. 860 of the Radio Regulations states that

> "The frequency 8364 kc/s must be used by lifeboats, liferafts and other survival craft, if they are equipped to transmit on frequencies between 4000 and 23 000 kc/s, and if they desire to establish with stations of the maritime mobile service communications relating to search and rescue operations (see No. 600)" **;

(b) that land stations will, when the appropriate portions of Art. 33 of the Atlantic City Radio Regulations become effective, keep watch during their service hours on the band 8356 kc/s to 8372 kc/s; of which 8364 kc/s is the centre;

(c) that Regulations 13 and 14 of Chapter IV of the Safety of Life at Sea Convention (1948) indicate minimum specifications for automatic distress transmitters;

(d) that tests and operational experience have shown that radio direction finding on 8364 kc/s may be a valuable aid (in conjunction with direction finding on 500 kc/s), in finding the position of both aircraft and ships in distress and survival craft;

(e) that complete coverage cannot be obtained with direction finding on only one frequency in the HF (decametric) band because of the limitations caused by radio propagation conditions;

(f) that HF (decametric) radio direction finding requires apparatus as free as possible from local site error and polarisation error;

---

* This Recommendation replaces Recommendation No. 72. The P.R. of Poland reserved its opinion on this Recommendation.

** The use of 8364 kc/s for these purposes depends upon the implementation of the appropriate portion of the Atlantic City Table of Frequency Allocations.

(g) that the accuracy of the bearing will depend upon the field strength of the signal and the signal/noise ratio;

(h) that in view of the rapid variation of the apparent azimuth of the bearing which is frequently observed in HF (decametric) radio direction finding, measurements should be made over several minutes to obtain a more accurate mean bearing; and that the bearing and fix may be improved subsequently by a further series of measurements;

(i) that standardised distress transmissions are desirable;

(j) that it is essential to have a means of rapid communication between the watch-keeping station and the direction-finding stations;

recommends

1. that the site of the HF (decametric) radio direction-finding station should be, as far as possible :

1.1 flat and horizontal for a radius preferably of at least 200 metres, with the surrounding neighbourhood flat and free from obstruction;

1.2 of high and uniform ground conductivity;

1.3 free from large metallic masses and objects likely to resonate at frequencies near to 8364 kc/s;

2. that the aerial system should be as free as possible from wave polarisation error (e.g. Adcock systems and spaced-loop systems);

3. that the bandwidth of the direction-finding receiver used when bearings are taken should be as narrow as possible, compatible with the modulation and frequency stability of the signal on 8364 kc/s, and that a broader bandwidth position should also be incorporated in the receiver for watch-keeping purposes;

4. that the sensitivity of the direction-finding equipment should be such that it operates satisfactorily with a field strength as low as 5 V/m;

5. that the bearing should be determined by an aural-null method or by any other method of comparable or better accuracy;

6. that the direction-finding equipment should be adjusted, balanced and calibrated at frequent intervals on the frequency of 8364 kc/s;

7. that the signal radiated by survival craft should be as strong as possible and stable in frequency to ensure the greatest accuracy in determining the bearings;

8. that the signals transmitted by survival craft should preferably include long dashes sent over a period of not less than five minutes for direction-finding purposes. The attention of administrations should be drawn to the precise form and content of such signals proposed by France, U.S.A. and U.K., given in Documents Nos. 39 (France), 43 and 99 (U.S.A.) and 44 (U.K.) of Geneva, and to the question of whether it would be desirable to use a common form of signal for both 500 kc/s and 8364 kc/s;

9. that, in order to give as great an accuracy of fix as possible, several widely-spaced and interconnected direction-finding stations should be employed (see Annex);

10. that the attention of administrations concerned should be drawn to the advantage of their studying further;

10.1 the most suitable type of network for providing rapid communication between direction-finding stations and plotting centres;

10.2 the most suitable way in which information should be exchanged between different stations or networks (e.g. use of "Q" code);

10.3 the best way to evaluate the most probable fix (position) from bearings supplied by the direction-finding stations;

11. that the attention of administrations should also be drawn to the fact that world-wide direction-finding coverage cannot be obtained with only one frequency in the HF (decametric) band.

ANNEX

ACCURACY OF BEARINGS ON 8364 KC/S

At distances greater than about 1200 km the root-mean-square (r.m.s.) bearing error to be expected with a modern HF (decametric) direction-finding system is of the order of 3 to 5 degrees.

At distances less than 1200 km the error progressively increases with decrease of distance to values of the order of 5 to 10 degrees; at small distances, less than about 100 km, the error may be even greater than 10 degrees.

The above figures refer to the arithmetic mean of bearings spread over an interval of not more than about 10 minutes.

ANNEX A 24

RECOMMENDATION No. 251 *

ADDITION TO APPENDIX 9 OF THE RADIO REGULATIONS

(Geneva, 1951 - London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that a code should not be inserted in the Radio Regulations unless it provides a sufficiently accurate assessment of the quality of transmissions;

b) that it would be advisable for all the administrations to use the same codes, and that the number of officially recognised codes must consequently be as restricted as possible;

c) that the abbreviations in the Q code are in general inadequate for obtaining a clear idea of the quality of a transmission;

d) that the SINPO code has been used for several years by some administrations;

e) that the FRAME and RAFISBENQO codes have been used for a long time but:

- the SINPO code gives a more accurate description of the transmission quality than the FRAME code and is easier to us
- the SINPFEMO code is derived from the SINPO code by adding three letters relating to special features of telephone transmissions and is easier to use than the RAFISBENQO or RISAFMONE code;

f) that the information which is not included in the SINPO or SINPFEMO code may be transmitted satisfactorily by service message;

unanimously recommends

1. that the SINPO and SINPFEMO codes described in the Annex should be included in the Radio Regulations;

---

* This Recommendation replaces Recommendation No. 221

2. that, in the meantime, these signal codes may be placed in service by interested operating agencies or administrations at the earliest time that may be mutually arranged between them. In this respect, the Secretary General is asked to circularise all administrations to know if they are prepared to apply these codes by 1st January, 1952.

Special remarks

a) A signal report shall consist of the code word SINPO or SINPFEMO followed by a five or eight figure group respectively rating the five or eight characteristics of the signal code.

b) The letter X shall be used instead of a numeral for characteristics not rated.

c) Although the code word SINPFEMO is intended for telephony, either code word may be used for telegraphy or telephony as may be desired.

d) The overall rating for telegraphy shall be as indicated in tables I and II.

TABLE I

	Mechanised Operation
5 Excellent	4-channel time-division multiplex
4 Good	2-channel time-division multiplex
3 Fair	Marginal single start-stop printer
2 Poor	BK's, XQ's and call signs readable
1 Unusable	Unreadable

TABLE II

	Morse Operation
5 Excellent	High speed
4 Good	100 wpm
3 Fair	50 wpm
2 Poor	BK's, XQ's and call signs readable
1 Unusable	Unreadable

e) The overall rating for telephony shall be as indicated in Table III.

TABLE III

	Operating condition	Quality
5 Excellent	Signal quality unaffected	Commercial
4 Good	Signal quality slightly affected	
3 Fair	Signal quality seriously affected. Channel usable by operators or by experienced subscribers	Marginally commercial
2 Poor	Channel just usable by operators	Not commercial
1 Unusable	Channel unusable by operators	

ANNEX

SINPO SIGNAL REPORTING CODE

Rating scale	S	I	N	P	O
	Signal strength	Degrading effect of			Overall readability (QRK)
		Interference (QRM)	Noise (QRN)	Propagation disturbance	
5	Excellent	Nil	Nil	Nil	Excellent
4	Good	Slight	Slight	Slight	Good
3	Fair	Moderate	Moderate	Moderate	Fair
2	Poor	Severe	Severe	Severe	Poor
1	Barely audible	Extreme	Extreme	Extreme	Unusable

SINPFEMO SIGNAL REPORTING CODE

Rating scale	S	I	N	P	F	E	M	O
	Signal strength	Degrading effect of			Frequency of fading	Modulation		Overall rating
		Interference (QRM)	Noise (QRN)	Propagation disturbance		Quality	Depth	
5	Excellent	Nil	Nil	Nil	Nil	Excellent	Maximum	Excellent
4	Good	Slight	Slight	Slight	Slow	Good	Good	Good
3	Fair	Moderate	Moderate	Moderate	Moderate	Fair	Fair	Fair
2	Poor	Severe	Severe	Severe	Fast	Poor	Poor or nil	Poor
1	Barely audible	Extreme	Extreme	Extreme	Very fast	Very poor	Continuously overmodulated	Unusable

"Note: It is recommended that the figure P appearing in the Table in the Annex should be used only if it is quite certain that the insufficient intensity of the signal has been caused by a propagation disturbance in the circuit for which the quality report is being made. This could apply, for example, in the following cases:

1. for a circuit which is operated every day at a given time, if it is noted that the receiving and transmitting apparatus is in normal condition and that for normal ionospheric conditions, the transmission frequency does not exceed the maximum usable frequency (MUF) or is not close to the lowest usable high frequency (LUHF).

In this case, it is desirable to assess the degree of disturbance by the decrease in signal strength as compared with normal propagation conditions.

2. for a single observation of a circuit, if it is quite certain that, at a given moment in a given place, there is ionospheric propagation disturbance affecting all circuits in the frequency range which also contains the transmission frequency.

In this case, it is desirable to assess the degree of disturbance by the decrease in signal strength with respect to normal propagation on a regularly observed circuit following the same path approximately.

A report on ionospheric propagation disturbance should not be formulated simply because the disturbance information service has predicted a disturbance for the period in question, or because a disturbance has been noted on another circuit or in a different frequency range. In this case, the letter X is used."

ANNEX A 25

RECOMMENDATION No. 254 *)

TECHNICAL CHARACTERISTICS OF FREQUENCY-MODULATED VHF (METRIC) MARITIME EQUIPMENTS

(Questions No. 107, 161 and 164 XIII)

(Warsaw, 1956)

The C.C.I.R.,

considering

a) that the Radio Regulations, Atlantic City, Chapter XIII, Article 34, Nos. 830 to 834, stipulate the general procedure for the worldwide use by the maritime mobile service of the frequency 156.8 Mc/s and neighbouring frequencies;

b) that the use of VHF (metric) equipments in the maritime mobile service could reduce the use of MF (hectometric) maritime bands and thus tend to reduce congestion in these heavily loaded bands;

c) that the early introduction of the world-wide use of equipments operating on the frequency of 156.8 Mc/s and neighbouring frequencies could contribute to the safety of life at sea;

d) that it would be desirable to reach agreement upon essential technical characteristics for frequency-modulated VHF (metric) radiotelephone equipments for use in international maritime services in order to expedite the international use of such equipments;

e) that, in the informal agreement on standardisation of VHF (metric) channels for international maritime radiotelephone services that was reached among certain countries during the Baltic and North Sea Radiotelephone Conference, 1955 (see I.T.U. circular letter 1683/55/R, dated 13 December 1955), it was considered that the equipment should employ frequency modulation and be capable of operating ultimately with a frequency spacing of 50 kc/s;

f) that, without some further measure of agreement on channel allocations, it is not possible to decide all the technical characteristics needed to facilitate the design of equipment for international VHF (metric) maritime mobile services;

---

*) This Recommendation replaces Recommendation No. 223.

Belgium, France, the P.R. of Poland and the P.R. of Rumania reserved their opinion on this Recommendation.

g) that the International Maritime VHF Radiotelephone Conference (The Hague, 1957) had agreed among other matters, upon a frequency allocation table using 4.6 Mc/s separation for duplex operation in the VHF international maritime mobile radiotelephone service;

unanimously recommends:

1. that the following characteristics for frequency-modulated VHF (metric) radiotelephone equipments for the international maritime mobile services operating on 156.8 Mc/s and neighbouring frequencies should be adopted by Administrations;

1.1 at present the frequency deviation should not be greater than ± 15 kc/s; and the maximum deviation should be reviewed later if it is found in practice that unacceptable adjacent channel interference occurs, particularly as the loading of the channels increases;

1.2 all receivers should be capable of receiving satisfactorily emissions having a maximum deviation of ± 15 kc/s;

2. vertical polarisation should be used;

3. in the absence of fading and local screening, the protection ratio for common-channel operation should be such that the desired signal level exceeds the interfering signal level by at least 10 db. Each Administration should provide for a further allowance, where appropriate, for fading and for fluctuations of a local nature (for instance, reflections from the terrain, sea, ships, docks, etc.);

4. the equipment should be designed for a frequency separation between adjacent channels of 50 kc/s;

5. the frequency separation between the transmitting and receiving frequencies for duplex working should be 4.6 Mc/s;

6. further study is required of means of selective calling. For this purpose reference is made to Question No. 160 (XIII);

7. other essential parameters :

7.1 frequency modulation with a pre-emphasis of 6 db/octave should be used (phase modulation) with subsequent de-emphasis in the receiver;

7.2 the output power of the ships' transmitters should generally not exceed 20 watts except in special circumstances to be determined by individual administrations;

7.3 Spurious emissions.

7.3.1. The power of spurious emissions due to harmonics of the carrier frequency shall not exceed 25μW, measured at the antenna terminals of the transmitter when loaded with a resistance equal to the nominal antenna impedance.

7.3.2. The power of spurious emissions falling in any other International VHF Maritime Mobile channel due to products of modulation should not exceed 10μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

7.3.3. The power output of any other spurious emission on any discrete frequency within the International VHF Maritime Mobile Band should not exceed 2.5μW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

7.3.4. In cases where Administrations permit exceptionally the use of higher powered transmitters, proportionate increases in the level of these spurious emissions may be tolerated.

7.4 the audio-frequency bandwidth should be limited to 3000 c/s;

7.5 the frequency tolerance of the transmitter should not exceed 0.002%;

7.6 to minimise interference, special attention should be paid to the following receiver characteristics :

- stability;
- selectivity;
- receiver radiation;
- intermodulation;

8. equipments should be designed so that frequency changes between assigned channels can be carried out rapidly, e.g., within a few seconds;

ANNEX A 26.

RECOMMENDATION No. 256 *)

INTERFERENCE DUE TO INTERMODULATION PRODUCTS IN THE VHF (METRIC) MOBILE MARITIME RADIOTELEPHONE SERVICE

(Question No. 164)

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that intermodulation products may cause serious interference in the operation of the VHF mobile maritime radiotelephone service;

b) that intermodulation products may be generated and radiated at receiving stations and transmitting stations, in the radio equipment itself or at external points (such as aerial systems) where there is electrical non-linearity;

c) that practical measures can be taken to minimise the generation of such intermodulation products and to mitigate their harmful effects;

unanimously recommends

1. that Recommendation No. 218, particularly parts 3, 4 and 15, should be followed for the purpose of minimising the generation of intermodulation products at points on ships external to the receiver;

2. that aerials, rigging, stays and structures likely to cause intermodulation products should be maintained in such condition as to minimise the generation of intermodulation products;

3. that care should be taken, in the design and development of receivers, to minimise the possibility of interference due to the generation of intermodulation products in the receivers themselves;

4. that the range of interference due to radiated intermodulation products should be limited to sea areas that are not normally navigated by ships and to shore areas that are clear of coast receiving stations;

---

*) This Recommendation terminates the study of Question No. 164.

5. that the siting of coast stations should take into account the factors mentioned in para. 4 above.

6. that frequency assignments in the VHF mobile maritime radiotelephone band should, as far as possible, take into account the possibility of interference from intermodulation products;

7. that where the service area permits, coast stations should use directive aerials;

8. that care should be taken in the use of the single-frequency channels to minimise interference, due to intermodulation products, to the common calling and safety channel of 156.80 Mc/s; and to the high-priority channels of The Hague VHF maritime radiotelephone frequency plan;

9. that frequency assignments to other services should, as far as possible, take into account the possibility of interference to the VHF mobile maritime radiotelephone service due to the generation of intermodulation products; in particular, powerful emissions from stations near coastal areas and with frequencies differing by about 4.6 Mc/s from one another, should be avoided if possible.

ANNEX A 27

RECOMMENDATION No. 253 *)

BEARING AND POSITION CLASSIFICATION FOR DIRECTION-FINDING

(Question No. 159 (XIII))

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the procedure specified in Appendix 15, Sections 5 and 6, of the Radio Regulations, Atlantic City, 1947, applies to direction-finding bearings and positions in the 500 kc/s frequency band;

b) that there would be advantages in adopting an internationally agreed system for classifying the accuracy of bearings and positions for all frequency bands;

c) that there would be advantages in adopting an internationally agreed type of signal for direction-finding purposes;

unanimously recommends

1. that a common system of classification of bearings and positions should be used in all frequency bands;

2. that the accuracy of bearings should be classified as follows :

"Class A" : Probability of less than 1 in 20 that the error exceeds 2 degrees;

"Class B" : Probability of less than 1 in 20 that the error exceeds 5 degrees;

"Class C" : Probability of less than 1 in 20 that the error exceeds 10 degrees;

"Class D" : Bearings whose accuracy is less than Class C;

3. that the accuracy of positions determined from direction-finding bearings should be expressed as Class "N", where "N" is the error, or amount of uncertainty, in nautical miles, such that the chance that "N" is exceeded is 1 in 20;

---

*) This Recommendation terminates the study of Question No. 159.

4. that Report No. 93, and the references below, should be used as a guide in determining the accuracy of bearings and positions by the objective (statistical) method and the subjective (observational) method, and the Annex to the Report should be used as a guide to the accuracy of bearings to be expected from HF Adcock direction-finders;

5. that signals for direction-finding purposes should include long dashes, each of at least 5 seconds duration, but, where necessary, the direction-finding station should also be permitted to specify the type and duration of the signal.

References

1. Ross, W. "The estimation of the probable accuracy of high-frequency radio direction-finding bearings", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 722

2. Stansfield, R.G. "Statistical theroy of D.F. fixing", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 762

3. Barfield, R.H. "Statistical plotting methods for radio direction-finding", J.I.E.E., Vol. 94, Part III A, 1947, No. 15, p. 673

4. Hopkins, H.G. "D.F. plotting aid", Wireless Engineer, July 1956, Vol. 33, No. 7, p. 173

ANNEX A 28

RECOMMENDATION No. 258 *)

SINGLE SIDEBAND AERONAUTICAL AND MARITIME MOBILE RADIOTELEPHONE EQUIPMENTS

(Question No. 162)

(Los Angeles 1959)

The C.C.I.R.,

considering

a) that the main advantages of single-sideband working (SSB, i.e. A3a) compared with double-sideband (DSB, i.e. A3) for mobile radio telephony are as follows :

aa) reduction of bandwidth required per channel

ab) increase in signal-to-noise ratio or, alternatively, reduction in transmitter power (and hence antenna voltage) for the same signal-to-noise ratio, improvements dependent upon the degree of carrier suppression

ac) reduction of the type of distortion that is due to selective fading

ad) reduction of interference, particularly that due to beat notes between carriers dependent on the degree of carrier suppression

ae) reduction of interference, due to cross-modulation between adjacent channel transmissions

b) that the disadvantages of SSB compared with DSB for mobile radio telephony are as follows :

ba) more rigorous requirements for transmitter and receiver frequency stability

bb) greater complexity of apparatus

bc) higher prices of the equipment

bd) higher maintenance costs for the equipment

---

*) The P.R. of Poland, and the U.S.S.R. reserved their opinion on this Recommendation.

be) impracticability of conversion of existing mobile DSB equipments for SSB operation

bf) Doppler effects that are significant for very high speed mobile units

c) that the MF-Radiotelephony bands used in the maritime services (i.e. world-wide 1605 to 2850 kc/s and additionally in Region 1 3155 to 3800 kc/s):

ca) include the international calling and distress frequency 2182 kc/s

cb) are shared with fixed services

cc) are used by many low tonnage ships, some compulsorily and others voluntarily fitted exclusively with DSB MF-Radiotelephone equipments

d) that the parts of the HF bands (i.e. 4000 kc/s and 23000 kc/s for mobile maritime and 2850 kc/s to 24000 kc/s for aeronautical use) allocated to the respective services;

da) do not include any international distress frequency

db) are exclusively allocated to these services

e) that in the maritime mobile services the advantages of SSB operation predominate over the disadvantages to a greater extent in the HF than in the MF band;

f) that, in the maritime mobile services, in the interests of safety of life at sea, the introduction of SSB operation should not be allowed to discourage the extension of voluntary fitting of DSB MF-Radiotelephony equipment:

recommends

1. for the maritime mobile services:

1.1 that SSB operation be introduced as far as operationally required in the MF and HF Radiotelephony bands;

1.2 that coast stations be prepared to communicate with DSB and SSB ship-borne equipment;

1.3 that for SSB equipment the following technical characteristics be employed:

1.3.1 for an interim period the degree of carrier reduction should be 16 - 26 db below peak envelope power and every endeavour should be made to achieve a carrier suppression of at least 40 db as soon as possible;

1.3.2 the carrier frequency of the transmitters should be maintained within the following tolerances:

1.3.2.1 for coast stations ± 20 c/s

1.3.2.2 for ship stations the short term limits (of the orde of 15 minutes) should be ± 40 c/s

1.3.2.3 for ship stations long term limits of ± 350 c/s (in the 8, 12, 16 and 22 Mc/s bands and ± 100 c/s in the 2 and 4 Mc/s bands) should be permitted for an interim period and every endeavour should be made to achieve limits of ± 100 c/s as soon as possible in all bands

1.3.3 the carrier frequency stability of SSB receivers should be maintained within the following tolerances:

1.3.3.1 for coast stations ± 20 c/s

1.3.3.2 for ship stations the short term limits should be ± 40 c/s *)

1.3.3.3 if spot frequency (i.e. fixed frequency pre-tuned) shipborne receivers are used, long term limits of ± 350 c/s should be permitted for an interim period and every endeavour should be made to achieve limits of ± 100 c/s as soon as possible

1.3.4 the upper sideband should be used;**)

1.3.5 the channel arrangements should be such that two SSB channels are accommodated within each existing DSB channel and the band-width of the SSB emissions should be kept within such limits as will permit this to be done (it is proposed that the precise arrangement of these SSB channels should be further discussed at the Administrative Radio Conference);

1.3.6 the transmitter audio frequency band should be 350 to 2700 c/s with a permitted amplitude variation of 6 db;

1.3.7 the unwanted frequency modulation of the SSB carrier should be sufficiently low to prevent harmful distortion;

---

*) This value may be maintained either manually or by other means.

**) Exceptionally, in the 4-23 Mc/s bands independent sideband (ISB) may be used by special arrangement between Administrations.

1.3.8 in the MF maritime mobile Radiotelephony bands SSB ship stations should be able to insert a carrier at a level sufficient to permit satisfactory reception by DSB receivers when communicating with DSB stations;

1.3.9 in the particular case of transmissions on the radiotelephone calling and distress frequency 2182 kc/s all transmissions should be made either by DSB, or by SSB with carrier insertion sufficient to permit satisfactory reception by DSB receivers.

1.4 that the attention of Administrations should be drawn to the fact that there would be technical and operational advantages in designating certain frequencies for international common use for ship-shore and inter-ship working;

2. that for the aeronautical mobile service, the Director of the C.C.I.R. should:

2.1 formally acquaint the I.C.A.O. of the interest of the C.C.I.R. in the study of SSB working in the aeronautical and maritime mobile services;

2.2 invite the I.C.A.O. to advise the C.C.I.R. of any technical or operational problems on which they would like the assistance of the C.C.I.R.;

2.3 offer to keep the I.C.A.O. informed of progress made by the C.C.I.R. in the study of the application of SSB working in the maritime mobile services;

2.4 request the I.C.A.O. to keep the C.C.I.R. informed of progress made by the I.C.A.O. in the study of the application of SSB working in the aeronautical mobile services.

NOTE : This Recommendation concludes the study of Question No. 162

ANNEX A 29.

RECOMMENDATION No. 255 *)

SPURIOUS EMISSIONS FROM FREQUENCY-MODULATED V.H.F.

(METRIC) MARITIME MOBILE EQUIPMENT

(Question No. 161)

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that spurious emissions originating from frequency-modulated VHF Maritime Mobile equipment are likely to cause interference in the VHF International Maritime Mobile Radio-telephone bands if they are not adequately suppressed;

b) that Report No. 113 (Doc. 401) gives a statement about the study of the nature of such spurious emissions;

c) that it would be advisable to limit the spurious emissions generated in frequency-modulated VHF mobile maritime transmitting and receiving equipment as far as practicable;

recommends

1. that the study of the nature of such spurious emissions, falling within the band of frequencies used by the VHF Maritime Mobile Services, be continued. Attention is drawn to Report No. 113 (Doc. 401);

2. that for transmitters of the order of 20 watts :

2.1 any spurious emission due to products of modulation and falling in any International VHF Maritime Mobile channel other than the channel of the fundamental emission, should not exceed 10 µW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

2.2 the output of any other spurious emission on any discrete frequency within the International VHF Maritime Mobile Bands should not exceed 2.5 µW, measured at the antenna terminals of the transmitter or receiver when loaded with a resistance equal to the nominal antenna impedance.

3. that in those cases where Administrations permit exceptionally the use of higher powered transmitters, proportionate increases in the level of these spurious emissions may be permitted.

---

*) The P.R. of Poland reserved its opinion on this Recommendation.

ANNEX A 29 a.

REPORT No. 113 *)

SPURIOUS EMISSIONS FROM FREQUENCY-MODULATED

VHF (METRIC) MARITIME MOBILE EQUIPMENT

(Question No. 161)

(Los Angeles, 1959)

Operation of VHF maritime mobile communications might be hampered by interference caused by spurious emissions falling within the band of frequencies used by this service.

Examples of such spurious emissions are mentioned in Docs. XIII/1, XIII/8, XIII/9 and XIII/13 of Los Angeles, 1959.

These spurious emissions may be caused by :

- Harmonics of oscillators of transmitters and receivers.
- Modulation products falling in adjacent channels.
- Intermodulation products produced at receiving stations or generated at transmitting stations and falling in adjacent channels.
- Intermodulation products caused by non-linear elements near the transmitting or receiving stations especially near to two transmitters operating simultaneously and having a frequency spacing of 4.6 Mc/s.
- Parasitic oscillations.
- Transmitter noise.

There are little data available yet about the extent of harmful interference caused by the above-mentioned phenomena and therefore Administrations are requested to continue the study of Question 161.

NOTE : "Spurious emissions" as used in this report do not include harmonic radiations.

---

*) This Report was adopted unanimously.

A N N E X A 30

RECOMMENDATION No. 324 *)

NOMENCLATURE OF THE FREQUENCY AND WAVELENGTH BANDS USED IN RADIOCOMMUNICATIONS

(Question No. 73)

(London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that it is appropriate to retain the subdivision of frequencies and of wavelengths adopted by the Administrative Radio Conference of Atlantic City (Radio Regulations, Article 2, para. 10) which has been shown to be of considerable practical value, since it is in fair agreement with the criterion of grouping together frequencies with common physical and propagation properties as well as a uniform equipment constructional technique;

b) that the merits of Heinrich Hertz (1857-1897) as a research worker on the basic phenonema of radio waves are universally recognized, as was confirmed at the centenary of his birth, and that as early as 1937 the I.E.C. adopted the Hertz (symbol : Hz) as a name for the unit of frequency (See, inter alia, the International Electrotechnical Vocabulary, publication 50/05, 1954 edition : 05-35-055, page 44, and 05-35-110, page 47);

c) that the C.C.I.T.T. also uses the Hertz (cf. Red Book, French version);

d) that in this Recommendation the table should be as synoptic as possible and that the expression of frequencies should be as concise as possible;

unanimously recommends

1. that the Hertz (Hz) be accepted for use alternatively with cycles per second (c/s) in C.C.I.R. documents as the name for the unit of frequency;

2. that it is proper to characterize bands by means of progressive whole numbers in accordance with the following table, intended to be substituted, at a later conference of the I.T.U., Article 2, paragraph 10 of the Radio Regulations of Atlantic City.

---

*) This Recommendation replaces Recommendation No. 225.

Band number	Frequency range (lower limit exclusive, upper limit inclusive)	Metric subdivision of waves
4	3 to 30 kc/s or kHz	Myriametric
5	30 to 300 kc/s or kHz	Kilometric
6	300 to 3000 kc/s or kHz	Hectometric
7	3 to 30 Mc/s or MHz	Decametric
8	30 to 300 Mc/s or MHz	Metric
9	300 to 3000 Mc/s or MHz	Decimetric
10	3 to 30 Gc/s or GHz	Centimetric
11	30 to 300 Gc/s or GHz	Millimetric
12	300 to 3000 Gc/s or GHz (or 3 Tc/s or THz)	Decimillimetric

Note 1 : "Band N" extends from 0.3×10^N to 3×10^N c/s (Hz)

Note 2 : When a service adopts a reference number or letter to designate a specific frequency band allocated to it and situated, wholly or for the most part, in "Band N" of the above nomenclature, the prefix N should normally precede the reference in question. For example, for the 41 to 68 Mc/s band, to which broadcast users give the reference "I", the appropriate designation is "broadcast band 8-I", since it refers to a part of "Band 8". This practice, applicable in the drafting of C.C.I.R. documents, is generally recommended for all cases where such a definition would obviate the risk of confusion in designating the numerous frequency bands and sub-bands.

Note 3 : Abbreviations; k = kilo (10^3), M = Mega (10^6), G = Giga (10^9), T = Tera (10^{12})

Note 4 : Abbreviations for adjectival band designators : Band 4 = V.L.F., band 5 = L.F., band 6 = M.F. band 7 = H.F., band 8 = V.H.F.; band 9 = U.H.F. band 10 = S.H.F., band 11 = E.H.F.

ANNEX A 31

RAPPORT N° 173 - REPORT No. 173 - INFORME N.° 173
(R. G. chap. 18)
MODIFICATIONS EVENTUELLES DE DEFINITIONS DU REGLEMENT DES RADIOCOMMUNICATIONS, ARTICLE I

POSSIBLE AMENDMENTS TO THE DEFINITIONS IN THE RADIO REGULATIONS, ARTICLE I

MODIFICACIONES QUE PODRIÁN EFECTUARSE EN LAS DEFINICIONES DEL ARTÍCULO I DEL REGLAMENTO DE RADIOCOMUNICACIONES

Parmi les termes et définitions que contiennent divers Avis du C.C.I.R., ceux dont l'importance semble justifier la modification de la liste de définitions donnée par l'Article I du Règlement des Radiocommunications sont donnés ci-après, dans les deux langues auxquelles se limitent pour le moment les travaux de la Commission d'études N° XIV : le français (colonne de gauche) et l'anglais (colonne de droite).

Dans la marge, à gauche, sont indiqués : d'abord, souligné, le numéro attribué par le Règlement des Radiocommunications à la définition correspondante, s'il s'agit d'une proposition de modification (par exemple: 58), ou un numéro suivi d'une lettre suffixe (par exemple 58 a) s'il s'agit d'une addition à intercaler à l'endroit approprié; puis, au-dessous, entre parenthèses, l'indication du Document C.C.I.R. de LOS ANGELES qui motive la proposition (par exemple : Doc. 253), suivi de la référence de l'Avis du C.C.I.R. jusqu'alors en vigueur (par exemple : "réf. 145" donne référence à l'Avis N° 145, que le texte du Doc. 253 est appelé à remplacer). Des parenthèses doubles sont utilisées pour indiquer que l'Avis en cause ne fournit pas textuellement la définition proposée, mais contient seulement les éléments qui ont servi de base à ladite définition.

Among the terms and definitions contained in C.C.I.R. recommendations, the ones which would appear to be sufficiently important to warrant modification of the list of definitions in Article I of the Radio Regulations are given below in the two languages at present used for its work by Study Group No. XIV, i.e. French (left column) and English (right column).

In the margin on the left are shown first, underlined, the number allotted by the Radio Regulations to the corresponding definitions in the case of a proposed modification (e.g. 58), or in cases where an additional insertion is to be made in the appropriate place a number followed by a letter (e.g. 58 a); then, below in brackets the indication of the C.C.I.R. Document of Los Angeles giving rise to the proposal (e.g. Doc. 253), followed by the reference to the C.C.I.R. Recommendation hitherto in force (e.g. "ref. 145" refers to Recommendation No. 145 which is to be replaced by the text in Doc. 253). Double brackets are used to indicate that the Recommendation in question merely provided the basis, and not the actual text, for the purposed definition.

Entre los términos y definiciones que figuran en distintas Recomendaciones del C.C.I.R., a continuación se indican, en los dos idiomas utilizados por el momento en los trabajos de la Comisión de estudios XIV, o sea, el francés (columna de la izquierda) y el inglés (columna de la derecha), aquellos cuya importancia parece justificar la modificación de la lista de definiciones del artículo I del Reglamento de Radiocomunicaciones.

En el margen izquierdo se indican: primeramente, subrayado, el número que lleve en el R.R. la definición correspondiente, si se trata de una proposición de modificación (por ejemplo, 58) o un número seguido de una letra como sufijo (por ejemplo, 58 a), si se trata de una adición que se ha de intercalar en el lugar apropiado; después, más abajo, y entre paréntesis, la indicación del documento C.C.I.R. de LOS ANGELES que motiva la proposición (por ejemplo, Doc. 253) seguida de la referencia a la Recomendación del C.C.I.R. hasta ahora en vigor (por ejemplo, "ref. 145", se refiere a la Recomendación núm. 145 que ha de ser sustituida por el texto del Doc. 253). Se utilizan paréntesis dobles para indicar que la Recomendación de que se trata no contiene textualmente la definición propuesta, sino solamente los elementos que han servido de base para la definición que se propone.

57	Fréquence assignée à une station : (transf. en 58 d, après 58 c)	Frequency assigned to a station : (transf. to 58 d, after 58 c)
57 a (Doc. 487 ref. 145)	Temps d'établissement d'un signal télégraphique: Temps pendant lequel le courant télégraphique passe du dixième aux neuf dixièmes (ou vice-versa) de la valeur qu'il atteint en régime établi.	Build-up time of a telegraph signal : The time during which the telegraphic current passes from one-tenth to nine-tenths (or vice versa) of the value reached at the steady state.
58 (Doc. 487 ref. 145) (Doc. 486 ref. 146)	Largeur de bande occupée par une émission : Largeur de la bande de fréquences telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance moyenne totale rayonnée par l'émission considérée.	Bandwidth occupied by an emission : The frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to one half per cent of the total mean power radiated by the emission.
58 a (Doc. 487 ref. 145)	Largeur de bande nécessaire : Pour une classe d'émission donnée, valeur minimale de la largeur de la bande de fréquence telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance totale rayonnée, cette valeur minimale suffisant à assurer la transmission de l'information à la vitesse voulue et avec la qualité requise, dans des conditions techniques données.	Necessary bandwidth : For a given class of emission, the minimum value of the frequency bandwidth such that, below its lower and above its upper frequency limits the mean powers radiated, are each equal to one half per cent of the total mean radiated power, this minimum value being sufficient to ensure the transmission of information at the rate and with the quality required for the system employed, under specified conditions.
58 b (Doc. 487 ref. 146)	Bande de fréquences occupée par une émission : Bande de fréquences du spectre hertzien telle que, au-dessous de sa fréquence limite inférieure et au-dessus de sa fréquence limite	Frequency band occupied by an emission : The frequency band in the radio frequency spectrum such that, below its lower and above its upper frequency limits, the mean power

supérieure, soient rayonnées des puissances moyennes égales chacune à un demi pour cent de la puissance moyenne totale rayonnée par l'émission considérée.

radiated are each equal to one half percent of the total mean power radiated by the emission.

58 c (Doc. 584 ref. 148) Bande de fréquences assignée à une station : Bande de fréquences dont le centre coïncide avec la fréquence assignée à la station et dont la largeur est égale à la largeur de bande nécessaire augmentée du double de la valeur absolue de la tolérance de fréquences.

Frequency band assigned to a station : The frequency band, the centre of which coincides with the frequency assigned to the station, and the width of which equals the necessary bandwidth, plus twice the absolute value of the frequency tolerance.

58 d (Doc. 584 ref. 148) Fréquence assignée : Centre de la bande de fréquence assignée à une station.

Assigned frequency : The centre of the frequency band assigned to a station.

58 e (Doc. 584 ref. 148) Fréquence caractéristique d'une émission : Fréquence aisément identifiable et mesurable dans une émission donnée.

Characteristic frequency of an emission : A frequency which can be easily identified and measured in a given emission.

58 f(=59.1) (Doc. 584 ref. 148) Fréquence de référence : Fréquence ayant une position fixe et bien déterminée par rapport à la fréquence assignée. Le décalage de cette fréquence par rapport à la fréquence assignée est, en grandeur et en signe, le même que celui de la fréquence caractéristique par rapport au centre de la bande de fréquence occupée par l'émission.

Reference frequency : A frequency having a fixed and specified position with respect to the assigned frequency. The displacement of this frequency with respect to the assigned frequency has the same absolute value and sign that the displacement of the characteristic frequency has with respect to the centre of the frequency band occupied by the emission.

Note 1 - La notion de fréquence de référence est rendue nécessaire du fait que la fréquence centrale de certaines classes d'émissions n'est pas facile à identifier et à mesurer.

Note 1 - The idea of a reference frequency is made necessary by the fact that the centre frequency of certain classes of emission is not easily identified and measured.

Note 2 - Pour certaines classes d'émissions, il est nécessaire de spécifier la valeur d'une ou plusieurs fréquences de référence, en même temps que la fréquence assignée. Par exemple, dans le cas des stations de télévision les fréquences caractéristiques sont celles des porteuses d'image et de son, et les valeurs des fréquences de référence correspondantes doivent être spécifiées.

59 (Doc. 584 ref. 148) Tolérance de fréquence : Ecart maximum admissible entre la fréquence assignée à une station et la fréquence située au centre de la bande de fréquences occupée par l'émission correspondante ou entre la fréquence de référence et la fréquence caractéristique. La tolérance de fréquence est exprimée en c/s, ou en valeur relative par rapport à la fréquence assignée.

59.1 (Note sur "la notion de fréquence de référence"; à supprimer : cf. 58 f)

64 a' (Doc. 487 ref. 145) Rayonnement hors bande : Puissance rayonnée par l'émission en dehors de la bande nécessaire. Le rayonnement hors bande ne comprend pas les rayonnements sur des fréquences éloignées, tels que les rayonnements non essentiels.

64 a (Doc. 657 ref. 147) Rayonnement non essentiel : Rayonnement sur une (ou des) fréquence(s) située(s) hors de la bande nécessaire et dont le niveau peut être réduit sans affecter la transmission de l'information correspondante. Les rayonnements harmoniques, les rayonnements parasites et les produits d'intermodulation sont compris dans les rayonnements

Note 2 - For certain classes of emissions it is necessary to specify the value of one or more reference frequencies as well as the assigned frequency. For example, in the case of television broadcast stations, the characteristic frequencies are those of the vision and sound carriers, and the figures for the corresponding reference frequencies should be specified.

Frequency tolerance : The maximum permissible deviation, with respect to the frequency assigned to a station, of the centre frequency of the frequency band occupied by the corresponding emission, or, with respect to the reference frequency, of the characteristic frequency of the emission. The frequency tolerance is expressed in c/s or as a fractional value of the assigned frequency.

(Note on "the concept of a reference frequency"; to be deleted : cf. 58 f)

Out-of-band radiation of an emission : The power radiated by an emission outside the necessary bandwidth. The out-of-band radiation does not include radiations on remote frequencies such as spurious emissions.

Spurious emission : Emission on a frequency or frequencies which are outside the necessary band, and the level of which may be reduced without affecting the corresponding transmission or information. Spurious emissions include harmonic emissions, parasitic emissions and intermodulation products, but exclude emissions

non essentiels, mais les rayonnements au voisinage immédiat des limites de la bande nécessaire et qui sont le résultat du processus de modulation utile pour la transmission de l'information en sont exclus.

in the immediate vicinity of the necessary band, which are a result of the modulation process for the transmission of information.

64 b (Doc. 657 ref. 147)

Rayonnement harmonique
Rayonnement non essentiel sur des fréquences qui sont des multiples entiers de celles comprises dans la bande occupée.

Harmonic emission :
Spurious emission on frequencies which are whole multiples of those comprised in the band occupied.

65 (ref. 168)

Gain relatif d'une antenne, dans une direction donnée (1) :
Rapport, exprimé en décibels, des champs produits dans la direction considérée (1), en un point suffisamment éloigné pour que le champ y soit inversement proportionnel à la distance, par les rayonnements respectifs, pour une même puissance d'alimentation (2), de l'antenne qu'il s'agit de caractériser et d'un doublet en demi-onde, considéré dans son plan médian, isolé dans l'espace et sans pertes.

Relative gain of an antenna in a given direction (1)
The ratio, expressed in decibels, of the field strengths produced in the direction under consideration (1), at a point sufficiently distant for the field strength to be inversely proportional to the distance, by the respective radiations for the same input power (2) from the antenna under consideration and from a half-wave doublet, loss free, isolated in space and considered in its median plane.

MOTIFS : Ce rapport étant exprimé en décibels, c'était inutilement compliquer la définition que d'y introduire les champs par leurs carrés. La nouvelle définition proposée, vise en outre à plus de clarté et peut se simplifier beaucoup (cf. texte 65.2 et motifs correspondants).

REASONS FOR THE CHANGE : This ratio being expressed in decibels, it would complicate the definition needlessly if the squares of the field strengths were to be used. The new definition proposed tends to a greater clarity and may be considerably simplified (cf. text 65.2 and the corresponding reasons).

65.1 (ref. 168)

/Note (1) au point 65/: En l'absence de la mention d'une direction spécifiée, il s'agit alors implicitement de la direction pour laquelle la grandeur prend sa valeur maximale.

/Note (1) to point 65/: In the absence of a specified direction being mentioned, it implies that the direction in which the field strength has its greatest value is taken.

MOTIFS : Unification de rédaction pour 65.1 et 66.1.

65.2 (ref. 168) /Note (2) du point 65/: Cette définition peut être notablement allégée. Tout le début, jusqu'aux mots "... même puissance d'alimentation (2), ...", peut être remplacé par "Rapport, exprimé en décibels, pour la direction considérée (1), des forces cymomotrices spécifiques nettes ...", la notion ainsi introduite étant elle-même définie de la manière suivante :

Force cymomotrice d'une antenne, dans une direction donnée (cf. note 65.1) : Produit exprimé en volts, du champ électrique de l'antenne en un point donné dans la direction considérée (cf.note 65.1), par la distance de l'antenne à ce point, celui-ci devant être assez éloigné pour que ce produit reste constant dans cette direction. La force cymomotrice est dite spécifique nette lorsque la puissance fournie à l'antenne a une valeur (de crête, ou moyenne,selon précisions à donner conformément aux définitions 61 à 64) de un kilowatt; elle est dite spécifique brute lorsque c'est la puissance rayonnée par l'antenne qui a cette valeur.

MOTIFS : L'Avis N° 168 du C.C.I.R., comme l'Avis N° 108 qu'il remplace, introduit cette notion de force cymomotrice spécifique (avec d'assez longs développements et d'une façon quelque peu différente) précisément comme base d'étude des diagrammes d'antennes, ce qui implique d'en tenir compte dans la définition des gains d'antennes, les diagrammes étant des représentations des gains.

REASONS : Unification of textes 65.1 and 66.1.

/Note (2) to point 65/: This definition may be shortened considerably. All the beginning, up to the words "... same input power (2) ..." may be replaced by "Ratio in decibels for the direction under consideration (1), of the specific nett cymomotive forces...", the idea introduced here is itself defined in the following manner :

Cymomotive force of an antenna in a given direction (see note to 65.1) : The product expressed in volts of the electric field of the antenna at a given point in the direction under consideration (see note to 65.1), and the distance of the antenna from this point, the antenna being sufficiently distant for the above product to remain constant in the direction given. This is defined as the specific nett cymomotive force if the power fed to the antenna has a value (peak, or mean according to the values to be specified in accordance with definitions 61 to 64) of one kilowatt; it is called specific gross if the power radiated from the antenna has this value.

REASONS : Recommendation No. 168 of the C.C.I.R. as well as Recommendation No. 108 which it replaces, introduces the conception of specific cymomotive force (with a fairly long development and in a slightly different manner) exactly as a basis for study of antenna radiation diagrams, which implies that if count is taken of this in the definitions of antenna gain, the diagrams will represent antenna gains.

Cette définition n'est toutefois proposée que sous forme de note pour tenir compte, conformément au procès-verbal de la dernière séance de la Commission d'études XIV du C.C.I.R. lors de la dernière Assemblée plénière, de ce qu'il n'y a pas unanimité au sujet de l'intérêt de cette notion.

This definition is however proposed only in form of a note in order to take into account, in accordance with the minutes of the final session of Study Group XIV of the C.C.I.R. during the last Plenary Assembly, that there was a lack of unanimity on the subject of the importance of this conception.

66 (ref. 168) Gain isotrope (ou gain absolu, ou coefficient de directivité) d'une antenne, dans une direction donnée (1) :
Même définition que ci-dessus en 65, en y remplaçant la fin, à partir des mots "... d'un doublet ..." par "d'une antenne isotrope, isolée dans l'espace et sans pertes".

MOTIFS : Les mêmes que pour le point 65.

Isotropic gain (absolute gain, or coefficient of directivity) of an antenna in a given direction (1):
The same definition as that of 65 above with the replacement of the phrase beginning with the words "... from a half-wave doublet..." by "from an isotropic antenna, loss free and isolated in space".

REASONS : The same as for point 65.

66.1 (ref. 168) /Note identique à la note 65.1 ci-dessus/
MOTIFS : Les mêmes que pour le point 65.1.

/Note identical with that of 65.1 above/
REASONS : The same as for point 65.1.

66.2 (ref. 168) /Note identique à la note 65.2 ci-dessus/
MOTIFS : Les mêmes que pour le point 65.2.

/Note identical with that of 65.2 above/
REASONS : The same as for point 65.2.

67 & 68 (ref. 168) /Texte commun/ Diagramme de directivité d'une antenne :
Représentation graphique, en coordonnées polaires ou cartésiennes du champ, de la force cymomotrice ou - sous forme logarithmique - du gain d'une antenne dans les différentes directions d'un plan ou d'un cone spécifiés, ou d'une famille de telles surfaces. Cette représentation est en général simplement relative, l'unité graphique correspondant à la valeur maximale (représentée avec la cote 1) de la quantité à représenter.

MOTIFS : Ils découlent de ceux qui sont donnés pour 65.2 ou 66.2.

/Common text/ Directivity diagram of an antenna :
A graphical representation, in polar or cartesian coordinates, of the field, of the cymomotive force, or - in logarithmic from - of the gain of an antenna in different directions in a given plane or a given cone, or of a family of such surfaces. This representation is generally purely relative, the unit of scale being taken as the maximum value (represented by the value 1) of the quantity represented.

REASONS : They derive from those which were given for 65.2 or 66.2.

73 a (*)	Système de relais radioélectriques : Système de radiocommunication travaillant généralement sur des fréquences très élevées, constitué par plusieurs sections reliées par des relais.	Radio relay system : Radiocommunication system usually operating at very high frequencies and consisting of a number of sections linked by relays.
73 b (*)	Faisceau hertzien : Système de radiocommunication travaillant sur des fréquences très élevées, en général des relais reliés par des faisceaux électromagnétiques de faible ouverture.	(No corresponding term in English)
73 a.1 (*)	(Note) : En fait, il est si général que les caractéristiques définies en 73 a et 73 b soient réunies qu'on se dispense, en pratique, de la préciser et que l'usage d'un seul terme est suffisant : faisceaux hertziens.	(Note) : In fact, the characteristics defined in 73 a and 73 b are so often found together that there is no distinction in practice and that the use of one term is enough.

(*) Pour l'ensemble de ces trois points, la proposition présentée ne s'appuie pas particulièrement sur l'un des Avis du C.C.I.R. : elle découle de l'ensemble de ceux des Avis du C.C.I.R. qui émanent de la Commission d'études IX (Ils utilisent tous, maintenant, la terminologie ici définie).

(*) For these three points, the proposition presented here does not particularly rely on a Recommendation of the C.C.I.R. it is derived from the majority of those Recommendations of the C.C.I.R. issued from Study Group IX (now they all use the terminology defined here above).

(*) En lo que se refiere a estos tres puntos, l proposición presentada aquí no se basa principalmente en la Recomendación del C.C.I.R., pero se deriva de la mayoría de ellas, las cuales provienen a su vez de la Comisión de Estudios IX (hoy en día, se usa generalmente la terminología empleada anteriormente).

(F) Une proposition a été omise dans la liste de "modifications éventuelles de définitions du Règlement des radiocommunications, Art. 1" qui fait l'objet du Rapport N° 173 (Doc. 774-E/F/S) établi par la commission d'études N° XIV (dernière séance : cf. Doc. 770, point 3, dernier alinéa). Il y a donc lieu d'insérer dans cette liste bilingue le texte complémentaire ci-après.

(E) A proposition has been omitted in the list of "possible modifications to the definitions in the Radio Regulations, Art. 1" which was the subject of Report No. 173 (Doc. 774-E/F/S) established by Study Group XIV (last meeting : see Doc. 770, point 3, last paragraph). The following additional matter should, therefore, be inserted in this bilingual list.

(S) Una proposición ha sido omitida en la lista de "modificaciones eventuales de definiciones del Reglamento de radiocomunicaciones, Art. 1" que hace el objeto del Informe N.° 173 (Doc. 774-E/F/S) establecido por la Comisión de estudios num. XIV (última sesión : cf. Doc. 770, punto 3, última linea). Ha lugar pues a insertar en esta lista bilingüe el texto complementario adjunto.

Def. 4. <u>Radiocommunication</u> : Télécommunication réalisée à l'aide d'ondes hertziennes <u>librement propagées</u>.	Def. 4. <u>Radiocommunication</u> : Telecommunication carried out by means of <u>freely-propagated</u> Hertzian waves.
<u>Motifs</u> : Cette proposition de modification ne se trouve pas dans tel ou tel signification ainsi précisée que doivent être compris tous les travaux du C.C.I.R.	<u>Reasons</u> : This proposition for a modification is not to be found in any particular Recommendation of the C.C.I.R., but all the work of the C.C.I.R. should be considered as having the signification given above.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1 *(cont.)*	Any other new matter of general interest	B 8	The C.C.I.R. has taken a number of new subjects for study in the field of propagation. Sometimes these subjects have been introduced between plenary assemblies, using the procedure mentioned in Article 7, para. 2 of the Convention. We give as examples: Study Programme No. 79 (V) and Report No. 52: " Propagation Across Mountain Ridges "; Study Programme No. 95 (VI) and Report No. 64: " Ionospheric Scatter Propagation "; Study Programme No. 91 (V): " Tropospheric Scattering "; Questions 168 (V) and 169 (VI): " Protection of Frequencies Used by Artificial Earth Satellites ».
Rec. 2	Standard frequency broadcasts and time signals		C.C.I.R. Study Group No. VII has on its programme solely the subject of Recommendation No. 2 in all its aspects. The relevant recommendations, reports, questions and study programmes are always kept up to date, in collaboration with the B.I.H. and the U.R.S.I. (See C.C.I.R. Recommendation No. 179 and Report No. 66, both on the subject.) This important work will still need a great deal of effort devoted to it in the future, in view of the growing occupancy of the spectrum.
Rec. 3	International monitoring		This subject entirely fills the programme of C.C.I.R. Study Group No. VIII.
	Technical recommendations for a coordinated world-wide service	*a)*	The main service was organized in C.C.I.R. Recommendation No. 19: " Organisation of an International Monitoring Service ", which is still in force without modification, though questions of detail need revision as time goes on.
	Technical standards and procedures of measurement to be adopted, etc.	*b)*	The accuracy of frequency measurements at monitoring stations is discussed in C.C.I.R. Recommendation No. 180: " Accuracy of Frequency Measurements at Monitoring Stations " and in Report No. 67: " Frequency Measurements Above 50 Mc/s at Monitoring Stations ". The accuracy of field-strength measurements is given in Recommendation No. 181: " Accuracy of Field-Strength Measurements by Monitoring Stations ".
	Form in which results of observations and measurements should be presented	*c)*	The " form " of the report has remained unchanged since C.C.I.R. Recommendation No. 22 was issued. Such questions as the identification of stations, automatic monitoring of spectrum occupancy, spectrum measurements, etc., are under study. The monitoring service will continue steadily to grow in importance in view of the ever-growing occupancy of the spectrum in the future.
Rec. 4	Review of Appendices 3, 4 and 5 of the International Radio Regulations		The review of Appendices 3, 4 and 5 of the Atlantic City Radio Regulations has been entrusted to C.C.I.R. Study Groups Nos. I, II and III. The main results are the following:

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 4 *(cont.)*	Bandwidth of emissions	1	C.C.I.R. Recommendation No. 88: " Bandwidth of Emission; Measurements made near the transmitter "; Recommendation No. 145: " Bandwidth of Emissions ";
	Bandwidth of receivers	2	Recommendation No. 155: " Selectivity of Receivers "; Recommendation No. 156: " Frequency Stability of Receivers "; Recommendation No. 154: " Noise and Sensitivity of Receivers ". (This last item is not explicitly mentioned in Atlantic City Recommendation No. 4, but cannot very well be separated from it).
	Harmonics, etc.	3	C.C.I.R. Recommendation No. 147: " Spurious Radiation "; Report No. 17: " Harmonics and Parasitic Emissions ". These studies, mentioned under 1, 2 and 3, are mainly being undertaken by C.C.I.R. Study Groups Nos. I and II, and the ever growing occupancy of the spectrum and new technical developments will necessitate the regular revision of the limits mentioned in the Recommendation. An item occurring in the title of Atlantic City Recommendation No. 4 must also be mentioned, namely the revision of Appendix 3 of the Radio Regulations. Though this item is very important it does not occur in the list of specific studies proposed to the C.C.I.R., in Rec. 4 It has, nevertheless been studied by the CCIR, resulting in CCIR Recommendation No. 148: " Frequency Stabilisation of Transmitters ".
		4	This subject has been studied by C.C.I.R. Study Group III. Results are given in: Recommendation No. 100: " Reduction of Occupied Bandwidth and Transmitter Power in Radio Telephony "; Recommendation No. 101: " Bandwidth Required at a Telegraph or Telephone Receiver Output "; Recommendation No. 161: " Bandwidths and Signal-to-Noise Ratios in Complete Systems "; Recommendation No. 162: " Use of Directional Antennae "; Recommendation No. 163: " Signal-to-Interference Protection Ratios ", and Recommendation No. 164: " Fading Allowances for the Various Classes of Service ". These studies are not yet completed.
Rec. 5	Study of the efficacy of signals MAYDAY and PAN		As far back as 1948 the C.C.I.R. issued Recommendation No. 23: " Signals MAYDAY and PAN ", which has remained valid up to this date. Hence C.C.I.R. study on this subject is finished.

