Documents of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3) (1st session) (Geneva, 1974)

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 101-E
18 October 1974
Original : English

COMMITTEE 5

NOTE FROM THE CHAIRMAN OF COMMITTEE 4

TO THE CHAIRMAN OF COMMITTEE 5

At the 4th Meeting of Committee 4 on Tuesday, 15 October 1974, having considered Document No. 66, it was unanimously decided to request Committee 5 to take into account this document.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Corrigendum No. 1 to
Document No. 102-E
21 October 1974
Original : English

COMMITTEE 5

Norway and Yugoslavia

BASIS FOR PLANNING

To ascertain the principle that all countries should be given equal rights in the drawing-up of a frequency plan, the planning should be established on the requirement of individual administrations based on their needs and also established on the provision of equivalent LF/MF broadcasting service for all countries.

Equivalent broadcasting service is achieved by providing the same number of units of broadcasting to each individual state *).

One "unit of broadcasting" permits the provision of one programme to the whole of the population, or to each officially recognized language group. This programme may be different in different parts of the state.

*) By "state" is meant : one of a number of politic units, each more or less sovereign and independent (government, state's rights and administration responsible for broadcasting), which together make up a federation.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 102-E
19 October 1974
Original : English

COMMITTEE 5

Norway

A METHOD IN PLANNING

To ascertain the principle that all countries should be given equal rights in the drawing-up of a frequency plan, the planning should be established on the requirement of individual administrations based on their needs and also established on the provision of equivalent LF/MF broadcasting service for all countries.

Equivalent broadcasting service is achieved by providing the same number of units of broadcasting to each individual state *).

One "unit of broadcasting" permits the provision of one programme to 100% of the population, or each officially recognized language group. This programme may be different in different parts of the state.

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*) By "state" is meant : One of a number of politics, each more or less sovereign and independent in regard to internal affairs, which together make up a supreme federal government.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 103-E
19 October 1974
Original : English

COMMITTEE 5

NOTE FROM THE CHAIRMAN OF COMMITTEE 4

TO THE CHAIRMAN OF COMMITTEE 5

At the 5th Meeting of Committee 4 on Thursday, 17 October 1974, having considered Document No. 80, it was unanimously decided to request Committee 5 to take into account this document.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 104-E
19 October 1974
Original : English

COMMITTEES 4 and 5

For information only

CHANGES TO CHANNEL FREQUENCIES RESULTING FROM THE ADOPTION OF VARIOUS CHANNELLING ARRANGEMENTS

Notes :

1. COP/AFR indicates the existing channelling provided in the Copenhagen Plan, 1948 and the African Plan, 1966.

2. 8 kHz, 9 kHz, 10 kHz indicate channelling arrangements based on a uniform channel spacing of 8, 9 or 10 kHz throughout the MF band, each channel frequency being an integral multiple of the spacing.

Existing Plan	New Plan	Minimum frequency change necessary (kHz)					Number of channels unfilled
		0	1	2	3	4	
10 kHz	8 kHz	27	-	54	-	27	27
	9 kHz	12	24	24	24	24	12
	COP/AFR	12	24	26	22	24	13
COP/AFR	8 kHz	14	28	36	29	14	14
	9 kHz	1	113	3	2	1	-1
	10 kHz	12	24	26	22	24	-13

J. RUTKOWSKI
Chairman of Committee 4

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 105-E
19 October 1974
Original : French

COMMITTEE 5

THIRD REPORT OF WORKING PARTY 5A TO COMMITTEE 5

Introduction

Working Party 5A held three meetings and examined Document Nos. 55 and 83 after those indicated in Document No. 84.

It submits to Committee 5 the following texts concerning the paragraphs on "Planning of the band 525-1 605 kHz" and "Planning of the band 150-285 kHz".

The Working Party could not reach unanimity on the last two sentences of the second sub-paragraph of paragraph 9.3.1 - Planning criteria - of this document. These sentences were placed in square brackets and it was left to Committee 5 to decide whether to retain or delete them.

The U.S.S.R. takes the view that the third sub-paragraph of the same paragraph 9.3.1 should be amended so as to leave the decision on the planning criterion to be used to the Second Session of the Conference. The Working Party, on the contrary, considered that both criteria could be used and that each country should be free to choose either of them in planning its networks.

Referring to paragraph 9.3.2.2 - Sky-wave service - the Indian delegate considered that a nominal usable field strength of 65 dB was suitable for rural areas in his country.

With regard to paragraph 9.4.2 - Nominal usable field strength in the LF band - certain delegations considered that a value of the order of 73 dB would be appropriate in non-tropical rural areas.

9.3 Planning of the band 525-1 605 kHz

9.3.1 Planning criteria

Some delegations favour the use of the sky-wave service for night-time coverage, and, of these, some would, in addition, like to have a certain number of channels reserved for this service in order that the sky-wave fields might be suitably protected. Channels for sky-wave service should preferably be located in the higher part of the band and the lower part of the band should be used for ground-wave services. The lowest frequencies are most suitable for the coverage of very large areas by ground-wave.

Other delegations held the view that the band should not be split into sub-bands and felt that the whole band should be used both for the ground-wave and sky-wave services. These delegations considered that this gives the possibility of planning in an optimal manner to satisfy the needs of the countries. [Splitting would reduce the number of channels available for ground-wave service. This would be particularly so in the areas where LF is not used and the sky-wave service is generally unreliable.]

Both criteria for the planning of the MF band could be used by the Second Session of the Conference and coordination of assignments to countries using different criteria could take place at that time.

9.3.2 Nominal usable field strength

9.3.2.1 Sky-wave service

The sky-wave service is generally intended for rural areas where the man-made noise is low. The nominal usable field strength (E_{nom}) for the service provided by the sky-wave shall be E_{min} + 6 dB. This value of E_{nom} is considered adequate and takes into account the fluctuation of the received signal.

9.3.2.2 Ground-wave service

During daytime, in general the service area will be limited by natural noise. Accordingly, under these conditions, the E_{nom} will be identical to the value given to E_{min}. However, in the presence of interference due to ground-wave of other transmitters E_{nom} shall be E_{min} + 3 dB. In the presence of severe man-made noise the value of E_{nom} could be higher.

At night, two conditions can exist :

The ground-wave service area is limited by the fading caused by the sky-wave of the same transmitter. In this case, E_{nom} at the

beginning of the fading zone is a function of the transmitter power. Such a situation is likely to occur only in the case of very high power and very good ground conductivity.

Where the ground-wave service area is not limited due to onset of fading, $E_{nom} = E_{min} + X$ dB. For rural areas X = 11 dB and for urban areas X = 17 dB.

9.4 Planning of the band 150-285 kHz

9.4.1 Planning criteria

LF waves should be used for the coverage, mainly by the ground-wave, of extensive areas and, where they are used, their use should be coordinated with that of the lower part of the MF band.

9.4.2 Nominal usable field strength

Assuming that the LF service is not affected by industrial noise and taking account of the correction factor $\Delta 3$ for natural noise at frequencies other than 1 MHz (Document No. 80), one gets :

$$E_{nom} = E_{min} + 17 \text{ dB}$$

C. TERZANI
Chairman

Note : The values of E_{min} given in paragraphs 9.3 and 9.4 are those given in Document No. 79 for 1 MHz.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 106-E
21 October 1974
Original : French

PLENARY MEETING

FIRST REPORT OF COMMITTEE 6

(SUBMISSION OF REQUIREMENTS)

Subjects treated :

i) Form for the submission of a frequency assignment requirement

ii) Detailed instructions concerning the information to be entered in the various boxes in the form for the submission of a frequency assignment requirement

iii) Definitions of the gain of an antenna referred to a short vertical antenna in a given direction.

1. Committee 6 unanimously adopted the form and texts on the above subjects appearing in Annexes A, B and C attached hereto.

2. Committee 6 proposes that the form and the detailed instructions contained in Annexes A and B to this document should be reproduced in a sufficient number of copies, which should be sent to the Administrations in Regions 1 and 3 so that they can notify the I.F.R.B. of their frequency requirements.

M. HARBI
Chairman

Annexes : 3

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ANNEX A

FORM FOR THE SUBMISSION OF A FREQUENCY ASSIGNMENT REQUIREMENT
(See detailed instructions - Annex B)

Regional Administrative Conference for LF/MF Broadcasting (Geneva, 1975)

1) Administration	Requirement sheet No.

Transmitting station

2) Name	3) Country	4) Coordinates of antenna site: Longitude (degrees and minutes)	E W	Latitude (degrees and minutes)	N S

5) Desired frequency (kHz)	6) Frequency range desired for alternative frequencies (kHz)
	to / or / to

7) Necessary bandwidth in kHz	8) Carrier power Pc (kW)	9) Hours of operation GMT
A3		from / to

Required service area		
10) Ground-wave	a) Coordinates of the centre of the area	b) Radius in km
11) Sky-wave	a) Coordinates of the centre of the area	b) Radius in km

12) Ground conductivity in service area (S/m)

3×10^{-2}	10^{-2}	3×10^{-3}	10^{-3}
3×10^{-4}	10^{-4}	3×10^{-5}	10^{-5}

Antenna characteristics

Simple vertical antenna	Antenna other than simple vertical antenna			
13) Height (metres)	15) Attach the radiation diagrams in the horizontal and/or vertical planes.			
14) Gain in dB	16) Horizontal plane	a) azimuth of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)
	17) Vertical plane	a) angle of elevation of maximum radiation (in degrees) where other than zero	b) angular width of the main lobe (in degrees)	c) gain (in dB)

18) For stations at less than 100 km from sea, attach a map showing the antenna site relative to the coastline

19) **Synchronized network**

If the station forms part of a synchronized network, list below other stations forming part of the network (if necessary, continue on the back) and for each such station complete a separate requirement sheet

Name of the station	Requirement sheet No.

20. : If this requirement covers an assignment in use indicate the frequency:..... kHz.

ANNEX B

Detailed instructions concerning the information to be entered in the various boxes in the form for the submission of a frequency assignment requirement

1. Administration — Name of the Administration submitting the requirement.

2. Name of transmitting station — Indicate the name of the locality by which the station is (or will be) known or in which it is (or will be) located. Use the name as shown in the International Frequency List where this exists. Limit the number of letters and numerals to a total of 14.

3. Country — Indicate the country in which the station is (or will be) located, using the symbols appearing in Table 1 of the Preface to the International Frequency List. (Seventh Edition, together with the latest Recapitulative Supplement).

4. Coordinates of the antenna

Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).

5. Frequency desired — Indicate the assigned frequency of the channel (see No. 85 of the Radio Regulations) your Administration would prefer to use. For this purpose the centre frequency of the channels adopted at the present Session of the Conference shall be used. Where this is not possible, state in the next box the frequency range within which the most suitable assigned frequency could be selected during planning. If the requirement is for a low-power transmitter channel, insert the symbol "CFP" in this box, in place of the desired frequency.

6. Frequency range desired

If a frequency has been indicated in the preceding box, indicate here the frequency range(s) within which an alternative frequency could be selected during planning.

Example : 680 - 740 kHz or 1200 - 1300 kHz

7. Necessary bandwidth

Indicate the necessary bandwidth of the emission as defined in No. 91 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth: 4.5 kHz) and 20 kHz (AF-bandwidth: 10 kHz).

8. Carrier Power

Indicate the average power supplied to the antenna transmission line by the transmitter during one radio frequency cycle under conditions of no modulation (see No. 97 of the Radio Regulations). The last column in this box is for the decimal.

9. Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT), to the nearest hour. The first pair of figures should show the time the first emission of the day begins, and the second the time the last emission ends.

Example :

from	0	7	to	2	3

10. and 11. Required service area

Indicate the radius of the proposed service area round the transmitter, in km, specifying whether the area is served by ground-wave and/or sky wave. In case where directional antenna is used, the approximate co-ordinates of the centre of the required service area and the radius, in km, of the service range shall be indicated.

12. Ground conductivity in the required service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely :

3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4},

3×10^{-5}, 10^{-5} S/m

Put a cross in the appropriate box.

Antenna characteristics

13. and 14. Simple vertical antenna (see pages 11 - 13 of this Annex).

13. Indicate the height of the antenna (in metres)

14. its gain (dB), referred to a short vertical antenna, in a given direction.
The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction one should adopt either of the two definitions :

The ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennas being supplied with the same power.

The ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force of 300V) in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

15. to 17. Antenna other than a simple vertical antenna

15. The form should be accompanied by radiation diagram(s) of the antenna in the horizontal and vertical plane(s).

Or, if this is impossible, indicate :

16. in the horizontal plane:

a) the azimuth of maximum radiation, in degrees, (clockwise) from True North;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna, **(dB)(see item 14 above).**

17. in the vertical plane:

a) the angle of elevation, in degrees, of maximum radiation;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain of the antenna (dB) (see item 14 above).

When the antenna diagram shows substantial secondary lobes indicate on a separate sheet for each lobe the azimuth and the angle of elevation of the radiation in the direction of the lobe axis and the gain, in dB, with respect to the maximum radiation of a short vertical antenna placed on a perfectly conducting plane earth.

18. In the case of stations at less than 100 km from the sea

Attach a map (on a scale of at least 1/1,000,000) showing the site of the antenna in relation to the coast if the latter is less than 100 km from the antenna. The scale of the map and direction of True North should be indicated on the map.

19. Synchronized network

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the corresponding requirement sheet number of the other transmitters in the network. A separate request form must be filled in for each of these stations.

20. If the **requirement corresponds to a frequency assignment** already in service, **that** frequency should be indicated irrespective of whether the Administration wishes to retain the frequency or agrees to its transfer.

The Administration may supply such additional information as it may consider useful on a separate sheet, in a simplified form so that it can be processed by electronic means.

V E R T I C A L A N T E N N A E

The following description of radiation patterns of vertical antennae is based on the C.C.I.R. publication entitled "Antenna Diagrams".

Figure No. 1 gives curves drawn so that the radius vector is proportional to the field expected in a given direction in a vertical plane at 1 km distance for 1 kW radiated power.

Figure No. 2 gives the maximum field expected in any direction along the ground as a function of the length of the antenna, the total power radiated being kept constant.

The functions are independent of the azimuth, so the power contours become horizontal, straight lines. The formulae used for calculating these power distributions are given below. It is assumed that the antennae are on perfectly conduting ground and that one kilowatt is being radiated in each case.

1. *Uniform current element* (antenna length short compared with $\lambda/4$)

$E = 300 \cos \theta$, in mV/m at one kilometre distance where

θ = elevation angle (latitude)

$(Ed)_{max} = 300$ mV/m $\sqrt{P}$ ($\theta = 0^0$ on horizon)
($\theta = 90^0$ in zenith)

2. *Quarter wave antenna*

$$E = 313.6 \frac{\cos (90^0 \sin \theta)}{\cos \theta} \text{ in mV/m at one kilometre distance}$$

$(Ed)_{max} = 313.6$ mV/m $\sqrt{P}$

3. .311 *wave antenna*

$$E = 234.21 \frac{\cos (112^0 \sin \theta) + 0.3740}{\cos \theta} \text{ in mV/m at one kilometre distance}$$

$(Ed)_{max} = 321.8$ mV/m $\sqrt{P}$

4. *Half wave antenna*

$$E = 190.26 \frac{\cos (180^0 \sin \theta) + 1}{\cos \theta} \text{ in mV/m at one kilometre distance}$$

$(Ed)_{max} = 380.52$ mV/m $\sqrt{P}$

5. .625 *wave antenna*

$$E = 261 \frac{\cos (225^0 \sin \theta) - \cos 225^0}{\cos \theta} \text{ in mV/m at one kilometre distance}$$

$(Ed)_{max} = 445$ mV/m $\sqrt{P}$

Notes - 1. E in the above equations is the same in value as the cymomotive force expressed in Volts in Figure 1.
2. d is the distance (taken as 1 km in the above equations)
3. P is the transmitter power in kW fed to the input of the antenna ignoring losses along the transmission line.

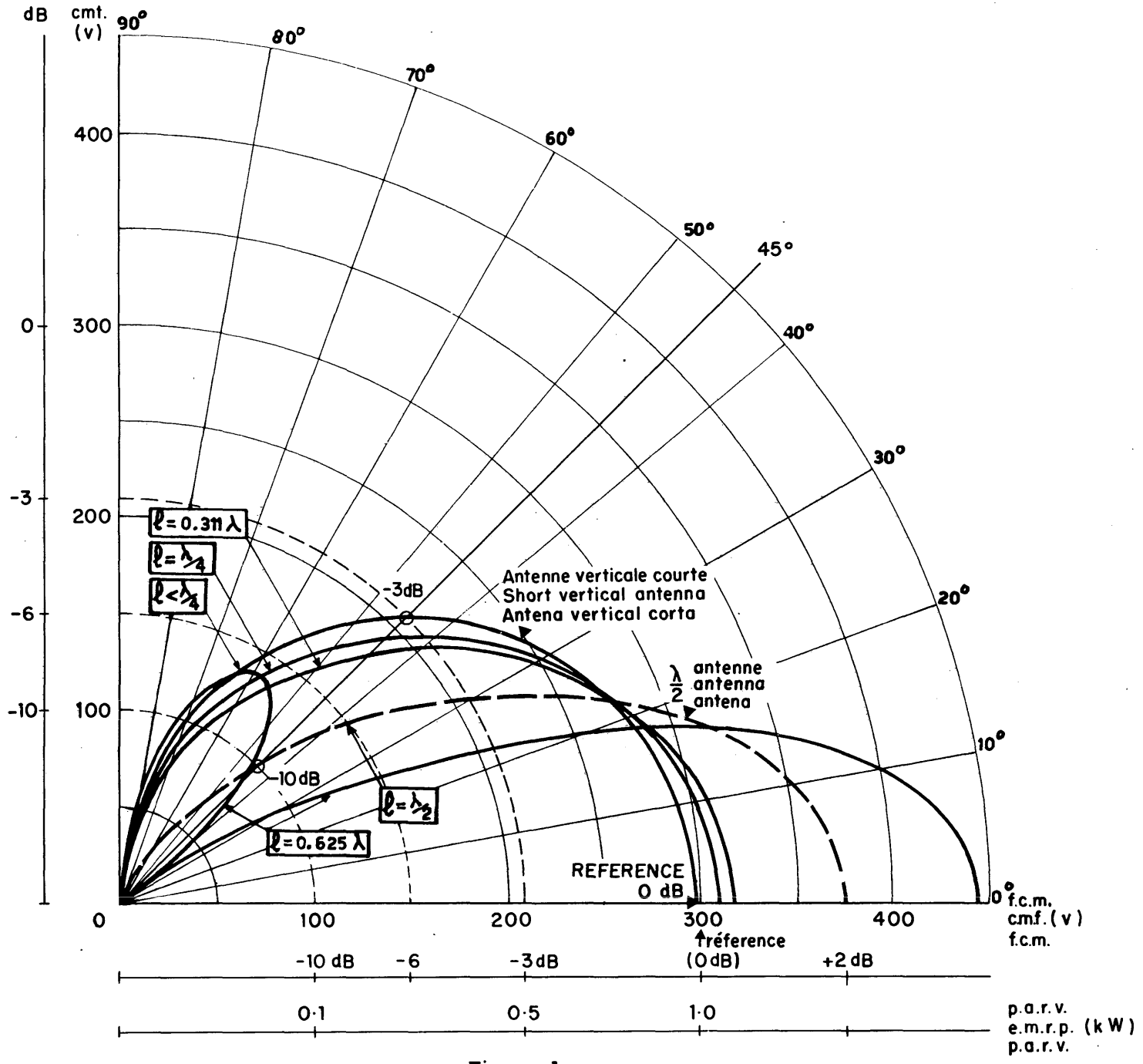
dB
cmt. (v)
90°
80°
70°
60°
50°
45°
40°
30°
20°
10°
0°
400
300
200
100
0
-3
-6
-10
ℓ = 0.311 λ
ℓ = λ/4
ℓ < λ/4
-3dB
-10dB
Antenne verticale courte
Short vertical antenna
Antena vertical corta
λ/2 antenne
antenna
antena
ℓ = λ/2
ℓ = 0.625 λ
REFERENCE
0 dB
0
100
200
300
400
f.c.m.
cmf. (v)
f.c.m.
réference
-10 dB
-6
-3dB
(0dB)
+2 dB
0·1
0·5
1·0
p.a.r.v.
e.m.r.p. (kW)
p.a.r.v.

Figure 1

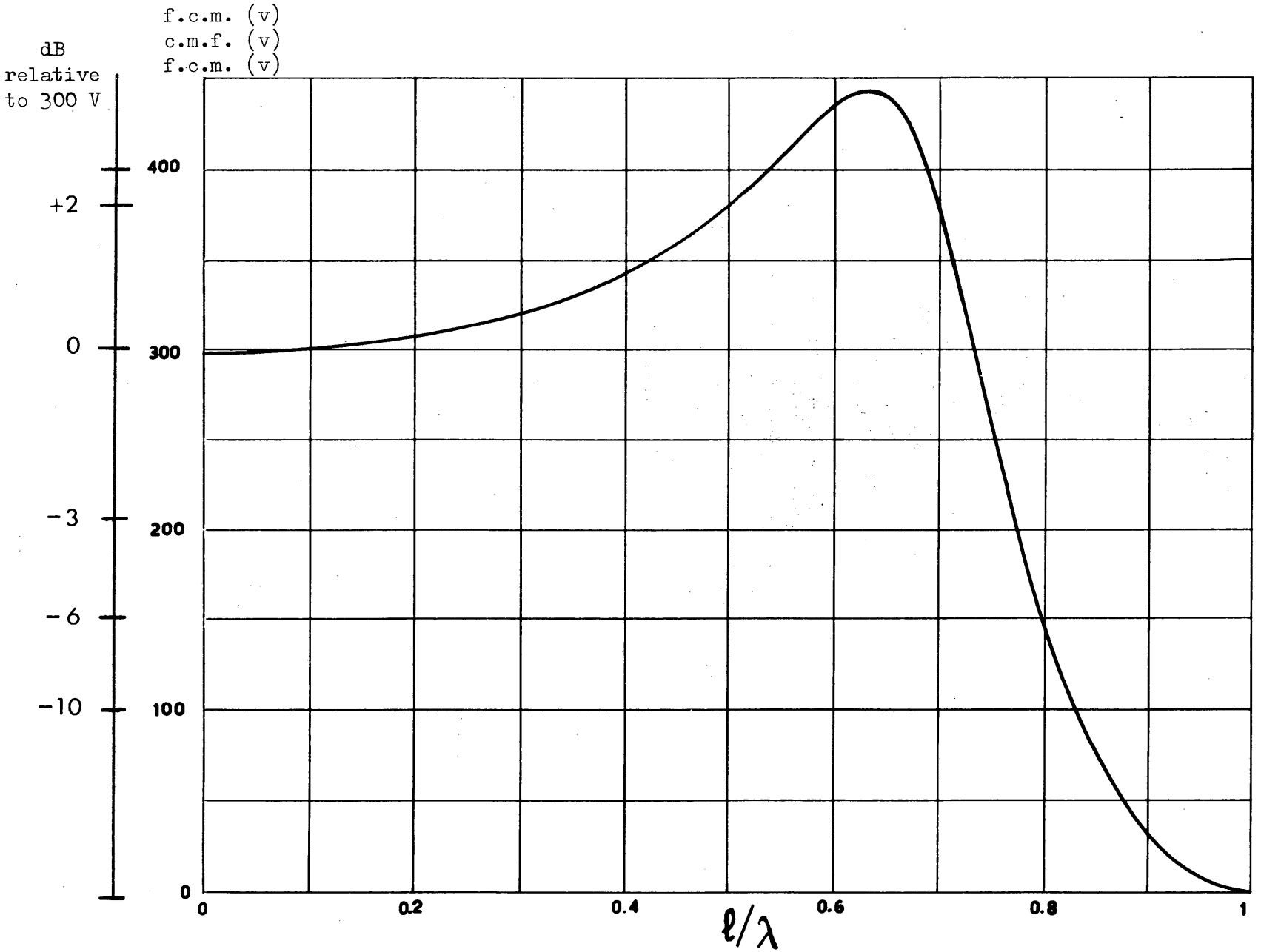
f.c.m. (v)
c.m.f. (v)
f.c.m. (v)
dB
relative
to 300 V
+2
0
-3
-6
-10
400
300
200
100
0
0
0.2
0.4
0.6
0.8
1
ℓ/λ

Fig. 2

ANNEX C

Definitions

GAIN OF AN ANTENNA REFERRED TO A SHORT VERTICAL ANTENNA IN A GIVEN DIRECTION

The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction one should adopt either of the two definitions :

The ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennas being supplied with the same power.

The ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force (c.m.f.) of 300V in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 107-E
20 October 1974
Original : English

COMMITTEE 6

NOTE FROM THE CHAIRMAN OF COMMITTEE 5

TO THE CHAIRMAN OF COMMITTEE 6

At the 4th Meeting of Committee 5 on Friday, 18 October 1974, having considered Document No. 87, it was unanimously decided to request Committee 6 to take into account this document.

Document No. 108-E
20 October 1974

PLENARY MEETING

B.4

4th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.		Title
C5	62(Rev.), 87, 91	Chap. 1	Definitions
C4	66	4.3.3	Directional antennae
C4	79	Chap. 6	Minimum field strength
C4	80	6.5	Frequency dependence of "minimum field strength"
C4	66	7.1	Receiving antennae
C5	62(Rev.)	9.5	Planning method
C4	78	Appendix C	Relative radio-frequency protection ratio curves
C4	80	Appendix D	Frequency dependence of "minimum field strength"
C4	81	Resolution A	Relating to bandwidth saving modulation systems
C5	62(Rev.)	Recommendation AA	Relating to the use of synchronized networks

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 16 pages

CHAPTER 1

DEFINITIONS

B.4

Audio-frequency signal-to-interference ratio

B.4

Ratio, expressed in dB, between the values of the voltage of the wanted signal and the voltage of the interference, measured under specified conditions, at the audio-frequency output of the receiver.

B.4

This ratio corresponds closely to the difference in volume of sound (expressed in dB) between the wanted programme and the interference.

Audio-frequency protection ratio

B.4

Agreed minimum value of the audio-frequency signal-to-interference ratio considered necessary to achieve a subjectively defined reception quality.

B.4

This ratio may have different values according to the type of service desired.

Radio-frequency wanted-to-interfering signal ratio

B.4

Ratio, expressed in dB, between the values of the radio-frequency voltage of the wanted signal and the interfering signal, measured at the input of the receiver under specified conditions.

B.4

For example, in the case of wanted and interfering transmissions of the classical type (carrier with double sideband), the chosen values will be the effective radio-frequency voltages that correspond to the wanted and interfering carriers.

Radio-frequency protection ratio

B.4

Value of the radio-frequency wanted-to-interfering signal ratio that enables, under specified conditions, the audio-frequency protection ratio to be obtained at the output of a receiver.

B.4

These specified conditions include such diverse parameters as spacing Δf of the wanted and interfering carrier, emission characteristics (type of modulation, modulation depth, etc.), receiver input and output levels as well as the receiver characteristics (selectivity and susceptibility to cross-modulation, etc.).

B.4

B.4

B.4 Nominal usable field strength (E_{nom})

The minimun conventional value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of natural noise, man-made noise and interference from other transmitters. Where the wanted or unwanted signal is fluctuating, or both are fluctuating, the percentage of the time during which the value of E_{nom} is exceeded shall be specified. The value of the nominal usable field strength is taken as a reference for planning purposes.

B.4 Nominal service area (of a broadcasting transmitter)

The area within which the field strength of a transmitter is equal to or greater than the nominal usable field strength.

B.4 Usable field strength (E_u)

The minimum value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of natural noise, man-made noise and interference in a practical situation (or in one resulting from a frequency plan). Where the wanted or unwanted signal is fluctuating, or both are fluctuating, the percentage of the time during which the value E_u is exceeded must be specified.

B.4 Service area (of a broadcasting transmitter)

The area in which the field strength of a transmitter is equal to or greater than the usable field strength.

B.4 Synchronized network

A group of transmitters whose carrier frequencies are identical or differ only slightly, usually by a fraction of a Hz, and which broadcast the same programme.

B.4

B.4

B.4

B.4

4.3.3 Directional antennae

B.4 Present knowledge shows that there are no particular technical difficulties in constructing antennae with high back protection over a wide range of angles in the horizontal and vertical planes.

B.4 Thus it has been possible to obtain with a three-mast antenna a front-to-back ratio of over 25 dB over a conical sector, with a horizontal axis, subtending an angle of 80° in the horizontal plane and 40° in the vertical plane. For planning purposes, a value of 20 dB would appear to be reasonable for radiation in the horizontal plane and 15 dB for radiation in the vertical plane, provided the antenna is situated on level ground. Administrations could, however, agree to other values of protection in special cases.

B.4 Present techniques also make it possible to obtain a variety of radiation diagrams for use in certain cases.

B.4 Antennae with low radiation at high elevation angles can also be built, which, for a ground-wave service at night, enable the area affected by fading to be further away from the transmitter.

Note : 1. Radiation in the horizontal plane concerns primarily the ground wave.

B.4 2. Radiation in the vertical plane concerns the sky wave.

B.4

B.4

B.4

B.4

B.4

B.4

CHAPTER 6

MINIMUM FIELD STRENGTH

B.4

6.1 In order to reduce the number of variables, it was decided not to take account of man-made noise in evaluating the "minimum field strength".1)

B.4

6.2 Reliable information on atmospheric noise available in C.C.I.R. Report 322 and values resulting from experience and measurements in the countries concerned were used as a basis for establishing "minimum field strength" values for the three zones A, B and C in Regions 1 and 3.

B.4

6.2.1 The dividing line between zones A and B begins at the point of intersection of parallel 20°N with the western border of Region 1 (No. 126 of the Radio Regulations). Thence it follows the parallel 20°N up to the point of intersection with meridian 20°E; thence by great circle arc to the intersection of meridian 44°E with the Equator; thence it follows the Equator up to the intersection with meridian 80°E; thence by great circle arc to the point with coordinates 100°E, 20°N; thence it follows the parallel 20°N up to the point of intersection with the eastern border of Region 3 (No. 128 of the Radio Regulations).

B.4

6.2.2 The dividing line between zones B and C begins at the point of intersection of parallel 6°S with the western border of Region 1 (No. 126 of the Radio Regulations); thence it follows the parallel 6°S up to the point of intersection with meridian 20°E; thence by great circle arc to the point with coordinates 46°E, 26°S; thence by great circle arc up to the point with coordinates 80°E, 20°S; thence it follows the parallel 20°S up to the point of intersection with the eastern border of Region 3 (No. 128 of the Radio Regulations).

6.3 The limits of the three zones are given in the map opposite.

B.4

6.4 The following "minimum field strength" values necessary to overcome natural noise (at 1 MHz) have been adopted :

Zone A : 60 dB/1μVm

Zone B : 70 dB/1μVm

B.4

Zone C : 63 dB/1μVm

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1) The value of the "minimum field strength" corresponds to the minimum usable field strength defined in C.C.I.R. Recommendation 449, except that man-made noise has not been taken into account.

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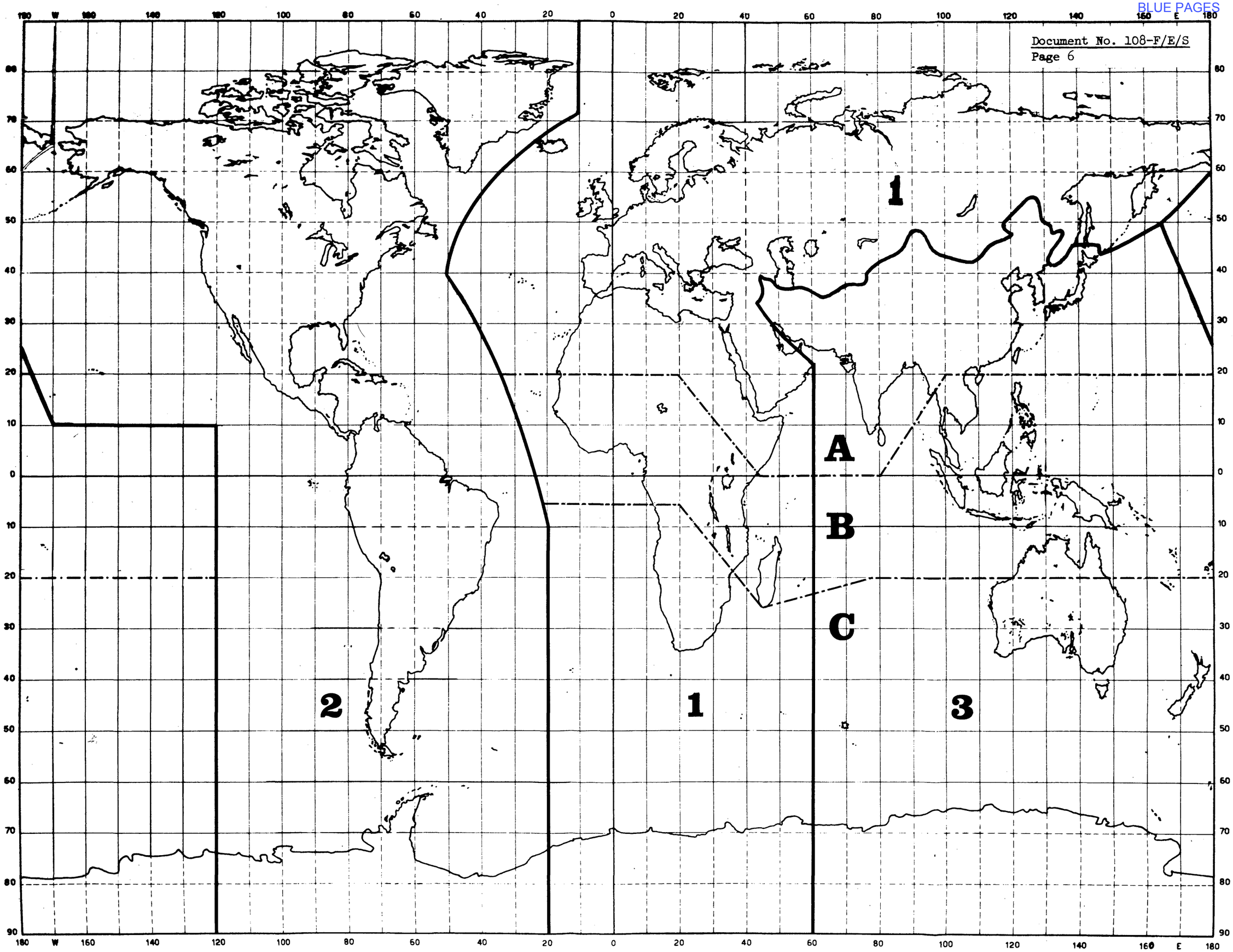
180 W 160 140 120 100 80 60 40 20 0 20 40 60 80 100 120 140 160 E 180
90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90
1
A
B
C
2
1
3

6.5 Frequency dependence of "minimum field strength"

B.4 The correction value Δa to be added to the values of "minimum field strength" to overcome natural noise for frequencies other than 1 MHz may be derived from the curve in Appendix D.[1)]

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1) The delegations of France and Sweden consider that this curve is not valid for LF and that lower values of the "minimum field strength" can be accepted.

CHAPTER 7

RECEIVERS

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7.1 Receiving antennae

B.4 The Plan should be drawn up without taking into account the directivity of receiving antennae.

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CHAPTER 9

PLANNING METHOD

9.5 Synchronized Network

For the purposes of planning and for determining the probabilities of harmful interference, a network of synchronized transmitters may generally be represented by an equivalent single transmitter the characteristics of which are calculated according to the method described below[1)].

9.5.1 Calculation of interference in the case of a synchronized network

9.5.1.1 Interference caused by a synchronized network

In the simple but frequent case in which the transmitters of the synchronized network use omnidirectional antennae and in which the transmitters are sufficiently close together, the interference can be calculated by replacing the transmitters by an equivalent single transmitter. This transmitter will be located at the "centre of gravity" of the network. This centre is determined as that of various masses, the mass in this case being the square of the c.m.f. of each of the transmitters (or the e.m.r.p. of each transmitter). The radiation of this equivalent transmitter will be the sum of the radiations of each transmitter of the network (i.e. the sum of the squares of the c.m.f.'s or the arithmetical sum of the e.m.r.p.'s).

If the transmitters of the network are equipped with directional antennae, the same rules apply for the calculation of the interference in a given direction (that of the transmitter to be protected). In this case, the centre of gravity and the radiated power of the equivalent transmitter will depend on the direction considered. The calculation of the centre of gravity must be effected with the masses proportional to the radiated power of the transmitters in the direction considered. In the same way, the radiated power of the equivalent single transmitter will be determined by adding up the radiated powers of each transmitter in the direction considered.

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1) More details can be found in C.C.I.R. Reports Nos. 459 and 616.