ANNEX 5

RECOMMENDATIONS 1 TO 8 TO THE C.C.I.R. ISSUED BY THE ADMINISTRATIVE RADIO CONFERENCE (ATLANTIC CITY, 1947)

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1	International co-ordination of studies of propagation	A	This work is covered by C.C.I.R. Study Groups Nos. IV, V and VI, and it continues to increase; at present the three groups have respectively 11, 17 and 26 different items on their programmes. A number of recommendations has been issued by these groups, some containing ground wave propagation curves (10 kc/s —10 Mc/s), and some tropospheric propagation curves for metric waves. Two atlases have been edited, containing theoretical reference propagation curves for frequencies between 30 and 300 Mc/s and between 30 and 30,000 Mc/s. More specific results are the following:
	Standardization of symbols Ionospheric soundings	B 1 B 2	The symbols, presentation of results and methods of measurement of ionospheric soundings, have been well defined by the C.C.I.R. During the recent International Geophysical Year a great many stations have been operating. The C.C.I.R. has, in Resolution No. 26: " Ionospheric Sounding Stations after the International Geophysical Year ", expressed the desirability that a number of these stations be continued after the I.G.Y. This work is now in the hands of the U.R.S.I., with which organisation the C.C.I.R. maintains a close and fruitful cooperation. As far as the C.C.I.R. itself is concerned, these tasks can be considered as finished.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 1 *(cont.)*	Coordination of investigations on absorption	B 3	This work is continuing in collaboration with the U.R.S.I. (see C.C.I.R. Study Programmes No. 97 (VI): " Pulse-Transmission Tests at Oblique Incidence ", No. 98 (VI): " Backscattering " and No. 99 (VI): " Estimation of Sky-Wave Field Strengths on Frequencies Above 1500 kc/s ".)
	Coordination of investigations of natural radio noise	B 4	Noise studies form part of the work of C.C.I.R. Study Group No. VI. Important results are given in C.C.I.R. Report No. 65: " Revision of Atmospheric Radio Noise Data ", which gives, amongst other things, in a number of charts, a review of the world noise distribution as a function of the hour and of the season. The W.M.O. has, at the request of the C.C.I.R., edited, in the form of tables and maps, statistical data on thunderstorms, the source of atmospheric noise. The C.C.I.R. has developed an apparatus for counting lightning flashes occurring at small distances, and is in contact with the W.M.O. in order to have these counters put into use over a world-wide network. The object is to have in the future more reliable data on the distribution of lightning all over the world. A close collaboration with the U.R.S.I. exists on the more theoretical aspects of noise problems. In general, work on noise is continually increasing.
	Determination of best practical means for rapid exchange, on international basis, of information of all kinds relating to propagation	B 5	The practical means for a rapid exchange of information on propagation has been developed (C.C.I.R. Recommendation No. 59: " Exchange of Information for the Preparation of Short-Term Forecasts and the Transmission of Ionospheric Disturbance Warnings "). Warnings for special ionospheric phenomena and regular information on solar and ionospheric phenomena are transmitted by radio and/or wire using special codes (e.g. Ursigrammes). This work is mainly in the hands of the U.R.S.I. now; the system was greatly extended during the I.G.Y. (for special alerts, etc.) and there is no need for great activity by the C.C.I.R. any longer.
	Publication of scientific and technical investigations; periodic publication of propagation forecasts, etc.	B 6	In response to this question, there exists at present C.C.I.R. Recommendation No. 116: " Presentation of Basic Propagation Prediction Charts ", standardising the scales to be used for basic propagation prediction charts. The work can be considered as finished, but the recommendation remains valid.
	Review of value of various phases of propagation work and of publications relating thereto	B 7	As a result of this recommendation there are two C.C.I.R. Reports, No. 43: " Review of Publications on Propagation " and No. 55: " Practical Uses and Reliability of Ionospheric Propagation Data ". Both reports are of interest, but the second is of greater importance and ensures that this work will be continued.

Atlantic City Rec.	Subject	Paragraph	Action taken by the C.C.I.R.
Rec. 6	Relating to the watch on the distress frequency 2182 kc/s		The C.C.I.R. issued Recommendation No. 124: " Watch on the Distress Frequency of 2182 kc/s " on this subject. The alarm signal mentioned therein is defined in C.C.I.R. Recommendation No. 219: " Alarm Signal for Use on the Maritime Radiotelephony Distress Frequency 2182 kc/s ". At present this study is completed by the C.C.I.R. It might, however, appear again in connection with the possible use of the frequency 2182 kc/s as an air-sea and sea-air distress frequency, which possibility was not envisaged in the Radio Regulations of 1947, nor in the Convention of the Safety of Life at Sea.
Rec. 7	Relating to the standardization of performance requirements for radiophoto equipment		The subject was first studied by C.C.I.R. Study Group No. IX, and after 1953 by C.C.I.R. Study Group No. III. The results can be found in C.C.I.R. Recommendation No. 227: " Standardisation of Phototelegraph Apparatus for Use on Combined Radio and Metallic Circuits ". A joint C.C.I.T.T.-C.C.I.R. Study Group on Phototelegraphy, administered by the C.C.I.T.T., has been formed. Neither the studies in the C.C.I.R., nor in the Joint Group, are as yet completely terminated.
Rec. 8	Desired to undesired signal ratio for each one of services sharing a band of frequencies etc.		This subject has been studied by C.C.I.R. Study Group XII. Results can be found in C.C.I.R. Recommendation No. 48: " Choice of Frequency to Avoid Interference in the Bands Shared with Tropical Broadcasting "; Recommendation No. 49: " Choice of Site of Stations and of Type of Antennas to Avoid Interference, etc. "; Recommendation No. 214: " Limitation of Power of Transmitter in the Tropical Zone, etc. "; Recommendation No. 216: " Minimum Permissible Protection Ratio to Avoid Interference in the Bands, etc. ". The studies are not yet completed.

NOTE. — The outcome of the IXth Plenary Assembly at Los Angeles in 1959 will probably cause some modifications in the results of the studies as given above.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 123-E
27 August 1959

WORKING GROUP 6A

SUMMARY RECORD

First Meeting of Working Group 6A (Definitions)

Tuesday, 25 August 1959, at 10.00 a.m.

References: (1) Terms of Reference of Working Groups of Committee 6 (Document 81 dated 21 August 1959).

(2) Agenda for first meeting of Working Group 6A (Document DT 8 dated 21 August 1959).

The Chairman of Working Group 6A, Mr. Allen (U.S.A.), after appointing Mrs. Mooney (U.S.A.) informal reporter for Working Group 6A, distributed a draft temporary document entitled "Provisional List of Terms and Definitions", dated August 25, 1959, and proceeded to a consideration of the agenda items as follows:

1. Procedure for coordinating definitions appearing in the Convention and the Radio Regulations

It was decided that the working group could proceed with the substance of its work and defer to a later date the question of the coordination of definitions, appearing in both the Convention and the Regulations, with delegates to the Plenipotentiary Conference.

2. Priority list of definitions

Subject to the following changes, the draft temporary document entitled "Provisional List of Terms and Definitions" was accepted as a basic working paper:

1) the deletion of the word "complete" appearing in the first line of the document;

2) the substitution of the following paragraph c. for the paragraph c. appearing on page 1 of the document: "c. A proposed new term which may require definition.";

3) the addition of a new category at the bottom of page 1 of the document "d. Proposed deletions."

It was agreed to request the Secretariat to translate this draft temporary document into the two other languages and to distribute it as a Conference document so that it might be used as a basic working document by the Group.

3. Date of completion of priority list of definitions

It was agreed to defer the question of establishing deadlines for some, or all, of the definitions until the working parties which were to consider them had been established and could meet.

4. Agenda of Working Group 6A

Working Parties were established as shown in the attached list and their agenda were decided in a meeting between the Chairman of Working Group 6A and the Chairman of Working Group 6A1 to 6A9. The listed agenda includes only those matters contained in the terms of reference of Working Group 6A (Document 81) and the proposals printed in the I.T.U. Proposals for the International Radio Conference. Proposals and other items of the agenda which will appear as mimeographed documents in the Conference series will be considered by Working Group 6A and, if related to the agenda of a specific working party, may be assigned to that party by action of the Working Group after appearing first on its agenda.

5. Other Matters

It was agreed to recommend to the Chairman of Committee 6 that the three Working Groups of Committee 6 be reclassified as Sub-Committees 6A, 6B, and 6C, and that the "working parties" referred to above be reclassified as Working Groups. The attached list uses the new term Working Groups, as agreed to by the Chairman of Committee 6, so that it may be used in the future without confusion.

Reporter
Ann Mooney

E.W. Allen
Chairman, Working Group 6A

Annex: 1

A N N E X

WORKING GROUPS 6A1 TO 6A9

Working Group 6A1: Radio, Hertzian Waves, Radio Communication
Chairman: Mr. P.V. Akerlind (Sweden)
Agenda: Paragraphs 1/, 4, 5, 6
Proposals 2/, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47
C.C.I.R. Report # 173 (Radio Division Circular 77)

Working Group 6A2: (a) Space Service (b) Telegraphy
Chairman: Mr. F.M. Ryan (U.S.A.)
Agenda: (a) Paragraphs 1/, 6.20, 20.10, 20.20, 39.10, 39.20
Proposals 2/, 3204, 3215, 3216, 3223, 3224
(b) Paragraphs 1/, 7, 10, 10.10, 17.20, 18
Proposals 2/, 3205, 48, 49, 3206, 53, 54, 57, 85, 86, 88

Working Group 6A3: (a) Telemetering (b) Systems and Emissions (c) Modulation
Chairman: Mr. A.H. Tintant (France)
Agenda: (a) Paragraphs 1/, 7.10, 16.10, 56.10
Proposals 2/, 50, 4610, 56, 58, 77, 79, 139
(b) Paragraphs 1/, 18.90, 73.10 - 73.90
Proposals 2/, 80-83, 93, 267-281, 283-287
(c) Paragraphs 1/, 69.10, 69.20, 69.25, 69.30, 69.35
Proposals 2/, 219-223

Working Group 6A4: (a) Radiolocation (b) Harbour Mobile Service
Chairman: Mr. R.K. Starkie (Australia)
Agenda: (a) Paragraphs 1/, 11, 12, 12.10, 13, 14, 15, 16, 27-30, 48-53.10, 70-73
Proposals 2/, 59-62, 3207, 63, 64, 3208, 3209, 65, 66, 69, 71, 72, 3210, 74, 75, 76, 107, 108, 109, 3219, 110, 111, 3220, 3227, 3228, 3229, 3230, 3231, 130, 131, 3233, 132, 133, 134, 253-261
(b) Paragraphs 1/, 22.10, 24.10
Proposals 2/, 102, 105

1/ Paragraphs of the Radio Regulations and sub-paragraphs as identified in Document No. DT 21.

2/ Proposals are taken from the I.T.U. Proposals for the International Radio Conference. Other proposals arising in the Conference Documents may be added later.

Working Group 6A5:	Radio Frequency Registration
Chairman:	Mr. N. Roberts (I.F.R.B.)
Agenda:	Paragraphs 1/, 18.15, 18.20, 18.30, 18.40, 18.50, 18.55, 18.60, 18.65
	Proposals 2/, 3212, 3213, 3214, 94, 95, 96, 3705
Working Group 6A6:	Characteristics of Emissions
Chairman:	Mr. C.C. Benton (United Kingdom)
Agenda:	Paragraphs 1/, 57-59, 69.65, 69.70,
	Proposals 2/, 3234, 3235, 3236, 3237, 141, 142, 143, 3238, 144, 146, 147, 148, 149, 3239, 150-167, 3240, 168, 170, 172, 3248, 186, 187, 236, 241
Working Group 6A7:	Transmitter and Antenna Power
Chairman:	Mr. W. Kranjager (Federal German Republic)
Agenda:	Paragraphs 1/, 60-68.10
	Proposals 2/, 174-178, 180-182, 184, 188-206, 3245, 3246, 208-212
Working Group 6A8:	Radio Noise
Chairman:	Mr. M.K. Basu (India)
Agenda:	Paragraphs 1/, 69.75-69.95
	Proposals 2/, 242-246
Working Group 6A9:	Nomenclature of Frequencies
Chairman:	Mr. M. Shimbori (Japan)
Agenda:	Paragraphs 1/, Radio Regulations Article II, Section III
	Proposals 2/, 361, 362, 363, 365, 366, 367, 368, 5097 (Doc. 60).

1/ Paragraphs of the Radio Regulations and sub-paragraphs as identified in Document No. DT 21.

2/ Proposals are taken from the I.T.U. Proposals for the International Radio Conference. Other proposals arising in the Conference Documents may be added later.

ADMINISTRATIVE RADIO
CONFERENCE

GENEVA, 1959

Document No. 124-E
28 August, 1959

SCHEDULE OF MEETINGS FROM 31 AUGUST TO 6 SEPTEMBER 1959

	Monday 31.8		Tuesday 1.9		Wednesday 2.9		Thursday 3.9			Friday 4.9	
	1000-1230	1500-1800	1000-1230	1500-1800	1000-1230	1500-1800	0900-1000	1000-1230	1500-1800	1000-1230	1500-1800
Committee 1	-	-	-	-	-	-	E	-	-	-	-
Committee 2 - Working group	-	-	-	-	-	-	-	-	-	-	Office 1 (at 16.30)
Committee 3 - Plenary	-	-	-	-	E	-	-	-	-	-	-
Committee 4 - Plenary	-	A	-	A	-	A	-	-	A	-	A
Committee 4 - Working groups	-	-	E	-	-	-	-	E	-	-	-
Committee 5 - Plenary	A	-	-	-	A	-	-	-	-	A	-
Committee 5 - Working groups	-	-	F	-	-	-	-	F	-	-	-
Committee 6 - Plenary	-	-	-	-	-	-	-	A	-	-	-
Working group 6 A	-	C	-	-	-	-	-	-	-	-	C
Working group 6 B	-	-	-	-	-	C	-	-	-	-	-
Working group 6 C	-	-	C	-	-	-	-	-	C	-	-
Committee 7 - Plenary	-	-	-	-	-	-	-	-	-	-	D
Sub-Committee 7 A	D	-	-	-	D	-	-	-	-	-	-
Sub-Committee 7 B	-	D	-	-	-	-	-	D	-	-	-
Sub-Committee 7 C	-	-	-	-	-	D	-	-	-	D	-
Sub-Committee 7 D	-	-	D	-	-	-	-	-	D	-	-
Committee 8	-	-	-	-	-	-	-	-	-	-	-

Note: The Chairmen of Working Groups and Sub-Groups not mentioned specifically in this programme will convene meetings of their groups or sub-groups directly as and when necessary.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 125-E
27 August 1959

COMMITTEE 6

THE ARGENTINE REPUBLIC

Proposals

ARTICLE 2

Number of proposal

5354 74 **Read:**

§1. Emissions are designated according to their classification and the width of the band they necessarily occupy.

Reasons:

The words "width of the frequency band occupied by them" have been replaced by: "width of the band they necessarily occupy", the definition of this latter having been included in the list of definitions. This is the bandwidth which can at the present time be calculated.

5355 78 **Read:**

(3) Supplementary characteristics:

	Symbol:
a) Double sideband	(none)
b) Single sideband	a
c) Two independent sidebands	b
d) Composite transmissions	c
e) Pulse, amplitude modulated	d
f) Pulse, width modulated	e
g) Pulse, phase (or position) modulated	f

Number of proposal

Reasons:

There is no call for a reference to carriers. Paragraphs e), f) and g) have been suitably amended.

N.B.: The following amendments relate to the table in No. 80, showing the classification of emissions.

5356 80 Make the following amendments:

Amplitude modulation	Telephony	Double sideband	A 3
		Single sideband	A 3 a
		Two independent sidebands	A 3 b
	Composite transmission		A 9 c

Reasons:

To bring this into line with the amendments proposed for 78.

Read:

5357 81 SS 6 When the full designation of an emission is necessary, the characteristic sign for that class of emission, as given above, is prefixed by a number indicating, in kilocycles, the width of the band necessarily occupied. The number in question shall be expressed to a maximum of two significant figures.

Reasons:

Since the subjects are related, the two paragraphs 81 and 82 become one. "Width of the band" is replaced by "width of the band necessarily occupied" for

Number of proposal

the reasons given with regard to paragraph 74. Moreover, the maximum of two significant figures for the number indicating the bandwidth is extended to any magnitude thereof since they are considered sufficient to describe it.

Read:

5358 83 SS 8 For the bandwidths necessarily occupied by the various classes of emission, see Appendix 5.

Reasons:

"Bandwidths" is replaced by "bandwidths necessarily occupied", for the reasons given with regard to paragraph 74.

5359 84 Delete

Reasons:

This is unnecessary.

ARTICLE 6

5360 232 Read:

SS 1 The use of class B emissions is forbidden in all stations, with the exception specified in Article 33.

Reasons:

The second part of this provision is deleted because the same text is included in Article 33 under 712.

Number of proposal

ARTICLE 13

5361 378/379 Read:

§ 7. Except in cases of distress, communications between ship and aircraft stations or between aircraft stations must not interfere with the work of coast or aircraft stations. When such interference is produced, the ship or aircraft station which causes it must stop transmitting or change frequency upon the first request of the land station concerned.

Reasons:

Interference caused by aircraft stations communicating between themselves is included. Moreover aircraft stations are added to the reference to coast stations, because they are also subject to interference.

5362 383. Delete.

Reasons:

This is transferred to Article 19 because it deals specifically with an identification problem.

5363 384. Delete.

Reasons:

The same as for 383.

5364 385. § 11. Delete.

Reasons:

Transfer to Article 19, because this is specifically a problem of identification.

Number of proposal

5365 398. Read as follows:

§ 2. The minimum bandwidth required for an emission and the level of spurious radiation must be kept at the lowest value which the state of technique and the nature of the service to which the assignment is made permit. Appendices 4 and 5 must be considered as a guide in this respect, until more recent International Radio Consultative Committee recommendations are published.

Reasons:

The expression "radio frequency harmonics and non-essential emissions" is replaced by the term "spurious radiation" in accordance with the new definition inserted after number 69 (Proposal 5259).

APPENDIX 2

5366 Point 15 to read:

15. Name of the station (in block letters) whose reception is subject to interference.

Reasons:

The station's reception at a specific point, and not the station itself, is subject to interference.

APPENDIX 4

5367 The heading to read:

Table of Tolerances for the Intensity of Spurious Radiation.

Reasons:

In line with the new definition inserted after number 69 (Proposal 5259).

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 126-E
27 August, 1959

MEXICO

Proposal

ARTICLE 5

Number of the proposal

5368 127. Read as follows:

"In Region 2, the 285-325 kc/s band shall be jointly used for aeronautical and martime radio navigation."

Reasons:

The considerable increase in air services over the last few years has necessitated the establishment of new aids in the sphere of navigation (radiobeacons) at a much faster rate than the development of maritime radionavigation, and although the existing text of paragraph 127 permits the establishment of such installations, this text is considered to be restrictive.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 127-E
CORRIGENDUM No. 1
23 September 1959

PLENARY MEETING
COMMITTEE 5

CORRIGENDUM

JAPAN

Amendment to Proposals on Document No. 127

Article 10 bis

5373 1) Each assignment recorded with a date in the Registration Column of the Master Radio Frequency Record in accordance with No. 225, No. 251 or No. 277 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register; in this case, the date to be transferred to the Registration Column of the Register shall be the date recorded in the Registration Column of the Record.

5374 revised 2) Each assignment recorded with a date in the Notification Column of the Master Radio Frequency Record in accordance with No. 228, No. 252, No. 254 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register; in the case the finding to the assignment by the International Frequency Registration Board is favourable 1) the date shall be transferred to the Registration Column, and, in the case it is unfavourable 1) the date shall be left in the Notification Column. The date to be transferred to the Master International Frequency Register shall be the date recorded in the Notification Column of the Master Radio Frequency Record.

5375 revised 3) Each assignment recorded with a date in the Notification Column of the Master Radio Frequency Record in accordance with No. 225, No. 251 and No. 277 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register; in this case, the date to be transferred to the Notification Column of the Register shall be the date recorded in the Notification Column of the Record.

5374.1 1) These findings shall be deducted from the examination under 327, 328 and 329 by the Board which initiated, in the order of the date of its receipt, with regard to each assignment notified after the effective date of the Extraordinary Administrative Radio Conference Agreement. Concerning the preparation of the Register in accordance with this Article, the unfavourable assignment thus resulting shall be considered and entered as having been insisted upon.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 127-E
27 August, 1959

JAPAN

Proposals

CHAPTER IV.

ARTICLE 10

Number of Proposal

5369 291. Replace the present text by the following:

d) the review of entries in the Frequency Register with a view to eliminating or correcting, in agreement with the country which made the assignment, inactive entries or incorrect records.

Reason:

To make the Frequency Register represent the actual uses.

After Article 10 add the following new article:

ARTICLE 10 bis

5370 Master International Frequency Register

5371 1. The Master International Frequency Register shall, in accordance with the provisions of this article, be prepared by the International Frequency Registration Board not later than the day of bringing into force of these Regulations.

5372 2. The International Frequency Registration Board shall, in accordance with the following paragraphs, transfer the entries of the Master Radio Frequency Record to the Master Internationsl Frequency Register. Those items entered in the Remarks Column of the Master Radio Frequency Record which are deemed necessary shall also be transferred.

5373 3. 1) Each assignment recorded with a date in the Registration Column of the Master Radio Frequency Record in accordance with No. 225, No. 251 or No. 277 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register, in this case the date to be transferred to the Registration Column of the Register shall be the date recorded in the Registration Column of the Record.

Number of Proposal

5374 2) Each assignment recorded with a date in the Notification Column of the Master Radio Frequency Record in accordance with No. 228, No. 251, No. 252, No. 253, No. 254, No. 277 of the Extraordinary Administrative Radio Conference Agreement of the Section 2 of the Annex 5 thereto shall be transferred to the Master International Frequency Register; in the case the finding to the assignment by the International Frequency Registration Board is favourable, the date shall be transferred to the Registration Column, and, in the case it is unfavourable, the date shall be retained in the Notification Column. The date to be transferred to the Master International Frequency Register shall be the date recorded in the Notification Column of the Master Radio Frequency Record.

5375 3) Each assignment recorded with a date in the Notification Column of the Master Radio Frequency Record in accordance with No. 225 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register; in this case the date to be transferred to the Notification Column of the Register shall be the date recorded in the Notification Column of the Record.

5376 4) Each assignment recorded with a date in the Putting into Service Column of the Master Radio Frequency Record in accordance with No. 247, No. 255 or No. 274 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register with the later date, either the date on which the International Frequency Registration Board received the first notice or 1 April, 1952, recorded in the Notification Column of the Master International Frequency Register.

5377 5) Each assignment recorded with a date in the Putting into Service Column of the Master Radio Frequency Record in accordance with No. 245 of the Extraordinary Administrative Radio Conference Agreement shall be transferred to the Master International Frequency Register; in the case the date to be transferred to the Notification Column of the Register shall be the date recorded in the Remarks Column of the Record.

5378 6) Each assignment recorded without a date in the Putting into Service Column of the Master Radio Frequency Record by the date of coming into force of these Regulations shall not be transferred.

Number of Proposal

5379 7) The date to be transferred to the Putting into Service Column of the Master International Frequency Register shall be the date recorded in the Putting into Service Column of the Master Radio Frequency Record.

5380 §4. The Master International Frequency Register shall be maintained in accordance with the provisions of Article 11.

ARTICLE 11

5381 310 Replace the present text by the following:

2) Any frequency assignment which is in full conformity with all provisions of the Radio Regulations and which is in the frequency bands contained in the adopted New International Frequency Lists or Frequency Assignment and Allotment Plans shall be recorded in the Registration Column.

Reason:

To be consistent with Article 10 bis.

5382 312 Replace the present text by the following:

3) Any frequency assignment which:

a) in any measure, contravenes the provisions of the Radio Regulations, but on the use of which the notifying country insists;

b) is in full conformity with all provisions of the Radio Regulations, but which is in the frequency bands not contained in the adopted New International Frequency Lists or Frequency Assignment and Allotment Plans;

shall be recorded in the Notification Column.

Reason:

To be consistent with Article 10 bis.

Number of Proposal

5383 321 Replace the present text by the following:

§5. Upon the receipt of a complete notice, the Board shall record it. An incomplete notice shall be returned by air mail to the notifying country with reasons of the Board.

Reason:

To conform to the present procedure of the Board.

5384 329 After this number add the following new paragraph (1 bis)

The examination mentioned in the preceding paragraph shall be made on the basis of the technical standards mentioned in ... (proposal 5395) or other technical data deemed suitable by the Board. In caseswhere any harmful interference is anticipated, the Board shall investigate, upon all data available through the international monitoring service or by other means, whether the related assignments recorded in the Master Radio Frequency Register are in actual use as recorded.

Reason:

As the Register should always represent the actual status of frequency uses, it is necessary to make investigation from a practical standpoint with respect to the probability of interference.

5385 (1 ter) The provisions of 329 and ... (proposal 5384) shall not be applied to an assignment in a band above 27,500 kc/s except when is employs the ionospheric scatter or tropospheric scatter technique.

Reason:

To clarify the scope of technical examination by the Board.

.....

5386 334 Replace the present text by the following:

2) Finding favourable with respect to 327, 328 and 329.

The assignment shall be recorded in the Master International Frequency Register, the date of receipt of the first

Number of Proposal

notice by the Board being shown in the Registration Column for the assignment in the frequency bands contained in the adopted New International Frequency Lists or Frequency Assignment and Allotment Plans or in the Frequency band activated by the provision of ... (proposal 5391) and shall be recorded in the Notification Column for the assignment in other frequency bands.

Reason:

To correspond to the provisions of 310 and 312.

5387 336 Replace the present text by the following:

4) Finding favourable with respect to 327 and 328 but unfavourable with respect to 329.

The notice shall be returned immediately by air mail to the notifying country, with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem. Further, such suggestions shall also be sent to other administrations likely to be affected by the finding.

Reason:

To provide for the procedures of No. 242 of E.A.R.C. (Geneva, 1951).

5388 337 Replace the present text by the following:

If the notifying country resubmits the notice with modification which results after re-examination in a favourable finding by the Board, the assignment shall be recorded in the Master Radio Frequency Register as provided under 334. In this case, the date to be recorded shall be the date of receipt by the Board of the Modified notice.

Reason:

To be consistent with the amended draft proposals 310 and 312.

Number of Proposal

5389 338 Replace the present text by the following:

Should the notifying country, however, insist upon reconsideration of the original notice unchanged, and should the Board's finding remain unchanged, the assignment shall be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the Notification Column. In this case, a sign indicating that this assignment is recorded in accordance with this paragraph, shall be shown in the Remarks Column.

5390 345 After this number add the following new paragraph:

§12 bis 1) If, as the result of the investigation by the Board of a particular part of the frequency band for which the new international frequency list or plan was not adopted, it becomes to be recognised that there exists no harmful interference between the assignments in such portion of spectrum, the Board shall recommend to the Administrations a suitable date with which all assignments recorded under ... (proposal 5376) or 312 (3) b) in such particular part of the frequency band, excepting those not satisfying the frequency allocation table or the rule of frequency assignment, should be ready to be transferred to the Registration Column.

5391 2) The Administrations, by a referendum, shall determine the date of transfer. The above assignments shall be transferred from the Notification Column to the Registration Column simultaneously with the date thus determined.

Reason:

To lay down a procedure to put into full force of the Atlantic City regulations by utilising the result of investigation by the Board and without recourse to administrative conferences.

5392 349 After this number add the following new paragraph:

§ 14 bis If the Board, in the light of the data received, finds that a recorded frequency assignment is not in use in accordance with particulars of the Register, it shall request the interested country to modify the recorded matters. In cases where the interested country does not reply satisfactorily to such request within ninety days, the Board shall modify or delete the record, taking for granted the request has been acceded to.

Number of Proposal

Reason:

To be as consistent as possible with the present actual uses.

5393 350 Replace the present text by the following:

§15. In case of permanent discontinuance of the use of any listed frequency, the notifying country shall inform the Board immediately of such discontinuance, whereupon the entry shall be removed from the Register.

Reason:

To be as consistent as possible with the actual uses.

5394 355 Replace the present text by the following:

§18. If one or more of the interested countries so request the Board shall investigate any contravention or non-observance of these regulations or any harmful interference and shall render findings and, to the interested administrations, issue recommendations for the solution of the problem.

5395 359 After this number add the following new paragraph:

§19 bis The Board shall establish the technical standards for the technical examination of notified frequency assignments. The standards shall be prepared on the basis of the provisionsof the Radio Regulations, the decisions of the administrative conferences, the recommendations of the International Radio Consultative Committee, and the present and future trends in radio techniques. If the Board deems appropriate, the technical standards shall be issued through the Secretary-General of the Union.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 128-E
28 August, 1959

WORKING GROUP 6C

SUMMARY RECORD

First Meeting of Working Group 6c
(Interference, Monitoring)

Wednesday, 26 August, 1959 at 15.00 hours

Reference: Agenda of 25 August, 1959, Document No. DT-19.

The Chairman asked if the United Kingdom Delegation could provide an unofficial rapporteur. The Delegate of the United Kingdom agreed that Mr. C.E. Secker should undertake the task.

1. Terms of Reference of Working Group 6c.

The terms of reference in Document No. 81 were agreed.

2. Organization of the Work.

The Chairman said that he proposed to take the Articles in the order in which they appeared in Document No.81, taking in the Appendix, E.A.R.C. Recommendations, I.F.R.B. report and C.C.I.R. Recommendations as appropriate. The Working Group would consider all items in the first instance and appoint working parties as necessary.

At the request of the Delegate of Mexico it was agreed to examine Proposal No. 4605 (referred to Committee 5) when discussing International Monitoring.

3. Examination of Article 13 (RR 372-385)

It was agreed that the Federal German Republic Proposal No. 5510 (Document No. 63) be added to the agenda under RR 384, and that Proposal No. 1325 should be included under RR 383-385.

3.1 RR 372
RR 373

There was no proposal relating to either of these.

3.2 RR 374 (Proposals Nos. 3256 and 3983)

There was some discussion as to whether Proposal No. 3256 was appropriate to Article 13 or Article 17. It was eventually decided that

some general provisions of this nature were appropriate to Article 13 on the grounds that the article dealt with methods of avoiding interference and that RR 374 would then be more complete but that any specific proposals should be put into Article 17.

The Delegate of Canada suggested that these proposals should be referred to a working party. The Chairman set up a working party consisting of the United Kingdom (Chairman), France, Canada, India, United States and I.F.R.B. (Mr. Roberts), and agreed to request Working Group 6A to expedite definitions of the terms used.

After Mr. Roberts had mentioned that receiving antennas were not included, the Delegate of South Africa suggested that RR 374 should be divided into four parts, (a) sites, (b) antennas, (c) receivers, (d) transmitters.

3.3 RR 375 (Proposal No. 1308)

The Delegate of the United States pointed out that this regulation referred to "the class of emission using the narrowest band-width", not the class of emission most economical in spectrum space. If we had adhered strictly to this, frequency modulation would not have been used although this was often more economical in spectrum space.

It was agreed to refer this regulation to the working party.

3.4 RR 376

3.4.1 Proposal No.1309 is purely editorial and was accepted.

3.4.2 Proposals Nos. 1310 and 1311. The modification was accepted but the choice between 'spurious radiation' and 'spurious emission' would have to await the decision of Working Group 6A.

3.4.3 Proposals Nos. 1312 and 4644 were accepted without comment.

3.5 RR 377

It was agreed that, although "electrical installations" should include "networks", some specific mention should be made. The Delegation of France suggested adding the words "including networks". This was agreed.

3.6 RR 378/379

The Argentine Administration had submitted a proposal for modifying this regulation, but as it had not been published it was agreed to defer consideration.

3.7 RR 380 (Proposal No. 1318)

The Delegate of the United States thought that "without delay" was too strong and would prove impracticable. He suggested the word "promptly" and the Delegate of Pakistan the word "expeditiously".

The Delegate of France pointed out that this regulation referred only to test and experimental transmissions. He had considered the United States' suggestion but could not think of a French word with precisely the same meaning as "expeditiously".

It was agreed to reconsider the wording at the next meeting.

3.8 RR 381

There was no proposal to alter this regulation.

3.9 RR 382 (Proposal No. 1319)

This was purely editorial and accepted.

3.10 RR 383 (Proposal No. 1321)

The Chairman pointed out that if "radiocommunication" were defined in terms of "information", it would not include plain carrier and radar transmissions. It was agreed to await the definition from Working Party 6A.

3.11 RR 383-385 (Proposals Nos. 1321-1325 inclusive)

The Delegate of the United Kingdom said that Article 19 dealt with notification, allocation and formation of call signs but not with their use and that their use was of great interest when dealing with interference problems.

The Delegate of France suggested rewording RR 372 to include a reference to Article 19 and adding a new paragraph after 372 to include parts of RR 384. The Chairman set up a working party consisting of France (Chairman), India and the United States to produce a draft wording.

3.12 RR 384 (Proposal No. 5510)

The Delegate of the Federal Republic of Germany said that the proposal would draw attention to the work of the C.C.I.R. but that consideration should be postponed until the above working party had made its proposal.

3.13 Proposals Nos. 1307, 1313, 1316, 1317 and 1320.

It was agreed that consideration would have to be postponed until the working party on RR 383 - 385 had made its proposal.

4. Any other business

There was no other business.

Rapporteur:
C.E. Secker

Chairman:
A. Heilmann

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 129-E
CORRIGENDUM No. 1
2 September, 1959

SUB-COMMITTEE 7A

CORRIGENDUM

Summary Record

Second Meeting - Sub-Committee 7A (General conditions of operation)

Wednesday 26 August, 1959 at 10 a.m.

In Document No. 129-E:

Page 1 §§ 7, 2nd line, read: "No. 1510 of Morocco".

In the Annex to the document, under 489 (2) replace the text with the following:

"Mobile stations which are registered in a territory or group of territories which does not have full responsibility for its international relations may be considered as regards the grant of licences, as subject to the authority of that territory or group of territories".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 129-E
28 August 1959

SUB-COMMITTEE 7A

SUMMARY RECORD

Second meeting - Sub-Committee 7A (General conditions of operation)

Wednesday 26 August 1959 at 10 a.m.

Chairman: Mr. P. Bouchier (Belgium)

Vice-Chairman: Mr. Martin Florez Cantero (Mexico)

The Chairman pointed out a typing error in the Agenda issued in Document No. DT 15; the article mentioned under 4 should be 25 and not 24. However, as Article 25 did not, in any case, come under "small questions", the whole of item 4 should be replaced by: "Article 26, and proposals relating to it."

Item 1 of the Agenda: Article 21 of the RR. Secrecy.

Proposal No. 1506 of the Federal German Republic was not seconded, and was therefore rejected. Article 21, numbers 485, 486 and 487 of the RR accordingly remained unchanged.

Item 2 of the Agenda: Article 22 of the RR. Licences.

Proposal No. 1507, of Poland, would be discussed at a future meeting as no representative of Poland was present.

Proposal No. 1508 of the Federal German Republic was not seconded, and was therefore rejected. No. 488 of the RR was thus maintained unchanged.

Proposals Nos. 1509 of France and French Overseas Territories, and No. 1509 of Morocco, relating to No. 489 of the RR, and seconded by the Belgian Congo and Italy were adopted. The drafting Group of the Sub-Committee would prepare a new version of No. 489, as amended, to be attached to the summary record of the second meeting for a second reading.

Proposal No. 1511 of the United States of America, seconded by the United Kingdom, was adopted with an amendment to the French text. It completed No. 490 of the RR; the same procedure as for No. 489 would be followed.

Proposals Nos. 1512 of France, French Overseas Territories and Morocco, 1513 of the United Kingdom, 1514 of Switzerland, 4661 of Czechoslovakia and 1515 of Australia all related to No. 492 of the RR. All were seconded and discussed. Proposal No. 1512 was adopted after a discussion in which Australia, the United States of America and the U.S.S.R. took part.

Proposals Nos. 1513 and 4661 were discussed together. In the light of the comments of France, Australia, South Africa, Indonesia, Italy, India, Israel, Brazil, China and Argentina, it became clear that the new version of No. 492 of the RR should not take into account the amendments proposed by the United Kingdom and Czechoslovakia. Proposals Nos. 1513 and 4661 were therefore rejected.

With regard to Proposal No. 1514, it was decided that it should be adopted in principle, but that the text should be amended according to suggestions by Pakistan relating to receivers, the United States relating to its form, and Iceland regarding amateur stations. The text of proposal No. 1514 as amended by the Sub-Committee, would be inserted in the RR with a special number, provisionally 492 bis. The adopted version would appear as an annex to the summary record of the meeting for second reading.

Discussion of Proposal No. 1515 of Australia was postponed until the following meeting.

The Chairman announced that he would be replaced by the Vice-Chairman, Mr. Martin Florez Cantero, the following week, as he had been recalled to Belgium for professional reasons for a few days.

The meeting rose at 12.25 p.m.

Approved

Rapporteur: The Chairman:

R. Monnat P. Bouchier

Annex: 1

ANNEX

NEW VERSIONS PROPOSED FOR THE RR

CHAPTER X

Article 22

Licences

489 (2) Mobile stations which have their place of registry in a colony, a territory under suzerainty or mandate, an overseas territory or a protectorate, may be considered, as regards the grant of licences, as subject to the authority of that colony, those territories or that protectorate.

490 § 2. The holder of a licence is required to preserve the secrecy of telecommunication, as provided in article 32 of the Convention. Moreover, the licence must provide, specifically or by reference, that if the station includes a receiver the interception of radiocommunication correspondence, other than that which the station is authorized to receive, is forbidden, and that in the case where such correspondence is involuntarily received, it must not be reproduced, nor communicated to third parties, nor used for any purpose, and even its existence must not be disclosed.

492 § 4. The government which issues a licence to a mobile station mentions therein in clear form, the particulars of the station, including its name, call sign and public correspondence category, as well as the general characteristics of the installations.

492 bis § 2 For land mobile stations a clause, either specific or by reference, shall be included in the licence under which the operation of these stations shall be forbidden in countries other than the country which has issued the licence, except as may be provided by special agreement between the countries concerned.

Note

(The drafting group consider the intention of 492 and the proposed 492 bis is to legislate for mobile stations only. The operation of amateur stations and broadcast receiving stations are separate questions. He therefore decided it better to lay down clearly the conditions of licencing for the mobile stations and, if variations are required in the licencing arrangements for amateur stations and broadcast receiving stations these should be subjects for separate proposals.)

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 130-E (Rev.)
2 October, 1959

WORKING GROUP 4A

PROPOSALS

ARTICLE 3

General rules for the assignment and use of Frequencies

(To read)86. The Members and Associate Members of the Union agree that in assigning frequencies to stations which are capable of causing harmful interference to the services rendered by the stations of another country, such assignments are to be made in accordance with the table of frequency allocations and other provisions of these Regulations.

(To read)87. Provisional drafting to be reviewed after termination of the work of Committee 5

Any new assignment or any change of frequency or basic characteristic of an existing assignment (No. 318, Appendix 1), shall be made in such a way as to avoid causing harmful interference to services rendered by stations using assigned frequencies in accordance with these Regulations, the characteristics of which are recorded in the Master Radio Frequency Record.

(To read)88. Administrations of the Members and Associate Members of the Union shall not assign to a station any frequency in derogation of either the table of frequency allocations given in this chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations.

(To read)89. The frequency assigned to a station of a given service shall be so separated from the limits of the band assigned to this service in such a way that, taking account of the band width which has to be occupied by the station's emission, no harmful interference is caused to services to which frequency bands immediately adjoining are allocated.

(No change) 90. Where a band of frequencies is allocated to different services in adjacent regions or sub-regions, the basic principle is the equality of right to operate. Accordingly, the station of each service in one region or sub-region must operate so as not to cause harmful interference with services in the other regions or sub-regions.

ARTICLE 4

Special Arrangements

(To read)91. Two or more Members or Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude special arrangements regarding the sub-allocation of bands of frequencies to the appropriate services of the participating countries.

(To read)92. Provisionally approved as far as 5060 and 27500 kc/s limits are concerned

Two or more Members or Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude special arrangements, as a result of a Conference to which all those Members and Associate Members of the Union affected have been invited, regarding the assignment of frequencies to those of their stations which participate in one or more specific services within the frequency bands allocated to these services by Article 5, either below 5060 kc/s or above 27500 kc/s but not between those limits.

(To read)93. The Members and Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude, on a world-wide basis, and as a result of a Conference to which all Members and Associate Members of the Union have been invited, special arrangements concerning the assignment of frequencies to those of their stations participating in a specific service, on condition that such assignments are within the frequency bands allocated exclusively to that service in Article 5.

(No change) 94. Special arrangements concluded in accordance with the provisions of Nos. 91, 92 and 93 shall not be in conflict with any of the provisions of these Regulations.

(To read)94 a. The provisions of No. 92 in no way affect the right of two or more Members or Associate Members of the Union to confer before making notifications for frequency assignments in all frequency bands covered by Article 5.

(To read)95. The Secretary-General of the Union shall be informed, in advance, of any Conference to be convened to conclude such an arrangement; he shall also be informed of the terms of the arrangement when concluded; and he shall inform the Members and Associate Members of the Union of the existence of such arrangements.

(To read)96. In accordance with the provisions of Article 10 the International Frequency Registration Board may be invited to send representatives to participate in an advisory capacity in the preparation of these arrangements and in the proceedings of the conferences, it being recognized that in the majority of cases such participation is desirable.

ARTICLE 5

(To read)

Table of Frequency Allocations
9 kc/s to 40,000 Mc/s

(No change) 97. § 1. In the frequency allocation table, which follows, the services to which each band is allocated are listed in alphabetical order. The order of listing does not, therefore, indicate relative priority.

(No change) 98. § 2. a) A footnote reference which appears in the lower left-hand margin of any section of a column showing allocations, either "World-Wide" or "Regional", applies to the services listed in that section of the column.

(No change) 99. b) Any footnote reference placed immediately after a particular service listing applies only to that service.

(No change)100. § 3. The three Regions [1] (see Appendix 16) into which the world has been subdivided for the allocation of frequencies are:

(No change)101. Region 1:

Region 1 includes the area limited on the East by line A (lines A, B and C are defined below) and on the West by line B, excluding any of the territory of Iran which lies between these limits. It also includes that part of the territory of Turkey and the Union of Soviet Socialist Republics lying outside of these limits, the territory of the Mongolian Peoples' Republic, and the area to the North of the U.S.S.R. which lies between lines A and C.

(No change)102. Region 2:

Region 2 includes the area limited on the East by line B and on the West by line C.

---

1) It should be noted that where the adjective "regional" is used in other chapters of these Regulations it does not necessarily relate to the three Regions here defined for purposes of frequency allocation.

(No change) 103. Region 3:

Region 3 includes the area limited on the East by line C and on the West by line A, except the territories of the Mongolian Peoples' Republic, Turkey, the territory of the U.S.S.R. and the area to the North of the U.S.S.R. It also includes that part of the territory of Iran lying outside of those limits.

The lines A, B, and C are defined as follows:

(No change) 104. Line A:

Line A extends from the North Pole along meridian 40° East of Greenwich to parallel 40° North; thence by great circle arc to the intersection of meridian 60° East and the Tropic of Cancer; thence along the meridian 60° East to the South Pole.

(No change) 105. Line B:

Line B extends from the North Pole along meridian 10° West of Greenwich to its intersection with parallel 72° North; thence by great circle arc to the intersection of meridian 50° West and parallel 40° North; thence by great circle arc to the intersection of meridian 20° West and parallel 10° South; thence along meridian 20° West to the South Pole.

(To read) 106. Line C:

(No change in English) Line C extends from the North Pole by great circle arc to the intersection of parallel 65° 30' North with the international boundary in Bering Strait; thence by great circle arc to the intersection of meridian 165° East of Greenwich and parallel 50° North; thence by great circle arc to the intersection of meridian 170° West and parallel 10° North; thence along parallel 10° North to its intersection with meridian 120° West; thence along meridian 120° West to the South Pole.

(To read) 107. The "European Broadcasting Area" is bounded on the West by the Western boundary of Region 1, on the East by the meridian 40° East of Greenwich and on the South by the parallel 30° North so as to include the western part of the U.S.S.R. and the territories bordering the Mediterranean, with the exception of the parts of Arabia and Saudi-Arabia included in this sector. In addition, Iraq is included in the European Broadcasting Area.

107. a) The "European Maritime Area" is bounded: on the North by a line extending along parallel 72 degrees North from its intersection with Meridian 55 degrees East to its intersection with Meridian 5 degrees West, then along Meridian 5 degrees West to its intersection with parallel 67 degrees North thence along parallel 67 degrees North to its intersection with Meridian 30 degrees West; on the West by a line extending along Meridian 30 degrees West to its intersection with parallel 30 degrees North; on the South by a line extending along parallel 30 degrees North to its intersection with Meridian 43 degrees East; on the East by a line extending along Meridian 43 degrees East to its intersection with parallel 60 degrees North, thence along parallel 60 degrees North to its intersection with Meridian 55 degrees East and thence along Meridian 55 degrees East to its intersection with parallel 72 degrees North.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 130-E
28 August 1959

WORKING GROUP 4A

PROPOSALS

ARTICLE 3

General rules for the assignment and use of Frequencies

(To read)86. The Members and Associate Members of the Union agree that in assigning frequencies to stations which are capable of causing harmful interference to the services rendered by the stations of another country, such assignments are to be made in accordance with the table of frequency allocations and other provisions of these Regulations.

(To read)87. Provisional drafting to be reviewed after termination of the work of Committee 5

Any new assignment or any change of frequency or basic characteristic of an existing assignment (No. 318, Appendix 1), shall be made in such a way as to avoid causing harmful interference to services rendered by stations using assigned frequencies in accordance with these Regulations, the characteristics of which are recorded in the Master Radio Frequency Record.

(To read)88. Administrations of the Members and Associate Members of the Union shall not assign to a station any frequency in derogation of either the table of frequency allocations given in this chapter or the other provisions of these Regulations, except on the express condition that harmful interference shall not be caused to services carried on by stations operating in accordance with the provisions of the Convention and of these Regulations.

(To read)89. The frequency assigned to a station of a given service shall be so separated from the limits of the band assigned to this service in such a way that, taking account of the band width which has to be occupied by the station's emission, no harmful interference is caused to services to which frequency bands immediately adjoining are allocated.

(No change) 90. Where a band of frequencies is allocated to different services in adjacent regions or sub-regions, the basic principle is the equality of right to operate. Accordingly, the station of each service in one region or sub-region must operate so as not to cause harmful interference with services in the other regions or sub-regions.

ARTICLE 4

Special Arrangements

(To read)91. Two or more Members or Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude special arrangements regarding the sub-allocation of bands of frequencies to the appropriate services of the participating countries.

(To read)92. Provisionally approved as far as 5060 and 27500 kc/s limits are concerned

Two or more Members or Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude special arrangements, as a result of a Conference to which all those Members and Associate Members of the Union affected have been invited, regarding the assignment of frequencies to those of their stations which participate in one or more specific services within the frequency bands allocated to these services by Article 5, either below 5060 kc/s or above 27500 kc/s but not between those limits.

(To read)93. The Members and Associate Members of the Union may, in accordance with Article 41 of the Convention, conclude, on a world-wide basis, and as a result of a Conference to which all Members and Associate Members of the Union have been invited, special arrangements concerning the assignment of frequencies to those of their stations participating in a specific service, on condition that such assignments are within the frequency bands allocated exclusively to that service in Article 5.

(No change) 94. Special arrangements concluded in accordance with the provisions of Nos. 91, 92 and 93 shall not be in conflict with any of the provisions of these Regulations.

(To read)94 a. The provisions of No. 92 in no way affect the right of two or more Members or Associate Members of the Union to confer before making notifications for frequency assignments in all frequency bands covered by Article 5.

(To read)95. The Secretary-General of the Union shall be informed, in advance, of any Conference to be convened to conclude such an arrangement; he shall also be informed of the terms of the arrangement when concluded; and he shall inform the Members and Associate Members of the Union of the existence of such arrangements.

(To read)96. In accordance with the provisions of Article 10 the International Frequency Registration Board may be invited to send representatives to participate in an advisory capacity in the preparation of these arrangements and in the proceedings of the conferences, it being recognized that in the majority of cases such participation is desirable.

ARTICLE 5

(See original F)

(To read)	107. § 4.	"European Broadcasting Area"
(Add, at the end)		"In addition, Iraq is included in the European Broadcasting Area".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 131-E
28 August 1959

PEOPLE'S REPUBLIC OF POLAND

Amendment to the proposal No. 1507

ARTICLE 22

Number of proposal	
1507 revised	In the proposal No. 1507 a standardisation of licences for mobile stations, being temporarily on the territory of another country, has been suggested. In amendment to the proposal mentioned above the licence forms for ship and aircraft stations are presented herewith in the Annexes 1 and 2 to this document. Some explanations are given in the Annex 3.

Annexes: 3

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

. . . . . .
. . . . . .
(Full name of the Administration written in the national language)

ANNEX 1

LICENCE No . . . . .

valid till . . . . . 19 . .

. . . . . .
. . . . . .
(Full name of the Administration written in English)

For possession and use of a wireless station on board the ship:

Name	Category	Gross tonage	Home port

. . . . . .
(. . . . .)

. . . . . .
. . . . . .
(. . . . .)

. . . . . .
(. . . . .)

. . . . . :

In accordance with . . . . . .
(Title of the internal decree)

And with the Radio Regulations, annexed to the International Telecommunication Convention now in force. . . . . .
(Telecommunication Authority)

Authorises herewith . . . . . .
(The armator or the owner and his address)

To install on board the above ship and to use wireless transmitters described below:

Call sign	Type of the Transmitter	Operating Power	Working frequencies	Type of Emission	Station Category	Remarks

. . . . . .
. . . . . .
. . . . . .(. . . . .)

The licensee is bound to observe all rules and regulations resulting from international agreements, particularly that concerning the correspondance secrecy (Radio Regulations Art. 21).

. . . . . .
For the Minister (or General Director) of . . . . . .
(Name of the Telecommunication Authority)

. . . .
(Place) (Date) (Signature)

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

ANNEX 2

. . . .
. . . .
(Full name of the Administration written in the national language)

LICENCE No. . . . . .

valid till . . . . . .19 . .

. . . .
. . . .
(Full name of the Administration written in French)

For possession and use of a wireless station on board the aircraft:

Sign	Category	Type	Cargo weight	Home airport

In accordance with . . . .
(Title of the internal decree)

and with the Radio Regulations, annexed to the International Telecommunication Convention now in force. . . . .
(Telecommunication Authority)

authorises herewith . . . .
(Name and address of the aviation enterprise, organisation or owner)

to install on board the above aircraft and to use wireless transmitters described below:

Call sign	Type of the transmitter	Operation power	Working frequencies or frequency bands	Type of emission	Station category	Remarks

The licensee is bound to observe all rules and regulations resulting from international agreements, particularly that concerning the correspondance secrecy (Radio Regulations Art. 21)

For the Minister (or General Director) of . . . .
(Name of the Telecommunication Authority)

. . . .
(Place)

. . . .
(Date)

. . . .
(Signature)

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X 3

EXPLANATIONS REGARDING TO THE ANNEXES 1 AND 2

1. National language text should be written in the place of dashed lines.

2. Names and other informations according to explanations given in brackets should be inscribed on the dotted line place.

3. According to the traditional customs the licences for ship stations should be typed and fulfilled both in national and English languages and those for aircraft stations in national and French languages.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 132-E
28 August, 1959

COMMITTEE 7

MINUTES
OF THE
SECOND MEETING OF COMMITTEE 7
(Operations Committee)

Geneva, 27 August, 1959, at 10.30 a.m.

Chairman: Mr. A.J. EHNLE (Netherlands)

Agenda: Document No. DT 24.

The Chairman apologised for some unavoidable delay in opening the meeting due to his absence at a prolonged meeting of the Steering Committee, and he then introduced the Agenda, Document No. DT 24.

1. Allocation of General Proposals to Committee 7.

The Chairman said that none of the general proposals contained in pages 2-40 of the Yellow Book had been listed in Document No. 2 as pertaining to Committee 7. However, a number of them fell within the field of work of the Committee and he had raised the question on the Steering Committee. On that Committee it had been agreed to convene a small group of Chairmen of Committees who would suggest an allocation of the general proposals. Their proposals would be laid before the Committee when they were known and he therefore proposed to defer consideration of this item for the present.

The Delegate of the United Kingdom asked when the group was likely to meet. He felt it was essential that the allocation should be made as soon as possible to avoid impeding the work of the Sub-Committees. The Chairman said he had asked for an early meeting and he thought it might assist Delegates to have a provisional list of the proposals he had suggested should be allocated to Committee 7. The list was as follows:

		Yellow Book
	No. 9	Page 5
	No.13	Pages 6 to 25
	No.14 (3 to 7 only)	Pages 26 to 27
	No.15	Page 28
	No.16	Page 28
	No.16 bis	Pages 29-32
and	Nos. 17-29	Pages 33-38

The Delegate of the United States expressed the view that proposals 1 and 2 and 10, 11 and 12 should also be allocated to Committee 7. The Chairman noted this view and said these would be added to the list. It was then agreed to defer further consideration of this item.

2. Reports of Chairmen of Sub-Committees 7A, 7B, 7C and 7D.

The Chairman invited reports of progress on Sub-Committees 7A, 7B, 7C and 7D.

Sub-Committee 7A.

The Chairman of Sub-Committee 7A (M. Bouchier, Belgium) reported that his Sub-Committee had met twice, on 24 and 26 August.

The first meeting had been concerned principally with organising the work and it had been agreed to tackle first those proposals that could be dealt with in plenary meetings of the Sub-Committee leaving for a later date those questions that would necessitate setting up Working Groups. It had been necessary to postpone consideration of Article 15, with which Appendix 2 was associated, pending the work of other Committees.

In the second meeting the Sub-Committee had commenced its consideration of Articles 21 and 22. A certain number of conclusions had been reached and the texts of these were now being dealt with by the internal drafting group of the Sub-Committee.

Sub-Committee 7B.

Mr. Billington (United Kingdom), Chairman of Sub-Committee 7B, reported that his Sub-Committee had also met twice during the week. Having examined the work to be done Sub-Committee 7B had commenced its work with the proposals, in respect of RR 236-239, which required urgent consideration because they affected the work of Committee 4. Conclusions had been reached; the texts would now be prepared by the drafting group and submitted to the Sub-Committee for approval.

Articles 27, 31 and 32 had been considered. In these a few texts had yet to be formulated by small working groups. When this had been done texts would be prepared by the drafting group and laid before the Sub-Committee for approval.

Two working groups had been set up, 7B(1) to deal with Appendix 9 and 7B(2) to deal with Appendix 9 bis. They would commence work at an early date.

The Sub-Committee had also commenced work on Article 30 and had dealt with about half the proposals for that Article.

Sub-Committee 7C.

The Chairman of Sub-Committee 7C, Capt. Graves (U.S.A.), reported that his Sub-Committee had met once. In this meeting the Sub-Committee had dealt with the usual procedure questions of appointing a rapporteur and assistants, terms of reference and organisation of the work. The Sub-Committee had begun to take up proposals in sequential order. Sufficient progress had not yet been made to assess how the work would go, or what working groups would be needed. Nevertheless it was already clear that a working group would be needed to deal with the proposals in regard to the use of the radiotelephony automatic alarm device and another for the numerous proposals concerning differentiations between the distress call when sent by a station in distress and when repeated by another station. The Sub-Committee planned to continue taking the proposals in order until such time as a problem arises which will have to be dealt with by a Working Group. The Agenda for the next meeting was contained in Document DT 22.

Sub-Committee 7D.

M. Caruso (Italy), Chairman of Sub-Committee 7D, reported that his Sub-Committee also had met only once (the second meeting would be held during the afternoon of 28 August). The first part of the meeting was devoted to discussing the work in a general way, setting up the language group and accepting the services of Mr. Kunz, of the General Secretariat, and Mr. Wang, of the I.F.R.B., who had been placed at the disposal of the Sub-Committee.

During the second part of the meeting Article 38 was discussed, but final decisions on this Article must be subject to the outcome of consideration of the general proposals. Article 39 was considered and it was decided to maintain the status quo. A Working Group was being set up to deal with the Accounting Regulations in Articles 41 of the Radio Regulations and Article 4 of the Additional Radio Regulations, but this group could not meet before Thursday, 3 September. The Agenda for the second meeting was consideration of Article 40 of the Radio Regulations, Articles 1, 2 and 3 of the Additional Radio Regulations and general discussion of Article 4 of the Additional Radio Regulations.

The reports of the Chairmen of Sub-Committees 7A, 7B, 7C and 7D were accepted by the meeting.

3. Miscellaneous.

(i) The Chairman recalled that at the last meeting he had promised to come back to the question of language advisers. He was now able to nominate as the French speaking Adviser M. Bes, of the French Delegation, and as the Spanish Adviser, Mr. Martin Flores Cantero, of the Mexican Delegation. He proposed that they should collaborate with the Rapporteur in the same manner as for other Committees. This was accepted.

(ii) The meeting was asked to accept Document No. 95 which amended the division of work in accordance with the agreements reached between the various Chairmen. This was agreed.

(iii) It was regretted that Minutes of the first meeting were not yet published. The translated drafts had not yet reached the language group.

(iv) The next meeting would be at 15.00 on Friday 4 September, 1959.

This concluded the business of the meeting.

Rapporteur
G.F. Wilson

Chairman of the meeting:
A.J. Ehnle

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 133-E
31 August, 1959

COMMITTEE 7 (Operation)

Proposals by the General Secretariat and the I.F.R.B. on the publication of Service Documents

ORDER OF CLASSIFICATION OF INFORMATION REGARDING THE VARIOUS COUNTRIES

1. On 30 December, 1958, the General Secretariat issued Radio Division Circular No. 766 concerning I.T.U. service documents.

1.1 A limited number of copies of this circular, which was prepared in collaboration with the I.F.R.B., are available for reference by the delegates who will participate in the work on this question in Committee 7.

1.2 The present document, which was also prepared in collaboration with the I.F.R.B., supplements the circular and deals with the order in which information about the various countries should be classified in service documents.