B.4 Let D be the distance between any transmitter of the network and any transmitter not belonging to the group and suffering interference, and D' the distance of the centre of gravity of the network from this transmitter. It is assumed that the previous method is acceptable only if :

B.4 $|D - D'| \leq 0.15D$ in the case of co-channel interference

B.4 $|D - D'| \leq 0.25D$ in the case of adjacent channel interference

B.4 If the conditions described above for the distances are not fulfilled, the general method will be applied, which consists of calculating the interference caused by each transmitter in the synchronized network and adding up the squares of the interference fields. This method is clearly valid in all cases, and can be applied systematically if the validity of the equivalent transmitter method is challenged.

B.4 The radio-frequency protection ratio to be applied for interference caused by a synchronized network suffered by the service of any other transmitter is the same as for a single transmitter.

B.4 9.5.1.2 Interference suffered by a transmission of a synchronized network

B.4 The interference suffered by a transmission belonging to a synchronized network may be due to :

B.4 - the other transmitters of the synchronized network (internal interference);

- other transmitters (external interference).

B.4 In the case of external interference, the radio-frequency protection ratio is considered to be the same as in the case of a single transmitter.

B.4 In the case of internal interference, the radio-frequency protection ratio is regarded as a problem specific to each country. However, in order to compare different frequency plans, it is necessary to calculate the coverage of the transmitters of a synchronized network. This coverage is determined in the same way as in the general case, namely by calculating for each transmitter the usable field strength by the formula :

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$$E_u = \sqrt{\Sigma (a_e E_{be})^2 + \Sigma (a_i E_{bi})^2 + E_m^2}$$

B.4 where E_{be} and E_{bi} are the external and internal interference fields,

a_e and a_i are the corresponding protection ratios, and

B.4 E_m is the minimum usable field strength /see 6.1/.

This formula corresponds to that given in C.C.I.R. Recommendation 499. In this calculation, the internal protection ratio a_i for planning purposes is taken as 8 dB.

B.4 9.5.2 Recommendation No. AA deals with the use of synchronized networks.

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APPENDIX C

RELATIVE RADIO-FREQUENCY PROTECTION RATIO CURVES

(Based on C.C.I.R. Recommendation 449)

B.4 The relative values of the radio-frequency protection ratio, expressed as a function of the carrier-frequency spacing, are given by the curves of Fig. 1 :

- curve A, when a limited degree of modulation compression is applied at the transmitter input, such as in good quality transmissions, and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;

- curve B, when a high degree of modulation compression (at least 10 dB greater than in the preceding case) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;

- curve C, when a limited degree of modulation compression (as in the case of curve A) is applied and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz;

- curve D, when a high degree of modulation compression (as in the case of curve B) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz.

The curves A, B, C and D are valid only when the wanted and unwanted transmissions are compressed to the same extent.

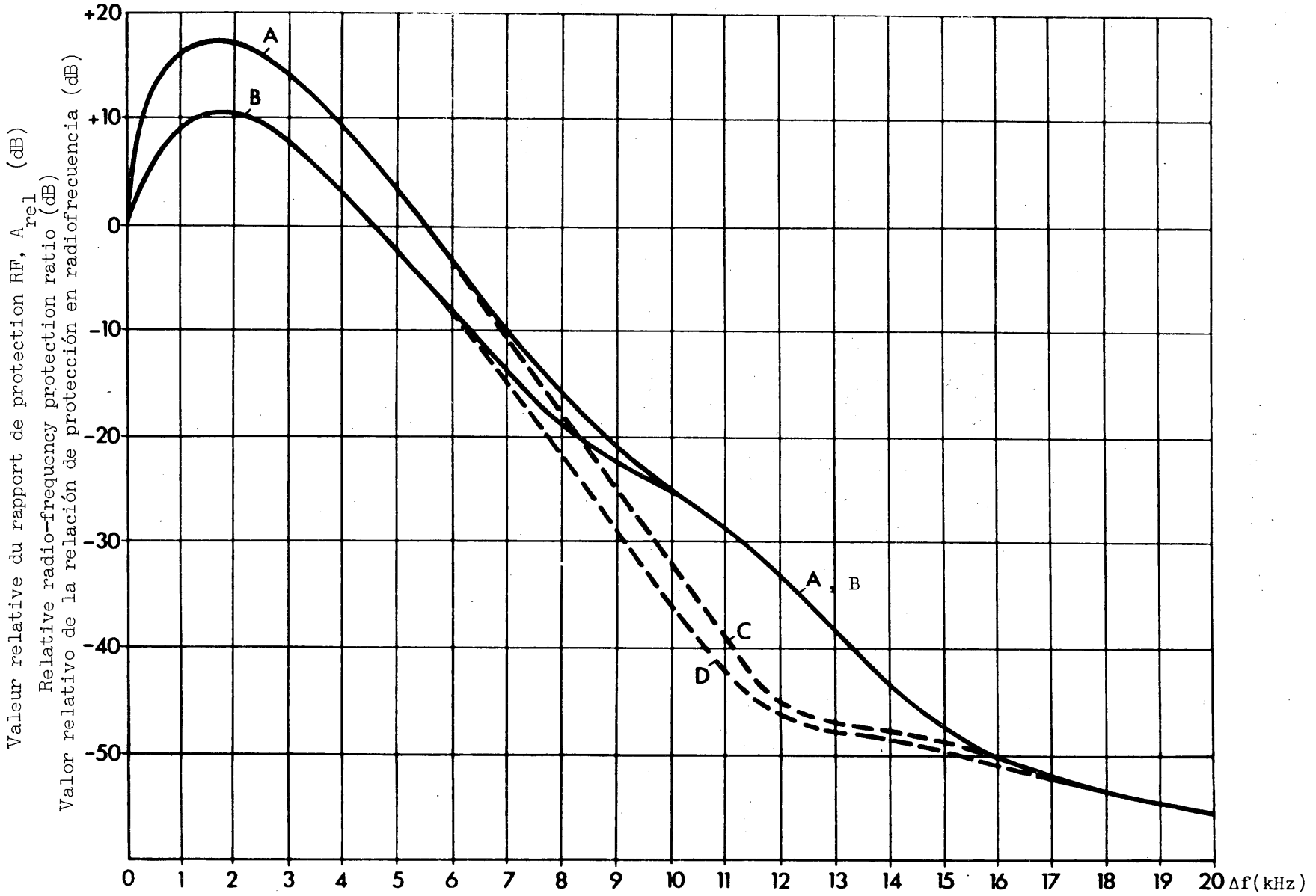


FIGURE 1 FIGURA 1

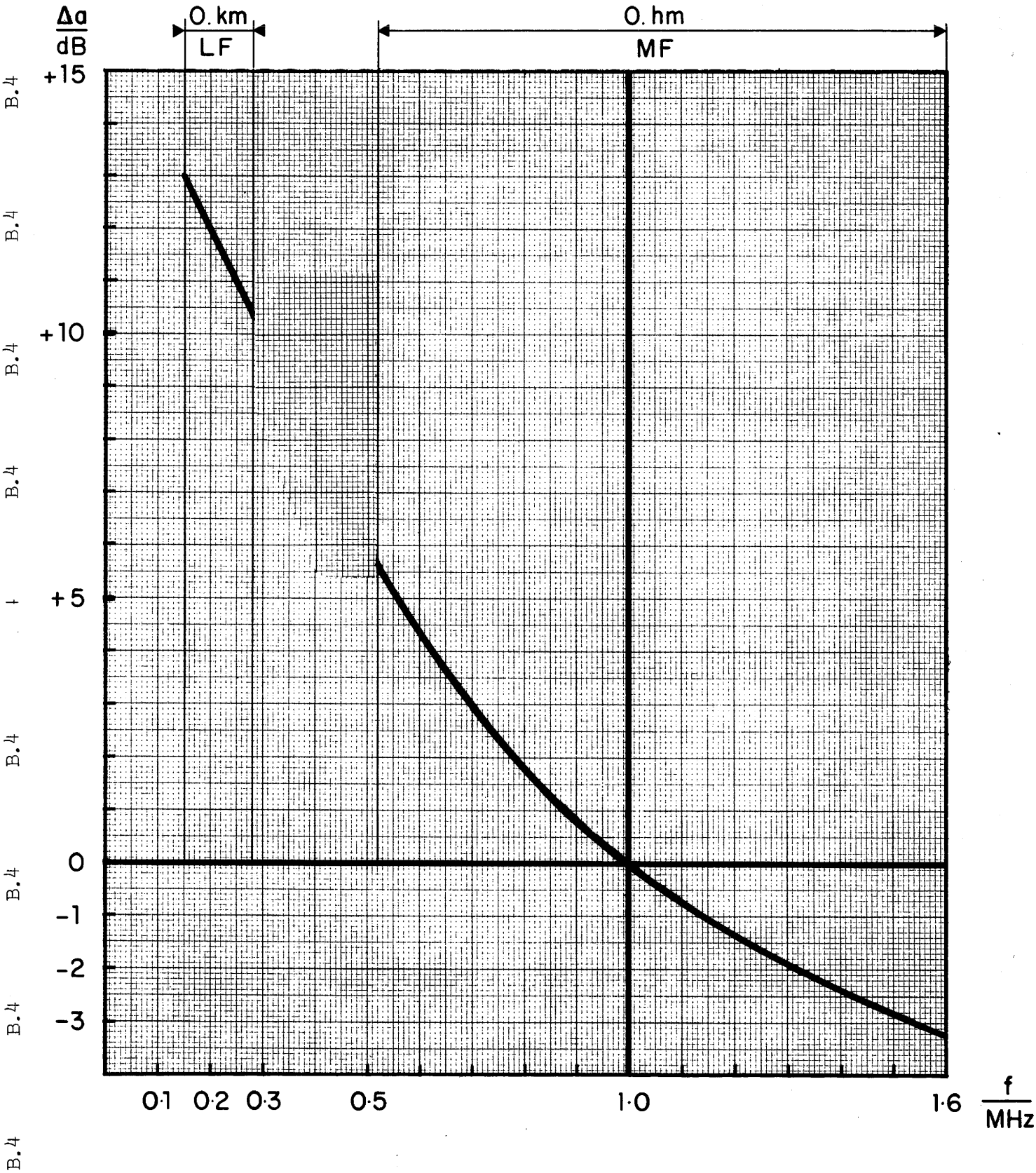
VALEURS RELATIVES DU RAPPORT DE PROTECTION AUX FREQUENCES RADIOELECTRIQUES EN FONCTION DE L'ECARTEMENT DES PORTEUSES
RELATIVE VALUE OF THE RADIO-FREQUENCY PROTECTION RATIO AS A FUNCTION OF THE CARRIER FREQUENCY SEPARATION
VALORES RELATIVOS DE LA RELACIÓN DE PROTECCIÓN EN RADIOFRECUENCIA EN FUNCIÓN DE LA SEPARACIÓN ENTRE LAS PORTADORAS

APPENDICE D APPENDIX D APÉNDICE D

"CHAMP MINIMAL" EN FONCTION DE LA FREQUENCE

FREQUENCY DEPENDENCE OF "MINIMUM FIELD-STRENGTH"

"INTENSIDAD DE CAMPO MÍNIMA" EN FUNCIÓN DE LA FRECUENCIA



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RESOLUTION A

Relating to Bandwidth Saving Modulation Systems

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

a) the improved efficiency in the use of the frequency bands 5 (LF) and 6 (MF) that might be achieved by the application of bandwidth saving modulation systems;

b) the difficulties associated with transmitters and receivers and with frequency planning if transition to bandwidth saving modulation systems is contemplated;

requests

1. the C.C.I.R. to expedite its studies of bandwidth saving modulation methods with particular reference to the technical, operational and economic aspects of single-sideband and independent sideband modulation, taking into account the problems of compatibility with existing receivers;

resolves

to ask the next competent World Administrative Radio Conference to decide, in the light of the results of the C.C.I.R. studies, on the feasibility of introducing such techniques in the LF/MF broadcasting service.

RECOMMENDATION NO. AA

Relating to the Use of Synchronized Networks

The Regional LF and MF Broadcasting Conference,

considering

B.4 that synchronized networks present considerable advantages over an equivalent single transmitter and therefore should be employed in much larger numbers in any frequency assignment plan;

B.4 that a synchronized network covers a greater area than the equivalent single transmitter; this increase, which depends on local conditions and the constitution of the network, may be large;

B.4 that the population coverage is in most cases increased to an even greater extent, since a synchronized network makes it possible to set up transmitters providing a higher field strength in the most densely populated areas; the population coverage may be more than doubled;

B.4 that subject to the rules given in Chapter 9, the interference caused by a synchronized network to transmitters in the same channel or adjacent channels is practically identical to that which would be caused by the equivalent single transmission;

B.4 that in view of the present congestion of the LF and MF bands, transmitter synchronization is one of the few ways of keeping most of the transmitters in operation in a country and reducing the number of channels required; this is a particularly important advantage;

B.4 that transmitters can be synchronized on any channel in the LF or MF bands;

B.4 that the constitution of a synchronized network may take a wide variety of forms, for example, a small number of high-power transmitters or a large number of low-power transmitters, or a combination of both types of transmitter;

B.4 that synchronization methods, which previously called for complex equipment, monitoring centres and a large number of highly skilled technicians, are nowadays simplified; indeed there is no problem at all if atomic oscillators are used since these oscillators provide a more than adequate frequency stability for many years without requiring any maintenance or supervision; various countries are already using such oscillators while others are planning to introduce them;

B.4

B.4

that the only limitation of the synchronized network is the need to broadcast the same programme at night. However, different programmes may be broadcast during the day except where the transmitters are very close together causing mutual ground-wave interference;

B.4

recommends

that in developing their broadcasting network in the LF and MF bands administrations use synchronized networks to the maximum extent possible.

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Note : Additional technical information of synchronized networks will be found in C.C.I.R. Reports Nos. 459 and 616, and in E.B.U. Publication TECH 3210 "Synchronized groups of transmitters in MF and LF broadcasting".

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Corrigendum No. 1 to
Document No. 109-E
21 October 1974
Original : French

COMMITTEE 4

Algeria - Burundi - Cameroon - Central African Republic - Chad - Congo - Dahomey - Egypt - Ethiopia - Gabon - Ivory Coast - Jordan - Kenya - Kuwait - Lebanon - Lesotho - Libya - Madagascar - Malawi - Mauritania - Mauritius - Morocco - Nigeria - Saudi Arabia - Senegal - Syria - Tanzania - Togo - Zaire - Zambia

DRAFT RESOLUTION .....

Channel spacing

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

noting

Resolution No. 4 of the African LF/MF Broadcasting Conference (Geneva, 1966)

considering

- that the use of a uniform channel spacing in Regions 1 and 3 will make it possible to use the frequency bands allocated for broadcasting in a more rational way than a different spacing according to the Region concerned;

- that the adoption of a uniform channel spacing would mean changing the carrier frequencies of stations in Region 1 and Region 3,

resolves

1. that within the framework of a standard spacing of 9 kHz between carrier frequencies (which must be whole multiples of that spacing), planning should restrict to a minimum any changes in the carrier frequencies of stations in Region 3;

2. that the second session of the Regional Administrative Broadcasting Conference shall adopt, for the frequency changes necessary in Regions 1 and 3, a timetable which allows for the special circumstances of developing countries.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 109-E
19 October 1974
Original : French

COMMITTEE 4

Algeria - Burundi - Cameroon - Central African Republic - Chad - Congo - Dahomey - Egypt - Gabon - Ivory Coast - Jordan - Kenya - Kuwait - Lebanon - Lesotho - Libya - Madagascar - Malawi - Mauritania - Mauritius - Morocco - Nigeria - Saudi Arabia - Senegal - Syria Tanzania - Togo - Zaire - Zambia

DRAFT RESOLUTION .....

Channel spacing

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

noting

Resolution No. 4 of the African LF/MF Broadcasting Conference (Geneva, 1966)

considering

- that the use of a uniform channel spacing in Regions 1 and 3 will make it possible to use the frequency bands allocated for broadcasting in a more rational way than a different spacing according to the Region concerned;

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resolves

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 110-E
20 October 1974
Original : English

COMMITTEE 4

Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Italy, Malta, Monaco, Norway, Netherlands, United Kingdom, Sweden, Switzerland, Turkey, Vatican City State, Yugoslavia

CHANNEL SPACING

1. The above countries have demonstrated, as a result of studies over a number of years, that a plan for the medium frequency band based on 8 kHz channel spacing, with the band divided into three or four blocks according to transmitter power and type of service, would lead to the greatest flexibility and most efficient use of the frequency spectrum and could provide an improvement of service in many parts of Regions 1 and 3.

2. It is however realised that a division of the band into three or four blocks as suggested in Documents No. 6 (Federal Republic of Germany) and 40 (E.B.U.), could involve in some cases large frequency changes and high cost for some stations, which might not be acceptable to the Administrations concerned. On the other hand, a division of the band into a larger number of smaller blocks as proposed in Document No. 25 (New Zealand) would involve much smaller frequency changes and low costs for most stations. Such an arrangement combined with 8 kHz channel spacing would provide maximum flexibility for minimum change of frequency and would appear to offer a possible alternative.

3. A change from the present channelling plan in Region 1, which embraces channels with 8, 9 and 10 kHz spacings, to one with a uniform 9 kHz spacing would reduce the number of channels available by one. It would not bring any benefits to Region 1 unless it was accompanied by some division of the band into blocks according to transmitter power and type of service.

4. In Document No. 67, certain countries have stated that there are advantages for Region 3 in retaining a uniform channel spacing of 10 kHz. However the adoption of this channel spacing in Region 1 would be unacceptable because it would lead to a substantial reduction of the number of channels available and would greatly worsen the congestion in Europe and

Africa; in Europe the congestion is caused by the great number of countries of rather limited size with a high population density and variety of languages.

5. If the countries of Region 3, in the interests of achieving standardization throughout Regions 1 and 3, agreed to change from 10 kHz channel spacing it would be advantageous for them to move to 8 kHz spacing, rather than to 9 kHz spacing, because this would give a 25% increase in the number of channels available and would provide room for expansion in the developing countries whose needs are bound to increase in the coming years; in addition, it would give the flexibility needed to minimize frequency changes for existing transmitters in developing countries. Furthermore, in a well engineered assignment plan, 8 kHz channels are capable of supporting an audio-modulation bandwidth of 10 kHz, as explained in Document No. 48 (United Kingdom). In addition, the choice of 8 kHz for Region 3 would provide a better compatibility with the channelling used in Region 2 than would the choice of 9 kHz, because there are 27 coincident carrier frequencies in the 8 and 10 kHz plans, as against 12 in the 9 and 10 kHz plans.

6. The 8, 9 and 10 kHz channel plans referred to above are as follows :

8 kHz :	528, 536, 544	1584, 1592, 1600 (135 channels)
9 kHz :	531, 540, 549	1584, 1593, 1602 (120 channels)
10 kHz :	530, 540, 550	1580, 1590, 1600 (108 channels)

7. Accordingly, and bearing in mind the best interests of the whole of Regions 1 and 3, including the desirability of a common channelling plan throughout, the countries above-named consider that the options available may be placed in the following order of merit, the respective centre frequencies being as indicated in paragraph 6 :

7.1 An 8 kHz channelling plan coupled with division of the band into three or four blocks according to transmitter power and type of service;

7.2 An 8 kHz channelling plan coupled with division of the band into a larger number of blocks according to transmitter power;

7.3 An 8 kHz channelling plan without division of the frequency band into blocks;

7.4 A 9 kHz channelling plan coupled with division of the band into three or four blocks according to transmitter power and type of service;

7.5 A 9 kHz channelling plan coupled with division of the band into a larger number of blocks according to transmitter power;

7.6 A 9 kHz channelling plan without division of the frequency band into blocks;

7.7 A 10 kHz channelling plan with or without division of the band into blocks according to transmitter power.

The above-named countries would urge the adoption, by all the countries of Regions 1 and 3, of one of the options 7.1, 7.2 or 7.3.

Documents of the Regional Administrative LF/MF Broadcasting Conference (Regions 1 and 3) (1st session) (Geneva, 1974)

Document No. 111

Not used

****

Pas utilisé

****

No utilizado

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 112-E
20 October 1974
Original : French/
English

COMMITTEE 5

FOURTH REPORT OF WORKING GROUP 5A

TO COMMITTEE 5

Introduction

Working Group 5A held its 12th and last meeting on 19 October.

It discussed the Annex to Document No. DT/34 and considered that that annex, on determination of the value of X to be added to the minimum usable field strength to obtain the nominal usable field strength, although useful, at the first meeting of the Conference, for clarifying the calculations made and for giving examples of distances between transmitters using the same channel and of ground wave service ranges corresponding to the nominal field strength values selected, was not necessary for the Conference's report.

The Working Group considered Document No. 99, by which Committee 4 transmitted to Committee 5 paragraphs 4 and 5 of Document No. 78 on radio frequency protection ratios, and noted that paragraph 5, the only one relevant to the Working Group, had already been considered. After having discussed Document No. 101, by which Committee 4 transmitted to Committee 5 Document No. 66 on directional antennae, the Working Group expressed its agreement in regard to that document and in particular in regard to paragraph 2. It was unable, for lack of time, to consider Document No. 102, presented by Norway; this can be considered directly by Committee 5 itself. The Working Group was unable to fix the values of the lowest and highest carrier frequencies in the LF/MF bands, because when its last meeting was held, the channel spacing had not yet been fixed by Committee 4.

The Working Group received the first report of Sub-Group 5A-4 on planning methods, and made some recommendations to the Sub-Group on the drafting of the report's paragraph on planning methods. The text of that paragraph, which is given below, could not be considered in its final form by the Working Group and is accordingly, with the Working Group's consent, being presented to Committee 5 directly by Sub-Group 5A-4.

9.6 Planning methods

1. The planning method must recognize the spirit of the planning principles but this has to be tempered with the facts that :

a) the available spectrum is limited as well as the capital and human resources;

b) the problem of providing a fair and rational allocation of channels and adequate powers is particularly difficult in those regions of the world where there is a large number of countries or population groups in relatively close proximity.

A rational planning method is needed to maximize the number of programmes and the quality of coverage that is given to the radio broadcasting listener.

9.6.1 Basic considerations

When planning it is necessary to observe the following principles :

a) to use coincident carrier frequencies with uniform channel spacing;

b) to retain the existing broadcasting stations network to the maximum extent possible, bearing in mind the commitments of many countries;

c) to minimize changes in existing frequency assignments;

d) to endeavour to meet to the maximum extent possible the requirements of all countries, for their broadcasting services taking into account administrative subdivisions and the number of national languages involved;

/ e) to take account of the concept of a unit of broadcasting coverage; /

f) to take into account the different technical parameters adopted by this session of the Conference for different broadcasting areas;

g) to take account of the specific needs of certain countries in view of insufficient availability of alternative broadcasting means in other frequency bands (for example VHF-FM). Noting that the LF/MF bands are particularly suitable for the economic exploitation for mass communication over large areas;

h) to set aside a certain number of low-power channels for the exclusive use by stations using powers of 1 kW or less (Document No. 87).

9.6.2 Working aspects for planning

a) A theoretical lattice for frequency channel distribution should assist in the basic planning approach.

b) However, taking into consideration existing broadcasting systems and their frequency assignments some necessary changes may, nevertheless, have to be introduced to modify the theoretical lattice distribution configuration.

c) The theoretical network needs to be supplemented with other transmitters having varying technical parameters in order to provide the needed service, as is mentioned in parargraph 9.6.1.

d) Using the above method of frequency allocations it is in everyone's interests that Administrations exercise goodwill and mutual understanding in the coordination of national requirements to obtain the best possible result.

While fulfilling these tasks different theoretical methods may be used, some of which are referred to in the three attached annexes.

C. TERZANI
Chairman

Annexes : 3

ANNEX 1

1. In a congested planning area high power stations are distributed throughout the band on virtually every channel. A planning method must be able to cope with this situation and recognize the great importance that various administrations place on maintaining the essential form of their present services and the need to keep the cost of any alterations to a minimum.

2. There are several aspects of planning methods. It is noted that :

   a) there is a minimum power level that is required to overcome noise levels,

   b) there is a limitation on powers used on particular channels if they are to be used many times over in different parts of the world on different programmes.

3. In the overall world-wide situation it is possible to distinguish three major power categories - high, medium and low with an extension upwards to super power and an extension downwards to very low power. There is roughly 10 dB between the main categories and at the moment the bulk of the stations fall into these groupings. The level of powers in these three main groupings varies between congested regions. As a generalization, low power can be defined as 1 kW to 10 kW, medium power 10 kW to 50 kW, and high power as 50 kW and above. It is noted that the maximum powers used in different parts of the world vary quite widely, but it is desirable that these maximum powers should merge smoothly from one area to another or be the same.

4. Four component techniques can be used to improve the efficiency of an assembly of transmitting stations :

   a) The coverage of all stations can be maximized by ensuring that they all provide coverage with respect to roughly the same usable field strength. This implies that stations of similar powers should be associated in frequency blocks.

   b) The coverage of all stations should be maximized by ensuring that adjacent channels do not contain stations of too widely differing power levels.

   c) The systematic spacing of co-channel stations according to the power level. Taking into account component a) this leads to equilateral triangular configurations.

d) A certain minimum number of stations should be associated in a similar power block grouping so that linear channel distribution schemes can be used to arrange the adjacent channel frequencies into a pattern that minimizes adjacent channel interference.

5. The question then is, can some of the above components of the full lattice grid planning method be applied to the MF band and still retain mixed transmitter powers distributed throughout it? This is indeed possible, and would give some adjacent channelling improvements. However the penalty for mixing different transmitter powers is that the lower power stations would have to suffer a higher usable field strength.

6. To improve this situation further it could be argued that all the powers could gradually be adjusted to the same level, this would equalize the usable fields but it would mean that the powers would tend to be either insufficient or excessive.

7. If on the other hand the powers were separated into different frequency blocks for each power class, each station would still be tailored to do its particular job, but the lower power stations could then be working with much lower usable fields with the result that their coverage would be noticeably increased. On the other hand this advantage could imply more frequency changes.

8. Against this last solution, many countries would consider that the situations where transmitters of different power levels share the same channel, the higher usable field strength requirements associated with lower power stations are coupled with the higher man-made noise levels which then make the compromise attractive. In this situation low power transmitters can be integrated into the high power lattice. However it might be necessary to increase the spacing between high power stations to accommodate this.

9. As a compromise it might be possible to group together channels containing transmitters of similar power into blocks of say three channels for each power class in accordance with the requirements submitted. This idea should only be made use of where practicable. Although this would be an improvement over existing mixed systems adjacent channel interference would be present between power blocks. This may not be ideal because it would still leave large numbers of power block transitions. However, this compromise would make larger frequency changes unnecessary.

10. A fuller application of a lattice approach could ease the adjacent channel interference problem and the use of larger power blocks should reduce the usable fields. However, recognizing at least three power categories and the need to avoid placing low power groups next to high power groups and a minimum number of channels in a group (about 9 or 12) it will be seen that the advantages cannot be reaped without some frequency shifting equal to one or more block widths.

11. As a practical approach it may be necessary to leave the general pattern of stations below a frequency of about 1 000 kHz as it exists at present. In this part of the frequency band a computer analysis could be carried out to see whether some very elementary frequency changes could produce any significant improvements.

12. Taking into account existing systems and the requirements of Administrations a computer analysis could be carried out to show the advantages and disadvantages of the four component techniques outlined, and any other methods that come to light.

13. In applying the lattice grid concepts it should be noted that additional concepts may need to be added to make the results correspond more closely to the particular situation. If possible there may be some merit in distorting the map to take account of other factors e.g. geomagnetic characteristics. A fuller description of the lattice grid theory is given in Annex 2.

14. In the case of areas well removed from the regions of concentrated population and in which low and medium power stations are involved, simplified coordination procedures can be contemplated. One such method is set out in Annex 3.

A N N E X 2

FREQUENCY PLANNING METHOD FOR LF/MF BROADCASTING BASED ON GEOMETRICALLY REGULAR LATTICES AND LINEAR CHANNEL DISTRIBUTION SCHEMES

In geometrically regular lattices it is possible to use linear channel distribution schemes in a way that mutual interference is reduced to the minimum possible. The lattice consists, in principle, of an adequate number of equilateral or nearly equilateral spherical triangles having sides corresponding to the distance necessary between transmitters sharing the same channel (the co-channel distance). In the idealized case the number C of channels available in the whole band, or, if desired, in a part of it is evenly distributed over the surface of any pair of triangles having one side in common (a rhombus in the case of equilateral triangles). Thus, all channels used are allocated to elementary areas of identical size (see Fig. 1).

In linear channel distribution schemes channels are arranged in such a way that, in any direction considered, frequency spacings between channels allocated to equally spaced areas are constant (under condition that channel numbers n and (C + n) are considered to be identical). The use of linear channel distribution schemes, therefore, secures that interference conditions are identical in any channel involved throughout the network. Differences in interference conditions are only implied by the dependency on frequency of propagation effects. The utility of any linear channel distribution scheme can, thus, easily be checked by computing, for instance, the interference caused to the channel assigned to the apices of the quadrilateral. It is obvious that interference other than co-channel interference will be lowest, when the relevant channels, e.g. the adjacent channels, are assigned to areas close to the centres of gravity of the two triangles constituting the equilateral. In the case of a rhombus the distance of the centres of gravity from the apices is $1/\sqrt{3}$ times the co-channel distance.

The application of geometrically regular lattices and linear channel distribution schemes in practical planning is fairly easy. It presumes, however, that planning is not restricted by numerous existing frequency assignments that have to be respected within very close limits. In the latter case this planning method would not be appropriate because the adaptation of the regular lattice, including its channel distribution, to actual transmitter sites, while simultaneously respecting existing assignments, would seriously affect coverage.

In all other cases this method would lead to satisfactory results when, by means of adequate distortion of the regular lattice's channel positions, channels are adapted to actual transmitter sites (see Fig. 2). Although it would be desirable that the necessary distortions be small, they may in particular and even numerous cases be quite considerable, provided that the same amount of care is exercised in these circumstances as would have been necessary in the absence of this method. Normally, the effects of lattice distortions on interference tend to compensate.

In order to facilitate the adaptation of the regular lattice's channel positions to actual transmitter sites it is useful to subdivide the whole planning area (Regions 1 and 3) into quadrilaterals (of rhombic or nearly rhombic shape) having sides corresponding to the predetermined co-channel distance. If different co-channel distances have to be respected in different parts of the planning area, this may well be covered by adequately adapting the subdividing lattice to the particular needs of any of these parts.

Should one or more quadrilaterals after adequate subdivision contain a number of transmitters greater than the number C of channels available in any quadrilateral, then channels can only be assigned when the excessive transmitters in the equilaterals are grouped together to form synchronized networks. Difficulties that would arise when excessive transmitters cannot be accommodated in synchronized groups would also exist when the planning procedure were not based on the method described here. In this case agreement will have to be reached on either an adequate modification to the technical parameters or a reduction in the number of requirements in the area where the difficulties exist.

It should be stressed that the planning method outlined above is primarily intended to give guidance during the planning procedure. It facilitates the assignment of frequency channels by providing channels for assignment in their probable order of suitability. The planning method can, however, never replace the negotiations between the Administrations concerned necessary to determine the radiated power or horizontal radiation patterns of the transmitters concerned.

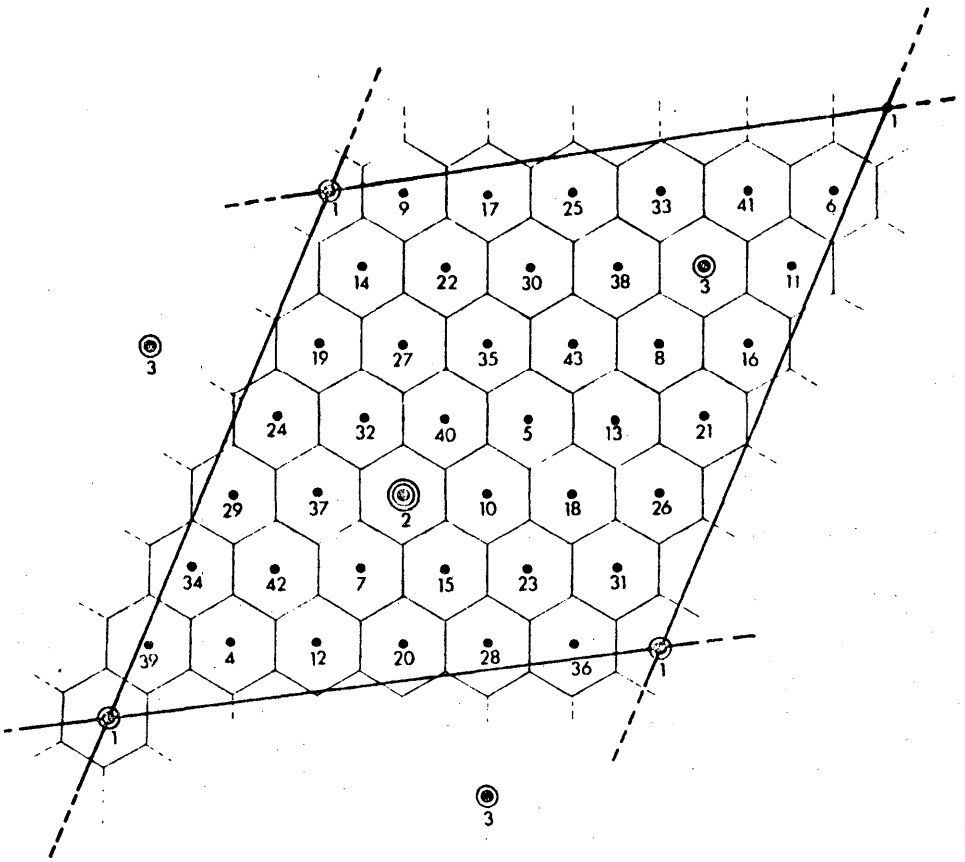

Fig. 1. - Example of a linear distribution of 43 channels.

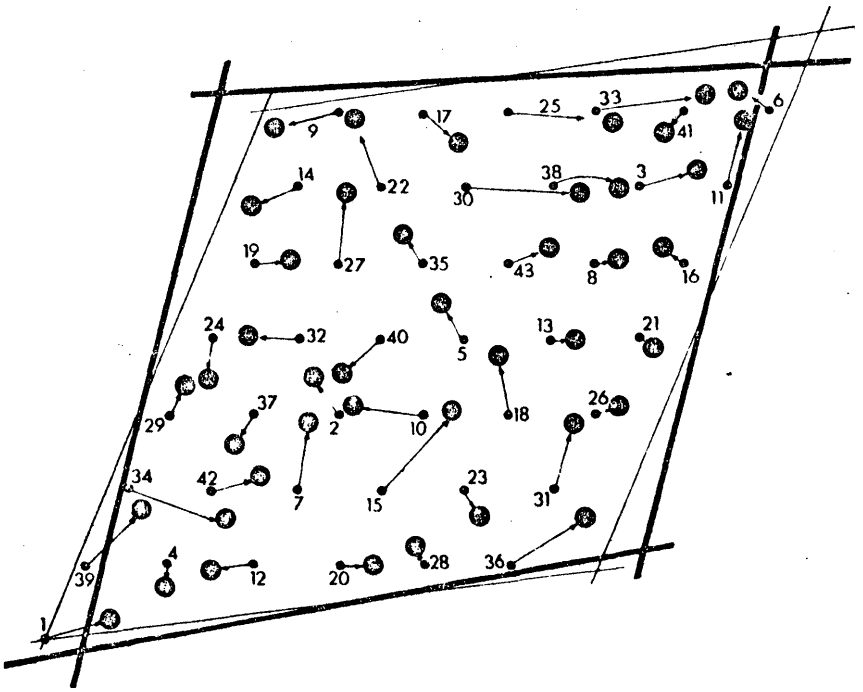

Fig. 2. - Application of a linear distribution to a network of real transmitters.

The numbered points correspond to the sites of the transmitters in the ideal network of Fig. 1. The black circles represent the real positions of the transmitters.

ANNEX 3

At the limits of lattice planning areas where, for instance, irregular concentrations of population exist on widely scattered islands it would be possible to introduce,as has been done in VHF and UHF planning, the concept of coordination distances.

It is obvious that if there is the requirement for an assignment on a remote Pacific island it would be illogical to develop a further series of lattices, outside the main area to be covered, just to make such an allocation fit into a particular planning pattern. It is here and in similar areas that the coordinated distance concept is applicable, providing the means by which one or a number of channels could be allocated without affecting a basic lattice plan.

The overall test of the possibility of using coordination distances is that the addition of transmitters to the overall system should not significantly change the planned operating conditions. It is considered therefore that where the co-channel station to be protected is situated in area A, as defined in the Annex to Document No. 79, a nominal usable field intensity of 66 dBμ might be considered the limiting field to which additional interference should not be added, with corresponding field-intensities of 76 dBμ and 69 dBμ in areas B and C respectively.