2. In accordance with Appendix 6 to the Radio Regulations, data (except that given in Part C of Lists IV and V) should be published in the alphabetical order of countries. However, the language to be used for this purpose is not indicated. The Secretary-General, adopting the order in which conference delegations have been seated in accordance with Article 2, Chapter 9, of the General Regulations annexed to the Convention, has followed the alphabetical order of countries' names in French. For the following reasons, however, another criterion would appear advisable.

3. a) The alphabetical order of countries' names is not the same in all languages, and people using the documents in versions other than the French are not necessarily familiar with the terminology and spelling of these names in French. If countries' names were shown in the alphabetical order of the various languages in each Union service document, considerable additional expense would be incurred.

b) As the publication of service documents is to be reviewed by the Administrative Radio Conference, it would be well to take this opportunity to standardise the method of publishing service documents as far as possible, with a view to facilitating corss-reference; in fact, the present arrangement makes consultation difficult and may mean that data are inadvertently overlooked.

c) In List I (now the Radio Frequency Record), and in Lists II and III which derive therefrom, the countries are indicated by abbreviations prepared in accordance with No. 484 of the Radio Regulations. These abbreviations consist of not more than three letters and are published in Table No. 1 of the Preface to the Radio Frequency Record (page 12 of the 6th edition). This table is annexed hereto, for information. Similar abbreviations are used in Lists IV to VII. They are not always exactly the same, being based on those appearing in I.T.U. List of Frequencies, and it is because of the rather high typesetting costs involved that they have not yet been standardised.

d) In view of the relationship between Lists I, II and III, on the one hand, and Lists IV to VII, on the other, it would seem that the names of countries might be arranged in the alphabetical order of the abbreviations for countries used in List I. Wherever abbreviations are used to indicate countries, they should be uniform. In Part C. of List IV, for example, where the particulars of ship stations include the designation, in abbreviated form, of the country responsible for the station, the abbreviation used should be the same as in Part B and in all other service documents. It should be noted, however, that in certain cases it would be necessary to make up new abbreviations or to modify or delete existing ones.

4. The General Secretariat and the I.F.R.B. propose, therefore, that information should be classed in the alphabetical order of the abbreviations mentioned above, it being understood that the prefaces to the service documents concerned would contain two lists:

a) one showing the abbreviations, with the names of the corresponding countries.

b) the other giving the names of countries whose station particulars appear in a section of the document, with the appropriate abbreviations.

5. Wherever reference is made, in Appendix 6 to the Radio Regulations, to the "name of the country", the latter would be stated in full, in the appropriate languages, after the abbreviation. Should the Conference accept the foregoing proposal, it would be necessary to replace the term "name of the country" by "abbreviation and name of the country" throughout Appendix 6 to the Radio Regulations.

Annex: 1

A N N E X

T A B L E No. 1

ABBREVIATIONS DESIGNATING COUNTRIES

(See paragraph 13.1)

Note - The following abbreviations have a geographical significance only.

ABBREVIATION	NAME OF THE COUNTRY
AAA	Shared throughout the world
AAB	Shared by several countries, but in a restricted area of the world
ADN	Aden
AEF	French Equatorial Africa
AFG	Afghanistan
AFS	Union of South Africa and Territory of South-West Africa
AGL	Angola
ALB	People's Republic of Albania
ALS	State of Alaska, United States of America (formerly Territory of Alaska)
AMS	New Amsterdam Island
AND	Andorra
ANF	French Territories in the Antarctic
AOE	Spanish Province in West Africa
AOF	French West Africa
ARG	Argentine Republic
ARS	Saudi Arabia
ASC	Ascension
ATN	Netherlands Antilles
AUS	Commonwealth of Australia
AUT	Austria
AZR	Azores
B	Brazil
BAH	Bahamas
BAS	Basutoland
BCH	Bechuanaland
BEL	Belgium

ABBREVIATION	NAME OF THE COUNTRY
BER	Bermuda
BLR	Bielorussian Soviet Socialist Republic
BOL	Bolivia
BRM	Burma (Union of)
BRN	North Borneo
BRU	Brunei
BUL	People's Republic of Bulgaria
CAN	Canada
CAR	Caroline Islands
CBG	Cambodia
CGO	Belgian Congo and Territory of Ruanda-Urundi
CHL	Chile
CHN	China
CHR	Christmas Island (Indian Ocean)
CKH	Cook or Hervey Islands
CKN	Cook or Hervey Islands (Northern Group)
CLM	Republic of Colombia
CLN	Ceylon
CME	Cameroon (State of) (under French Trusteeship)
CNR	Canaries
CPV	Cape Verde Islands
CTO	Ghana
CTR	Costa Rica
CUB	Cuba
CVA	Vatican City State
CYP	Cyprus
D	Germany
DNK	Denmark
DOM	Dominican Republic
E	Spain
EGY	United Arab Republic (Egyptian Region)
EQA	Ecuador
ERY	The Part of Ethiopia named "Eritrea"
ETH	Ethiopia, except the part of Ethiopia named "Eritrea"

ABBREVIATION	NAME OF THE COUNTRY
F	France and Algeria
FJI	Fiji Islands
FLK	Falkland Islands and Dependencies
FNL	Finland
G	United Kingdom of Great Britain and Northern Ireland
GCA	Territories and Colonies of the United Kingdom in Region 1
GCB	Territories and Colonies of the United Kingdom in Region 2
GCC	Territories and Colonies of the United Kingdom in Region 3
GDL	French Department of Guadeloupe
GIB	Gibraltar
GIL	Gilbert and Ellice Islands
GLP	Persian Gulf
GMB	Gambia (Bathurst)
GNE	Spanish Province in the Gulf of Guinea
GNP	Portuguese Guinea
GRC	Greece
GRL	Greenland
GTM	Guatemala
GUB	British Guiana
GUF	French Department of Guiana
GUM	Guam
HKG	Hong Kong
HNB	British Honduras
HND	Republic of Honduras
HNG	Hungarian People's Republic
HOL	Netherlands
HTI	Republic of Haiti
HWA	Hawaii
HWL	Howland Island
I	Italy
ICO	Cocos Keeling Islands
IND	India
INP	Portuguese India
INS	Republic of Indonesia

ABBREVIATION	NAME OF COUNTRY
IOB	British West Indies
IRL	Ireland
IRN	Iran
IRQ	Iraq
ISL	Iceland
ISR	State of Israel
IWA	Iwo Jima
J	Japan
JAR	Jarvis Island
JON	Johnston Island
JOR	Jordan
KEN	Kenya
KER	Kerguelen Islands
KOR	Republic of Korea
KRE	People's Democratic Republic of Korea
LAO	Laos
LBN	Lebanon
LBR	Liberia
LBY	Libya
LUX	Luxembourg
MAC	Macao
MAU	Mauritius
MCO	Monaco
MCS	Marcus Island
MDG	Madagascar and Dependencies
MDR	Madeira
MDW	Midway Island
MEX	Mexico
MLA	Malaya
MLD	Maldive Islands
MLT	Malta
MNG	Mongolian People's Republic
MOZ	Mozambique
MRA	Mariana Islands

ABBREVIATION.	NAME OF COUNTRY
MRE	Morocco - Northern Zone
MRF	Morocco - Southern Zone
MRL	Marshall Islands
MRN	Marion Island
MRT	French Department of Martinique
NCG	Nicaragua
NCL	New Caledonia and Dependencies
NGN	Netherlands New Guinea
NGU	Territory of New Guinea
NHB	New Hebrides (British-French Condominium)
NIG	Nigeria
NOR	Norway
NPL	Nepal
NYA	Nyasaland
NZL	New Zealand
OCE	French Polynesia
ONC	Stations of the "United Nations Military Observer Group in India and Pakistan"
PAK	Pakistan
PAP	Territories of Papua
PAQ	Easter Island
PHL	Republic of the Philippines
PHX	Phoenix Islands
PLM	Palmyra Island
PNR	Republic of Panama
PNZ	Panama Canal Zone
POL	People's Republic of Poland
POR	Portugal
PRG	Paraguay
PRU	Peru
PTC	Pitcairn Island
PTR	Puerto Rico
RAU	United Arab Republic
REU	French Department of Reunion

ABBREVIATION	NAME OF COUNTRY
RHN	Northern Rhodesia
RHS	Southern Rhodesia
ROD	Rodriguez
ROU	Roumanian People's Republic
RYU	Ryu-Kyu Islands
S	Sweden
SAR	Germany, Saarbruecken
SDN	Republic of the Sudan
SEY	Seychelles
SHN	S. Helena
SLM	Solomon Islands
SLV	Republic of El Salvador
SMA	American Samoa
SMB	British Somaliland
SMF	French Somaliland
SMO	Western Samoa
SMR	Republic of San Marino
SNG	Singapore
SOM	Somaliland (Italian Administration)
SPM	S. Pierre and Miquelon
SRL	Sierra Leone
SRW	Sarawak
STP	S. Tome and Principe
SUI	Switzerland
SUR	Surinam
SWN	Swan Island
SYR	United Arab Republic (Syrian Region)
TCH	Czechoslovakia
TGK	Tanganyika Territory
TGO	Togo (Autonomous Republic)
TGR	Morocco - Tangier
THA	Thailand
TMP	Portuguese Timor
TON	Tonga

ABBREVIATION	NAME OF COUNTRY
TRA	Italy - Trieste
TRC	Tristan da Cunha (Station of the Union of South Africa)
TUN	Tunisia
TUR	Turkey
UGA	Uganda
UKR	Ukranian Soviet Socialist Republic
URG	Uruguay
URS	Union of Soviet Socialist Republics
USA	The 48 contiguous States of the United States of America (Excludes the State of Alaska)
VEN	Venezuela
VIR	Virgin Islands
VTN	Viet-Nam
WAK	Wake Island
YEM	Yemen
YUG	Yugoslavia
ZAN	Zanzibar

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 134-E
31 August 1959

COMMITTEE 4

SUMMARY RECORD

Fifth Meeting - Committee 4 (Frequency Allocation Committee)

Wednesday 26 August 1959, at 15.00 hours - Room A

1. The Chairman drew attention to the Agenda, Document No. DT 23, which refers to the Annex to Document No. DT 16, resuming at 150 kc/s.

Before opening discussion the Chairman said that he had noted that many Delegates appeared to be finding difficulties in following the work of the Committee; this was due to the multiplicity of proposals, paragraphs, pages, regulations and other numbers, and to the disposal of these numbers throughout the documentation. He would therefore wish to record the two following points which he hoped would assist the Delegates.

a) The present discussions represent only the first consideration given to the subject matter; even if approval is signified now to a proposal, no Delegate will have lost the right to a different decision later, for example, in a Working Group, or in full Committee, when the Working Group reports back, or even in the Plenary Assembly. Approval at this stage should also be considered as being of a tentative nature pending completion of the study of the totality of the frequency Table.

b) Some delegates have drawn attention to the difficulties of getting all proposals on a common subject together and have explained their own ways of overcoming these difficulties. The Chairman has asked the I.F.R.B. and the Secretariat to take note of this; as a result it is expected that the first list of collated proposals would be available for the meeting of Friday afternoon, August 28th.

2. 150-160 kc/s

The Chairman summarised proposals 3514, 3515, 892, 898 and 727 as being directed towards one point of substance, the deletion of No. 117 of the Radio Regulations. After some discussion in which the Delegates of Spain and Denmark favoured the retention of No. 117, whereas the Delegates of U.K., U.S.S.R. and Poland favoured its deletion, the latter urging that their new proposal for No. 118 of the Regulations was sufficient, the Chairman ruled that in such case it was preferable that the No. 117 should be retained.

This was approved.

3. 160-285 kc/s

The Chairman summarised the proposals under six headings, priority for aeronautical fixed services in the band 160-200 kc/s, amendments to No. 125 of the Radio Regulations, reduction of fixed services in Region 3, protection of the AERN services in Region 3 in the band 185-285 kc/s, the use of the AERN services in the band 160-200 kc/s and the deletion of Nos. 120 to 123 of the Radio Regulations.

Proposals Nos. 467 and 3286 were adopted.

After some discussion on Proposals Nos. 468, 3287, 634 and 636, Proposal No. 3287 was adopted for application in Region 2; its applicability in Region 3 would be considered in a Working Group.

Proposals Nos. 632, 633, 634, 635, 667 and 668 would be considered in a Working Group. Proposals 714, 728, 729, 901, 902, 903, 3517 and 3519 related to the deletion in whole or in part of Nos. 120 to 123 of the Radio Regulations. The Chairman ruled that in principle these should be retained but that the exact content and wording of these Regulations would be considered by a Working Group.

4. 285-325 kc/s

The Chairman summarised the proposals under three headings, the use in U.S.S.R. of AERN services in the band 285 to 325 kc/s and of MRN services in the band 315 to 325 kc/s, the deletion of No. 128 of the Radio Regulations, and the proposal to insert a new footnote to the Table governing the use of 314.5 kc/s for test transmissions. After some discussion it was agreed that all proposals in this band would be passed to a Working Group with the exception of that relating to 314.5 kc/s. It was agreed that this subject was more appropriate to the discussions on the International Frequency List and the Committee rejected the proposal to avoid a new footnote to the Table.

5. 325-405 kc/s

There were many proposals to delete the provision for Aeronautical mobile service in this band, to delete No. 130 and to amend or delete Nos. 131 and 132 of the Radio Regulations. There was also the U.S.S.R. proposal 909 to use this band for broadcast services East of 40° E and in explanation the Delegate of U.S.S.R. stated that it was their intention that such use should not interfere with the AERN service.

It was agreed that all proposals in this band would be considered by a Working Group.

6. In response to a question from the Delegate of Netherlands concerning the meaning of the * (asterisk) in the United States of America proposals, (see proposal 3272) the Delegate of the United States took the opportunity to explain that between 2,850 kc/s and 27,500 kc/s worldwide standardisation is considered essential; below 2,850 kc/s worldwide standardisation is considered essential in some bands and desirable in others; this varies from band to band.

7. Mr. Gayer of I.R.B., when replying to a question from the Delegate of France, took the opportunity to express the pleasure he and his colleagues of the Board felt in being able to help the Chairman and the Delegates by making available their knowledge, experience and detailed studies. He drew attention to the explanation of I.F.R.B. procedure in Section 3 of the I.F.R.B. Report. He explained that the Board treated notifications in accordance with the Frequency Allocation Table and the Radio Regulations; that the footnotes to the Table are, in fact, Radio Regulations; that a notification in accordance with a footnote is therefore "in-band" and received appropriate consideration by the Board; protection to services is afforded by awarding a 2a date to a notification in a primary service whereas, although a notification in a secondary service may receive a 2a date there would be an appended note drawing attention to the relevant provisions of the Radio Regulations; he considered that the I.F.R.B. procedure was of more importance to Committee 5 but that it would probably be of assistance to Committee 4 to understand it.

In response to a further question from the Delegate of France who chose as specific examples Nos. 127 and 128 of the Radio Regulations Mr. Delamulla of I.F.R.B. explained that the effect of these in conjunction with the Table was virtually identical and that the Board would give the same treatment to an AERN notification in Region 2, as they would in Region 3.

After a brief discussion as to the extent of cross-reference on this question between Committees 4 and 5, Mr. Gracie, vice-chairman of I.F.R.B., said that he considered that it was essentially the function of Committee 4 to state the conditions in which services are authorised in frequency bands and further to state the relative priorities where these would be required; that Committee 4 would establish definitions if necessary of such terms as "priority", "non-interference band" if these were required; and that would then appear to be the responsibility of Committee 5 to ensure that the frequency registration procedures are satisfactory to ensure compliance with the conditions determined by Committee 4. This view was supported by the Delegate of the U.S.A.

This discussion led to a further discussion on the general questions of footnotes to the Frequency Allocation Table, the Delegate of Jugoslavia reminding the Committee that the Delegate of Colombia had already drawn the attention of the Committee to the plethora of footnotes and supporting the view that these should be reduced in number as far as possible.

The Delegate of Colombia stated his view that as a question of principle all footnotes permitting operation of services on a basis of not causing harmful interference to authorized services were redundant and unnecessarily obscured the clarity of the Table; it would be preferable to simplify the Table by their removal. A number of countries supported this view, the Delegates of the U.S.S.R. and U.K. on the other hand considered that reasons be adduced in favour of retaining certain footnotes rather than to rely on No. 88 of the Radio Regulations.

The Chairman accepted a proposal by the Delegate of the United States that this subject be debated before further study of the Table by Committee 4 and stated that this would be the first item of the Agenda for Committee 4 on Friday, 28th August, 1500 hours.

On this being agreed the Chairman adjourned the meeting.

Rapporteur: Chairman:

A. James Bourne Gunnar Pedersen

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 135-E
CORRIGENDUM No. 2
12 September, 1959

PLENARY MEETING
COMMITTEE 4

BRAZIL

Proposal

ARTICLE 5

Number of Proposal			
5421 (Revised)	142	28 b)	Add the following note: In Brazil, the band 525-535 kc/s may also be used by broadcasting stations with the power not to exceed 250 watts, provided no interference is caused to maritime mobile service.

Reasons

The proposed use of the band 525-535 kc/s by broadcasting stations will be conjured within the interior of Brazil. Geographical separation between broadcasting stations and stations of the maritime mobile service will be sufficient to preclure interference to the maritime mobile service.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 135-E
CORRIGENDUM No. 1
4 September, 1959

PLENARY MEETING
COMMITTEE 4

CORRIGENDUM

BRAZIL

Proposals

ARTICLE 5

The number of the proposal in Document No. 135 should read :

5421

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 135-E
31 August 1959

PLENARY MEETING
COMMITTEE 4

BRAZIL

Proposals

ARTICLE 5

Number of proposal

142 Add the following note:

28 b) In Brazil, the band 525-535 kc/s shall be used by broadcasting stations of up to 250 watts power.

Reasons:

Brazil does not need this band for the mobile service. Hence it proposes that band shall be used for broadcasting within Brazilian territory, care being taken to see that the mobile services in neighbouring countries are not affected.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 136-E
31 August, 1959

SUB-COMMITTEE 7 B

SUMMARY RECORD

First Meeting of Sub-Committee 7 B

(Radiotelegraph and Radiotelephone Procedures in the Mobile Services)

Tuesday, 25 August, 1959 at 10.00 a.m.

In opening the meeting the Chairman welcomed M. Bes (France) as Vice-Chairman and said that past experience assured him that the collaboration of M. Bes would contribute substantially to a successful outcome to the deliberations of the Sub-Committee.

The Chairman put before the meeting the Agenda set out in Document No. DT 12 with the following amendments:

Item 4 Add proposals for R.R. 236-239 Nos. 4885, 4886 and 4887 contained Document No. 36 (but incorrectly numbered 4485, 4486 and 4487 in that Document.)

Item 5 Delete R.R. 277 Proposal No. 1094 which could not be discussed until its transfer to Sub-Committee 7B had been approved by Committee 7.

This amended Agenda was agreed.

1. Appointment of Reporters

The following were proposed, and accepted by the Meeting:

Reporter: Mr. G.F. Wilson (United Kingdom)

Language Advisers: French: M. Prunieras (France)
Spanish: M. Martin Iturrioz (Argentine)

The above members would form the Drafting Group for the work of the Sub-Committee.

2. Terms of Reference

The Chairman said that the Terms of Reference were as listed under Group 8B on Page 19 of Annex 1 to Document No. 2.

3. Work of the Sub-Committee

The Chairman outlined the work of the Sub-Committee. The proposals concerning this work were listed on pages X-2, X-3 and X-4 at the beginning of Vol. 1 of the Book of Proposals and would be published as an Annex to the report of the meeting. (See Annex 1 attached). In addition there were a number of general proposals which affected the items to be dealt with by the Sub-Committee, but until these had been allocated by the Chairman of the Conference to Committee 7 it would be impossible to consider them. It might, therefore, be necessary to revise decisions reached now in the light of the outcome of the proposals. The Sub-Committee would also be concerned with certain C.C.I.R. Recommendations which appeared in I.T.U. Circular No. 775.

The Delegate of Spain asked for clarification of the intention in regard to R.R. 236-239 and Mr. Ehnle, Chairman of Committee 7, explained that it had been agreed with the Chairman of Committee 4 that Committee 7 would give early consideration to the proposals for R.R. 236-239 and afterwards they would be considered by Committee 4.

4. Examination of Article 7 (R.R. 236-239)

As the Delegate of Indonesia had not received Document 36 in time to study it, it was agreed that R.R. 236-239 should be considered but that any decisions reached should be subject to the views of the Delegate of Indonesia at the next meeting.

R.R. 236 - Proposal No. 4885 (Spain)

Agreed to defer a decision pending study of this proposal by the Delegate of Israel.

R.R. 236 - Proposals No. 4886 (Spain) and No. 1020 (United Kingdom)

As there was no support for it, Proposal No. 4886 was not adopted. Proposal No. 1020 was supported by India and France. There being no opposition to No. 1020 it was adopted.

R.R. 238 - Proposal No. 1021 (France, French O.P.T.A. Morocco) and No. 4887 (Spain).

The proposals were opposed by the Delegates of the U.S.A., the U.S.S.R., Netherlands, United Kingdom and India on the ground that the provisions of R.R. 238 were used and served a very useful purpose and had not given rise to any difficulty in regard to harmful interference. In view of these arguments the Delegates of France, the French O.P.T.A. and Morocco agreed to withdraw proposal No. 1021. The Delegate of Spain said the provisions of R.R. 238 were not used in Spain, but he did not wish to press the point and agreed that proposal No. 4887 should also be withdrawn.

R.R. 239 - Proposal No. 3646 (U.S.A.)

It was agreed that the Drafting Group should take note of this proposal.

R.R. 239 - Proposal No. 1022 (U.K.)

Proposal No. 1022 was supported by Delegates of India, France, U.S.A. and the Netherlands. The latter suggested that the reference "(see 571)" should be included. After discussion in which the Delegates of China, Brazil and Belgium took part it was agreed to adopt Proposal No. 1022 as amended by the Netherlands.

In reply to the Delegate of China the Chairman explained that proposal No. 3647 (U.S.A.) could not be discussed as it had not yet been assigned to Sub-Committee 7B.

5. Examination of Article 9 (R.R. 262 and 277)

R.R. 262 - Proposal No. 3662 (U.S.A.)

It was agreed that the Drafting Group should take note of this proposal.

R.R. 262 - Proposals No. 1075 (France, French O.P.T.A. and Morocco and No. 1076 (U.K.)

These proposals being identical they were considered together. There being no opposition they were adopted.

6. Examination of Article 27

R.R. 568-599 - Proposal No. 1656 (Denmark, Finland, Iceland, Norway, Sweden)

It was agreed to defer consideration of this proposal for editorial revision until a decision on the General Proposals had been reached.

R.R. 568 - Proposal No. 1657 (U.S.A.) and Proposal No. 1658 (France, French O.P.T.A.)

It was agreed that the Drafting Group should take note of these proposals.

R.R. 569 - Proposal No. 1659 (U.K.)

This proposal was supported by the Delegate of France. There was no opposition and Proposal No. 1659 was adopted.

R.R. 570 - Proposal No. 1660 (France, French O.P.T.A., Morocco, U.K.)

The Delegate of Norway said he was willing to support the proposal if "maritime mobile stations" were replaced by "stations of the maritime mobile service". The Delegate of the U.S.A. supported this amendment which was acceptable to the proposing Delegations. Proposal No. 1660, as amended was adopted.

R.R. 571 - Proposals No. 1661 (U.S.A.)

" No. 1662 } (France, French O.P.T.A., Morocco)
" No. 1664 }
" No. 1663 (Netherlands)
" No. 4102 (United Kingdom)

The Chairman suggested that as these proposals appeared to be the same in principle they should be considered together. It was agreed that that the Drafting Group should be asked to produce a composite proposal. The Delegate of France pointed out that it might well prove there was a difference in substance particularly in regard to the degree of action to be taken to avoid interference and whether the regulation should apply to Administrations or to Aircraft stations.

R.R. 572 - Proposal No. 1665 (U.S.A.)

It was agreed that the Drafting Group should take note of this proposal.

R.R. 572 - Proposal Nos. 4103 - 4111 inclusive

It was agreed to defer consideration of these proposals until Aricles 33 and 34 had been dealt with. The Observer for the C.I.R.M. pointed out that the English text of Proposal No. 4104 should be checked for accuracy.

7. Other business

(i) The Delegate of China pointed out that Article 6 did not appear to be completely covered in the proposed grouping in Document No. 2. The Chairman agreed to take this question up with the Chairman of Committee 7.

(ii) The Chairman gave advance detail of the Agenda for the next meeting at 3 p.m. on Wednesday, 26 August.

Rapporteur: R.M. Billington

G.F. Wilson Chairman

Annex :

A N N E X

LIST OF ITEMS IN VOLUME 1 OF THE BOOK OF PROPOSALS WITH WHICH THE SUB-COMMITTEE IS CONCERNED

Art No.	Chapter Articles etc.	1st Series	2nd Series	3rd Series	Pages No.
	CHAPTER XIII. Working Conditions in the Mobile Services				
27	Aircraft and Aeronautical Stations	1656-1665	4102		411R1-413R1
27 bis (new)	Conditions to be Observed by Coast Stations		4103-4111		412R1-413-2
28	Conditions to be Observed by Mobile Stations	1666-1746	4112-4168	4673-4675	413.3-429.1
29	General Radiotelegraph Procedure in the Maritime and Aeronautical Mobile Services	1747-1890	4169-4192	4676-4686	430R1-461.1
30	Calls	1891-1924	4193-4201		462R1-470R1
31	General Call "To all Stations"	1925-1942	-	4687	471 -473R1
32	Call to Several Stations Without Request for Reply	1943-1944	-	-	473.1-
33	Use of Frequencies for Radiotelegraphy in the Maritime Mobile and Aeronautical Mobile Services	1945-2058	4202-4255	4688-4692	474R2-505R2
34	Maritime Mobile Radiotelephone Service	2059-2294	4256-4394	-	506 -558
34 bis (new)	Use of Frequencies in Maritime Mobile Radiotelephone Service	2295-2346	-	-	559 -571
35	Working Hours of Stations in the Maritime and Aeronautical Mobile Services	2347-2380	-	-	572 -579
	Appendix 9. Miscellaneous Abbreviations and Signals to be used in Radiocommunications	2863-3002	4588	4713-4723	740 -777

Art No.	Chapter Articles etc.	1st Series	2nd Series	3rd Series	Pages No.
	Appendix 9 bis (new). Study of a Means of Expression in International Radiotelephony for the Maritime Mobile Service	3003	-	-	777 -793
	Appendix 11. Procedure in the Mobile Radio-telephone Service	3007-3014	-		795 -800R1
	Appendix 13. Hours of Service for Ships in the Second Category	3022-3027	-	-	805 -807

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No.137-E
31 August 1959

COMMITTEE 5

SUMMARY RECORD

Third Meeting of Committee 5
(Frequency registration procedure and international frequency list)

Tuesday, 26 August 1959 at 10.0 a.m.

Ref. : Agenda of 22 August - Document No. DT 11

Opening the meeting, the Chairman stated that, since the agenda for the second meeting had not been exhausted, the third meeting would continue to discuss it. He opened a general discussion on Document No.20.

The Delegate of Spain endorsed the I.F.R.B. report and thought that a detailed study of it might be entrusted to suitable Working Groups. His delegation had submitted a new draft for Articles 10, 11 and 12 in Document No.38 which he requested the Chairman to take into account.

The Delegate of France thought Document No.20 was a most important one since, first, it brought out the difficulties which had confronted the I.F.R.B. and outlined the measures taken to overcome them and, second, because it suggested amendments designed to prevent similar difficulties arising again.

He supported the proposals made by the delegates of the United Kingdom and Colombia to the effect that a document incorporating the I.F.R.B's suggestions and one showing the actual use which was being made of the frequency bands should be published. Further, he felt that the I.F.R.B. had carried out its task and that close co-operation between the Administrations and the I.F.R.B. was an indispensable factor in the application of the future Radio Regulations.

The Delegate of Ceylon congratulated the I.F.R.B. for its work and endorsed the United Kingdom proposal for the issue of a document summarizing the I.F.R.B's suggestions.

The I.F.R.B. Member stated that the documents in question were in course of preparation.

The Delegate of Canada supported the statements made. He accepted Document No.20 and thought that use should be made of it by the Working Groups.

The Delegate of Ghana, with the other delegations, congratulated the I.F.R.B. He thought it inevitable that amendments should be made to the Regulations because of the accession of new countries.

The Delegate of China said:

"The Chinese Delegation wishes to associate itself with the previous speakers in highly commending the work of the I.F.R.B. and its comprehensive report to the Administrative Radio Conference.

"Despite all the difficulties encountered during the past years, the I.F.R.B. has nevertheless duly discharged its duties entrusted by the Atlantic City Administrative Radio Conference and later the E.A.R.C. in Geneva."

He ended:

"The Chinese Delegation is happy to say that its Administration has always been in close co-ordination with the I.F.R.B. in the past and wishes to reassure here its willingness to continue to do so in the future."

"The Delegate of Indonesia thought that the existence of the I.F.R.B. was very useful for the young countries; he thanked that organ for the work done and the help given.

The Delegate of South Africa supported the statements made by the other delegations; he supported the United Kingdom proposal regarding the publication of a document giving the suggestions made by the I.F.R.B, and the Portuguese proposal on the setting up of two Working Groups. He thought that the matter should be dealt with before Item 4.

The Delegate of Malaya congratulated the I.F.R.B. whose existence, he thought, was of great value to the new countries.

The Delegate of the U.S.S.R. thought that while the I.F.R.B. had done useful work on the allocation of frequencies to the services, and on the transfer of certain frequency bands, it had failed to accomplish certain work entrusted to it. For example, with regard to the HF broadcasting plan, it had not followed the C.C.I.R. recommendations and the results obtained were insignificant. Moreover, an international frequency list had not been prepared. Hence the Delegation of the U.S.S.R. thought that the I.F.R.B. should be reorganized.

The Delegate of the Netherlands joined the other delegations in congratulating the I.F.R.B. on its report.

The Delegate of Paraguay congratulated the I.F.R.B. and thanked it for the assistance it had given in solving frequency allocation problems.

The Delegate of the People's Republic of Bulgaria congratulated the I.F.R.B. on its work in certain spheres but thought that some of the tasks had not been accomplished since they were not the province of the I.F.R.B. He supported the statement by the U.S.S.R.

The Delegate of Israel congratulated the I.F.R.B. for the work it had done and suggested that a Group of two or three members of that organ should be made responsible for helping the new countries to prepare their plans.

The Delegate of Poland, while recognizing that the I.F.R.B. had done useful and important work in some spheres, considered that certain work had been left undone, such as the HF broadcasting plan and the International Frequency List, on account of the unsuitable principles, technical or otherwise.

The Delegate of Japan considered that the I.F.R.B. had made it possible to avoid chaos in the sphere of radio, and stated that his delegation would make proposals for the amendment of Article 11.

The Delegate of Ireland congratulated the I.F.R.B. on its fruitful work.

The Delegate of Yugoslavia thought that the I.F.R.B. report was a comprehensive and eloquent document, and that there should be increased collaboration between the I.F.R.B. and the administrations.

The Delegate of Cuba asked the I.F.R.B. to clarify certain points which were not clear to his delegation. For instance, why had Cuba's requirements in frequency-hours been reduced by 90%?

The Delegate of Turkey expressed his gratitude to the I.F.R.B. for what it had achieved, and thought that such results could have been attained only through a spirit of co-operation.

Replying to the questions raised by the Delegate of Cuba, the Delegate of the I.F.R.B., said that the information requested appeared in Section 6 of the report.

The Delegate of Venezuela thanked the I.F.R.B. for the work it had done and thought that its powers should be extended.

The Delegate of Greece congratulated the I.F.R.B.

The Delegate of Ethiopia congratulated the I.F.R.B. He would have some comments to make on the report later on.

The Delegate of Cuba said that the statement by the I.F.R.B. had not clarified matters for him; however, he would continue to study the report.

The Delegate of the Ukraine had made a study of Document No.20 and said that although in certain respects the I.F.R.B. had carried out its task to the full, in others, like high-frequency broadcasting planning, the results were negligible. He considered that the question should be submitted to an international conference.

The Delegate of Libya who had asked for the floor at the preceding meeting was absent at the third meeting.

The Chairman, in summarizing the statements made by the delegations, congratulated the I.F.R.B. and its staff. He considered that the main job of Committee 5 would be to allocate clearly the tasks of the I.F.R.B. He stated that the proposals of the United Kingdom and Colombia in the publication of appropriate documents were being put into effect. He invited the delegate of Israel to ensure that the examination of his proposal should be undertaken in due course. He thought that as several delegations had expressed the wish to proceed to the organization of Committee 5 as rapidly as possible it would be preferable to leave Item 4 of the Agenda and go on immediately to Item 5.

Item 5 - Constitution of Working Groups to deal with problems pending. Terms of reference of the Groups.

The Chairman opened the debate and said that a compromise solution would have to be found between the Portuguese proposal to form two Working Groups and the proposals contained in Document 2 of the General Secretariat of the I.T.U. for the establishment of several Working Groups.

He was of the opinion that they could proceed in the following way:

- set up Working Groups to study the International Frequency List with regard to problems in the parts of the spectrum which could be solved rapidly; i.e. Groups for the:

- maritime plans

- aeronautical plans

- regional plans

- frequencies from 14 kc/s to 150 kc/s.

The other parts of the spectrum would be studied by the main Committee with a view to establishing the draft terms of reference for the Working Groups which would eventually be entrusted with this work.

Also a Group would be entrusted with the examination of the procedure for notifying frequencies.

The Delegate of the U.S.A. considered that there were not various proposals to establish an indefinite number of Working Groups, but only one

proposal by Portugal to set up two Working Groups. He concurred in the latter proposal.

The Delegate of the U.S.S.R. considered that if two Working Groups were set up, it would run counter to the decision of the Plenary Assembly which combined Committees 5 and 6. He thought that it would be more logical to establish a Working Group for frequencies between 150 and 4,000 kc/s, one for aeronautical services and one for the maritime service. The most important questions concerning frequencies above and below 27.5 Mc/s and high frequency broadcasting would be examined by the Committee as a whole so that a basic stand could be adopted before they were referred to the Working Groups if necessary.

The Delegate of Mexico was of the opinion that the number of Working Groups should be limited. He proposed the establishment of two Sub-Committees:

one dealing with the frequency list

one dealing with the notification procedure.

The Sub-Committee dealing with the Frequency List would be divided into 3 Working Groups:

one for frequencies between 4,000 kc/s and 27.5 Mc/s

one for frequencies below 150 kc/s and above 27.5 Mc/s

one for regional frequencies between 150 kc/s and 4,000 kc/s. He also considered that some important problems like the broadcasting plan could be studied by the Committee as a whole.

The Delegates of the United Kingdom, the Argentine Republic and Colombia declared themselves to be in agreement with the Portuguese proposal.

The Delegates of New Zealand and Cuba supported the statement of Mexico.

The Delegate of Bulgaria supported the U.S.S.R. proposal.

At the U.S.S.R. delegate's suggestion, as amended by the delegate of Italy, the Chairman decided to establish a Working Group consisting of three representatives from each region (to be appointed by the Chairman and the Vice-Chairman) whose task it would be to find a compromise solution for the organization of the Committee's work. The working group would meet before the following meeting. Two representatives of the I.F.R.B. would assist the Working Group.

The Chairman's decision was adopted.

The meeting rose at 12.40 p.m.

Rapporteur:
M. Barrailler

Chairman:
M. Joachim

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 138-E
1 September, 1959

SUB-COMMITTEE 7D

SUMMARY RECORD

Second Meeting - Sub-Committee 7D - (Radiotelegrams)

Friday 28 August 1959, at 3 p.m.

Chairman: Mr. A. Caruso (Italy)

Agenda: Document No. DT 32.

Opening the meeting, the Chairman welcomed Mr. Farine (Switzerland).

He introduced the agenda (Document No. DT 32), which was adopted.

The Chairman pointed out that he had not wished to mention Article 41 in his agenda, since it had been decided at the first meeting that study of that important article relating to the accounting procedure for radiotelegrams should be passed to a Working Group.

He then read out a letter from the Administration of Ghana requesting cancellation of its Proposal No. 2652.

Passing to Item 1 of the agenda, he suggested that United Kingdom Proposals 2574, 2575, 2576 and 2577 should be discussed as a whole. First of all, he requested the United Kingdom Delegation to comment on the proposals in more detail.

The Delegation of the United Kingdom replied that its proposals were more in line with present practice and that it seemed logical that, in the Channel for example, a ship, although nearer to a foreign coast station, should nevertheless transmit traffic intended for the United Kingdom to a British coast station. Moreover, such a procedure would mean an appreciable saving of time and money for the user.

The proposals were supported by the United States of America, Indonesia and the Netherlands.

The Argentine Delegation asked whether it was nevertheless understood that, when routing a radiotelegram, preference should be given to the coast station of the country of destination of the message.

The Delegation of the United Kingdom replied that it was in no way its intention to prevent a ship station from making a call direct to the coast station of the country of destination of the message.

The Argentine Delegate said he was satisfied, and supported Proposals 2574, 2575, 2576 and 2577.

The Delegation of France considered that the wording of Proposal 2575 weakened the present provisions of No. 955; he thought, too, that the new text of 2577 was ambiguous.

After statements by Pakistan, China and Norway, Proposals 2574, 2575 and 2576 were adopted. The drafting group was, however, asked to supply a new text for Proposal 2577, which was then adopted by a very large majority. The text is annexed hereto.

Replying to a comment by the Delegation of Pakistan concerning a possible revision of the 405 to 535 kc/s band by Committee 4, the Chairman explained that in such a case, Proposals 2575, 2576 and 2577 would have to be reconsidered later.

The Delegation of Belgium then expressed its fears regarding the interpretation that might be given to the first two lines of Proposal 2578 by Italy. It considered that the mobile stations should be able to conform freely with Articles Nos. 2575 and 2576.

The Delegations of the United Kingdom and Switzerland agreed.

Speaking on behalf of the Delegation of Italy, the Chairman withdrew the Italian Proposal No. 2578.

- Item 2 of the agenda:

The Netherlands Proposal No. 3066 was adopted. The amended text is annexed hereto.

The Italian Proposal No. 3067 was adopted.

- Item 3 of the agenda:

The Delegation of France requested that the discussion of Proposal 3068 be postponed until the next meeting.

After a discussion in which the Delegations of China, Pakistan and the United Kingdom took part, and having taken note of the information supplied by Mr. T. K. Wang (I.F.R.B.), the Chairman put the Japanese Proposal No. 3069 to the vote. It was adopted by sixteen votes to eight, with two abstentions.

Finally the Colombian Delegation pointed out that it had put forward a proposal concerning article No. 1 of the Additional Regulations, but it had not yet been distributed to the delegates. It asked for its proposal to be examined as soon as it was in the delegates' hands.

Hardly any time remained to start Item 4 of the Agenda.

The Chairman pointed out that article 4 of the Additional Regulations contained basic proposals and that their examination would make up the agenda of the third meeting.

The meeting rose at 6 p.m.

The Rapporteur:

A. Adam

The Chairman:

A. Caruso

Annex: 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

Number of proposal

2577 (Redraft)

A mobile station, when using class A2 emission in the band 405 to 535 kc/s to dispose of radiotelegrams to a coast or aeronautical station which is not the nearest coast or aeronautical station, must cease working or must change frequency or class of emission upon the first request made by a coast or aeronautical station which is nearer to the mobile station than the coast or aeronautical station being worked; this request being based upon the interference which the working of the mobile station causes to the nearer coast or aeronautical station.

3066 (Redraft)

2007 - b) Name of the ship station followed, when necessary, by its call sign, the latter separated from the name of the station by a fraction bar or in the case of an aircraft station, its call sign, as shown in the appropriate list of stations.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 139-E
1 September, 1959

COMMITTEE 5

UNITED STATES OF AMERICA

PROPOSALS

ARTICLE 11

Amend proposal 3884 for additional paragraph under No. 332 as follows:

In line five add word "not" between "shall" and "be". Line five will then read:

"with. However, a notice shall not be acted upon which has"

INTERNATIONAL TELECOMMUNICATION UNION

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

E

Document No. 140-E
1 September, 1959

COMMITTEE 5

UNITED STATES OF AMERICA

Proposals

ARTICLE II

Insert the following new paragraph between proposals 3905 and 3906, page 302.3:

Number of Proposal	
3905 bis	4) If a change in frequency usage of a coast station in one of the bands allocated exclusively to coast telephone stations in the Maritime Mobile Service between 4000-23000 kc/s is only a change from one type of emission to another without additional band space being thereby occupied (see Appendix 12), the Board shall enter the date of change in emission in column 2c but without change in the column 2a or 2b date as the case may be.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 141-E
1 September, 1959

COMMITTEE 5

UNITED STATES OF AMERICA

Proposals

APPENDIX 12

The following replaces completely proposal 4590:

Before the Table in Appendix 12, substitute the following text for the present text:

This table is a recommendation for the channels to be used by coast and ship stations in the bands allocated to the maritime mobile radiotelephone service between 4000 and 23000 kc/s. It is recommended to administrations for use as a guide in the choice of frequencies for their stations.

One or more series of frequencies are assigned to each coast station, which uses these frequencies associated, as far as possible, in pairs; each pair comprising a transmitting and a receiving frequency. The series shall be selected with due regard to the areas served and so as to avoid, as far as possible, harmful interference between the services of different coast stations.

Assignments to stations utilizing single sideband or independent sideband emissions shall be considered to be in accordance with the following table if the bandwidth necessarily occupied by the emission does not extend beyond the upper or lower limits of the bandwidth which would be necessarily occupied by the emission of an assignment utilizing conventional double sideband emission made in accordance with the table.

If an administration assigns frequencies other than those indicated above, its radiotelephone service must not cause harmful interference to radiotelephone stations of the maritime mobile service which use frequencies assigned to them from this table in accordance with these Regulations.

It is recommended that stations in the Maritime Mobile Radiotelephone service operating in the bands 4000-23000 kc/s employing double sideband emission (A3) or two channel independent sideband emission (A3b) should operate with their carrier frequency and their assigned frequency at the values listed in the table. Stations using single sideband single channel (A3a) emissions may operate either in the upper half or the lower half of the channels designated by the center frequencies in the table. A station operating in the upper half of the channel should use upper sideband transmission with its carrier frequency at the frequency listed in the table and its assigned frequency would then be 1500 cycles higher than that listed in the table. A station operating in the lower half of the channel should use upper sideband emission with its carrier below the midband frequency of the channel as listed in the table by the appropriate following amounts:

Band	Carrier Frequency Relative to Midband Frequency of Channel as Listed in Table
4,000 kc/s	-3300 cp/s
8,000 "	-3400 "
12,000 "	-3700 "
16,000 "	-3700 "
22,000 "	-3700 "

These stations should register their assigned frequencies 1500 cycles higher than the indicated value for their carrier frequencies.

Reason:

To indicate how single sideband emissions should be operated and registered in the maritime mobile radiotelephone bands between 4000 and 23000 kc/s. A3a emissions in the upper half of each channel are selected to make them interchangeable with the upper sideband of A3 or A3b emissions. A3a emissions in the lower half of each channel have been selected to put the carrier 150 cycles from the band edge to give as much separation between A3a channels in the upper and lower halves as is practicable.

* * *

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 142-E
1 September, 1959

COMMITTEE 5

UNITED STATES OF AMERICA

Proposal

APPENDIX 16 bis

Amend proposal 4596 by adding following at end of Part I (see page 816.10):

6. Data for Tracing Interference Contours (Insert pages 21 through 24 from "Frequency Allotment Plan for the Aeronautical Mobile Service and Final Agreement," Geneva 1948-49).

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 143-E
1 September 1959.

CZECHOSLOVAKIA

Corrigendum

to Proposal No. 4671 (p. 406, Revision 2)

Instead of 556, read 555.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 144-E
1 September, 1959

COMMITTEE 4

SUMMARY RECORD

Sixth Meeting - Committee 4 (Frequency Allocation Committee)

Friday, 28 August 1959, at 15.00 hours - Room A

1. The Chairman introduced the agenda, Document DT 30 and recalled that as a result of discussions at the previous meeting, it had been decided to discuss as the first item the question of footnotes appended to the Frequency Allocation Table. The agenda divided this consideration into two parts as shown at (a) and (b). In reply to an invitation from the Chairman, Mr. J. A. Gracie, Vice-Chairman of I.F.R.B., made a statement along the following lines:

1.1 The Board believes that in principle endeavours should be made to keep the number of footnotes to a minimum.

1.2 However, the Board believes it probable that the general Table of Frequency Allocations will only be acceptable to many Administrations if specific provision is made for a number of what might be termed "secondary" or "additional" services usually of a restricted nature.

1.3 It appears to the Board that juridically it is immaterial whether this provision is incorporated in the Table itself or covered by a footnote, since a footnote has the status of a Regulation.

1.4 However, in many cases it would appear to be simpler to provide for the "secondary" or "additional" services by means of a footnote, especially when the particularities of the restrictions to be applied to this service (for example, power or area) have to be defined.

1.5 It might be thought, as was suggested by the Delegate of Colombia at the last meeting, that there is no need to provide for a "secondary" or "additional" service to be operated on a basis of non-interference to the primary service since an Administration, in the absence of any other special provision, could make use of the provisions of Article 3 of the Radio Regulations. However, it is the view of the I.F.R.B. that there is a distinction between the two methods of operation, since if provision for a "secondary" service is made by means of a footnote, the service may be considered to be an "in-band" service and therefore entitled to protection from assignments of the same type which are notified at a later date as well as protection from any of the "out-of-band" services which are not embraced in the footnote. Also,

the Board believes that some Administrations prefer to see a specific authorization to them to operate "secondary" or "additional" services, even on a non-interference basis, as they consider that this gives a higher status to those services than if they were not specifically mentioned and had to be operated under No. 88 of the Radio Regulations. Conversely, other Administrations which are interested only in the service to which the band is primarily allocated, prefer to see in a footnote a positive restriction placed on the use of the secondary service.

1.6 In summary, the Board proposes that the Committee defer further action until consideration has been given to the other footnotes proposed and that possibly at a later date an ad hoc group be set up to examine the question of eliminating footnotes to the maximum extent possible.

2. The Chairman thanked Mr. Gracie for his remarks and said that it was clear that the reply to the question in (a) must, generally speaking, be no, since the inclusion of a station on a non-interference basis when a station operates under No. 88, in which case it would not be considered "in-band". Administrations could not, therefore, in such cases, give up the substance of the footnotes. The Chairman further considered whether, at a later stage, in co-operation with Committee 5, some of the specific stations or services included in the footnote on a non-interference basis could not be transferred to the Frequency Lists and the notification procedure for assignments under No. 88 changed so as to give some protection for notification, thus making it possible to have them removed from the Allocation Table.

3. In connection with item (b) of the Agenda, Mr. Gracie, on the invitation of the Chairman, made the following comments:

3.1 It appears to the Board that it would be desirable to standardize the terminology as far as possible - for example, such terms as "approved", "permitted", and "reserved" all appear in the footnotes. There is also a variety of terms relating to operation of services on a non-interference basis. It would seem to be even more important to define the terms used in the footnotes.

3.2 For example, the word "priority" implies a "primary" service which has priority, all other authorized services being secondary; the I.F.R.B. has assumed that the intention in giving priority to the primary service is that the secondary service:

a) can only operate if it causes no harmful interference to assignments of the primary services which are already in use;

b) can only continue in operation if it causes no harmful interference to the assignments of the primary services which may be brought into use at some future date;

c) cannot claim protection from assignments of the primary services which are already in use or which may be brought into use at some future date;

d) can, however, claim protection from other assignments of a secondary service (i.e. of the same type) which are brought into use at a future date.

This is the interpretation given to Regulations such as, for example, No. 128.

3.3 The term "not interfering with" or "no harmful interference should be caused to" the primary services (or similar expressions) is perhaps not quite so clear as the use of the term "priority". It is clearly the intention that the assignment of the secondary services must not cause harmful interference to assignments of the primary services which are already in operation. It is not entirely clear, however, as to whether assignments to the secondary service should not cause harmful interference to assignments of the primary services which are notified at a later date (although the I.F.R.B. has adopted this interpretation). In regard to interference received by the secondary service, it does not seem clear as to whether the term means that the secondary service cannot claim freedom from harmful interference from assignments of the primary services which may be brought into operation at some future date. However, the I.F.R.B. believes that under the present provision of Article 1, the secondary services can claim such protection, and this is the interpretation presently placed on such Regulations as, for example, No. 127.

3.4 If what might be termed an additional type of service is "authorized" or "permitted" by a footnote to operate in a certain area without any restriction, or similarly if a band of frequencies is "reserved" in an area for an additional type of service, it would appear to the I.F.R.B. to be the intention of these footnotes that assignments of this additional service have the right to protection of assignments of the secondary service (in other areas) which may be notified in future, i.e. assignments of the additional services have complete equality with assignments of the other types of services to which the band is allocated.

4. The Chairman thanked Mr. Gracie for the views expressed and stated his opinion that in connection with the presentation of the Table and footnotes, this Conference should be able to work out substantial

The present Table contains, in effect, a rather undigested agglomeration of notes, each of them in the terminology used by the Administration in question. The Committee ought to prepare the list with standardized means of presentation chosen in such a way that it would be easily understood. The footnotes appeared to fall into two, or perhaps three categories, as follows:

The first category covers an additional type of service which is "reserved for the exclusive use" or just "reserved" or "authorized" or "permitted" for a special service or for a specified area. The services comprised in this category should have the same standing as the other services in the Table itself. It would only be a matter of convenience in the presentation whether the information would be given in the rectangular columns of the Table or as a footnote, but the standardized footnote might, in most cases, prove to be the more convenient method as we probably could not introduce too many new columns.

The second category covers an "additional" type of service which "must not interfere with the primary service" or is "permitted provided that no harmful interference is caused to the primary service". This class should not cause harmful interference to stations of the primary service, whether operating now or to be installed in the future. The additional service would itself have protection only from future assignments to the secondary service. If, on the other hand, service A has priority over service B, then service B also falls under this category. Exactly the same applies in the case where it is stated that a service "must accept harmful interference from another service".

5. The Chairman pointed out that in his résumé he had drawn the conclusions a little more sharply than had Mr. Gracie in his statement, and that a detailed study might show that after all there may be other additional categories. The Chairman proposed that after a discussion of the Principles involved, the Committee might decide to:

a) establish a working group or ad hoc group to study all the notes to determine the various kinds and thereafter make proposals for their presentation in a practical form;

b) continue consideration of the Allocation Table basing the study on the interpretation of the notes as given by Mr. Gracie and in the Chairman's comments.

In this way, it would be possible to deal effectively with the Allocation Table, knowing the principle underlying the notes and leaving the question of their presentation to be decided later. If the Committee accepted this procedure, the number of footnotes could be substantially decreased and it might be possible, for example, to

include information in the Table itself regarding the priority of services by printing the non-priority services in italics.

The Chairman invited the comments of the meeting on the principles of the matter only. The Delegate of India was interested to hear the I.F.R.B. interpretation and felt that there was still some difficulty of correlation of these views with those expressed in Part III, Chapter 3 of the I.F.R.B. report. The Delegate of the Federal German Republic gave details of an examination of the footnotes which they had made and supported the view that there should be a small working group or an ad hoc group to examine the question further. The Delegate of the United Kingdom felt that the footnotes provided useful supplementary information and also a measure of flexibility enabling the particular needs of individual countries to be met in a convenient way. Their removal would probably lead to the Table being more complicated. He further considered that the use of No. 88 of the Regulations was intended to cover the occasional operation of a particular station rather than that of a service or system on a Regional or even world-wide basis. He agreed that there was scope for standardization and improvement in the terminology used and that on this matter the Committee should seek the collaboration and views of the I.F.R.B.

The Delegate of Colombia expressed the view that the contents of Article 3 were largely principles and that the Table of Article 5 represented the frequency allocations on a long-term basis. He felt that footnotes might vary in one or two years but that Administrations were free to inform the I.T.U. and I.F.R.B. of their intention to operate under Article 3; he would be agreeable to the subject being examined in an ad hoc group.

The Delegate of Brazil emphasized that footnotes should only be maintained to the extent to which they are essential and supported the proposal to set up an ad hoc group.

The Delegate of Sweden expressed support for the views stated by the United Kingdom.

The Delegate of the Netherlands supported the Chairman's proposal that there should be an ad hoc group.

The Delegate of Australia, agreeing that footnotes should be reduced to a minimum, supported the proposal that there should be a working group and expressed the view that such a group should also deal with special cases in addition to the general categories.

The Delegate of France pointed out that their questions at earlier meetings had not been intended to suggest that all footnotes should be eliminated, but had been intended to draw attention to the need for footnotes being standardized and reduced to the essential minimum.

The Delegate of Austria agreed that a standardized form was necessary, but considered that the ad hoc group should deal with the special cases in addition to the general categories.

The Delegate of Norway supported the United Kingdom's views.

The Delegate of Ceylon agreed that in principle footnotes should be kept to a minimum, that nevertheless some were essential, and supported the general view that such footnotes should be properly drafted.

The Chairman summarized the feeling of the meeting that there appeared to be complete agreement on the need to reduce footnotes to a minimum and also on the greater need to ensure standardization of the form of those footnotes retained. He considered that the statements made by Mr. Gracie would prove to be valuable guidance and stated that they would be published in the report of the meeting.

He then proposed that Working Group 4B be set up to examine all questions affecting the use of frequencies between 9 kc/s and 4,000 kc/s, and invited the Delegate of India to nominate a chairman for this working group; he further suggested that this Working Group 4B would establish a sub-group to deal with the questions concerning footnotes.

The Delegate of India did not consider that it would be appropriate for the footnotes to be dealt with by a sub-group of Working Group 4B and suggested that an ad hoc group be set up separately to discuss all questions affecting footnotes. The Delegate of the United States strongly supported this view. The Delegate of Canada suggested that there should be an initial examination by some one familiar with all of the footnotes and asked whether it was possible that the I.F.R.B. could undertake such an examination and make proposals, based on the existing footnotes, in skeleton form for the assistance of Committee 4. The Delegate of the United States supported this proposal. Mr. Gracie said that the I.F.R.B. was prepared to assist the ad hoc group in this or any other way possible but pointed out that the definition of intention was the responsibility of the delegates. The Chairman, noting the general agreement that Committee 4 should establish an ad hoc group, asked which States wished to volunteer for membership. The following is the list: U.S.S.R., U.S.A, Iceland, Netherlands, Denmark, France, South Africa, Korea, Brazil, Tunisia, Colombia, Mexico, China, Australia, United Kingdom, Morocco, Argentina, Federal German Republic, India and Sweden.

The Delegate of Colombia explained that his delegation, because of certain difficulties in their status due to non-ratification of the Convention, was unable to accept the Chairman's invitation to provide a chairman for this ad hoc group. After the recess, the Delegate of Sweden said, in reply to the Chairman, that they were happy to accept and that Mr. Gejer would be the chairman of this ad hoc group. It was agreed that the group would be known as Working Group 4F. Mr. Gejer stated that the first meeting of Working Group 4F would take place on Thursday, 3 September at 11.30 in Room E.

The Chairman then reverted to the question of Working Group 4B and the Delegate of India accepted the invitation and nominated Mr. M.L. Sastry as the chairman. Mr. Sastry said that the first meeting of Working Group 4B would be at 9.30 on Tuesday, 1 September, in Room E.

The following States indicated their desire to take part in the work of Working Group 4B: U.S.S.R., Sweden, Federal German Republic, Mexico, India, Canada, Spain, Roumania, Poland, Yugoslavia, Japan, U.S.A., Denmark, Bulgaria, Israel, Paraguay, South Africa, Netherlands, Turkey Switzerland, Morocco, New Zealand, Norway, Ghana, Korea, Luxembourg, Finland, Costa Rica, Greece, Brazil, Argentina, Belgium, Colombia, Tunisia, Pakistan, United Kingdom, Portugal, Italy, France, Cuba, China, Iceland, Ethiopia, Australia, Austria, Bolivia, Bielorussian S.S.R., Portuguese Oversea Provinces, Philippines, Indonesia.

In reply to a question from the delegate of Ghana, the Chairman indicated that he would be proposing to set up the following additional working groups:

4C : 4 - 27 Mc/s
4D : 27 - 10,500 Mc/s
4E : 10,500 Mc/s and above.

6. Turning to Item 2 of the Agenda, the Chairman drew the attention of delegates to the new listing of proposals appearing in Document No. DT 29 and said that this method of listing would be continued for future work on all questions affecting the Frequency Allocation Table.

405 - 415 kc/s

The Chairman drew attention to a number of proposals concerning the use of this band and particularly to those concerning Radio Regulation No. 133. While it appeared from the discussion that a number of these proposals were intended to be of a drafting nature, there were views expressed that many of them contained matters of substance, and it was agreed that all questions affecting this band should be referred to Working Group 4B.

415 - 490 kc/s

In connection with this item, delegates of the following States expressed their wish to have their countries included in the text proposed by Austria in proposal 4618:

Yugoslavia, Bulgaria, Greece and Spain.

The Delegate of Sweden wished to see the provision retained for the use of Oestersund and the Delegate of Finland expressed the same requirement in respect of Oulu. The Delegate of Sweden also drew attention to their proposals Nos. 27, 28 and 29 concerning the interchange of a maritime mobile service band with a broadcasting band, and after

discussions in which it was generally agreed that these proposals were proper to the work of Committee 4, the Chairman stated that these proposals would be discussed as the first item of the Seventh Meeting to be held on Monday 31 August.

As there was no other business, the Chairman adjourned the meeting.

Rapporteur

A. James Bourne

Chairman

Gunnar Pedersen

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 145-E (Rev)
11 September, 1959

COMMITTEE 4

TERMS OF REFERENCE FOR WORKING GROUP 4F

(Foot notes in the Table of Frequency Allocations)

a) Consideration of possibility of dispensing with some foot notes which may be covered by other provisions of the Radio Regulations.

b) Consideration of possible clarification and standardisation of terminology used in such foot notes which may continue to be appended to the Table of Frequency Allocations.

Sven Gejer
Chairman
Working Group 4F

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 145-E
1 September, 1959

COMMITTEE 4

TERMS OF REFERENCE FOR WORKING GROUP 4F

(Foot notes in the Table of Frequency Allocations).

a) Consideration of possibility of dispensing with some foot notes which may be covered by the provisions of Article 3 of the Radio Regulations.

b) Consideration of possible clarification and standardization of terminology used in such foot notes which may continue to be appended to the Table of Frequency Allocations.

Sven Gejer
Chairman
Working Group 4F.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 146-E
1 September, 1959

COMMITTEES 4 and 5

FEDERAL PEOPLE'S REPUBLIC OF YUGOSLAVIA

Suggestions for organising and speeding up the work

A number of proposals and suggestions have been made, both before the Conference and during the last few days, regarding the accomplishment of the chief tasks confronting the Administrative Radio Conference, i.e. the revision of the Radio Regulations and the preparation of the International Frequency List.

If this large number of proposals, and the problems arising therefrom, are to be studied and dealt with in the time allotted to the various committees, it is essential to work systematically by attacking and trying to solve these problems in a definite order which is dictated by the interdependence of the various groups of questions.

Since the application of any standard procedure regarding the notification and registration of frequency assignments is subject to the existence of an initial frequency record, it can be said that the latter is the principal aim and that, for example, the method of procedure itself is, to a certain extent, of secondary importance once a reference list of frequencies exists.

For this reason the principal purpose of the E.A.R.C. was to decide on the necessary working methods for the establishment of the List in question as soon as possible.

It must nevertheless be emphasised that it is the Atlantic City Table of Frequency Allocations (1947) which constitutes the valuable basis for the establishment of the international list. The Union, and especially the I.F.R.B., in collaboration with the countries Members of the I.T.U., have devoted many years' work to engineering the bands provided for the various radio services or for the different regions and areas. Despite the considerable objective difficulties, this work has produced very satisfactory results. Moreover, in many parts of the entire frequency spectrum, for certain services, both world-wide and regional, frequency assignment or allotment plans have been prepared which were accepted by the great majority of the countries.

Keeping in mind all these facts mentioned, we consider that in order to make the work of Committees 4 and 5 run smoothly, it would be useful to approach the problems in logical order by arranging them in the following way:

1. To study and eventually accept proposals for changing some frequency band limits (in several services and regions) or else to insert some new frequency bands in the Atlantic City Table*)

2. To establish the final form of the Table of Frequency Allocations with reference to the conclusions under heading 1.

3. To study the situation of the various frequency bands with a view to the possible acceptance of the detailed proposals with regard to specified frequencies, the order of priority for the services mentioned and the other conditions or restrictions within the band considered.

The bands to be studied could be classified as follows:

a) Bands for which there is a general or regional arrangement;

b) Bands for which there is no arrangement or plan;

c) Bands which until now have not appeared in the Atlantic City Table of Frequency Allocations.

In our opinion Item 1 should be examined by a special working group of Committee 4.

Another and perhaps more practical alternative would be to make each working group which is going to deal with a single band or several narrower bands examine first of all the proposals under Item 1. These working groups should correspond to those set up by Committee 5 as far as bands are concerned.

Item 2 should be dealt with by a working group of Committee 4 whose terms of reference would be to compile the results obtained by the other groups concerned with the problems of band limits, co-ordinate them and draft them in a more or less final version.

Item 3 should, of course, be shared out among several working groups of Committee 5 which should already have at their disposal the results reached in the course of work and the conclusions on the problem under item 1; however, discussion within these groups should first and

---

*) As typical examples of proposals of this kind one can take that of Sweden - No. 28 (page 38 in the Yellow Book) and those of other countries dealing with the need for initial assignments of frequencies or more or less narrow bands for the requirements of space or astronautical communications and research on outer space.

foremost be concerned with matters pertaining to the bands listed in a) and then with those listed in b). Point 3c) might be dealt with by a special working group independently of any other group.

The conclusions of the working groups dealing with point 3a) should consist in either the adoption of existing plans, amended, whenever necessary, by proposals designed to improve them (so as to be acceptable to the greatest possible number of countries), or suggestions to convene international conferences to cope with specific services, or regional conferences empowered to revise the relevant plans for inclusion in the international frequency list.

The working groups' conclusions with regard to item 3b) should comprise proposals on either the organization of work (e.g. the establishment of special or expert committees or the convening of special conferences) for drawing up new plans, or on the procedure for the gradual preparation of a preliminary frequency list in a given band.

The working group dealing with item 3c) would be required to propose the distribution of the bands specified according to the likely needs of the various services and/or regions, from 10,500 Mc/s to 40,000 Mc/s.

These suggestions are based on the belief that, organized in the systematic way described above, the work of Committees 4 and 5 would be less protracted than if it were undertaken on a broader basis necessitating simultaneous discussion of all the problems, however varied, relating to frequency bands of considerable width (e.g. the 4 to 27.5 Mc/s band).

In fact there is a risk that the Committees might have to revert to problems already discussed and alter the conclusions reached as a result of subsequent deliberations, etc.

Since this document deals with the future organization of the work of the Committee 4 and 5 which is still in the initial stage, we believe that a useful purpose would be served by examining the above suggestions at the earliest opportunity with a view to taking a decision.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 147-E
1 September 1959.

SUB-COMMITTEE 7B

SUMMARY RECORD

Second Meeting of Sub-Committee 7B
(Radiotelephone and Radiotelegraph Procedures in the Mobile Services)

Wednesday, 26 August, 1959, at 3.0 p.m.

Agenda: Document No. DT 18E.

(Note - To facilitate working the items were not taken in the order given but, for convenience, they are reported in the order of the Agenda).

The following corrections were made in the Agenda:

Page 2 - Against R.R.703 add "Proposal No. 4201"
Page 3 - Article 25 delete from R.R.842 to R.R.858 inclusive.

---

1. Review of conclusions of First Meeting in regard to Article 7 (R.R.236-239)

R.R.236 Proposal No. 1020 (United Kingdom)

The Delegates of Indonesia, Argentine, Israel and France expressed the view that the phrase "When special circumstances make it indispensable" was not sufficiently specific so far as it applied to sub-paragraph (b). It was agreed that a small working group consisting of Delegates of France, Indonesia and the United Kingdom should examine the question. They submitted the following draft text:

"236 bis. However in emergency a land station may communicate with fixed stations or other land stations not of the same category."

This proposal, which replaces No. 1020, was adopted.

R.R. 236 - Proposal No. 4885 (Spain)

As there was no support for Proposal No. 4885 it was not adopted.

2. Examination of Article 30

In opening discussion of the proposals for Article 30, the Chairman pointed out that a number of these proposals would be affected by the outcome of the general proposals in regard to layout of text. When such items were reached they could either be deferred or provisional conclusions could be reached.

Heading. Proposal No. 1891 (Netherlands)

It was agreed that discussion of this proposal should be deferred.

R.R.681-682. Proposals Nos. 4193 and 4194 (U.S.A.)

It was agreed that these should be noted by the Drafting Group.

R.R.683. Proposal No. 1892 (Denmark, Finland, Iceland, Norway, Sweden).

This proposal was discussed at some length and the Delegates of France, the Federal German Republic, U.S.A. and the U.S.S.R. proposed that the status quo should remain. The Delegate of Belgium supported Proposal No.1892. In view of this division of opinion the question was put to the vote with the following result:

In favour of Proposal No.1892 7
In favour of Status Quo 19
Abstentions 5

Proposal No. 1892 was therefore not adopted.

The Delegate of the United Kingdom explained that he had abstained because the United Kingdom had a Proposal No. 1894 for amendment of R.R.683. The Delegate of Italy abstained because he could see no substantive difference in the proposals.

R.R.683. Proposal No.1893 (France, French O.P.T.A.)
Proposal No.1894 (United Kingdom)

Proposal No.1894 was supported by the Delegates of Israel and Brazil. It was agreed that there was no difference in principle between Proposals Nos.1893 and 1894 but that there was a need for clarification of the term "service area". A small Working Group of the Delegates of France and the United Kingdom was set up to produce a satisfactory text.

R.R.684. Proposal No.1895 (United Kingdom).

It was agreed that in studying Proposals Nos.1893 and 1894 the Working Group should also take into account this proposal.

R.R.685. Proposal No.4195 (U.S.A.).

As there was no support for this proposal it was not adopted.

R.R.685. Proposal No.4196 (U.S.A.).
Proposal No.1753 bis. (U.K. - See Document No.28)

It was agreed that Proposals Nos.4196 and 1753 bis should be considered together noting that the position of the latter in the Radio Regulations would have to be reviewed at a later date when Article 29 was being considered and possibly also in the light of the outcome of the general proposals.

There was a discussion of some length in which the Delegates of France, Sweden, Brazil and India supported the substance of the proposal and the Delegate of the Netherlands was unable to accept the wording of No.4196 but thought that No.1753 bis might be acceptable if it faithfully reproduced the wording of E.A.R.C. No.76. It was agreed that the Delegate of the U.S.A. would convene a Working Group consisting of representatives of France, India, the Netherlands, Sweden and the United Kingdom to produce a text for consideration at the next meeting.

The Delegates of Sweden and Israel pointed out inconsistencies in the usage of English in the use of "its" in the second line and "they have" in the fourth line of R.R.685. It was agreed that this editorial point should be noted by the Drafting Group.

R.R.686. Proposal No.1896 (Denmark, Finland, Iceland, Norway, Sweden).

The proposal was supported by the Delegate of the Netherlands and in principle by the Delegates of Israel, the United Kingdom and the U.S.A. After some discussion of the precise wording to be used the following was proposed by the Delegate of Israel supported by the Delegates of Norway, the United Kingdom and the U.S.A.:

> "Coast stations shall transmit their traffic lists on their normal working frequencies in the appropriate bands."

This was adopted.

R.R.687. Proposal No.1897 (Denmark, Finland, Iceland, Norway, Sweden).

There being no opposition, this proposal was adopted.

R.R.687. Proposal No.4197 (U.S.A.).

The proposal was supported by Canada and, there being no opposition, was adopted. It was noted that the Drafting Group would have to combine these proposals.

R.R.687. Proposals Nos.1898, 1899, 1900 and 1901 (U.K.)

It was agreed to defer consideration of these proposals as they would be affected by the outcome of the general proposals.

R.R.688. Proposal No.4198 (U.S.A.)

It was agreed that this proposal should be noted by the Drafting Group.

R.R.688. Proposal No.1902 (U.K.)

As this proposal would be affected by the general proposals in regard to radiotelephony regulations, it was agreed that it should be deferred.

R.R.690. Proposal No.1903 (United Kingdom)

Since this proposal is consequential on proposals for Article 20, it was agreed that it should be deferred.

NOTE: The Delegates of France and Israel pointed out that in the light of the revision of R.R.687, R.R.689 might now be deleted. It was agreed that this question should be raised again when texts had been prepared by the Drafting Group.

The remaining items listed under Item 2 of the Agenda will be considered at the next meeting.

3. Examination of Article 31.

Heading. Proposal No.1925 (Netherlands)

It was agreed to defer consideration of this proposal until the outcome of the general proposals was known.

R.R.704-706. Proposal No.1926 (France, French O.P.T.A., Morocco).

Originally there was no opposition to this proposal but in consideration of subsequent proposals the Delegates of Italy and the U.S.A. said they would prefer to retain the status quo of Article 31. After discussion the proposing Delegations withdrew Proposal No.1926.

R.R.704-709. Proposals Nos.1927 to 1936 (Federal German Republic)

After the Delegate of the Federal German Republic had explained the aims of these proposals there was no support for Proposal No.1927 and it was not adopted. The Delegate of the Federal German Republic then

withdrew Proposals Nos.1928 to 1936 so that the work of the Sub-Committee would not be impeded by discussion of these related proposals.

R.R.704-706. Proposals Nos.1937-1939 (United Kingdom)

Proposal No.1937 was not adopted and the Delegate of the United Kingdom therefore withdrew the related proposals Nos.1938 and 1939.

R.R.708. Proposal No.1940 (Japan)

The Delegate of Japan asked that consideration of this Proposal be deferred until the outcome of Proposals Nos.2562 to 2565 was known. This was agreed.

R.R.708. Proposal No.1941 (Belgium) and
Proposal No.4687 (Netherlands)

It was agreed to defer discussion of these proposals until related proposals for Articles 29 and 33 had been dealt with.

R.R.709. Proposal No.1942 (Belgium)

There being no support for this proposal, it was not adopted.

4. Examination of Article 32

Heading. Proposal No.1943 (Netherlands)

It was agreed to defer consideration of this proposal until the outcome of the general proposals was known.

R.R.710. Proposal No.1944 (United Kingdom)

There being no support for it, this proposal was not adopted.

5. Examination of Article 35

As time did not permit of consideration of this Article, this item will be carried into the Agenda of the next meeting.

6. General Discussion of Appendix 9

The Chairman said that only Nos.2863, 2864, 2865 and 2866 on Page 740, Volume II of the Book of Proposals were of a general nature. The remainder were of a detailed nature and could best be examined by a small working group.

General Proposal No.2863 (Denmark, Finland, Iceland, Norway, Sweden)

There being no opposition, this proposal was adopted.

General Proposal No.2864 (U.S.A.)

This proposal was supported by the Delegate of Indonesia and, there being no opposition, was adopted.

General Proposal No.2865 (France, French O.P.T.A.)

After a short discussion in which the Delegates of France, the United Kingdom and the United States of America took part, it was decided to pass this proposal to a small working group for examination.

General Proposal No.2866 (Peoples' Republic of Poland)

There being no support for this proposal it was not adopted.

A Working Group to be known as Working Group 7B(1) was set up to examine the remaining proposals for Appendix 9 (i.e. Nos.2867-3002, 4588 and 4713-4723). The Delegate of Japan being unable to supply a Chairman for this Working Group the Delegate of Portugal was appointed Chairman. The other participants are the Delegations of Belgium, France, India, United Kingdom and United States of America.

7. General Discussion of Appendix 9 bis

General Proposal No.3003 (France, French O.P.T.A.)

The Delegate of France explained the need for an international radiotelephony signal code. The Delegates of the United Kingdom and of the U.S.A. supported the principle of the proposal and expressed their appreciation to the Delegation of France of the intense effort that had gone into producing this proposal. However, they thought the detail should be studied by a working group and this was agreed. The Delegate of India pointed out that the working group would have to take note of the outcome of proposals in regard to the phonetic alphabet.

It was agreed that the Working Group 7B(2), to examine Appendix 9 bis, excluding the phonetic alphabet, which would be studied under Appendix 11, would have a chairman from the Delegation of France and that representatives of the Delegations of Argentine, Israel, Netherlands, United Kingdom and United States of America, together with the International Chamber of Shipping would participate.

8. Examination of Article 28

Time did not permit discussion of this item which will be included in the next Agenda.

9. Other Business

(i) The Chairman of Committee 7 announced that the Plenary Meeting on Thursday, 27 August would be at 10.30 a.m. in Salle A.

(ii) The Chairmen of Working Groups announced their preliminary arrangements.

(iii) The Delegate of the U.S.S.R. asked that future arrangements should try to avoid meetings of the Sub-Committee on successive days. The Chairman agreed that this should be avoided in future.

. . . . . .

The Sub-Committee rose at 6.0 p.m.

Rapporteur

G. F. Wilson

Chairman

R. M. Billington

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 148-E
1 September, 1959

SUB-COMMITTEE 7C

SUMMARY RECORD

Second Meeting - Sub-Committee 7C (Safety and Distress)

Friday, 28 August, 1959 at 10.00 a.m.

Reference: Agenda of 28 August, 1959, Document No. DT 22.

1. Announcement of approved Terms of Reference for Sub-Committee 7C.

The Chairman opened the meeting by referring to Document No. 95 having been approved by Committee 7, which would be the new terms of reference for 7C. He stated that Article 4 would not be within this Committee's terms of reference. He said there were also two items to be considered by 7C pertaining to proposals on the use of the auto alarm signal and a new procedure for the retransmission of distress signals.

2. Consideration of RR 232. Use of Class B emissions.

Proposals were summarised into two categories: 1) Delete the Article entirely; 2) Modify the Article.

The Delegate of the United States explained that the U.S. position was to delete all reference to Class B emissions appearing in Regulations 711-711.1, 712, 863, and 868 of Atlantic City; to rely on the language of paragraph 865 whereby a ship in distress may use any means at its disposal to attract attention, make known its position, and obtain help; and add a new paragraph to Article 7 to provide for use of Class B for distress.

The discussion revolved on the question whether new spark equipment should be licensed or whether there should be a cut-off date for the use of All Class B. The general opinion appeared to be that Class B emissions were inefficient and outmoded, and should eventually be done away with. The difference in opinion appeared to be whether a cut-off date for all use of B emissions should be established and what date or where the sentence should be put into the Regulations that it may be used for distress. It was brought out by the Delegate of the Netherlands that there are other instances than distress in which Class B emissions might be used advantageously, and indicated that they might desire to continue installation of new spark equipment.

The Chairman concluded the discussion by naming a Working Group (later named 7C1) to work out the differences. The following, with the Delegate of France, as Convenor, were nominated to participate: France, Netherlands, U.S.A., U.K., U.S.S.R., Indonesia, and Sweden.

3. Consideration of Article 8. Protection of Distress Frequencies.

The Chairman introduced this item stating that it appeared all proposals were in agreement with the principle in regard to the protection of the distress frequencies 500 kc/s and 2182 kc/s, with the differences of opinion being whether to specify definite guard bands or state "any emissions that might cause interference with the distress or alarm emissions".

The Delegate of France pointed out that the guard band for 500 kc/s is included in the allocations table, Article 5, and the guard band for 2182 kc/s could be included in the same table. This was supported by the Delegate of the U.K., and the Delegate of the U.S.A., who, however, pointed out that the guard band for 2182 kc/s has not been designated. The other question brought out was whether there should be a separate paragraph for each frequency or whether both should be named in the same paragraph.

After further discussion it was generally agreed to enlarge the terms of reference for Working Group 7C1 to include paragraph 240 of the R.R., and include Delegates of Germany, India, and Japan. The Delegates of China and Morocco also have proposals for each of the items under discussion. (The Delegate of France later announced a meeting of Working Party 7C1 at 3 p.m., 1 September, in Room K, Bâtiment Electoral.)

R.R. 241 - relating to guard bands for the frequency 333 kc/s in Regions 1 and 3: The Delegates of all countries were in agreement to the deletion of paragraph 241.

4. Consideration of RR 277. 8364 kc/s for Survival Craft. (Subject to Clarification of Terms of Reference)

The Chairman announced that this item has been transferred to 7B.

5. Consideration of Chapter XIV, Article 36. Reserve Installations

The Delegate of France suggested that this item might be re-examined after Working Party 7C1 has concluded its work; except for the use of Class B, there is no need to distinguish between emergency and reserve installations. It would then be a matter for the Drafting Committee to handle. The Delegate of the U.K. concurred in principle with the French proposal, and it was agreed to defer consideration of proposals 2383-2384.

R.R. 860: It was agreed to leave proposal 2385 to the Drafting Committee.

R.R. 861: It was agreed that proposal 2386 should not contain the present exact paragraph of the I.C.A.O. as a reference, but should be worded similarly to paragraph 860. The matter was left to the Rapporteur and the French and Spanish assistants to draft. The representative of the C.I.R.M. suggested that the I.C.A.O. representative might be asked to assist.

R.R. 862: This item was tabled until Working Party 7C1 reports.

R.R. 863: This item was tabled until Working Party 7C1 reports.

6. Other business.

It was brought out that Working Party 7C1 should examine 863-868, Article 37, 711-711.1, and 712, even though technically within the terms of reference of 7B.

It was announced that the next meeting would be Wednesday, w 2 September, at 3 p.m. This meeting was adjourned at 12.25 p.m.

G. Van A. Graves

Chairman

Rapporteur:

R.T. Brown

(French: M. Fontaine; Spanish: Sr. F. Carcano)

Summary: R.R. 232-240 - To be studied by Working Party 7C1

R.R. 241 - Agreement reached to delete

R.R. 277 - Transferred to Committee 7B

R.R. 860 - Delegated to Drafting Committee

R.R. 861 - Delegated to Rapporteur

R.R. 862 - Deferred until 7C1 reports

R.R. 863 - Deferred until 7C1 reports

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 149-E
1 September 1959

COMMITTEE 7

ITALY

Proposals

Additional Radio Regulations

ARTICLE 4

Proposals Nos. 3 117 to 3 122 should be replaced by the following:

At the end of Article 4, add a new sub-section:

D b) Radiotelegrams concerning persons protected in time of war by the Geneva Conventions of August 12, 1949.

Radiotelegrams concerning persons protected in time of war by the Geneva Conventions of August 12, 1949, are accepted under the conditions specified in Article 64 of the Telegraph Regulations (Geneva Revision 1958) and shall bear the paid service indication =RCT= placed before the address.

The land station charge and the ship or aircraft charge for radiotelegrams bearing the paid service indication =RCT= shall be decreased in the same proportion as the charge for transmission on the general telecommunication network (Nos. 646 and 647 of the Telegraph Regulations, Geneva Revision 1958).

ARTICLE 6

Number of proposal

Add the following paragraph 13:

5397 13 b) Radiotelegrams concerning persons protected in time of war by the Geneva Conventions of August 12, 1949 (=RCT=).

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 150-E
7 September, 1959

LIST OF DOCUMENTS PUBLISHED BY THE CONFERENCE

No. 101 to 150

Document No.	Origin	Destination	Title
101			Corrigendum to Document No. 75-E
102	Committee 5	Committee 5	First meeting Committee 5 (Frequency Registration Procedure and International Frequency List)-20 August 1959 at 11.30 a.m.
103	Sub-Committee 7B	Sub-Committee 7B	Report Working Group to combine Proposals 1661, 1662, 1663, 4102 and 1664.
104	Sub-Committee 7D	Sub-Committee 7D	Summary Record Sub-Committee 7D - Radiotelegrams - First Meeting 24 August 1959
105	Libya	Committee 4	Proposal
106	U.R.S.S.		Proposals - Article 5
107	Plenary Meeting	Plenary Meeting	Minutes of the Second Plenary Meeting
108	Committee 2	Committee 2	Summary Record of the Second Meeting of Committee 2 - 24 August 1959 at 4.30 p.m.
109			Corrigendum to Document No. 37
110	Plenary Meeting	Plenary Meeting	Minutes of the Plenary Meeting 19 August 1959 at 3.20 p.m.
			Corrigendum to the Minutes of the First Meeting of Heads of Delegations (Document No. 49) and the First Plenary Meeting (Document No. 55)
112	Sub-Committee 7A	Sub-Committee 7A	Summary Record - First Meeting of Sub-Committee 7A - 24 August 1959 at 10 a.m.
113	Committee 4	Committee 4	Summary Record Third Meeting - Committee 4 - 24 August 1959 at 15.00 hours
114	Portugal	Committee 4	Proposal Article 5
115	Peru	"	" "
116	Israel	"	Proposals relating to paragraphs 86, 87 and 88

Document No.	Origin	Destination	Title
117	Mexico		Proposal - Appendix 1
118	Sub-Committee 7C	Sub-Committe 7C	Summary Record - First Meeting - Sub-Committee 7C - 25 August 1959 at 3.00 p.m.
119	Committee 5	Committee 5	Summary Record - Second Meeting of Committee 5 - 24 August 1959 at 10 a.m.
120	Committee 4	Plenary Session	First Report of Committee 4 to the Plenary Assembly
121	"	Committee 4	Summary Record - Fourth Meeting - Committee 4 - 25 August 1959 at 15.00 hours
122	Secretariat	Committees 4, 5, 6 and 7	Application of the provisions of Chapter 18 of the general regulations
123	Working Group 6A	Working Group 6A	Summary Record - First Meeting of Working Group 6A (Definitions) - 25 August 1959 at 10.00 a.m.
124	Secretariat		Schedule of Meetings from 31 August to 6 September 1959
125	Argentine Republic	Committee 6	Proposals - Article 2
126	Mexico		Proposal - Article 5
127	Japan		Proposals - Chapter IV Article 10
128	Working Group 6C	Working Group 6C	Summary Record - First Meeting of Working Group 6C - 26 August 1959 at 15.00 hours
129	Sub-Committee 7A	Sub-Committee 7A	Summary Record - Second Meeting - Sub-Committee 7A - 26 August 1959 at 10 a.m.
129 CORRI.			
130	Working Group 4A	Working Group 4A	Proposals - Article 3
131	People's Republic of Poland		Amendment to the proposal No. 1507 - Article 22
132	Committee 7	Committee 7	Minutes of the Second Meeting of Committee 7 - 27 August 1959 at 10.30 a.m.
133	General Secretariat and I.F.R.B.	Committee 7	Proposals by the General Secretariat and the I.F.R.B. on the publication of Service Documents
134	Committee 4	Committee 4	Summary Record - Fifth Meeting - Committee 4 - 26 August 1959 at 15.00 hours
135	Brazil	Committee 4	Proposals - Article 5
135 CORRI.			
136	Sub-Committee 7B	Sub-Committee 7B	Summary Record - First Meeting of Sub-Committee 7B-25 August 1959 at 10.00 a.m.

Document No.	Origin	Destination	Title
137	Committee 5	Committee 5	Summary Record - Third Meeting of Committee 5 - 26 August 1959 at 10.00 a.m.
138	Sub-Committee 7D	Sub-Committee 7D	Summary Record - Second Meeting - Sub-Committee 7D - 28 August 1959 at 3 p.m.
139	United States of America	Committee 5	Proposals - Article 11
140	"	"	" " "
141	"	"	" " 12
142	"	"	Proposal Appendix 16 bis
143	Czechoslovakia		Corrigendum to proposal No. 4671
144	Committee 4	Committee 4	Summary Record - Sixth Meeting - Committee 4 - 28 August 1959 at 15.00 hours
145	Working Group 4F	Committee 4	Terms of Reference for Working Group 4F
146	Federal People's Republic of Yugoslavia	Committees 4 and 5	Suggestions for organizing and speeding up the Work
147	Sub-Committee 7B	Sub-Committee 7B	Summary Record - Second Meeting of Sub-Committee 7B - 26 August 1959 at 3.00 p.m.
148	Sub-Committee 7C	Sub-Committee 7C	Summary Record - Second Meeting of Sub-Committee 7C - 28 August 1959 at 10.00 a.m.
149	Italy	Committee 7	Proposals - Additional Radio Regulations - Article 4
150	Secretariat		List of the documents published by Conference No. 101 to 150

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 151-E
2 September, 1959

SUB-COMMITTEE 7A

ISRAEL

Proposals

ARTICLE 23

Number of Proposal

Numbers 493 to 499 of the Radio Regulations.

It is proposed that the above mentioned numbers should be reworded as follows :

5398 493. Representatives of the competent authority of countries where a mobile station calls may require the production of the licence for inspection. The person responsible for the mobile station must facilitate this examination. The licence or a copy certified by the authority which has issued it must be permanently exhibited in the station. Should this prove impossible it must be kept in such a way that it can be produced without delay.

5399 494. Delete the words in fine "the master or his deputy" and replace : "person responsible for the ship, aircraft or other vehicle carrying the mobile station".

5400 495. When on the request of a representative of the competent authority the licence cannot be produced or when manifest irregularities are observed, the radio installations of the station may be inspected to make sure that they conform to the conditions imposed by these Regulations.

5401 496. In addition representatives of the competent authority shall have the right to require the production of the operators' certificates and/or authorities to operate, but proof of professional knowledge may not be demanded.

5402 497. Delete in line 5 "in article 15" and after that read : "subject must be approached without delay applying the procedure specified in article 15".

Number of Proposal

5403 498. The representative of the competent authority who has inspected the station must, before leaving it, communicate the results of his inspection to the person responsible for the station (see 565).

5404 499. The countries, member and associate members of the Union, shall not impose etc. etc.

In the 5th line after the word "This" read : "shall in no way affect arrangements made under international agreements relating to maritime or air navigation not covered by these Regulations."

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 152-E
2 September 1959

COMMITTEE 4

SUMMARY RECORD

Seventh Meeting - Committee 4
(Frequency Allocation Committee)

Monday, 31 August 1959 at 16.00 hours - Room A

1. The Chairman introduced the Agenda (Document No. DT 44) and asked for comments on the Report of the Second Meeting, Document No. 89.

The Delegate of Italy reminded the Committee that in connection with Proposal 3256, he had stated the view that this proposal was more suitable for a Recommendation or Resolution rather than as a Regulation; this view had been supported by the Delegate of France.

It was agreed that Document No. 89 would be held in abeyance pending the submission by the Delegates of Italy and France of a draft amendment incorporating the above views.

2. The Proposals by Sweden, Nos. 27, 28 and 29

In introducing this item the Chairman stated the proposals were very interesting, that they proposed to move the services into more appropriate bands from the point of view of radio propagation, that they appeared to offer improvements in the distress services, together with an eventual economy in equipment; that the main obstacle appeared to be the considerable maritime investments in equipment and that it was the duty of the Committee to consider the difficulties which would arise in an interim or transitional period. He invited the Delegate of Sweden to comment on these difficulties when presenting his proposals.

The Delegate of Sweden referred to the advantages of his proposal, one frequency band for short distance maritime communications, one distress band, overall transmission improvements, more efficient frequency usage and for broadcast purposes better overland transmission; the disadvantages were the necessary alterations of broadcast receivers, and the need to fix a date of interchange many years in advance. He proposed initial reference of the question to Working Group 4B and possible later study in conjunction with Committee 7; he considered that the next broadcast and maritime conferences would make detailed plans for the interchange of the two bands.

The Delegate of the United Kingdom said that, after careful study of this proposal, he did not view it favourably; it was doubtful whether further detailed study would be profitable. While recognizing the change to be of assistance to the broadcast service, it would be necessary to change broadcast receivers and this would bear heavily on those receivers having an intermediate frequency of 465 kc/s or thereabouts. There would be serious practical maritime difficulties in that 500 kc/s is better for direction-finding purposes than 2,182 kc/s and that the coverage on 500 kc/s is better, particularly if the coastal station is some distance inland. There would be a major undertaking and huge costs in converting ship equipments and this would probably need to be spread over about 15 years. He considered it inadvisable to contemplate making proposals to overthrow what was virtually the only effective distress organization. For all the foregoing reasons he was opposed to further detailed study.

The Delegate of Pakistan considered that the 6 advantages listed in page 38 of the yellow book of proposals related rather to the use of one distress frequency than to the interchange of the two frequency bands. He considered that it was desirable to retain the status quo particularly in the tropical latitudes where the higher medium-wave bands were more successful in overcoming the higher noise-level. He supported the United Kingdom views on broadcast receiver conversion difficulties.

The Delegate of France fully shared the views expressed by the United Kingdom. He pointed out that the use of wireless telegraphy between 415 and 525 kc/s had been well proved over many years and was superior to the higher medium frequencies for direction-finding purposes because of the absence of skywave. He considered that Committee 7 might be asked to consider those parts of the Swedish proposals affecting them.

The Delegate of the Netherlands supported the views of France and the United Kingdom, as also did the Delegate of the United States of America, who additionally considered that the frequency allocation aspects of the proposals should be settled in a definitive manner during the meeting.

The Delegate of Sweden stated that the six advantages quoted on page 38 related not only to the use of one distress frequency but also to having only one short distance maritime band and hence easier choice of WT or RT, and of simpler equipments.

The Delegate of Yugoslavia, while admitting that there might be difficulties for the users of the maritime mobile bands, drew attention to the difficulties of finding sufficient broadcast frequencies in Europe. He considered the proposals worthy of further consideration and supported the Swedish proposal to pass them to Working Group 4B.

The Delegate of Switzerland, believing that the proposals might in the long run be of benefit to both services, also supported the proposal to pass them to Working Group 4B.

The Delegate of South Africa expressed views similar to those of Pakistan in respect of broadcasting in high noise areas and wished to be associated with the views stated by the United Kingdom, Pakistan, France, the Netherlands and the United States.

After a little further discussion, the Delegate of Sweden said he would bring his proposals to the attention of Committee 7 and it was agreed that unless otherwise directed by the Plenary Assembly, Committee 4 would take no further action on these proposals.

3. Discussion was resumed on proposals affecting the band 415-490 kc/s. The Chairman established that the intentions of Proposals 918 and 3,525 are the same. In the resumed discussion on the Austrian proposal the Chairman drew attention to its substantial difference from No. 138 of the Radio Regulations. The Delegate of Austria stated that his proposal was concerned with maintaining the status of No. 138 in respect of Innsbruck only. He pointed out that provision had been made in the Maritime Convention for Oestersund, Oulu and Hamar broadcasting stations, but not for Innsbruck; he wished to retain the broadcast facility for Innsbruck on a basis of non-interference to the maritime mobile service.

The Delegate of Switzerland confirmed that in respect of Geneva he had no requirement to retain the provision of No. 138.

The Delegate of Yugoslavia pointed out that all these proposals were concerned with the use of stations on a basis of non-interference to the maritime mobile service and that in his view it was necessary that the footnote should refer specifically to stations and not to countries. The Delegate of the United Kingdom questioned whether it was appropriate in a footnote to make reference to specific frequencies.

The Delegate of Poland drew attention to the serious difficulties which could be caused by broadcasting to a number of frequencies in the E.A.R.C. plan. It was agreed that all proposals affecting No. 138 of the Radio Regulations would be referred to Working Group 4B, who would take note of the various comments which had been made.

There was some discussion on Proposals 915, 919, 641, 642 and 643 concerning the use of this band for aeronautical radio navigation purposes. The Delegate of Czechoslovakia asked that their interest in using this band for aeronautical radio navigation purposes on a basis of non-interference to the maritime mobile service be recorded so that the Working Group would be able to take this into account.

The Delegates of the United States and of Australia expressed the view that it would be preferable that countries wishing to use this band for aeronautical radio navigation purposes be included in a footnote rather than making a regional or world wide allocation. It was agreed that this question also would be studied in Working Group 4B.

490 - 510 kc/s

The Chairman drew attention to the main proposal in this band, No. 920, by the U.S.S.R. The Delegate of the U.S.S.R. explained that it was the intention of their proposal to insert the new words as shown in the Table and to refer the governing conditions to the appropriate Article of the Radio Regulations. The Delegate of the United States pointed out that the effect of this would be to remove from the Table the name of the service to which the band would be allocated. It was then agreed that this point should also be considered by Working Group 4B.

510 - 525 kc/s

In this band the Chairman pointed out that all the proposals were substantially the same as those made in the lower band and that they would be treated in the manner already agreed. The Delegates of Austria and Czechoslovakia asked that their similar interests in this band be recorded.

4. At this stage the Chairman pointed out that the Committee had reached the end of the proposals listed in Document No. DT-29 and suggested that the Committee might agree to further study of the Frequency Table based on the material of Document No. DT-16.

525 - 535 kc/s

The Chairman drew attention to Proposals 419 and 644 which were very similar and the Delegates of Australia and India explained that the proposals were based on the fact that they had no requirement for the mobile service. The Delegates of Japan and the Philippines pointed out that this may adversely affect certain of their assignments and proposed that the matter be referred to Working Group 4B. The Delegate of Brazil stated that they had submitted proposals on this subject which had not yet been published and requested that the Working Group take these into consideration. It was agreed that this question would be referred to Working Group 4B.(this is now available as Document No. 135).

In respect of Proposals 922 and 927, the Delegate of the U.S.S.R. confirmed that their proposed use for the aeronautical radio navigation service would be on a basis of non-interference to the broadcasting service. It was agreed that Working Group 4B would be asked to draft an appropriate report.

535 - 1,605 kc/s

The Chairman summarized Proposals 3526, 737 and 3293 as being of a drafting nature and pointed out that Proposals 922 and 927 had been dealt with in the previous band. It was agreed that Working Group 4B would prepare an appropriate report.

Proposal 926 by the U.S.S.R. to delete No. 143 of the Radio Regulations was agreed.

5. Under "Other business", the Chairman, in reply to a question from the Delegate of India, confirmed that it was the intention to continue to produce proposals in the form of Document No. DT-29.

The Delegate of Belgium pointed out that hitherto his delegation had not played a major part in the discussions but had nevertheless studied them with great interest. They had concluded that in the complexities of the Frequency Allocation Table there would always be great difficulties in interpreting the meaning or intention in many frequency bands, but it might be possible to clarify the legal intention if the allocations were stated as a series of sentences to which the Table could be a memorandum. In this connection he gave an example of the type of text suggested:

405 - 415 kc/s - Region I

1. This band is allocated to the coastal radio direction-finding service of the maritime mobile service.

2. It cannot be used by coastal stations.

3. It can be used for inter-ship communications at distances greater than 200 miles from the coast.

4. It can be used for maritime radio navigation (radio beacons) on condition that it does not cause harmful interference to the radio direction-finding service.

The Delegate of Belgium went on to say that this did not at the moment constitute a formal proposal but rather a suggestion which he felt should be borne in mind. He recognized that this was possibly a revolutionary move, but also one justified by the difficulties of the situation and he felt that it was best in the first instance that he should raise this in the Plenary session of Committee 4 rather than in the appropriate Working Group 4F.

The Delegate of the United States confirmed it as his view that the suggestion was worthy of further consideration and that it ought to be discussed in Working Group 4F, and the Delegate of the Federal German Republic supported this view. The Chairman said that in his opinion the proposal was a good one and worthy of serious consideration in the Working Group and the meeting agreed that the Working Group be asked to take this into account in their studies of the Table and its footnotes.

At this stage the Chairman adjourned the meeting.

Rapporteur: Chairman:

A. James Bourne Gunnar Pedersen

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 153-E
2 September, 1959

WORKING GROUP 6A

SUMMARY RECORD

Second Meeting - Working Group 6A (Definitions)

Monday, 31 August, 1959 at 15.00 hours

Reference: Agenda of 31 August, 1959, Document No. DT 36.

1. Minutes of the First Meeting (Document No. 123)

The Chairman first considered Document No. 123, the Minutes of the first meeting of Working Group 6A, which was accepted subject to the following corrections:

1) Page 2, paragraph 4, line 4 - change "includes" to "include"

2) Page 3, paragraph 1, line 6 - change "... Circular 77" to "... Circular 775"

3) Page 4, paragraph 3 - change "Mr. W. Kranjager" to "Mr. W. Kronjager".

2. Discussion of Documents Nos. 8, 47, 59, 60, 69, 77, 83

The Chairman next considered the above listed documents for the purpose of assigning some of the proposals included therein to various of the Sub-Groups. Certain proposals were considered directly by Working Group 6A under Item 5. In addition to the listed documents, it was agreed also to assign proposals No. 247 through No. 252 in the Yellow Book, as well as CCIR Report No. 173 to various Sub-Groups.

There is attached a corrected and amended Annex replacing the Annex to Document No. 123 setting forth the subject matter, the Chairman and the Administrations participating as members of Sub-Groups 6A1 through 6A9. The proposals to be studied by each Sub-Group have not been listed, for the sake of brevity, and since the list will be changing as new documents are issued. The distribution of proposals between the Sub-Groups will be maintained on a current basis by arrangements between the Chairman of Working Group 6A and the Chairmen of the Sub-Groups.

3. Membership of Sub-Groups 6A1-6A9

The Chairman requested that each Delegation indicate the Sub-Groups in which it wished to participate, and also requested that each Delegation communicate the name of the delegate who would participate to the individual Chairmen of those Groups. The Chairmen's respective box numbers are shown in the corrected Annex, along with the initials of the participating Administrations.

4. Priorities

The Chairman then suggested a list of priorities in case of conflict between the Sub-Groups which was accepted by the Working Group. This list is tentative and subject to revision and extension based on the needs indicated by the other Committees of the Conference:

1) 6A4 - Agenda (a) - Radiolocation Service

2) 6A2 - Agenda (a) - Space Service

3) 6A6 - Characteristics of Emissions

4) 6A3 - Agenda (a) - Telemetering

5) 6A5 - Radio Frequency Registration

6) 6A7 - Transmitter and Antenna Power

7) 6A8 - Agenda (a) - Interference

8) 6A1 - Radio, Hertzian Waves, Radio Communication

9) 6A9 - Nomenclature of Frequencies.

The Chairman suggested that the descriptive text accompanying the Provisional List of Terms and Definitions include the order of priorities in which terms under study would be considered in order that the Chairmen of other Conference Committees might indicate any disagreement with the order of priorities.

5. Provisional List of Terms and Definitions

It was agreed to accept, provisionally, definitions of the following terms concerning which proposals had been made in Documents Nos. 8, 47, 59, 60, 69, 77 and 83 and which have not been assigned to a Sub-Group.

Document DT 21 No.	Term	Proposals	Accepted
6.10	Radio Astronomy	68 50 Rev. 1 (USSR) 3203 45 Rev. 1 (USA) 5238 Doc. 69 (Arg.)	68, 50 Rev. 1
8	Telephony	51 46 Rev. 2 (France) 5240 Doc. 69 (Arg.)	RR No. 8
25	Aeronautical Mobile Service	5251 Doc. 69 (Arg.)	RR No. 25
31	Amateur Service	112 59 Rev. 1 (France) 5254 Doc. 69 (Arg.)	RR No. 31
32.10	Radio Astronomy Service	3221 59.1 (USA) 5255 Doc. 69 (Arg.)	3221, 59.1
34	Special Service	3222 60 Rev.1 (USA) 5256 Doc. 69 (Arg.)	5256, Doc. 69
55	Experimental Station	137 65 Rev. 1 (Den., Fin. Ice. Nor. Swe.) 138 65 Rev. 1 (U.K) 5262 Doc. 69 (Arg.)	RR No. 55

A consideration of other terms in the Provisional List of Terms and Definitions (Document No. DT 21) was deferred until the next meeting of Working Group 6A.

6. Other Matters

The Chairman of Committee 6 had further discussion in the Steering Committee concerning the proposal to change Working Group 6A to Sub-Committee 6A (Document No. 123, Item 5). The change was opposed and it was agreed not to reclassify Working Group 6A as a Sub-Committee. 6A will retain its classification as Working Group 6A and the groups established by it will be known as Sub-Groups 6A1 to 6A9, as shown in the revised Annex.

A. Mooney
Reporter

E. W. Allen
Chairman, Working Group 6A

Annex : 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

SUB-GROUPS 6A1 TO 6A9

Sub-Group 6A1:	Radio, Hertzian Waves, Radio Communication
Chairman:	Mr. F.V. Akerlind (Sweden) (Box 84/5)
Members:	Argentina, France, United Kingdom, U.S.S.R., Sweden
Sub-Group 6A2:	(a) Space Service (b) Telegraphy
Chairman:	Mr. F.M. Ryan (U.S.A.) (Box 31/27)
Members:	Argentina, Canada, France, F.G.R., India, Pakistan, United Kingdom, U.S.S.R., U.S.A., Switzerland
Sub-Group 6A3:	(a) Telemetering (b) Systems and Emissions (c) Modulation
Chairman:	Mr. A.H. Tintant (France) (Box 34/14)
Members:	Australia, France, U.S.A., Union of South Africa, Spain, I.F.R.B.
Sub-Group 6A4:	(a) Radiolocation (b) Harbour Mobile Service
Chairman:	Mr. R.K. Starkie (Australia) (Box 5/8)
Members:	Argentina, Australia, Canada, France, India, Japan, United Kingdom, U.S.S.R., U.S.A., Union of South Africa, Spain
Sub-Group 6A5:	Radio Frequency Registration
Chairman:	Mr. N. Roberts (I.F.R.B.) (Box 502/9)
Members:	Argentina, Canada, China, India, Japan, Portugal, U.S.A., Union of South Africa, Switzerland, Spain, I.F.R.B.
Sub-Group 6A6:	Characteristics of Emissions
Chairman:	Mr. C.C. Benton (United Kingdom) (Box 82/32)
Members:	Argentine, China, France, F.G.R., India, Japan, Pakistan, Portugal, United Kingdom, U.S.A., I.F.R.B.
Sub-Group 6A7:	Transmitter and Antenna Power
Chairman:	Mr. W. Kronjager (Federal German Republic) (Box 77/10)
Members:	Argentina, Canada, France, F.G.R., India, Japan, U.S.A., Spain, I.F.R.B.
Sub-Group 6A8:	(a) Interference (b) Radio Noise
Chairman:	Mr. M.K. Basu (India) (Box 42/3)
Members:	Canada, France, F.G.R., India, Japan, U.S.A., Union of South Africa, I.F.R.B.
Sub-Group 6A9:	Nomenclature of Frequencies
Chairman:	Mr. M. Shimberi (Japan) (Box 50/10)
Members:	France, F.G.R., India, Japan, Portugal, United Kingdom, I.F.R.B.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 154-E
2 September, 1959

PLENARY MEETING
COMMITTEE 7

BELGIUM, BELGIAN CONGO

Proposal

ARTICLE 33

Number of proposal		
5405	773.	After this number, add the following new sub-paragraph:

(1 bis) It is recommended that countries which share a channel in one of the exclusive maritime mobile bands between 4 000 kc/s and 27 500 kc/s afford special consideration to the countries among them which have no other channel in the same band and endeavour to use their primary channel to the greatest extent possible, in order to permit the latter countries to satisfy their minimum communication requirements.

Reasons:

Article 78 of the E.A.R.C. Agreement.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 155-E
2 September, 1959

This document is circulated at the request of the Chairman of Sub-Committee 7D.

INTERNATIONAL LABOUR CONFERENCE

Recommendation 106

RECOMMENDATION CONCERNING MEDICAL ADVICE BY RADIO TO SHIPS AT SEA

The General Conference of the International Labour Organisation,

Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Forty-First Session on 29 April, 1958, and

Having decided upon the adoption of certain proposals with regard to medical advice by radio to ships at sea, which are included in the fifth item on the agenda of the session, and

Having decided that these proposals shall take the form of a Recommendation,

adopts this thirteenth day of May of the year one thousand nine hundred and fifty-eight the following Recommendation, which may be cited as the Medical Advice at Sea Recommendation, 1958:

The Conference recommends that each Member should apply the following provisions:

Members should ensure by a pre-arranged system that -

a) medical advice by radio to ships at sea is available free of charge at any hour of the day or night;

b) the medical advice available includes, where necessary and practicable, specialist advice;

c) adequate use is made of the radio advice facilities available, inter alia, by instruction of seagoing personnel and by medical guides

which indicate clearly and concisely the type of information which will help the doctor in giving his advice, so that the person on board ship who seeks advice understands what sort of information is required by the advising doctor;

d) an up-to-date and complete list of radio stations from which medical advice can be obtained is carried on each ship equipped with radio installations, and kept in the custody of the radio officer or, in the case of smaller vessels, of the person responsible for radio duties.

Annex : 1

A N N E X

FACILITIES OFFERED BY COAST STATIONS TRANSMITTING MEDICAL ADVICE

(Information taken from the List of Special Service Stations)

1	2	3	4
Country	Accepts requests from ships of all nationalities	Charges for messages	Payment of medical fees
Azores	Yes	Yes	No
Aden	Yes	No	No
French Equatorial Africa	Yes	Yes	No
French West Africa	Yes	Yes	No
Alaska	Yes	No	No
Netherlands Antilles	Yes	No	No
Argentine Republic	Yes	No	No
Australia (Commonwealth of)	Yes	No	No
Belgium	Yes	No, for ships registered in countries where the service is free	No, for ships registered in countries where the service is free.
Bermuda	Yes	No	No
Burma (Union of)	Yes	No	No
North Borneo	Yes	No	No
Cameroons (State of) (under French Trusteeship)	Yes	No	No
Canada	Yes	No, (may be domestic charge)	

1	2	3	4
Ceylon	Yes	Yes	
Cyprus	Yes	No	No
Costa Rica		No	
French Somaliland	Yes	No	No
Cuba		No	
Denmark (including Faroes and Greenland)	Yes	No	No
Dominican Republic	Yes	No	No
Egypt	Yes	No	No
United States	Yes	No *)	No
Falkland Islands and Dependencies	Yes	No	No
Fiji Islands	Yes	No	No
Finland	Yes	No	Yes
France and Algeria	Yes	No	No
Gambia	Yes	No	No
Ghana	Yes	No	No
Gibraltar	Yes	No	No
Persian Gulf	Yes	No	No
Greece	Yes	Yes	No
Guadeloupe (French Department of)	Yes	No	No
Guatemala		No	
British Guiana	Yes	No	No
Hawaii	Yes	No	No
Hongkong	Yes	No	No

*) Telephone calls from ships made to doctors or hospitals via the coast stations of the Pacific Telephone and Telegraph Company are chargeable in accordance with the scale in force.

1	2	3	4
India	Yes	No	No
British West Indies	Yes	No	No
Ireland	Yes	No	
Israël	Yes	No	No
Italy: coast stations	Yes	No, for ships registered in countries where the service is free	No
Italy: Roma-Centro Radio-Medico internazionale (C.I.R.M.)	Yes	No	No
Japan	Yes	No	No
Kenya		No	No
Libya	Yes	No	No
Madagascar and Dependencies	Yes	Yes	No
Madeira	Yes	Yes	No
Malaya	Yes	No	No
Malta	Yes	No	No
Mariannas	Yes	No	No
Morocco	Yes	Yes	No
Martinique (French Department of)	Yes	No	No
Mauritius		No	No
Nauru	Yes	No	No
Norway	Yes	No	No
Dutch New Guinea	Yes	No	No
New Guinea (Territory of)	Yes	No	No

1	2	3	4
New Zealand	Yes	No	No
Pakistan	Yes	No	No
Panama (Republic of)		No	
Panama (Canal Zone)	Yes	No	No
Papua (Territories of)	Yes	No	No
Netherlands	Yes	No	No
Philippines (Republic of the)		No	No
Poland (People's Republic of)	Yes	No	No
French Polynesia	Yes	No	No
Puerto Rico	Yes	No	No
Portugal	Yes	Yes	No
Federal German Republic	Yes	No	No
German Democratic Republic	Yes	No	No
Réunion (French Department of)	Yes	No	No
United Kingdom of Great Britain and Northern Ireland	Yes	No	
Sarawak	Yes	No	No
Seychelles	Yes	No	No
Sierra Leone	Yes	No	No

1	2	3	4
Somaliland (Italian Administration)	Yes	No, for ships registered in countries where the service is free	No
Sweden	Yes	No	No
St. Pierre and Miquelon	Yes	No	No
Union of South Africa and Territory of South-West Africa	Yes	No	No
Viet-Nam	Yes	No	No
Yugoslavia (Federal Republic of)	Yes	No	No

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 156-E
3 September 1959

PLENARY MEETING
COMMITTEE 4

COMMUNICATION OF THE AUSTRALIAN DELEGATION

It is the desire of the Australian Delegation that Proposals Nos. 5 and 6 for consideration by the Conference should please be withdrawn.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 157-E
3 September, 1959

PLENARY MEETING
COMMITTEE 4

FINLAND

Proposals Concerning Frequency Band Allocations for Meteorological Aids

ARTICLE 5

Number of Proposal

	Frequency Band kc/s	Allocation to Services: World-wide
5406	27,500 - 28,000	Meteorological Aids

5407 Delete the proposal No. 607 (page 194) as far as Finland is concerned

	Frequency Band Mc/s	Allocation to Services: World-wide	Footnotes
5408	400 - 406	Meteorological Aids	Delete 208 (Note 94)
5409	1,660 - 1,700	Meteorological Aids	Delete 219 (Note 105)

Reasons

The need of the Meteorological Aids Service is well established. The Meteorological Aids (radio-sonde) network of the Regions 1, 2 and 3 consists of several hundred stations each launching from 2 to 4 radio-sondes daily to determine the upper-air conditions. These observations are vital for the safety of the air traffic, the rational planning of air-routes and for the general weather forecasting. The network is being substantially enlarged to meet the requirements of the jet aircraft traffic and the modern weather forecasting. The network, when completed, will consist of more than one thousand stations distributed in all the three Regions.

The exclusive frequency bands are desirable for the following reason. The Meteorological Aids (radio-sondes) are required to reach the minimum altitudes of 24 km (80,000 feet) according to a present recommendation. The balloons which carry the radio-sondes are able to lift only a limited weight to this high altitude. An average weight at the Meteorological Aids (radio-sondes) is approximately 1,000 grams (2 lbs.) and the lightest type weighs 300 grams (2/3 lb.). Only a part of the weight is available for the transmitter and its power supply. The output power is therefore of necessity of exceptionally low value. It ranges from 5 mW to 100 - 200 mW in the present equipment. The Meteorological Aids (radio-sondes) are therefore highly susceptible to harmful interference. It is therefore concluded to be desirable to protect their operation by allocating them exclusive frequency bands.

The World-wide allocation

- would facilitate a wide-spread manufacture and use of common equipment; this standardization would result in better homogeneity of the results;

- would make it possible to carry out observations over large areas requiring cooperation between two or more countries;

- would facilitate the work of the stations on board ships, which cross the boundaries of the Regions on their routes;

- would protect the Meteorological Aids (radio-sondes), operating in the frequency band 27,500 - 28,000 kc/s, from long distance interference.