Typical powers and distances for each of the areas concerned are given in Table 1. The propagation information has been taken from C.C.I.R. Report 264-2 and, although it is appreciated that this basic information is unlikely to be used for final planning purposes, the C.C.I.R. information is suitable for comparison purposes. The permissible interfering field-intensity which would provide a negligible increase in interference in the planned co-channel assignment area is proposed as - 16 dB with respect to the nominal usable field-strength.

TABLE 1

Nominal usable field-intensity	Power	Coordination distance
Area A 66 dBμ	10 kW	3300 km
Area B 76 dBμ	10 kW	2500 km
Area C 69 dBμ	10 kW	3100 km

It is considered that transmitters fulfilling the above qualifications should be permitted to be established in direct coordination with a basic plan but on a non-interference basis.

In the case of multiple transmitters on such a channel the r.m.s. power, taking into consideration any differences in distances, should be the measure of the interfering field. Obviously, lower power transmitters would be permissible at shorter distances from the planned co-channel assignment.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 113-E
21 October 1974
Original : English

COMMITTEE 4

Australia, Republic of Korea, Republic of India,
Republic of Indonesia, Iran, Japan, Kingdom of Laos,
Malaysia, New Zealand, Pakistan, Republic of the Philippines,
Republic of Singapore, Thailand, Papua New Guinea

CHANNEL SPACING

On the strict conditions that all the countries in Regions 1 and 3 present at this conference agree and that the centre frequencies should be integral multiples of channel spacing throughout the medium frequency band for broadcasting, and on the strict condition that in preparing the draft of the plan every frequency in use in Region 3 should be first changed to the nearest new channel frequency within ±5 kHz for the existing transmitters, which will be a whole multiple of 9 kHz, the countries in Region 3 enumerated above are prepared to compromise and could agree to the adoption of a uniform channel spacing of 9 kHz provided unanimous agreement of all countries present at this conference is obtained for uniform 9 kHz channel spacing throughout the band.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Corrigendum to
Document No. 114-E
23 october 1974
Original : English

PLENARY MEETING

In second paragraph, fifth line, replace the word "renunciated" by "enunciated".

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 114-E
21 October 1974
Original : English

PLENARY MEETING

The Republic of Korea

STATEMENT

The Delegation of the Republic of Korea makes on behalf of its Government the following statement :

It is deeply regrettable that the Delegation of China issued statement on political issue which has nothing to do with the work of this highly technical conference. The position of the Republic of Korea regarding North Korea's participation in international organizations was renunciated in the special Foreign Policy Statement by the President Park of the Republic of Korea on June 23, 1973 as follows : "We will not oppose North Korea's participation with us in international organizations if it could serve to the easing of tension and the furtherance of International Cooperation."

Therefore, the irrelevant statement of the Delegation of China should be withdrawn forthwith.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 115-E
21 October 1974
Original : French

PLENARY MEETING

SECOND AND LAST REPORT OF COMMITTEE 6

(SUBMISSION OF REQUIREMENTS)

Subject treated : Draft Resolution on work to be done by the I.F.R.B. before the Second Session of the Conference.

Committee 6 unanimously adopted the draft Resolution annexed hereto.

M. HARBI
Chairman

Annex : 1

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A N N E X

DRAFT RESOLUTION ...

concerning studies to be made by the I.F.R.B. before the Second Session of the Conference

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

that it is essential for the proper conduct of its Second Session on Planning that preparatory work should be carried out by the I.F.R.B. on the basis of the requirements submitted by Administrations and the standards adopted at the First Session,

invites Administrations

to submit their frequency requirements to the I.F.R.B. on the appropriate forms, a model of which is to be found in Document No. 106, page 3, as soon as possible after the end of the First Session, so that they are received by the I.F.R.B. not later than 1 May 1975,

instructs the I.F.R.B.

1. to supplement the information it receives by means of the following data :

- carrier power in dB per kW,
- cymomotive force (c.m.f.) in the horizontal plane,
- effective monopole radiated power (e.m.r.p.) with vertical antenna in the horizontal plane,
- magnetic dip and declination and geomagnetic latitude at the transmitter,

2. to prepare a list of all the requirements it receives, supplemented by the data listed in paragraph 1 above and to send a copy thereof to each Administration in Regions 1 and 3 not later than 1 June 1975.

3. The Board shall study the requirements it receives on the basis of the technical decisions taken at the First Session, proceeding as follows :

3.1 It shall provisionally calculate, for each transmitter, the usable field strength resulting from all requirements, choosing the frequency it considers most suitable in the desired frequency range where the Administration has not indicated a preferred frequency;

3.2 It shall collect this information in statistical form in order to provide a summary of the situation resulting from the requirements;

3.3 It shall draw up a report containing the foregoing results and send it to all Administrations in Regions 1 and 3, preferably by 1 July 1975, and in any case not later than 15 July 1975;

3.4 It shall make to each Administration individually whatever suggestions it sees fit with a view to eliminating any incompatibilities that are evident.

4. The Board shall prepare for the Second Session of the Conference an up-to-date document containing the results of its studies as sent to Administrations, together with any comments it has received since sending them.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 116-E
21 October 1974
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COMMITTEE 4

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 4

(Technical data and criteria)

Thursday, 17 October 1974, at 2210 hrs

Chairman : Mr. J. RUTKOWSKI (Poland)

Subjects discussed :	Document Nos.
1. Revision of Document No. 72 (pages 4 and 5) on the basis of Document No. 61	61, 72
2. Third Report of Working Group 4B	78

1. Revision of Document No. 72 (pages 4 and 5) on the basis of Document No. 61 (Documents Nos. 61 and 72)

The Chairman recalled that pages 4 and 5 of Document No. 72 had been referred back to the Committee by the Plenary Meeting because the text did not fully correspond to that of Document No. 61, as adopted.

The Chairman of Working Group 4C apologized for the discrepancy, which had arisen as a result of a misunderstanding. Page 5 of Document No. 72 should read as follows :

- paragraph 8.2 : no change;
- paragraph 8.3 : no change;
- after paragraph 8.3, insert a new paragraph 8.3.1, corresponding in its entirety to paragraph 4.1 of Document No. 61;
- paragraph 8.4 : delete the last sentence.

The delegate of the U.S.S.R. said that he was fully satisfied with the proposed modifications.

The proposed modifications of page 5 of Document No. 72 were adopted.

The Chairman stated that the revised text would be transmitted to the Editorial Committee.

2. Third Report of Working Group 4B (Document No. 78)

The delegate of the Federal Republic of Germany, at the Chairman's invitation, gave an audio-visual demonstration on the subject of radio frequency protection ratios, using material supplied by the Institute of Radiotechnics (I.R.T.) in his country.

The Chairman, inviting the Committee to examine Document No. 78, drew attention to the close interrelationship between the question of radio frequency protection ratios and that of coordination distances. By adopting higher values of protection ratios, countries would make it difficult or impossible for themselves to obtain sufficient protection, the number of available broadcasting channels being limited by physical laws and by the Radio Regulations. Moreover, as some delegations in Working Group 4B had pointed out, insistence upon more favourable protection ratios at the present time would set inevitable limits on broadcasting developments in the future, as no channels would be available for additional transmitters. In conclusion, he noted a general tendency towards raising

the values of technical parameters of all kinds. That tendency should be resisted, since it might result in an unrealistic situation making it impossible for the Second Session of the Conference to produce any plan at all.

The delegate of the U.S.S.R. proposed that paragraph 2 of Document No. 78 should be amended to read as follows :

"2. For planning purposes, the following values of co-channel protection ratios should be used :

- 30 dB for a stable wanted signal interfered by a stable or fluctuating signal,

- 27 dB for a fluctuating wanted signal interfered by a stable or fluctuating signal.

By agreement betwwen the Administrations concerned, the following values of co-channel protection ratios may be adopted :

- up to 40 dB (when the conditions permit) for a stable wanted signal interfered by a stable or fluctuating signal,

- up to 37 dB (when the conditions permit) for a fluctuating wanted signal interfered by a stable or fluctuating signal.

These figures apply to countries where MF is the principal means of providing a broadcasting service.

Note : In cases of fluctuating wanted or unwanted signal, the values of co-channel protection ratios apply for at least 50% of the nights of the year at midnight."

The delegates of Japan, Italy, Nigeria, Australia, France, Romania and India supported the amendment.

The amendment was unanimously approved.

Document No. 78, as amended, was adopted.

The meeting rose at 2305 hours.

The Secretary :

C. GLINZ

The Chairman :

J. RUTKOWSKI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 117-E
21 October 1974
Original : English

PLENARY MEETING

REPORT OF SUB-GROUP PLEN-A

DRAFT RESOLUTION ...

Report of the First Session

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

1. that according to Administrative Council Resolution 743 the agenda of the Second Session of the Conference shall be

" a) to consider the Report of the First Session of the Regional Administrative LF/MF Broadcasting Conference on technical and operational criteria and methods for frequency planning in the LF/MF broadcasting bands in Regions 1 and 3;

b) on the basis of these technical and operational criteria and planning methods, to draw up an agreement and an associated frequency plan of assignments in the LF/MF broadcasting bands in Regions 1 and 3 to replace, as appropriate, existing plans for those bands",

2. that many delegations are of the opinion that the Report of the First Session should be signed only by the Chairman of the Conference, and that on the contrary a number of delegations feel that individual delegations should sign the Report of this Conference,

3. that compromise results were obtained after difficult discussions due in particular to the different situations prevailing in Regions 1 and 3,

resolves

that the Second Session apply the technical bases defined in the Report of the First Session,

instructs

1. the Chairman of the Conference to transmit under his signature the Report of the First Session to the Second Session of the Conference,

2. the Secretary-General to transmit the Report of the First Session to administrations of Regions 1 and 3.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 118-E
22 October 1974
Original : English

PLENARY MEETING

MINUTES

OF THE

SECOND PLENARY MEETING

Wednesday, 16 October 1974, at 1500 hrs

Chairman : Mr. F. LOCHER (Switzerland)

Subjects discussed		Document No.
1.	First series of texts submitted by the Editorial Committee	64, 72
2.	Deadline for submitting proposals for the first session	-
3.	Form of the report of the first session	DT/30
4.	Progress of work	-

1. First series of texts submitted by the Editorial Committee (Document Nos. 64 and 72)

The Chairman of the Editorial Committee introduced Document No. 64, which gave the draft plan proposed by the Editorial Committee for the document containing the decisions adopted at the first session of the Conference. It was proposed to divide the texts submitted to the Editorial Committee into three categories. First, the decisions of the Committees would form the main body of the text (Chapters 1 to 10). The suggested sub-division of those chapters was provisional and could be amended as work in the Committees progressed. Secondly, any technical information, such as that given in C.C.I.R. texts, would appear in the Appendices. Lastly, any resolutions, recommendations or opinions adopted by the first session would appear at the end of the document.

The draft plan set out in Document No. 64 was approved.

The Chairman of the Editorial Committee introduced Document No. 72. She pointed out that some of the technical texts given as references (such as Report 618 of the C.C.I.R., see page 2 of the document) were new and had not yet been printed in official publications of the Union. The meeting might like to consider whether it would be advantageous to publish such texts in the Appendices to the report of the first session, as would be done with other technical information.

The Chairman of Committee 6 supported that suggestion, provided that there would be no difficulty with regard to reprinting the texts concerned. He noted that administrations filling in the form for submission of requirements (which was at present being drafted by his Committee) would probably find it very helpful to have such definitions or methods of measurement available for easy reference.

The Deputy Secretary-General said that if the Conference would be satisfied with the same type of reproduction as had been used for the C.C.I.R. texts given in the Annex to Document No. 10, there would be no problem. If a properly printed document were required, of the same quality as the new C.C.I.R. Volumes, then they could not be provided before the spring of 1975.

The delegate of Lebanon said that immediate availability of the texts was more important to administrations than the quality of the printing.

The delegate of the United Kingdom, supported by the delegate of Sweden, said that as quite a large volume of such C.C.I.R. texts might have to be published he proposed that they should be brought out as a supplementary booklet, associated with but separate from the report, so as to avoid making the latter too bulky. Administrations would find such a booklet a useful reference. To keep the booklet as compact as possible, there would be no need for it to include such texts referred to in the report as were generally available (e.g. extracts from the Radio Regulations). Printing should present no difficulty as most texts likely to be required could be reproduced from the Annex to Document No. 10.

The Chairman of the Editorial Committee, supported by the delegate of Sweden and the representative of the Arab States Broadcasting Union, said that as it was still too early to tell what volume of C.C.I.R. texts would be involved she proposed that it should be left to the Committee Chairmen and the Editorial Committee to decide what texts were necessary for the report and in what form they should be produced.

It was so agreed.

In reply to the delegate of Spain, who wondered whether the Conference would use the practice followed at the Maritime Conference of having a representative of each language group indicate differences existing between the various language versions of the texts submitted by the Editorial Committee, the Deputy Secretary-General said that the procedure had been applied only at the second reading of texts when lack of time prevented a new text as corrected at the first reading from being printed. Use of such a procedure at the present Conference would depend on how fast its work progressed but he agreed that there should be utmost flexibility.

The Chairman invited the meeting to consider Document No. 72 page by page.

Page 2

Approved, with an editorial correction to the Spanish text only, as indicated by the delegate of Spain.

Page 3

On the Chairman of the Editorial Committee pointing out that her Committee had doubts as to the clarity of meaning of the word "simultaneously", which appeared at the end of the last line, the delegate of New Zealand, supported by the delegates of the United Kingdom and Nigeria, proposed that it should be replaced by "together".

It was so agreed.

The delegate of Sweden felt that the decision to use the concepts of c.m.f. and e.m.r.p. together had been an unfortunate compromise due to the unwillingness of the proponents of either of the concepts to see the other gaining ground. It would be more convenient to settle on one single expression of radiated power (his delegation personally favoured e.m.r.p. since it was easier to visualize the power of a transmitter from a figure in watts rather than volts). The simple formula for converting whichever expression of radiated power was decided on to the other could then be appended as a footnote. However, if that proposal was rejected and the two concepts were retained, they should at least be expressed in the same units, i.e. in decibels.

That statement was noted.

The delegate of Lebanon pointed out that the compromise decision on the expression of radiated power had been arrived at only after long discussion in Committee 4. There would be no inconvenience in calculating c.m.f. from e.m.r.p. and vice versa if, as had been decided in Committee 4, a table giving the corresponding values of the two quantities was provided.

The delegate of Spain indicated a correction to the Spanish text only of paragraph 4.4.

Page 3, as amended, was approved.

Pages 4 and 5

The delegate of Japan said that with regard to shared bands in the LF band, his delegation wished to point out that in Region 3 the 160-285 kHz band was allocated to the Aeronautical Radionavigation Service, as was shown by the Table of Frequency Allocations in the Radio Regulations. A number of aeronautical radio beacons were operating in this band in Japan and were duly recorded in the Master International Frequency Register. Unfortunately, there had been cases of interference to those beacons from broadcasting stations in Region 1. In view of the risk to life from the resultant disturbance to reception of radio beacon signals by aircraft, the attention of all administrations was drawn to the importance of observing the provisions of Radio Regulation No. 117. The Japanese delegation urged that when an LF broadcasting plan was being drawn up for Region 1, Radio Regulation No. 117 should be strictly observed.

That statement was noted.

The delegate of Kuwait said that it was important that harmful interference be avoided in the band referred to in paragraph 8.1.3 (p. 4).

That statement was noted.

After the delegate of the U.S.S.R. had noted that some modifications had been made to the text of pages 4 and 5 by the Editorial Committee after its approval by Committee 4, it was agreed that pages 4 and 5 would be returned to Committee 4 for final approval.

2. Deadline for submitting proposals for the first session

The delegate of Italy, supported by the delegate of the United Kingdom, noted that it would be inadvisable to set a deadline for submitting proposals to the present session as that would preclude compromise proposals from being put forward after that date, and proposed that no such time limits should be set.

After a short discussion in which the delegates of Spain and the U.S.S.R., the Vice-Chairman of the I.F.R.B., the Deputy Secretary-General and the Chairman took part, that proposal was approved.

3. Form of the report of the first session (Document No. DT/30)

After the Deputy Secretary-General had introduced Document No. DT/30, the delegate of Spain questioned the closeness of the parallel drawn between the Aeronautical Conference and the present Conference. There were a number of differences between the two, the most significant being that the Aeronautical Conference had not finished collecting its technical data by the end of its first session and had had to complete that task at its second session, while the work on the technical background to the present Conference would be finished by the end of the first session. It was essential that the steps to be taken with regard to the decisions of the first session should be such as to avoid giving administrations the impression that the agreements reached were of a provisional character only. Delegates required more time for consideration of such an important matter and a decision should not be taken at the present Plenary meeting.

The Deputy Secretary-General felt that in spite of those remarks there was a valid parallel to be drawn between the 1966 Aeronautical Conference and the present Conference. He considered that their preparatory sessions were analagous. If the juridical status of the present session was that of a preparatory session of an administrative conference then it was governed by No. 75 of the Montreux Convention which provided for the final report of the session to be approved by the Plenary Meeting and signed by the Chairman.

The Plenary Meeting was, however, at liberty to decide otherwise, but, should it do so, he had to draw its attention to the implications of requiring the final report to be signed by the participating delegations. Those were : need for the lengthy process of approval by national governments and subsequent transmission of that approval to the I.T.U. and the need for provision of a final protocol.

The delegate of the Federal Republic of Germany, supported by the delegates of Italy, Lebanon, New Zealand and Liberia said that as the present session was only the first part of a single conference there was no need for signature of its report by participating delegations. He proposed that it would be sufficient to bring the texts approved by the present session into the form agreed upon and for the Plenary Meeting to adopt a resolution approving that report, under the signature of the Chairman, as the results to be used for the work of the second session.

The delegate of Nigeria considered that signature by the participating delegations would be necessary to authenticate the report.

The delegations of New Zealand and Pakistan pointed out that the credentials for their delegations did not cover signature of any final document of the Conference.

The Vice-Chairman of the I.F.R.B., supported by the delegates of Mauritania and Senegal, queried whether the results contained in the final report, which were required for work by the I.F.R.B. in the interval between the two conferences, would be accepted as valid by administrations if they were not signed by participating delegations.

The delegate of the Federal Republic of Germany said that adoption of a resolution instructing the various organs of the I.T.U. what action to take after the end of the present session would cover that point.

In reply to the delegate of Japan who asked for clarification of the status of such a resolution and noted that the Resolutions, Recommendations and Opinions attached to the Convention were not covered by the signatures to the Convention, the Deputy Secretary-General said that resolutions represented agreements reached by the participating delegations in a conference and there was no doubt of the legality of the directives they gave to the organs of the Union or the wishes they expressed to a higher authority of the Union such as a plenipotentiary conference.

In reply to a comment by the Vice-Chairman of the I.F.R.B., he said that, apart from exceptional circumstances, resolutions adopted by administrative conferences generally took effect immediately.

In reply to a comment by the delegate of Spain with regard to the provisions of the Convention regarding credentials for administrative conferences, he said that there was a need to inform administrations of the need for credentials to participate irrespective of any action to be taken.

In reply to a query from the delegate of Sweden he said that a delegation was always entitled to submit reservations with regard to any decision of an adminstrative conference. If the final report of the present session was to be signed by the Chairman, such reservations could be annexed to the report. If formal signature by participating delegations was decided on then a final protocol would be required.

In view of the wide range of points raised in discussion it was agreed to defer any decision on the question of signature of the final report to a later plenary meeting.

4. Progress of work

The Chairman said that the progress of work was generally satisfactory, thanks to the efforts of the Chairmen of the Committees and Working Groups. Nevertheless, certain very important technical problems, particularly that of channel spacing, had not been solved to the satisfaction of all concerned. Since the problem of channel spacing must be settled at the current session, he had taken the initiative of consulting certain delegations unofficially; although those consultations had not yet been completed, there was reason to hope that the necessary concessions would be made, so that the deteriorating situation of LF and MF broadcasting in Regions 1 and 3 should not be prolonged. He relied on the support of all participants and hoped that they too would contact other delegations and groups of delegations in an effort to reach an acceptable solution as soon as possible.

The Chairman of Committee 4 said he wished to comment on the opinions on channel spacing which had emerged in the competent Working Groups and which would be further clarified at a later meeting of Committee 4. A large group of countries in Region 3 had expressed the view that uniform channel spacing for all Regions would be desirable, but that the spacing for Region 3 should be 10 kHz. Different proposals had been submitted by various groups of countries in Region 1: a group of African countries was also in favour of uniform spacing and considered that that spacing should be 9 kHz; the same view was held by a group of Eastern European countries; and the countries of the European Broadcasting Union, as well as certain

individual countries in the Region, also advocated uniform channel spacing, but believed that that spacing should be 8 kHz. Accordingly, a consensus had been reached only on the desirability of uniform spacing. The problem would be discussed further in Committee 4, but it had become abundantly clear that great good will would be needed to reach a compromise which would be acceptable to all participants.

In reply to the delegate of Lebanon, who referred to the difficulties that night meetings presented to small delegations such as his own, the Chairman of Committee 4 pointed out that Working Group 4B would be meeting to approve certain outstanding working papers, but that the problem of channel spacing would be discussed at the next plenary meeting of Committee 4 on the following morning. In any case, night meetings could not be avoided if the Conference was to keep to the time-limits laid down by the Administrative Council. Moreover, care had been taken not to schedule concurrent meetings of Committees 4, 5 and 6, in order to take the position of small delegations into account.

The meeting rose at 1720 hours.

The Secretary-General : The Chairman :

M. MILI F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 119-E
22 October 1974
Original: English/French

COMMITTEE 4

REPORT OF DRAFTING GROUP TO COMMITTEE 4

Definition of channel and channel spacing

1. Channel (in AM broadcasting)

Part of the frequency spectrum, the width of which is equal to the necessary bandwidth of the broadcasting emission, and which is characterised by the nominal value of carrier frequency.

2. Channel spacing (in AM broadcasting)

The frequency difference between the nominal carrier frequencies of two succesive channels. This concept is of practical interest only if the difference is constant in a given frequency band.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 120-E
22 October 1974
Original : French

PLENARY MEETING

People's Republic of Albania

DECLARATION

The Delegation of the People's Republic of Albania makes the following declaration in connection with the report on credentials :

We do not recognize the validity of the credentials of the Saigon South Viet-Nam clique. The Provisional Revolutionary Government of the Republic of South Viet-Nam is the lawful representative of the South Viet-Nam people.

Our delegation expresses its opposition to the credentials issued by the South Korea authorities, which were put in power illegally by the American imperialists during their aggression against Korea.

The only lawful representative of the Korean people is the Government of the Democratic People's Republic of Korea.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 121-E
22 October 1974
Original : English

PLENARY MEETING

Norway

TEXT PROPOSED FOR THE AMENDMENT OF DOCUMENT No. 87

1. Insert on page 1 for Chapter 9.3.1 after "... the country concerned" :

"In cases where countries are separated by sea water, the 0.5 mV/m field-strength shall, in principle, be met at the mid-point of the over-water path, unless other agreement between the Administrations concerned is achieved."

2. Insert on page 2 in the appendix, first §, after "... neighbouring country" :

"or at the mid-point of an over-water path"

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 122-E
22 October 1974
Original : French

PLENARY MEETING

REPORT

OF THE BUDGET CONTROL COMMITTEE

TO THE PLENARY MEETING

The Budget Control Committee held three meetings during the First Session of the Broadcasting Conference and examined the various points arising from its terms of reference.

As a result of its work and in accordance with Chapter 9, Rule 5, of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965, this report is presented for consideration by the Plenary Meeting.

1. Budget of the Conference

The Budget Control Committee took note of the budget of the Conference as approved by the Administrative Council at its 28th Session and revised at its 29th Session in 1974. This budget amounted to 1,130,000 Swiss francs (see Document No. 19).

2. Situation of Conference expenditure

In accordance with the provisions of the General Regulations annexed to the International Telecommunication Convention, Montreux, 1965, the Budget Control Committee presents to the Plenary Meeting a report showing, as accurately as possible, the estimated expenditure of the Conference.

In accordance with these provisions, a statement including the budget as adjusted by the Administrative Council at its 29th Session, the breakdown of the amounts set aside in the budget for the various chapters and items, the credit transfers and expenditure incurred up to 18 October 1974 for the Broadcasting Conference is submitted for consideration by the Plenary Meeting. This statement, which is given in Annex I to this document is supplemented by an indication of the commitments to expenditure up to that date and estimates of foreseeable expenditure until the close of the Conference.

It can be seen from this statement that total expenditure is estimated at 1,047,000 Swiss francs, or 83,000 Swiss francs less than the budget approved by the Administrative Council.

3. Contributions of recognized private operating agencies and non-exempted international organizations

Under Article 16 of the Financial Regulations of the I.T.U., the report of the Budget Control Committee to the Plenary Meeting must include a list of the recognized private operating agencies and international organizations which are required to contribute to defraying the expenses of the Broadcasting Conference. To this list must be added a list of the international organizations which have been exempted from payment in accordance with Number 225 of the Convention.

The list in question is given in Annex 3 to this document.

4. Breakdown of Conference expenditure

Since this Conference is a regional conference within the meaning of Article 7, No. 50, of the Montreux Convention and concerns countries situated in Regions 1 and 3 as defined in Article 5 of the Radio Regulations, the costs involved must be borne by all the Members and Associate Members of those Regions in accordance with their classes of contribution and on the same basis by the Members and Associate Members of Region 2 participating in it. The list of Members and Associate Members responsible for meeting the costs of the Conference will be found in Annex 2.

At its 27th Session, the Administrative Council decided that the Regional Broadcasting Conference should be divided into two sessions. Since, however, a new Convention will come into force on 1 January 1975, the costs of the First Session in 1974 must be charged to Members separately at the end of the year.

According to the figures given in Annex 1 to this document, total expenditure is estimated at 1,047,000 Swiss francs. Taking account of the contributions to be paid by recognized private operating agencies and non-exempted international organizations, and of the 347 contributory units of Members and Associate Members responsible for meeting the costs of the Conference (see Annex 2), the amount of the contributory unit to be paid by Members and Associate Members works out at 3,000 Swiss francs.

5. Organization of the Conference

In accordance with Chapter 9, Rule 5, Number 674, of the General Regulations annexed to the Montreux Convention, the Budget Control Committee is also responsible for assessing the organization and the facilities made available to delegates.

The Budget Control Committee has looked into this matter and it considered that the facilities available to delegates were adequate and that the organization of the Conference calls for no comment on its part.

*

* *

In accordance with Number 677 of the General Regulations annexed to the Montreux Convention, this report together with the observations of the Plenary Meeting will be transmitted to the Secretary-General for submission to the Administrative Council at its next annual session.

*

* *

The Plenary Meeting is requested to approve this report.

Dr. M.K. RAO
Chairman

Annexes : 3

A N N E X 1

No.	Item	Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
	Chapter I - Staff									
9.101	Salaries and related expenses									
	- Salaries	631,000				31,900	553,000	12,100	597,000	
	- Overtime	53,000				-	4,000	26,000	30,000	
		684,000	- 1,000		683,000	31,900	557,000	38,100	627,000	- 56,000
9.102	Travel expenses									
	- Travel expenses	47,000			47,000	7,800	17,200	2,000	27,000	- 20,000
9.103	Insurance									
	- UNJSFP	-				900	900	200	2,000	
	- Sickness	10,000				300	-	8,700	9,000	
	- Accidents	4,000				-	-	4,000	4,000	
		14,000	+ 1,000		15,000	1,200	900	12,900	15,000	-
TOTAL CHAPTER I		745,000	-	-	745,000	40,900	575,100	53,000	669,000	- 76,000
	Chapter II - Premises and Equipment									
9.201	Premises, furniture, machines									
	- Rental for CICG	242,000				87,700	146,600	700	235,000	
	- Purchase/lease furniture and machines	3,000				-	3,300	700	4,000	
		245,000	- 2,000	-	243,000	87,700	149,900	1,400	239,000	- 4,000
9,202	Document production									
	- Production of current documents	30,000	-	-		14,500	-	12,500	27,000	
		30,000	-	-	30,000	14,500	-	12,500	27,000	- 3,000

No.		Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
9.203	Office supplies and overheads									
	- Supplies	8,000				500	4,300	200	5,000	
	- Local transport	3,000					7,500	500	8,000	
		11,000	+ 2,000	-	13,000	500	11,800	700	13,000	
9.204	Post, telegraph and telephone									
	- Post	20,000				4,400	-	14,600	19,000	
	- Telegraph charges	1,000				-	-	-	-	
	- Telephone charges	1,000				-	-	-	-	
		22,000	- 2,000	-	20,000	4,400	-	14,600	19,000	- 1,000
9.205	Technical material									
	- Technical material	1,000			1,000	-	-	-	-	- 1,000
9.206	Sundry and unforeseen									
	- Badges, etc.	3,000				400	3,800	800	5,000	
		3,000	+ 2,000		5,000	400	3,800	800	5,000	-
TOTAL CHAPTER II		312,000	-	-	312,000	107,500	165,500	30,000	303,000	- 9,000
	Chapter III - Other expenses									
9.301	IFRB preparatory work									
	- Computer supplies	7,000				-	-	-	-	
	- Reproduction of documents	4,000				2,300	-	-	2,300	
	- Office and other supplies	2,000				-	-	3,700	3,700	
		13,000			13,000	2,300	-	3,700	6,000	- 7,000

No.	Title	Final budget	Transfers of credits		Credits available	Expenditure at 18 October 1974			Total expenditure	Difference
			Item/item	Chap./chap.		Actual	Committed	Estimated		
1	2	3	4	5	6	7	8	9	10	11
9.302	Report to the second session									
	Reproduction costs	45,000			45,000	-	-	45,000	45,000*)	
		45,000	-	-	45,000	-	-	45,000	45,000*)	
9.303	Interest credited to the ordinary budget									
	Interest	15,000			15,000	-	-	24,000	24,000	
		15,000	-	-	15,000	-	-	24,000	24,000	+ 9,000
TOTAL CHAPTER III		73,000			73,000	2,300	-	72,700	75,000	+ 2,000
GENERAL TOTAL		1,130,000	-	---	1,130,000	150,700	740,600	155,700	1,047,000	- 83,000

*) Credit foreseen by the Administrative Council pending a decision by the Plenary Meeting on form of the final report.

ANNEX 2

List of Members and Associate Members of the Union and contributory units

A. MEMBERS in Regions 1 and 3	Contributory units
1. Afghanistan (Republic of)	½
2. Albania (People's Republic of)	½
3. Algeria (Algerian Democratic and Popular Republic)	3
4. Germany (Federal Republic of)	20
5. Saudi Arabia (Kingdom of)	1
6. Australia	18
7. Austria	1
8. Bangladesh (People's Republic of)	1
9. Belgium	8
10. Byelorussian Soviet Socialist Republic	1
11. Burma (Socialist Republic of the Union of)	1
12. Botswana (Republic of)	½
13. Bulgaria (People's Republic of)	1
14. Burundi (Republic of)	½
15. Cameroon (United Republic of)	½
16. Central African Republic	½
17. China (People's Republic of)	15
18. Cyprus (Republic of)	½
19. Vatican City State	½
20. Congo (People's Republic of the)	½
21. Korea (Republic of)	1
22. Ivory Coast (Republic of the)	1
23. Dahomey (Republic of)	½
24. Denmark	5
25. Egypt (Arab Republic of)	5
26. United Arab Emirates	1
27. Group of Territories represented by the French Overseas Post and Telecommunication Agency	1
28. Spain	3
29. Ethiopia	1
30. Fiji	½
31. Finland	3
32. France	30
33. Gabon Republic	½
34. Gambia	½
35. Ghana	1
36. Greece	1
37. Guinea (Republic of)	½
38. Equatorial Guinea (Republic of)	½
39. Upper Volta (Republic of)	½
40. Hungarian People's Republic	1

MEMBERS in Regions 1 and 3 (continued)	Contributory units
41. India (Republic of)	13
42. Indonesia (Republic of)	1
43. Iran	1
44. Iraq (Republic of)	1
45. Ireland	3
46. Iceland	½
47. Israel (State of)	1
48. Italy	10
49. Japan	20
50. Jordan (Hashemite Kingdom of)	½
51. Kenya (Republic of)	½
52. Khmer Republic	1
53. Kuwait (State of)	1
54. Laos (Kingdom of)	½
55. Lesotho (Kingdom of)	½
56. Lebanon	1
57. Liberia (Republic of)	1
58. Libyan Arab Republic	½
59. Liechtenstein (Principality of)	½
60. Luxembourg	½
61. Malaysia	3
62. Malawi	½
63. Maldives (Republic of)	½
64. Malagasy Republic	1
65. Mali (Republic of)	½
66. Malta	½
67. Morocco (Kingdom of)	1
68. Mauritius	½
69. Mauritania (Islamic Republic of)	½
70. Monaco	½
71. Mongolian People's Republic	½
72. Nauru (Republic of)	½
73. Nepal	½
74. Niger (Republic of the)	½
75. Nigeria (Federal Republic of)	2
76. Norway	5
77. New Zealand	5
78. Oman (Sultanate of)	½
79. Uganda (Republic of)	½
80. Pakistan	3
81. Netherlands (Kingdom of the)	8
82. Philippines (Republic of the)	1
83. Poland (People's Republic of)	3
84. Qatar (State of)	½
85. Syrian Arab Republic	1
86. German Democratic Republic	3
87. Ukrainian Soviet Socialist Republic	3
88. Roumania (Socialist Republic of)	1
89. United Kingdom of Great Britain and Northern Ireland	30
90. Rwanda (Republic of)	½

MEMBERS in Regions 1 and 3 (continued)	Contributory units
91. Senegal (Republic of the)	1
92. Sierra Leone	½
93. Singapore (Republic of)	1
94. Somali Democratic Republic	1
95. Sudan (Democratic Republic of the)	1
96. Sri Lanka (Ceylon) (Republic of)	1
97. Sweden	10
98. Switzerland (Confederation of)	10
99. Swaziland (Kingdom of)	½
100. Tanzania (United Republic of)	½
101. Chad (Republic of the)	½
102. Czechoslovak Socialist Republic	3
103. Spanish Saharian Territory	1
104. Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible	1
105. Thailand	2
106. Togolese Republic	½
107. Tonga (Kingdom of)	½
108. Tunisia	2
109. Turkey	2
110. Union of Soviet Socialist Republics	30
111. Viet-Nam (Republic of)	1
112. Yemen Arab Republic	½
113. Yemen (People's Democratic Republic of)	½
114. Yugoslavia (Socialist Federal Republic of)	1
115. Zaire (Republic of)	1
116. Zambia (Republic of)	1
B. ASSOCIATE MEMBERS in Regions 1 and 3	
1. Papua New Guinea	½
C. MEMBERS AND ASSOCIATE MEMBERS in Region 2 participating in the conference	
1. Brazil (Federative Republic of)	5
	347

A N N E X 3

PARTICIPATION OF INTERNATIONAL ORGANIZATIONS AND RECOGNIZED PRIVATE OPERATING AGENCIES IN THE WORK OF THE FIRST SESSION OF THE BROADCASTING CONFERENCE

	Class of contribution
I. INTERNATIONAL ORGANIZATIONS	
a) Specialized agencies	
NONE	
b) Other international organizations	
International Special Committee on Radio Interference (C.I.S.P.R.)	exempt
International Radio and Television Organization (O.I.R.T.)	exempt
Arab Telecommunication Union	exempt
Asian Broadcasting Union	exempt
Arab States Broadcasting Union	exempt
Union of National Radio and Television Organizations of Africa (U.R.T.N.A.)	exempt
European Broadcasting Union (E.B.U.)	exempt
II. RECOGNIZED PRIVATE OPERATING AGENCIES	
British Broadcasting Corporation	½ unit
Independent Broadcasting Authority	½ unit

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 123-E
22 October 1974
Original : English

Note by the Chairman of the Conference

On request by the Head of the Delegation of the German Democratic Republic, the attached letter is brought to the notice of the Conference.

Annex : 1

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A N N E X

DELEGATION OF THE GERMAN DEMOCRATIC REPUBLIC TO THE
I.T.U. BROADCASTING CONFERENCE (FIRST SESSION), GENEVA 1974

Mr. Fritz Locher
Chairman of the
ITU Broadcasting Conference
(First Session)
Geneva

Geneva, 17 October 1974

Mr. Chairman,

I have the honour to submit to you the following statement of the delegation of the German Democratic Republic :

"Taking into consideration that in the preliminary list of participants of the ITU Broadcasting Conference (First Session), Geneva 1974, two representatives of institutions of Berlin (West) are indicated as members of the delegation of the Federal Republic of Germany, the delegation of the GDR states :

1) that the participation of the said representatives in the work of the conference as well as their indication in the conference materials can only be done with regard to the provisions of the Quadripartite Agreement of 3 September 1971, and

2) that as far as matters of security and of the status of Berlin (West) are affected by the conference work, the strict observance of the Quadripartite Agreement of 3 September 1971 must be guaranteed."

I should like to ask you, Mr. Chairman, to bring this statement of the GDR delegation to the notice of the Conference.

Please accept, Mr. Chairman, the assurances of my distinguished consideration.

G. SCHULZ
Acting Head of Delegation

BLUE PAGES

Document No. 124-E
22 October 1974

PLENARY MEETING

B.5

5th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.		Title
C5	87	Chapter 1	Definitions (LPCs)
C5	84	9.1	Planning principles
C5	87	9.6	Low power channels

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 6 pages

B.5

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CHAPTER 1

DEFINITIONS

Low power channels (LPCs)[1)]

Low power channels are for use by medium frequency broadcasting stations employing a maximum e.m.r.p. of 1 kW (c.m.f. of 300 V) and for which simplified planning and coordinating methods may be used.

---

1) These channels are intended to replace the International Common Frequencies defined in the 1948 Copenhagen Plan.

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CHAPTER 9

METHOD OF PLANNING

B.5

9.1 Planning principles[1)]

The LF/MF Broadcasting Conference will draw up a new LF/MF frequency assignment Plan in Regions 1 and 3.

B.5

The Plan will be drawn up in accordance with the principle that all countries, large and small, have equal rights. It should also be based on the needs of administrations and should bring about satisfactory reception conditions in all countires, having regard to the different conditions of the countries in Regions 1 and 3 and, in particular, the needs of the developing countries.

B.5

The Plan will be drawn up having regard to ground-wave service areas and, in certain cases, of sky-wave service areas. The ground-wave may be used to cover large or small areas.

B.5

It is extremely desirable that the channel spacing should be uniform over the whole area covered by the Plan. (The ideal would obviously be for this principle to apply throughout the world.)

B.5

The nominal carrier frequencies should be integral multiples of the channel spacing.

B.5

It is noted that by selecting integral multiples of the channel spacing for use as the intermediate frequency or frequencies of future receivers, some advantage may be gained by reducing interference generated internally in these receivers (see C.C.I.R. Report 458 [1], item 3.2.4). Such an arrangement is of value only when the carrier frequencies are themselves integral multiples of their spacing.

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1) Certain administrations expressed a preference for a more technical planning principle based on coverage units.

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9.6 Low power channels

9.6.1 Principles of planning

It is recommended :

- that simplified methods should be used for the preparation of the Plan and also for coordination of any subsequent additions or modifications;

- that low power channels (LPCs) should not be adjacent to channels used by transmitters providing a service in the same area with low usable field strengths;

- that LPCs should be sufficiently separated from each other in frequency in order to allow simultaneous use in the same area;

- that LPCs should be reserved for transmitters which cannot form part of a synchronized network on another channel.

The value of the nominal usable field strength in low power channels should be 88 dB/1μVm. However, the resultant field strength of a low power transmitter network at the boundary of the territory of any other country should not exceed 0.5 mV/m except by agreement with the Administration concerned. Paragraph 9.6.2 shows the method of calculating this field strength.

9.6.2 Methods of planning low-power channels

9.6.2.1 Method of planning[1)]

The nominal usable field strength in these channels is limited to 88 dB/1μVm. To ensure that this value is not exceeded as a result of interference from transmitters in other countries, the transmitter network of each country should be so regulated that the resultant field strength at the border of any neighbouring country does not exceed 0.5 mV/m in any LPC.

1) It may be of assistance to Administrations when drawing up their requirements for LPC assignments to note that an approximate indication of their quota of assignments in these channels may be assessed on the basis of uniform power density. The total power used in a country of area A km^2 is then approximately A.50 mW in any LPC. The exact total power will depend upon local conditions and will in any case be less if transmitters are concentrated near the borders with other countries.

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The resultant field strength in mV/m is calculated according to the formula $\sqrt{E_1^2 + E_2^2 + E_3^2 + \ldots}$, where E_1, E_2, E_3, ... are the values of field strength in mV/m due to each individual transmitter in a country operating in a given LPC. Only field strengths due to stations within 500 km of the border of a neighbouring country will be included in the calculation.

B.5

These values of field strength E_1, E_2, E_3, etc. are to be calculated according to the curves shown in Figure ... taking account of the radiated power of the transmitter and the distance from the border of the neighbouring country. These curves are for ground wave propagation and an e.m.r.p. of 1 kW (c.m.f. of 300 V) / in the horizontal plane, and for a frequency of 1 MHz /. Curves A and B are based upon a ground conductivity of 10 mS/m over land and 4 S/m over sea / (which are normally used for planning purposes) /. Where the ground conductivity is known to be significantly greater than 10 mS/m, the dashed line (30 mS/m) should be used for calculation.

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Curve D should be used for sky wave propagation; it has been assumed that the transmitting antenna is a short vertical antenna.

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9.6.2.2 Modification of the Plan

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Subsequent to Part 2 of the Conference, certain administrations may require to modify or add to their requirements for LPCs. In these circumstances, administrations may make changes, coordinating only with those countries whose borders are within a certain distance of the new or modified station. This coordination distance depends upon the radiating characteristics of the new or modified station; it is shown in Table 1.

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This Table is based on the assumption that the addition of a further transmitter does not increase the nominal usable field strength / due to the other transmitters in the same channel / by more than 0.2 dB, taking into account both ground-wave and sky-wave propagation.

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The simplified coordination should not be used for the addition of synchronized transmitters if the total equivalent power of the group exceeds 1 kW.

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Where new requirements are such that the simplified coordination cannot be used, the normal coordination procedure will be applied.

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TABLE 1

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c.m.f. (V)	e.m.r.p. (kW)	Coordination distance (km)
300	1.0	700
260	0.75	500
212	0.5	400
150	0.25	200, 350*)
95	0.1	70, 250*)
67	0.05	50, 200*)

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*) Values for a propagation path over sea.

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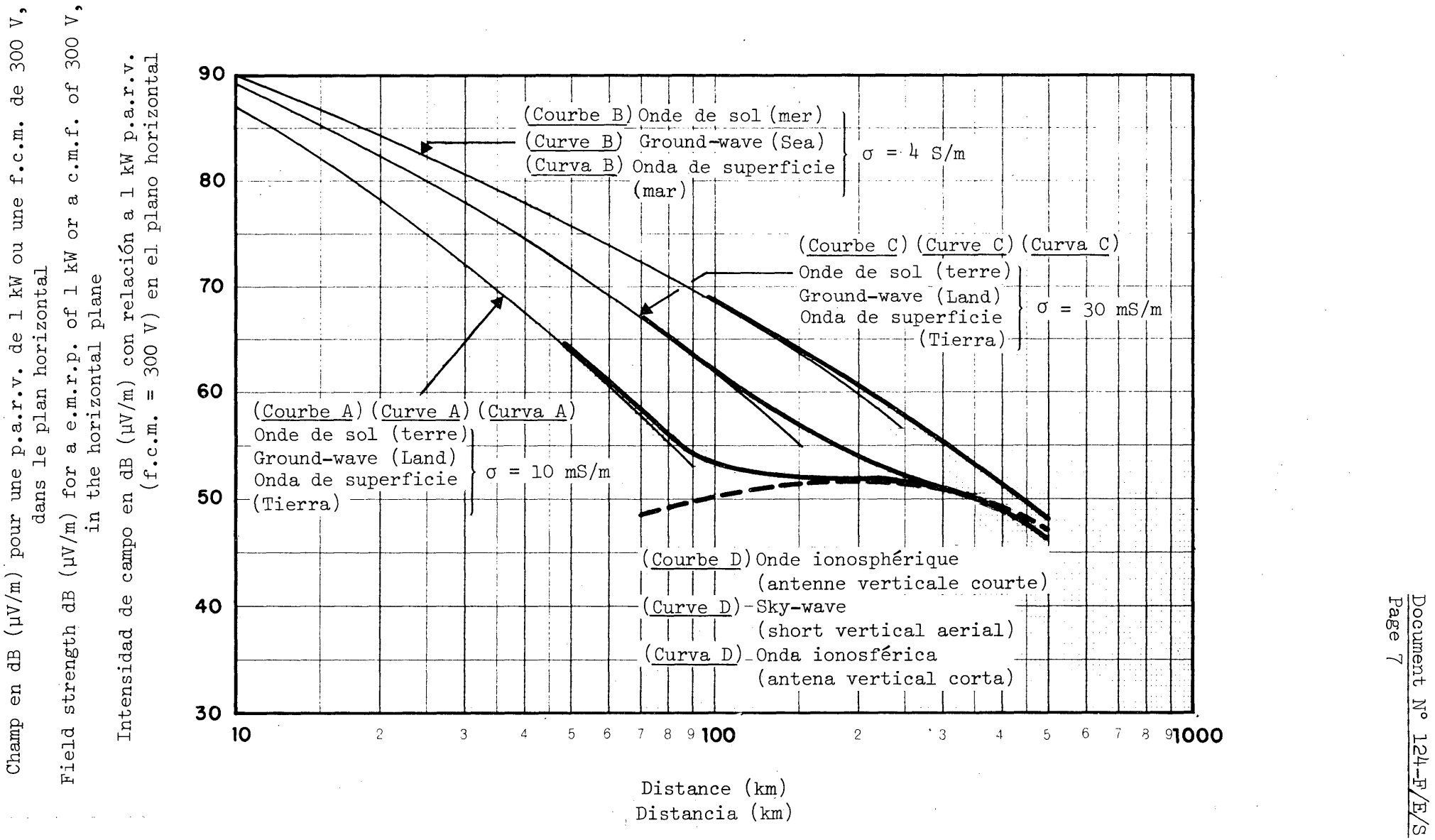
Courbes pour la planification des canaux pour émetteurs de faible puissance [f = 1 MHz]

Curves for planning low-power channels [f = 1 MHz]

Curvas para la planificación de canales de baja potencia [f = 1 MHz]



INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 125-E
22 October 1974
Original : English

PLENARY MEETING

Republic of Viet-Nam

DECLARATION

The delegation of the Republic of Viet-Nam rejects as unfounded the statement made by the delegation of China in Document No. 95 :

1. No article of the Paris Agreement on Viet-Nam either refers to the Viet-Cong or describes it as an administration or government.

2. According to the Paris Agreement (Chapter IV), the Viet-Cong should join the South Viet-Namese people to elect one government for South Viet-Nam, and not for North Viet-Nam to create a separate entity under the label of the so-called "P.R.G." (Provisional Revolutionary Government).

3. The Paris Agreement has not set up and it is not within its competence to set up the "P.R.G." or any entity other than the Republic of Viet-Nam as a "legal government in South Viet-Nam". The Paris Agreement has not either changed and it is not within its competence to change the legal and constitutional character of the government of the Republic of Viet-Nam.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 126-E
23 October 1974
Original : French

DRAFT RESOLUTION ...

Channel spacing

The Regional Administrative LF/MF Broadcasting Conference (First Session), Geneva, 1974

noting

Resolution No. 4 of the African LF/MF Broadcasting Conference (Geneva, 1966),

considering

a. that the use of a uniform channel spacing throughout Regions 1 and 3 would facilitate the use of the frequency bands allocated for broadcasting in a more rational way than at present;

b. that a majority of administrations is in favour of a plan with 9 kHz channel spacing and with centre frequencies equal to integral multiples of 9 kHz;

c. that a substantial minority of administrations is in favour of a plan with 8 kHz channel spacing and with centre frequencies equal to integral multiples of 8 kHz;

d. that, nevertheless, the countries of Regions 1 and 3 have agreed that a new draft plan should be prepared with 9 kHz channel spacing and with centre frequencies equal to integral multiples of 9 kHz;

e. that the adoption of such a uniform channel spacing would mean changing the centre frequencies of most stations in Regions 1 and 3;

resolves

1. that a draft plan for broadcasting frequency assignments in the MF bands for Regions 1 and 3 should be prepared by the Second Session using the centre frequencies listed in the Annex;

2. that when the draft plan is prepared, any frequency that is already being used shall first be replaced by the frequency of the nearest new channel and subsequent changes desired should be negociated between the administrations concerned or groups of administrations concerned during the Second Session;

3. that, however, if the majority of Administrations represented at the Second Session of the Conference, after careful examination, finds that the draft plan is unsatisfactory, the Conference may consider the possibility of preparing a plan based on a different channel spacing; in this case the provision of paragraph 2 shall also apply;

4. that the Second Session of the Conference shall adopt for the frequency changes required in Regions 1 and 3 a time table which takes into account the special conditions of the developing countries.

Annex : 1

A N N E X E - A N N E X - A N E X O

ESPACEMENT UNIFORME DES CANAUX DE 9 KHZ DANS LA BANDE DES ONDES HECTOMETRIQUES
UNIFORM CHANNEL SPACING OF 9 KHZ IN THE MF BAND
SEPARACION UNIFORME DE CANALES DE 9 KHZ EN LA BANDA DE ONDAS HECTOMETRICAS

No.	(kHz)	No.	(kHz)	No.	(kHz)
1	531	41	891	81	1251
2	540	42	900	82	1260
3	549	43	909	83	1269
4	558	44	918	84	1278
5	567	45	927	85	1287
6	576	46	936	86	1296
7	585	47	945	87	1305
8	594	48	954	88	1314
9	603	49	963	89	1323
10	612	50	972	90	1332
11	621	51	981	91	1341
12	630	52	990	92	1350
13	639	53	999	93	1359
14	648	54	1008	94	1368
15	657	55	1017	95	1377
16	666	56	1026	96	1386
17	675	57	1035	97	1395
18	684	58	1044	98	1404
19	693	59	1053	99	1413
20	702	60	1062	100	1422
21	711	61	1071	101	1431
22	720	62	1080	102	1440
23	729	63	1089	103	1449
24	738	64	1098	104	1458
25	747	65	1107	105	1467
26	756	66	1116	106	1476
27	765	67	1125	107	1485
28	774	68	1134	108	1494
29	783	69	1143	109	1503
30	792	70	1152	110	1512
31	801	71	1161	111	1521
32	810	72	1170	112	1530
33	819	73	1179	113	1539
34	828	74	1188	114	1548
35	837	75	1197	115	1557
36	846	76	1206	116	1566
37	855	77	1215	117	1575
38	864	78	1224	118	1584
39	873	79	1233	119	1593
40	882	80	1242	120	1602

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 127-E
22 October 1974
Original : English

COMMITTEE 2

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 2

(Credentials)

Monday, 21 October 1974, at 1500 hrs

Chairman : Mr. Samuel H. BUTLER (Republic of Liberia)

Subjects discussed :	Document No.
1. Approval of the Summary Record of the first meeting of Committee 2	71
2. Draft final report of Committee 2 to the Plenary Meeting	DT/36

1. Approval of the Summary Record of the first meeting of Committee 2 (Document No. 71)

The Summary Record of the first meeting of Committee 2 was approved.

2. Draft final report of Committee 2 to the Plenary Meeting (Document No. DT/36)

The Chairman pointed out some amendments to the Annex of Document No. DT/36 which were necessary because representation at the Conference had changed, and some more credentials had been received and examined, since the publication of that document.

The delegate of the U.S.S.R., speaking also for a number of other countries, handed in statements for inclusion as annexes to the Final Report of Committee 2.

The Final Report of Committee 2 (Document No. DT/36, as amended) was approved.

The Chairman thanked the Committee for authorizing him to examine any credentials that might still be received, and to report directly to the Plenary Meeting.

The meeting rose at 1540 hours.

The Secretary :
P.A. TRAUB

The Chairman :
Samuel H. BUTLER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 128-E(Rev.1)
22 October 1974
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 4

(Technical data and criteria)

Friday, 18 October 1974, at 0930 hrs

Chairman : Mr. J. RUTKOWSKI (Poland)

	Subjects discussed	Document No.
1.	Channel spacing	-
2.	Other business	83

1. Channel spacing

The Chairman of Working Group 4B, summing up the results of that Working Group, said that all delegations were agreed on the need for a uniform channel spacing throughout Regions 1 and 3. Agreement had, however, not yet been reached on whether its value should be 8, 9 or 10 kHz.

The Chairman pointed out that that was the crucial problem of the Conference, as differences in channel spacing caused serious difficulties, especially on the frontier between Regions 1 and 3.

The delegate of the United Kingdom, reviewing the various possibilities, advocated a frequency assignment plan with a channel spacing of 8 kHz, which would give 135 channels between 528 and 1 600 kHz, with the band divided into 3 or 4 blocks according to transmitter power, as described in Documents Nos. 6 and 40, as that would enable the most efficient use of the spectrum to be made. It would, however, involve significant frequency changes, and therefore high costs. Division of the band into a greater number of smaller blocks as described in Document No. 25, involved very much smaller changes and costs. The adoption of a plan with a channel spacing of 8 kHz would diminish congestion in Region 1, and would increase the number of available channels in Region 3 by 25 %, providing room for expansion where it was bound to be needed. In a well-engineered assignment plan, an audio bandwidth of 10 kHz could be achieved with a channel spacing of 8 kHz, which was therefore not incompatible with good reception quality. For countries in a fortunate position, e.g., those desiring an adjacent channel protection ratio of 0 dB, even a channel spacing of 10 kHz was not enough; such difficulties could be overcome by using only every other channel. Interference between Regions 2 and 3 could more easily be avoided as such a plan would provide more common carrier frequencies.

A frequency assignment plan with a channel spacing of 9 kHz, which would give 120 channels between 531 and 1 602 kHz, would, in Region 1, reduce the number of channels by 1 and involve changing the frequencies of all transmitters without significant benefit, unless the band were divided into blocks according to transmitter power.

A plan with a channel spacing of 10 kHz, which would give 108 channels between 530 and 1 600 kHz, would worsen congestion in Region 1, and was therefore unacceptable.

A channel spacing of 8 kHz, with a subdivision of the band into blocks, would therefore give maximum benefits to everyone, allowing congestion to be diminished in Europe - where it was not intended to set up additional transmitters - and greater flexibility in Region 3.

The observer from the Asian Broadcasting Union, referring to Documents Nos. 67 and 69, pointed out that at least 13 Asian countries were in favour of a plan retaining the present channel spacing of 10 kHz. Careful consideration of the plan using a channel spacing of 8 kHz had shown it to be unacceptable in most of Asia for technical and economic reasons. The Asian countries in question did not want to lower their standards of broadcasting, or spend a lot of money, to solve avoidable problems created in Region 1, or to satisfy desires for additional outlets. In view of the necessity of uniform channel spacing, a compromise to use a channel spacing of 9 kHz might, however, be considered.

The delegate of Pakistan considered that since present usage had come about on a purely regional basis, it might be a mistake to decide on a uniform channel spacing without taking into account Region 2. Changing frequencies might involve high costs, especially where elaborate antenna systems were used, and it did not seem reasonable to solve interference problems in Region 1 at the cost of developing countries free of such problems. Moreover, increases in transmitter power throughout the world had already begun to cause interference between Regions 2 and 3. A uniform channel spacing of 10 kHz throughout the world appeared to be the best solution; if a compromise had to be made all the same, a channel spacing of 8 kHz seemed preferable to one of 9 kHz.

The delegate of New Zealand pointed out that the average frequency change necessary in Region 3 would be 2 to 3 kHz, up to a maximum of 6 kHz in individual cases. Thus, costs would not be too high, and such changes would make no difference to transmitters or listeners.

The delegate of Belgium remarked that it had been possible to reach agreement in Europe by a scientific study of optimal utilization of the spectrum; the results of this research were given in E.B.U.'s Document No. 3206. It did not seem generous to maintain that the problems of congestion in Europe could have been avoided, instead of agreeing to a channel spacing of 8 kHz, which could be objectively shown to be the optimal solution throughout Regions 1 and 3.

The delegate of the Netherlands pointed out that there was no close link between channel spacing and quality, as could be seen from VHF/FM stereophonic broadcasting where channels occupying 250 kHz only required channel spacings of 100 kHz, still achieving the highest possible quality.

The delegate of Pakistan considered that a channel spacing of 8 kHz would be acceptable if it could be guaranteed that frequency changes would be small, of the order of 1 or 2 kHz. He did not, however, believe such a guarantee to be possible.

The delegate of Belgium replied that the frequency changes would be restricted to a maximum of 4 kHz; some frequencies would remain unchanged. However, for planning purposes it would probably be necessary to make a number of more substantial changes. If use were made of the method recommended by New Zealand (Document No. 25), i.e. dividing the frequency band into a fairly large number of blocks to group together transmitters of comparable power, there would be some frequency changes which might be in the region of 10%.

The delegate of France pointed out that the frequencies of most modern transmitters could be changed considerably without any technical difficulties, while a change of about 5 % was quite possible in older transmitters.

Changes of up to 10 % could easily be carried out on monopole antennae, and almost all directional antennae allowed changes of 5 % without significantly deforming the directivity diagram.

The delegate of Australia remarked that either 8 kHz or 9 kHz channel spacing would involve changing the operating frequency of about 200 transmitters in Australia, with radiated powers ranging between 2 kW and 50 kW. The numbers would be high because every one of the 108 channels was in use at present. An average cost of about $ 50 had been estimated which in all cases would involve the change of an oscillator crystal and, in some cases, adjustment of the antennae.

It was also stated that the number of high power Region 2 stations in the Pacific area of Region 3 likely to cause interference in Region 3 from channel heterodynes was very small, and that the relative distances involved were very great.

The delegate of Pakistan remarked on the fact that estimates of the frequency changes that would be necessary had grown rapidly in the course of the meeting.

The observer from the European Broadcasting Union felt that the purpose of the Conference was not to force the majority to accept a proposal that they did not consider advantageous, but rather to find a solution offering maximum benefit to all concerned.

The Chairman observed that in view of the interference problems which existed in the border area between Regions 1 and 3, it was impossible to contemplate frequency changes in one region without taking account of conditions in the other. If the overall situation was to be improved, some agreement on uniform channel spacing seemed essential.

The delegate of Algeria said that uniform channel spacing was indeed of fundamental importance to all countries in the border area between Regions 1 and 3. He was happy to note from the discussion which had just taken place that the countries of Region 3 seemed willing to make some sacrifices. Every effort should be made to reach a compromise solution that was acceptable to all.

The Chairman said that the attention of Committee 5 might appropriately be drawn to the need to provide the countries in Regions 1 and 3 with the assurance that the frequency changes contemplated would be kept as small as possible.

The delegate of the United Kingdom proposed that a small ad hoc working party should be set up to examine the various frequency channelling plans which had been discussed and to prepare a statement for submission to the Committee on the maximum and minimum frequency changes which would be required to move from one plan to another.

Following a discussion on the composition, terms of reference and usefulness of the proposed working party, in which the delegates of the U.S.S.R., the United Kingdom, Spain, France, the Federal Republic of Germany, Sweden, Belgium, Egypt, Algeria, New Zealand, Pakistan, Japan, Australia, Lesotho, Nigeria, India, Uganda, Roumania, Mauritania, Malaysia and Lebanon, the Chairman and the observer for the Arab States Broadcasting Union took part, the United Kingdom proposal was adopted.

It was decided that the working party should be composed of the United Kingdom (Chairman), Belgium (for Western Europe), the U.S.S.R. (for Eastern Europe), Algeria (for the Arab States), Nigeria (for Africa), Australia and Japan (for Asia), and a representative of the C.C.I.R.

The terms of reference of the working party, as worded in the United Kingdom proposal, were approved, and the working party was requested to report its findings to the next meeting of the Committee.

2. Other business (Document No. 83)

The delegate of Australia introduced Document No. 83, which had been referred to Committees 4 and 5. Although the document was concerned mainly with planning methods, it was based on a technical argument related to the Italian proposal in Document No. 49 and sought to show how a full lattice plan might be merged with planning suited to the Australian area. It had, he believed, already been accepted by Committee 5.

The meeting rose at 1215 hours.

The Secretary :
C. GLINZ

The Chairman :
J. RUTKOWSKI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

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The observer from the Asian Broadcasting Union, referring to Documents Nos. 67 and 69, pointed out that at least 13 Asian countries were in favour of a plan retaining the present channel spacing of 10 kHz. Careful consideration of the plan using a channel spacing of 8 kHz had shown it to be unacceptable in most of Asia for technical and economic reasons. The Asian countries in question did not want to lower their standards of broadcasting, or spend a lot of money, to solve avoidable problems created in Region 1, or to satisfy desires for additional outlets. In view of the necessity of uniform channel spacing, a compromise to use a channel spacing of 9 kHz might, however, be considered.

The delegate of Pakistan considered that since present usage had come about on a purely regional basis, it might be a mistake to decide on a uniform channel spacing without taking into account Region 2. Changing frequencies might involve high costs, especially where elaborate antenna systems were used, and it did not seem reasonable to solve interference problems in Region 1 at the cost of developing countries free of such problems. Moreover, increases in transmitter power throughout the world had already begun to cause interference between Regions 2 and 3. A uniform channel spacing of 10 kHz throughout the world appeared to be the best solution; if a compromise had to be made all the same, a channel spacing of 8 kHz seemed preferable to one of 9 kHz.

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The delegate of Belgium replied that most frequency changes would be small, and some of up to 10 % could be made quite easily, while other frequencies would remain unchanged, especially if the band were divided into 3 or 4 blocks according to transmitter power and type of service. A more easily acceptable plan would be possible if the band were divided into smaller blocks, as explained in Document No. 25, as transmitters of comparable power could be grouped together.

The delegate of France pointed out that the frequencies of most modern transmitters could be changed considerably without any technical difficulties, while a change of about 5 % was quite possible in older transmitters.

Changes of up to 10 % could easily be carried out on monopole antennae, and almost all directional antennae allowed changes of 5 % without significantly deforming the directivity diagram.

The delegate of Australia remarked that the adoption of a channel spacing of 8 kHz would involve changing the frequency of 12 transmitters (ranging from 2 to 50 kW) in Australia, where all the channels in the band were used. The cost of this change, which would involve a new crystal, and adjustment of the antennae, had been estimated at $ 50 per station.

The number of high-power stations in Region 2 likely to cause interference in Region 3 was not great, and relative distances between Regions 1 and 3 were quite different from those between Regions 2 and 3.

The delegate of Pakistan remarked on the fact that estimates of the frequency changes that would be necessary had grown rapidly in the course of the meeting.

The observer from the European Broadcasting Union felt that the purpose of the Conference was not to force the majority to accept a proposal that they did not consider advantageous, but rather to find a solution offering maximum benefit to all concerned.

The Chairman observed that in view of the interference problems which existed in the border area between Regions 1 and 3, it was impossible to contemplate frequency changes in one region without taking account of conditions in the other. If the overall situation was to be improved, some agreement on uniform channel spacing seemed essential.

The delegate of Algeria said that uniform channel spacing was indeed of fundamental importance to all countries in the border area between Regions 1 and 3. He was happy to note from the discussion which had just taken place that the countries of Region 3 seemed willing to make some sacrifices. Every effort should be made to reach a compromise solution that was acceptable to all.

The Chairman said that the attention of Committee 5 might appropriately be drawn to the need to provide the countries in Regions 1 and 3 with the assurance that the frequency changes contemplated would be kept as small as possible.

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The meeting rose at 1215 hours.

The Secretary :
C. GLINZ

The Chairman :
J. RUTKOWSKI

Document No. 129-E
23 October 1974

PLENARY MEETING

B.6

6th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.	Title
C4	98	2.2 Sky-wave propagation
-	-	Appendix B
C4	98	Annex to Appendix B
-	-	Appendix E

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 25 pages

B.6

2.2 Sky-wave propagation

B.6

Within Region 1 and for Australia and New Zealand*), the sky-wave propagation prediction method described in Appendix B should be used. In Region 1 the basic propagation formula is given by Equation (1) of that Appendix. In Australia and New Zealand the basic propagation formula is given by Equation (13) of the same Appendix. Some examples of the use of this method are given in the Annex to this Appendix.

B.6

Within the Asian part of Region 3*), the Cairo North-South curve, given in Appendix E, or a mathematical formula which gives the same result, should be used. No corrections should be made for sea gain. Polarization coupling loss should be calculated according to the method described in Appendix E.

B.6

For paths which pass from one region to another, the method used should be that which applies at the mid-point of the great-circle path.

B.6

Within the whole of Regions 1 and 3 the radiation in a given direction is expressed in dB with reference to 300 V cymomotive force or 1 kW e.m.r.p. The powers are expressed in dB relative to 1 kW.

B.6

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*) For sky-wave field-strength prediction, the boundary between Australia and New Zealand, on the one hand, and the Asian part of Region 3, on the other hand, shall be described by geographic latitude 11° South.

B.6

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APPENDIX B

B.6

SKY-WAVE FIELD-STRENGTH PREDICTION METHOD FOR THE FREQUENCY RANGE 150 TO 1605 kHz FOR REGION 1, AUSTRALIA AND NEW ZEALAND

List of symbols

B.6

b	Solar-activity factor given in Section 2.6
d	Ground distance between transmitter and receiver (km)
F_o	Annual median field strength at the reference time defined in Section 2 (db above 1 μV/m)
F_t	Annual median field strength at time t (dB above 1 μV/m)
f	Frequency (kHz)
f'	A frequency defined in Equation (6) (kHz)
G	Antenna gain referred to a short vertical antenna in the direction of propagation
G_o	Sea gain for a terminal on the coast (dB)
G_S	Sea gain for a terminal near the sea (dB)
h	Transmitting antenna height
h_r	Height of reflecting layer (km)
I	Magnetic dip angle (degrees)
k	Basic loss factor due to the absorption in the ionosphere
k_R	Loss factor due to absorption in the ionosphere
L_P	Excess polarization coupling loss (dB)
L_t	Diurnal loss factor (dB)
P	Radiated power (dB above 1 kW)
p	Slant propagation distance (km)
Q	A sea-gain parameter given in Section 2.3
R	Twelve-month smoothed Zurich sunspot number
s	Distance of terminal from sea, measured along great-circle path (km)
t	Time relative to sunset or sunrise (hours)
V	Transmitter cymomotive force (dB above 300 volts)
θ	Direction of propagation relative to magnetic East-West (degrees)
λ	Wavelength
Φ	A geomagnetic latitude parameter
Φ_T	Geomagnetic latitude of transmitter } (degrees, positive in northern hemisphere, negative in southern hemisphere)
Φ_R	Geomagnetic latitude of receiver }

B.6

1. Introduction

This method of prediction gives the night-time sky-wave field strength produced for a given power radiated from one or more vertical antennae, when measured by a loop aerial at ground level aligned in a vertical plane along the great circle path to the transmitter. It applies for paths of lengths up to 12,000 km. However in band 5 it was only verified for paths of up to 5000 km. The accuracy of prediction varies from region to region and may be improved in certain regions by applying modifications such as those shown in Section 5. In any case the method should be used with caution for geomagnetic latitudes greater than 60°.

B.6

2. Annual median night-time field strength

B.6

The predicted sky-wave field strength is given by :

$$F_o = V + G_S - L_P + 105.3 - 20 \log_{10} p - 10^{-3} k_R p \qquad (1)$$

B.6

where F_o = annual median of half-hourly median field strengths (dB above 1 μV/m) at the reference time defined in Section 2.1.

V = transmitter cymomotive force, dB above a reference cymomotive force of 300 volts

B.6

G_S = sea-gain correction, dB

L_P = excess polarization-coupling loss, dB

B.6

p = slant-propagation distance, km

B.6

k_R = loss factor incorporating effects of ionospheric absorption, focusing and terminal losses, and losses between hops on multi-hop paths

2.1 Reference time

B.6

The reference time is taken as six hours after the time at which the sun sets at a point S on the surface of the earth. For paths shorter than 2000 km, S is the mid-point of the path. On longer paths, S is 750 km from the terminal where the sun sets last, measured along the great-circle path.

2.2 Cymomotive force

B.6

The cymomotive force V in the azimuth and the elevation of the direction of propagation is calculated by the formula :

B.6

$$V = P + G \qquad (2)$$

where P is the radiated power (expressed in dB/kW).

For the purpose of planning, the losses will be neglected and P will be taken to be the power supplied to the antenna transmission line.

B.6

G is the gain of the antenna in dB referred to a short vertical antenna in the direction of propagation (See Chapter 1).

For a simple vertical antenna, this gain is given by Figure 1.

2.3 Sea gain

B.6

G_S is the additional signal gain when one or both terminals is situated near the sea. G_S for a single terminal is given by :

B.6

$$G_S = G_o - 10^{-3} \frac{Q\, s\, f}{G_o} \quad \text{(dB)} \qquad (3)$$

where G_o is the gain when the terminal is on the coast, f is the frequency in kHz and s is the distance in km of the terminal from the sea, measured along the great-circle path. Q = 0.44 in band 5 and 1.75 in band 6. G_o is given in Annex Figure 2 as a function of d for bands 5 and 6. In band 5, G_o = 10 dB when d > 6500 km. Equation (3) applies for values of s such that $G_S > 0$. For larger values of s, $G_S = 0$. If both terminals are near the sea, G_S is the sum of the values of G_S for the individual terminals.

2.4 Polarization coupling loss

L_P is the excess polarization coupling loss. In band 5, $L_P = 0$. In band 6 at low latitudes, for $|I| \leq 45^\circ$.

$$L_P = 180\ (36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2 \text{ dB/terminal} \qquad (4) \quad \text{(see Figure 7)}$$

where I is the magnetic dip in degrees at the terminal and θ is the path azimuth measured in degrees from the magnetic E-W direction, such that $|\theta| \leq 90^\circ$. For $|I| > 45^\circ$, $L_P = 0$. L_P should be evaluated separately for the two terminals, because of the different θ and I that may apply, and the two L_P values added. The most accurate available values of magnetic dip and declination should be used in determining θ and I (see Figures 8, 9 and 10).

2.5 Slant propagation distance

For paths longer than 1000 km, p is approximately equal to the ground distance d (km). For shorter paths

$$p = (d^2 + 4h_r^2)^{\frac{1}{2}} \qquad (5)$$

where h_r = 100 km if $f \leq f'$ and 220 km if $f > f'$, where f' (in kHz) is given by

$$f' = 350 + \sqrt{(2.8d)^3 + 300^3}^{1/3} \qquad (6)$$

Equation (5) may be used for paths of any length with negligible error.

2.6 Loss factor due to absorption in the ionosphere

The loss factor due to absorption in the ionosphere k_R is given by

$$k_R = k + 10^{-2}\ bR \qquad (7)$$

where R = twelve-month smoothed Zurich sunspot number. In band 5, b = 0. In band 6, b = 1 for Europe and Australia and 0 elsewhere.

$$k = 1.9f^{0.15} + 0.24f^{0.4}(\tan^2\Phi - \tan^2 37^\circ) \qquad (8)$$

where f = frequency (kHz)

For paths shorter than 3000 km

$$\Phi = (\Phi_T + \Phi_R)/2 \qquad (9)$$

where Φ_T and Φ_R are the geomagnetic latitudes (see Figure 11) at the transmitter and receiver respectively, determined by assuming an earth-centred dipole field model with northern pole at 78.5°N, 69°W geographic coordinates. Φ_T and Φ_R are taken as positive in the northern hemisphere and negative in the southern hemisphere. Paths longer than 3000 km are divided into two equal sections which are considered separately. The value of Φ for each half-path is derived by taking the average of the geomagnetic latitudes at

one terminal and at the mid-point of the whole path, the geomagnetic latitude at the mid-point of the whole path being assumed to be the average of Φ_T and Φ_R. As a consequence

B.6 $$\Phi = (3\Phi_T + \Phi_R) / 4 \qquad (10)$$

for the first half of the path and

B.6 $$\Phi = (\Phi_T + 3\Phi_R) / 4 \qquad (11)$$

for the second half. The values of k calculated from Equation (8) for the two half-paths are then averaged and used in Equation (7).

B.6 If $|\Phi| > 60^\circ$, Equation (8) is evaluated for $\Phi = 60^\circ$

3. Nocturnal variation of annual median field strength

B.6 $$F_t = F_o - L_t \qquad (12)$$

where F_t = annual median field strength at time t, dB above 1 μV/m

F_o = annual median field strength at reference time defined in Section 2.1, dB above 1 μV/m, given by Equation (1)

B.6 L_t = diurnal loss factor, dB, given in Fig. 3

Fig. 3 shows the average of the annual median nocturnal variations for Europe and Australia, derived from Fig. 8 of C.C.I.R. Report 264 and Fig. 5 of C.C.I.R. Report 431 respectively; the time t is the time in hours relative to the sunrise or sunset reference times as appropriate. These are taken at the ground at the midpath position for d < 2000 km and at 750 km from the terminal where the sun sets last or rises first for longer paths.

B.6 4. Day-to-day and short-period variations of field strength

6 The field strength exceeded for 10% of the total time on a series of nights, during short periods centred on a specific time is :

8 dB greater in band 5

10 dB greater in band 6

B.6 than the values of F_o and F_t given above.

5. Accuracy of the method

B.6 This method is believed to be reasonably accurate in Regions 1 and 3. Comparison of predicted and measured values shows, however, that its accuracy in certain regions may be further improved by making the following corrections.