The results of the Meteorological Aids (radio-sondes) observations are used in all the three Regions regardless in which of the Regions the actual observation was carried out. Therefore it is in the interest of all the three Regions to secure an interference free and rational use of the Meteorological Aids in all the three Regions.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 158-E
3 September 1959

PLENARY MEETING
COMMITTEE 6

JAPAN

Proposals

ARTICLE 2

The following amendments shall be made in Section I Article 2 of the Radio Regulation:

Section I. Classification

Number of proposal				
5410	75 § 2.	Emissions are classified and symbolized according to the following characteristics:		
		(1)	Type of modulation of main carrier	
		(2)	Type of transmission	
		(3)	Supplementary characteristics	
		(4)	Sub-supplementary characteristics.	
5411	76 § 3.	(1)	Types of modulation of main carrier:	Symbol
		a)	Amplitude	A
		b)	Frequency (or phase)	F
		c)	Pulse	P
		d)	Composite modulation Combinations of A, F and P	
5412	78	(3)	Supplementary characteristics:	
		a)	Amplitude modulation, double sideband	(none)
		b)	Amplitude modulation, single sideband	a
		c)	Amplitude modulation, two independent sidebands	b
		d)	Amplitude modulation, other emissions	c
		e)	Pulse, amplitude modulated	d
		f)	Pulse, width modulated	e
		g)	Pulse, phase (or position) modulated	f
		h)	Vestigial sideband	g

Number of proposal

Symbol

(4) Sub-supplementary characteristics :

a) Full carrier (none)
b) Reduced carrier (including control carrier) r
c) Suppressed carrier s

5413 80 S 5. The classification of typical emissions is tabulated below :

Type of Modulation	Type of Transmission	Supplementary Characteristics	Sub-supplementary Characteristics	Symbol
Amplitude Modulated	Absence of any modulation	-	-	A0
	Telegraphy without the use of modulating audio frequency (on-off keying)	-	-	A1
	Telegraphy by the keying of a modulating audio frequency or audio frequencies or by the keying of the modulated emission (special case: an unkeyed modulated emission	Double sideband	Full carrier	A2
		Single sideband	Full carrier	A2a
			Reduced carrier	A2ar
			Suppressed carrier	A2as
		Two independent sidebands	Reduced carrier	A2br
			Suppressed carrier	A2bs
	Telephony	Double sideband	Full carrier	A3
		Single sideband	Full carrier	A3a
			Reduced carrier	A3ar
			Suppressed carrier	A3as
		Two independent sidebands	Reduced carrier	A3br
		Other emissions	Reduced carrier	A3cr
	Facsimile	Double sideband	Full carrier	A4
		Single sideband	Reduced carrier	A4ar
			Suppressed carrier	A4as

Type of Modulation	Type of Transmission	Supplementary Characteristics	Sub-supplementary Characteristics	Symbol
Amplitude Modulated (Contd.)	Facsimile (Contd.)	Two independent sidebands	Reduced carrier	A4br
			Suppressed carrier	A4bs
	Television	Double sideband	Full carrier	A5
		Vestigial sideband	Full carrier	A5g
	Composite transmissions and cases not covered by the above	-	-	A9
	Composite transmissions	Single sideband	Full carrier	A9a
			Reduced carrier	A9ar
			Suppressed carrier	A9as
		Two independent sidebands	Reduced carrier	A9br
		Other emissions	Reduced carrier	A9cr
Frequency (or phase) Modulated	Absence of any modulation	-	-	F0
	Telegraphy without the use of modulating audio frequency (frequency shift keying)	-	-	F1
	Telegraphy by the keying of a modulating audio frequency or audio frequencies or by the keying of the modulated emission (special case: an unkeyed emission modulated by audio frequency	-	-	F2
	Telephony	-	-	F3
	Facsimile	-	-	F4
	Television	-	-	F5

Type of Modulation	Type of Transmission	Supplementary Characteristics	Sub-supplementary Characteristics	Symbol
Frequency (or phase) Modulated (Contd.)	Composite transmissions and cases not covered by the above	-	-	F9
Pulse Modulated	Absence of any modulation intended to carry information	-	-	P0
	Telegraphy without the use of modulating audio frequency	-	-	P1
	Telegraphy by the keying of a modulating audio frequency or audio frequencies or by the keying of the modulated pulse (special case: an unkeyed modulated pulse)	Audio frequency or audio frequencies modulating the pulse in amplitude	-	P2d
		Audio frequency or audio frequencies modulating the width of the pulse	-	P2e
		Audio frequency or audio frequencies modulating the phase (or position) of the pulse	-	P2f
	Telephony	Amplitude modulated	-	P3d
		Width modulated	-	P3e
		Phase (or position) modulated	-	P3f

Type of Modulation	Type of Transmission	Supplementary Characteristics	Sub-supplementary Characteristics	Symbol
Pulse Modulated (Contd.)	Composite transmissions and cases not covered by the above	-	-	P9
Composite Modulation	Telephony (when the frequency modulated main carrier of time-division multiplex telephony being used as service channel	Phase (or position) modulated pulse	-	P3f.F3

Reasons :

Due to the increasing use of the carrier reduction technique (especially in the single sideband communication), television and composite Transmissions, it seems necessary to classify more finely and designate more definitely emissions for the purpose of monitoring. This proposal intends not only to satisfy such requirements, but to rationalize more sufficiently the designation of emissions.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 159-E
3 September, 1959.

COMMITTEE 5

C.C.I.R. DOCUMENTS

At the request of Committee 5 the following C.C.I.R. documents are published for the immediate information and use of the Conference. They will be available in printed form in English and French later on the Recommendations in Volume I of the C.C.I.R. Los Angeles documents towards the end of September; the Resolutions, Questions and Study Programmes in Volume II towards the end of November and the Reports in Volume III before the end of the conference.

Chairman of Committee 5
Dr. Joachim

Annexes: 3

Recommendations Nos. 262, 316 and 317.

Reports Nos. 127 and 150.

Resolution No. 48.

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X 1

RECOMMENDATION No. 262

H. F. BROADCASTING

Effects of Closer Spacing Between Carriers

(Question No. 203 (X))

(Los Angeles, 1959)

The C.C.I.R.,

unanimously recommends

that at least with the majority of receivers in use, the ratio of the wanted to unwanted field-strengths to give satisfactory reception (see Note) when two transmitters use carrier frequencies 5 kc/s apart should not be considered to be less than when the transmitters use the same frequency (within 50 c/s).

Note - Satisfactory reception is defined here as a condition when the interference from the unwanted signal can be deemed tolerable.

RECOMMENDATION No. 316*

BASIC PREDICTION INFORMATION FOR IONOSPHERIC PROPAGATION

(Study Programme No. 149 (VI))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the objectives of Study Programme No. 60 have not yet been attained;

b) that the I.F.R.B. has made known its urgent need for the most reliable median F2 MUF data which are available at the present time, for application on a world-wide scale, as well as for information which will assist in determining those circuits for which operational results differ appreciably from MUF predictions;

---

*This Recommendation replaces Recommendation No. 176

unanimously recommends

1. that Study Group No. VI should study by correspondence the improvements that could be obtained by adopting forms of presentation other than zonal charts, and that the Chairman of this Study Group should send the results of this study, through the Director of the C.C.I.R., to the I.F.R.B.;

2. that interested Administrations may make available to the I.F.R.B. by way of information, or for purposes of consultation, operational data on circuits, especially those for which it appears, from operational experience or from monitoring observations for instance, that divergences of practical importance exist between basic predictions and operational results. These data should comprise statistics of fade-in and fade-out times and should indicate the effects of factors other than propagation conditions (for example, frequency changes made for operational reasons). In principle, all relevant details of the working conditions should be stated;

3. that the information be transmitted through the Chairman of Study Group No. VI and the Director of the C.C.I.R., and that in the most important cases the I.F.R.B. or the Administration concerned may request the Director of the C.C.I.R. to consult the Working Group charged with Resolution No. 48.

RECOMMENDATION No. 317*

SYSTEMATIC SKY-WAVE FIELD STRENGTH MEASUREMENTS ON FREQUENCIES BETWEEN THE APPROXIMATE LIMITS OF 1.5 AND 40 Mc/s

(Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the Working Group for Resolution No. 48 has at its disposal only a restricted number of data on field strength values, as well as on the radiation pattern of transmitting antennae;

b) that in order to carry out its task it should have available a great number of reliable field strength measurements, referring to widely different conditions;

c) that, in the vast task undertaken within the framework of the I.G.Y. programme as to the physics of the ionosphere, insufficient attention has been given to the question of field strength measurements;

---

*See Report No. 142.

unanimously recommends

1. that absolute field strength measurements, as accurate and systematic as possible, should be carried out in receiving stations in order to determine as a final objective the median hourly-monthly field strength values;

2. that these measurements should be carried out for circuits:

- operating on different frequencies,
- of various lengths up to at least 12,000 km (measurements on the longest of these are most urgent),
- in various geographical directions (for example N-S and E-W),
- on which, preferably, the emission is almost continuous; and the radiated power is almost constant;

3. that these measurements should be carried out over as long a period as possible, and at least for one month of each season, during the times of the day most useful for the problem;

4. that these measurements should be carried out within a co-ordinated programme and that their results should be comparable (same units, same scale of diagrams, etc.); and to this end the Administrations should exchange information on their calibration procedures;

5. that for this purpose it is necessary to create a small but reliable network of key measuring stations; wherever possible determinations of the angle of incidence should be made at these measuring stations;

6. whenever possible the measurement programme outlined in (4) above should include measurements of the directivity at great distance of the antennae used in accordance with Study Programme No. 130 (III);

7. that the measuring equipment now in the possession of the C.C.I.R. Specialized Secretariat should be utilized as soon as possible for regular recording of a certain number of HF (decametric) field strength values;

8. that Administrations, members of the C.C.I.R., should be requested to designate some transmitters for the field strength measurements. The Administrations should make precise measurements of the radiation characteristics of these transmitters in order to evaluate accurately the field strength at a distance of 1 km from the antenna at all relevant values of angle of elevation and azimuth. During the measuring period the overall radiated power should be controlled. If such measurements prove to be impossible, precise measurements of the power supplied to the antenna should be made and the antenna gain and pattern should be indicated. The antenna should be maintained in good technical condition;

9. That a joint programme of measurements, for which the basic suggestions are described in the annex to this document, should be worked out in the near future by correspondence, in accordance with the possibilities of individual countries;

10. That the resolution of observations should be done at the measuring stations according to the programme set up; the corresponding monthly Tables or graphs should be sent at appropriate intervals to the Working Group;

11. That the final data obtained, and their practical results, should be published in an appropriate form.

*

* *

A N N E X

SYSTEMATIC FIELD STRENGTH MEASUREMENTS ON FREQUENCIES BETWEEN THE APPROXIMATE LIMITS OF 1.5 and 40 Mc/s

A comprehensive programme for coordinated measurement of field strength should be established, by means of correspondence followed by a special consultation. Some basic suggestions in the form of a preparatory document are given below.

1. All countries taking part, whether concerned with transmission or reception, should designate the circuits, typical for various propagation conditions over which the measurements are to be made, and should take into account any proposals regarding such circuits which may be made by the Working Group. The number of circuits should not be too great.

2. All countries taking part should designate transmitters with suitably directed antennae. The transmitter-antenna installation must provide adequate radiated power. The antenna patterns (both vertical and horizontal) must be calculated in the most thorough way possible, and the power fed to the antenna must be measured, and the vertical and horizontal radiation patterns described in detail.

3. The choice of frequencies on wh ch the measurements are to be made should be governed by the programme for different levels of solar activity, time of year or day, etc. The frequencies transmitted by standard frequency stations must, in any case, be included.

4. Every effort including relevant agreements should be made to provide protection of the selected frequencies.

5. It is recommended that accurate measurements, checked at frequent intervals, be made with a small number of key stations in different countries.

As auxiliary stations, it would be advisable to make use also of stations possessing fairly simple equipment giving less accurate measurements than those obtained by key stations.

6. Such key stations should record the field strengths by means of automatic recording equipment over a period of time long enough to reveal the characteristic trend of the field.

Auxiliary stations may carry our measurements over shorter periods and without making use of automatic recording equipment.

A proposed time table should be established at a later date, depending on the means available to the individual countries and the general organization of the work.

7. Uniform recording speeds, scales, etc., should be established for the key stations so that the recordings can be compared.

8. A uniform method should be established for compiling the data obtained and presenting the final results.

9. The measurement programme worked out may be altered in the light of experience and by agreement between those taking part in the work.

10. The precision required for the measurements obtained must be established on the basis of the measurement means available and the accuracy of knowledge concerning the radiated power and antenna patterns.

11. When selecting the circuits on which the measurements are to be made, account must be taken of any ionospheric vertical sounding stations.

12. All countries, members of the C.C.I.R., should be called upon to continue and extend any work undertaken in accordance with the I.G.Y. programme likely to be of assistance in the present task (vertical and oblique sounding, measurement of absorption, etc.).

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

ANNEX 2

REPORT No. 127*

INTERFERENCE IN THE BANDS SHARED WITH BROADCASTING
Complement to Report No. 89

(Question No. 102 (XII) and Study Programme No. 167(XII))

(Los Angeles, 1959)

The information contained in the present report is supplementary to that of Report No. 89 and represents the results of the work carried out since the VIIIth Plenary Assembly of the C.C.I.R., Warsaw, 1956.

Doc. XII/1, (United Kingdom) of Los Angeles, 1959, summarizes the data presented at various times regarding the protection ratio of the wanted to unwanted signal that is required for just tolerable interference at various values of separation of carrier frequencies. The graphs of the document are given in Fig. 1. The summary of the conditions of the Post Office tests has also been given in the document and is reproduced in para. 3 of the Annex.

Doc. XII/6, (India) of Los Angeles, 1959, gives an account of the work carried out in connection with Question No. 102. Protection ratios required against (1) A1 emissions both for speech and music programmes, (2) A2 and (3) A3 emissions for music programmes has been assessed. The results are given in para. 4 of the Annex.

The Indian document takes into consideration the frequency tolerance standards as laid down in the Atlantic City Radio Regulations. The summary is confined to two limiting cases, namely frequency separation of zero and 5 kc/s and indicates the protection figures required for various types of emission. The document also states that the results referred to steady state conditions and that an appropriate allowance should be made for fading.

An analysis of selectivity characteristics of receivers in use in India has also been given in the document. Extensive tests were carried out to investigate the effect of reducing the bandwidth of broadcast transmissions on the overall quality from the point of view of listeners' satisfaction.

The conclusion in the Indian document is that it is necessary to maintain the normal bandwidth of modulating frequencies to well beyond 5 kc/s. Any modifications to the design of broadcast receivers to attenuate frequencies at 5 kc/s and lower will, therefore, result in serious deterioration to the quality of reception.

---

* This Report was adopted by correspondence without reservation.

LEGEND

*(A) van der Pol (1933)

*(B) Braillard, (C.C.I.R., Bucharest, 1937)

*(C) B.P.O. tests, 1948

**(D) B.P.O. tests, 1950

**(E) B.P.O. tests, 1951

**(F1) B.P.O. tests, 1956 (no filter)

**(F2) B.P.O. tests, 1956 (whistle filter)

**(G1) Indian, 50% satisfaction, (interfering signal - Broadcast)

**(G2) Indian, 90% satisfaction, (interfering signal - Broadcast)

**(H) Curve used by I.F.R.B., 1956 for HF broadcast plans

* Just perceptible interference chosen as the criterion.

** Just tolerable interference chosen as the criterion

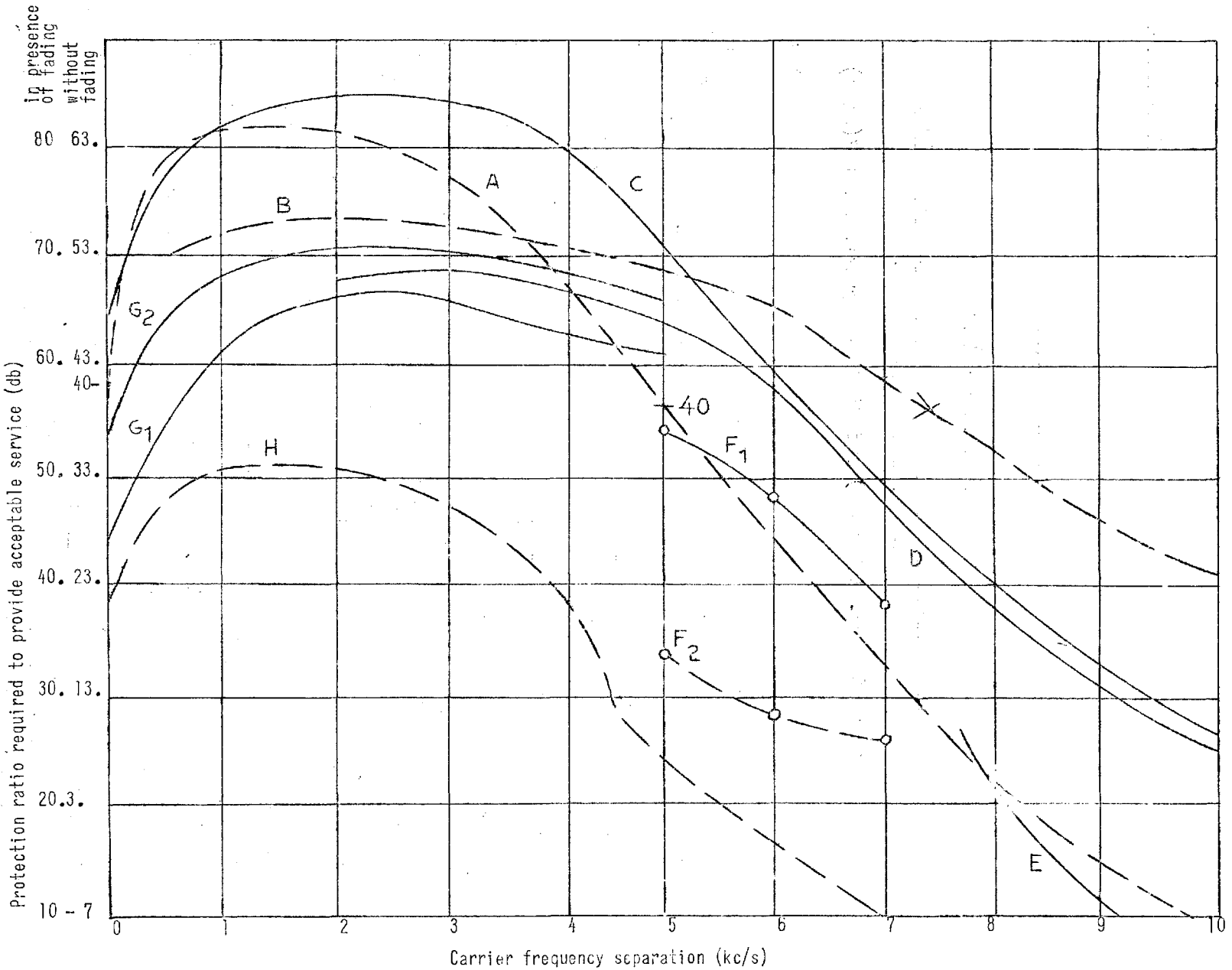


FIGURE 1

Protection ratios required to provide acceptable service

Annex

1. Conditions of test for Curve A.

The tolerable signal-to-interference ratio (with the receiver tuned to the wanted signal) has been chosen as the criterion of receiver selectivity.

The receiver sensitivity was adjusted so as to apply a low frequency power of 150 mW to the loudspeaker, the wanted signal being modulated by a 400 c/s tone to a depth of 30%. The quasi-maximum of the modulation of the interfering signal corresponded to a modulation index of 90%.

The amplitude of the interfering signal was then increased up to the point when its interfering effect on an unmodulated wanted signal was just perceptible to the ear at a distance of about 50 cm from the loudspeaker.

Further, if the wanted signal was also modulated, the above ratio may be multiplied by a factor between 3 and 5*. (Documents of the European Radiocommunication Conference, Lucerne, 1933, pp. 280-282 and the Documents of the fourth Reunion of the C.C.I.R., Bucharest, 1937, Vol. I. pp. 109-112).

2. Conditions of tests for Curve B.

Similar conditions to those of Curve A, but relating to very high quality reception. (Documents of the C.C.I.R., Bucharest, 1937, Vol.I,241).

3. Conditions of tests for Curves C, D, E and F (British Post Office tests)

Table I

Test	Date of test	Wanted Signal		Unwanted Signal	
		Type	Modulation Index	Type	Modulation Index
C	1948	Music (0-8 kc/s)	30% average peaking to 100% occasionally	Speech (0-8 kc/s)	30% average peaking to 100% occasionally
D	1950	Broadcast speech	"	Telephony (0-3 kc/s)	70%
E	1951	"	"	Speech (0-6 kc/s)	30% average peaking to 100% occasionally
F	1956	"	"	Music (6db down at 4.6 kc/s)	30% average peaking to 100% occasionally

* Note by the Director of the C.C.I.R. The original van der Pol curve was plotted as the ratio of the "tolerable interfering signal to the wanted signal". Accordingly, with the curve A of Fig. 1, which is plotted as the ratio of the wanted signal to the interfering signal, this factor should be 1/3 to 1/5 (-9.5 to -14 db).

The conditions under which test F were conducted require some detailed comment.

A "standard" condition of co-channel interference was set up, this in the first place providing an interfering broadcast signal 23 db below the wanted carrier level. As finally set up, however, short-term Rayleigh-type fading was introduced and, on the basis of some practical evidence, this was taken to require an increase in co-channel protection ratio to 33 db. An allowance of 7 db for long -term fading would thus give the figure of 40 db for planning purposes as used at the Mexico City Broadcasting Conference, 1948. The tests F, however, were carried out with artificially produced short-term fading only and all adjacent channel figures therefore relate to a co-channel protection ratio of 33 db. In the final presentation these figures have therefore been reduced by 10 db to equate the results to the non-fading conditions used for all other tests. The ordinate has been so labelled that protection ratios can be read off either for non-fading conditions, or for full fading conditions incorporating a total allowance of 10 + 7 db = 17 db for short-term and long-term fading. For some of these measurements under test F a simple whistle filter was introduced in the loudspeaker input leads so that the improvement in protection ratio that might readily be gained by reducing the audible heterodyne whistle at 5, 6 and 7 kc/s could be assessed.

4. Conditions of test for Curve G2 (Indian tests with 90% listener satisfaction) (See Table II)

TABLE II

Wanted signal	Interfering emission	Frequency separation (kc/s)	Protection ignoring frequency tolerance (db)	Maximum frequency tolerance in the shared bands (Atlantic City) (c/s)	Protection taking into account the tolerance in Col. 5 (db)
(1)	(2)	(3)	(4)	(5)	(6)
Speech	A1-fixed (40 w.p.m.)	0	26.5	150	33.5
"	A1-mobile (40 w.p.m.)	0	26.5	1000	44.5
"	A2-fixed (mod. at 525 c/s)	0	35	150	42
"	A2-mobile (mod. at 525 c/s)	0	35	1000	49
"	A3-fixed (mod. at 3 kc/s max.)	0	33	150	40
"	A3-mobile (mod. at 3 kc/s max.)	0	33	1000	50
"	A3-Broadcasting	0	33	150	44
"	A1-fixed (40 w.p.m.)	5	41.5	150	43
"	A1-mobile (40 w.p.m.)	5	41.5	1000	47
"	A2-fixed (mod. at 525 c/s)	5	39	150	43
"	A2-mobile (mod. at 525 c/s)	5	39	1000	49
"	A3-fixed (mod. at 3 kc/s max.)	5	48	150	50

TABLE II (continued)

(1)	(2)	(3)	(4)	(5)	(6)
Speech	A3-mobile (mod. at 3 kc/s max.)	5	48	1000	52
	A3-Broadcasting	5	48	150	49
	A3-Broadcasting	0	33	645	51.5
	A3-Broadcasting	5	48	645	50.5
Music (Vocal)	A1-fixed (40 w.p.m.)	0	27.5	150	36
	A1-mobile (40 w.p.m.)	0	27.5	1000	42.5
Music (Instru-mental)	A2-fixed (mod. at 525 c/s)	0	24	150	28.5
	A2-mobile (mod. at 525 c/s)	0	24	1000	36
Music (Vocal)	A3-fixed (mod. at 3 kc/s max.)	0	26	150	34
	A3-mobile (mod. at 3 kc/s max.)	0	26	1000	41.5
	A1-fixed (40 w.p.m.)	5	37	150	39
	A1-mobile (40 w.p.m.)	5	37	1000	43
Music (Instru-mental)	A2-fixed (mod. at 525 c/s)	5	39	150	40
	A2-mobile (mod. at 525 c/s)	5	39	1000	43
Music (Vocal)	A3-fixed (mod. at 3 kc/s max.)	5	42.5	150	44
	A3-mobile (mod. at 3 kc/s max.)	5	42.5	1000	46.5

5. Conditions of test for Curve H

Curve of the minimum protection ratio used by the I.F.R.B. for high-frequency broadcasting planning, which is, for stable transmitters (± 20 c/s) without accounting for any 5 kc/s whistle effects and under operational conditions where the wanted field strength is considerably stronger (by at least 20 db) than the unwanted field strength. (Information furnished by the I.F.R.B.).

6. Comments on results

With such a variety of test arrangements and particularly of types of receiver employed, it cannot be expected that a close uniformity of results would be obtained; this is confirmed by the presentation given in Fig. 1. The rather less stringent protection resulting from test F may imply that the 10 db factor allowed for short term fading is unnecessarily high. It may also, in part, be a consequence of the reduced bandwidth of the interfering signal as compared with that used for some of the earlier tests.

It will be noted that the I.F.R.B. curve H gives protection ratios substantially lower than any of the measured data. A further point of considerable interest is that the introduction of simple whistle filters appears to reduce the required protection ratio at frequency spacings of the order of 5 to 7 kc/s by as much as 12 to 20 db.

REPORT No. 150*

QUESTIONS SUBMITTED BY THE I.F.R.B.

(Study Group VI)

(London, 1953 - Warsaw, 1956 - Los Angeles, 1959)

Although the C.C.I.R. is still not in a position to supply full answers to the three questions contained in the Annex below, progress has been made since the VIIIth Plenary Assembly and some positive measures have been taken with a view to obtaining information on which answers may eventually be based.

Study Programme No. 149 (VI) makes clear the reasons why Question (a) below cannot be fully answered at present. Moreover, some of the modifications introduced into this Study Programme, regarding methods of presentation and interpolation for instance, indicate that the problems involved in the production of MUF predictions appear now to be even more difficult than was thought. Recommendation No. 316 includes a provision intended to expedite the study of methods of presentation.

As regards Question (b) the Working Party set up by Recommendation No. 177 of Warsaw has been carrying out its tasks and reporting periodically (see Doc. No. 6 of Los Angeles, 1959). Recommendation No. 317 and Resolution No. 46 are designed to continue the work of the Group and to provide it with adequate material. Study Programmes Nos. 144 (VI) and 145 (VI) are also important in this connection.

In relation to Question (c), which is covered by Study Programme No. 142 (VI), Report No. 154 includes reference to the substantial progress which is being made in a relevant measurement programme which is being carried out by the European Broadcasting Union.

A N N E X

Questions submitted by the I.F.R.B.

Ionospheric propagation

Question (a):

What modification, if any, should be made to the master FOT curves used by the Mexico City High-Frequency Broadcasting Conference in order to take into account experience acquired in subsequent years?

---

* This Report, which replaces Report No. 56, was adopted unanimously.

Question (b):

What is the best method of calculating the field strength produced by a transmitter working on frequencies above 1,500 kc/s by means of ionospheric propagation (distances up to 25,000 km)?

Question (c):

What modification, if any, should be made to the C.C.I.R. long and medium wave night propagation curves adopted at Cairo in 1938? In particular they appear to need extension:

i) as a function of magnetic latitude,
ii) as a function of season,
iii) as a function of solar activity.

Note:

In revising and extending these curves, attention should be paid to distances less than 500 km (to allow, for example, for the evaluation of the effect of special vertical transmitting aerials designed to reduce fading in the outer part of the service area) and to distances beyond 2,000 km (to allow for the evaluation of interference between regions).

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

ANNEX 3

RESOLUTION No. 48*

STUDY OF SKY-WAVE FIELD STRENGTHS ON FREQUENCIES BETWEEN THE APPROXIMATE LIMITS OF 1.5 AND 40 Mc/s

(Study Programme No. 149 (149))

(Warsaw, 1956 - Los Angeles, 1959)

The C.C.I.R.,

considering

a) that the calculation of sky-wave field strength on frequencies in the range between about 1.5 and 40 Mc/s for radiocommunication circuits of different lengths is of great practical importance;

b) that the method of calculation of field strength within this range of frequencies should be based on sufficiently reliable theoretical grounds connected with the physics of the ionosphere and the laws of radio-wave propagation in the ionized region;

c) that the theoretical grounds and calculation formulae, concerning computation methods, should be given a detailed experimental check on different high frequencies for radiocommunication circuits of various lengths and directions. In this it is necessary to take into account the time of day, season and the phase of solar activity;

d) that the work of different Administrations as well as of the I.F.R.B. should be based on a method which, while theoretically reliable, would give the best correspondence with measured values of field strength;

e) that, in order to appreciate the relative merits of the various methods, it will be necessary to make many comparisons of experimental data and the results of the several methods of computation;

unanimously resolves

1. the continuance of the Working Party set up by Recommendation No. 177, in which the following Administrations are represented:

France (Chairman),
United States of America,
Japan,
Federal German Republic,
Roumanian People's Republic,
Czechoslovakia,
U.S.S.R;

*) This Resolution replaces Recommendations Nos. 177 and 178.

2. that the Working Party continue the work on comparison of the three suggested methods of calculation of field strength on frequencies above 1,500 kc/s, namely those based on:

- Circular No. 462 of the National Bureau of Standards (U.S.A.);
- Technical Report R.P.U. 9 (U.S.A.)*;
- Document No. 744 (U.S.S.R.) of Warsaw, 1956;

3. that in future other methods of calculation be considered if any such are submitted by the Administrations to the C.C.I.R.;

4. that in view of the great amount of work involved in the comparison of the calculation methods with one another, and with experimental data, the Administrations, Members of the C.C.I.R., should render all possible assistance to the Working Group;

5. that the Administrations, Members of the C.C.I.R. should carry out a number of measurements of field strength and radiated power of transmitters with a view to a comparison of the calculations carried out by different methods with experimental data (Recommendation No. 317);

6. that, in order to make the measurements reliable and comparable, the Administrations participating in the above-mentioned investigations should follow the recommendations of the Working Group on this subject;

7. that, taking into account that the work on measurements of field strength will require much time, during which continuous coordination will be needed, the task of the Working Group should be continued by correspondence as well as by meetings and be coordinated by its Chairman, who will report from time to time to the Chairman of Study Group VI and to the Director of the C.C.I.R. on the progress made.

---

* Doc. No. 285 of Warsaw, 1956, indicates that R.P.U. Technical Report No. 9 is available as Catalogue No. PB 103,045 at:

The Office of Technical Services,
Department of Commerce,
Washington 25, D.C. (U.S.A.)

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE
RADIO CONFERENCE

GENEVA, 1959

Document No. 160-E
3 September 1959

COMMITTEE 5

COMMENTS BY THE UNITED KINGDOM IN REGARD TO ITS PROPOSALS FOR THE REVISION AND APPLICATION OF ARTICLE 11 OF THE RADIO REGULATIONS

1. Annex I to this Document reproduces the proposals already made by the United Kingdom for revision of Article 11 and Appendix 1 of the Radio Regulations. Annex 2 shows the text of Article 11 as it would appear if the United Kingdom proposals for revision of the Article were adopted.

2. At the present time Sections I-VI of Article 11 which pertain to the notification and registration procedure are in force only in relation to certain frequency bands. In other bands, the procedure for the notification and recording of frequency assignments described in Chapter VII of the E.A.R.C. Agreement applies. The United Kingdom proposals envisage that the Article 11 procedure, suitably amended, should now be applied to all frequency assignments for which notification to the I.F.R.B. is required. The provisions of Chapter VII of the E.A.R.C. Agreement could then be terminated.

3. The Article 11 procedure is based on three main principles:

(a) notification to the I.F.R.B. before use,

(b) technical examination by the I.F.R.B,

(c) recording in the Registration Column if the Board's finding is favourable, or in the Notification Column if it is unfavourable and the notifying Administration so requests.

The Article also makes provision for the review of findings and for the I.F.R.B. to make studies and recommendations with a view to assisting in the solution of particular problems.

In the United Kingdom view, these principles are sound, the procedure has been tried now for several years and has worked reasonably well. In the light of these factors it is felt that it would be unwise to alter the general structure of the Article.

4. The United Kingdom recognizes that the Article 11 procedure was originally devised for the processing of new requirements into a fully compatible International Frequency List, a situation which has not yet been achieved. Nevertheless, as a result of the evolutionary process started under the E.A.R.C. Agreement, assignments in the Master Radio

Frequency Record are now largely in the appropriate Atlantic City bands. But as is evident from the number of assignments in satisfactory use despite an unfavourable finding, it would appear that the Record contains many inaccurate entries. The United Kingdom believes that the Conference should adopt a procedure which will result in a record accurately reflecting actual frequency usage. United Kingdom Proposals in respect of R.R. 338 and 338 bis (see Annex 1) are designed to achieve this objective. If these Proposals were implemented, they should provide the I.F.R.B. with accurate information about actual frequency usage and enable the Board to give greater assistance to Administrations with unsatisfied requirements.

5. The other principal procedural amendments to the Article proposed by the United Kingdom would:

(i) abolish the procedure for objections and comments by Administrations in regard to notices (R.R.323-325);

(ii) in general, limit the full technical examination by the I.F.R.B. of notices relating to frequencies above 30 Mc/s to assignments to broadcasting, and to ionospheric and tropospheric-scatter stations (R.R.329 (bis));

(iii) abolish the provision for the transfer of entries from the notification column to the registration column after six years of operation without a finding of the existence of harmful interference (R.R. 345);

(iv) simplify the provisions for cancellation of recordings and extend them to amendments to existing recordings. The I.F.R.B. would be given a general duty to make enquiries whenever it had reason to believe that operations are not being conducted in accordance with the notified particulars of an assignment, with the view to amending the Master Register. Such amendments would, however, be made only in agreement with the notifying Administration. (R.R. 347);

(v) extend the Board's scope under Section VII of the Article (Studies & Recommendations) by applying the provisions of R.R. 356-359 to changes of other basic characteristics of an assignment as well as changes in frequency.

6. If the application of the basic Article 11 procedure is to be extended to unplanned bands it will be necessary to construct a Master International Frequency Register with dates in the Registration and Notification Columns, since it is against these assignments that future entries into the Register will have to be examined by the I.F.R.B. In the unplanned bands at present there are dates in only Column 2c, and in some cases, Column 13. In the opinion of the United Kingdom the present Master Radio Frequency Record does now provide a basis on which the Master

Register can be introduced in a manner suitable for Article 11. Its proposals will be found in the new paragraphs after R.R.316 (See Annex 1).

Besides dealing with assignments in the unplanned bands these provide for the transfer to the Master International Frequency Register of all assignments in lists or plans which have been adopted and which have been notified as being in use. The Annexes to the E.A.R.C. Agreement containing these assignment plans will then have served their purpose and need not be retained. The United Kingdom considers it necessary, however, to retain the Allotment Plan for the Maritime Mobile Radiotelephone Service (Part A of Annex 5 to the Agreement) and the Allotment Plans for the Aeronautical Mobile Service (Annexes 8 and 9 to the Agreement), and has accordingly proposed that these Plans should be incorporated as Appendices to the Radio Regulations. The references to its proposals in this regard are:

Allotment Plan for the Maritime Mobile Radiotelephone Service	Proposal No.	4879	Document No.	24
	" "	4882	" "	30
Allotment Plans for the Aeronautical Mobile Service	" "	5078	" "	46
	" "	5079	" "	47

Annexes : 2

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X 1

UNITED KINGDOM - RADIO REGULATIONS ARTICLE 11

RR No.	Proposal	Proposal No.	Page No.
	Section I. Preamble		
309			
310			
311	Delete	1237	293
312			
313			
	Reasons 309 is not required in view of the proposal to reword 314. The substance of 310-313, suitably modified, it is proposed to include in new paragraphs following 339.		
	Section II. Notification of Frequency Assignments		
314	Replace the present text by the following: ss 2.(1) Every change in frequency usage at a station other than a mobile or amateur station shall be notified to the Board if the frequency is to be used for international communication, or is capable of causing harmful interference with any service of another country, or if international recognition of the use of the frequency is desired. Reasons Reworded to cover the present 309 and to use the term "change in frequency usage", which it is proposed to define in Article 1.	1240	293.2

RR No.	Proposal	Proposal No.	Page No.
315	Replace the present text by the following: (2) Similar notice shall be given of frequencies to be used in the operation of a particular service by mobile stations for working with land stations or other mobile stations. Reasons To include frequencies used between mobile stations. Add the following new sub-paragraph:	1241	294
	(2 bis) Frequencies assigned to a working service for use during years of high or low sunspot activity may be notified to the Board for any other service for use on an interim basis and without prejudice to the earlier frequency assignment. Reasons 349 transferred to a more appropriate place.	1242	294
316	Add in fine: The Board shall, however, make appropriate entries in the Master International Frequency Register with respect to such frequencies. Reasons To provide for entries to be made by the Board.	1243	294.1

RR No.	Proposal	Proposal No.	Page No.

Add the following new paragraphs:

§2 bis. Notifications shall be recorded in the Master International Frequency Register which shall be compiled and maintained by the Board in accordance with the provisions of this Article. — 1244 — 294.1

§2 ter. The Board shall enter in the Master International Frequency Register, as initial data, the following categories of assignments which appear in the Master Radio Frequency Record on the effective date of this article: — 1245 — 295

(a) Assignments with dates in Column 2c only and assignments with dates in Columns 2c and 13 indicated by the symbol "P" which were notified in accordance with the provisions of 272 of the E.A.R.C. Agreement. If the assignment conforms with the table and the rules for the allocation of frequencies the date appearing in Column 2c or Column 13 of the Master Radio Frequency Record, whichever is earlier, shall be entered in Column 2a of the Register, otherwise it shall be entered in Column 2b. In either case the letter "U" shall be entered in Column 13 of the Register. — 1246 — 295

(b) Assignments with dates in Columns 2a and 2c or 2b and 2c. These dates shall be entered in the corresponding Columns of the Register unchanged. — 1247 — 295

(c) Other assignments with dates in Column 2c only or in Columns 2c and 13 only. For each assignment the date on which the notice of the change in frequency usage was received by the Board shall, if the notice was the subject of an unqualified favourable finding by it, be entered in Column 2a of the Register, otherwise it shall be entered in Column 2b. The date on which the change was stated to have occurred shall, in either case, be entered in Column 2c of the Register. — 1248 — 295

RR No.	Proposal	Proposal No.	Page No.
	S_{S2} quater. The Board shall transfer to Column 13 of the Register such remarks in Column 13 of the Master Radio Frequency Record as in its opinion are necessary and are not inconsistent with the provisions of S_{S2} ter, a), b) and c). Reasons To provide for the transfer to the Master International Frequency Register of entries in the Master Frequency Record, when appropriate.	1249	295
317	Replace the present text by the following: S_{S3}. Whenever practicable, notification of a change in frequency usage under the provisions of 314 must be made to the Board before the change has taken place. As a general rule, it should be made not earlier than three months before the date of the change. Reasons To set a time limit on advance notification, but allow earlier notification in exceptional cases.	1250	296
318	Replace the present text by the following: S_{S4} (1) Except as provided in (1 bis) (see proposal 1254) each notice must include the following information: Name of notifying Member or Associate Member; Frequency; Date of use; Call sign;	1252	296.2 and 297

RR No.	Proposal	Proposal No.	Page No.

Name and geographical position of the station;

Localities or areas of intended reception;

Class of station and nature of service;

Bandwidth necessarily occupied and class of emission;

Peak power in kW;

Azimuth of maximum radiation of antenna in degrees (clockwise) from true North;

Maximum hours of use in G.M.T. for each locality or area of intended reception.

For this purpose it is recommended that the notifying Member or Associate Member should use a form similar to the specimen given in Appendix 1 and should also include the additional data called for in that Appendix. They may include other information.

Reasons

To provide for notices to be submitted in common form and to bring the description and extent of the minimum particulars for all assignments virtually into line with those required under the interim procedure of the E.A.R.C. Agreement for assignments below 27,500 kc/s.

Add the following new sub-paragraph: 1254 297 and 298

(1 bis) In the case of frequencies notified under 315 the minimum essential information is as follows:

Name of notifying Member or Associate Member;

Frequency;

Date of Use;

Area or areas of use;

Nature of Service;

Bandwidth necessarily occupied and class of emission;

Peak power in kW.

RR No.	Proposal	Proposal No.	Page No.
	Reasons To make clear what particulars are essential in these cases.		
319	Unchanged		
320	Unchanged.		
	Section III. Procedure for the examination of Notices		
	Add the following new sub-paragraph:	1255	298.3
	§4 bis. Upon receipt of a notice (other than a preliminary telegraphic notice) incomplete in respect of essential information the Board shall return it by air mail to the notifying Member or Associate Member giving its reasons for this action and shall make no entry in the Master International Frequency Register.		
	Reasons To provide that no entry in the Register is to be made in these circumstances.		
321	Replace the present text by the following:	1256	298.4
	§5. Upon the receipt of a complete notice, the Board shall communicate its date of receipt immediately to the notifying Member or Associate Member.		
	Reasons To make clear that no entry in the Register is made at this stage.		
323 324 325	Delete	1257	298.5

RR No.	Proposal	Proposal No.	Page No.
	Reasons It is doubtful whether the procedure would be workable over the whole range of frequencies. The I.F.R.B. must carry out its own examination of the notice before registration, and this should adequately protect the interests of other countries concerned.		
326	Unchanged.		
327	Unchanged.		
328	Unchanged.		
329	Add the following new sub-paragraph: (1 bis) A notice in conformity with the table and the rules for allocation of frequencies shall not, however, be examined with respect to 329 if it relates to a frequency above 30 Mc/s (other than a frequency to be used at an ionospheric scatter, tropospheric scatter or broadcasting station) unless the Board is specifically requested to apply that provision by the notifying administration when it submits the notice or by another administration concerned within 30 days of the date of receipt of the circular in which details of the notice are published. Reasons To conserve the resources of the Board by exempting assignments in these bands from examination with respect to the probability of harmful interference unless an administration concerned considers this to be necessary.	1260	299.1
330	Unchanged.		
331	Unchanged.		

RR No.	Proposal	Proposal No.	Page No.
332	Add in fine: The Board shall insert a suitable note in Column 13 in respect of such assignments.	1262	300
	Reasons To identify the service or regional agreement.		
	Section IV. Recording of Frequency Assignments		
333	Unchanged		
334	Replace: "assignment" by: "change in frequency usage"	1265	300.2
	Reasons To adopt the use of this expression as defined in the proposal for Article 1.		
335	Replace: "country" by: "Member or Associate Member"	1267	301
	Reasons To conform with the wording of the Convention.		
336	Replace: "country" by: "Member or Associate Member"	1268	301.1
	Reasons To conform with the wording of the Convention		

RR No.	Proposal	Proposal No.	Page No.
337	Replace: "country" by: "Member or Associate Member"	1270	301.2
	Reasons To conform with the wording of the Convention.		
	Replace: "assignment" by: "change in frequency usage"	1271	301.2
	Reasons To adopt the use of this expression as defined in the proposal for Article 1.		
338	Replace the present text by the following: However, if the notifying Member or Associate Member re-submits the original notice unchanged and informs the Board that the change in frequency usage has been made without any reports of harmful interference having been received, the change in frequency usage shall, if the Board's finding remains unchanged, be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the NOTIFICATION COLUMN.	1273	302
	Reasons To introduce requirements to be satisfied before the notice is recorded.		
	Add the following new sub-paragraph: The Board shall then investigate the assignments that contributed to the unfavourable finding and, with the agreement of the notifying Member or Associate Member concerned, shall effect any cancellations or amendments found to be necessary in order that the recordings in the Master International Frequency Register shall reflect the actual frequency usage. If, as a result, the Board is able to reach a favourable	1274 bis	302.0

RR No.	Proposal	Proposal No.	Page No.
	finding upon any assignment recorded under 338 with a date in the NOTIFICATION COLUMN, that date shall be transferred to the REGISTRATION COLUMN without change. Reasons The recording of an assignment under RR 338 (as revised in Proposal 1273) discloses that a degree of compatibility between assignments exists which is not borne out by the data in the Master International Frequency Register. The Board should promptly investigate the matter with the view to making the Register reflect the actual frequency usage.		
339	Replace: "frequency assignment" by: "change in frequency usage" and add in fine: A remark to this effect shall be entered in Column 13 of the Register. Reasons To adopt the use of this expression as defined in the proposal for Article 1. To identify the assignments concerned in the Register.	1276	302.1
	Add the following new sub-paragraph and paragraphs: (5 bis) Finding favourable with respect to 327 and 328 but examination with respect to 329 not required. The change in frequency usage shall be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the NOTIFICATION COLUM.	1278	303

RR No.	Proposal	Proposal No.	Page No.

Reasons

Consequential on proposal 1260.

S s10 bis. However, if any notice relates to a change in the basic characteristics of an existing assignment (other than a change of frequency, a material change in the geographical location of the station, an increase in the bandwidth of emission or of the power, a change in the azimuth of maximum radiation in the case of a directional transmission, or an extension of the maximum hours of use) and the Board finds that the change will not increase the probability of harmful interference with the service of a station for which a frequency assignment has been recorded, the amended assignment shall retain the existing dates in Column 2 of the Master International Frequency Register. — 1279 — 303 1

Reasons

To set out, in place of 346, the circumstances in which the dates in Column 2 of the Register may be retained upon an amendment to an existing assignment.

S s10 ter.(1) Operations on assignments with dates in Column 2a of the Register which are in full conformity with all the provisions of the Radio Regulations shall have the right to international protection from harmful interference. — 1280 — 304

Reasons

311 amended and transferred to a more appropriate place.

(2) Operations on assignments with dates in Column 2b of the Register shall not have the right to international protection except as provided for in 329.

Reasons

313 amended and transferred to a more appropriate place.

RR No.	Proposal	Proposal No.	Page No.
	Section V. Review of Findings		
340	After "notifying" replace: "country" by: "Member or Associate Member"	1282	304.1
	Reasons To conform with the wording of the Convention.		
	Replace: "harmful interference either anticipated or actual" by: "actual harmful interference"	1283	304.1
	Reasons To provide that actual interference should be the only criterion.		
341	Unchanged.		
342	Unchanged.		
343	1. After "338", add: "or sub-paragraphs b) and c) of 316 s^{2}_{s} ter" (see proposals 1247 and 1248)	1284	305
	Reasons To cater for the initial entries in the Register.		
	2. In the middle, replace "country" by "Member or Associate Member"	1285	305
	Reasons To conform with the wording of the Convention.		

RR No.	Proposal	Proposal No.	Page No.
	3. Replace: "in operation" by: "in actual use in accordance with the notified information"	1286	305
	Reasons		
	Clarification		
344	Unchanged		
345	Delete the second sentence	1287	305.1
	Reasons		
	It seems better to leave the transfer of entries to the REGISTRATION COLUMN to the operation of 343 and 344		
346	Delete	1288	305.2
	Reasons		
	Consequential on proposals 1265 and 1278		
	Section VI, amend heading to read:	3952	305.2
	"Cancellation and Amendment of Frequency Recordings"		
	Add the following new paragraph:	1289	305.3
	SS 13 bis. In case of permanent discontinuance of the use of any listed frequency, the notifying Member or Associate Member shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Register.		
	Reasons		
	350 transferred to a more appropriate place.		

RR No.	Proposal	Proposal No.	Page No.
347	Replace the present text by the following: SS 14. (1) As a general rule, the Board, if it has reason to believe that a frequency has not been brought into use, or has ceased to be used, in accordance with the notified particulars, shall consult the notifying Member or Associate Member and, subject to its agreement, shall cancel or suitably amend the recording of the assignment. Reasons Simplification, and to provide for amendment as well as cancellation.	1290	306
348	Delete Reasons Superfluous, in view of the revised wording proposed for 347 (see proposal 1290)	1292	307
349	Delete Reasons Transferred to a more appropriate place as § 2 (2 bis) (see proposal 1242)	1293	307
350	Delete Reasons Transferred to a more appropriate place as 13 bis (see proposal 1289)	1294	307.1
351	Delete Reasons See proposal 1292	1295	307.1

RR No.	Proposal	Proposal No.	Page No.
	Section VII. Studies and Recommendations		
352	Unchanged		
353	Unchanged		
354	Unchanged		
355	Unchanged		
356	Replace: "the frequency of" by: "frequency usage at". Reasons To include changes of other basic characteristics of an assignment	1297	308
357	Unchanged		
358	Unchanged		
359	After: "frequency"; add: "usage" Reasons See proposal 1297	1298	308
	Section VIII. Availability of Records		
360	Add in fine: These shall be published in the working languages of the Union as defined in the Convention. Reasons To conform with current practice and to Administrative Council Resolution 70 (amended).	1300	308.2
361	Unchanged		

Form of Notice

For use when notifying to the International Frequency Registration Board a change in frequency usage

(See Article 11)

Notifying Member or Associate Member _____

Additional Assignment ☐ Amendment*) to an existing assignment ☐ Cancellation of an assignment ☐ Notice No. ____

For I.F.R.B. use

1 Frequency _____ kc/s _____ Mc/s

2c _____ Date of use

3 _____ Call sign

Ref. to preliminary telgr. notice _____

4a Location of transmitter: _____ Name _____ Geographical position _____ Country

4b Localities or areas of reception	4c Length of circuit in kms	9a Azimuth of maximum radiation	9b Angular width of main radiation lobe	9c Antenna gain in db

5 _____ Class of station and nature of service

6 _____ Bandwidth necessarily occupied and class of emission

7 _____ Description of transmission

8 _____ Peak power in kW

10 _____ Hours of use G.M.T.

11 _____ Operating Administration or Company

12 Centralising Office: _____ Telegr. address: _____

13 Remarks: _____

Coordination effected with the following interested Administrations: _____

*) The amended particulars are underlined

Notes

4a Geographical position.

Indicate the latitude and longitude of the transmitting station in degrees and minutes, except for radionavigation land stations, for which the position should be given in degrees, minutes, and seconds.

4b Localities or areas of intended reception.

When more than one locality or area is served, list all the specific localities or areas, giving the location of the receiver or receivers where appropriate.

4c Length of circuit in Kms.

In the case of forked fixed circuits the distance to each locality should be shown.

In the case of fixed networks, the maximum distance between any two stations should be shown.

In the case of emissions intended to serve a large geographical region the distance to the approximate centre of the region or the maximum and minimum distances of the extremes of the region may be furnished.

9a Azimuth of maximum radiation.

In degrees (clockwise) from true North.

9b Angular width of main radiation lobe.

The angular width of the main lobe in the horizontal plane is that total angle, in degrees, within which the radiated power in any direction is not more than 6 db less than the power radiated in the direction of maximum radiation.

9c Antenna gain in db.

Gain to be calculated with reference to a theoretical free space half-wave dipole (see Article 1).

5 Class of station and nature of service.

Reference should be made to Appendix 7.

6 Bandwidth necessarily occupied and class of emission.

Indicate the full designation of the emission in accordance with Article 2. Additional information regarding the emissions should be furnished under items 7 or 13.

7 Description of transmission.

The information to be furnished should include:

- in the case of telegraphy, the type of code used such as "on" "off" Morse - Frequency shift Morse - 7 unit code - Hell-Schreiber Facsimile, etc.;

- in the case of telephony, details such as the use of single side-band one or two channel working should be given.

In the case where the assigned frequency is not actually transmitted, the reference frequency should be given here.

10 Hours of use (G.M.T.).

Indicate the maximum hours of use of the frequency to each locality or area of intended reception. The maximum hours of use of the frequency shall be taken to mean the earliest and latest hours of use of this frequency for a complete day during all schedules for a complete sunspot cycle. For example: if during one period the schedule would be 1000 to 1500 hours (G.M.T.) and for another period of 1100 to 1600 hours (G.M.T.), the information to be shown will be 1000 - 1600 hours (G.M.T.).

12 Centralizing office.

The addresses required are those to which communication should be sent on urgent matters regarding interference, quality of emissions, and questions referring to the technical operation of the circuit (see Article 14).

13 Remarks.

Any other useful data which might assist the International Frequency Registration Board should be furnished.

A N N E X 2

UNITED KINGDOM

PROPOSED TEXT OF ARTICLE 11 OF THE RADIO REGULATIONS

Section I. Notification of Changes in Frequency Usage

§ 1. (1) Every change in frequency usage at a station other than a mobile or amateur station shall be notified to the Board if the frequency is to be used for international communication, or is capable of causing harmful interference with any service of another country, or if international recognition of the use of the frequency is desired.

(2) Similar notice shall be given of frequencies to be used in the operation of a particular service by mobile stations for working with land stations or other mobile stations.

(3) Frequencies assigned to a working service for use during years of high or low sunspot activity may be notified to the Board for any other service for use on an interim basis and without prejudice to the earlier frequency assignment.

(4) Specific frequencies prescribed by the present Regulations for common use by stations of a given service (for example, 500 kc/s) shall not be notified to the Board. The Board shall, however, make appropriate entries in the Master International Frequency Register with respect to such frequencies.

§ 2. Notifications shall be recorded in the Master International Frequency Register which shall be compiled and maintained by the Board in accordance with the provisions of this Article.

§ 3. The Board shall enter in the Master International Frequency Register, as initial data, the following categories of assignments which appear in the Master Radio Frequency Record on the effective date of this Article:

a) Assignments with dates in Column 2c only and assignments with dates in Column 2c and 13 indicated by the symbol "P" which were notified in accordance with the provisions of 272 of the E.A.R.C. Agreement. If the assignment conforms with the table and the rules for the allocation of frequencies the date appearing in Column 2c or Column 13 of the Master Radio Frequency Record, whichever is earlier shall be entered in Column 2a of the Register, otherwise it shall be entered in Column 2b. In either case the letter "U" shall be entered in Column 13 of the Register.

b) Assignments with dates in Column 2a and 2c or 2b and 2c. These dates shall be entered in the corresponding Columns of the Register unchanged.

c) Other assignments with dates in Column 2c only or in Columns 2c and 13 only. For each assignment, the date on which the notice of the change in frequency usage was received by the Board shall, if the notice was the subject of an unqualified favourable finding by it, be entered in Column 2a of the Register, otherwise it shall be entered in Column 2b. The date on which the change was stated to have occurred shall, in either case, be entered in Column 2c of the Register.

§ 4. The Board shall transfer to Column 13 of the Register such remarks in Column 13 of the Master Radio Frequency Record as in its opinion are necessary and are not inconsistent with the provisions of § 3.

§ 5. Whenever practicable, notification of a change in frequency usage under the provisions of § 1 must be made to the Board before the change has taken place. As a general rule, it should be made not earlier than three months before the date of the change.

§ 6. (1) Except as provided in the following paragraph each notice must include the following information:

Name of notifying Member or Associate Member.

Frequency.

Date of use.

Call sign.

Name and geographical position of the station.

Localities or areas of intended reception.

Class of station and nature of service.

Bandwidth necessarily occupied and class of emission.

Peak power in kW.

Azimuth of maximum radiation of antenna in degrees (clockwise) from true North.

Maximum hours of use in GMT for each locality or area of intended reception.

For this purpose it is recommended that the notifying Member or Associate Member should use a form similar to the specimen given in Appendix 1 and should also include the additional data called for in that Appendix. They may include other information.

(2) In the case of frequencies notified under § 1(2) the minimum essential information is as follows:

Name of notifying Member or Associate Member.

Frequency.

Date of Use.

Area or areas of use.

Nature of service.

Bandwidth necessarily occupied and class of emission.

Peak power in kW.

(3) Preliminary telegraphic notices may be transmitted to the Board in brief form including at least the frequency, location and class of station, advising that a complete notice is being transmitted.

(4) The date of first receipt by the Board of such notice in either complete or preliminary form shall establish the order of its consideration; provided, however, that the date of receipt of a preliminary notice shall be applicable only where the complete notice is received by the Board within 30 days thereafter.[1)]

Section II. Procedure for the Examination of Notices

§ 7. Upon receipt of a notice (other than a preliminary telegraphic notice) incomplete in respect of essential information the Board shall return it by air mail to the notifying Member or Associate Member giving its reasons for this action and shall make no entry in the Master International Frequency Register.

§ 8. Upon receipt of a complete notice, the Board shall communicate its date of receipt immediately to the notifying Member or Associate Member.

§ 9. At intervals of one week, the Board shall circulate by air mail in the form of a circular addressed to all countries, members of the Union, certified copies of all notices received by it.

§ 10. (1) The Board shall examine each notice with respect to:

a) its conformity with the table and the rules for allocation of frequencies;

---

1) In the event of undue delay in the delivery of a notice by post or telegraph, that event, if and when verified, shall not in any way prejudice the priority of consideration of the registration for the country which submitted the notice.

b) its conformity with the other provisions of the Convention and the Radio Regulations (with the exception of those relating to the probability of harmful interference);

c) the probability of harmful interference either to any service rendered by a station for which a frequency assignment has already been recorded in the Master International Frequency Register with a date in the REGISTRATION COLUMN or to a service operating in accordance with the provisions of 10 (1) a) & b), on a frequency recorded with a date in the NOTIFICATION COLUMN, but which has not, in fact, caused harmful interference.

A notice in conformity with the table and the rules for allocation of frequencies shall not, however, be examined with respect to 10(1) c) if it relates to a frequency above 30 Mc/s (other than a frequency to be used at an ionospheric scatter, tropospheric scatter or broadcasting station) unless the Board is specifically requested to apply that provision by the notifying administration when it submits the notice or by another administration concerned within 30 days of the date of receipt of the circular in which details of the notice are published.

(2) Where appropriate, the Board shall also examine the notice as regards its conformity with a regional or a service agreement.

§ 11. In examining notices of assignment of frequencies to stations the Board shall bear in mind that in many instances, several stations may share the use of a single frequency.

§ 12. When a service or a regional agreement has been concluded, the Board shall be informed of the details of this agreement. The procedure to be followed in connection with frequency assignments made pursuant to such service or regional agreement shall be as specified in § 10 of this article except that the Board shall not consider the question of interference among the parties to such an agreement. The Board shall insert a suitable note in Column 13 in respect of such assignments.