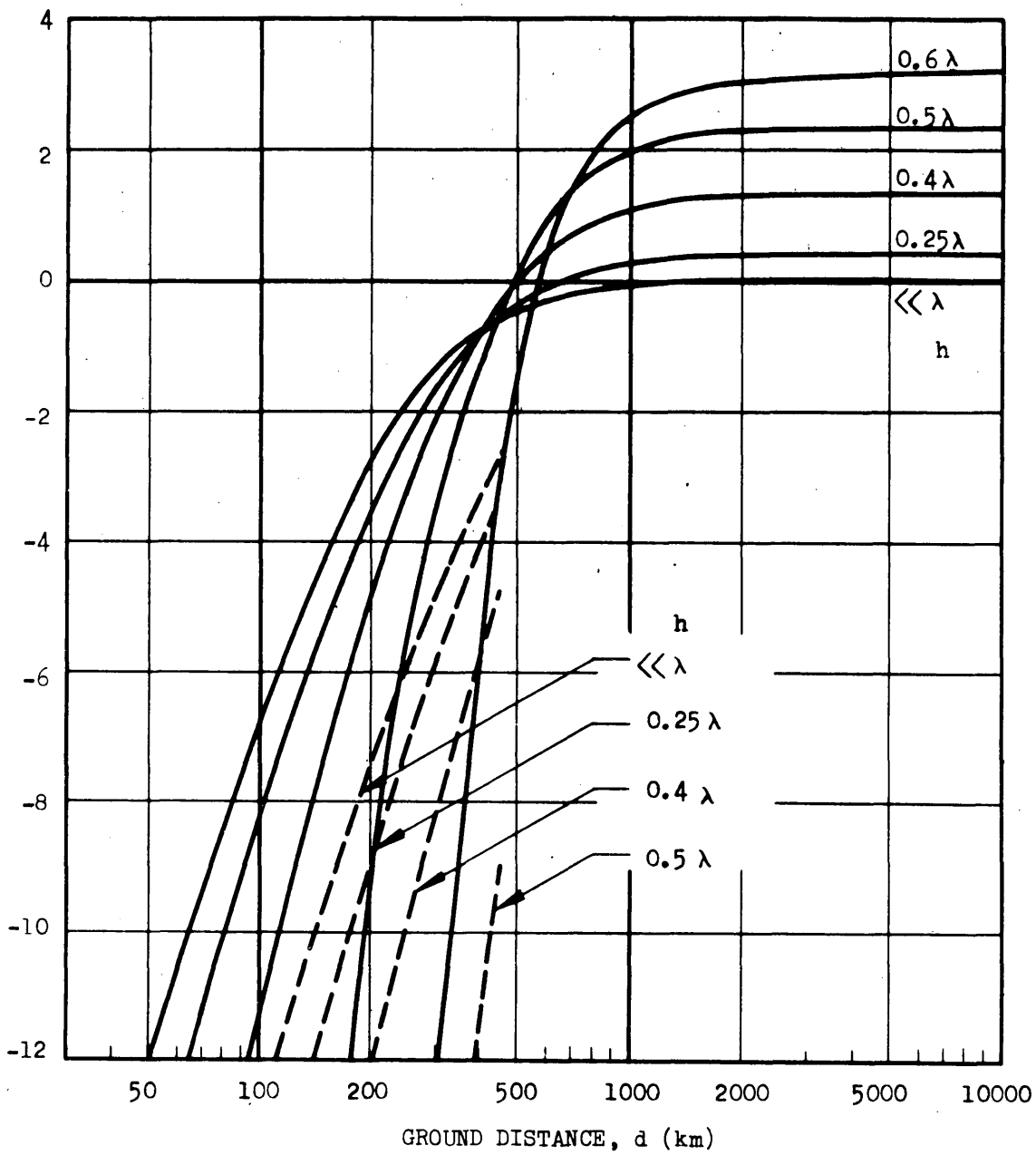
Since field strengths measured in Australia and New Zealand are 4 to 7 dB higher than those predicted by the method, a better prediction formula for this area is

B.6 $$F_o = V + G_S - L_P + 108 - 20 \log_{10} p - 0.8 \times 10^{-3} k_R p \qquad (13)$$

The field strength exceeded on and 6 for 10% of the total time on a series of nights, during short periods centred on a specific time, is only 7 dB greater than the annual median in this area.

B.6 6. The Annex to the Appendix contains some examples of the use of this method.

B.6 B.6 B.6 B.6 B.6 B.6 B.6 B.6 B.6



h = Aerial height

——— h_r = 100 km (E layer reflection)

– – – – h_r = 220 km (F layer reflection)

FIGURE 1

Transmitting antenna gain for
a simple vertical antenna

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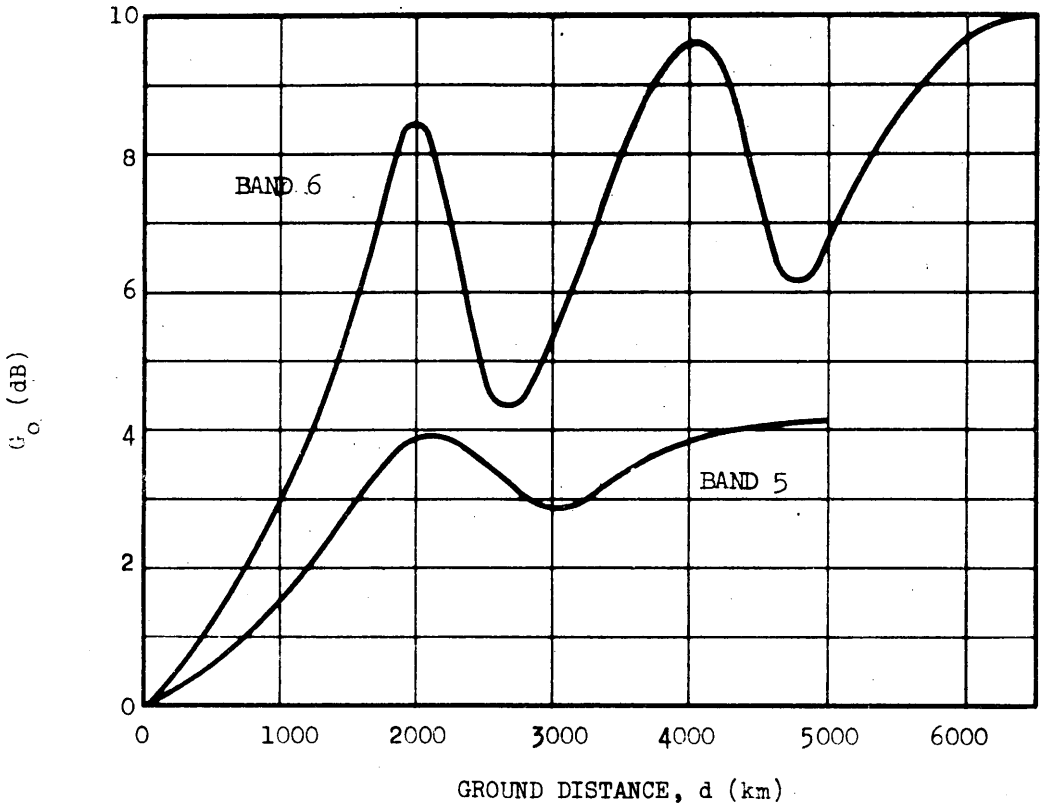

FIGURE 2

Sea gain (G_o) for a single terminal on the coast

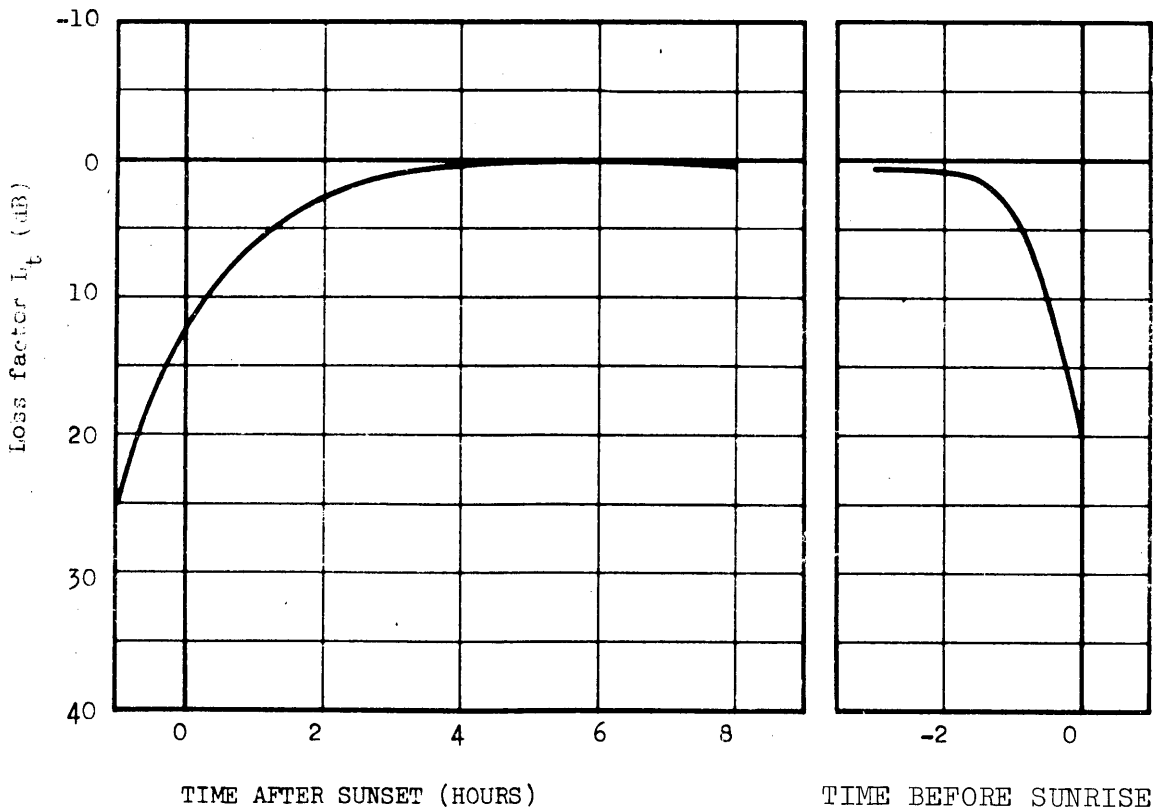

FIGURE 3

Diurnal loss factor (L_t)

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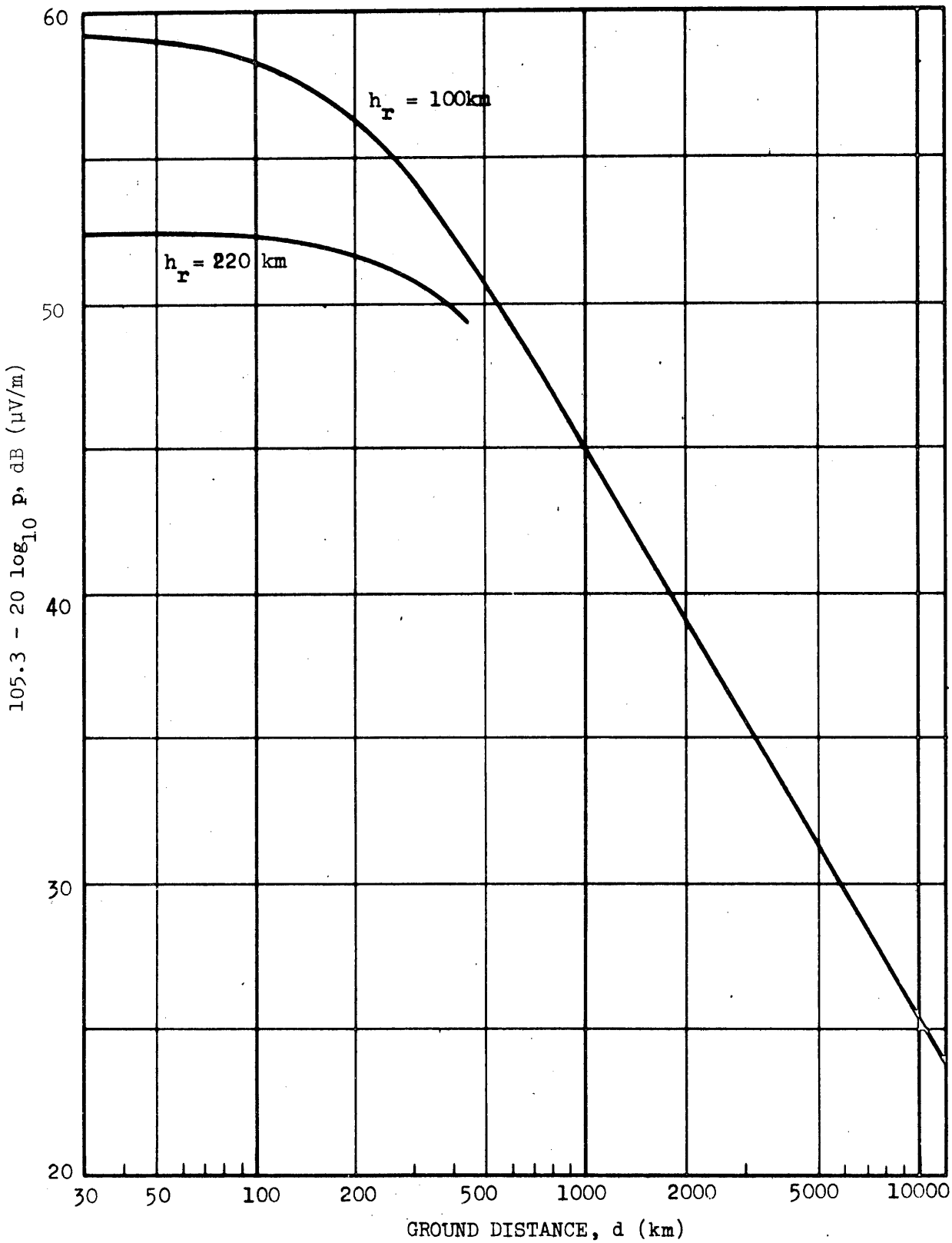

FIGURE 4

Basic field strength

The curves show $105.3 - 20 \log_{10} p$
where $p = (d^2 + 4h_r^2)^{\frac{1}{2}}$

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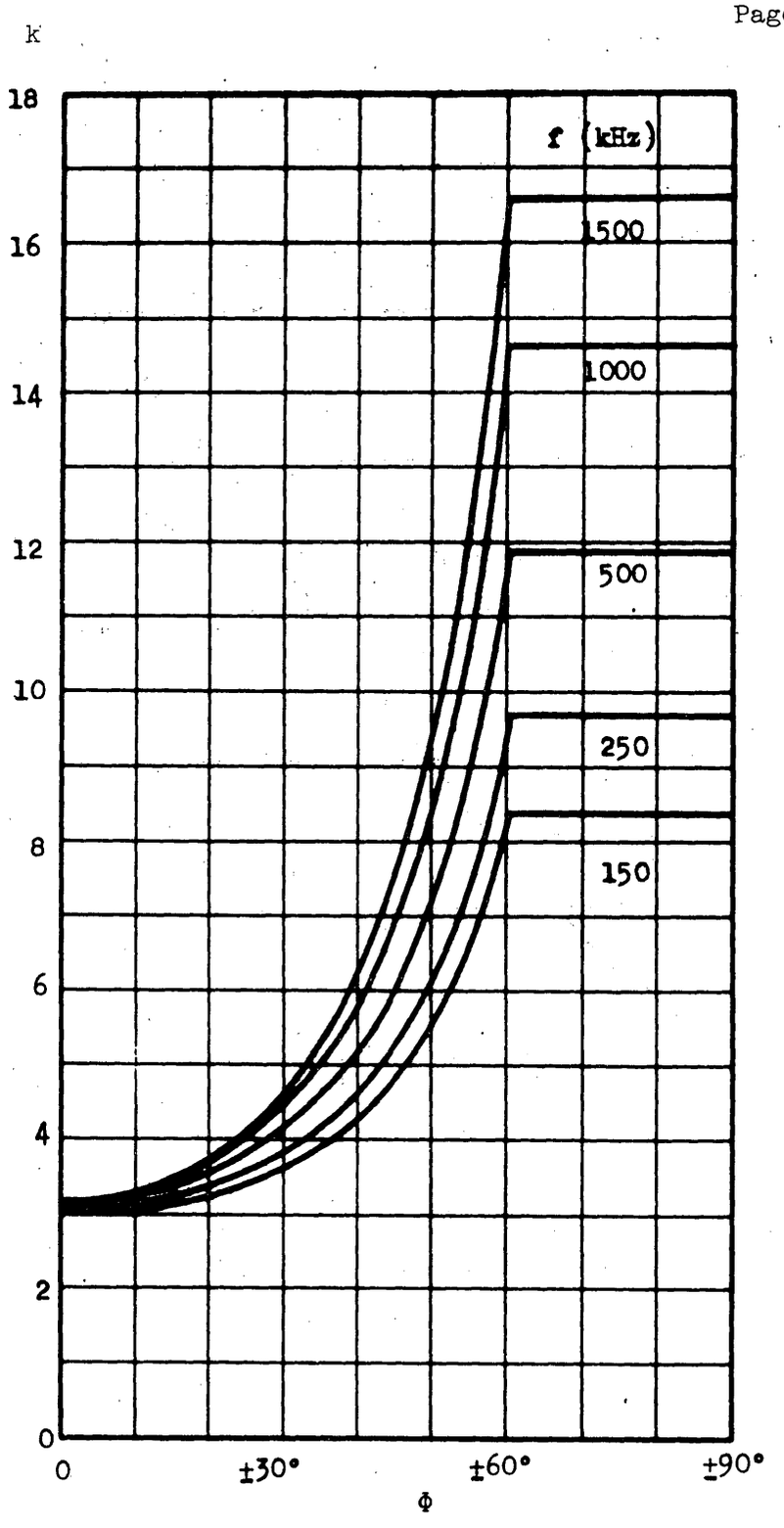

FIGURE 5

Basic loss factor due to ionospheric absorption

$$k = 1.9f^{0.15} + 0.24f^{0.4} (\tan^2 \Phi - \tan^2 37^\circ)$$

$$(0 \leq \Phi \leq 60^\circ)$$

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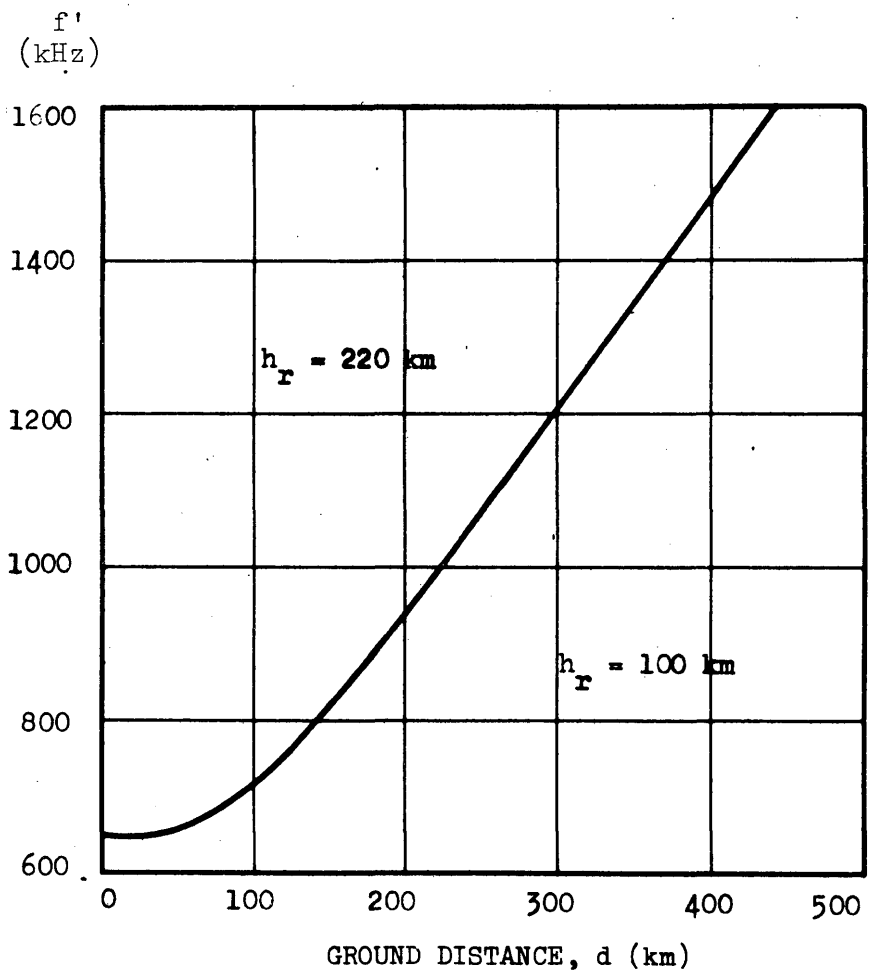

FIGURE 6

Frequency defined in equation (6)

$$f' = 350 + \left[2.8\, d^3 + 300^3 \right]^{\frac{1}{3}}$$

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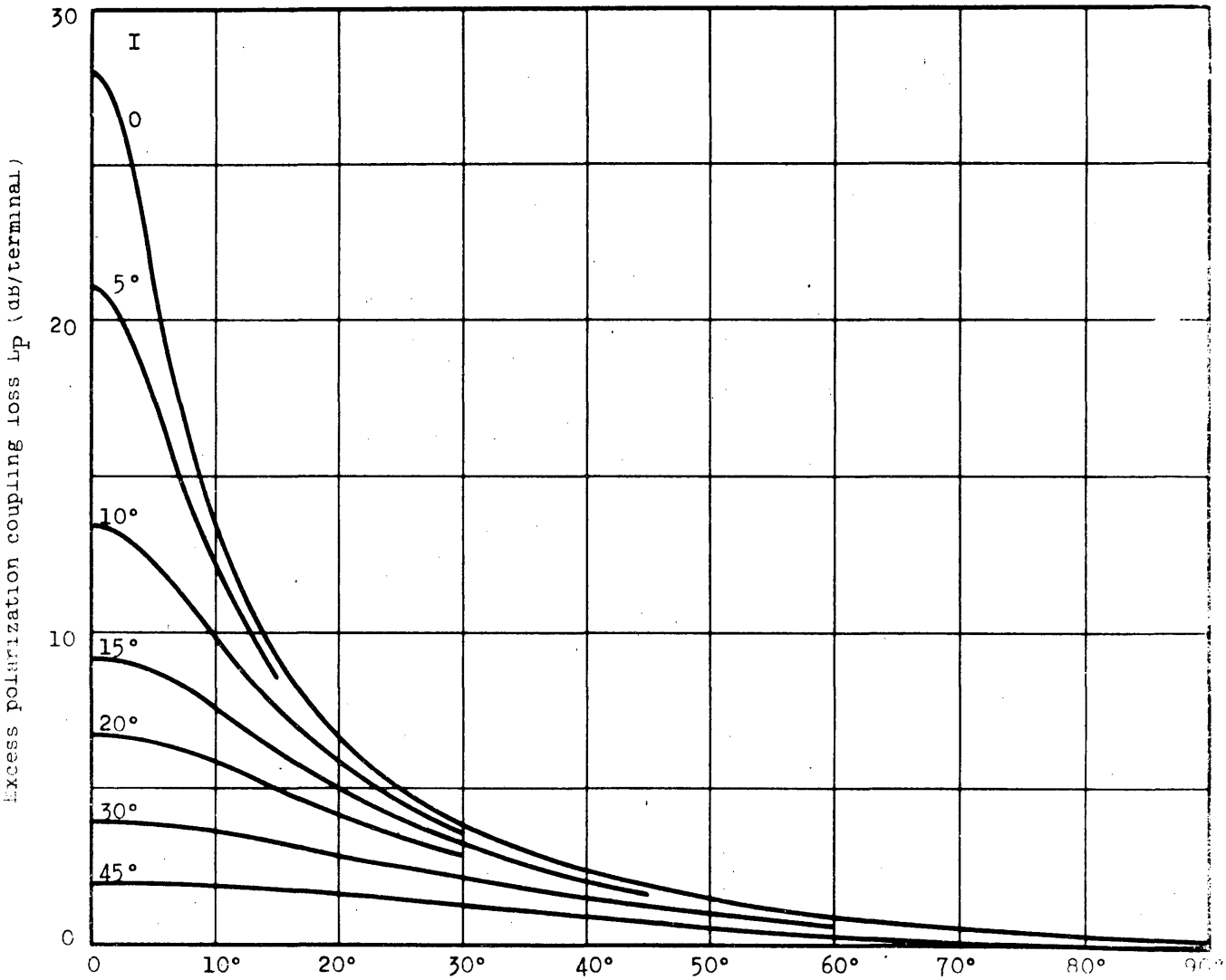
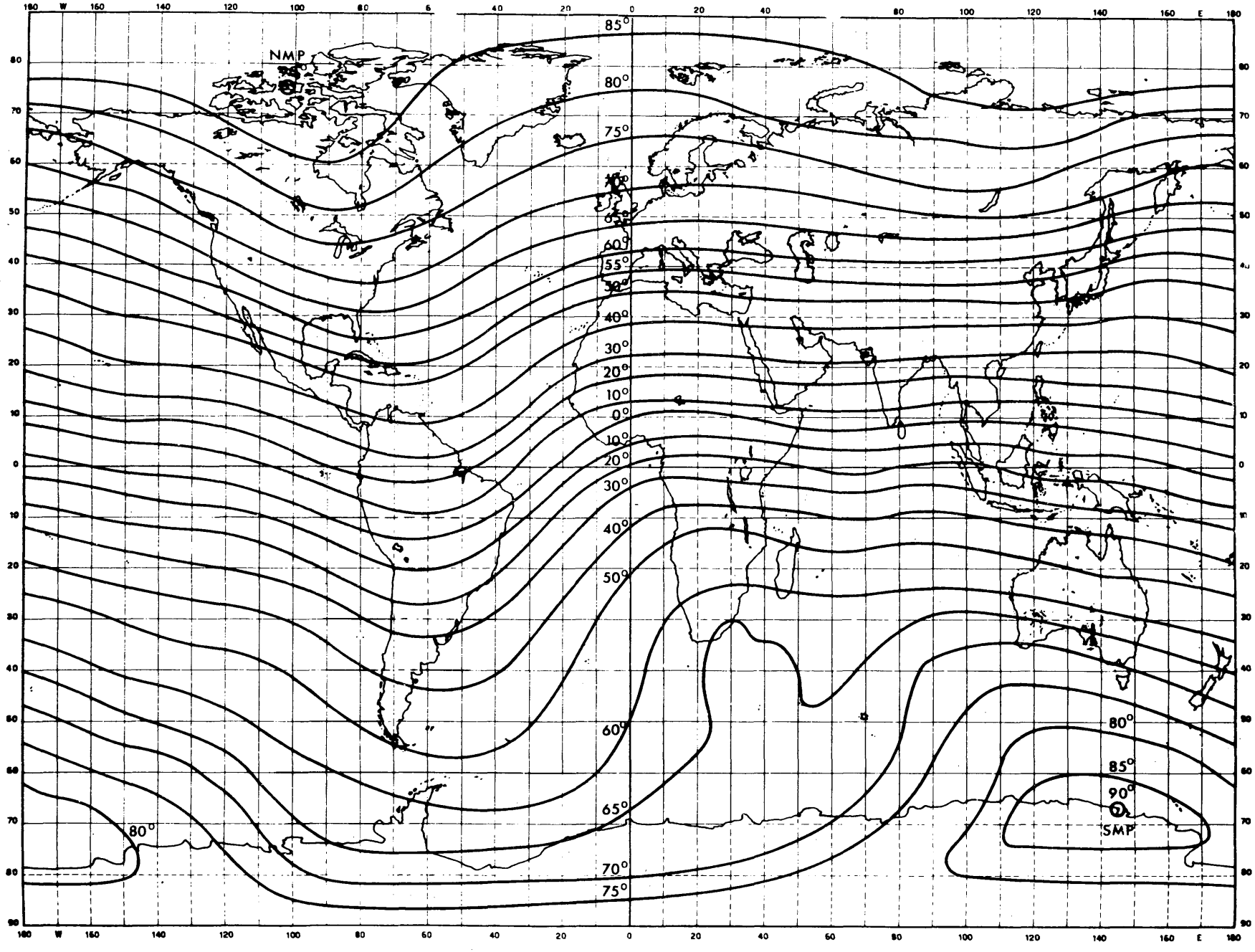


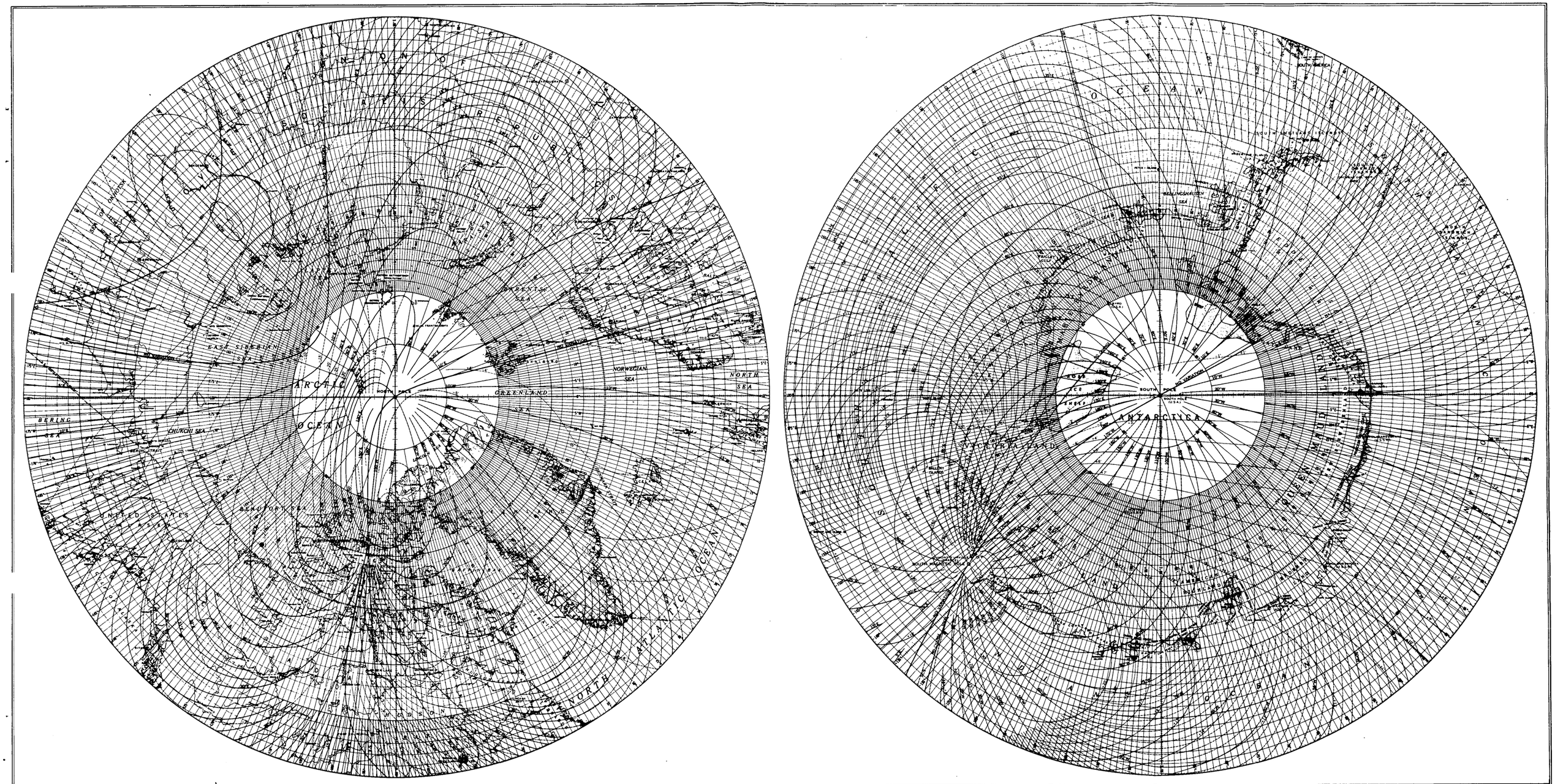
FIGURE 7

Excess polarization coupling loss L_P

FIGURE 8 - FIGURA 8

Map of magnetic dip - Carte de l'inclinaison magnétique - Mapa de inclinación magnética





L'inscription d'un pays ou d'un territoire sur cette carte ainsi que le tracé de frontières n'impliquent, de la part de l'U.I.T., aucune prise de position quant au statut politique de ces pays ou territoires, ni aucune reconnaissance officielle de ces frontières.

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La inscripción de un país o de un territorio en este mapa así como el trazado de fronteras en los mapas no implican que la U.I.T. tome posición en cuanto al estatuto político de esos países o territorios ni el reconocimiento por su parte de esas fronteras.

FIGURE 9 - FIGURA 9

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

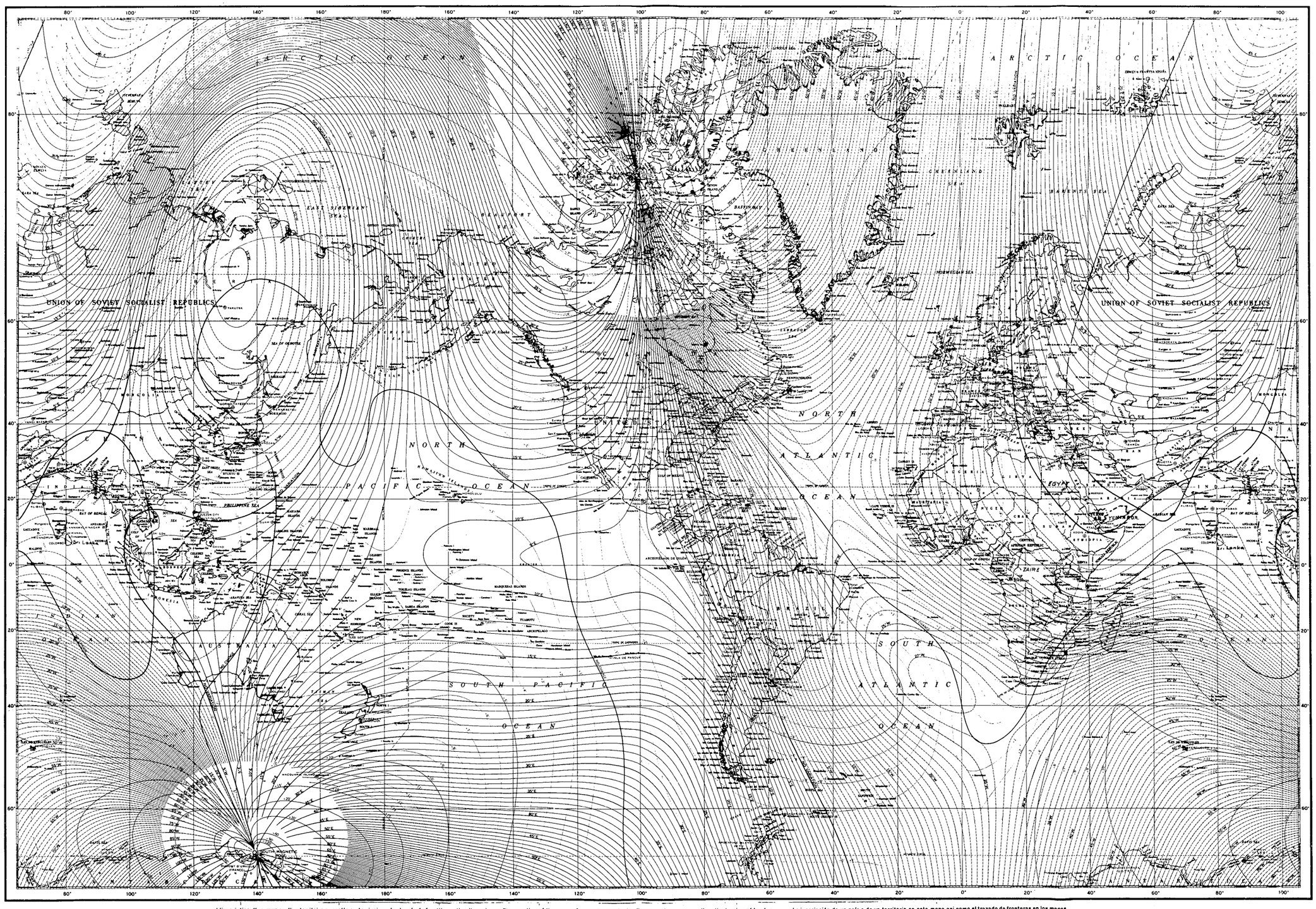

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FIGURE 10 - FIGURA 10

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

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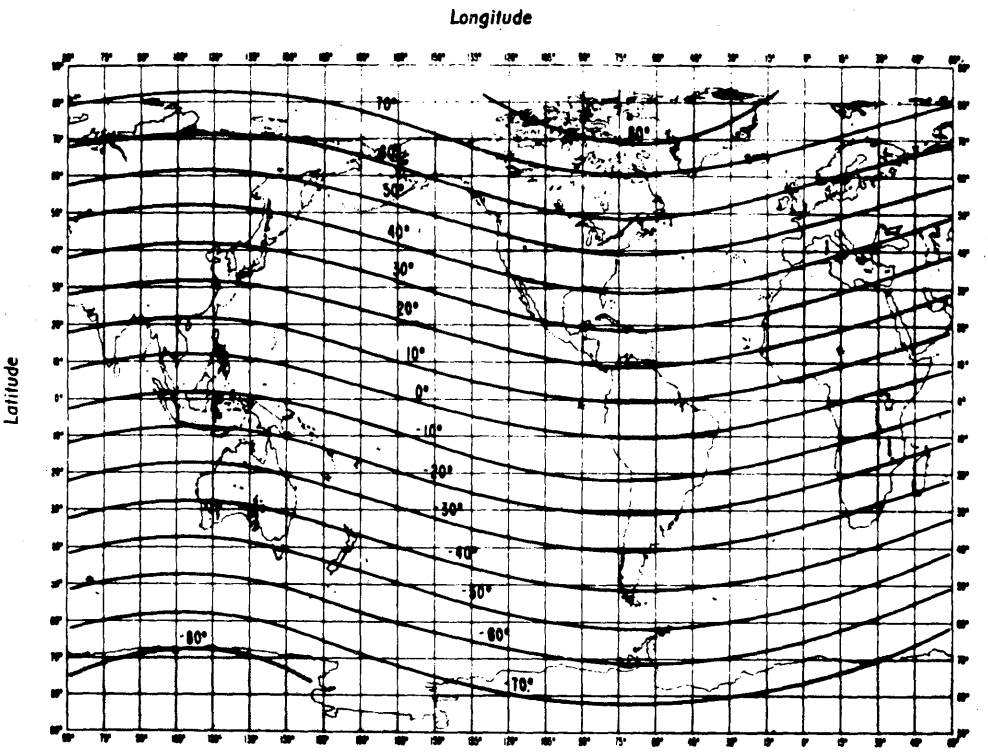

FIGURE 11

Geomagnetic latitudes

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ANNEX TO APPENDIX B

Example of the use of the sky-wave field-strength prediction method

1) Short-distance path

Data

Transmitter	Rome (Italy)	
Receiver	Darmstadt (F.R.G.)	
Great-circle distance	950 km	
Frequency	845 kHz	
Basic field strength (Fig. 4)	45.5	dB(μV/m)
Geomagnetic latitude of transmitter	$\Phi_T = 44°$	Fig. 11
Geomagnetic latitude of receiver	$\Phi_R = 52°$	
Geomagnetic latitude parameter	$\Phi = \frac{\Phi_T + \Phi_R}{2} = 48°$	
Basic loss factor (Fig. 5)	7.2	

Attenuation contributed by loss factor = $7.2 \times 950 \times 10^{-3} = 6.9$ dB

Annual median field strength = 45.5 - 6.9 = 38.6 dB(μV/m)

2) Long-distance path with one terminal near the sea and the other in the tropical region

Data

Transmitter	Riyad (Saudi Arabia)	
Receiver	Helsinki (Finland)	(2 km from sea)
Great-circle distance	4,280 km	
Frequency	587 kHz	
Basic field strength (Fig. 4)	32.5	dB(μV/m)
Geomagnetic latitude of transmitter	$\Phi_T = 18°$	Fig. 11
Geomagnetic latitude of receiver	$\Phi_R = 58°$	

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	First half of path	Second half of path
Geomagnetic latitude parameter	$\frac{3\Phi_T + \Phi_R}{4} = 28°$	$\frac{\Phi_T + 3\Phi_R}{4} = 48°$
Basic loss factor (Fig. 5)	4.1	6.9

Average loss factor = $\frac{4.1 + 6.9}{2} = 5.5$

Attenuation contributed by loss factor = $5.5 \times 4{,}280 \times 10^{-3} = 23.5$ dB

Dip latitude of transmitter, I (Fig. 8) = 30°

Direction of propagation relative to magnetic east-west at transmitter, θ = 70°

Polarization coupling loss at transmitter (Fig. 7) = 0.5 dB

Sea-gain :

for terminal on the coast, G_o (Fig. 2) = 9.0 dB

reduction because receiver is 2 km from sea = $\frac{10^{-3} \times 1.75 \times 2 \times 587}{9.0} = 0.2$ dB

resultant gain, G_s = 9.0 - 0.2 = 8.8 dB

Annual median field-strength = 32.5 - 23.5 + 8.8 - 0.5 = 17.3 dB(μV/m)

Note : These two examples give the field-strength produced by a source radiating with a c.m.f. of 300 V or an e.m.r.p. of 1 kW in the direction of propagation. Corrections for antenna gain (Fig. 1) and for transmitter power are not included. The reference time is 6 hours after sunset. For other times, use should be made of Fig. 3.

B.6

APPENDIX E

SKY-WAVE FIELD STRENGTH PREDICTION METHOD FOR THE FREQUENCY RANGE 525 TO 1605 kHz FOR THE ASIAN PART OF REGION 3 NORTH OF 11°S

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B.6

1. Symbols

d	Ground distance between transmitter and receiver (km)
F_o	Annual median field strength at the reference time defined in ..... (dB above 1 μV/m)
F_c	Field strength, in dB, derived from the Cairo curve (Figure 1)
F_t	Annual median field strength at midnight (dB above 1 μV/m)
f	Frequency (kHz)
I	Magnetic dip angle (degrees)
L_P	Excess polarization coupling loss (dB)
L_t	Diurnal loss factor (dB)
P	Radiated power (dB above 1 kW)
t	Time relative to sunset or sunrise (hours)
V	Transmitter cymomotive force (dB above 300V)
Θ	Direction of propagation relative to magnetic East-West (degrees)

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2. Propagation curve

B.6 In the Asian area of the Region 3 situated to the north of 11°S the "Cairo North-South" propagation curve referred to the annual midnight median value should be used for sky wave predictions. This curve appears in Figure 1 of this Appendix. This curve refers to an effective radiated power (e.m.r.p.) of 1 kW or a c.m.f. of 300 V of a short vertical antenna. The field F_o, in dB, is given by the formula

B.6
$$F_o = F_c - L_p \qquad (1)$$

where F_c is the field strengh, in dB, derived from the Cairo curve (see Figure 1)

L_p is the polarization coupling loss, in dB

B.6 3. Polarization coupling loss (L_p)

L_p is the excess polarization coupling loss. In band 5 $L_p = 0$. In band 6 at low latitudes for $|I| \leq 45°$

B.6
$$L_p = 180\ (36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2 \text{ dB/terminal} \qquad (2) \text{ (see Figure 2)}$$

where I is the magnetic dip in degrees at the terminal and θ is the path azimuth measured in degrees from the magnetic E-W direction, such that $|\theta| \leq 90°$. For $|I| > 45°$, $L_p = 0$. L_p should be evaluated separately for the two terminals, because of the different θ and I that may apply, and the two L_p added. The most accurate available values of magnetic dip and declination should be used in determining θ and I (see Figures 3, 4 and 5).

B.6 4. Nocturnal variation of annual median field strength

B.6
$$F_t = F_o - L_t \qquad (3)$$

where F_t = annual median field-strength at time t, dB above 1 μV/m

B.6 F_o = annual median field strength at midnight, dB above 1 μV/m, given by Figure 1 or a corresponding mathematical formula

L_t = diurnal loss factor, dB, given in Figure 6

In Figure 6 time t is the time in hours relative to the sunrise or
B.6 sunset reference times as appropriate. / These are taken at the ground at the midpath position for $d < 2000$ km and at 750 km from the terminal where the sun sets last or rises first for longer paths. /

5. Day-to-day and short-period variations of field strength

B.6 The field strength exceeded for 10% of the total time on a series of nights, during short periods centred on a specific time is 10 dB greater than the median value.

B.6

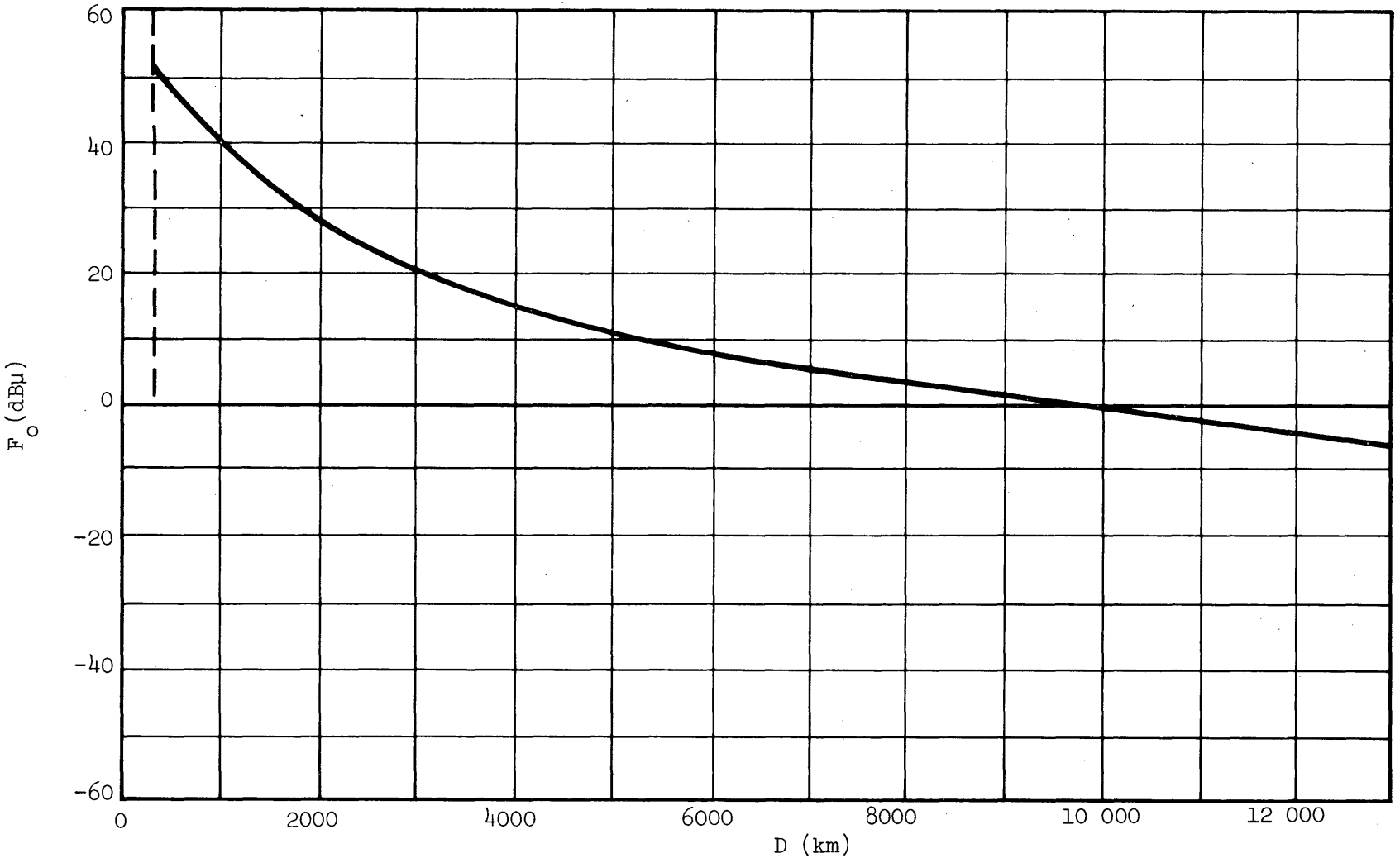

FIGURE 1

Annual midnight median value of ionospheric field strength of Cairo North/South curve

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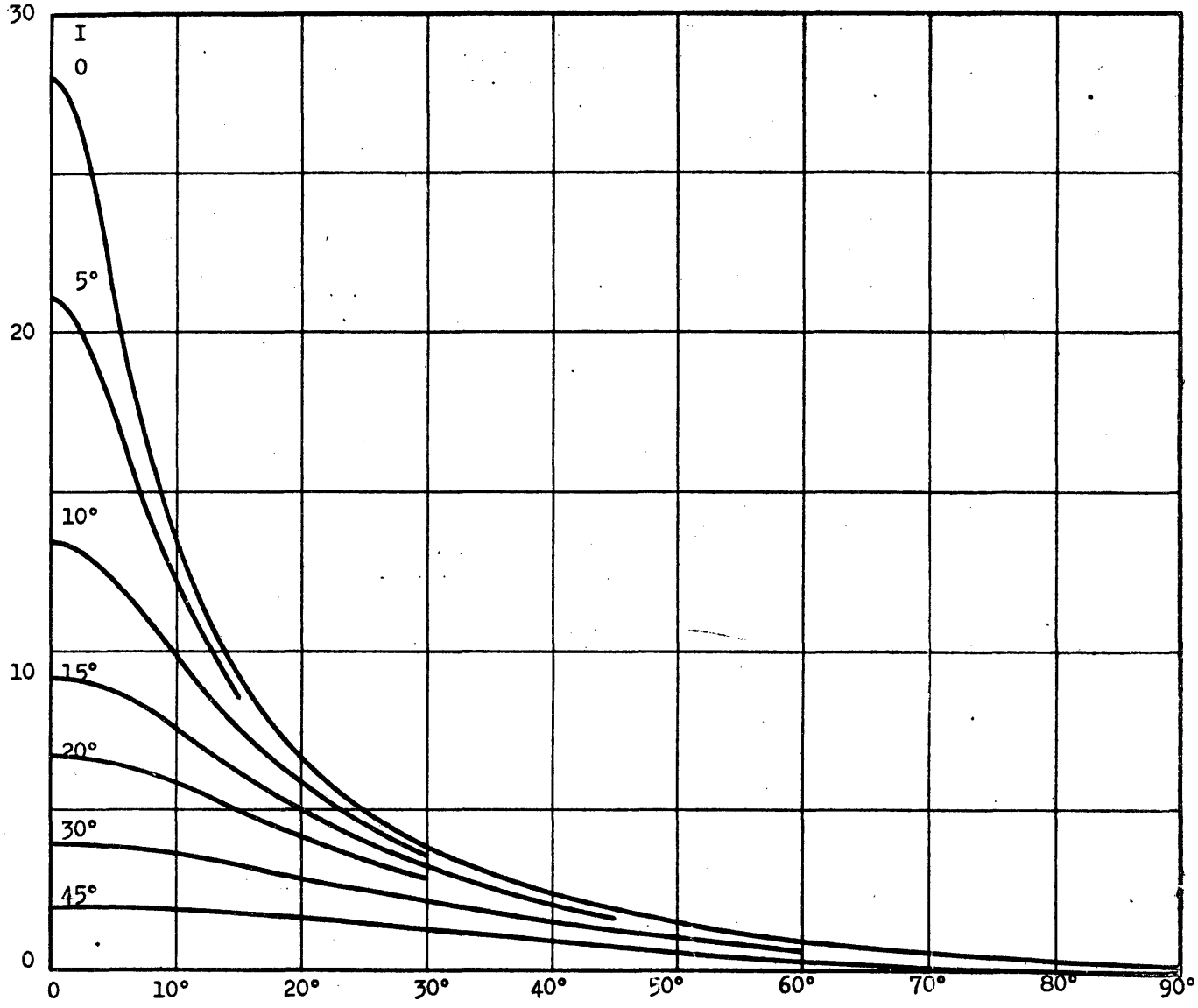


Direction of propagation relative to magnetic east-west θ (degrees)

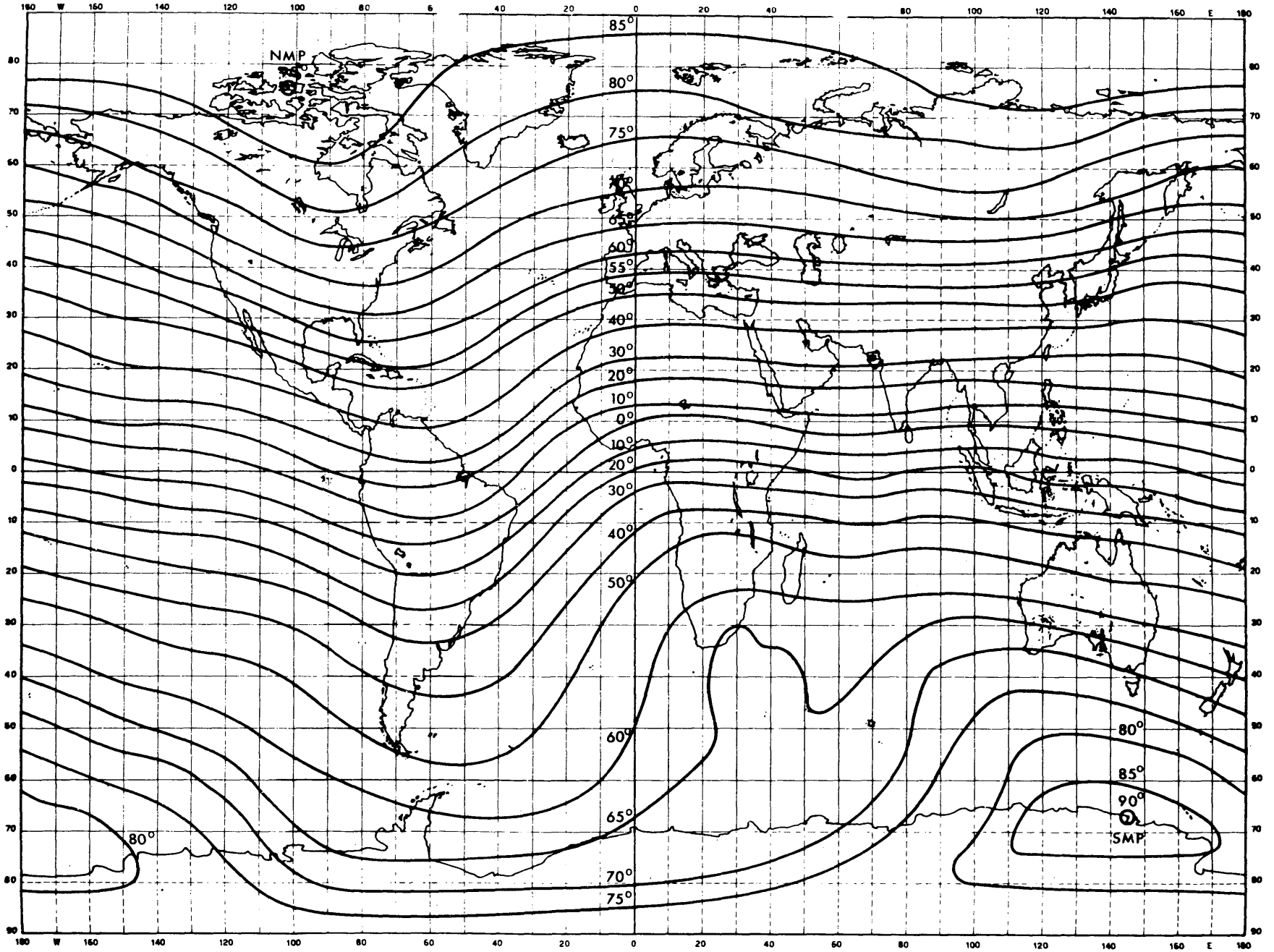
FIGURE 2

Excess polarization coupling loss L_P

$$L_P = 180\ (36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2$$

FIGURE 3

Map of magnetic dip - Carte de l'inclinaison magnétique - Mapa de inclinación magnética



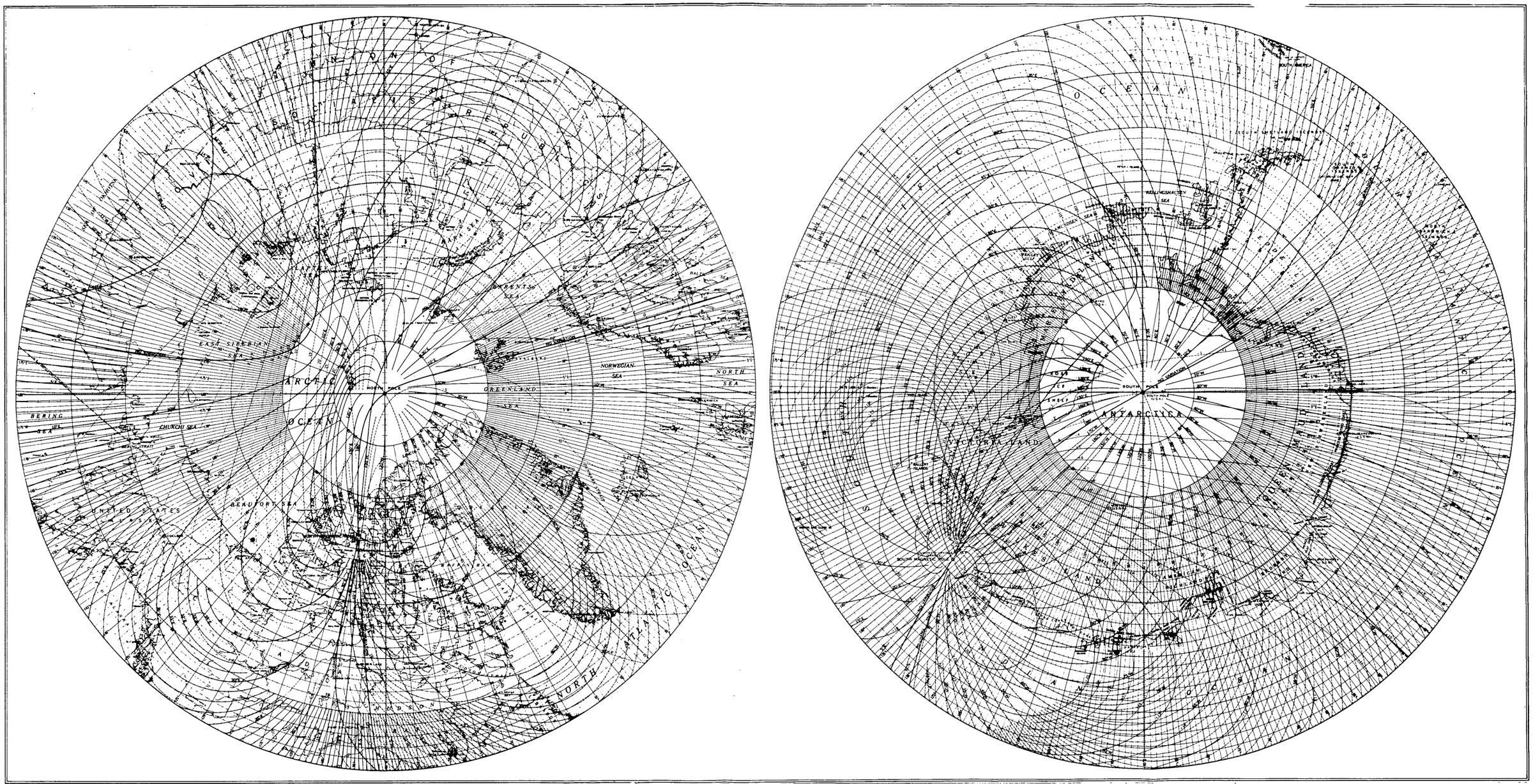


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FIGURE 4

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

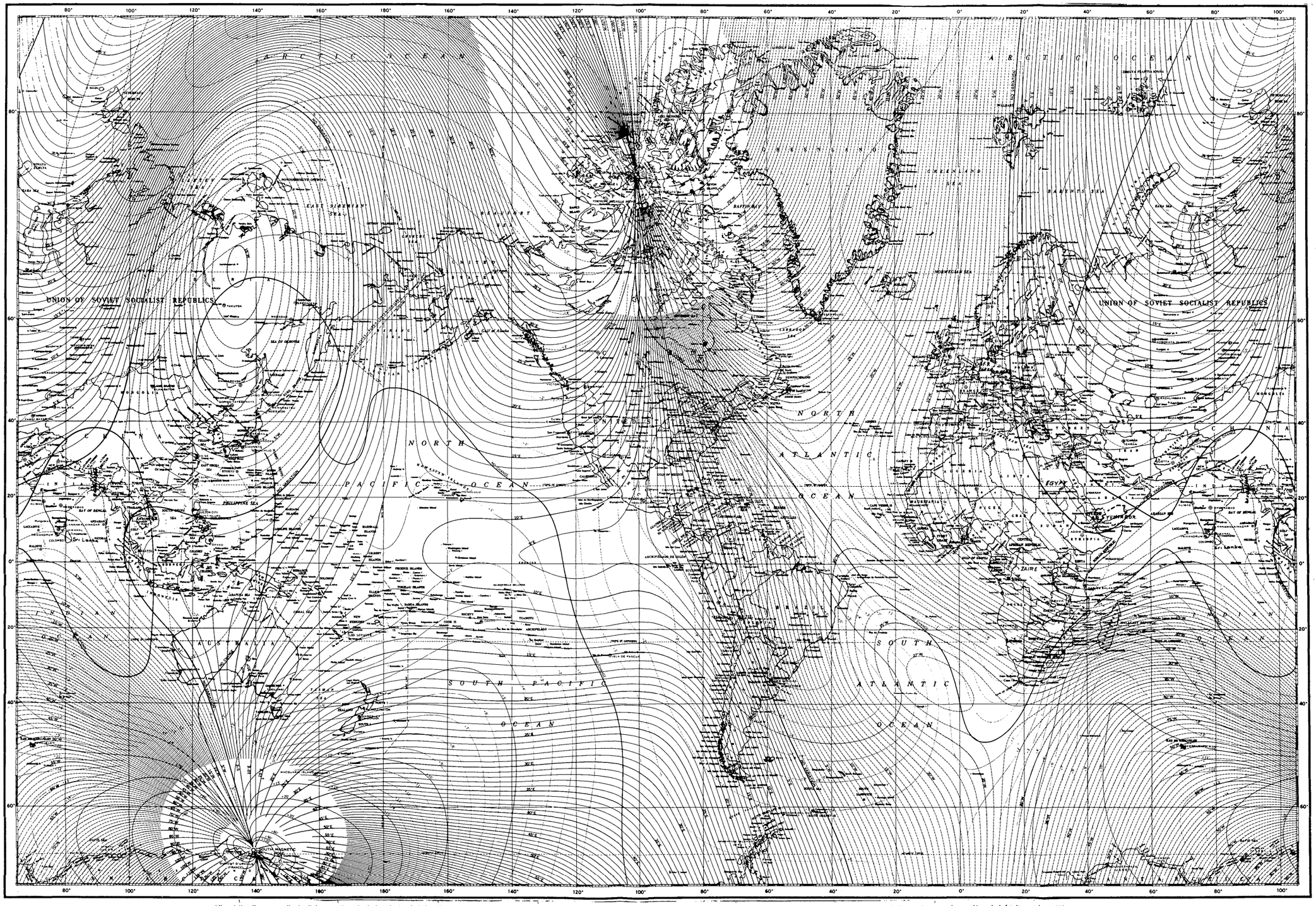

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FIGURE 5

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

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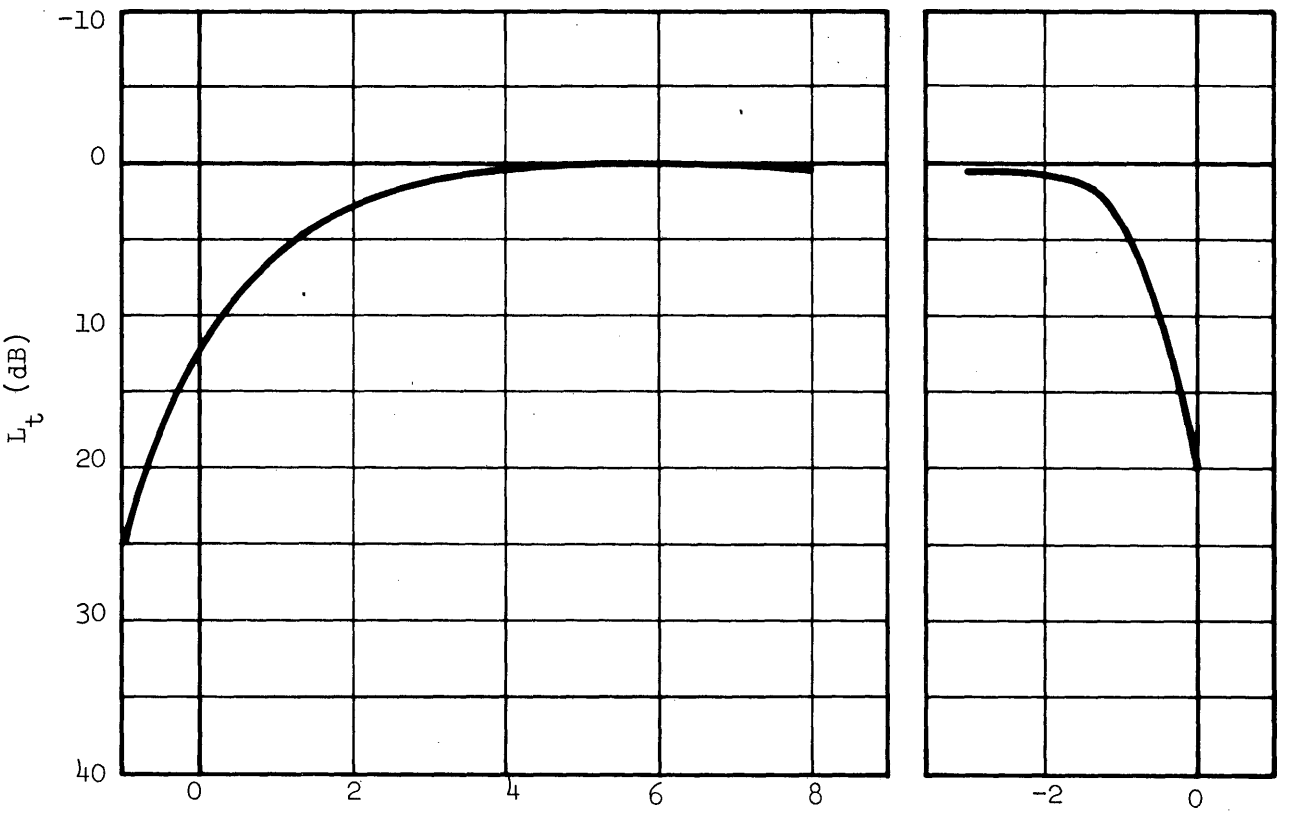

FIGURE 6

Diurnal loss factor (L_t)

Document No. 130-E
23 October 1974

PLENARY MEETING

B.7

7th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.		Title
C6	106	Chapter 10	Form of submission of requirements
C6	106	Appendix F	
C6	106	Chapter 1	Definitions. Gain of an antenna referred to a short vertical antenna (in a given direction)
C6	115	Resolution B	

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 13 pages

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CHAPTER 10

FORM OF SUBMISSION OF REQUIREMENTS

Frequency requirements must be submitted on the form shown in Appendix F.

The Annex to this Appendix contains detailed instructions concerning the manner in which the form should be completed.

APPENDIX F

FORM FOR THE SUBMISSION OF A FREQUENCY ASSIGNMENT REQUIREMENT
(See detailed instructions in Annex)

Regional Administrative Conference for LF/MF Broadcasting (Geneva, 1975)

1) Administration	Requirement sheet No.

Transmitting station

2) Name	3) Country	4) Coordinates of antenna site: Longitude (degrees and minutes)		Latitude (degrees and minutes)	
			E W		N S

5) Desired frequency (kHz)	6) Frequency ranges desired for alternative frequencies (kHz)
	to / or / to

7) Necessary bandwidth in kHz	8) Carrier power Pc (kW)	9) Hours of operation GMT
A3		from / to

Required service area		
10) Ground-wave	a) Coordinates of the centre of the area	b) Radius in km
11) Sky-wave	a) Coordinates of the centre of the area	b) Radius in km

12) Ground conductivity in service area (S/m)

3×10^{-2}	10^{-2}	3×10^{-3}	10^{-3}
3×10^{-4}	10^{-4}	3×10^{-5}	10^{-5}

Antenna characteristics

Simple vertical antenna	Antenna other than simple vertical antenna			
13) Height (metres)	15) Attach the radiation diagrams in the horizontal and/or vertical planes.			
14) Gain in dB	16) Horizontal plane	a) azimuth of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)
	17) Vertical plane	a) angle of elevation of maximum radiation (in degrees) where other than zero	b) angular width of the main lobe (in degrees)	c) gain (in dB)

18) For stations less than 100 km from the sea, attach a map showing the antenna site relative to the coastline

19) **Synchronized network**

If the station forms part of a synchronized network, list below other stations forming part of the network (if necessary, continue on the back) and for each such station complete a separate requirement sheet

Name of the station	Requirement sheet No.

20. : If this requirement covers an assignment in use indicate the frequency:..... kHz.

B.7

ANNEX 1 TO APPENDIX F

B.7

Instructions for completing the form

Box No.

B.7

1. Administration — Name of the Administration.

B.7

2. **Name of transmitting station** — **Indicate the name of the locality by which the station is (or will be) known or in which it is (or will be)** situated. Use the name **shown in the International Frequency List where this exists. Limit the number of letters and numerals to a total of 14.**

B.7

3. Country — Indicate the country in which the station is (or will be) located. Use the symbols in Table 1 of the Preface to the International Frequency List. **(Seventh Edition, together with the latest Recapitulative Supplement).**

B.7

4. Coordinates of the antenna

Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).

B.7

5. Frequency desired — Indicate : - either the assigned frequency of the channel (see No. 85 of the Radio Regulations) your Administration would prefer to use. For this purpose, indicate the centre frequency of the channels adopted at the present Session of the Conference.

B.7

- or enter in the next box the frequency ranges within which the most suitable frequency could be selected during planning. If the requirement is for a low-power transmitter channel, insert the symbol "LPC" in this box, in place of the desired frequency.

B.7

B.7

B.7

6. Frequency range desired

If a frequency has been indicated in the preceding box, indicate here the frequency range(s) within which an alternative frequency could be selected.
Example : 680 - 740 kHz or 1200 - 1300 kHz

B.7

7. Necessary bandwidth

Indicate the necessary bandwidth of the emission as defined in No. 91 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth: 4.5 kHz) and 20 kHz (AF-bandwidth: 10 kHz).

B.7

8. Carrier Power

Indicate the power supplied to the antenna transmission line by the transmitter, as defined in No. 97 of the Radio Regulations. The last column in this box is for the decimal.

B.7

9. Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT), to the nearest hour. The first pair of figures should show the time the first emission of the day begins, and the second the time the last emission ends.

Example :

from	0	7	to	2	3

B.7

10. and 11. Required service area

Indicate the radius of the proposed service area round the transmitter, in km, specifying whether the area is to be served by ground-wave and/or sky-wave. If a directional antenna is used, indicate the approximate co-ordinates of the centre of the required service area and its radius, in km.

B.7

B.7

B.7

B.7 12. Ground conductivity in the required service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely :

B.7 3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4},

3×10^{-5}, 10^{-5} (in S/m)

B.7 Put a cross in the appropriate box.

B.7 Antenna characteristics

13. and 14. Simple vertical antenna (see Annex 2).

B.7 13. Indicate the height of the antenna (in metres)

B.7

B.7

B.7

B.7

B.7

B.7

B.7

14. Indicate the gain (in dB) of the antenna referred to a short vertical antenna in a given direction. The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction, either of the two following definitions should be adopted :

B.7

The ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennas being supplied with the same power.

B.7

The ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force 300 V) in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

B.7

The ratio, expressed in dB, is the same for the two definitions.

B.7

15. to 17. Antenna other than a simple vertical antenna

15. The form should be accompanied by radiation diagram(s) of the antenna in the horizontal and/or vertical plane(s).

B.7

Or, if this is impossible, indicate :

16. in the horizontal plane:

B.7

a) the azimuth of maximum radiation, in degrees, (clockwise) from True North;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

B.7

c) the gain (in dB) (see item 14 above).

B.7

B.7

17. in the vertical plane:

B.7

a) the angle of elevation, in degrees, of maximum radiation;

B.7

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain (in dB) (see item 14 above).

B.7

When the antenna diagram shows substantial secondary lobes, indicate on a separate sheet for each lobe the azimuth and the angle of elevation of the lobe axis and the gain, in dB.

18. Stations less than 100 km from the sea

B.7

If the station is less than 100 km from the sea, attach a map (on a scale of at least 1/1,000,000) showing the site of the antenna, the scale of the map and the direction of True North.

B.7

19. Synchronized network

B.7

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the corresponding requirement sheet number of the other transmitters in the network. A separate form must be filled in for each of these stations.

B.7

20. If the **requirement corresponds to a frequency assignment** already in service, **that** frequency should be indicated irrespective whether the Administration wishes to retain the frequency or agrees to its transfer.