Section III. Recording of Changes in Frequency Usage.

§ 13 (1) Depending upon the findings of the Board subsequent to the examination prescribed in § 10, further action shall be as follows:

(2) Finding favourable with respect to 10 (1) a) b) and c)

The change in frequency usage shall be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the REGISTRATION COLUMN.

(3) Findings unfavourable with respect to § 10 (1) b).

The notice shall be returned immediately by air mail to the notifying Member or Associate Member, with the reasons of the Board for this finding.

(4) Finding favourable with respect to § 10 (1) a) and b) but unfavourable with respect to 10 (1) c).

The notice shall be returned immediately by air mail to the notifying Member or Associate Member, with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

If the notifying Member or Associate Member resubmits the notice with modification which results after re-examination in a favourable finding by the Board, the change in frequency usage shall be recorded in the Register as provided under § 13 (2), the date of receipt by the Board of the modified notice being shown in the REGISTRATION COLUMN.

However, if the notifying Member or Associate Member resubmits the original notice unchanged and informs the Board that the change in frequency usage has been made without any reports of harmful interference having been received, the change in frequency usage shall, if the Board's finding remains unchanged, be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the NOTIFICATION COLUMN.

The Board shall then investigate the assignments that contributed to the unfavourable finding and with the agreement of the notifying Member or Associate Member concerned, shall effect any cancellations or amendments found to be necessary in order that the recordings in the Master International Frequency Register shall reflect the actual frequency usage. If, as a result, the Board is able to reach a favourable finding upon any assignment recorded under §13(4) with a date in the NOTIFICATION COLUMN, that date shall be transferred to the REGISTRATION COLUMN without change.

(5) Finding favourable with respect to § 10 (1) b) and c) but unfavourable with respect to § 10 (1) a).

The change in frequency usage shall be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the NOTIFICATION COLUMN. However, if harmful interference to the reception of any station operating in accordance with the frequency allocation table is caused by the use of this frequency assignment, the station using this frequency assignment must immediately suspend operations upon receipt of advice of this harmful interference. A remark to this effect shall be entered in Column 13 of the Register.

(6) Finding favourable with respect to 10 (1) a) and 10 (1) b) but examination with respect to 10 (1) c) not required.

The change in frequency usage shall be recorded in the Master International Frequency Register, the date of receipt of the first notice by the Board being shown in the NOTIFICATION COLUMN.

§ 14. However, if any notice relates to a change in the basic characteristics of an existing assignment (other than a change of frequency, a material change in the geographical location of the station, an increase in the bandwidth of emission or of the power, a change in the azimuth of maximum radiation in the case of a directional transmission, or an extension of the maximum hours of use) and the Board finds that the change will not increase the probability of harmful interference with the service of a station for which a frequency assignment has been recorded, the amended assignment shall retain the existing dates in Column 2 of the Master International Frequency Register.

§ 15 (1) Operations on assignments with dates in Column 2a of the Register which are in full conformity with all the provisions of the Radio Regulations shall have the right to international protection from harmful interference.

(2) Operations on assignments with dates in Column 2b of the Register shall not have the right to international protection except as provided for in § 10 (1) c).

Section IV. Review of Findings.

§ 16. (1) The reconsideration of a finding by the Board may be requested:

- by the notifying Member or Associate Member, or

- by any other country interested in the question, but in the latter case only on the grounds of actual harmful interference.

(2) Prior to reconsideration, the Board shall circulate by air mail such requests to all countries members of the Union. The latter shall telegraph their objections or comments within two weeks of receipt of the circular and shall, within a further two-week period, dispatch a letter to the Board amplifying their telegram.

(3) The Board, in the light of all the data thus received shall render such further findings as the circumstances warrant.

§ 17. (1) If, in accordance with provisions § 13(4) or sub-paragraphs b) and c) of § 3 an entry has been made in the Master International Frequency Register with the date in the NOTIFICATION COLUMN, the Board, upon request of the notifying Member or Associate Member, and after the station has been in actual use in accordance with the notified information for a reasonable period, shall review the matter, first having given the interested countries an opportunity to present their views.

(2) If the Board's finding is then favourable, the date shall be transferred from the NOTIFICATION COLUMN to the REGISTRATION COLUMN without change. If the finding with respect to probable harmful interference is still unfavourable, the date shall be left in the NOTIFICATION COLUMN.

(3) If, on the contrary, the Board makes a finding that harmful interference actually exists, it shall be "prima facie" evidence that the operation is in violation of these Regulations.

Section V. Cancellation and Amendment of Frequency Recordings

§ 18. In the case of permanent discontinuance of the use of any listed frequency, the notifying Member or Associate Member shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Register.

§ 19. As a general rule, the Board, if it has reason to believe that a frequency has not been brought into use, or has ceased to be used, in accordance with the notified particulars, shall consult the notifying Member or Associate Member and, subject to its agreement, shall cancel or suitably amend the recording of the assignment.

Section VI. Studies and Recommendations

§ 20. If it is requested by any country member of the Union and if the circumstances appear to warrant, the Board shall make a study and issue a report on the following problems of frequency utilization.

a) in cases arising under S 13 (4) as to a possible alternative frequency assignment to avoid probable interference; and

b) in cases where a need arises for additional channels within a specific portion of the frequency spectrum.

§ 21. If one or more of the interested countries so request, the Board shall investigate any contravention or non-observance of these Regulations or any harmful interference and shall issue through the Secretary General of the Union a report containing its findings and recommendations for the solution of the problem.

§ 22. If the Board finds that a change in frequency usage at one or more stations will:

a) accommodate a new station;

b) facilitate the solution of an interference problem; or

c) otherwise facilitate the more effective use of a particular portion of the radio spectrum,

and if such change is acceptable to the country or countries directly concerned, the change in frequency usage shall be recorded in the Master International Frequency Register without change in the original date or dates.

Section VII. Availability of Records.

§ 23. The Board shall make available to the interested countries, for their information, and to the Secretary General of the Union for prompt publication, all reports of its findings and reasons therefor. These shall be published in the working language of the Union as defined in the Convention.

§ 24. In case a country member of the Union avails itself of the provisions of Article 25 of the Convention, the Board shall, upon request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disagreements.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 161-E
3 September 1959

COMMITTEE 4

SUMMARY RECORD

Eighth Meeting of Committee 4

Tuesday, 1st September 1959, 15.00 hours - Room A

1. The Chairman introduced the Agenda Document No. DT 53 which made reference to Document No. DT 52 with addenda 1 and 2. He referred first to proposals affecting the use of the band 1,605 kc/s up to 2,000 kc/s in Region 1 and specifically to Proposals 475, 477 and 3438. It was made clear that the intention between 1,605 and 1,800 kc/s was to confine the application of aeronautical radionavigation to the tropical zone of Region 1 and on this basis the Committee agreed Proposals 477 and 3438.

It was noted that the remainder of Proposal 475 with respect to the band 1,800 to 2,000 kc/s was similar to Proposals 478, 3527 and 3295 which were all concerned with replacing No. 146 of the Radio Regulations which also related to Proposals 479 and 480 proposing replacement of No. 147 There were divided views on the bandwidth of Loran and the advisability of including this in the Radio Regulations. The Delegate of Belgium said that he was prepared to support the text of Proposal 478. The Delegate of the United States had some difficulty with the words "is available" in Proposal 3527. It was agreed that these proposals could be considered by Working Group 4-B.

It was agreed that Proposal 928, to delete No. 144 of the Radio Regulations, would be passed to the Working Group.

Discussion on Proposals 3439 and 3440 revealed differences of opinion as to whether the substance of the proposal was appropriate to the Radio Regulations, and to what part of the Regulations, or whether it would not be more correct for it to be associated with the appropriate regional plans and agreements. It also was pointed out that the Federal German Republic had submitted a proposal No. 5100 in Document No. 61 along the same lines. It became clear that the intention was to apply the proposal to both Fixed and Mobile Services and it was therefore agreed that a footnote would be more appropriate. It was agreed that the Working Group would be asked to prepare a draft report.

The Delegate of Czechoslovakia drew attention to their use of the band 1,715 to 1,900 kc/s by the Amateur Service on a non-interference basis to other services and there was some discussion as to the method by

which this would be included in the Radio Regulations, the Delegate of Czechoslovakia considering that this could be done by the use of a footnote based substantially on his statement. The Delegate of Finland expressed a similar requirement which he agreed could be met by the inclusion of his country in the text of No. 145 of the Radio Regulations. The Delegate of South Africa drew attention to Proposal 5168 contained in Document No. 78 which has the intention of including in the same regulation the words "and the Territory of South-West Africa". It was agreed that Working Group 4-B would be asked to draft appropriate texts.

2. After the recess, the Chairman turned to proposals in this band affecting Region 2 and specifically to Proposal 3294. The Delegates of Argentine, Denmark, Mexico and Brazil considered that the radio positioning service should not cause harmful interference to any of the existing services in the band; the Delegate of U.S.S.R. pointed out that their territories lay very close to the boundary between Region 1 and Region 2 and that until they have a clearer understanding of radiopositioning they would be unable to reach a conclusion on this proposal. The Chairman assumed that in such case No. 90 of the Radio Regulations would apply. The Delegate of the United States explained that the particular operation for coastal and inland survey had been in use in his country since 1949 on extremely low power and with very narrow bandwidth; that the operation was compatible with the use of Fixed and Mobile services. He said that he would take the question of an amendment under advisement and proposed that further discussion should be in the Working Group. This was agreed.

The next proposal was that part of 3295 concerned with the amendment of No. 147 of the Radio Regulations. The Delegates of Cuba and Mexico considered the proposal to be restrictive and the Delegate of Argentine drew attention to their Proposal 5210 appearing in Document No. 91. After some discussion concerning the application of this proposal in Region 3, it was agreed that it would be passed to the Working Group.

Proposal 420 by Australia was acceptable to the Delegates of New Zealand, China, Philippines, Japan and the United States, the latter supporting the view that the aeronautical radionavigation service should be included in the body of the Table. The Delegate of Pakistan considered that all those States who wished to use this facility should be listed in a footnote. It was agreed to pass this question to the Working Group. It was agreed that Working Group 4-B would be asked to examine the Proposal 676 in connection with their examination of Proposal 3294.

Proposals 645 and 646 were supported by the Delegates of China and Ceylon and opposed by the Delegates of Japan, United States, Philippines and New Zealand. The Delegate of Indonesia was able to support No. 646 but not No. 645. In connection with No. 646 the Delegate of France asked whether there was not a difficulty based on the limitations of aircraft equipment and whether it was the intention of India to apply these new channels to international civil flights. The Observer of I.A.T.A. stated that in his view this band would not be suitable for international purposes.

He pointed out that aircraft equipment in use and under development did not cover the band below 2 Mc/s, and that even if such equipment were produced there would be radiation difficulties because of the inefficiency of the antenna system. He confirmed that during low sunspot conditions the difficulties described by the Delegate of India did exist but believed that the problem of communication in poor conditions might be overcome by procedural or organisational methods. The Delegate of the United States believed that the aeronautical Mobile Service ought not to share frequency bands with other services and supported the views expressed by the Observer of I.A.T.A. The Delegate of India said that he would be interested to learn more about the methods mentioned by the Observer of I.A.T.A., and it was then agreed that the proposals would be considered by the Working Group.

3. As many Delegates did not have addendum 2 to Document No. DT 52, it was agreed that further consideration would be deferred until the following day.

The Delegates of France and Italy produced a draft text for insertion in Document No. 89; after a little discussion this was handed in and will be published as a corrigendum to Document No. 89. On the proposal of the Delegate of Ethiopia it was agreed that the reports of the third and fourth meetings would be taken at the following day's meeting, and the Chairman then adjourned the Committee.

Rapporteur:

A. James Bourne

Approved:

Gunnar Pedersen
Chairman

ADMINISTRATIVE RADIO
CONFERENCE

GENEVA, 1959

Document No. 162-E
3 September, 1959

PROGRAMME OF MEETINGS FROM 7 TO 13 SEPTEMBER, 1959

	Monday 7		Tuesday 8		Wednesday 9		Thursday 10			Friday 11	
	0930-1230	1500-1800	0930-1230	1500-1800	0930-1230	1500-1800	0930-1230	1500-1800	1830	0930-1230	1500-1800
Committee 1									E		
Committee 2 - Working Group											Office 1 (a 16h.30)
Committee 3 - Plenary											
Working Group 3A			1								
Working Group 3B		1									
Committee 4 - Plenary		A		A		A		A			A
Working Group 4B	E				E					E	
Working Group 4F			E				E				
Committee 5 - Plenary										A	
Working Group 5A	F		F		F		F				
Other Working Groups - Committee 5		F		F		F		F			F
Committee 6 - Plenary							A				
Working Group 6A		C									C
Working Group 6B						C					
Working Group 6C			C					C			
Committee 7 - Plenary											B
Sub-Committee 7A	D				D						
Sub-Committee 7B				D			D				
Working Group 7B1		L									
Working Group 7B2			K								
Sub-Committee 7C						D				D	
Sub-Committee 7D			D					D			
Committee 8											

Note: Independently of the above programme, the Chairmen of Committees, Sub-Committees, Working Groups and Sub-Groups may convene any meetings they may consider necessary outside the normal schedule

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS

F

CONFÉRENCE ADMINISTRATIVE DES RADIOCOMMUNICATIONS

GENÈVE, 1959

Document N° 163-FES
CORRIGENDUM N° 1
10 septembre 1959

SEANCE PLENIERE
COMMISSION 4

UNION OF SOUTH AFRICA AND TERRITORY OF SOUTH WEST AFRICA

Proposition N°

Dans le document N° 163-F, page 1, remplacer le texte de la proposition 5414 par le suivant:

5414	119.10	Dans l'Union de l'Afrique du Sud, le Territoire de l'Afrique du Sud-Ouest, la Rhodésie du Nord et la Rhodésie du Sud, la bande 160 - 200 kc/s est attribuée au service fixe, et la bande 200 - 285 kc/s est attribuée au service de radionavigation aéronautique et au service mobile aéronautique.

Proposal No.

In document N° 163-E, page 1 replace the text of proposal 5171 by the following:

5414	119.10	In the Union of South Africa and territory of South West Africa, Northern Rhodesia and Southern Rhodesia, the band 160-200 kc/s is allocated for the fixed service and the band 200-285 kc/s is allocated for the aeronautical radionavigation and aeronautical mobile services.

Proposición N.°

Documento N.° 163, página 1, sustitúyase el texto actual por el siguiente:

5414	119.10	En la Unión Sudafricana Territorio de África del Sudoeste, Rhodesia del Norte y Rhodesia del Sur, la banda 160-200 kc/s está destinada al servicio fijo, y la banda 200-285 kc/s, a los servicios de radionavegación aeronáutica y móvil aeronáutico

---

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 163-E
3 September, 1959

PLENARY MEETING
COMMITTEE 4

UNION OF SOUTH AFRICA
AND TERRITORY OF SOUTH-WEST AFRICA

Proposals

ARTICLE 5

Number of proposal			
5414	119	10)	In the first sentence, delete the words "the Union of South Africa, the territory under mandate of Southwest Africa". Reasons: No longer applicable.
5415	142	28)	Replace the present text by: In the Union of South Africa and the territory of Southwest Africa, Northern Rhodesia and Southern Rhodesia the band 525-535 kc/s is used for the mobile service. Reasons: Drafting amendment to achieve consistancy and to bring into line with the International Telecommunications Convention and the International Telegraph and Telephone Regulation.
5416	158		Replace the second sentence by: However, in the Union of South Africa and the territory of Southwest Africa, the band 7,100-7,150 kc/s will be used exclusively for the Amateur service. Reasons: See Proposal No. 5415.

Number of proposal

5417 205 91) Replace present text by:

In the Union of South Africa and the territory of Southwest Africa, Northern Rhodesia and Southern Rhodesia the band 220-225 Mc/s is allocated for the Amateur service.

Reasons: See Proposal No. 5415.

5418 220 106) Replace the first sentence by:

In Region 2, Australia, New Zealand, Northern Rhodesia, Southern Rhodesia, the Union of South Africa and the territory of Southwest Africa, and the United Kingdom, the frequency 2,450 Mc/s is designated for Industrial, Scientific and Medical purposes.

Reasons: See Proposal No. 5415.

5419 228 114) Replace the first sentence by:

In Region 2, Australia, New Zealand, Northern Rhodesia, Southern Rhodesia, the Union of South Africa and the territory of Southwest Africa and the United Kingdom, the frequency 5,850 Mc/s is designated for Industrial, Scientific and Medical purposes.

Reasons: See Proposal No. 5415.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 164-E
3 September, 1959

PLENARY MEETING
COMMITTEE 5

ARGENTINE REPUBLIC

Proposal

APPENDIX 1

Number of proposal

5420 Replace present text by the following:

Form of notice

1. Notifying Government.
2. Date of notice.
3. Reference to preliminary telegraphic notice (if any).
4. Assigned frequency in kc/s (or Mc/s).
5. Class of emission (note a).
6. Bandwidth of emission in kc/s.
7. Power in kW.
8. Antenna Location:
   a) Country
   b) Place
   c) Latitude and Longitude (note b).
9. Directivity of Antenna (note c):
   a) Azimuth of maximum radiation in degrees from true north (clockwise).
   b) Angular width of the main lobe in the horizontal plane in degrees (note d).
   c) Gain in decibels (db) in direction of maximum radiation at the assigned frequency (note e).
10. Call signal.
11. Class of Station (note f).

12. Nature of Service (CP, CO, etc. - note f).

13. Locality (or localities) or region (or regions) with which communication is established or projected (note g).

14. Projected date of service or date put into service.

15. Maximum hours of use of frequency (G.M.T.) (note h).

16. Length of intended circuit in km (note i).

17. Description of transmission employed (note j).

18. Operating Administration or Company.

19. Postal and telegraphic address of the Administration under whose jurisdiction the station is placed.

20. Remarks (note l).

21. If assignment is made in accordance with a service or regional arrangement, the agreement should be identified.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 165-E
CORRIGENDUM No. 1
18 September, 1959.

PLENARY MEETING

COMMITTEE 4

Replace proposal Number 5421 by 5421 bis.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 165-E
3 September, 1959

PLENARY MEETING
COMMITTEE 4

BRAZIL

Proposal

ARTICLE 5

Number of Proposal		
5421	195.	Add after No. 195

.... For distress communications, ships may contact aircraft on this frequency.

Reasons

To provide the possibility for ships to communicate in the VHF band in order to contact an aircraft, in case of distress or in search and rescue operations, and is consequential to the Proposal (No.....) with respect to Article 37, Section II.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 166-E
3 September 1959

PLENARY MEETING
COMMITTEE 7

BRAZIL

Proposal

ARTICLE 37

Number of proposal

5422 870 After this number add the following new sub-paragraph:

(4) For distress communications a ship station may contact aircraft or aeronautical station on the frequency of 121.5 Mc/s, A3 emission. In this case they must observe the same conditions as the aeronautical service.

Reasons:

The provision of 2,182 kc/s for communications between ships and aircraft, while desirable, is not sufficient because of technical limitations and poor intelligibility under severe static and atmospheric conditions. Also, most of the helicopters, not specially intended for SAR, do not have the possibility to carry an HF installation. Nevertheless, they may participate in search and rescue operations.

It was therefore believed that, in the interest of improving safety and in order to further promote co-ordination of rescue efforts, the possibility should be opened for ships to communicate on 121.5 Mc/s.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 167-E
3 September, 1959

COMMITTEE 5

SUMMARY RECORD

Fourth Meeting of Committee 5

Friday, 28 August, 1959 at 10 a.m., in Room A

Reference : Agenda of 27 August, 1959, Working Document No. 31

The Chairman opened the meeting, and the agenda was adopted.

Item 1 Consideration of the summary record of the first meeting of the Committee (Document No. 102)

The Delegate of Mexico recalled that it had been decided that there should be one rapporteur only. The summary record, however, bore two signatures. He asked that the summary records should be signed only by the French rapporteur.

The Chairman said that his request would be taken into account in the future.

Item 2 Report on the results achieved by the ad hoc Working Party responsible for discussing the organization of the Committee 5 working groups (set up at the third plenary meeting of the Committee 5, 26 August, 1959)

The Chairman recalled the situation which had given rise to the appointment of the Working Party and described its composition :

Region 1	France	United Kingdom	U.S.S.R.
" 2	United States	Mexico	Argentine Republic
" 3	India	Pakistan	Australia

plus two members of the I.F.R.B.

He announced the results of the Group's work, and read the document which had been drafted at the end of its meeting. (The text is annexed).

The composition and the conclusions of the Working Party were approved unanimously. The Chairman then proposed that the Committee should elect the Chairman of the Working Group on frequency notification and registration procedure. He suggested that the Chairman should be

chosen from the members of the Committee who were personally acquainted with the work of the International Frequency Registration Board. The names of Mr. Miles (U.S.A.), Mr. Krassnosselski (U.S.S.R.), Mr. Mortensen (Norway), Mr. Pardo (Spain), and Mr. Uhler (Sweden) were put forward.

There was considerable discussion on the procedure to be adopted for the selection of the Chairman of the Working Group on frequency notification and registration procedure.

The Delegates of the Union of South Africa, Portugal, Mexico, New Zealand, Turkey, China, Brazil, the Portugese Oversea Provinces and Australia considered that a vote should be taken.

The Delegates of Colombia, Ethiopia, the Netherlands, the Philippines, Cuba and Spain thought that the text concerning the setting up of the various working groups was not sufficiently clear, and that there should be a discussion on frequency notification and registration before the Working Group was set up.

The Delegates of the U.S.S.R., Poland and Bulgaria did not consider that it was necessary to vote. The Delegates of the United Kingdom and India said that the Committee should not waste time on the matter and should take a decision at this meeting.

The Delegate of Yugoslavia proposed a compromise solution.

Finally, after the candidacies of the representatives of the U.S.S.R. and the United States had been withdrawn, the Committee decided unanimously to nominate Mr. Searle, Head of the New Zealand Delegation, as Chairman of the Working Group on frequency notification and registration.

Mr. Searle thanked the Committee for its vote of confidence, and accepted the office of Chairman, in spite of the other duties with which he was entrusted.

The Delegate of the United States considered that the terms of reference of the Working Group should be clarified by adding in paragraph 2, after the words "Chapter IV of the Radio Regulations", the words "other than the matters treated in Article 6 of the Convention".

The Delegates of India and Colombia supported the proposal, which was then adopted.

The Delegate of France thought that the general discussion of frequency notification and registration procedure and on the Frequency List should deal only with general principles and ideas, without touching on particular cases of specific problems. At his request, the Chairman said that the general discussion planned for the next few meetings of the Committee would deal with frequency notification and registration procedure and that the problems of the Frequency List which were connected with procedure would be considered.

Several delegations asked that the points to be studied at the next meeting should be decided. The Chairman replied that the general discussion would cover Article 11 of Chapter IV of the Radio Regulations.

The meeting rose at 12.30 p.m.

Rapporteur:
J. Barrailler

Chairman:
M. Joachim

Annex: 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

The Working Group has considered the various proposals regarding the future work of Committee 5 and has unanimously come to the following conclusions:

1. That a general discussion should take place in the main Committee on the problems of notification and registration procedure as well as the International Frequency List.

2. It should form a Working Group for notification and registration procedure and specifically to deal with Chapter IV of the Radio Regulations (other than those matters treated in Article 6 of the Convention) and Chapter VII of the E.A.R.C. Agreement, as soon as the general discussion is completed.

3. The Working Group also recommends that Committee 5, after a general discussion on the problems of the International Frequency List, decide to form a Working Group, or more than one Working Group (should that be considered necessary) to deal with this matter as soon as possible, with suitable terms of reference.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 168-E
3 September 1959

PLENARY ASSEMBLY
SUB-COMMITTEE 7D

SWITZERLAND

Proposals

ARTICLE 41

ACCOUNTING FOR RADIOTELEGRAMS

Section I. Establishment of Accounts

Number of proposal

5423 967 Replace the present text by the following:

(2) Nevertheless, the regulation minimum charge - seven words for ordinary and urgent radiotelegrams and fourteen words for press radiotelegrams - must be taken into account.

Reasons

To bring the text into line with the Telegraph Regulations, Geneva Revision, 1958.

5424 969 Replace the present text by the following:

(2) The administration to which the office of origin is subject is debited through the medium of the telegraph accounts, from country to country if necessary, by the administration to which the land station is subject, with the telegraph charges and the total charges for prepaid replies.

Reasons:

According to the Telegraph Regulations, Geneva Revision, 1958, the charge for collation no longer figures in international accounts.

Section II. Exchange, Verification and Settlement of Accounts

5425 --- Amend the title of Section II as follows:

Section II. Exchange and Verification of Accounts. Payment of Balances.

Number of proposal

Reasons:

For greater accuracy (terms used in Telegraph Regulations)

5426 985 Replace present text by:

§ 15. (1) When there are differences between the accounts prepared by the two Administrations, the monthly accounts shall be admitted without revision in the following cases:

	Amount of the credit account	Difference not to exceed
a)	less than 1,000 francs	10 francs
b)	from 1,000 to 100,000 francs	1% of the credit account
c)	more than 100,000 francs	1% of the first 100,000 francs and 0.5% of the remainder of the credit account

Reasons:

Text adapted to that of the Telegraph Regulations, Geneva Revision 1958.

---

989 to 998 Replace § 17 to 19 by the following new § 17 and § 18:

5427 § 17. The quarterly account must be verified and the amount must be paid within a period of six weeks dating from the day on which it is received by the debtor administration. Beyond this period, the creditor Administration has the right to demand interest at the rate of six per cent per annum, reckoned from the day following the date of expiry of the said period.

5428 § 18. (1) The balance of the quarterly account in gold francs is paid by the debtor administration to the creditor administration, by a sum equivalent to its value, in conformity with the provisions of these Regulations and of such special monetary agreements as may exist between the countries of the Administrations concerned.

Number of proposal

5429 (2) This payment may be effected, at no expense to the creditor administration 1):

5429 b) 1) Taxes, clearing expenses, impositions and commissions which may be levied on the creditor administration by the country in which they operate shall not be considered as expenses to be borne by the debtor administration.

5430 a) at the choice of the debtor administration, in gold or by means of cheques or drafts payable on demand in the capital or in a commercial centre of the creditor country, or by transfer on a bank of this capital or of a commercial centre of the creditor country; cheques, drafts, or transfers shall be made out in one of the currencies specified under A of Appendix No. ... to these Regulations;

5431 b) by agreement between the two Administrations through the intermediary of a bank clearing through the Bank of International Settlements at Bâle;

5432 c) by any other means agreed upon between the parties concerned.

5433 (3) The currencies used for payment, and the rules for converting the balances expressed in gold francs into the currency of payment, shall be those shown in Appendix No. ... (proposal No. 5441) to these Regulations.

5434 (4) Any loss or gain resulting from the settlement of balances by cheque or draft shall be treated according to the following rules:

5435 a) any loss or gain arising from an unforeseen rise or fall affecting the gold par rate of one of the currencies specified in A, b) 1., 2. and 3. of Appendix No. ... to these Regulations and occurring up to and including the day on which the cheque or draft is received, shall be divided equally between the two Administrations concerned;

5436 b) when a considerable variation occurs in the gold par rate or in the rate upon which conversion was based, the rules indicated in a) above shall be applied, except when a rise or fall is caused by a revaluation or devaluation of the currency of the creditor country;

Number of proposal

5437 c) in the case of delay in the despatch of a cheque or draft which has been delivered, or in the transmission to a bank of a transfer order, the debtor Administration shall bear any loss incurred as a result of such delay; any unreasonable period which may have elapsed between delivery by the bank and forwarding of the cheque or draft shall be considered as a delay; if any gain is incurred as a result of such delay, one-half must be made good to the debtor Administration;

5437 bis 1) A delay greater than four working days counted from the day of issue of the cheque or draft (but not including that day) until the day of forwarding of this cheque or draft.

5438 d) In any case provided for in a), b) and c) above, differences not exceeding 5 per cent shall be ignored;

5439 e) the provisions of (2) and (3) of this paragraph shall be observed for the settlement of differences; and the period of settlement shall begin from the date of receipt of the cheque or draft.

5440 (5) When the amount of the balance is more than five thousand (5,000) gold francs, the date of the despatch of a cheque or a draft, the date of its purchase and its amount, or else the date of the transfer order and its amount, must, upon a request by the creditor Administration, be notified by the debtor Administration by means of a service telegram.

Reasons:

Adaptation to Telegraph and Telephone Regulations, Geneva Revision, 1958.

5441 Add the following new Appendix:

APPENDIX 16 bis

Payment of Balances of Accounts

The currencies used for payment, as well as the rules for conversion of the balances expressed in gold francs into the currency of payment, referred to in Article 41, § 18 (3) of the Radio Regulations, shall be the following :

Number of proposal

A. Currencies of payment

The currencies used for the payment of the gold franc balances of international radiotelegraph accounts shall be the following :

a) If the country to which the creditor Administration belongs has made a special monetary agreement with the country to which the debtor Administration belongs, the currency designated by that agreement;

b) If no special monetary agreement exists between these countries, the creditor country may request that this payment be made :

1. in the currency of a country where the central bank of issue or other official institution freely buys and sells gold or gold currency for the national currency at fixed rates determined by law or by virtue of an agreement with the Government (currency referred to hereinafter as "gold currency");

2. or in the money of a country with a free rate of exchange (currency referred to hereinafter as "free currency"), the gold parity of which is fixed by the International Monetary Fund;

3. or in the currency of a country with a free rate of exchange (free currency), the gold parity of which is determined by domestic law or by an arrangement between the Government and an official issuing house of that country;

4. or in its own currency, which may not necessarily fulfil the conditions laid down in 1, 2 or 3 above; in this case, the Administrations or recognized private operating agencies concerned must be in agreement;

c) If the currencies of several countries fulfil the conditions in b), paras. 1, 2, or 3 above, the creditor Administration shall indicate the currency of payment which is convenient to it.

Number of
Proposal

B. Rules for Conversion

Conversion into the currency of payment of the balances in gold francs shall be effected according to the following rules:

a) If the Administrations belong to countries between which special monetary agreements exist, conversion shall be made:

1. at the choice of the debtor Administration either directly into the currency of the creditor country at the gold parity fixed for such currency by the International Monetary Fund; or through the currency of the debtor country on the basis of the gold parity approved for this currency by the International Monetary Fund; the result obtained in the currency of the creditor country or of the debtor country shall, if necessary, be converted into the currency of payment in conformity with special monetary agreements between the two countries;

2. in the absence of a gold parity approved by the International Monetary Fund for both the currency of the creditor country and the currency of the debtor country: at the gold par rate of a currency fulfilling the conditions prescribed in A b) paragraphs 1, 2 or 3; the result obtained shall then be converted into the currency of the debtor country at the current official rate of exchange for such currency in that country, and thence, if necessary, into the currency of payment, in conformity with the special monetary agreements;

3. at the choice of the debtor Administration either directly into the currency of the creditor country and at the gold parity fixed for that currency by a law of the country, or by an arrangement between the Government and an official issuing house, or through the currency of the debtor country and at the gold parity determined for that currency by a law of the country or by an arrangement between the Government and an official issuing house; the result obtained in the currency of the creditor country or in the currency of the debtor country shall, if necessary, be converted into the currency of payment in conformity with the special monetary agreements between the two countries;

b) If the Administrations belong to countries which have not made any special monetary agreement, conversion shall be made as follows:

1. if the currency in which payment is made is a gold currency: at the gold par rate of such currency;

2. if the currency in which payment is made is a free currency for which a gold parity has been fixed by the International Monetary Fund: at the gold parity approved by the Fund, or at the gold par rate determined by domestic law or by an arrangement between the Government and an official issuing house;

3. if the currency in which payment is made is a free currency for which the International Monetary Fund has not fixed any gold parity: either at the gold par rate determined by domestic law or by an arrangement between the Government and an official issuing house, or through another free currency with a gold parity fixed by the Fund; the result obtained shall be converted into the currency in which payment is made at the official rate in force in the debtor country the day or the day before the transfer is effected or the cheque or draft is purchased;

c) If, by agreement between the two Administrations concerned, the currency in which payment is made is that specified in A b), paragraph 4 above, the balance in gold francs shall be converted into any gold currency or free currency; the result obtained shall be converted into the currency of the debtor country, and thence into the currency of the creditor country at the official rate of exchange in force in the debtor country on the day or the day before the transfer is effected or the cheque or draft is purchased.

Reasons

See Telegraph and Telephone Regulations, Geneva Revisions, 1958.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 169-E
3 September 1959

PLENARY ASSEMBLY
SUB-COMMITTEE 7D

SWITZERLAND

Proposals

Additional Radio Regulations

ARTICLE 5

Radiomaritime Letters and Radio Air Letters

Number of Proposal		
5442	2069 Replace by :	
	a)	It shall be expressed entirely in plain language.
	a^{bis})	When asked to do so by the office or ship or aircraft station of origin, the sender shall sign a declaration that the text is expressed entirely in plain language, and that it bears no esoteric meaning. The declaration shall indicate the language or languages used.
5443	2070 to 2072 Delete these numbers.	
5444	2081 Replace by :	
	(2)	Reimbursement of charges shall be authorized in the event of non-delivery as specified in No. 885 of the Telegraph Regulations (Geneva Revision, 1958), and in the cases provided in 911, 912, and 913 of these Regulations.

Reasons

See the Telegraph Regulations, Geneva, 1958.

Number of Proposal

ARTICLE 6

Special Radiotelegrams. Paid Service Indications

5445 2098 Before "= Jx =", add : =TLXx= (direction ship or aircraft to land).

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 170-E
3 September 1959

SUMMARY RECORD

Third Meeting - Sub-Committee 7D

Tuesday 1 September 1959, 10 a.m.

Chairman: M..A. Caruso (Italy)

Agenda:

1. Additional Radio Regulations, Article 3, Proposal 3068.

2. Additional Radio Regulations, Article 4; examination of the following proposals of principle, before the detailed study of Article 4 is referred to the Working Group on Accounts:

   a) Should the collection of a ship station or aircraft station charge for radiotelegrams be made optional? (Proposal 3070)

   b) Should the maximum land station and ship or aircraft charges be reduced? (Proposal 3075)

   c) Should the principle be introduced of a minimum number of chargeable words for the radiotelegraph part of the route over which radiotelegrams are transmitted? (Proposals 3071-3072-3073-3082)

   d) Should a category for medical radiotelegrams be introduced? (Proposals 4607-3127-5163)

   e) Should a new category be introduced for radiotelegrams concerning persons protected in time of war by the Geneva Conventions of 1949? (Proposals 3117-3117b)

   f) Should provisions be introduced concerning charges for radiotelephone calls? (Proposals 3128-3129-3130-3131 and 5129)

The Chairman invited the Delegate of France to comment on Proposal 3068, by France, the French O.P.T.A. and Morocco.

After a discussion in which the Delegates of France, the United Kingdom and the United States took part, the Chairman put Proposal 3068 to the vote. The proposal was rejected by 33 votes to 1, with 6 abstentions.

Proceeding to Item a) on the Agenda, the Chairman requested the Delegate of the Netherlands to explain Proposals 3070 and 3076 in greater detail.

Since there was no support, the proposals were not considered.

Item b) of the Agenda

Because of lack of support, Proposal 3075 submitted by Japan was not considered.

Item c) of the Agenda

That important item which was the subject of Proposals3071 by Italy, 3072 and 3082 by Japan and 3075 by the Netherlands dealt with the application of the principle of a minimum number of chargeable words for the radiotelegraph part of the route over which radiotelegrams are transmitted.

A lively discussion ensued in which the Delegations of the Argentine Republic, Colombia, Canada, the United States of America, France, Italy, Norway, the United Kingdom, Sweden and the Netherlands took part.

The Delegate of Italy, referring to his Delegation's Proposal 2607 which had the same end in view, thought that the introduction of the principle of a minimum number of chargeable words for the radiotelegraph part of the route over which radiotelegrams are transmitted would lead to simplified methods of charging and reduce the chronic deficit in the budget of the maritime mobile service.

The Delegate of the United Kingdom could not support the Italian Delegate's views since he felt that the method advocated would not find favour with the shipping companies. That state of affairs might result in a marked reduction in traffic, since the number of radiotelegrams consisting of less than 7 words represented a considerable proportion of the total number of radiotelegrams exchanged between Commonwealth ships and the coast stations of the United Kingdom. His Delegation might, however, agree to the use of the advocated method of charging for international telegrams from or to countries other than that in which the coast station was located.

The Delegate of Norway said that ships flying the Norwegian flag were plying the seas all over the world and that, therefore, the problem was of great interest to his Delegation. He would add that his Administration had never experienced any difficulty in applying the current methods of charging.

In conclusion, the Delegate of Sweden felt that the principle involved was too important and could not be settled immediately by the Sub-Committee; he would have to consult his Administration before taking a stand. He suggested that discussion and vote on the matter be postponed to a subsequent meeting.

The Chairman agreed with the suggestion and proposed that the meeting should proceed with the rest of the Agenda, postponing the decision on item c) to the meeting on Thursday next (3 September).

It was so agreed.

Proceeding to item d), the Chairman put forward for discussion Proposals 3127 by Japan, 4607 by Italy and 5163 by the Federal German Republic for the introduction of a new category of messages, namely, medical radiotelegrams.

The proposals were unanimously adopted. It was felt, however, that the provisions for that category of messages should be inserted under the heading "Special services" in article 45 of the Radio Regulations, the question of charges being taken up at a later stage.

Item e) of the Agenda

Proposals 3117 and 3117 bis submitted by Italy were adopted. The Swiss and Italian Delegates were invited to submit a suitable text for inclusion in the Radio Regulations.

Item f) of the Agenda

The Chairman conveyed his grateful thanks to the Delegate of the Federal German Republic for his Proposal 5129 containing a comprehensive set of regulations for radiotelephone calls.

United Kingdom Proposals 3128-3129-3130 and 3131 and Proposal 5129 submitted by the Federal German Republic were then discussed.

The Delegate of the United States felt that it was premature either to discuss or to fix the maximum or minimum charges for radiotelephone calls, since in his country the charges currently in force were based on agreements between the persons using and the operating agencies providing the service.

The Delegate of the United Kingdom shared that view.

Finally, the Chairman proposed that two working groups should be set up, one designated "Accounting" and one "Radiotelephony".

Mr. Swanson was appointed chairman of the "Accounting" group, while Mr. Petrich accepted the chairmanship of the "Radiotelephony" group.

The terms of reference of the "Accounting" group were to be:

Study of article 41 of the Radio Regulations and article 4 of the Additional Regulations,

and those of the "Radiotelephony" group:

Study of a text on the operation of the radiotelephony service.
The "Accounting" group would be composed of the representatives of Belgium, Denmark, France, Japan, Italy, United States, Netherlands, Sweden, Norway, and the Federal German Republic, while the "Radiotelephony" group would consist of the Delegates of Australia, France, United Kingdom, Netherlands and the Federal German Republic.

Since there were no further items on the Agenda, the meeting rose at 6.05 p.m.

Rapporteur:
A. Adam

Chairman:
A. Caruso

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 171-E
3 September, 1959

SUB-COMMITTEE 7C

SUMMARY RECORD

Third Meeting - Sub-Committee 7C (Safety and Distress)

Wednesday, 2 September, 1959 at 3:00 p.m.

Reference: Agenda of 28 August, 1959, Document No. DT 50.

1. Minutes of 1st meeting (Document No. 118).

The Delegate of Malaya desired to amend his remarks appearing on page 2, paragraph (c), to read: "The Delegate of Malaya pointing out Proposal 2221 for consideration for a second distress frequency for the tropics reserved the right of opening discussions on Article 8 later, and supported the proposal made by the Delegate of Israel."

2. Report of Working Group 7C-1, if available.

The Delegate of France reported Working Group 7C-1 held a meeting Tuesday for consideration of paragraph 232 relating to Class B emissions. The meeting adjourned until the Delegates with differences could get together and reach a compromise acceptable to the group. He hoped this would be accomplished soon and another meeting could be held next week.

3. Consideration of Article 37.

The Delegate of Sweden explained the Proposals 2394 through 2414 by Denmark, Finland, Iceland, Norway and Sweden concerning 500 kc/s radiotelegraph distress procedures as having three objectives:

(1) To make the transmission of the auto alarm signal compulsory;

(2) To have the distress call and message to follow the auto alarm signal immediately;

(3) If time permits, to repeat the distress call.

The Delegate of the U.K. was opposed to making the transmission compulsory and was supported by the Delegates of France, U.S.A., Canada, as preferring the A.C. language, "is, as a general rule, preceded by the alarm signal . . . . . ."

The Delegate of France supported the second proposal to have the distress call and message follow the alarm signal immediately instead of waiting two minutes, due to the part usually played by the coastal stations. The Delegate of the U.K. could partially support and offered a change in language from the A.C. wording, "when circumstances permit", to "when considered necessary". This proposal was supported by the Delegate of France. The Delegate of Sweden would accept if it were agreed to make the transmission of the alarm signal compulsory. This could not be agreed, and the Chairman requested the Delegate of Sweden to convene a Working Party (7C-2) composed of the five countries proposing, plus France, the U.K., India and the U.S. The members from the I.C.S. and the C.I.R.M. requested to participate.

2415 - It was agreed to be editorial for the Drafting Committee.

2416 - The Chairman passed over until Proposal 2562 was considered.

4395 - It was agreed to be editorial for the Drafting Committee.

The Delegate of Sweden questioned whether Article 864 was up to date and referred to Article 568.

4396 - It was agreed to pass over until the time arrives to determine the exact place various Articles would be put in the final form.

2417)
4397)
4693) - It was agreed that the three language drafting group would handle as all proposals had the same principle. The question whether
2418) telegraphy and telephony were to be separated would be handled
5114) later.

5115 - Not supported - and passed over.

4398 - Agreed the insertion of "radiotelegraph" to distinguish from radiotelephony.

2419 - It was agreed that the language of this proposal was better saying "The characteristics of the radiotelegraph alarm signal are given in 920".

2420 - The Committee concurred in this language.

4399 - The Delegate of the U.K. agreed to the language of 2419. The Delegate of the U.S. also concurred, and it was agreed to by the Committee.

2421)
4400)
2422)
2423) - After discussion of the term, "preferably A-2 emission", it was agreed to defer these proposals, awaiting the results of the
4401) 7C-1 Working Party.
4694)
2424)

4402 - It was agreed to be a matter of editorial correction.

4403) - These proposals were passed to the Drafting Committee to work
2425) out.

2426 - The Delegate of the U.K., supported by the Delegates of the U.S.S.R., Portugal, Sweden, France, agreed to change the word "shall" to "may if necessary". This was left to the Drafting Committee.

4404 - The U.K. proposal was adopted after support of the Delegates of the U.S.A., France, Portugal, Sweden.

4695 - Passed until the Delegate of Czechoslovakia is present.

2427)
2428) - These proposals were supported by the Delegates of France, the Federal German Republic, Belgium, the U.S.S.R., China, Sweden, and the U.K., providing the wording was changed to "stations of
2431) the maritime mobile service", and both distress frequencies,
2432) 500 kc/s and 2,182 kc/s, with their types of emission, were added. It was left to the Drafting Committee.

2429) - These proposals were tabled until the Delegate of Morocco is
2430) present.

The meeting was adjourned at 6:10 p.m.

Rapporteur: Chairman:

R. T. Brown G. Van A. Graves

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 172-E
4 September 1959

PLENARY MEETING
COMMITTEE 4

TURKEY

Proposal

ARTICLE 5

Number of Proposal		
5446	125.	After this number add the following new note :
	13bis)	In Turkey the 285 - 315 kc/s band may also be used by the Aeronautical Radionavigation Service.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 173-E
4 September, 1959

PLENARY MEETING
COMMITTEE 4

UNITED STATES OF AMERICA

Proposals

ARTICLE 5

Modifications to the proposals made by the United States of America for the indicated bands are submitted as follows :

Number of proposal	Frequency Band Mc/s	Allocation to Services	Footnotes
3354	132.0 - 135.0 (81 bis)*	a) Fixed b) Mobile c) Radiopositioning	(81 bis) In the band 132-135 Mc/s, the aeronautical mobile (R) service shall be afforded protection from harmful interference from other services operating in the band
3354 bis	135.0 - 136.0 (81 ter)	a) Earth - Space* b) Fixed c) Mobile d) Radiopositioning e) Space *	(81 ter) In the band 135-136 Mc/s, the fixed, mobile and radiopositioning services shall not cause harmful interference to the earth-space and space services. This band is established primarily for communication with or between earth and space stations
3365	*)400 - 401 (93 bis)	a) Earth - Space b) Meteorological Aids c) Space	(93 bis) In the band 400-401 Mc/s, the meteorological aids service shall not cause harmful interference to the earth-space and space services. This band is established primarily for communication with or between earth and space stations. Delete 208 [note 94]
3365 bis	*)401 - 406	Meteorological Aids	Delete 208 [note 94]

*) The U.S. considers that this allocation should be on a worldwide basis

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 174-E
4 September, 1959

COMMITTEE 5

PAKISTAN

Suggestion for procedure to deal with questions relating to the International Frequency List

The Committee may carry out a general discussion on the following points in the Committee.

a) Consider in general the broadcasting plans prepared by the I.F.R.B. and their disposal Document No. 20, Section VI.

b) Consider in general the report of the I.F.R.B. concerning the preparation of the International Frequency List for fixed services and what future action should be taken on this question. Document No. 20, Section VII.

c) Consider in general the position with regard to plans and lists, other than broadcasting, already in existence and what steps are required to convert them into International Frequency Lists, so that the frequency assignments may get legal status.

The general discussion should be so arranged that these points could be dealt with finally in not more than a couple of meetings of Committee 5.

Pakistan also supports the view that a working group be formed immediately with Mr. Autelli as Chairman to deal in detail with the above terms so that he could organise the work of the Working Group and take note of the general trend of discussions in the main Committee on these problems.

M.N. Mirza

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 175-E
4 September, 1959

COMMITTEE 5

SUMMARY RECORD

Fifth Meeting of Committee 5

Monday 31 August, 1959 at 10.00 a.m. in Room A

Reference : AGENDA Document DT 46 of 29 August, 1959

The Chairman opened the meeting and the Agenda was adopted.

1. General discussion on questions relating to the notification and registration procedure of frequency assignments, and on questions relating to the International Frequency List, with a view to giving general directions to Working Group 5A (frequency registration procedure).

Opening the discussion, the Chairman gave the floor to Mr. Searle, Chairman of Working Group 5A.

Mr. Searle said that he had examined the questions which Working Group 5A might study and wished to submit them to the Committee for consideration. The questions were:

1. Technical examination of frequency assignments. Should the examination be carried out at international level? Which bands should be examined? When the examination has been carried out, what further steps should be taken? Should the examination be used as a control measure or as a means of giving advice to Administrations?

2. Dates. What measure of importance should be attached to the figures in columns 2a, 2b and 2c of the Frequency Assignment List?

3. Insistence procedure. If a request for a frequency has been refused how can control and national sovereignty be reconciled?

4. Periodic revision of the List. What procedure should be adopted? Problem of frequencies and circuits used intermittently.

5. How does the international list reflect the use which is actually being made of the spectrum?

Since the first question was of paramount importance, he felt that it could be broached at that meeting.

The Chairman agreed that during the general discussion question 1 should be the first to be dealt with.

The Delegate of Colombia thought that it might be better if the delegates were to make their general views known in the first instance and then proceed to study the questions put by Mr. Searle.

The Delegate of Roumania felt that the notification and registration procedure of frequency assignments was a matter of the greatest importance since on it depended the duties and structure of the I.F.R.B. He would like to outline certain aspects of that procedure in the light of experience.

With regard to the technical examination, he felt that the I.F.R.B. was not in a position to carry out such an examination in a useful manner. He suggested that the technical examination should be done away with and that the task of the I.F.R.B. should be to register Administrations' requirements which were in line with the frequency allocation table and other clauses of the Regulations to publish them and to keep the International Frequency List up to date. Cases of interference could be settled by better co-operation between the administrations concerned, which should likewise be responsible for monitoring.

The Delegate of Portugal said that while study of the proposals had revealed a unanimous opinion that the I.F.R.B. expenditure should be cut down there was a wide divergence of views as to the role and tasks of that body.

He felt that the experience acquired as well as the wider use which was being made of the spectrum should lead to additional resources being placed at the disposal of the I.F.R.B. The technical examination of the frequency bands below 30 Mc/s and of circuits used for ionospheric or tropospheric propagation as well as space communication was indispensable. He was sure, too, that the date factor was important and felt that the list should reflect the use which was actually being made of the spectrum; it was also essential that the list should be brought up to date.

The Delegate of India said that examination of the proposals had shown that they had many points in common, such as for instance, the general desire to have a frequency list reflecting the use which was actually being made of the spectrum. The value of the technical examination depended on the value of the information supplied by the administrations, which should endeavour to furnish the I.F.R.B. with complete and detailed data so as facilitate its work and to enable it to prepare a list showing the use which was actually being made of the spectrum.

The Delegate of the United States stated that the aim of the U.S. proposals was to get a list published showing the use which was actually being made of the spectrum, and to widen the scope and work of the I.F.R.B.

Since Atlantic City, the Union had not been in a position to publish an engineered list, except for that covering the bands below 3,950 kc/s and the aeronautical and maritime bands. That was why an interim procedure had had to be adopted for the unplanned bands.

The purpose of the American proposals was to implement Article 11 of Atlantic City in respect of the bands already planned and to endeavour to obtain a list reflecting the use which was actually being made of the spectrum for the other bands. As for the HF broadcasting plan, the U.S.A. was still in favour of having one established; that, however, would not be possible for some years to come. He thought that broadcasting requirements could be met by using the bands provided for that purpose at Atlantic City.

The Delegate of Pakistan supported the idea of having the technical examination reinforced, leaving the I.F.R.B. to carry on with the tasks entrusted to it.

The U.S.S.R. Delegate thought that, in the light of experience, it seemed necessary to draw the Administrations' attention to the need to strengthen their spirit of co-operation. The notification procedure defined in Article 11 of the Radio Regulations and Article 32 of the E.A.R.C. had proved unsatisfactory. The present technical examination was not practical and did not provide a way of solving the problems. The I.F.R.B. report itself showed that, in practice, registration was the only function performed by that body. The technical examination should be the job of the Administrations themselves and any cases of interference should likewise be dealt with by the Administrations concerned, with the I.F.R.B. ensuring coordination between them. That way of approach would simplify the procedure and reduce expenditure.

The Delegate of Colombia felt that in recent years the Union had been restricting its activities and was tending to become merely an information centre. That had not been the aim at Atlantic City. The present conference should, consequently, endeavour to strengthen the Union's activities.

The problems had changed since 1947 and a revision of the Regulations was called for. It was a good thing to want to cut down expenditure, but the expenses were bound to be greater if there was no plan, or if the plans were faulty. That was why it was important to have plans and lists reflecting the true use which was being made of the spectrum and suggested that this conference prepare such plans and lists. The study of specific problems should be referred to sub-groups set up to deal with the various services. In his opinion, the technical examination could not be done without; moreover, the scope of the I.F.R.B. should be extended in such a way as to enable it, in particular, to give help to young countries. Arrangements must be made for a periodic revision of the frequency lists which should reflect the true use which was being made of the spectrum.

The Delegate of Indonesia said that it was essential to have an accurate frequency list and that the current lists should be revised in such a manner as to make things easier for young countries in their search for frequencies.

He supported the proposals to maintain the technical examination and to reduce expenditure. He also endorsed the U.S.S.R. delegate's statement calling for co-operation on the part of Administrations in the interests of solving interference problems.

The Delegate of the Belgian Congo considered that, in examining frequency requirements, the I.F.R.B. did not attach sufficient importance to the fact that as a rule an Administration only gives notification of a frequency when it was sure by means of tests and if need be by a preliminary try out that it was suitable. He considered that such an examination was necessary and hoped that in future it would be carried out with this in mind; in his opinion it was not advisable to modify the present structure of the I.F.R.B.

The Delegate of Czechoslovakia considered that the technical examination carried out by the I.F.R.B. was based on out-dated standards. Since the work of the C.C.I.R. had shown that standards had advanced, it was necessary to review assignments that had been granted according to old standards so that they could be adapted to new standards; however, this raised some extremely difficult problems - for instance when an assignment which had received a favourable finding became unfavourable in the light of up-to-date standards.

It was not possible to give force of law to standards which were constantly changing. Such standards should only enable the spectrum to be put to better use for the guidance of the administrations.

The Delegate of Spain supported the statement of the delegate of Portugal concerning the maintenance of the technical examination. He considered that the Conference should try to publish a list giving the effective use of the spectrum and, if successful, Article 11 of the Radio Regulations could be enforced without difficulty. He thought that the procedures which would apply for the different bands should be examined and eventually adapted to the bands. He considered that only the administration which had made the notification had the power to cancel it.

The Delegate of Mexico endorsed the other statements on the need for an accurate list. He thought that administrations should review their assignments and give the I.F.R.B. as much information as possible. The resources of the I.F.R.B. should be increased so that it would be in a position to guide administrations. Increased resources would also allow the I.F.R.B. to give fuller information and thereby to carry out its work in a better way. He proposed that a group of monitoring stations round the world should be established in order to facilitate control.

The Chairman said that there was not enough time left to continue the general discussion.

The meeting rose at 12.35 p.m.

The rapporteur,
J. Barrailler

The Chairman,
Dr. Joachim

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 176-E
4 September, 1959

COMMITTEE 2

MINUTES

OF THE THIRD MEETING OF COMMITTEE 2 (CREDENTIALS)

Geneva, 28 August, 1959 at 4.30 p.m. - Room E

Chairman: Dr. F. Nicotera, Head of the Italian Delegation

Vice-Chairmen: Dr. Libero Oswaldo de Miranda (Brazil)
Mr. I.M. Trifonov (Bulgaria)

Agenda: Working Document No. 27 (26 August, 1959)

The Chairman declared the meeting open and drew attention to Agenda contained in Working Document No. 27 of 26 August, 1959, which was adopted.

The Committee then proceeded to take up items 1 to 4 of this document.

1. Approval of the Minutes of the second meeting (Document No. 108 of 25 August, 1959)

The Chairman pointed out that the document should be amended as follows :

- page 4, Table 1, Column 2. A trifling correction to the French text only.
- page 5, 5th paragraph. Replace "...the United States of America..." by "...the Territories of the United States of America..."

Mr. Stead pointed out sub-paragraph (2) on page 3 should be amended as follows :

(2)Represented by an observer. Has not acceded to the Convention.

Following an observation by the Delegate of Spain, Mr. Stead proposed that the fourth paragraph on page 4 be replaced by the following :

The following tables show the result of the initial examination of the credentials submitted to the Committee at its second meeting. The credentials submitted at the first meeting of the Committee appear in the table on page 3 of Document No. 82 of 21 August, 1959.

The proposal was adopted.

The Chairman, replying to a point raised by the Delegate of Australia, said that he had decided to call a meeting of the Committee to reconsider a decision taken at previous meetings - namely, that an interim report should be immediately submitted to the Plenary Assembly. He considered that the point should be taken up later on the agenda. Subject to the above amendments, the minutes of the second meeting of the Committee were approved.

2. First Report by the Working Group to the Committee

The Chairman inquired whether any delegations present had any comments to make.

The Delegate of the U.S.S.R. asked that the following statement be inserted in the minutes. This request was granted, and here is the statement :

"At the Plenary Meeting, my Delegation has already drawn the Conference's attention to the anomalous situation which has so far prevented representatives of the People's Republic of China from taking part in the work of the I.T.U., while China's place is illegally occupied by the representatives of the Chiang Kai-Shek clique.

The true representatives of China can only be those duly appointed by the Central Government of the People's Republic of China.

On behalf of my Delegation, I protest against the acceptance of the credentials of the Kuomintang group."

The Delegate of China said that he did not wish to comment on the statement made by the Delegate of the U.S.S.R. He considered that the content of that statement bore no relation to the Committee's terms of reference. Committee 2 had simply been asked to check the credentials of each delegation and to reach its conclusions within the period specified by the Plenary Assembly, in accordance with Chapter 5, paragraph 4 of the General Regulations annexed to the International Telecommunication Convention (Buenos Aires, 1952). He had already

drawn attention to a statement made by the delegation of the U.S.S.R. in the Plenary Assembly and requested that the following statement should appear in the Summary Record :

> "The terms of reference of the Credentials Committee are clearly defined in Chapter 5 of the General Regulations annexed to the Convention.
>
> I have already had occasion to reply in the Plenary Assembly to the inadmissible attacks directed at my delegation by the delegation of the U.S.S.R. The Committee will share my view that it is of no use to do so again.
>
> The renewed intervention of the Delegate of the U.S.S.R. is just as inadmissible in this Committee as before the Conference itself."