B.7

The Administration may supply, on a separate sheet and in a simplified form suitable for electronic processing, such additional information as it may consider useful.

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ANNEX 2 TO APPENDIX F

Vertical antennae

B.7 The following description of radiation patterns of vertical antennae is based on the C.C.I.R. publication entitled "Antenna Diagrams".

B.7 Figure No. 1 gives curves drawn so that the radius vector is proportional to the field in a given direction in a vertical plane at 1 km distance for a radiated power of 1 kW.

B.7 Figure No. 2 gives the maximum field expected in any horizontal direction as a function of the length of the antenna, the total power radiated being kept constant.

B.7 The functions are independent of the azimuth, so the power contours become horizontal, straight lines. The formulae used for calculating these power distributions are given below. It is assumed that the antennae are on perfectly conducting ground and that one kilowatt is radiated.

1. *Uniform current element* (antenna length short compared with $\lambda/4$)

B.7 $E = 300 \cos \theta$, in mV/m at one kilometre distance where

θ = elevation angle (latitude)

$(Ed)_{max} = 300$ mV/m $\sqrt{P}$ ($\theta = 0^0$ on horizon)
($\theta = 90^0$ in zenith)

2. *Quarter wave antenna*

B.7 $$E = 313.6 \frac{\cos (90^0 \sin \theta)}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 313.6$ mV/m $\sqrt{P}$

3. .311 *wave antenna*

B.7 $$E = 234.21 \frac{\cos (112^0 \sin \theta) + 0.3740}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 321.8$ mV/m $\sqrt{P}$

4. *Half wave antenna*

B.7 $$E = 190.26 \frac{\cos (180^0 \sin \theta) + 1}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 380.52$ mV/m $\sqrt{P}$

5. .625 *wave antenna*

B.7 $$E = 261 \frac{\cos (225^0 \sin \theta) - \cos 225^0}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 445$ mV/m $\sqrt{P}$

B.7 Notes - 1. E in the above equations is the same in value as the cymomotive force expressed in volts in Figure 1

2. d is the distance (taken as 1 km in the above equations)

3. P is the transmitter power in kW fed to the input of the antenna ignoring losses along the transmission line.

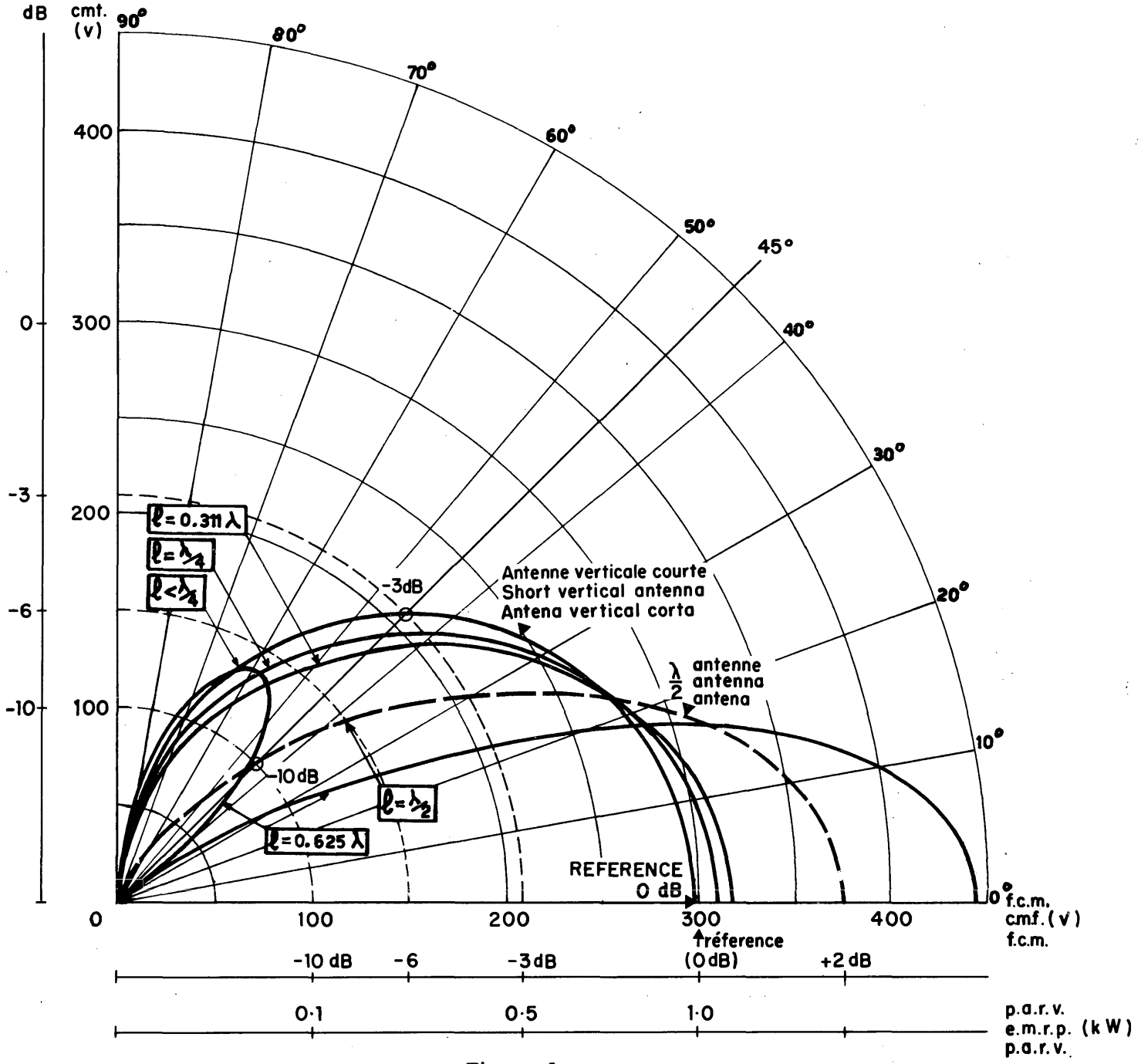
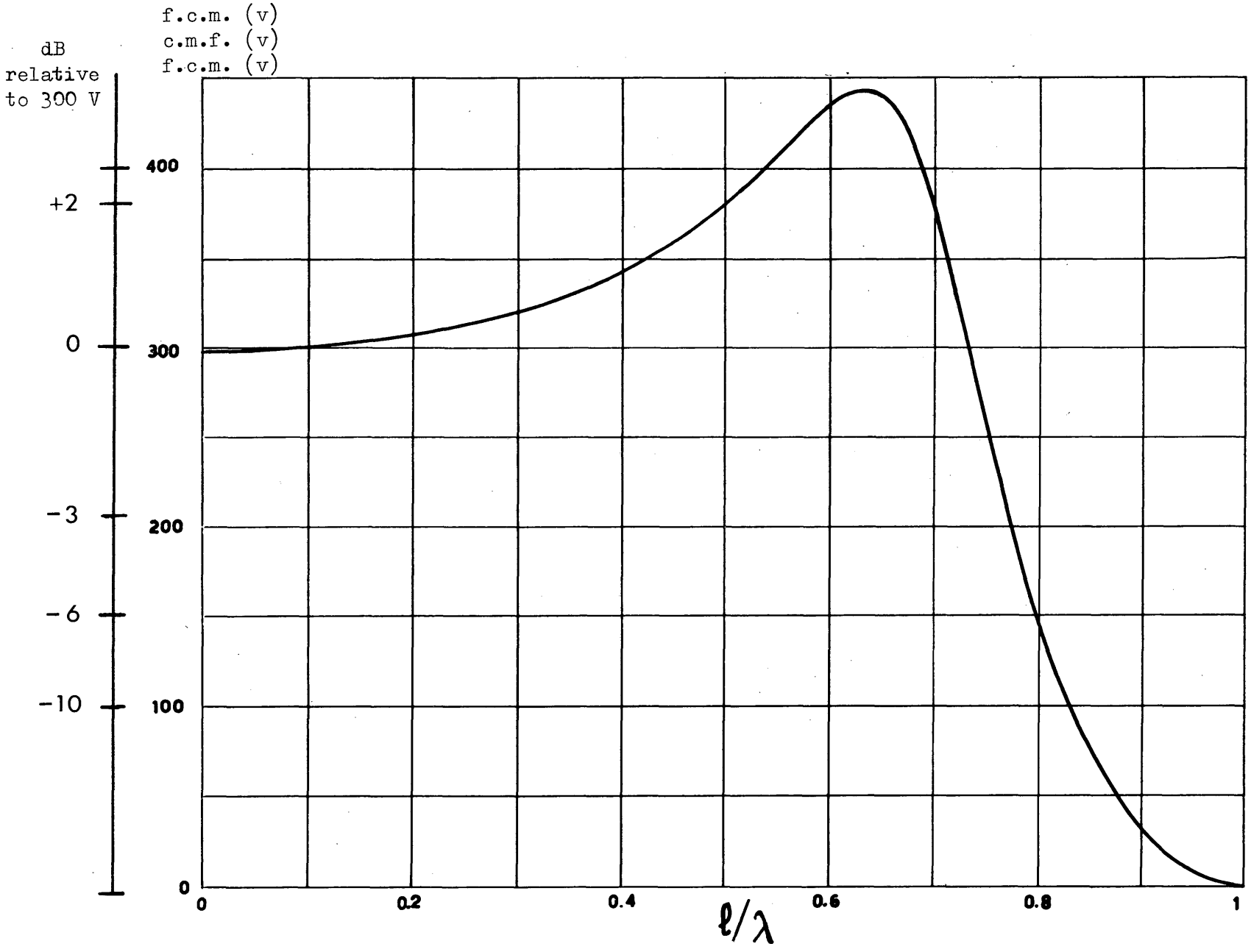

dB
cmt. (v)
90°
80°
70°
60°
50°
45°
40°
30°
20°
10°
0°
400
300
200
100
0
-3
-6
-10
ℓ = 0.31 λ
ℓ = λ/4
ℓ < λ/4
-3dB
-10dB
ℓ = λ/2
ℓ = 0.625 λ
Antenne verticale courte
Short vertical antenna
Antena vertical corta
λ/2 antenne
antenna
antena
REFERENCE
0 dB
f.c.m.
cmf. (v)
f.c.m.
100
200
300
400
réference
(0dB)
-10 dB
-6
-3dB
+2 dB
0·1
0·5
1·0
p.a.r.v.
e.m.r.p. (kW)
p.a.r.v.

Figure 1


f.c.m. (v)
c.m.f. (v)
f.c.m. (v)
dB relative to 300 V
+2
0
-3
-6
-10
400
300
200
100
0
0
0.2
0.4
0.6
0.8
1
ℓ/λ

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CHAPTER 1

DEFINITIONS

Gain of an antenna referred to a short vertical antenna (in a given direction)

The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction either of the two following definitions should be adopted :

- the ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennae being supplied with the same power;

- the ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force (c.m.f.)) of 300V in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

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RESOLUTION No. B

Relating to studies to be made by
the International Frequency Registration Board
before the Second Session of the Conference

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

that it is essential for the proper conduct of its Second Session on Planning that preparatory work should be carried out by the I.F.R.B. on the basis of the requirements submitted by Administrations and the standards adopted at the First Session,

invites Administrations

to submit their frequency requirements to the I.F.R.B. on the appropriate forms, a model of which is to be found in Appendix F, as soon as possible, after the end of the First Session, so that they are received by the I.F.R.B. not later than 1 May 1975,

instructs the I.F.R.B.

1. to supplement the information it receives by means of the following data:

- carrier power in dB per kW,
- cymomotive force (c.m.f.) in the horizontal plane,
- effective monopole radiated power (e.m.r.p.) with a short vertical antenna in the horizontal plane,
- magnetic dip and declination and geomagnetic latitude at the transmitter,

2. to prepare a list of all the requirements it receives, supplemented by the data listed in paragraph 1 above and to send a copy to each Administration in Regions 1 and 3 not later than 1 June 1975,

B.7 3. to study the requirements it receives on the basis of the decisions taken at the First Session, proceeding as follows:

B.7 3.1 it shall provisionally calculate, for each transmitter, the usable field strength resulting from the requirements, in cases where the Administration has not indicated a preferred frequency; it chooses the frequency it considers most suitable in the desired frequency range,

B.7 3.2 it shall collect this information in statistical form in order to provide a summary of the situation resulting from the requirements,

B.7 3.3 it shall draw up a report containing the foregoing results and send it to all Administrations in Regions 1 and 3, preferably by 1 July 1975, and in any case not later than 15 July 1975,

B.7 3.4 it shall make to each Administration individually whatever suggestions it sees fit with a view to eliminating any apparent incompatibilities,

B.7 4. to prepare for the Second Session of the Conference a document containing the report sent to Administrations, together with any comments it has received since sending it.

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BLUE PAGES

Document No. 131-E
23 October 1974

PLENARY MEETING

B.8

8th SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.		Title
C4	119	Chapter 1	Definitions (channel; channel spacing)
C4	58	2.1.2.	
C5	112	9.2	Planning methods
C5	105	9.3	Planning of the band 525 - 1 605 kHz
C5	105	9.4	Planning of the band 150-285 kHz
C5	112	Appendix G (with 2 annexes)	

Miss M. HUET

Chairman of the
Editorial Committee

Annexes : 14 pages

B.8

CHAPTER 1

DEFINITIONS

B.8 Channel (in AM broadcasting)

Part of the frequency spectrum, the width of which is equal to the necessary bandwidth of the broadcasting emission, and which is characterized by the nominal value of carrier frequency.

B.8 Channel spacing (in AM broadcasting)

The freqency difference between the nominal carrier frequencies of two succesive channels. This concept is of practical interest only if the difference is constant in a given frequency band.

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2.1.2. In the absence of detailed information on ground conductivity or any other relevant information, (for example, the map included in the Final Acts of the African Broadcasting Conference, Geneva, 1966) the value of 10^{-2} S/m should be used.

B.8 C.C.I.R. Report 229-2 contains information on the electrical characteristics of the surface of the Earth.

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9.2 Planning methods

The plan must be established in the spirit of the planning principles, but account should be taken of the following facts:

a) the available frequency spectrum is limited, as are the capital and human resources;

b) the problem of providing a fair and rational allocation of channels and adequate powers is particularly difficult in those regions of the world where there is a large number of countries or population groups in relatively close proximity.

A rational planning method is needed to provide the radio audience with the highest possible number of programmes and to optimize coverage.

9.2.1 Basic criteria

When planning, it is necessary to observe the following basic criteria, consisting in:

a) the use of identical carrier frequencies, with uniform channel spacing, throughout Regions 1 and 3;

b) the retention, and possibly improvement, of the coverage of the existing broadcasting stations to the maximum extent possible, having regard to the commitments of a large number of countries;

c) the reduction to a minimum of changes in existing frequency assignments;

d) compliance, to the maximum extent possible, with the requirements of the broadcasting services of all administrations, taking into account administrative subdivisions and the number of languages involved;

e) taking account of the technical parameters adopted by this session of the Conference for different broadcasting areas;

f) taking account of the specific needs of certain countries arising from the lack of alternative means in other frequency bands (for example VHF-FM), noting that the LF/MF bands are particularly suitable for the economic operation of mass communication media over large areas;

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B.8 g) to set aside a certain number of low-power channels for exclusive use by stations using powers of 1 kW or less (Chapter 9.6)

9.2.2 Practical aspects of planning

B.8 a) A theoretical lattice for frequency channel distribution should assist in the basic planning approach adopted in certain very large areas;

B.8 b) however, in view of the existing broadcasting systems and their frequency assignments, some changes may, nevertheless, have to be introduced to modify the theoretical lattice distribution configuration. In areas at the limits of a theoretical lattice plan, simplified coordination procedures could be adopted in the form of coordination distances and powers within the limits of which additional transmitters would not significantly affect the service of planned stations;

B.8 c) when a draft plan is prepared, the existing frequency assignments in Region 3 shall first be fixed to the nearest multiple of the channel spacing;

B.8 d) the theoretical network should be supplemented with other transmitters having different technical parameters in order to provide the service required, as described in paragraph 9.2.1;

B.8 e) using the above method of frequency assignment, it is in the common interest that Administrations should exercise goodwill and mutual understanding in coordinating national requirements to obtain the best possible result.

B.8 The two planning methods described above are described in general terms in Appendix G, and in detail in Annexes 1 and 2 to this Appendix.

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9.3 Planning of the band 525-1 605 kHz

9.3.1 Planning criteria

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Some delegations favoured the use of the sky-wave for night-time coverage, and, of these, some also thought that a certain number of channels should be reserved for this service so that the sky-wave fields might be suitably protected. Channels for sky-wave services should preferably be located in the higher part of the band and the lower part of the band should be used for ground-wave services as the lowest frequencies are most suitable for the coverage of very large areas by ground-wave.

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Other delegations held the view that the band should not be split into sub-bands and felt that the whole band should be used both for the ground-wave and sky-wave services. These delegations considered that this would allow the possibility of planning in an optimum manner thus satisfying the needs of the various countries.

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Both criteria for the planning of the MF band could be used by the Second Session of the Conference and coordination between countries using different criteria could take place at that time.

9.3.2 Nominal usable field strength

9.3.2.1 Sky-wave service

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The sky-wave service is generally intended for rural areas where the man-made noise is low. The nominal usable field strength (E_{nom}) for the service provided by the sky-wave shall be E_{min}*) + 6 dB. This value of E_{nom} is considered adequate and takes into account the fluctuation of the received signal.

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9.3.2.2 Ground-wave service

During daytime, the service area will in general be limited by natural noise. Accordingly, under these conditions, the value of E_{nom} will be identical to that assigned to E_{min}. However, in the presence of interference due to ground-wave of other transmitters E_{nom} will be E_{min} + 3 dB. In the presence of severe man-made noise the value of E_{nom} could be higher.

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At night, two cases can occur :

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*) The values of E_{min} given in paragraphs 9.3 and 9.4 are those given in Chapter 6 for 1 MHz.

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a) Where the ground-wave service area is not limited by the onset of fading caused by the sky-wave of this transmitter, the nominal usable field strength is :

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$$E_{nom} = E_{min} + X \text{ dB}$$

X = 11 dB for rural areas*)

X = 17 dB for urban areas

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b) Where the transmitter power is sufficiently great for the ground-wave service area to be limited by fading due to the sky-wave of the same transmitter, the nominal usable field strength may be chosen to be greater than the value given above. It should not, however, be made greater than the ground-wave field strength at the beginning of the fading zone.

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The usable field strength at the beginning of the fading zone is a function of the transmitter power, the antenna characteristics**) and the ground conductivity. The fading zone may be defined by taking the protection ratio between the ground-wave and the sky-wave to be equal to the internal protection ratio applicable to a synchronized network, i.e. 8 dB.

9.4 Planning of the band 150-285 kHz

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9.4.1 Planning criteria

The LF band should be used for the coverage of extensive areas, mainly by ground-wave. Where used, its use should be coordinated with that of the lower part of the MF band.

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9.4.2 Nominal usable field strength

Assuming that the LF service is not affected by man-made noise and taking account of the correction factor Δa for natural noise at frequencies other than 1 MHz (paragraph 6.5 and Appendix D) :

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$$E_{nom} = E_{min} + 17 \text{ dB}^{***)}$$

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*) Some delegations considered a nominal usable field strength of 65 dB to be suitable for rural areas in their countries.

**) The use of anti-fading antennae reduces the probability of occurrence of this case.

***) Certain delegations considered a value of the order of 73 dB to be appropriate in non-tropical rural areas.

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APPENDIX G

B.8

LATTICE AND OTHER METHODS OF PLANNING

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1. In a congested area, high-power stations are distributed throughout the band in virtually every channel. A planning method must be able to cope with this situation and take account of the great importance attached by various administrations to maintaining the essential form of their existing services and the need to keep the cost of any changes to a minimum.

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2. There are several aspects of planning methods. It is noted that :

a) there is a minimum power level that is required to overcome noise levels,

b) there is a limitation on powers used in particular channels if they are to be used many times over in different parts of the world for different programmes.

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3. World-wide, three major power categories may be distinguished - high, medium and low, with an extension upwards to super-power and an extension downwards to very low power. The power level in these three groupings varies from one congested region to another. In this context, as a generalization, low power can be defined as below 10 kW, medium power 10 kW to 50 kW, and high power as above 50 kW. It is noted that the maximum powers used in different parts of the world vary quite widely, but it is desirable that these maximum powers should merge smoothly from one area to another or be the same.

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4. Four method components can be used to improve the efficiency of an assembly of transmitting stations :

a) The coverage of all stations can be maximized by ensuring that they all provide coverage with respect to roughly the same usable field strength. This implies that stations of similar powers should be associated in frequency blocks.

B.8

b) The coverage of all stations should be maximized by ensuring that adjacent channels do not contain stations of too widely differing power levels.

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c) The systematic spacing of co-channel stations according to the power level. If account is taken of paragraph a), this leads to equilateral triangular configurations.

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d) A certain minimum number of stations should be associated in a similar power block grouping so that linear channel distribution schemes can be used to arrange the adjacent channel frequencies into a pattern that minimizes adjacent channel interference.

5. The question which then arises is, can some of the above components of the full lattice grid planning method be applied to the MF band and still retain mixed transmitter powers distributed throughout it? This is indeed possible, and would give some adjacent channelling improvements. However, mixing different transmitter powers would penalize the lower-power stations with a higher usable field strength.

6. To improve this situation further, it could be argued that all the powers could gradually be adjusted to the same level; this would equalize the usable fields but it would mean that the powers would tend to be either too low or too high for the service required.

7. If, on the other hand, the transmitter powers were separated into different frequency blocks for each power class, each station would still be tailored to do its particular job, and the lower-power stations could then be working with much lower usable fields, with the result that their coverage would be noticeably increased. This advantage could imply more frequency changes.

8. Many countries would consider that, in situations where transmitters of different power levels share the same channel, the higher usable field strength requirements associated with lower-power stations are coupled with the higher man-made noise levels which then render the compromise attractive. In such situations, low-power transmitters can be integrated into the high-power lattice. However, it might be necessary to increase the spacing between high-power stations to accommodate this.

9. As a compromise, it might be possible to group together channels containing transmitters of similar power into blocks of, say, three channels for each power class in accordance with the requirements submitted. This idea should be applied only where practicable. Although this would be an improvement over existing mixed systems, adjacent channel interference would be present between power blocks. This may not be ideal, because it would still leave large numbers of power block transitions. However, this compromise would render larger frequency changes unnecessary.

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10. A fuller application of a lattice approach could ease the adjacent channel interference problem, and the use of larger power blocks should reduce the usable field strengths. However, recognizing at least three power categories and the need to avoid placing low-power groups next to high-power groups and a minimum number of channels in a group (about 9 or 12), it will be seen that advantages cannot be gained without some frequency shifting equal to one or more block-widths.

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11. As a practical approach, it may be necessary to leave the pattern of stations below a frequency of about 1 000 kHz, as is the case at present. In this part of the frequency band, a computer analysis could be carried out to see whether some very elementary frequency changes might produce any significant improvements.

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12. Taking into account existing systems and the requirements of Administrations, a computer analysis could be carried out to show the advantages and disadvantages of the four method components outlined above, and any other methods that come to light.

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13. In applying the lattice grid concepts, it should be noted that additional concepts may be required to make the results correspond more closely to the particular situation. If possible, there may be some merit in distorting the map to take account of other factors e.g. geomagnetic characteristics. A fuller description of the lattice grid theory is given in Annex 1 to this Appendix.

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14. For areas remote from regions of high population density, in which low- and medium-power stations are involved, simplified coordination procedures can be contemplated. One such method is described in Annex 2 to this Appendix.

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ANNEX 1 TO APPENDIX G

FREQUENCY PLANNING METHOD FOR LF/MF BROADCASTING BASED ON GEOMETRICALLY REGULAR LATTICES AND LINEAR CHANNEL DISTRIBUTION SCHEMES

In geometrically regular lattices, it is possible to use linear channel distribution schemes in such a way that mutual interference is reduced to a minimum. In principle, the lattice consists of a sufficient number of equilateral or nearly equilateral spherical triangles having sides corresponding to the distance necessary between transmitters sharing the same channel (the co-channel distance). In the ideal case, the number C of channels available in the whole band, or, if desired, in a part of it, is evenly distributed over the surface of any pair of triangles having one side in common (a rhombus in the case of equilateral triangles). Thus, all channels used are allocated to elementary areas of identical size (see Figure 1).

In linear channel distribution schemes, channels are arranged in such a way that, in any direction considered, frequency spacings between channels allocated to equally spaced areas are constant (on the condition that channel numbers n and (C + n) are considered to be identical). The use of linear channel distribution schemes, therefore, ensures that interference conditions are identical in any channel involved throughout the network. Differences between interference in different channels are due solely to the effects of frequency on propagation. The utility of any linear channel distribution scheme can thus easily be checked by computing, for instance, the interference caused to the channel assigned to the apices of the quadrilateral. It is obvious that interference other than co-channel interference will be lowest when the relevant channels, e.g., the adjacent channels, are assigned to areas close to the centres of gravity of the two triangles constituting the equilateral. In the case of a rhombus, the distance of the centres of gravity from the apices is $1/\sqrt{3}$ times the co-channel distance.

The application of geometrically regular lattices and linear channel distribution schemes in practical planning is fairly easy. It presupposes, however, that planning is not restricted by numerous existing frequency assignments that have to be respected within very close limits. In the latter case, this planning method would not be appropriate because the adaptation of the regular lattice, including its channel distribution, to actual transmitter sites, while simultaneously respecting existing assignments, would seriously affect coverage.

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B.8 In all other cases, this method would lead to satisfactory results when, by means of distortion of the regular lattice's channel positions, channels are adapted to actual transmitter sites (see Figure 2). Although it would be desirable to have small distortions, they may in particular and even numerous cases be quite large. The method would, however, be applicable in these circumstances also, provided that the same amount of care is exercized in these circumstances as would have been necessary if this method had not been applied. Normally, the effects of lattice distortions on interference tend to cancel each other out.

B.8 In order to facilitate the adaptation of the regular lattice's channel positions to actual transmitter sites, it is useful to subdivide the planning area into quadrilaterals (of rhombic or near-rhombic shape) having sides corresponding to the predetermined co-channel distance. If different co-channel distances have to be respected in different parts of the area in question, this may well be covered by suitable adaptation of the subdividing lattice to the particular needs of any of these parts.

B.8 Should, after adequate subdivision of the planning area, one or more quadrilaterals contain a number of transmitters greater than the number C of channels available in any quadrilateral, then channels can only be assigned when the excessive transmitters in the quadrilaterals are grouped together, to form synchronized networks. Difficulties that would arise in cases where superfluous transmitters cannot be accommodated in synchronized groups would also occur if the planning procedure were not based on the method described here. Agreement will then have to be reached on either a modification of the technical parameters or a reduction in the number of requirements in the area where the difficulties occur.

B.8 It should be stressed that the planning method outlined above is primarily intended to give guidance in the planning procedure. It facilitates the assignment of frequency channels starting with the most suitable. The planning method can, however, never supersede the negotiations required between the Administrations concerned to determine the radiated power or antenna radiation patterns of the transmitters concerned.

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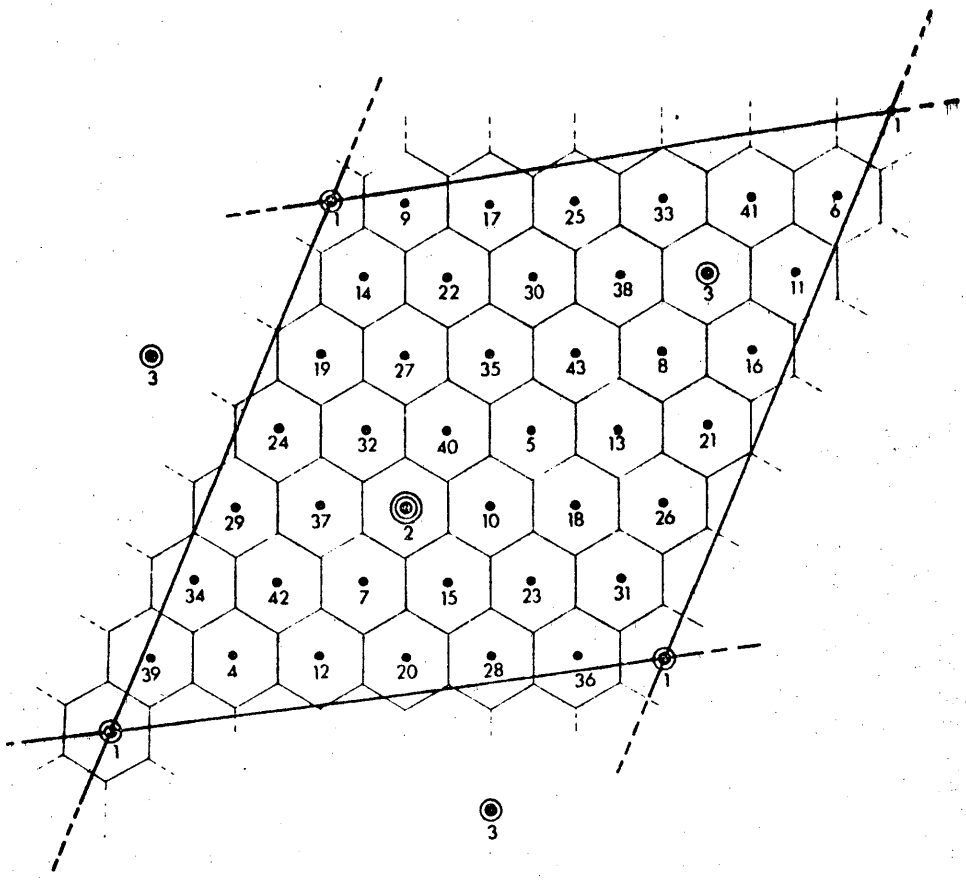

Fig. 1. - Example of a linear distribution of 43 channels.

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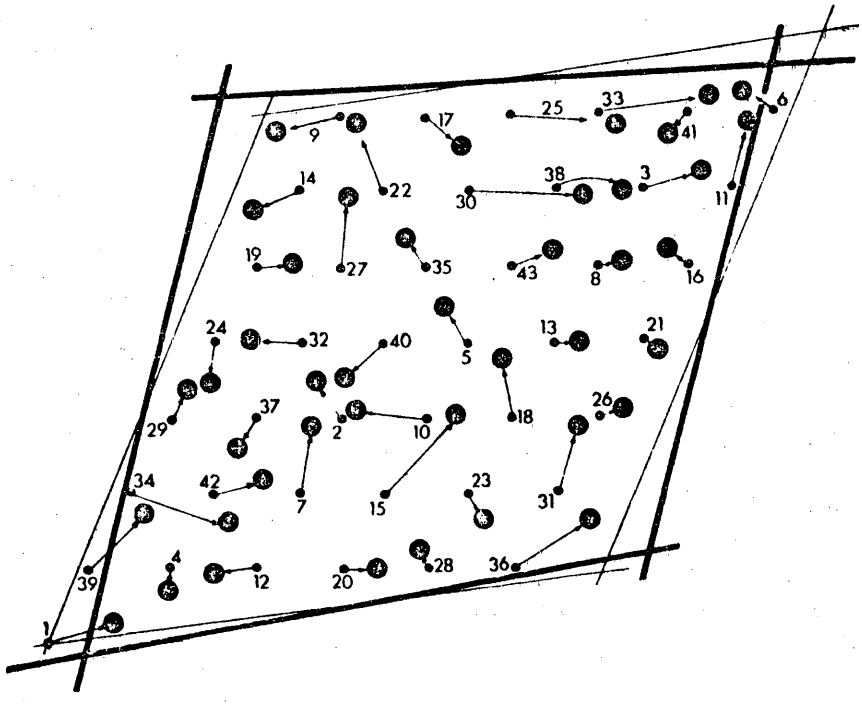

Fig. 2. - Application of a linear distribution to a network of real transmitters.

The numbered points correspond to the sites of the transmitters in the ideal network of Fig. 1. The black circles represent the real positions of the transmitters.

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ANNEX 2 TO APPENDIX G

B.8

THE USE OF COORDINATION DISTANCES IN PLANNING

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At the limits of lattice planning areas where, for instance, irregular concentrations of population exist on widely scattered islands, it would be possible to introduce the concept of coordination distances, as has been done in VHF and UHF planning.

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It is obvious that if an assignment is required for a remote Pacific island, it would be illogical to develop a further series of lattices, outside the main area to be covered, just to make such an allocation fit into a particular planning pattern. It is here and in similar areas that the coordinated distance concept is applicable, providing the means by which one or a number of channels could be allocated without affecting a basic lattice plan.

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The overall test of the possibility of using coordination distances is that the addition of transmitters to the overall system should not significantly change the planned operating conditions. It is considered, therefore, that where the co-channel station to be protected is situated in area A, as defined in Chapter 6, a nominal usable field strength of 66 dBμ might be considered the limiting field to which additional interference should not be added, with corresponding field strengths of 76 dBμ and 69 dBμ in areas B and C respectively.

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Typical powers and distances for each of the areas concerned are given in the table below. The propagation information has been taken from C.C.I.R. Report 264-2 and, although it is appreciated that this basic information is not to be used for final planning purposes, the C.C.I.R. information is suitable for comparison purposes. The permissible interfering field strength which would yield a negligible increase in interference in the planned co-channel assignment area is proposed as approximately - 16 dB with respect to that interference.

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TABLE 1

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Nominal usable field strength	Power	Coordination distance
Area A 66 dBμ	10 kW	3300 km
Area B 76 dBμ	10 kW	2500 km
Area C 69 dBμ	10 kW	3100 km

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B.8 It is considered that transmitters meeting the above qualifications should be permitted to be established by direct coordination, applying a basic plan, but on the understanding that no interference is caused.

B.8 In the case of multiple transmitters operating in such a channel, the r.m.s. power, taking into consideration any difference in distances, should be the measure of the interfering field. Obviously, lower-power transmitters might be located at shorter distances from the planned co-channel assignment.

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4.3.3 In order to facilitate planning, it should be noted that in some cases directional transmitting antennae can be used.

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 132-E
23 October 1974
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 5

(Planning Methods)

Thursday, 17 October 1974, at 1505 hrs

Chairman : Mr. K.R. BINZ (Federal Republic of Germany)

Subjects discussed	Document No.
1. Approval of the summary record of the first meeting	82
2. New documents	DT/31
3. Report of Working Group 5A	84

1. Approval of the summary record of the first meeting (Document No. 82)

The delegate of Switzerland said that the words "observer" and "suggested" should replace the words "representative" and "proposed" in item 4 on page 4, where reference was made to the statement of the E.B.U. observer. It was incorrect for observers to make proposals.

Approved, as amended.

2. New documents (Document No. DT/31)

The Chairman said that a number of the documents listed in Document No. DT/31 had already been discussed.

The other documents would be examined in due course. Document No. 83 (Australia) should be added to the list of documents dealt with by Working Group 5A.

The Committee took note of Document No. DT/31, as amended.

3. Report of Working Group 5A (Document No. 84)

The Chairman of Working Group 5A explained that the second part of the document, entitled "Planning principles", was intended for insertion in Chapter 9 of the report of the current session. The Working Group had, moreover, decided to delete the last paragraph of the document, in the belief that the matter had been dealt with by Committee 4 and did not directly concern planning.

The Chairman of Committee 4 said that he would prefer that sentence to remain, since his Committee intended to refer to Committee 5 the recommendation of Committee 4 that intermediate frequencies of receivers should be whole-number multiples of the channel spacing interval.

The delegate of the United Kingdom, supported by the delegates of New Zealand and France, said that the sentence as it appeared in Document No. 84 was much too categorical. The best course would be to replace it by a statement along the lines of paragraph 5 of Document No. DT/24(Rev.1), which merely drew attention to the advantages of selecting integral multiples of the channel spacing for intermediate frequencies of receivers.

It was so agreed.

The delegate of Pakistan, supported by the delegate of Yugoslavia, suggested that the word "requirements" in the third line of the second principle should be replaced by "needs", in accordance with the corresponding paragraph in Document No. DT/19(Rev.1).

It was so agreed.

The delegate of Norway observed that a distinction should be made between the needs of countries and the requirements of administrations.

The delegate of Spain, supported by the delegates of Australia, Sweden, Norway, Switzerland, Finland, Ireland and New Zealand, expressed regret at the fact that the preference expressed by certain countries for a more technical second planning principle, based on coverage units, had been mentioned in the introduction, not in the principles themselves, although such a reference was made in Document No. DT/19(Rev.1).

The delegates of Yugoslavia, Pakistan, Tunisia and Saudi Arabia considered that the text should be kept as it appeared in Document No. 84.

The Chairman of Working Group 5A explained that the last paragraph of the introduction to that document represented a minority view. The Working Group had left it to the Committee to decide whether the statement should appear in the final report.