There was no further comment on the first report of the Working Group of the Committee (Working Document No. 34 of 27 August, 1959), and the Committee passed to item 3 of its agenda.

3. Draft first report by the Committee to the Plenary Assembly

The Delegate of the Territories of the United States of America pointed out that it would be convenient to delay the presentation of the report until the final date set by the Plenary Assembly.

The Chairman explained that he had decided to call a meeting of the Committee to reconsider a decision taken at the second meeting (see page 3 - third paragraph, of Document No. 108 dated 25 August, 1959).

The Chairman said that, after due consideration, he had realized that if a report were to be submitted to the Plenary Assembly immediately, certain delegations would lose their right to vote in accordance with Chapter V (2) of the General Regulations annexed to the Convention. He considered that, if the report were submitted immediately, it would not be in accordance with the decision taken by the Plenary Assembly that a period of four weeks should be granted to enable delegations to put their credentials in order so that they might continue to participate in the work and votes of the Conference.

The Chairman therefore proposed that the report should not be submitted immediately, but should await the final date set by the Conference.

It was so decided.

4. Any other business

Mr. Stead gave a brief summary of the situation in regard to the credentials examined up to the present, and the Chairman proposed that the Committee should meet on 14 September, 1959, for the report of the Working Group to be presented.

As there was no objection to the proposal, the meeting rose at 5.20 p.m.

Approved:

J.F. Martinez
Rapporteur

F. Nicotera
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 177-E
4 September, 1959

COMMITTEE 4

SUMMARY RECORD

9th Meeting of Committee 4

2nd September, 1959 at 1500 hours - Room A

1. As Corrigendum 1 to Document 89 was not available consideration of this item was deferred. The Reports of the 3rd and 4th meetings, documents 113 and 121 were approved. In connection with the latter the Chairman drew attention to a mistake under the Rapporteur, where two names had been inserted.

2. The Chairman opened the discussion on proposals contained in Add. 2 to document DT 52 and commenced with proposals numbers 923, 738, 481 828, 855, and 3441 concerned with the deletion of Meteorological aids in the band 2045 to 2065 kc/s. The delegate of United Kingdom and the Observer of W.M.O. wished for these services to continue; the delegate of Norway would be agreeable to move the MET assignments from this band if it were possible to reach agreement on its world wide maritime use. After some discussion it was agreed that the subject would be referred to Working Group 4B.

Proposals 481, 828 and 3442, concerned with the implementation of recommendation No. 2, Göteborg, 1955, differed slightly in the substance and markedly in presentation. The delegate of Federal German Republic was prepared to withdraw No. 828 in the event that 481 was adopted. He also drew attention to recommendation No. 3 of the same Conference. The delegates of United States, Argentina, and Australia drew attention to the fact that in accordance with No. 64 of E.A.R.C. and regional agreements 2638 kc/s and 2738 kc/s were being used and this would make it difficult to accept 2055 kc/s. On the proposal of the Chairman it was agreed that this problem would be transmitted to Committee 7.

Proposal 3529 would be dealt with by Working Group 4B.

There were a number of proposals relating to the inclusion in the Frequency Allocation Table of a guard-band for the distress frequency 2182 kc/s and after some inertia it appeared that there were differences of opinion on the magnitude of this guard-band. On the proposal of the delegate of the United Kingdom supported by the delegate of the U.S.S.R. it was agreed that as this was an operational problem it should be referred first to Committee 7 and after their views had been received the question could be referred to Working Group 4B.

Proposals 678 and 679 received support from the delegates of Australia, India, Indonesia, Philippines and United States, the latter proposing that the drafting problems would be settled in the Working Group. This was agreed.

In connection with the band 2300 to 2850 kc/s the delegate of Poland confirmed that their proposals 742 to 746 concerned their own country which had no requirement for tropical broadcasting. The delegate of U.S.S.R. pointed out that proposals 925 and 931 did not differ substantially from the existing Tables and also that their proposal to retain the existing standard frequency 2500 kc/s - 2 kc/s had been omitted from the Yellow Book.

Proposals 3531 and 3532 were of a drafting nature and would be examined by the Working Group.

Proposal 3301 and proposal 5214 (doc. 91) were agreed.

There was some discussion on the difference between the guard-bands provided for the standard frequency 2,500 kc/s in Region 1 and the other two Regions; the delegate of India considered that this should be standardised on a world-wide basis. The delegate of Yugoslavia supported the proposal of the delegate of India that the matter should be further discussed by Working Group 4B. This was agreed.

In the bands 2850 to 3155 kc/s, 3155 to 3400 kc/s and 3400 to 3500 kc/s the only new substantial matter was the proposal of U.S.S.R. to delete from the Table the references to R. & OR sub-divisions of the Aeronautical Mobile Service allocations. Opposition to this proposal was expressed by the delegates of France, Italy, Netherlands, Spain, Argentina, Brazil, Belgium, Japan, and the United Kingdom for the reason that the existing R service is planned on an Area basis and the OR service on a national basis; to alter these plans would cause considerable disruption of the two services. The delegate of the U.S.S.R. explained that the purpose was not to merge the two services but to enable a possibility that if amendments of frequencies in the two bands were made the line of demarcation between the two bands might be moved although at this time they had no specific proposal in respect of such a move. The delegate of Czechoslovakia supported this view. It was agreed that the question would be referred to the Working Group.

In the band 3500 to 4000 kc/s there were a number of proposals concerned with the extent to which the amateur service would be authorised. In addition to the proposals listed in doc. DT 52 Add. 6, there were also the proposals of Argentina, 5216 and 5217 in doc. 91. After opinions had been expressed by a number of delegates it was agreed that the question would be referred to a Working Group.

On the suggestion of the delegate of the U.S.S.R. it was agreed to consider his proposal 938 at a later meeting.

3. The Chairman said that at the meeting on 3 September, he would take up discussion of the band from 4 mc/s to 27 mc/s; the method of considering the Table band by band had been useful below 4 mc/s and would probably be useful for Very High Frequencies but for the HF bands he suggested that it would probably be better to use a different method. He stated that a paper would be prepared based on the services operating in this band and suggested that in the first instance there should be a general discussion of principles without too much reference to the details. This was agreed and the Chairman then adjourned the meeting.

Rapporteur:

A. James Bourne

Approved:

Gunnar Pedersen

Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 178-E
4 September, 1959

SUB-COMMITTEE 7A

SUMMARY RECORD

Third meeting - Sub-Committee 7A (General operating conditions)

Monday, 31 August, 1959 at 10 a.m.

Chairman : Mr. P. Bouchier (Belgium) absent

Vice-Chairman : Mr. Martin Flores Cantero (Mexico)

In the absence of Mr. P. Bouchier, Mr. Martin Flores Cantero presided.

The Chairman proposed that they consider the outstanding items in Working Document No. 15, which was the agenda for the second meeting of the Sub-Committee.

The Proposals relating to Article 22 of the RR, Licenses, were then examined.

As Proposal 1507 from Poland, containing a draft form of licence, had not been distributed, consideration of this proposal was postponed.

With regard to Proposal 1515 from Australia, putting forward regulations for provisional certificates, an amendment was suggested by Japan, to cover ships built abroad but registered before their departure in the country of their destination.

The Chairman asked the Australian and Japanese delegations to prepare a complete text.

The Sub-Committee examined the proposals concerning Chapter XI, Article 23 No. 493 of the RR, Inspection of mobile stations.

Proposal 1516 from Italy : This covered an amendment to the last sentence of No. 493, was seconded by Portugal, China and Argentina, and was discussed at length. Finally a vote was taken and the proposal was rejected by 21 votes to 4, with 2 abstentions, in view of the difficulties of exhibiting licences in ships and aircraft.

Two amendments were proposed in the course of the discussion. The delegation of Argentine, seconded by Mexico, Italy and France, asked for the words "without delay" in the second sentence No. 493 of the RR to

to be replaced by "immediately". The delegation of Israel suggested that "The governments or appropriate administrations" in the first sentence should be replaced by : "Inspectors or representatives of governments or appropriate administrations".

The delegation of the United States was opposed to the consideration of proposals which had not been submitted in writing, in view of the fact that the vote had been in favour of retaining the present form of No. 493 of the RR.

The Chairman stated that the vote concerned exclusively Proposal 1516 from Italy, but that discussion was open on any relevant proposals and in particular on Proposals 1517 from the United Kingdom and 4662 from Czechoslovakia, which put forward a similar amendment for the first sentence of No. 493 of the RR, to make it more binding.

The delegation of the United States recalled that they had received instructions from their government to speed up the work of the Conference, and they therefore felt that only the proposals contained in the yellow book should be taken into account.

The delegation of Israel emphasized the purely editorial nature of their proposal and requested that it be included in the summary record, and that mention be made of their desire to introduce the proposed wording in the articles where "governments" and "administrations" were mentioned.

The delegation of Italy supported Israel and quoted Rule 10 § 4 of the General Regulations concerning the Chairman's right to accept proposals.

The delegation of Pakistan pointed out that Israel's proposal could not be applied in all cases.

Finally, a vote was taken concerning the amendment proposed by Israel. It was rejected by 25 votes to 2.

The Drafting Group would prepare a new text for No. 493 of the RR, taking into account only Proposals 1517 from the United Kingdom, 4662 from Czechoslovakia, and the amendment proposed by Argentina.

The Sub-Committee considered the proposals relating to No. 494 of the RR. Proposals Nos. 1518 from France, Overseas France and Morocco, and 1519 from the United Kingdom concerning No. 494 of the RR were identical.

Proposal 1519 from the United Kingdom was seconded by Portugal and France. The delegation of the United Kingdom could support the French proposal if the words "in charge" were replaced by "responsible for". The French delegation approved this amendment.

The delegations of Norway, Israel, Italy and Sweden were in favour of retaining No. 494 as it stood.

The amendment proposed referred to decisions which would be taken later in connection with No. 565 of the RR, which defined the authority of the Master; the Chairman therefore, in accordance with a proposal from Sweden, asked whether the Sub-Committee wished to postpone discussion on Proposals 1518 and 1519 until later.

The Sub-Committee did not support the suggestion to postpone discussion.

The Chairman reminded them of the existence of a proposal in Document No. 86 by British West Africa, which was analogous with the other proposals concerning No. 494 of the RR.

The Chairman put No. 494 of the RR to the vote. It was decided by 19 votes to 9 with 1 absention to change No. 494 of the RR in accordance with Proposal 1518 from France, Overseas France and Morocco, as amended by the United Kingdom.

The Chairman announced that the following meeting would be devoted to the remaining items on the Agenda in Working Document No. 15.

The meeting rose at 12.50 p.m.

R. Monnat
Rapporteur

Martin Flores Cantero
Vice-Chairman

Annex: 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

NEW DRAFTS PROPOSED FOR THE RR

CHAPTER XI

ARTICLE 23

INSPECTION OF MOBILE STATIONS

493 § 1 (1) The governments or appropriate administrations of countries where a mobile station calls may require the production of the licence for examination. The operator of the mobile station, or the person responsible for the station, must facilitate this examination. The licence must be kept in such a way that it can be produced upon request. As far as possible, the licence, or a copy certified by the authority which has issued it, should be permanently exhibited in the station.

494 (2) The inspectors must have in their possession an identity card or badge, issued by the competent authority, which they must show on request of the master or person responsible for the ship, aircraft or other vehicle carrying the mobile station.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 179-E
4 September, 1959

SUB-COMMITTEE 7A

SUMMARY RECORD

Fourth Meeting - Sub-Committee 7A (General Operating Conditions)

Wednesday, 2 September, 1959 at 10 a.m.

Chairman : Mr. Bouchier (Belgium) absent
Vice-Chairman : Mr. Martin Flores Cantero (Mexico)

Mr. Bouchier had been called back to Belgium for a few days so Mr. Martin Flores Cantero took his place.

The Chairman reminded the meeting of the agenda (Working Document No. 15 and Document No. 129).

Australian proposal 1515, as amended by Japan, was not yet available, so that discussion thereof had perforce to be postponed.

The Sub-Committee then turned to the proposals relating to No. 495 of Article 23 (Chapter XI of the Radio Regulations). The Italian Delegation being absent, discussion of Italian proposal 1520 had to be postponed.

Consideration of United Kingdom of Great Britain and Northern Ireland proposals 1521 relating to No. 496 of the Radio Regulations and 1523, relating to No. 497, was postponed until later, for the points in connection with operators' certificates depended on decisions to be taken in connection with No. 500 of the Radio Regulations, and especially United Kingdom of Great Britain and Northern Ireland proposal 1533.

The Sub-Committee approved French, Overseas France and Moroccan proposal 1525, amending No. 498, after a discussion in which Argentina called for harmonization of the terminology in English and French, while China, backed up by India, suggested that a written report be called for only in case of breach. The French Delegation seconded this amendment. The Group of sub-Committee rapporteurs was asked to devise the new wording for No. 498 in accordance with the decisions taken.

The Sub-Committee then turned to French and Overseas France proposal 1527, and Moroccan proposal 1528 (No. 499).

The Moroccan Delegation said its proposal was eaxactly the same as the French.

The French Delegation explained its proposals and asked that proposals 1527, 1530, 1531 and 1532 be considered together .

The Chinese Delegation wanted the expression "maritime or air navigation" in the second sentence of No. 499, to include coast stations.

There was a lengthy discussion as to whether it would be well to add fresh paragraphs to the Radio Regulations - a matter on which doubt had been cast by the Union of Soviet Socialist Republics, which failed to see why there whould be a distinction between temporary and lengthy stays. Such a distinction might lead to friction.

The French Delegation explained that the distinction was based on practice. Speakers from the Union of Soviet Socialist Republics, Belgium, Portugal, the United Kingdom of Great Britain and Northern Ireland, and France, took the floor. Eventually French proposal 1531 was rejected.

The United Kingdom of Great Britain and Northern Ireland said that if proposal No. 1531 was done away with, there was no reason to keep proposal No. 1530, which could well be jettisoned. Colombia, Australia and the United States supported.

Canada proposed that No. 499 should be kept as it stood. India and Pakistan seconded. Pakistan asked France whether "temporarily" in No. 499 should not be changed to read : "for a lengthy period".

France recalled that it wanted two sets of rules, one for the duration of stays, the other for the lengthy stays.

The Chairman recalled that the United States proposal 1526 concerned No. 499 too, but as far as the English version was concerned the proposal was for a drafting change only.

The Chairman called for a vote to see whether the Sub-Committee should consider the amendments proposed by France in accordance with proposal 1527 amended, or whether the existing texts should be kept, with minor drafting improvements, in accordance with United States proposal 1526 and the Chinese remark about the terminology applicable to navigation by air and sea.

The Sub-Committee, by 24 votes to 5, with 4 abstentions, decided to keep 499 unchanged.

The Drafting Committee will have to bear in mind the drafting changes suggested in the United States proposals 1522 (No. 497), 1524 (No. 498), and 1526 (for No. 499).

Israel called for a change in the beginning of No. 499, to include Associate Members too. The point was one that could well be left to the Drafting Committee. France seconded.

Israel also wanted No. 499 to read : "Members of the Union shall not impose technical and operating conditions more severe than those provided for in these Regulations upon foreign mobile stations which are temporarily within their territorial waters or make a temporary stay within their territories", instead of "... undertake not to impose...". Thereafter, read : "This would in no way affect", instead of : "This in no way affects".

As regards the Chinese drafting remark, the Delegations of Pakistan, the United Kingdom of Great Britain and Northern Ireland, France and the United States, observed that the existing wording was already satisfactory.

The Chairman repeated that the drafting party would have to investigate the need for such drafting changes.

The Delegation of the Union of Soviet Socialist Republics asked the Chairman to have another agenda issued for the following meeting.

The Chairman said he would do so. The agenda would comprise the following items :

1) Polish proposal 1507
2) Australian proposal 1515
3) Italian proposal 1520
4) Proposals relating to Article 26
5) Proposals relating to Article 43
6) Proposals relating to Article 45
7) Any other business

The Chairman thanked the delegates for having helped him in Mr. Bouchier's absence. Mr. Bouchier would be back in time for the following meeting.

The meeting rose at 12.30 p.m.

R. Monnat
Reporter

Martin Flores Cantero
Chairman

Annex : 1

PAGE INTENTIONALLY LEFT BLANK

PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

A N N E X

498 (2) The Government or administration official who has inspected the station must, before leaving it, communicate the result of his inspection, in writing to the master or to the person responsible if any breach of the conditions imposed by these regulations is observed (see No. 565).

499 § 3. The countries, Members of the Union, undertake not to impose technical and operating conditions more severe than those provided for in these Regulations upon foreign mobile stations which are temporarily within their territorial waters or make a temporary stay in their territory. This in no way affects arrangements which are made under international agreements relating to maritime or air navigation, and which are therefore not covered by these Regulations.

Note : "Provided for" is a better translation of "prévoient" than "contemplated".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 180-E
5 September, 1959

WORKING GROUP 6C

SUMMARY RECORD

Second Meeting of Working Group 6C (Interference, Monitoring)

Tuesday, 1 September, 1959 at 10.00 hours

Reference: Agenda of 28 August, 1959, Document No. DT 39

1. Approval of the Record of the First Meeting of Working Group 6C

The following amendments were agreed:

Item 3.2 RR 374 add at beginning "The Delegate of France said that Committee 4 had noted the similarity between Proposals 3256 and 3983 and would be likely to make a recommendation on the transfer of 3256 to Committee 6".

Item 3.5 RR 377 "electrical installations" should read "electrical installations of any kind".

Item 3.11 RR 383-385 In paragraph 2 at the end of the first sentence "RR 384" should read "RR 383".

Subject to these amendments the record of the first meeting was agreed.

2. Report of the Working Group by the Working Party 6C-1

The Chairman of Working Party 6C.1 reported that the work had not been completed. Progress was being made on combining Proposals 3256 and 3986 and a draft text would be ready for the next meeting.

3. Report to the Working Group by the Working Party 6C-2

The Chairman of Working Party 6C-2 introduced Document No. DT 37. He drew attention to a mistake in the English and Spanish versions: in the final paragraph "Committee 6" should read "Committee 7".

The Delegate for France said that in the French text the letter "s" should be omitted from "superflus".

The terms of Document No. DT 37 were accepted. It was agreed that Committee 7 should be advised of the need to include the provisions of Nos. 384 and 385 in Article 19, and that Proposal 5110 (Document No. [illegible]) should be considered in this connection.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 181-E
5 September, 1959

WORKING GROUP 6C

SUMMARY RECORD

Third Meeting of Working Group 6C (Interference, Monitoring)

Thursday, 3 September, 1959 at 15.00 hours

Reference: Agenda of 28 August, 1959, Document No.DT 39

1. Report to the Working Group by the Working Party 6C 1 (Item 2)

The Chairman of Working Party 6C 1 submitted the proposals for Article 13 RR 374 and 374bis in Document No. DT 61.

After some discussion it was agreed that

(a) RR 374 should refer to sites and antennae.

(b) references to equipment should be moved to RR 396 and 398,

(c) there should be a reference to RR 396 and 398 in RR 374,

(d) in reference to receiving sites and antennae there should be inserted "where the nature of the service permits" to cover such cases as broadcast receivers.

Working Party 6C 1 was instructed to prepare a new draft proposal.

2. RR 378/379 Proposal No. 5361 (Document No. 125)

The Delegate for Argentine introducing the proposal said that it should commence "Except in cases of distress, communications between ship atations or between ship and aircraft stations or ...."

This proposal was accepted.

3. Examination of Article 14 (RR 386 - 391) Item 4

After a lengthy discussion on proposed amendments to RR 386 - 388 (Proposals Nos. 1329, 1338, 3991, 3992, 3993) the Committee could not decide whether the receiving station or transmitting station administration should be responsible for initiating interference procedure.

A working party was set up consisting of the Delegation of South Africa (Chairman) and the Delegation of U.S.A., Netherlands, United Kingdom, Australia, and the Federal German Republic to consider all proposals relating to RR 386 - 388.

Rapporteur
C.E. Secker

Chairman
A. Heilmann

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 182-E
4 September, 1959

COMMITTEES 4, 5, 6, and 7

CORRECTIONS TO ANNEX 5 OF CIRCULAR 772

(SEE CONFERENCE DOCUMENT NO. 122)

CONSEQUENT ON THE IXth PLENARY ASSEMBLY OF THE C.C.I.R., LOS ANGELES, 1959.

Atlantic City Rec.	Paragraph	Action taken by the C.C.I.R.
Rec.1	A	No change
Rec.1	B1) B2)	C.C.I.R. Resolution No. 26 was cancelled.
	B3	For C.C.I.R. Study Programme No.97(VI) read No.151(VI). " " " " No.98(VI) read No.152(VI). " " " " No.99(VI) read No.144(VI) and No. 145(VI).
	B4	C.C.I.R. Report No.65 has been issued in a second edition.
	B5	For C.C.I.R. Recommendation No. 59 read No. 313.
	B6	No change
	B7	For C.C.I.R. Report No. 55 read No. 160.
	B8	For C.C.I.R. Study Programme No.79(V) read No.136(V). " " " " No.95(VI) read No.147(VI). " " " " No.91(V) read No.139(V). " " Report No.52 read No.144. " " " No.64 read No.159. C.C.I.R. Questions 168(V) and 169(VI) no longer remain for study.
Rec.2		For C.C.I.R. Recommendation No.179 read No.319. " " Report No.66 read No.166.
Rec.3	(a)	No change
	(b)	For C.C.I.R. Recommendation No.180 read No.322. " " Report No.67 read No.169.
	(c)	No change

Atlantic City Rec.	Para-graph	Action taken by the C.C.I.R.
Rec.4	1	For C.C.I.R. Recommendation No.88 read No.229. " " " No.145 read No.230.
	2	For C.C.I.R. Recommendation No.155 read No.235. " " " No.156 read No.236. " " " No.154 read No.234.
	3	For C.C.I.R. Recommendation No.147 read No.232. " " " No.148 read No.233.
	4	For C.C.I.R. Recommendation No.163 read No.240.
Rec.5		For C.C.I.R. Recommendation No.23 read No.250.
Rec.6		No change
Rec.7		For C.C.I.R. Recommendation No.227 read No.244.
Rec.8		Add C.C.I.R. Report No.127 "Interference in the bands shared with broadcasting (Complement to Report No.89)."

Foot of the last page: Delete footnote in its entirety.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 183-E
7 September, 1959

PLENARY MEETING
COMMITTEE 4

UNITED KINGDOM

Proposal

ARTICLE 5

Number of Proposal

5448

Frequencies for Radio-Astronomy

1. Work in radio-astronomy has already led to major advances in knowledge, and there is moreover every promise of further important results from future work in this field.

2. At the IXth Plenary Meeting of the C.C.I.R. held at Los Angeles earlier this year the technical desirability of allocating frequencies for radio-astronomy was considered and it was recommended unanimously that Administrations should afford all practicable protection to the frequencies used by radio-astronomers in their own and neighbouring countries (see Recommendation No. 314). The need to give complete international protection from interference in the bands 322-329, 1,400-1,427 and 1,645-1,675 Mc/s was particularly mentioned and attention was also drawn to the fact that radio-astronomers in a number of countries had indicated their desire to use one band at each of the following approximate positions in the spectrum:

Frequency (Mc/s)	Bandwidth (Mc/s)
40	± 0.75
80	± 1.0
160	± 2.0
640	± 2.5
2560	± 5
5120	± 10
10240	± 10

3. The United Kingdom invites the Ordinary Administrative Radio Conference to consider further the question of frequency allocation for radio-astronomy when Article 5 of the Radio Regulations is reviewed. It does not consider it sufficient or, from a frequency planning point of view desirable, that frequency allocations for work in radio-astronomy should be made on a purely national basis. It is, for example, likely that harmful interference will be experienced across national frontiers from ground-based services operated by neighbouring Administrations if the matter is dealt with in that way. Moreover, ships and aircraft, using international routes, may cause interference to radio-astronomy or may find the use of an unnecessarily large number of frequencies denied to them in one country or another as a result of a piecemeal approach to the problem.

4. In some instances, because of propagation conditions, or the extensive use of mobile equipments, it appears desirable to seek internationally quiet bands for radio-astronomy on a world-wide basis. In other cases, however, Regional agreement on the bands to be used should suffice.

5. The United Kingdom's proposals are as follows:

i) that the band 1,400-1427 Mc/s be allocated, world-wide, for radio-astronomy;

ii) that the band 151-154 Mc/s should eventually be shared in Region I between the meteorological and radio-astronomy services;

iii) that radio-astronomy should eventually have priority in the following bands:

38.0	± 0.75	Mc/s	(on a world-wide basis)
80.0	± 1.0	Mc/s	(on a Region 1 basis)
610	± 2.5	Mc/s	(" " " " ")
2296	± 4	Mc/s	(" " " " ")
5260	± 10	Mc/s	(on a Region 1 or, if possible, world-wide basis)
10000	± 10	Mc/s	(" " " " " " ")
14900	± 25	Mc/s	(" " " " " " ")
19000	± 50	Mc/s	(" " " " " " ")
31000	± 300	Mc/s	(" " " " " " ")

NOTE 1: The bands are intended as internationally quiet bands for radio-astronomy involving reception only.

NOTE 2: In the case of the frequency 610 Mc/s, it is proposed that the next European VHF Broadcasting Conference be asked to bear in mind this radio-astronomy requirement with a view to safeguarding the band-edge frequency as far as possible, cognizance being taken of the locations of the main radio-astronomy centres.

6. The United Kingdom appreciates that all countries may not wish to use the frequencies in paragraph 5 (iii) above for work in radio-astronomy. Exclusive allocations are not, therefore, proposed. It is instead suggested that priority should eventually be afforded to radio-astronomy operations in these bands; other compatible operations would not, therefore, be excluded. It is moreover recognised that countries, including the United Kingdom, could only work gradually towards priority for radio-astronomy in the bands in paragraph 5 (iii) above, or towards the clearance of the bands mentioned in paragraphs 5(i) and (ii) above. Nevertheless, acceptance of the proposals would give a lead and provide a starting point, from which a pattern of radio-astronomy allocations could eventually be developed. The United Kingdom asks that its proposals be considered on that basis, and with the great importance of work in radio-astronomy particularly in mind.

7. The international reservation of the bands 322-329 and 1,645-1,675 Mc/s is not proposed because of their use by other important radio services; but it is hoped that Administrations will bear in mind the needs of radio-astronomy in any future plans that are drawn up for these bands.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 184-E
7 September, 1959

PLENARY MEETING
COMMITTEE 4

UNITED KINGDOM

Proposal

ARTICLE 5

Frequencies for Space Research

Number of proposal

5449

1. Space research carried out from satellites in orbit around the earth has already provided much useful scientific data, particularly as regards radio propagation, and there is every prospect of further notable advances in this field. In October, 1958, the Committee for Space Research (COSPAR) was set up by the International Council of Scientific Unions and this Committee has formulated frequency proposals for space research. The matter was also considered by the C.C.I.R. at its IXth Plenary Assembly held at Los Angeles (Recommendation No. 259).

2. The United Kingdom proposes that the Ordinary Administrative Radio Conference should make frequency allocations for purposes of space research when Article 5 of the Radio Regulations is reviewed. The following allocations are suggested:

(i) An exclusive allocation at 108 Mc/s ± 0.025 Mc/s or alternatively just below 136 Mc/s to provide a narrow band for tracking and telemetry purposes; (this frequency was used during the International Geophysical Year).

(ii) An exclusive allocation of 1 Mc/s of band-width within the range 400-420 Mc/s (the precise frequency limits to be settled by the Conference) to provide the main band for tracking and telemetry purposes.

(iii) The use of narrow frequency bands within the upper guard band of the standard frequency allocations at 5, 10 and 20 Mc/s, and an exclusive allocation at 21 Mc/s ± 10 kc/s for ionospheric research involving transmissions from space vehicles.

(iv) An exclusive allocation of band-width of 0.1% (the precise limits to be determined by the Conference) within each of the following bands:

1,400 - 1,427 Mc/s
5,270 - 5,300 Mc/s
15,400 -15,800 Mc/s

to provide narrow bands for tropospheric and other types of research.

3. The United Kingdom has already proposed that the band 1,400-1,427 Mc/s be allocated for radio-astronomy on a world-wide basis. However, it is considered that this band is of sufficient width, and the nature of the radio-astronomy requirement such, as to permit a small part of it to be used also for space research.

4. The above proposals make provision for space research only; they are not intended to make provision for the control or guidance of space vehicles themselves, or for the provision of actual working services to, from, or between such vehicles. More extensive allocations, covering any such additional needs, might be settled by a subsequent Administrative Radio Conference when requirements can be assessed with more certainty.

5. It is proposed that all the allocations mentioned in paragraph 2 above be made on an exclusive world-wide basis. Whilst it might be practicable for some other radio services to use the bands at the present time, it must be borne in mind that transmissions to and from space vehicles, for space research, are likely to be more numerous than at present and that higher powers may well be used in the future.

6. These proposals are in broad agreement with those formulated by the Committee on Space Research.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 185-E
7 September, 1959

WORKING GROUP 6B

SUMMARY RECORD

First Meeting of Working Group 6B (Technical Characteristics)

Wednesday, 2 September, 1959 at 15.00 hours

Reference : Agenda of 1 September, 1959, Document No. DT 55

The Chairman welcomed delegates to the first meeting of Working Group 6B. He appointed Mr. C. E. Secker of the United Kingdom Delegation as unofficial rapporteur.

1. Terms of reference

The terms of reference set out in Document No. 81 were agreed.

2. Organization of work

The Chairman explained that he wished to start examination of the relevant Radio Regulations in the Working Group and to set up Sub-Groups where detailed consideration was required. This was agreed.

3. Examination of Radio Regulations

The Chairman referred to Documents Nos. DT 45 and DT 65 which contained summaries of proposals submitted and pointed out that these did not include proposals from the Argentine Administration in Document No. 125 and those to be submitted by the Japanese Administration.

RR 74 (Proposals 293-295 and 5354)

It was noted that all these proposals had the same intention and Proposal No. 293 was accepted.

Section I Heading (Proposal 296)

Proposal 296 was accepted.

RR 75 (Proposals 297, 298, 4611)

It was agreed that RR 75 should read :

"Emissions are classified and symbolized according to the following characteristics :

1) Type of modulation of the main carrier
2) Type of transmission
3) Supplementary characteristics"

with the following reservations :

a) to reconsider the word "signal" instead of "transmission" in 2) if proposal 219 were accepted;
b) to reconsider 3) after the examination of later regulations;
c) to consider the Japanese Administration proposal for a further sub-section when it had been published.

RR 76 - 80

These were discussed briefly and it was decided to set up Sub-Group 6 B1 to examine the proposals. The Sub-Group was to consist of the Delegation for Australia with Mr. M. Strohfeldt as Chairman and the Delegations of France, the United Kingdom, India, U.S.A., the Federal German Republic, Japan, Argentine, South Africa and the I.F.R.B.

Rapporteur :
C.E. Secker

Chairman :
J.K.S. Jowett

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 186-E (Rev.)
5 October 1959

PLENARY SESSION
COMMITTEE 7

FEDERAL GERMAN REPUBLIC

Proposal

ARTICLE 37

Number of the proposal		
5447 (Rev.)	920.	After this number, insert the following new paragraph:

1 bis) On board survival craft, the call sign of the maritime mobile station shall be automatically transmitted three times by the automatic radiotelegraph alarm apparatus.

Reasons:

1) Quicker identification of the mobile station in distress.

2) Through automatic (and hence compulsory) transmission of the call sign immediately after the alarm signal, it is possible in cases of distress even for inexperienced persons to send at least the call sign of the maritime mobile station, thus ensuring that the name of the survival craft in distress is known.

3) Document 329 draws the attention of Committee 7 to the new wording of No. 372, prohibiting all stations from sending signals without giving their identity.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 186-E
7 September, 1959

PLENARY MEETING
COMMITTEE 7

FEDERAL GERMAN REPUBLIC

Proposal

ARTICLE 37

Proposal No.

5447 920. After this number, insert the following new paragraph:

(1 bis) The call sign of the maritime mobile station shall also be three times automatically transmitted by the automatic radiotelegraph alarm apparatus.

Reasons

Quicker identification of the station in distress.

INTERNATIONAL TELECOMMUNICATION UNION

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

E

Document No. 187-E
8 September, 1959

PLENARY MEETING
COMMITTEE 7C

ISRAEL (STATE OF)

PROPOSAL

ARTICLE 37

Number of Proposal		
5453	867.	After this number add the following new sub-paragraph:
	(2 bis)	Communications in radiotelephony in cases of distress, urgency and safety shall be transmitted at dictation speed with distinct articulation.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 188-E
7 September, 1959

COMMITTEE 7

MINUTES
OF THE
THIRD MEETING OF COMMITTEE 7
(Operations Committee)

4 September, 1959 at 3 p.m.

Chairman: Mr. A. J. EHNLE (Netherlands)

Agenda: Document No. DT 57

In opening the meeting, the Chairman asked that an additional item, namely, "Reports of Chairmen of Sub-Committees 7A, 7B, 7C and 7D" be added to the Agenda. This was accepted.

1. Minutes of First Meeting - Document No. 93.

The minutes of the First Meeting (Document No. 93) were accepted with the following amendments:

Page 2, Item 4, read "Sub-Committee B .....
Vice-Chairman: Mr. J. Bes - Delegation of France."

and "Sub-Committee D .....
Vice-Chairman: Mr. M. Flisak -Delegation of Poland."

Page 2, Item 5: Delete last sentence and substitute:

"The Chairman of Committee 4 had asked that Sub-Committee 7B should treat the examination of Radio Regulations 236-239 as an urgent matter so that the work of his Committee would not be held up".

Page 3, Item 6, (ii) read "had designated the following Delegates to assist ..... etc."

2. Minutes of Second Meeting - Document No. 132.

The minutes of the Second Meeting (Document No. 132) were accepted.

3. Matters Arising including allocation of general proposals to Committee 7.

The Chairman referred to Item 1 of the minutes of the Second Meeting (Document No. 132). He said that the meeting to allocate the general proposals contained in pages 2 - 40 of the Yellow Book had not yet taken place. The Chairman of the Conference had in preparation a document in which the exact terms of reference of all Committees would be published. It would not be possible, therefore, to proceed further with this item until the document had been issued.

4. Allocation of Proposals Nos. 27, 28 and 29 (Yellow Book, Pages 37, 38).

The Chairman explained that Committee 4 had found it necessary to examine these proposals, but they had received no support. However the Chairman of Committee 4 had stated that it was his intention to pass the proposals to Committee 7 for further examination. Accordingly the Delegate of Sweden was invited to say whether he wished that this should be done. The Delegate of Sweden replied that the idea contained in Proposals Nos. 27, 28 and 29 was not a new one. It had been put forward at earlier Conferences and, although the proposed measures looked forward 10 or 15 years, it was the desire of his Delegation that they should not be lost sight of. The Delegation of Sweden therefore hoped it would be possible to have the proposals examined by one or other of the Sub-Committees of Committee 7. There was no support for this suggestion and accordingly Proposals Nos. 27, 28 and 29 were deleted from the Agenda.

4a. Reports of Chairmen of Sub-Committees 7A, 7B, 7C and 7D.

(i) Sub-Committee 7A

The Vice-Chairman of Sub-Committee 7A reported that Mr. Bouchier's professional duties had compelled him to return to Belgium for the time being. Accordingly Mr. Cantero had acted as Chairman of the two meetings which had taken place since the last report. At the first of these, on 31 August, 1959, the Sub-Committee completed its study of Article 22 of the Radio Regulations except Proposal No. 1507. At the second meeting on 2 September, 1959, the examination of Article 23 was completed with the exception of Proposals Nos. 1520, 1521 and 1523 which could not be dealt with until Article 24 had been studied. The cooperation of all Delegations was enabling the Sub-Committee to make good progress.

(ii) Sub-Committee 7B

The Chairman of Sub-Committee 7B reported that his Sub-Committee had met once since the last report. At that meeting the examination of Article 30 - Calls - was completed. Agreed proposals had been passed to the Drafting Group to prepare texts and a few others to small working groups to prepare compromise drafts. The two Working Groups, 7B1 (Appendix 9) and 7B2 (Appendix 9 bis) were making satisfactory progress. At its next meeting

Sub-Committee 7B would commence its examination of Article 35 (less Section IV) and then pass on to Article 28.

(iii) Sub-Committee 7C

The Chairman of Sub-Committee 7C said that the most notable development since his last report was that a second Working Group, 7C2, had been set up to deal with the use of the automatic alarm in radiotelegraphy and radiotelephony. Mr. Embe, of the Delegation of Sweden was Chairman of this Working Group on which the following Delegations were represented: Denmark, Finland, Iceland, Norway, France, India, the United Kingdom and the United States of America as well as the I.C.S. and C.I.R.M.

The Sub-Committee had continued its examination of Article 37 up to, and through, Section IV - Distress Call. To enable the Working Groups to meet sufficiently frequently, Sub-Committee 7C was giving up one of its meetings each week and the Committee could be sure that under the Chairmanship of Mr. Bes and Mr. Embe, the Working Groups would continue to make good progress.

The Delegates of Brazil, the Netherlands and Pakistan indicated that they wished to participate in the task of Working Group 7C2. The Chairman of Sub-Committee 7C willingly accepted them and indeed invited any other Delegation that might be interested to join the Working Group without further formality.

(iv) Sub-Committee 7D

The Chairman of Sub-Committee 7D reported three meetings of his Sub-Committee. Good progress had been made: Article 40 had been examined and new texts adopted. At the request of the Delegation of Colombia who wished a new proposal to be taken into consideration, examination of Article 1 of the Additional Radio Regulations had been deferred. However, Articles 2 and 3 had been studied. In general consideration of Article 4 six points of principle had emerged. These had been put before the Sub-Committee and decisions were reached which would be taken into account in drafting the texts. Two Working Parties had been established. The first, 7D1 (Accounts) would deal with Articles 41 of the Radio Regulations and 4 of the Additional Radio Regulations; the second, 7D2 (Radiotelephony), under the Chairmanship of Mr. Petrich (Federal German Republic) would deal with operating rules for radiotelephony. In view of the importance of the tasks of these two Working Groups, meetings of the Sub-Committee would be suspended temporarily. However, he was pleased to say that Mr. Swanson, Chairman of Working Group 7D1 (Accounts) had estimated that his Working Group might complete its task in four meetings. This encouraged him to think it might be possible to resume plenary meetings of the Sub-Committee in the third week of September.

The reports of the Chairmen of Sub-Committees 7A, 7B, 7C and 7D were accepted by the meeting.

5. Other Business.

(i) Allocation of New Proposals.

The following allocations of new proposals were accepted by the meeting:

Sub-Committee 7A

Document No. 133 (I.F.R.B.) - Service Documents.

Sub-Committee 7B

Document No. 154 (Belgium, Belgian Congo) - Article 33, Radio Regulations.

Sub-Committee 7C

Document No. 166 (Brazil) - Article 37, Radio Regulations.

Sub-Committee 7D

Document No. 149 (Italy) - Article 4, Additional Radio Regulations.

" No. 168 (Switzerland) - Article 41, Radio Regulations.

" No. 169 (Switzerland) - Articles 5 and 6, Additional Radio Regulations.

(ii) Timetable for Week Commencing 7 September, 1959.

The Chairmen of Sub-Committees gave details of proposed meetings of the various Working Groups. Considerable re-adjustment was necessary to accommodate Delegations who could not participate in simultaneous meetings of several important Working Groups and it was agreed that an amended timetable would be issued before 7 September, 1959.

(iii) The next meeting of Committee 7 will be on Friday, 11 September, 1959 in Room B at 15.00 hours.

This concluded the business of the meeting.

Rapporteur:
G.F. Wilson

Chairman of the meeting:
A.J. Ehnle

INTERNATIONAL TELECOMMUNICATION UNION

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 189-E
7 September 1959

COMMITTEE 4

SUMMARY RECORD

Tenth Meeting of Committee 4 (Frequency Allocation)

Thursday 3 September, 1959, at 15.00 hours - Room A

1. The report of the second meeting, Document No. 89 as amended by Corrigendum 1, was agreed without comment.

2. In opening the discussion on the frequency bands between 4 and 27 Mc/s the Chairman drew attention to the lists of proposals which had been published in Document No. DT 70. He said that in general the proposals appeared to fall mainly into two groups:

   a) countries having the opinion that the Allocation Table for the whole HF band should not be changed in any way;

   b) countries wishing to increase the allocations for HF broadcasting at the expense of the fixed service.

There were, of course, some other problems, but these were probably less difficult to deal with and could be taken up as the Committee proceeded with the consideration of the various services in the HF band.

But the main problem, which might turn out to be the key to the success or failure of the Conference, was the problem of HF broadcasting versus the fixed services.

He would not attempt to give the arguments of the two groups. The Conference would no doubt hear these very soon from the sponsors of the two categories of proposals.

But the Conference must realize that it was faced with two grim alternatives: to disappoint the broadcasting interests, or to disappoint the fixed service interests and to upset most of the work which had been done during the last years by implementing the E.A.R.C. Agreement and by coordinating the use of the HF bands.

It was, of course, possible that the coming discussion would show clearly which of the possibilities would be the preferred one.

The Conference must realize that the normal methods for obtaining a compromise solution did not apply here. The propagation characteristics of HF waves practically rule out different regional solutions, and the very nature of HF broadcast reception makes sharing with other services extremely difficult.

But all the same, the Conference must not forget what the Swedish author, Selma Lagerlöf, said in one of her stories "there is always a third possibility, only it may be difficult for us to see it". The Chairman concluded by stating that he would be relying on the good help of the Delegates.

3. The Delegate of Argentine opened the discussion with the following statement:

" Our Delegation happens to be the first to speak at this meeting, since we submitted Proposal No. 5203 (Doc. 91) with the aim of avoiding any alteration in the Table of band allocations between 4 and 27.5 Mc/s.

" The Argentine Administration considers that any change in these bands would create a further complication in the difficult problems that countries have to solve.

" We cannot forget that there exist plans in the aeronautical mobile R and OR services and also in the maritime mobile services, which will lead to the solution of the problems arising from the disorderly and inorganic use of the frequency spectrum in the bands assigned to these services.

" Neither can we forget the great efforts accomplished by countries to clear the frequency bands assigned to them by these plans and to bring out-of-band stations into the appropriate bands.

" We should like to draw attention to the fact that many Administrations are attempting to find a solution to their problems in their domestic and international communications on the basis of the present Table of Frequency Allocations and that, consequently, any change in that Table would be harmful, both technically and economically.

" It should be remembered how much it cost our country to observe the modifications which the Atlantic City Conference introduced in the Table of band allocations.

" We are in a period that may be called transitional; further time will be required before we can make variations, in order to assess the actual effects of such efforts. Any change would defeat its purpose.

" Accordingly, Mr. Chairman, we formally submit our proposal not to introduce changes in the Frequency Allocation Table between 4 and 27.5 Mc/s and we would request that, in view of its excluding character, you would open it to general discussion in so far as the Delegates here desire".

The Delegate of Canada supported the views of the previous speaker with the following remarks:

" The Canadian Delegation believes it would be useful, at this point in our work, to recall the heavy pressure under which so much overtime work was done, and the considerable lengthening of the Conference, at Atlantic City, in achieving an agreeable subdivision of the spectrum from 4 to 27.5 Mc/s. We would remember, also, the subsequent years spent here, in beautiful Geneva, and elsewhere, during the E.A.R.C. and associated Conferences, planning an orderly move into the Atlantic City bands. This move into the new bands has only recently been completed, at enormous expense in time, engineering effort and equipment, and at last all the Services are packed together in the spectrum 4 and 30 Mc/s as snugly as sardines in a can. The heavy expenses borne by all administrative operating agencies in achieving this result have, of course, by no means been amortized.

" We all agree, I am sure, that no service has enough space under the existing arrangement, and we know that no service can secure additonal space excepting at the direct expense of another service.

" In such circumstances, and bearing in mind that there has not yet accumulated a significant body of experience of wholly in-band operation under the Atlantic City table, the Delegation of Canada supports wholeheartedly the recommendation of Argentine and Peru for the retention intact, of the Atlantic City table between 4 and 27.5 Mc/s, and hopes that those of us who find it unavoidable to increase the assignments to certain services or to add some new service, may be able to do so successfully within the scope allowed by Articles 3, 4 and 5 of the regulations."

The Delegate of Canada was followed by the Delegate of Brazil in the following words:

" My Delegation wishes to give its views on some general matters in connection with the 4,000-27,500 kc/s band.

" We finished a preliminary consideration of the bands up to 4,000 kc/s yesterday. In these bands, the problems are easier of solution, since propagation is more restricted and the joint or individual interests of neighbouring countries can be more readily harmonized by regional agreements. But in the bands we shall now be considering, there are other, more complicated, factors to be borne in mind.

" We hold the view that in the bands between 4,000 kc/s and 27,500 kc/s the allocation made at Atlantic City should continue for a few years longer - a distribution implemented as a result of the E.A.R.C. Agreement.

" Inclusion of various high-frequency exclusive R and OR aeronautical mobile bands in the Atlantic City Table, an appreciable increase in the maritime mobile high-frequency exclusive bands and also in the high-frequency broadcasting exclusive bands, caused a severe reduction in the width of the bands previously used for the fixed and land mobile services. This situation has meant the gigantic job of rearranging the fixed and land mobile circuits which were using frequencies in the bands intended, according to the Table, for broadcasting and the maritime and aeronautical services.

" This called for a tremendous effort on the part of our countries to read just the frequencies and to respect circuits within the periods and according to the rules laid down by the E.A.R.C.

" We are, it would seem, in the first phase of the execution and experience of the Atlantic City Table of Frequency Allocations, which is being implemented as a result of the decisions of the E.A.R.C. Hence we think that the Union will have to continue, for several years, to use the 4,000 to 27,500 kc/s bands before considering the possibility of introducing fundamental changes.

" Past experience has shown us that with the reciprocal collaboration of the Administrations and the help of the I.F.R.B., we can achieve even more satisfactory results without the need for making any alteration in the distribution in this part of the spectrum.

" That is our opinion, and that is all I wish to say. Thank you, Mr. Chairman."

The Delegate of the United States stated that he would speak in the same vein as the previous speakers: we had begun to make substantial progress in sharing this valuable international resource, the high-frequency band, but we had paid in time, effort and money for the progress that had so far been made. There had, for example, been some 20 conferences since Atlantic City which were concerned with this band and until we had gained more experience of the plans developed at these conferences and with the possibility of using improved procedural methods to gain a more efficient use of the frequency spectrum, we should risk retrogression by attempting to make radical changes. Some features did not appear to be perfect, but he considered that an attempt to find an alternative which would be acceptable to all States and also an improvement on the present allocations, was out of question at this time. He drew attention that the United States had asked in Proposal No. 3333 for a small change about 26 Mc/s for the new

space service and that the original United States' proposal had been to support a policy of no change between 2,850 kc/s and 25,000 kc/s. However, in order wholeheartedly to support the proposal made by the Delegate of Argentine, the United States would withdraw Proposal No. 3333 and would seek an alternative frequency above 27.5 Mc/s. He concluded by pointing out that historically the I.T.U. has always recognized the collective responsibility of all States to reach substantial agreement in these bands and said that the Conference must not be tempted to look at regional or area divisions.

The Delegate of Peru supported strongly what had been said by the Delegate of Argentine and pointed out that his country had made similar proposals which were to be found in Document No. 115.

The Delegate of Iceland was generally of the same opinion, that there should be no serious changes; however, he did feel that the present division of the Table had gone a little too far to allow the necessary degree of flexibility. In this connection he gave the example of a wide-band telephone channel only in use during office hours which could be used outside these hours for broadcasting on the same frequency with the same power and the same antenna system. It was not his intention to propose common bands for fixed and broadcast services, but he did feel that restricted use of this sharing method could be of assistance in reducing the congestion of the broadcast band. He wished to make no specific proposal at this time.

The Delegate of New Zealand supported the views already expressed; any idea that the Table could be changed at this time could only cause serious repercussions on all the work which had been done during the past 10-12 years. He considered that a period of stability must now be arranged; much of the work already done was producing very good results, but we should not know for some time more what the full value would be. In reference to the many conferences which have occurred since Atlantic City, he said that these in themselves had been expensive and the results of implementing their plans had also been very costly in equipment and antenna redesign. It was necessary to gain more experience before making any further changes.

The Delegate of Venezuela supported the views expressed by the previous speakers; time had been consumed in implementing the E.A.R.C. plans based on the Atlantic City Table and it was hoped with the help of I.F.R.B. and the cooperation of all Administrations to find a solution to those problems still pending.

The Delegate of the United Kingdom spoke briefly in the following terms: "The United Kingdom is proposing no major changes in frequency allocations in the HF band. A valuable measure of stability has now been

achieved in that band, and we consider it most undesirable to disturb that stability especially in view of the approaching period of lower sunspot activity. We recognize that arguments can be advanced for increasing the allocations made for one or other particular service but increases of that kind could only be made at the expense of the other services which are also hard pressed. In our view, any major changes would not lead to the intended result but rather to difficulty and disorder. We find support for our point of view in the views and proposals of other Administrations and in one or two paragraphs of the I.F.R.B.'s report which draw attention to the further expenditure and effort that would be called for should major changes be made in band allocation."

The Delegate of Paraguay also supported the previous speakers as follows:

" We should like to support the opinions expressed by the Delegates of Argentina, Canada, Brazil and others, since they concord with our views.

" It would be superfluous to expand the reasons for these views, and we would merely add that we have plans developing on the basis of the Atlantic City Table which require from us all the efforts of which we are capable with the means at our disposal. We feel that this position must be that of all under-developed countries."

The Delegate of Mexico was in general support of the previous speakers, as will be seen from his statement which follows: "I should like to state that Mexico, together with the other Administrations, has made great efforts to conform with the existing Table of Frequency Allocations and that, although we still have some problems in connection with some of our assignments, what has been done is much greater than what remains to be done. If the efforts already made are not to prove useless, Mexico supports the Argentine proposal that the existing Table be maintained as long as possible and, should this not be so, that it should suffer the minimum of changes."

The Delegate of Austria said that his country had made great efforts to move into band, but that there was insufficient experience available to make it appropriate to change now; one complete sunspot cycle had not yet elapsed; in order to assist the Conference in arriving at a decision he was prepared to withdraw their Proposal 4619.

The Delegate of Turkey said that over a long period of time and with great difficulty administrations had applied the provisions made at Atlantic City and he was not, therefore, in favour of any change, at least for some years to come.

The Delegate of Japan made the following statement: "The Japanese Delegation deems that the current Table of Frequency Allocation is quite satisfactory for most of the frequency band between 4 and 27.5 Mc/s and should be maintained as it stands.

" We would like to support the proposals or opinions of Argentine, Canada, Brazil, U.S.A., New Zealand, United Kingdom of Great Britain and several other countries who have the same point of view."

The Delegate of the Philippines made the following statement:

" The Philippines is in complete accord with the views expressed by Canada, Peru, New Zealand, the U.S.A., the United Kingdom, Paraguay, Mexico, Japan and others to the effect that it will be a wise move to wait and maintain the status quo of the Frequency Allocation Table insofar as frequency band 4.0 Mc/s to 27.5 Mc/s is concerned and supports Proposal No. 5203 of Argentina.

" My Delegation believes that we should, at least for a number of years more, continue to implement the high frequency band 4.0 to 27.5 Mc/s as it now appears in the Frequency Allocation Table adopted at the Atlantic City Conference of 1947."

The Delegate of Finland stated that he wished to support the view that no principal changes should be made to the Atlantic City Table of Frequency Allocation.

The Delegate of the U.S.S.R. drew attention that the total allocations for broadcasting in all sectors of the Table amounted to 2,600 kc/s; in the opinion of the U.S.S.R. this was not sufficient. In view of the constant increase of the cultural needs of populations and the growing importance of broadcasting in education, he considered this question of additional frequencies for broadcasting purposes to be of the highest importance. The Conference would have noted that there had been considerable developments in the field of communication by cables and by new radio techniques and that this should enable a slight reduction to be made in the allocations to fixed services, thus allowing for an increase for broadcasting. He would like to stress that he did not wish to modify the Atlantic City Table, but he believed it possible to broaden slightly the broadcast bands in accordance with the proposals which they had submitted; this would amount to a total increase of the broadcast bands by 388 kc/s.

The Delegate of the Federal German Republic fully shared the views proposed by the Argentine Delegate; he pointed out that in Document No. 26 they had made certain proposals concerning the use of frequencies by the Red Cross, but these did not affect the Table of Frequency Allocations and may not even be proper to the work of this Committee.

The Delegate of Bolivia said that as so many arguments had already been put forward, he did not wish to express his views at great length but merely to state his support for the proposal that there should be no change.

The Delegate of South Africa also supported the proposal made by the Delegate of Argentine and by many others.

The Delegation of Colombia stated that with regard to the bands between 4 Mc/s and 28 Mc/s it did not wish to introduce any changes in the Atlantic City Frequency Band Allocation Table in view of the inconvenience which would arise from a change of this nature. From the economic point of view considerable harm would ensue for various countries, including Colombia; also it was considered unnecessary to increase any band assigned to a given service since this could only cause a decrease in another service.

The Delegation of Colombia considers that the bands assigned in accordance with the Atlantic City Table between 4 and 28 Mc/s are adequate for the services and that the impossibility of adequately operating certain services is solely due to the incorrect use of such bands as, for example, the fixed and broadcasting services in this part of the spectrum. Colombia, however, would wish to point out that, in the 5,060 - 5,250 band, a special radiotelephone service for educational purposes is operating (in conformity with number 237 of the Radio Regulations).

The Delegate of Greece stated that he was opposed to any change in the Atlantic City Table.

The Delegate of Malaya made the following statement: "We wish to associate ourselves with those Administrations who wish no change in the Allocation Table in the bands 4,000 to 27,500 kc/s because of the various reasons already mentioned which need not be repeated.

" Our main concern is, of course, in the availability of frequencies for high-frequency broadcasting. We all have the belief that the spectrum for HF broadcasting is bursting. However, it is our contention that it is not the spectrum that is bursting but the Master Radio Frequency Register itself that is bursting at the seams because of unrealistic registration.

" We believe that with cooperation and goodwill among Members of this Union the HF broadcasting problem for the younger Members can be solved.

" However, if this problem cannot be solved amicably, then we have no alternative but to press for wider spectrum for the broadcasting service."

The Delegate of Ghana stated that he shared the views of those who felt that no changes should be made. He pointed out, however, that special efforts will have to be made to meet the known needs of new countries for frequencies for HF broadcasting. He asked that special efforts in this connection be made by the I.F.R.B. Unless it was possible by such efforts to alleviate their difficulties, he might be forced by circumstances to ask for an increase in the broadcasting bands.

The Delegate of Cuba in principle supported the proposals made by the Delegate of Argentine; however, the Conference should not lose the opportunity to make slight revisions especially in the Regional bands. In this connection, he felt it was possible to make slight changes in such bands without these changes constituting any serious derogation of the Atlantic City Table. As an example he made reference to the band 7,100 to 7,300 kc/s which, in Region II, is used exclusively by amateurs. If the Region II allocation were aligned with those of Region I and Region III, this could contribute to the solution of the difficulties in high-frequency broadcasting about which dissatisfaction had been expressed.

The Delegate of Australia made the following statement : "The Australian Delegation has listened with great interest to the remarks of the Argentine Delegate which have been supported by the Delegate of the United States of America and numerous others who advocate no alternation to the Frequency Allocation Table between 4 and 25 Mc/s.

" We agree that it would be unwise to suggest any changes of a major nature and to this end would seek your approval to withdrawal of our proposals numbered 5 and 6 which are listed for consideration on page 2 of Document No. DT 70-E. The Secretary-General has been requested to so arrange.

" While supporting the move for no major changes in the Table, however, my Delegation feels that several alterations of a minor nature could be made with some profit at this juncture. The changes to which I refer are covered by those proposals suggesting review of the Industrial, Scientific and Medical bands with the possibility of some slight extension. Other proposals which we have submitted suggest some reduction in the guard bands at 15, 20 and 25 Mc/s for standard frequency transmissions and some alteration in existing usage in the 7 - 7.15 Mc/s band now allotted for shared use of broadcasting and amateur services in our country. We desire, Mr. Chairman, to allow the proposals mentioned to be submitted for consideration of the Committee."

The Delegate of the United States referred to the possibility which had been mentioned that the fixed service will in future require less frequency space; the United States had found that despite the introduction of technical improvements, the requirements had nevertheless continued to

grow. He referred to the willingness shown by the Delegates of Malaya and Ghana to consider in Committee 5 proposals for improving the management of the frequency bands; he considered that it was the duty of the Conference to effect this improvement in management before the bands were upset and said that his Delegation would be prepared to cooperate in any way possible in effecting such improvement.

The Delegate of Sweden said that he shared the views that as little as possible change should be made; in order to assist the Conference, he wished to withdraw his Proposals 407 to 411. In respect of what had been said about shortage of frequencies for HF broadcasting, he considered that the great need of the other services made it unreasonable to give more space to this service.

The Delegate of Poland made the following statement : "The Polish Delegation does not agree with the proposals to leave the part of the spectrum between 4 and 27.5 Mc/s unchanged. Experience has shown that the Atlantic City Table requires some correction. In particular, the high-frequency broadcasting bands seem too narrow.

" It is our opinion that far-reaching changes are not required, but certain corrections should be made in accordance with the proposals submitted by Poland in the Yellow Book. We hope that these proposals will be discussed in detail at one of the forthcoming meetings of Committee 4."

The Delegate of China made the following statement : "The Delegation of China fully supports Proposal 5203 submitted by the Argentine Delegation that the present Table of Frequency Allocation between 4 Mc/s and 27.5 Mc/s should be maintained in consideration of the time and expenses already spent in moving the frequencies into the bands. The requirements of new services should, as far as possible, be met with in the bands above 27.5 Mc/s."

The Delegate of Italy said that he was, in principle, in agreement with the view that at least at this Conference there should be no major change; however, a solution which maintained the status quo was too easy and too comfortable for such a Conference and that the Conference should do its best to correct any errors which might have been made at Atlantic City.

The Delegate of Ethiopia considered that too much effort and expense had been involved in moving into Atlantic City bands for these to be changed at the present time. He was pleased to say that his country had no out-of-band frequencies; they had, however, some unfulfilled requirements and for this reason they proposed to support in the near future the implementation of the I.F.R.B. draft plans provided amendments were made to meet the requirements of Ghana, Malaya and his own country.

The Delegate of Norway shared the views expressed by most of the previous speakers that the present allocations should, in general, be maintained.

The Delegate of Roumania agreed with the viewpoint of a large number of speakers that there should not be major changes; a few improvements were required in certain bands to meet the needs of high-frequency broadcasting and, in this respect, he supported the proposals of the Delegate of the U.S.S.R.

The Delegate of Spain supported the proposals made by the Delegate of Argentine.

The Delegate of Ireland wished his country's name to be added to the list of those in favour of maintaining the status quo; furthermore, in view of the general opinions already expressed he considered that this Committee could reach a conclusion without the necessity of referring the subject to a working group.

The Delegate of Israel supported the general porposals; his State had been successful with one exception in eliminating out-of-band frequencies. He hoped that the work of Committee 5 would lead to an improvement in frequency management and thus help to solve the problems of those states which, like his own, still had difficulties in high-frequency broadcasting.

The Delegate of Ceylon referred to the powers of this Conference in dealing with the Atlantic City Table; he considered that insufficient time had elapsed since Atlantic City to make a decision now to make major changes. Nevertheless, if palpable errors had been made by Atlantic City, these should be rectified, but the Conference should be very sure that there had been possible errors. He considered that the amateur service should, if possible, have exclusive bands although he did not wish to make any specific proposal. On the whole, he supported the view that there should be no major changes.

The Delegate of the Belgian Congo made the following statement : "The Delegate of the Belgian Congo considers that any modification of the existing distribution should be avoided, provided that the minimum high-frequency broadcasting requirements can be satisfied on the national level. It is thus only a posteriori that we shall be able to say whether the Table as it stands is acceptable or whether the widening of certain HF broadcasting bands is absolutely indispensable."

The Delegate of Czechoslovakia considered that the needs for cultural and educational exchanges in high-frequency broadcasting should be taken into account in an adequate manner. He was not able to agree that there should be no change, and considered that the Conference must discuss all problems which had become topical since Atlantic City. No one could claim that the Atlantic City Table is perfect and he considered that all proposals should be studied in order to find a satisfactory solution. In respect of high-frequency broadcasting, he supported proposals put forward by the Delegates of U.S.S.R. and Poland.

The Delegate of Bulgaria said he wished to be associated with those who favoured retention of the status quo, but he noted that many Delegates had drawn attention to the overloading of some of the bands and their consequent inability to meet all needs. He felt that something must be done to overcome the difficulties by broadening the HF broadcasting bands at the cost of the telegraph and telephone services which could more and more use cables. For this reason, he supported the proposals made by the Delegates of U.S.S.R. and Poland.

The Delegate of France considered it undesirable to make major changes to the Table. Broadly speaking, he was in favour of retaining the status quo; nevertheless he considered that minor amendments should be made to the Table and he accordingly supported the views expressed by the Delegate of Italy.

The Delegate of Belgium expressed the following views : "The Belgian Delegation agrees with the very many delegations which have expressed their opposition to undermining, at any time, the structure which has been laboriously built up since Atlantic City - the Table of Frequency Allocations between 4 and 27.5 Mc/s. We could, however, agree to certain adjustments of very minor importance. The Belgian Delegation accordingly supports the views of the Italian Delegation, already seconded by the French Delegation."

The Delegate of Yugoslavia made the following statement : "The Yugoslav Delegation cannot accept the rigid principle of maintaining at any price the status quo with regard to the section between 4,000 and 27,500 kc/s in the Table of Frequency Allocations, for everyone knows that that Table was drawn up 12 years ago and that since then there have been many changes in wire and radio telecommunication technique.

" How can anybody leave the high-frequency section of the Table unchanged when it is well known that it is precisely in that section that the situation is least satisfactory?

" Nevertheless, there is no doubt that the Atlantic City Table provides a valuable basis for the accommodation and arrangement of the various radio services.

" But during the discussion on the problem of the Table - the special bands and their limits - small countries such as Iceland and Cuba, new countries such as Ghana and Malaya, and even countries with a large superficial area such as the U.S.S.R. and the Belgian Congo, have expressed the view that a more flexible attitude must be taken in handling these questions.

" Moreover, several delegations share the opinion that we have not had sufficient experience in the use of certain high frequency bands.

" However, we have had another experience - a negative one - in recent years, on the complete advisability of distributing the bands between the various services and especially between the fixed and broadcasting services.

" The reasons why we have not succeeded in preparing the International Frequency List for these two services are of a different nature. For the fixed service, within the framework of the P.F.B., we often found ourselves in the situation where it seemed that the establishment of an arrangement was feasible. Among others, it was a question of separating the varying opinions on the method of presentation of the frequency requirements relating to special two-way links or to special stations. These varying views nevertheless prevented the P.F.B. from achieving success in its work. Thus the principal cause of the failure to prepare the Plan for the fixed services was not the narrowness of the bands reserved for those services in the Table.

" Completely different reasons, despite the efforts made at the international conferences held in Mexico City and Florence/Rapallo, by the Technical Committee in Paris and the I.F.R.B., prevented the preparation of acceptable plans for the high-frequency broadcasting services. Time and again the countries' requirements were too voluminous for the total bandwidths reserved for broadcasting in the Atlantic City Table. Even the special measures taken, such as the one taken by the I.F.R.B. of separating adjacent channels by 5 kc/s with a geographical distribution of interlaced transmitters (let us borrow this technical term from television) did little to change the situation.

" It must not be forgotten that, with regard to the bandwidths assigned to the high frequency services (and this is most crucial in broadcasting), the total width in the Table must be larger than is strictly essential for a single phase of the sunspot cycle if we are to ensure radio broadcast programmes without considerable restrictions during the "difficult" phases and seasons.

" It is necessary, on the other hand, to remember that the Table - slightly amended as regards the limits of services not yet planned - should serve for the near future at least, especially for the underdeveloped countries and for the new services.

" For all these reasons, our Delegation considers that we should not reject the idea of a carefully studied revision of the limits of the Atlantic City Table relating to the fixed and broadcasting services in that part of the frequency spectrum between 4,000 and 27,500 kc/s."

The Delegate of the Netherlands supported the views expressed by the Delegates of Italy, France and Belgium.

The Delegate of Korea endorsed the proposal made by the Delegate of Argentina and supported by many others: however, he was inclined to agree with the Delegates of Malaya and Ghana that the I.F.R.B. should study the better distribution of frequencies and gave his assurance that his country would co-operate fully in such a study.

The Delegate of Denmark had no doubt that the majority considered that the present allocation should be maintained. His country had undertaken a survey of the effects resulting from the U.S.S.R. proposals to extend the broadcast bands at the expense of the fixed service bands; the only fixed circuit influenced by this change would be that from Copenhagen to Moscow. Even if this were acceptable to Denmark, it would nevertheless increase the loading on what would remain of the fixed service bands. He agreed that there was a tendency to greater use of cables; nevertheless there was an opposite tendency from those countries requiring frequencies to build up new networks. He considered that we were now in a state of balance between these tendencies and that in a few years it might be possible for the fixed services to give up a small part of their allocations. This, he felt, could not happen at this Conference.

The Delegate of the Vatican City shared the views expressed by the Delegate of Italy and supported by the Delegate of France.

The Delegate of Hungary made the following statement:
"The Hungarian administration is disposed, as regards its radio service, to work in accordance with the Atlantic City frequency allocation table within the frequency bands between 4 and 27.5 Mc/s. However, Hungary not being a big enough country, is unable to make its voice heard effectively, in the short wave broadcasting bands due to lack of adequate frequencies. And I think there are several small countries in the same situation. I believe I speak at the same time on behalf of these countries too when I submit for consideration the slight broadening of some short-wave broadcasting bands. And first of all, taking into consideration the actual facts, this should be done in the 9 Mc/s broadcasting frequency bands."

The Delegate of Iran agreed with the proposal that there should be no major changes; however, the frequencies assigned to Iran did not meet their requirements especially for HF broadcasting, but also for fixed service, he hoped that the Conference would be able to find an adequate solution to this problem.

The Delegate of Portugal expressed support for the views stated by the Delegate of Italy and supported by the Delegate of France.

4. In summing up, the Chairman said that it now appeared that the general opinions fell into four headings:

4.1 those supporting the Argentine proposal that there should be no change;

4.2 those which were very close but considered that special provisions to improve the HF broadcasting service should be made, probably in Committee 5;

4.3 those who supported the Italian proposal to retain the Table in principle but to rectify shortcomings either at this or the next Conference;

4.4 those who wished for substantial increases in the broadcast bands.

This all added up to one main issue and a few questions of detail and he asked the Committee whether it could accept that a small and restricted group could look into the question of finding a common solution.

The Delegate of Italy considered it doubtful whether a small group would be able to deal adequately with the question.

The Delegate of the United States felt that the feasibility of the Chairman's proposal would be improved if a paper could be produced for the main Committee giving a consensus of the views stated during the meeting. The Delegates of Cuba and India supported the views of the Delegate of Italy.

The Delegate of Argentine supported the views of the Delegate of the United States.

The Delegate of Pakistan made the following statement: "We support the United States' views that what is now necessary is to bring out a document laying down the excellent summing up that you had done. We do not feel strongly about the size of the working group, whether it is small or big.

" The Pakistan Delegation does not find any alternative to the general idea of keeping the Atlantic City Table of Allocations more or less compact, though it is not opposed to the consideration of small changes that this Conference may find practicable.

" In spite of all its efforts, Pakistan does not have sufficient in band frequencies mainly for its broadcasting and fixed services and it is forced to keep about 40 frequencies out of band even though they may cause mutual interference to the service of other countries, until such time that suitable in band frequencies can be found perhaps with the help of the I.F.R.B.

" We hope that this Conference in its deliberations will keep in view the needs of various new and underdeveloped countries and find ways and means to meet their needs and in that case this Conference would have done a great service to all the countries together."

The Delegate of Peru supported the views expressed by the Delegate of the United States.

The Delegate of Bolivia also supported the United States' view but further suggested that continuing study of this subject should be based on a document containing a precise summary of the modifications required, possibly obtained by submission from the delegates.

The Delegate of the United Kingdom considered that any group should be given a firm directive by the main committee.

The Delegate of Brazil supported the views of the United States.

The Delegate of the U.S.S.R. suggested that it might be difficult to produce a résumé of the large number of opinions which had been expressed; in general, he supported the views of the Delegate of Italy that there should be a working group, which, on the basis of the general discussion and of the proposals in the Yellow Book, would reach the necessary conclusions.

The Delegate of Colombia supported the views expressed by the Delegate of the United States, but considered that the problem of the broadcasting versus the fixed service was of such a major nature as to merit discussion in the full committee.

On the explanation by the Chairman that he understood the U.S. proposal to be that there should be a summary document presented to the next meeting, which would form the basis of further work, the Delegate of Italy supported the views expressed by the Delegate of the United States.

As this document would not be available for the meeting on the following day, it was agreed that that meeting would open consideration of the frequency bands above 27.5 Mc/s and that such consideration would take the form of a general discussion.

The Delegate of Yugoslavia drew attention to Document 146 which the Chairman said could be taken under Miscellaneous Items the following day.

The meeting was then adjourned.

Rapporteur:

A. James Bourne

Approved :

Gunnar Pedersen
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 190-E
8 September, 1959

PLENARY MEETING
SUB-COMMITTEE 7A

ISRAEL (STATE OF)

Proposal

ARTICLE 22

Number of Proposal		
5452	492	Second line, replace "mentions" by "shall mention".

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 191-E
8 September, 1959

PLENARY MEETING
COMMITTEE 7A

ISRAEL (STATE OF)

Proposal

ARTICLE 15

Number of proposal		
5451	392	Replace the present text by the following :

§ 1. Infringements of the Convention and the Radio Regulations shall be reported to the Administrations concerned. For this purpose the specimen form given in Appendix 2 shall be used.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 192-E
8 September, 1959

PLENARY ASSEMBLY
COMMITTEE 6

ISRAEL (STATE OF)

Proposal

ARTICLE 13

Number of proposal		
5450	374	Replace the present text by the following :

§ 3. In order to minimize interference :

- locations of transmitting and receiving stations must be selected with particular care;
- radiation in and reception from unnecessary directions shall be minimized ..... (remainder unchanged).

INTERNATIONAL TELECOMMUNICATION UNION

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

E

Document No. 193-E
ADDENDUM No. 2
21 September 1959

PLENARY MEETING

PROPOSALS BY I.T.U. MEMBER COUNTRIES
CIRCULATED IN CONFERENCE NUMBERED DOCUMENTS

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
165 (Corrigendum No. 1)	Brazil	5421 bis	Article 5, 195 (RR)	x			
238	France	5490	Article 5 (RR)	x			
239	Federal German Republic	5491	Article 19, 419 (RR)				x
240	India	5496	Article 5 (RR)	x			
243	Czechoslovakia	5492	Article 5 (RR)	x			
244	United Kingdom	2004 (Revised)	Article 33 (RR)				x
247	Israel (State of)	5493	Article 37, 866 (RR)				x
		5494	" " 868				x
		5495	" " 869				x
249 (See No. 105)	Libya (U.K. of)	5289	Article 9, 252 (RR)	x			
		5289 bis	" " 245	x			
251 (See No. 27)	Federal Rep. of Germany	4884 (Withdrawn)	Article 11 (RR)		x		
252	China	1275	Article 11 (RR)		x		
253	Mexico	-	Draft Resolution		x		
254	Hungarian People's Republic	5497	Article 5 (RR)	x			
255	Federal People's Rep. of Yugoslavia	5499	Article 5 (RR)	x			
256	ditto	5498	Article 5 (RR)	x			
264	Israel (State of)	5500	Article 2 (RR)			x	

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 193-E
ADDENDUM No. 1
15 September, 1959

PLENARY MEETING

PROPOSALS BY I.T.U. MEMBER COUNTRIES
CIRCULATED IN CONFERENCE NUMBERED DOCUMENTS

Document Number	Country	Proposal Number	Reference (Article, para., etc)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
78 (Corrigendum)	Union of South Africa & Territory of South West Africa	5171	Art. 5,193 (R.R.)	x			
160 (Ref. Docs. Nos.24, 30, 46 & 47)	United Kingdom		Art. 11 (R.R.) (Comments)		x		
169	Switzerland	5442-5445	Art. 5 (Additional Radio Regulations)				x
174	Pakistan	-	Suggestion relating to the International Frequency List		x		
183	United Kingdom	5448	Article 5 (R.R.)	x			
184	United Kingdom	5449	Article 5 (R.R.)	x			
186	Federal German Republic	5447	Article 37, 920 (R.R.)				x
187	Israel (State of)	5453	Article 37, 867 (R.R.)				x
190	Israel (State of)	5452	Article 22, 492 (R.R.)				x
191	Israel (State of)	5451	Article 15, 392 (R.R.)				x
192	Israel (State of)	5450	Article 13, 374 (R.R.)			x	
194	Federal German Republic	1983 (Rev.)	Article 33, 732 (R.R.)				x

Document Number	Country	Proposal Number	Reference (Article, para., etc)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
196	Union of South Africa & Territory of South West Africa	5454	Article 1 (R.R.)			x	
199	Brazil	5455	Article 5, 109 (R.R.)	x			
201	British East Africa	5456	Article 5, 202 (R.R.)	x			
202	Korea (Republic of)	5468	Article 19, 419 (R.R.)				x
203	Korea (Republic of)	5457-5467	Article 5 (R.R.)	x			
204	Federal German Republic	5469	Article 5 (R.R.)	x			
216	Portuguese Overseas Provinces	5476	Article 5, 119 (R.R.)	x			
217	Finland	5477	Article 5 (R.R.)	x			
218	United States of America	4101 (Amendment)	Article 26, 566 (R.R.)				x
220	Israel (State of)	5478-5481	Article 43, 1008-1013, (R.R.)				x
221	Israel (State of)	5482-5483	Article 44, 1017 (R.R.) " " 1018				x
225	Mexico	-	Application of No.110 of the EARC Agreement		x		
226	(Israel (State of)	5484	Article 29, 620 (R.R.)				x

Document Number	Country	Proposal Number	Reference (Article, para., etc)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
227	Israel (State of)	5485-5487	Article 30 (R.R.)				x
231	Denmark, Finland, Iceland, Norway, Sweden	5470-5474	Articles 9,13(R.R.) & Appendix 10(R.R)		x		
232	Federation of Malaya	5488	Article 34 (R.R.)				x
235	Libya (United Kingdom of)	5475	Article 5 (R.R.)	x			

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 193-E
8 September 1959

PLENARY MEETING

PROPOSALS BY I.T.U. MEMBER COUNTRIES CIRCULATED IN CONFERENCE NUMBERED DOCUMENTS

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
8	Pakistan	4726	Article 1, 1 (R.R.)			x	
		4727	" " 2			x	
9	Pakistan	4728	Article 3, 86 (R.R.)	x			
		4729	" " 88	x			
10	Republic of Colombia	4730	Article 1, 1 (R.R.)			x	
		4731	" " 2			x	
		4732	" " 4			x	
		4733	" " 5			x	
		4733b	" " "			x	
		4734	" " 6			x	
		4735	" " 8			x	
		4736	" " 9			x	
		4737	" " 11			x	
		4738	" " 12 - 16			x	
11 (Rev.)	Republic of Colombia	4843	Article 1, 21 (R.R.)			x	
		4844	" " 22			x	
		4845	" " 31			x	
		4846	" " 32			x	
		4847	" " 33			x	
		4848	" " 39			x	
22	United Kingdom	4869	Draft Recommendation		x		x
23	United Kingdom	3503	Article 5 (R.R.)	x			
		3503 bis	" "	x			
		4870 to 4874	" "	x			
24	United Kingdom	4875 to 4879	Article 9 (R.R.)	x			
		1077	" " Amendment to proposal	x			
		1077 bis	" " " " "	x			
		1077 ter	" " " " "	x			

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
25	United Kingdom	4880	Article 28 (R.R.)				x
		4881	" "				x
26	Federal Republic of Germany	4883	Article 5 (R.R.)	x			
27	Federal Republic of Germany	4884	Article 11 (R.R.)		x		
28	United Kingdom	1753	Article 29 (R.R.)				x
		1753 bis	" "				x
29	United Kingdom	2256	Article 34 (R.R.)				x
		2256 bis	" "				x
30	United Kingdom	4882	Appendix 12 ter (R.R.)		x		
36 (see 99)	Spain	4885 to 4887	Article 7 (R.R.)			x	
37	Spain	4888 to 4890	Article 9 (R.R.)	x			
38	Spain	4891	Chapter IV - (R.R.) General Comments		x		
		4892 to 4906	Article 10 (R.R.)		x		
		4907 to 5048	Article 11 (R.R.)		x		
		5049 to 5059	Article 11 bis (R.R.)		x		
		5060	Article 11 ter (R.R.)		x		
		5061 to 5065	Article 11 quarto (R.R.)		x		
		5066	Article 12 (R.R.)		x		
39	Spain	5067 to 5069	Appendix 1 (R.R.)		x		
40 (Rev.)	Spain	5070	Article 11 (R.R.)		x		
		5071	Draft Resolution		x		
		5072	" "		x		
41	Spain	5073 to 5075	Article 14 (R.R.)			x	
42	Spain	5076	Article 19 (R.R.)				x

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
43	Spain	5077	Article 20 (R.R.)				x
46	United Kingdom	5078	Article 9 (R.R.)	x			
47	United Kingdom	5079	Appendix 16 bis (R.R.)		x		
		5080	" " ter		x		
48	United Kingdom	5081	Recommendation			x	x
54	Belgium	516	Article 5 (R.R.)	x			
		556	" "	x			
59	Federal German Republic	5082	Article 1, 7 (R.R.)			x	
		5083	" " 10			x	
		5084	" " 57			x	
		5085	" " 57			x	
		5086 to 5089	" "			x	
		5090	" " 59			x	
		5091	" " 59.1			x	
		5092	" " 64			x	
60	Federal German Republic	5093	Article 2, 77 (R.R.)			x	
		5094	" " 78			x	
		5095	" " 80			x	
		5096	" " 84			x	
		5097	" " 85			x	
61	Federal German Republic	5098	Article 5, 109 (R.R.)	x			
		5099	" " 125	x			
		5100	" " 145	x			
		5101	" " 218	x			
		5102	" " "	x			
62	Federal German Republic	5103 to 5106	Article 9, 261 (R.R.)	x			
		5107	" " 262				x
		5108	" " 269	x			
		5109	" " "	x			
63	Federal German Republic	5110	Article 13, 384 (R.R.)			x	
64	Federal German Republic	5111	Article 34, 814 (R.R.)				x
		5112	" " 827				x
		5113	" " 834				x

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
65	Federal German Republic	5114	Article 37 (R.R.)				x
		5115	" " , 867				x
		5116	" " 877				x
		5117	" " 879				x
		5118	" " 923				x
		5119	" " 925				x
		5120	" " 929				x
66	Federal German Republic	5121	Article 41 (R.R.)				x
67	Federal German Republic	5122	Appendix 13 (R.R.)			x	
68	Federal German Republic	5123	Appendix 4 (R.R.)			x	
69	Argentine Republic	5236	Article 1, 5 (R.R.)			x	
		5237	" " 6			x	
		5238	" " "			x	
		5239	" " 7			x	
		5240	" " 8			x	
		5241	" " 9			x	
		5242	" " 10			x	
		5243	" " 11			x	
		5244	" " 12			x	
		5245	" " "			x	
		5246	" " 13			x	
		5247	" " 14			x	
		5248	" " 15			x	
		5249	" " 16			x	
		5250	" " 17			x	
		5251	" " 25			x	
		5252	" " 27			x	
		5253	" " 28			x	
		5254	" " 31			x	
		5255	" " 32			x	
		5256	" " 34			x	
		5257	" " 36			x	
		5258	" " 51			x	
		5259	" " "			x	
		5260	" " 52			x	
		5261	" " 53			x	
		5262	" " 55			x	
		5263 to 5266	" " 57			x	
		5267	" " 58			x	
		5268	" " "			x	

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
69 (cont.)	Argentine Republic	5269	Article 1, 59			x	
		5270	" " 60			x	
		5271	" " 61			x	
		5272	" " 62			x	
		5273	" " 63			x	
		5274	" " 63.1			x	
		5275	" " 64			x	
		5276	" " 66			x	
		5277	" " 67			x	
		5278	" " 68			x	
		5279	" " 69			x	
		5280	" " 71			x	
		5281	" " 72			x	
		5282 to 5288	Article 1, New Section VI			x	
70	Federal German Republic	5124	Appendix 5 (R.R.)			x	
71	Federal German Republic	5125	Appendix 7 (R.R.)				x
72	Federal German Republic	5126	Appendix 13 (R.R.)				x
73	Federal German Republic	5127	Appendix 14 (R.R.)				x
		5128	" 14 bis				x
74	Federal German Republic	5129 to 5166	Article 4 (Additional Radio Regulations)				x
77	Union of South Africa and Territory of South-West Africa	5167	Article 1, 11 (R.R.)			x	
78	Union of South Africa and Territory of South-West Africa	5168	Article 5, 145 (R.R.)	x			
		5169	" " 172	x			
		5170	" " 178	x			
		5171	" " 193	x			
		5172	" " 202	x			
		5173	" " 218	x			
		5174	" " 222	x			
		5175	" " 231	x			
		5176	" " 232	x			

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
79	Union of South Africa and Territory of South-West Africa	5177	Article 19, 419 (R.R.)				x
83	British West Africa	5178	Article 1, 4 (R.R.)			x	
		5179	" " 5			x	
		5180	" " 57			x	
		5181	" " 63			x	
		5182	" " 64			x	
84	British West Africa	5183 to 5193	Article 5 (R.R.)	x			
85	British West Africa	5194	Article 11, 314 (R.R.)		x		
		5195	" " 315		x		
86	British West Africa	5196	Article 23, 494 (R.R.)				x
87	British West Africa	5197	Appendix 6 (R.R.)				x
		5198	" "				x
88	Indonesia (Republic of)	5199	Article 19, 419 (R.R.)				x
		5200	" " 422				x
		5201	" " 432				x
		5202	" " "				x
90	United States of America	3354	Article 5 (R.R.)	x			
		3354 bis	" "	x			
		3365	" "	x			
		3365 bis	" "	x			
	Note: Proposals 3354 - 3365 bis further modified in Document No. 173						
91	Argentine Republic	5203 to 5217	Article 5 (R.R.)	x			
94	Argentine Republic	5218	Article 10 (R.R.)		x		
		5219 to 5233	Article 11 (R.R.)		x		
		5234	Article 12 (R.R.)		x		
		5235	" "		x		
99 (see 36)	Spain	4885 to 4887	Article 7 (R.R.)			x	

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
105	Libya	5289	Article 9, 252 (R.R.)	x			
		5289 bis	" " 245/2	x			
106	U.S.S.R.	5290 to 5347	Article 5 (R.R.)	x			
114	Portugal	5352	Article 5 (R.R.)	x			
115	Peru	5348	Article 5 (R.R.)	x			
116	Israel	5349	Article 3, 86 (R.R.)	x			
		5350	" " 87	x			
		5351	" "	x			
117	Mexico	5353	Appendix 1 (R.R.)		x		
125	Argentine Republic	5354	Article 2, 74 (R.R.)			x	
		5355	" " 78			x	
		5356	" " 80			x	
		5357	" " 81			x	
		5358	" " 83			x	
		5359	" " 84			x	
		5360	Article 6, 232 (R.R.)			x	x
		5361	Article 13, 378/379 (R.R.)			x	
		5362	" " 383			x	
		5363	" " 384			x	
		5364	" " 385			x	
		5365	" " 398			x	
		5366	Appendix 2 (R.R.)			x	
		5367	Appendix 4 (R.R.)			x	
126	Mexico	5368	Article 5, 127 (R.R.)	x			
127	Japan	5369	Article 10, 291 (R.R.)		x		
		5370 to 5380	" " bis		x		
		5381	Article 11, 310 (R.R.)		x		
		5382	" " 312		x		
		5383	" " 321		x		
		5384	" " 329		x		
		5385	" " "		x		
		5386	" " 334		x		
		5387	" " 336		x		
		5388	" " 337		x		
		5389	" " 338		x		
		5390	" " 345		x		
		5391	" " "		x		
		5392	" " 349		x		

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
127 (cont.)	Japan	5393	Article 11, 350 (R.R.)		x		
		5394	" " 355		x		
		5395	" " 359		x		
131	People's Republic of Poland	1507 (Revised)	Article 22 (R.R.)				x
135 (see No. 165)	Brazil	5421	Article 5, 142 (R.R.)	x			
140	United States of America	3905 bis	Article 11 (R.R.)		x		
141	United States of America	4590 (Revised)	Appendix 12 (R.R.)		x		
142	United States of America	4596 (Revised)	Appendix 16 bis (R.R.)		x		
143	Czechoslovakia	4671 (Corrigendum)	Article 24 bis (R.R.)				x
146	Federal People's Republic of Yugoslavia	-	Suggestions for organizing and speeding up the work	x	x		
149	Italy	3117 to 3122 (Revised)	Article 4 (Additional Radio Regulations)				x
		5397	Article 6 (Additional Radio Regulations				x
151	Israel	5398 to 5404	Article 23 (R.R.)				x
154	Belgium Belgian Congo	5405	Article 33 (R.R.)				x
156	Australia	5	Annexes 5, 6 and 7 (E.A.R.C.)		x		
		6	Annexes 8 and 9 (E.A.R.C.)		x		
	Note: Proposals 5 and 6 withdrawn						
157	Finland	5406 to 5409	Article 5 (R.R.)	x			

Document Number	Country	Proposal Number	Reference (Article, para., etc.)	Committee which should consider proposal pending action by Plenary			
				4	5	6	7
158	Japan	5410	Article 2, 75 (R.R.)			x	
		5411	" " 76			x	
		5412	" " 78			x	
		5413	" " 80			x	
163	Union of South Africa and Territory of South-West Africa	5414	Article 5, 119 (R.R.)	x			
		5415	" " 142	x			
		5416	" " 158	x			
		5417	" " 205	x			
		5418	" " 220	x			
		5419	" " 228	x			
164	Argentine Republic	5420	Appendix 1 (R.R.)		x		
165 (see No. 135)	Brazil	5421	Article 5, 195 (R.R.)	x			
166	Brazil	5422	Article 37, 870 (R.R.)				x
168	Switzerland	5423	Article 41, 967 (R.R.)				x
		5424	" " 969				x
		5425	" "				x
		5426	" " 985				x
		5427 to 5429	" " 989-998				x
		5429b	" " " "				x
		5430 to 5437	" " " "				x
		5437 bis	" " " "				x
		5438	" " " "				x
		5440	" " " "				x
		5441	Appendix 16 bis				x
172	Turkey	5446	Article 5, 125 (R.R.)		x		
173 (see Doc.No. 90)	United States of America	3354	Article 5 (R.R.)		x		
		3354 bis	" "		x		
		3365	" "		x		
		3365 bis	" "		x		

Note: 3354 - 3365 bis are modifications of proposals in Document No. 90

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 194-E
8 September, 1959

PLENARY ASSEMBLY
COMMITTEE 7

THE FEDERAL GERMAN REPUBLIC

Proposal

ARTICLE 33

Number of proposal

1983 (revised) 732. Instead of the existing proposal 1983, read as follows :

When the frequency 500 kc/s is used for distress traffic, ships stations in Regions 1 and 3 shall not use the frequency 512 kc/s as a working frequency, but only as a frequency for calls to coast stations which:

a) take no part in the distress traffic; or

b) are specifically shewn in the List of Coast and Ship Stations; exceptionally, coast stations may use this frequency too.

Reasons :

1) In Region 1, 512 kc/s is often used as a working frequency by ship stations, but when 500 kc/s is used for distress purposes, there is frequent interference with calls and messages on 512 kc/s.

2) It is essential that there shall be an additional listening watch on 512 kc/s by coast stations if calls on this frequency are to be successful. This will be possible for coast stations with staffs big enough for a double watch.

Number of proposal

1983 (revised)

It will be possible, too, for coast stations which do not in fact share in distress traffic. A watch on 512 kc/s would make for the speedy handling of the traffic exchanged by maritime mobile stations not taking part in distress traffic.

3) There is no statutory obligation for ship stations to listen out for distress calls on 512 kc/s, or to be ready for an extra watch. Hence there is no reason why coast stations should use this frequency to call ship stations. Despite this, in the event of distress, coast stations should be able to call each other on 512 kc/s without causing interference to distress traffic.

4) Provided coast stations use 512 kc/s only as described above, the breach in the provision of No. 731 authorized in No. 732 will be kept to a minimum.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 195-E
CORRIGENDUM No. 1
16 September 1959

COMMITTEE 6

CORRIGENDUM

Summary Record

Second Meeting - Committee 6

Thursday, 3 September 1959, at 10.00 hours - Room A

The Delegate of India has requested that, in Document No. 195, Section 3, in place of the third and fourth sentences should be read:

" The Delegate of India said that the C.C.I.R. had done extensive work since 1947 when these recommendations were made. He proposed that relevant Recommendations, Reports, etc. of the C.C.I.R. and the work of I.F.R.B. (Technical Standards, Section IX, Document No. 20) were examined before making final decision on the recommendations in the Radio Regulations. Where study has been completed it may be appropriate to incorporate these recommendations or parts of these recommendations into the body of the Radio Regulations and in other cases the Recommendations may be modified suitably or deleted as appropriate. He considered that the Recommendations Nos. 1 and 4 may be retained in some form with any necessary modification."

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 195-E
8 September, 1959

COMMITTEE 6

SUMMARY RECORD

SECOND MEETING - COMMITTEE 6

Thursday, 3 September, 1959 at 10.00 hours - Room A

1. The Chairman opened the meeting by extending a cordial welcome to those delegates who were not present at the first meeting. He then introduced the Agenda (Document No. DT 56) and asked for comments on the Minutes of the First Meeting (Document No. 98).

The Delegate of Yugoslavia pointed out that in Section 3, paragraph 3, line 5, in place of "C.C.I.R." should be read "I.F.R.B." With this amendment the Minutes of the First Meeting were approved.

2. Report by Chairmen of Working Groups

The Chairman invited the Chairmen of Working Groups to give their report and to say if a target date for the completion of the work could be indicated.

The Chairman of Working Group 6A reported that at the First Meeting on 25 August, 1959 the terms of reference of Working Group 6 (Document No. 81) were accepted and it was decided that by dividing the work between a number of small sub-groups there should be no difficulty in completing the work satisfactorily. Nine sub-groups were formed, each dealing with a group of related definitions as shown in Document No. 123. To make available as early as possible definitions which are urgently awaited, it was decided to prepare a provisional list of existing and proposed terms and definitions. This would include for immediate use a number of provisional working definitions for which, although their inclusion in the Radio Regulations is not decided, the Working Group proposes no change in the term itself or its meaning.

At the Second Meeting on 31 August, 1959 proposed definitions contained in additional Conference documents were considered. Some were accepted for inclusion in the provisional list and some were assigned to sub-groups. A tentative list of priorities for the work of the sub-group was prepared. This has been issued as Document No. 153. The priorities will be subject to request from other Committees. Some requests have since been received and will be considered at the Third Meeting on 4 September, 1959.

It was not yet possible to indicate a target date for completion of the work. The size of the sub-groups was larger than desired and this made simultaneous meetings difficult. It was hoped that firm conclusions would be reached on most of the definitions within one month but some drafting work would then remain and it was hoped that the provisional list of terms and definitions together with definitions completed at the request of other Committees would meet their needs.

The Chairman thanked the Chairman of Working Group 6A. He realised the difficulty of arranging simultaneous meetings and the problems raised by the additional proposals that were being received. Nevertheless, he asked the Working Group 6A to consider the possibility of combining sub-groups, and the possibility of introducing a closing date for accepting new definitions.

The Chairman of Working Group 6B said that at the First Meeting on 2 September, 1959 the terms of reference of Working Group 6B (Document No. 81) were accepted. It was agreed to proceed with the consideration of the relevant Regulations from No. 74 onwards and to form sub-groups as and when necessary. Revision of Regulation No. 74 and part of No. 75 was agreed. After a brief discussion on Regulations Nos. 76 to 80 it was agreed to form a sub-group consisting of 10 delegates to consider the revision of these Regulations and the last part of No. 75. Mr. M. Strohfeldt (Australia) kindly accepted the Chairmanship of this sub-group and it was hoped that the sub-group would meet on 7 September, 1959.

As Working Group 6B had held only one meeting it was difficult to estimate a date for completion.but the Working Group would endeavour to complete the bulk of the work by Friday, 16 October, 1959.

The Chairman thanked the Chairman of Working Group 6B and said that it was valuable to have a target date in mind at this stage and more precise dates could be determined as the work proceeds.

The Chairman of Working Group 6C reported that at the First Meeting on 26 August, 1959 the terms of reference of Working Group 6C (Document No. 81) were accepted and the proposals relating to Article 13 were examined. Two small sub-groups were formed to deal with proposals relating to five Regulations and a new text was agreed for six Regulations.

At the Second Meeting on 3 September, 1959, it was agreed that Regulations Nos. 384 and 385 should be transferred to the beginning of Article 19 and that Proposal No. 5110 (Document No. 63) should also be taken into account in this Article which is being dealt with by Committee 7. The proposals relating to Article 14 were examined and will need to be discussed further at the next meeting.

Articles Nos. 14 and 18 are closely related to Articles Nos. 10 and 11 and the progress of Working Group 6C will depend on the decision of Committee 5. A date for the completion of work cannot be correctly estimated at this stage, but it is hoped that most of the work will be completed by the middle of October.

The Chairman thanked the Chairman of Working Group 6C and asked the Working Group to submit a report on the work to be referred to Committee 7. It would be necessary for Working Group 6C to keep in touch with the work of Committee 5 on Articles 10 and 11.

3. Review of Atlantic City Recommendations

The Chairman referred to Atlantic City Recommendations Nos. 1, 3, 4, 7 and 8 and said that it was important to know what practical results had been achieved, what results should be included in Radio Regulations and what further action by the C.C.I.R. should be recommended by the Conference. He confirmed in reply to the Delegate of Colombia that a detailed discussion would await the distribution of Circular No. 775 and Annex 5 to Circular No. 772 in the form of a Conference document. The Delegate of India said that the C.C.I.R. had done extensive work and it may be possible to withdraw some of the Atlantic City Recommendations and modify others. He considered that Recommendations Nos. 1, 2 and 4 should be retained with any necessary modification. The Delegate of U.S.A. said that it would be premature to have a detailed discussion until it had been determined which of the C.C.I.R. recommendations should be included in Radio Regulations. It was agreed that a preliminary review should be made and the Chairman invited the representativesof the I.F.R.B. and C.C.I.R. to comment on the present position.

The I.F.R.B. representative said that although the work done by the C.C.I.R. was very important and some of the studies may need to be continued for a very long time, the necessary action had been initiated and the I.F.R.B. would have no objection to the deletion of the Atlantic City Recommendations. It may, however, be necessary to take further action in order to take into account the E.A.R.C. Recommendations, particularly Nos. 3 and 4.

At this stage, copies of Document No. 122, with the re-prints of Circular No. 775 and Annex 5 of Circular No. 772 were distributed.

The C.C.I.R. representative gave a review of the work done by the C.C.I.R. and indicated the changes to the C.C.I.R. document numbers which had been made as a result of the discussions at Los Angeles.

The Delegate of Israel said that the work of this Conference would be difficult without the actual C.C.I.R. documents and proposed that arrangements be made to ensure that a Plenary Meeting of the C.C.I.R. should be held not later than a year before the next Ordinary Administrative Radio Conference. The Chairman agreed that Committee 6 should prepare a Resolution on this basis and asked the C.C.I.R. representative to prepare a list of the changes to the C.C.I.R. document numbers and to make available to delegates all the relevant C.C.I.R. documents. The C.C.I.R. representative pointed out that the provisions relating to the preparation of proposals for the O.A.R.C. were laid down in Chapter 18 of the General Regulations and these had been met by the issue of Circulars Nos. 772 and 755. He said that a list of changed C.C.I.R. document numbers would be prepared and the possibility of providing copies of all relevant documents would be examined.

4. Appendices A and C - Radio Regulations

The Chairman invited the representatives of the I.F.R.B. and C.C.I.R. to comment on the present position relating to Appendices A and C. He said in reply to a question from the Delegate of Canada that the study of these Appendices would be referred to the Working Groups if discussion in detail was necessary.

The C.C.I.R. representative said that Appendix A was covered by Atlantic City Recommendation No. 1 and action had been taken by the C.C.I.R. Appendix C was addressed to Administrations and was also covered by the Atlantic City Recommendations. He said that a number of monitoring stations had been established by Administrations and information was being supplied to the C.C.I.R. and I.F.R.B.

The I.F.R.B. representative said that in view of the action already initiated by the C.C.I.R. in connection with Atlantic City Recommendation No. 1 the text of Appendix A had served its purpose and the I.F.R.B. would not object to its withdrawal. With reference to Appendix C he said that the I.F.R.B. report includes a section on International Monitoring which was due to be discussed in Working Group 6C.

In a discussion in which the Delegates of U.S.A., Pakistan, India, U.S.S.R., U.K., France and Argentine took part, reference was made to various proposals relating to Appendices A and C. It was agreed to refer the matter to the Working Groups as follows :

Appendix A to be studied by Working Group 6B

Appendix C to be studied by Working Group 6C

There were no further matters raised for discussion and the meeting closed at 12.55 hours.

G.C. Benton
Rapporteur

M.N. Mirza
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 196-E
8 September 1959

PLENARY MEETING
COMMITTEE 6

UNION OF SOUTH AFRICA AND TERRITORY OF
SOUTH WEST AFRICA

Proposal

ARTICLE 1

Number of proposal	
5454	Article 1. After Radio Regulation 33 add the following new definition:

Radio Geodetic Survey Service: A service for the determination of position or geometric parameters in geodetic or similar survey.

Reasons: It is desirable to distinguish between low powered equipment used for geodetic survey and high powered equipment which is included in the definition of Radiolocation Service (at present Radiopositioning Service). In addition this term is used in other proposals.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 197-E
8 September, 1959

SUB-COMMITTEE 7D

SUMMARY RECORD

of the Fourth Meeting held by Sub-Committee 7D (Radiotelegrams)

on Thursday, 3 September, 1959, at 3.00 p.m.

The Chairman, opening the meeting, declared that Document No. 149 (fresh Italian proposals relating to radiotelegrams concerning persons protected by the Geneva Conventions dated 12 August, 1949 (=RET=) in war-time) had been distributed that morning.

Would the Sub-Committee agree to consider it as the first item on the agenda?

The United Kingdom of Great Britain and Northern Ireland wanted the document to be discussed at the next meeting. It was so decided.

The Chairman thereupon turned to the first item on the agenda (decision on whether or not there should be a minimum of chargeable words for the radiotelegraph transmission of radiotelegrams : Proposals 3071, 3072, 3073 and 3082) consideration of which had been postponed on request by a delegation.

The minimum of chargeable words would be :

7 for ordinary radiotelegrams
14 for press radiotelegrams, and
22 for letter-radiotelegrams.

Argentina had already supported Italian proposal 3071 at the third meeting. But it would be well if those countries which had made proposals in connection with 2021 were to comment thereon at greater length.

The Netherlands recalled that proposal 3073 had been made for the following reasons :

1) at the last Administrative Telegraph and Telephone Conference, the time taken to transmit the preamble had been a factor borne in mind when deciding on the minimum number of chargeable words;

2) as regards radiotelegrams, the time taken up by calling operations and preliminary signals had to be allowed for.

If a decision were taken as to a minimum number of chargeable words for radiotelegraph transmission, and if a single ship or aircraft charge were laid down, a degree of standardization could be achieved in accounts.

Norway had in the meantime heard further details about the compromise suggested by the United Kingdom of Great Britain and Northern Ireland and was ready to support it.

Japan was generally in favour of having a minimum number of chargeable words; it had nothing to add to what had been said by the Netherlands.

Sweden began by thanking the Chairman for allowing it to revert to the matter. It had, in the meantime, given further thought to the problem, and had informed its Administration about the various aspects thereof. The principle involved should apply only to international radiotelegrams, as defined in the United Kingdom of Great Britain and Northern Ireland compromise, which it was ready to support. As regards radiotelegrams to or from a country, exchanged via that country's land stations, the charge should go on being calculated in accordance with the rate per word.

Argentina : could the compromise proposal be read out?

The Chairman asked the United Kingdom of Great Britain and Northern Ireland to read out its proposal slowly. The proposal could be summarized as follows :

"The minimum number of chargeable words for radiotelegraph transmission would apply only to radiotelegrams from or to a country other than the one where the coast station is."

Sweden supported the amendment.

Italy, at the previous meeting, had described in general terms what its proposal 3071 was intended to achieve. The proposal was designed, grosso modo, to :

1) ensure that the charge levied for a radiotelegram was more nearly in accordance with actual costs;

2) thus attenuate the chronic losses sustained by the maritime mobile service throughout the world;

3) simplify accounting procedures;

4) and thus make for greater standardization of accounts.

Besides which, the time taken to transmit the preamble and to do the operations connected with calling and preliminary signals was the same, no matter whether the radiotelegram be three words long or ten.

The United States felt that rates should be the same, no matter what the service was. Hence they favoured adoption of a minimum for the chargeable words transmitted by radiotelegraphy.

Australia supported the Italian proposal 3071.

The United Kingdom of Great Britain and Northern Ireland had followed, with interest, the arguments adduced by those Delegations which favoured the principle set forth in item 1 of the agenda. But a full application of that principle would not do much to repair the chronic losses sustained by the maritime mobile service. The root of the matter lay in the abolition of charges per word for radiotelegrams from or to a country, exchanged by that country's land stations. Such an abolition would mean an increase of some 140% for a considerable proportion of radiotelegrams. Unless their compromise proposal were adopted, they could not agree to any minimum being laid down for the radiotelegraph transmission of radiotelegrams.

Portugal supported Italian proposal 3071.

Canada would support Italian proposal 3071, as it had done at the third meeting. Nothing would make it change its mind.

Brazil would support the proposal too.

The Chairman said that all delegations had been able to air their views. He would call for a vote, not on proposals 3071, 3072, 3073 and and 3082, but on the principle involved, as defined in item 1 of the agenda for the fourth meeting.

The principle involved was adopted by twenty votes to nine, with no abstentions.

The United Kingdom of Great Britain and Northern Ireland asked the Chairman to have it recorded in the minutes that at the third meeting United Kingdom of Great Britain and Northern Ireland had made reservations about the principle of chargeable minima

The Chairman turned to item 2, and called on Mr. Swanson (Chairman of the Working Party on Accounts) to speak.

Mr. Swanson said his Working Party could not begin at once. He had, however, done everything in his power to speed things up. Four meetings, at the most, should suffice.

The Chairman, thanking the speaker for the good news, wished him luck and announced that the Sub-Committee 7D meetings on Tuesday, 8 September, and Thursday, 10 September, would be reserved for the working party on accounts.

He would approach Mr. Petrich, Chairman of the working party on radiotelephony, to arrange for a first meeting to be held on Monday afternoon.

Colombia and New Zealand wanted to attend the meetings of the working party on accounts.

The Chairman, before declaring the meeting closed, said that Sub-Committee 7D would start work again during the third week of September.

A. Adam
Reporter

A. Caruso
Chairman

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 198-E
8 September, 1959

WORKING GROUP 6A

SUMMARY RECORD

Third Meeting - Working Group 6A
(Definitions)

Friday 4 September, 1959, at 15.00 hours

Reference: Agenda of 2 September 1959, Document No. DT-69.

1. Minutes of the Second Meeting (Document No. 153)

The Working Group first considered Document No. 153, the Summary Record of the second meeting of Working Group 6A, which was accepted subject to the following corrections:

(1) Annex, p. 5, Sub-Group 6A1, Members: Add "Switzerland, Portugal, I.F.R.B., Federal German Republic, and India".

(2) Annex, p. 5, Sub-Group 6A3, Members: Add "Japan".

2. Reports of the Chairmen of Sub-Groups 6A1 to 6A9

It was announced that a Steering Committee, composed of the Chairman of Working Group 6A and the Chairmen of the Sub-Groups, would meet each Monday morning at 9.30 a.m. to determine the time, place, and agendas of the meetings of the various Sub-Groups for the ensuing week. It was also reported that, to date, only Sub-Group 6A4 had met, that it had held two meetings, had tentatively finalized the definitions for "radiolocation" and "radionavigation", but that it would not report on these definitions until it had also finalized a related definition for "radiopositioning".

3. Consideration of proposals relating to terms and definitions listed on the agenda

The Chairman next considered the proposals contained in Documents issued by the Conference relating to terms and definitions as listed on the Agenda and taken from Document No. DT 21.

The following decisions were made with respect thereto:

(1) Proposal No. 4730 in Document No. 10 was added to the list of proposals to be considered at a later date in connection with the Preamble.

(2) Proposal No. 4731 in Document No. 11 was added to the proposals considered in connection with No. 2 - Telecommunication. The definition of Telecommunication found in No. 2 of the Radio Regulations was tentatively approved, implying the rejection of proposals Nos. 33, 34, and 4731, and subject to the reservation of India on the inclusion of the word "visual".

(3) The definition of "General Network of Telecommunication" found in No. 3 of the Radio Regulations was tentatively approved, indicating the rejection of proposal No. 35.

(4) Proposed new definitions for "Remote Control" (10.20), "Radio Control" (16.20), "Telephone Call" (17.10), and "Radiotelephone Call" (18.10) were passed over until a need for their inclusion in the Radio Regulations should be made apparent.

(5) It was noted that Nos. 16.40, 16.50, and 16.60, included on the Agenda, had already been referred to Sub-Group 6A3.

(6) A proposed definition for "Monitoring" (18.70) was referred to Sub-Group 6A5.

(7) A proposed definition for "Tropospheric Scatter" (18.75) (Proposal 91) was accepted provisionally.

(8) Consideration of a proposed definition for "Ionospheric Scatter" was deferred until the next meeting of the Working Group.

The above terms and definitions are to be submitted to Committee 6 for approval and for inclusion in the first issue of the "Provisional List of Terms and Definitions", to be labelled "Part I".

4. Other matters

The Chairman noted that there had been a request from the Chairman of Committee 5 to give priority to the consideration of the name of the "frequency unit".* A general discussion of whether the "frequency unit" should be defined in terms of cycles per second, or in terms of Hertz or both, alternatively, ensued. There was a clear difference of

---

* See: I.T.U. Proposals for the International Conference Nos. 3 (page 3), 361-369 (pages 119-122), and 4614 (page 122.1); Proposal No. 5097 (Doc. 60); and C.C.I.R. Recommendation 324, (Radio Division Circular No. 775).

opinion and it was agreed to report the question back to Committee 6 to be placed on its agenda for a vote, in view of the lack of representation of all the countries at the Sub-Group meeting.

Reporter:
Ann Mooney

E.W. Allen
Chairman, Working Group 6A

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Dpcument No. 199-E
8 September, 1959.

PLENARY MEETING
COMMITTEE 4

B R A Z I L

Proposal

ARTICLE 5

Number of proposal

5455 109. The frequency allocation table:

In the band 27,500 to 28,000 kc/s include:

c) Meteorological Aids.

Reasons:

Much equipment of European manufacture uses this band. The Brazilian Administration uses this equipment. The equipment made in Brazil, too, conforms to European standards.

INTERNATIONAL TELECOMMUNICATION UNION

E

ADMINISTRATIVE RADIO CONFERENCE

GENEVA, 1959

Document No. 200-E
21 September, 1959

LIST OF DOCUMENTS PUBLISHED BY THE CONFERENCE

Nos. 150 to 200

Document Number	Origin	Destination	Title
151	Israel	Sub-Committee 7A	Proposals - Article 23
152	Committee 4	Committee 4	Summary Record - Seventh Meeting - Committee 4 31 August 1959, at 16.00
153	Working Group 6A	Working Group 6A	Summary Record - Second Meeting - Working Group 6A 31 August 1959, at 15.00
154	Belgium, Belgian Congo	Committee 7	Proposal - Article 33
155	Sub-Committee 7D		Recommendation concerning medical advice by radio to ships at sea. (Recommendation 106 - International Labour Conference.)
156	Australian Delegation	Committee 4	Communication of the Australian Delegation
157	Finland	"	Proposals - Article 5
158	Japan	Committee 6	Proposals - Article 2
159	Committee 5	Committee 5	C.C.I.R. documents
160	United Kingdom	"	Comments by the U.K. in regard to its proposals for the revision and application of Article 11 of the Radio Regulations
161	Committee 4	Committee 4	Summary Record - Eighth Meeting of Committee 4 1 September 1959, at 15.00
162	Secretariat		Programme of meetings from 7 to 13 September, 1959

Document Number	Origin	Destination	Title
163	Union of South Africa and Territory of South West Africa	Committee 4	Proposal No. 5414
164	Argentine Republic	Committee 5	Proposal Appendix 1
165	Brazil	Committee 4	Proposal - Article 5
166	Brazil	Committee 7	Proposal - Article 37
167	Committee 5	Committee 5	Summary Record - Fourth Meeting - 28 August 1959, at 10.00 a.m.
168	Switzerland	Plenary Assembly Sub-Committee 7D	Proposals - Article 41
169	"	"	" - Article 5
170	Sub-Committee 7D	Sub-Committee 7D	Summary Record - Third Meeting - Sub-Committee 7D - 1 September 1959, at 10.00 a.m.
171	Sub-Committee 7C	Sub-Committee 7C	Summary Record - Third Meeting - 2 September 1959 at 3.00 p.m.
172	Turkey	Committee 4	Proposal - Article 5
173	United States of America	"	Proposals - "
174	Pakistan	Committee 5	Suggestion for procedure to deal with questions relating to the International Frequency List
175	Committee 5	Committee 5	Summary Record - Fifth Meeting of Committee 5 31 August 1959 at 10.00 a.m.
176	Committee 2	Committee 2	Summary Record - Third Meeting of Committee 2 28 August 1959, at 4.30 p.m.
177	Committee 4		

Document Number	Origin	Destination	Title
177	Committee 4	Committee 4	Summary Record - 9th Meeting of Committee 4 2 September 1959, at 15.00
178	Sub-Committee 7A	Sub-Committee 7A	Summary Record - Third Meeting - Sub-Committee 7A 31 August 1959, at 10.00
179	"	"	Summary Record - Fourth Meeting - Sub-Committee 7A 2 September 1959, at 10.00
180	Working Group 6C	Working Group 6C	Summary Record - Second Meeting of Working Group 6C 1 September 1959, at 10.00
181	Working Group 6C	Working Group 6C	Summary Record - Third Meeting of Working Group 6C 3 September 1959, at 15.00
182	Secretariat	Committees 4, 5, 6 and 7	Corrections to Annex 5 of Circular 772 (see Conference Document No. 122)
183	United Kingdom	Committee 4	Proposal - Article 5
184	"	"	" "
185	Working Group 6B	Working Group 6B	Summary Record - First Meeting of Working Group 6B 2 September 1959, at 15.00
186	Federal German Republic	Committee 7	Proposal - Article 37
187	Israel (State of)	Committee 7	" " 37
188	Committee 7	Committee 7	Summary Record - Third Meeting of Committee 7 4 September 1959, at 15.00
189	Committee 4	Committee 4	Summary Record - Tenth Meeting of Committee 4 3 September 1959, at 15.00

Document Number	Origin	Destination	Title
190	Israel (State of)	Committee 7	Proposal - Article 22
191	"	"	" - Article 15
192	"	Committee 6	" - Article 13
193	Secretariat	Plenary Meeting	Proposals by I.T.U. Member Countries circulated in Conference numbered document
193	Add I	"	" " "
194	Federal German Republic	Proposal	Article 33
195	Committee 6	Committee 6	Summary Record - Second Meeting - Committee 6 3 September 1959, at 10.00
195	Corr. 1	"	" " "
196	Union of South Africa and Territory of West Africa	"	Proposal - Article 1
197	Sub-Committee 7D	Sub-Committee 7D	Summary Record of the Fourth Meeting held by Sub-Committee 7D Thursday 3 September 1959, at 3.00 p.m.

Document Number	Origin	Destination	Title
198	Working Group 6A	Working Group 6A	Summary Record - Third Meeting - Working Group 6A 4 September, 1959, at 15.00
199	Brazil	Committee 4	Proposal - Article 5
200	Secretariat		List of documents published by the Conference - Nos. 150 to 200