A long discussion followed. The delegates of Pakistan, the Netherlands and Norway pointed out that the question of coverage units did not properly relate to that of equal rights and might be dealt with under Chapter 9.1.2, "Method of planning". The delegate of the United Kingdom suggested that a sentence might be added at the end of the introduction which would read : "However, the Working Group was not able to agree on the definition of such a unit". The Chairman of Committee 7, supported by the delegate of Sweden, proposed that the document should remain unchanged except that the third paragraph of the introduction should become a footnote, with the reference asterisk placed after the title "Planning principles".

After further discussion, the proposal of the Chairman of Committee 7 was approved, on the understanding that the asterisk and footnote could be deleted if the Committee was able to reach a satisfactory solution in connection with Chapter 9.1.2.

The delegate of India, supported by the delegates of Zambia, Pakistan, Mauritania and Lesotho, proposed that the words "priority required to be given to" should be inserted after "in particular" at the end of the second principle, to accentuate the need for preferential treatment of the developing countries.

The delegates of Switzerland, New Zealand and Spain opposed that proposal. In their view, the notion of equal rights could not accommodate that of priority.

The Chairman of Working Group 5A said that the wording of the paragraph was the result of a delicate compromise between six different proposals and should therefore remain unchanged. Moreover, the English text should be the one which appeared in Document No. DT/19(Rev.1).

In reply to questions by the delegates of Lesotho and Malawi, the delegate of China explained that the term "big and small", inserted at his delegation's proposal, carried the connotation of relative power and wealth as well as that of actual territorial size.

He proposed that the discussion of Document No. 84 be closed.

That proposal was supported by the delegates of the Federal Republic of Germany, Albania, Italy and the United Kingdom.

The Chinese proposal was adopted by 63 votes to 2, with 4 abstentions.

The meeting rose at 1755 hours.

The Secretary :

M. AHMAD

The Chairman :

K.R. BINZ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Corrigendum 1 to
Document No. 133-E
24 October 1974
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 4

(TECHNICAL DATA AND CRITERIA)

Please correct the ninth line on page 3 to read :
"would probably go down to about 9."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 133-E
23 October 1974
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 4

(Technical Data and Criteria)

Friday, 18 October 1974, at 1500 hrs

Chairman : Mr. J. RUTKOWSKI (Poland)

Subjects discussed :	Document No.
1. Channel spacing	DT/37
2. Fourth, fifth and sixth reports of Working Group 4B	79, 80, 81
3. Summary records of the 2nd, 3rd and 4th meetings	90, 93, 94
4. Channel spacing (continued)	

1. Channel spacing

The discussion on this subject was continued from the previous meeting of Committee 4.

The delegate of the Soviet Union drew the Committee's attention to the compromise solution set out in the draft resolution proposed by his delegation in Document No. 53. That proposal had been inspired by his delegation's concern that future frequency planning should entail as few changes in existing transmitter frequencies as possible, involve the least possible cost to administrations and give a plan that could be implemented with the least possible delay. The test results given in Document No. 17 indicated that the draft resolution could provide an acceptable overall solution for Regions 1 and 3.

In reply to a question from the delegate of the United Kingdom, he confirmed that the draft resolution implied that the band should be divided into two parts : one with 10 kHz spacing in which Region 3 countries would keep their existing transmitters while Region 1 countries changed theirs to co-channel values, and one with 9 kHz spacing, in which Region 1 countries would keep their existing transmitters while Region 3 changed theirs.

The delegate of the United Kingdom said that that would cause difficulties in Region 1 which did not have a uniform 9 kHz chanelling plan.

The delegate of the Netherlands reiterated the views put forward in Document No. 33 and, in particular, in paragraph 4 of that document. He also referred to C.C.I.R. Report 400, adopted unanimously at the XIIIth Plenary Assembly of the C.C.I.R., which clearly indicated that 8 kHz was regarded as the optimum channel spacing. In his opinion, the Conference should follow the C.C.I.R.'s guidance in the matter.

The Chairman of the Ad Hoc Group on Channel Spacing which had been set up at the previous meeting of Committee 4, reported on the results of his Group's work (see Document No. DT/37). He noted that in cases where a change of frequency plan resulted in the creation of new unfilled channels, the use of those channels to improve the existing situation would entail moving some carrier frequencies by a larger amount than those indicated in the document, i.e., by 6 kHz or more. In cases where channels were lost through plan changes, the Group had not considered what action would be necessary to restore those assignments.

The delegate of the United Kingdom noted that in changing the Copenhagen/Africa Plan to a uniform 9 kHz spacing, all channels except one would have to be changed and one channel would be lost, thus making that particular changeover more difficult to achieve. The least number of channel changes, on the other hand, would be experienced by countries changing from a 10 kHz to an 8 kHz spacing.

The delegates of Nigeria and the U.S.S.R. said that although the change from the Copenhagen/Africa Plan to 9 kHz spacing involved a large number of channel changes most (113) of those were 1 kHz shifts only and would pose only a minor problem to administrations.

In reply to the delegate of India, who asked what number of channel changes would be required in going from the Copenhagen/Africa Plan to 9 kHz spacing if channels were made coincident on the second rather than the first channel, the Chairman of the Ad Hoc Group said the number of channel changes would probably go down by about 9.

In reply to the delegate of Egypt, who asked what number of transmitters in Regions 1 and 3 would be compelled to change frequencies as a result of the various types of changeover, the Chairman, supported by the Technical Secretary, explained that the data required to calculate those figures in detail would only become available after a plan had been established, in other words not until the Second Session of the Conference.

The delegate of Australia said that on a rough estimate there were about 1200 transmitters in Europe (10 per channel) and 3000 in Asia (30 per channel). On that basis, adoption of uniform channel spacing of 8, 9 or 10 kHz would involve Regions 1 and 3 in the following changes :

New frequency spacing	No. of channels requiring change			New channels			No. of transmitters compelled to change frequency
	R1	R3	Total	R1	R3	Total	
8 kHz	107	81	188	14	27	41	3500
9 kHz	119	96	215	- 1	12	11	3900
10 kHz	110	-	110	-13	-	-13	1200

The delegate of Spain felt that if the Conference was not to reach an impasse it would be desirable to eliminate from the discussion those options that would never reach a consensus (such as adopting 10 kHz spacing in Region 1, which could not afford to lose 13 channels in an already congested area) and concentrate the Committee's attention on reaching some workable solution.

The Chairman proposed adjourning the discussion until after the next two agenda items had been discussed. When discussion resumed he would like an indication of how many delegations :

i) still insisted on retaining 10 kHz spacing,

ii) still insisted on retaining the Copenhagen/Africa Plan,

iii) were prepared to change to 8 kHz spacing, or

iv) were prepared to change to 9 kHz spacing. Such an indication of the current of opinion in the Committee would assist him in reporting the Committee's views to the Plenary.

2. Fourth, fifth and sixth reports of Working Group 4B (Documents Nos. 79, 80 and 81)

The Chairman of Working Group 4B introduced Document No. 79.

The delegate of the United Kingdom suggested that the words "been neglected" at the end of the footnote on page 2 in the English text should be replaced by the words "not been taken into account".

It was so agreed.

Document No. 79, as amended, was approved.

The Chairman of Working Group 4B introduced Document No. 80.

Replying to a point raised by the delegate of France, he explained that the dotted curve in the diagram shown in the Annex was merely intended to indicate the existence of an interrelationship between the slopes of steepness of the two solid curves. It could therefore be dispensed with.

It was agreed to delete the dotted curve from the diagram.

After a brief discussion in which the delegations of the German Democractic Republic and France took part, it was agreed to delete the words "for rural areas" at the end of the second sub-paragraph of paragraph 1 on page 1.

The Chairman of the Ad Hoc Group set up to produce the draft Resolution relating to bandwidth saving modulation systems, introducing Document No. 81, said that the words "on the feasibility of introducing" should be inserted between the words "C.C.I.R." and "such" in the second operative paragraph under "requests". The figure "1" at the beginning of the first paragraph under "requests" should be deleted.

The delegate of France suggested that the words "taking account of compatibility with existing receivers" should be added at the end of the first operative paragraph under "requests".

The Chairman of the Ad Hoc Group, supported by the delegate of Tunisia, accepted that suggestion.

It was so agreed.

The delegate of the U.S.S.R. wondered whether it would not be more appropriate if the request to the next competent World Administrative Radio Conference contained in the second operative paragraph were issued by the Second Session of the Conference.

The Executive Secretary said that the First Session was structurally independent from the Second Session and was empowered to formulate requests or recommendations to other bodies. He quoted precedents of similar action being taken on past occasions.

The delegate of the U.S.S.R. said that he was satisfied with that explanation.

In reply to a point raised by the delegate of France, the Chairman said that the French and Spanish texts of Document No. 81 would be brought into line with the English text after the meeting.

Document No. 81, as amended, was approved.

3. Summary records of the second, third and fourth meetings (Documents Nos. 90, 93 and 94)

The summary record of the second meeting (Document No. 90) was approved.

The delegate of the United Kingdom suggested that the words "start with" in the sixth line on page 4 of Document No. 93 should be replaced by the word "obtain".

It was so agreed.

The summary record of the third meeting (Document No. 93) was approved with that correction.

The delegate of India said that the word "this" in the second line of the last paragraph on page 2 of Document No. 94 should be replaced by the word "his". The word "experience" in the top line on page 3 should be replaced by the words "measurements carried out".

It was so agreed.

The summary record of the fourth meeting (Document No. 94) was approved with those corrections.

4. Channel spacing (continued)

The Chairman asked delegates whether they were prepared to hold a show of hands on the four questions he had outlined earlier during the meeting. He emphasized that delegations were not being called upon to vote but only to give an indication of their respective positions on the subject of channel spacing so as to assist him in making a verbal report to the Plenary Meeting.

The delegate of Belgium remarked that many delegations might be inclined to favour the Copenhagen/Africa Plan arrangements if the solution they preferred had no chance of being adopted. The choice was an extremely

delicate one and, while appreciating the Chairman's concern, he felt that it might be advisable to give delegations more time for consultations with a view to stating their definitive positions at the Plenary Meeting.

The delegate of Italy supported that view.

The delegate of the Federal Republic of Germany said that he would also prefer the poll to be postponed until the Plenary Meeting. However, if a show of hands was held in the Committee, delegations should not be asked to pronounce themselves on the Copenhagen/Africa Plan but only on the uniform channel spacings of 8, 9 or 10 kHz.

The delegate of Japan said that he fully understood the Chairman's position but considered that the proposed show of hands would be premature.

The delegate of New Zealand was in favour of the Chairman's proposal to conduct a poll. He did not agree that such a step would be premature or that further consultations over the weekend were likely to produce any significant result.

The delegates of Morocco, Syria, Libya, Mauritania, Liberia and Mauritius associated themselves with those remarks.

The delegates of the Netherlands, France, Malaysia, the United Kingdom, Yugoslavia, Laos, Zambia, Pakistan and Egypt agreed with the delegations of Belgium and Japan that the poll should be deferred.

The delegate of Kuwait suggested that the question whether or not to hold a poll should be decided by a show of hands.

The delegate of New Zealand was unable to support that suggestion. If delegates wished for extra time, they should be allowed it.

The delegate of Papua New Guinea remarked that it would be helpful if the questions which the Chairman proposed to put to delegations could be set out in writing.

The delegate of Lebanon supported the suggestion made by the delegate of Kuwait.

The delegate of Sweden wondered whether it might not be possible to hold a further meeting of Committee 4 for the specific purpose of conducting the poll.

After consulting the Deputy Secretary-General, the Chairman said that a short meeting of Committee 4 could be held on Monday, 21 October 1974, at 0900 hours.

The delegates of Japan and Nigeria supported the proposal to hold a further meeting of the Committee.

It was so agreed.

The meeting rose at 1830 hours.

The Secretary :
C. GLINZ

The Chairman :
J. RUTKOWSKI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 134-E
23 October 1974
Original : English

PLENARY MEETING

Republic of Korea

STATEMENT

The Delegation of the Republic of Korea on behalf of its Government, hereby states that :

1. Any reservation made in connection with, or any statement made against the validity of its representation of the Republic of Korea in the LF/MF Broadcasting Conference, is without foundation and without legal effect;

2. Therefore, that the Korean Delegation rejects any statement by any Delegation concerning the representation of the Republic of Korea;

3. In this connection, that the Korean Delegation rejects the irresponsible observation (Document No. 96-E, Annexes 3 and 4) made by the Delegations of Hungary, Byelorussia, Bulgaria, Ukraine, Poland, Czechoslovakia, Democratic German Republic, Mongolia, U.S.S.R. and Roumania, with a view of the position of the Republic of Korea regarding North Korea's participation in international organizations enunciated in the special Foreign Policy Statement by the President of the Republic of Korea on 23 June 1973, as follows : "We will not oppose North Korea's participation with us in international organizations if it could serve to the easing of tension and the furtherance of International Cooperation."

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 135-E
23 October 1974
Original : English

Note by the Chairman of the Conference

On request by the Head of the Delegation of the Federal Republic of Germany, the attached letter is brought to the notice of the Conference.

Annex : 1

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ANNEX

DELEGATION OF THE
FEDERAL REPUBLIC
OF GERMANY

Geneva, 23.10.1974

To the Chairman
of the Broadcasting Conference
Director-General Mr. F. Locher

Geneva

Dear Mr. Chairman,

I have the honour to refer to the letter of the Delegation of the D.D.R. of 17 October 1974, published in Document No. 123. I should like to draw the attention of the Conference to the following :

1. According to Annex II, No. 408, of the International Telecommunication Convention, Montreux 1965, each Member and Associate Member shall be free to make up its delegation as it wishes.

2. It is in keeping with the Annex IV A and B of the Quadripartite Agreement of 3 September 1971 that the Federal Republic of Germany represents the interests of Berlin (West) in International Conferences and International Organizations and that permanent residents of Berlin (West) participate jointly with participants from the Federal Republic of Germany in international exchanges.

3. The delegation of the Federal Republic of Germany states that it does not fall within the competence of the Conference to decide whether matters of security and status of Berlin are affected by the Conference work.

I should like to ask you, Mr. Chairman, to bring this statement of the Federal Republic of Germany to the notice of the Conference.

Please accept, Mr. Chairman, the assurances of my distinguished consideration.

(signed) J. KUPPER

Head of Delegation

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 136-E
23 October 1974
Original : English

COMMITTEE 6

SUMMARY RECORD

OF THE

SECOND MEETING OF COMMITTEE 6

(SUBMISSION OF REQUIREMENTS)

Wednesday, 16 October 1974, at 1035 hrs

Chairman : Mr. M. HARBI (Algerian Democratic and Popular Republic)

Subjects discussed :	Document No.
1. Information (technical characteristics) which administrations should furnish to the I.T.U. when submitting frequency requirements for incorporation in frequency assignment plans	57, 58, 60 DT/21 and Add. DT/25
Form in which such information should be notified to the I.T.U.	DT/21 and Add.
2. Final date by which the information must reach I.T.U. to allow for necessary processing by I.F.R.B. and distribution to administrations	

1. Information (technical characteristics) which administrations should furnish to the I.T.U. when submitting frequency requirements for incorporation in frequency assignment plans (Documents Nos. 57, 58, 60, DT/21 and Add., DT/25) and the form in which such information should be notified to the I.T.U. (DT/21 and Add.)

The Chairman drew attention to Documents Nos. 57, 58 and 60, which had been referred to the Committee by Committee 4, and to Document No. DT/21 and its Addendum, which were intended to serve as a basis for the Committee's work. Document No. DT/21 was accompanied by Document No. DT/25; the latter document had, however, been superseded to some extent by Document No. 72, which contained a number of definitions drawn up by Committee 4 and approved by the Editorial Committee.

He suggested that the Committee should first proceed to a general exchange of views on Document No. DT/21 and its Addendum, and then set up a working group to study the final layout and content of the form on which administrations were to submit their frequency requirements.

It was so agreed.

The Chairman, referrring to the section headed "Necessary bandwidth" on page 2 of the Addendum to Document No. DT/21, said that "No. 89" should be replaced by "No. 91" in the first sentence.

The delegate of the United Kingdom, referring to page 4 of the Addendum to Document No. DT/21, said that the words "at least" should be replaced by the words "less than" in the first sub-heading and in the third line of the text under that sub-heading. That correction concerned only the English text.

The delegate of France, referring to the section of the draft form (Document No. DT/21) headed "Service area", said that it might be useful to specify whether the sub-section headed "Ground-wave" extended to rural areas or was limited to urban areas only, since a higher usable field strength could no doubt be accepted in the case of urban areas with a high level of industrial noise.

The Vice-Chairman of the I.F.R.B. said that it might be appropriate to replace the term "service area" by "area to be served", in view of the fact that the service area was henceforth to be defined in terms of usable field strength. With regard to the comment by the French delegate, a footnote might be inserted requesting administrations to indicate whether the area to be served included areas with a high level of industrial noise.

Replying to a question by the delegate of the Netherlands, the Chairman said that the service area was defined in a C.C.I.R. Recommendation (Annex to Document No. 10, pages 245-247) and in Document No. DT/25. It would not be possible for administrations to determine the exact extent of the service area because it would be an outcome of the planning.

That was why the suggestion had been made to use the term "area to be served" in the draft form.

The delegate of Nigeria said that he would prefer the term "proposed service area".

The delegate of the United Kingdom suggested "required service area" as a possible alternative.

The delegate of Japan said that his delegation had submitted a proposal concerning the use of the term "nominal service area" which was currently being considered by Committee 5.

The Chairman suggested that the Working Group to be set up should be requested to study the matter, taking into account the views which had just been expressed and the pertinent discussions in Committee 5.

It was so agreed.

The delegate of India said that the box heading "Peak power" in the draft form might give rise to some confusion, since the term "carrier power" was used in the corresponding section of the Addendum.

The Vice-Chairman of the I.F.R.B., referring to the English text only, said that "carrier power" was the correct term and that the box heading in question should be amended accordingly.

The Chairman having drawn attention to an error in the English text of the draft form, the delegate of the United Kingdom suggested that the box heading "Effective radiated power of short vertical antenna (e.m.r.p.) in maximum direction" should be replaced by "Effective monopole radiated power (e.m.r.p.) in maximum direction".

It was so agreed.

The delegate of the United Kingdom, referring to the third box under the heading "Antenna characteristics", expressed the view that the sub-heading "Gain (in relation to isotropic)" should be replaced by "Gain (referred to a short vertical antenna) in the horizontal direction". The first and second lines of the last sub-paragraph on page 3 of the Addendum should be amended along the same lines, and "No. 100" in the second line of that sub-paragraph should be replaced by "No. 102".

Following an exchange of views concerning the calculation of gain in the horizontal and vertical planes for short vertical, semi-isotropic and isotropic antennae, the Chairman suggested that the Working Group to be set up should be requested to study the question of defining a single reference antenna and to prepare a proposal which could be submitted to the Conference for adoption.

It was so agreed.

The delegate of the Netherlands, referring to point b) in the box headed "Distance of antenna from sea, for stations at less than 100 km from sea", expressed the view that some reference to a maximum distance should be included.

The Vice-Chairman of the I.F.R.B. suggested that the previous speaker's concern might be met if a phrase such as "for which the distance from the sea is less than 100 km" was inserted after "azimuths" in point b).

The delegate of the Netherlands welcomed that suggestion.

The delegate of France considered that the large box under the heading "Antenna other than simple vertical antenna" was not sufficiently clear. The items of information to be supplied if it was not possible to attach radiation diagrams should be set out in two columns, relating respectively to angle and gain.

The Chairman agreed that every effort should be made to ensure that the final layout of the form was as clear and logical as possible.

The delegate of Tunisia proposed an amendment to the section headed "Mean value of ground conductivity in the service area", on page 3 of Addendum 1 to Document No. DT/21, that would follow the wording of Document No. 58, mentioning specifically the map included in the Final Acts of the African Broadcasting Conference.

The Vice-Chairman of the I.F.R.B. suggested deleting the whole sentence, so as to encourage administrations to supply as much information as possible.

The delegate of the United Kingdom suggested a compromise to the effect that the sentence in question should be amended to read : "In the absence of such information, or any other relevant information, the value of 10^{-2} S/m should be used."

The Chairman and the delegates of France and Spain supported that compromise, as it did not seem desirable to introduce complications into the form, and as all such information would be given in the Final Report of the Conference anyway.

The delegate of the U.S.S.R. suggested including a sentence encouraging administrations to give any other information they might judge useful.

Referring to the section headed "Compression" on page 2 of Addendum 1 to Document No. DT/21, the delegate of the United Kingdom inquired why administrations were to state simply whether they used compression or not, as all broadcast transmissions were in fact compressed. Perhaps "yes" and "no" should be replaced by "limited" and "high" compression.

The Vice-Chairman of the I.F.R.B. agreed, adding that since C.C.I.R. Recommendation No. 449 did not specify a value distinguishing limited and high degrees of modulation compression, Committee 4 should be requested to provide such a value.

At the suggestion of the Chairman, it was decided to set up a Working Group (6A) to discuss the problems raised : the group would consist of the delegations of the U.S.S.R., France, the United Kingdom, Tunisia, Algeria, the Federal Republic of Germany, Nigeria, Japan, Spain, and any others who were interested, and the Chairman offered his services as Chairman of the Working Group, as he had taken part in preparing Document No. DT/21 and its Addendum.

The representative of the I.F.R.B. drew attention to an error on page 2 of Addendum 1 to Document No. DT/1, where "transmitter" should be replaced by "transmission" in the section on necessary bandwidth and to the fact that Document No. DT/29 contained, on page 2, a request by Sub-Working Group 5B-2 to Committee 6, and proposed that that request should be considered by Working Group 6A.

It was so decided.

2. Final date by which the information must reach I.T.U. to allow for necessary processing by I.F.R.B. and distribution to administrations

The Chairman reminded the Committee that the final date depended on the nature of the work the I.F.R.B. would be required to do by the First Session of the Conference. The nature of that work should therefore be discussed before the final date was fixed.

The delegate of Pakistan suggested that, as administrations would request frequency assignments as close to the ones in present usage as possible, the I.F.R.B. should calculate expected interference and incompatibilities on that basis, with the aid of the computer, and then make pertinent suggestions to administrations. Thus the work of the Second Session would be reduced, and present usage would be altered as little as possible.

The delegates of France and Italy supported that suggestion, but considered it unnecessary for the I.F.R.B. to prepare draft plans, as they would probably be rejected as usual.

The delegate of the United Kingdom, supported by the delegates of the Netherlands and Nigeria, thought that althogh the draft plan prepared by the I.F.R.B. for the African Broadcasting Conference had been modified considerably,

it had still served a useful purpose as a basis for discussion. One or even two I.F.R.B. draft plans would therefore be almost essential for the freqency planning conference.

The final date for submission of frequency requirements could not be fixed until Committee 5 had decided on the planning method.

The delegate of Nigeria expressed the hope that the plans for the Second Session would be based on a uniform channel spacing, to be agreed at the First Session.

The meeting rose at 1210 hours.

The Secretary :
R. PLUSS

The Chairman :
M. HARBI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 137-E
23 October 1974
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FOURTH MEETING OF COMMITTEE 5

Friday, 18 October 1974, at 1500 hrs

Chairman : Mr. K.R. BINZ (Federal Republic of Germany)

Subjects discussed :	Document No.
1. Approval of the summary record of the second meeting	89
2. Chapter 9 (Planning Method) of the report of the First Session of the Conference	64 DT/22(Rev.)
3. Reports of Chairmen of Working Groups	
3.1 Report of Working Group 5A	91
3.2 Reports of Working Group 5B	62(Rev.1), 87
4. New Zealand	68

1. Approval of the summary record of the second meeting (Document No. 89)

Approved.

2. Chapter 9 (Planning method) of the report of the First Session of the Conference (Document No. 64, DT/22(Rev.))

The Chairman invited consideration of the proposals for the structure of Chapter 9 contained in the Annex to Document No. DT/22(Rev.).

The delegate of Italy pointed out that the words "Planning method" or "Method of planning" were repeated three times as the titles of Chapter 9 and sections 9.1 and 9.1.2 and asked whether some way could be devised of avoiding such repetition.

After a brief discussion, it was agreed, on the proposal of the delegate of Spain, to delete "9.1 Method of planning", and retain the other titles unchanged, re-numbering the sections and sub-sections from 9.1 to 9.6.

3. Reports of Chairmen of Working Groups

3.1 Report of Working Group 5A (Document No. 91)

The Chairman of Working Group 5A introduced the Working Group's second report (Document No. 91) which contained definitions of nominal usable field strength, usable field strength and service area and a new definition of nominal service area.

The report (Document No. 91) was approved without comment.

3.2 Reports of Working Group 5B (Documents Nos. 62(Rev.1) and 87)

The Chairman of Working Group 5B introduced the report on synchronized networks (Document No. 62(Rev.1)), and the report on low power channels (Document No. 87), drawing attention to an omission in the French text of Document No. 87.

Document No. 62(Rev.1)

The Chairman pointed out that in the last line on page 4, the figure / 8 / was in square brackets because it was subject to confirmation by the Chairman of Committee 4.

The delegate of Spain drew attention to a minor error in the Spanish text of page 4, and the delegates of Norway and France to a minor error in the fifth line of page 6.

The delegate of the United Kingdom said that in various places throughout the text, for example, the heading on page 4, the word "transmitter" should be replaced by the word "transmission". It was agreed that the delegates of the United Kingdom and France, in consultation with the Chairman of Working Group 5B, should introduce that editorial amendment wherever necessary.

The delegate of Italy, supported by the delegates of France and Yugoslavia, urged that the information given on pages 3-4 should be included in the main body of Chapter 9 rather than in an appendix. It was so agreed, and the document was amended accordingly.

The report (Document No. 62(Rev.1)), as amended, was approved.

Document No. 87

The delegate of Norway said that, during the discussion in Working Group 5B, his delegation had reserved its position because it could not agree with the wording of paragraph 2 of Chapter 9.3.1 and of two sentences on page 3 of Document No. 87. The second sentence in 9.3.1 would not cause difficulties where the land boundary of one country was adjacent to that of a neighbouring country, but where sea intervened it would create the possibility of having the sea area interfered with from both sides. He therefore believed that that sentence should refer not to "the territory of any other country" but to "the boundary of its own border" and should further state that, where sea intervened between two countries, the boundary should be considered as being in the middle of the sea area, or as specified in other agreements between the countries concerned.

The delegate of the United Kingdom was not in favour of any alteration of 9.3.1 which he believed would damage the simple basis of the new scheme for low power channels. Unless the main object of a transmitter was to serve shipping or oil rigs, the overall situation would be worsened rather than improved and greater interference would be caused to transmitters on the coast line of coastal states if the Norwegian proposal were adopted. In his view the case envisaged by the Norwegian delegate could be adequately covered by coordination between the countries concerned.

A discussion ensued in which reference was made to the effects of the proposal on islands, either independent, or belonging to an adjacent coastal territory or to a third country. The delegates of the Netherlands, France, Sweden, Spain, Finland, Denmark and Yugoslavia supported the Norwegian view, while those of Tunisia and Switzerland endorsed the view of the United Kingdom delegate.

The delegate of Switzerland then moved closure of the debate under No. 707 of the Convention.

After the delegates of Norway and the Netherlands had opposed the motion, the Chairman put to the vote the motion for closure.

The result being 5 votes in favour of closure, 10 against and 20 abstentions, the Chairman deferred consideration of the matter to a later meeting, in accordance with No. 723 of the Convention.

He then said that, under paragraph 3 of Document No. 87, he would have to transmit a note to the Chairman of Committee 6 on the form of requirements of administrations needing LPC allocations.

The Vice-Chairman of the I.F.R.B. pointed out that Working Group 6A had studied the question and had decided that the form for LPC requirements should be the same as for other channels, but that an indication should be given of the more limited data to be given in such cases.

The delegate of Spain proposed that, by analogy with the decision taken on the document on synchronized networks, the contents of Annex 1 to Document No. 87 should become an integral part of Chapter 9 of the report of the session.

The delegate of Italy supported that proposal and added that the second "considering" paragraph and the three "recommends" paragraphs of the draft Recommendation in Annex 2 should also be included in Chapter 9, as a planning principle, preceding the contents of Annex 1, which related to planning methods and modification of the plan.

The delegate of Switzerland supported those proposals.

The representative of the I.F.R.B. said that, although there was no objection to including the draft Recommendation in the body of the report, it might be better to leave the fairly technical contents of Annex 1, with a table and a figure, in an Appendix, along the lines followed in the Radio Regulations.

After a brief discussion, it was decided to follow the course proposed by the delegates of Spain and Italy but, for technical reasons, to publish the figure on page 5, with an appropriate heading, as an Appendix.

The delegate of the U.S.S.R., supported by the delegate of Italy, proposed that the words "in the same area" should be inserted after the word "operating" in the first "recommends" paragraph of the draft Recommendation.

That proposal was approved.

The delegate of Norway pointed out that the term "A.50 MW" in the English version of the footnote to page 3 should read "A.50 mW".

The representative of the I.F.R.B. observed that, in order to submit requests for LPC, administrations must know more or less what LPC were available. Perhaps an indication could be given before the end of the session.

The delegate of Italy said that the number of LPC could not be decided on at the current session.

The Chairman of Working Group 5B said that the Group had discussed proposals for fixing the number of LPC, but had been unable to agree on any of them and had therefore left the matter for the Second Session to decide.

The Vice-Chairman of the I.F.R.B. added that it was important for the work of Committee 6 not only to inform administrations of available LPC, but also to let them know the channels for which they could not submit requirements.

The delegate of Spain, supported by the delegate of Italy, suggested that, although the number of available LPC could not be specified at the current session, some guidance might be given concerning the part of the spectrum in which they would be located. Even if two different methods were approved, a location roughly in the centre of the MF band should be compatible with both methods.

The delegate of Nigeria expressed the view that countries should be allowed to use LPC wherever they were located in the spectrum.

The delegate of Switzerland, supported by the delegates of Australia, the German Democratic Republic, the United Kingdom, Japan and Poland, said that it was premature to give any indication of either the number of available LPC or of their location.

Document No. 87, as amended, was approved, subject to reconsideration of paragraph 2 at the next meeting.

The Chairman, noting that Working Group 5B had completed its work, thanked the Chairman and members of the Group for the efficient way in which they had accomplished a difficult task.

4. New Zealand Document No. 68

The Chairman observed that the document was before the Committee for information only, not for discussion.

The delegate of New Zealand said that the words "separation requirement" at the end of the penultimate paragraph on page 1 should be replaced by "spacing" and that all the -24 dB figures in Table IV on page 3 should be replaced by -30 dB.

The meeting rose at 1750 hours.

The Secretary : The Chairman :

M. AHMAD K.R. BINZ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 138-E
23 October 1974
Original : English

COMMITTEE 3

SUMMARY RECORD

OF THE

THIRD AND LAST MEETING OF COMMITTEE 3

(BUDGET CONTROL)

Tuesday, 22 October 1974, at 1005 hrs

Acting Chairman : Mr. P.C.M. BOUCHIER (Belgium) (Vice-Chairman)

Subjects discussed :	Document No.
1. Summary records of the first and second meetings of the Budget Control Committee	74, 88
2. Position of the accounts at the Conference as at 18 October 1974	Annex 1 to DT/33
3. Draft report of the Budget Control Committee to the Plenary Meeting	DT/33
4. Completion of the Committee's work	-

1. Summary records of the first and second meetings of the Budget Control Committee

First meeting (Document No. 74)

Approved.

Second meeting (Document No. 88)

The delegate of the Federal Republic of Germany said that the phrase "such as the Editorial Committee or ad hoc groups" at the end of the second paragraph on page 2 should be replaced by "such as drafting or ad hoc groups" and that the reference to the delegates of his country at the beginning of the fourth paragraph in the English text should be in the singular.

Approved as amended.

2. Position of the accounts of the Conference as at 18 October 1974 (Annex 1 to Document No. DT/33)

The Secretary of the Committee said that the position of the accounts had further improved since he had last reported to the Committee, and that the margin had increased from 27,000 to 83,000 Swiss francs. That was largely due to the fact that it had been unnecessary to engage additional staff during the first two weeks of the Conference, with a resulting saving of 56,000 Swiss francs. The increase of expenditure under Chapter II was due to certain unforeseen costs of transferring equipment and supplies from Headquarters to the Conference building; on the other hand, the Plenary Meeting had not yet decided on the form of the final report, and the 45,000 Swiss francs budgeted under item 9.302 might well be substantially reduced.

Approved, subject to correction of a typing error in the English text.

3. Draft report of the Budget Control Committee to the Plenary Meeting (Document No. DT/33)

The delegate of the Federal Republic of Germany proposed that the words "in general" should be deleted from the first paragraph on page 3.

The Secretary of the Committee said that the asterisks and footnote under heading II in Annex 3 should be deleted and the words "1/2 unit" inserted against both the recognized private operating agencies concerned.

Document No. DT/33, as amended, was approved.

4. Completion of the Committee's work

The Acting Chairman, speaking on behalf of the officers of the Committee, thanked all the participants and the Secretariat for their valuable assistance and cooperation and announced that Committee 3 had completed its work.

The meeting rose at 1025 hours.

The Secretary :
R. PRELAZ

The Chairman :
P.C.M. BOUCHIER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 139-E
23 October 1974
Original : Russian

PLENARY MEETING

Letter to the Chairman of the Conference from the delegations of the Byelorussian S.S.R., the Ukrainian S.S.R. and the U.S.S.R., dated 23 October 1974

To M. F. Locher
Chairman, Regional Administrative
LF/MF Broadcasting Conference

Mr. President,

We hereby request you to have circulated as an official Conference document our statement that the delegations of the Byelorussian S.S.R., the Ukrainian S.S.R. and the U.S.S.R. share the views of the delegation of the German Democratic Republic as expressed in Document No. 123.

(Signed) V. CHAMCHINE

Union of Soviet Socialist Republics

V. SAVANTCHOOK

Ukrainian Soviet Socialist Republic

L. PODORSKY

Byelorussian Soviet Socialist Republic

PINK PAGES

Addendum No. 1 to
Document No. 140-E
25 October 1974

PLENARY MEETING

R.1(Add.)

1st SERIES OF TEXTS SUBMITTED BY THE
EDITORIAL COMMITTEE TO THE PLENARY MEETING

The attached texts are submitted to the Plenary Meeting for second reading :

Miss M. HUET
Chairman of the
Editorial Committee

Annexes : 6 pages

Addendum No. 1 to
Document No. 140-E

RESOLUTION No. C

Relating to Channel Spacing

The Regional Administrative LF/MF Broadcasting Conference (First Session), Geneva, 1974,

noting

Resolution No. 4 of the African LF/MF Broadcasting Conference, Geneva, 1966,

considering

a) that the use of a uniform channel spacing throughout Regions 1 and 3 would facilitate the use of the frequency bands allocated for broadcasting in a more rational way than at present;

b) that a majority of administrations is in favour of a plan with 9 kHz channel spacing and with carrier frequencies equal to integral multiples of 9 kHz;

c) that a substantial minority of administrations is in favour of a plan with 8 kHz channel spacing and with carrier frequencies equal to integral multiples of 8 kHz;

d) that, nevertheless, the countries of Regions 1 and 3 have agreed that a new draft plan should be prepared with 9 kHz channel spacing and with carrier frequencies equal to integral multiples of 9 kHz;

e) that the adoption of such a uniform channel spacing would mean changing the carrier frequencies of most stations in Regions 1 and 3;

f) that, although it would be desirable to have in the LF broadcasting band carrier frequencies which are integral multiples of the channel spacing, the adoption of such a relationship, and consequently the displacement of each carrier frequency (of -2 kHz), would give rise to problems with respect to sharing with other radio services;

unanimously resolves

1. that, a draft plan for broadcasting frequency assignments in the MF band for Regions 1 and 3 should be prepared by the Second Session on the basis of a uniform 9 kHz channel spacing, using the carrier frequencies listed in Annex 1;

2. that a draft plan for broadcasting frequency assignments in the LF band for Region 1 should be prepared by the Second Session on the basis of a uniform 9 kHz channel spacing,using the carrier frequencies listed in Annex 2;

3. that when the draft plan is prepared, any frequency that is already being used shall first be replaced by the frequency of the nearest new channel and subsequent changes desired should be negotiated between the administrations concerned or groups of administrations concerned during the Second Session;

4. that, however, if the majority of Administrations represented at the Second Session of the Conference, after careful examination, finds that the draft plan is unsatisfactory, the Conference may consider the possibility of preparing a plan based on a different channel spacing common to Regions 1 and 3. In this case the provision of paragraph 3 above shall also apply;

5. that the Second Session of the Conference shall adopt for the frequency changes required in Regions 1 and 3 a time table which takes into account the special conditions of the developing countries;

invites Administrations

1. to study, taking into account paragraph 8.4 of this Report, the problems of frequency sharing of the LF band allocated to the Broadcasting Service in order to make it possible to change the carrier frequencies appearing in Annex 2 to frequencies which are integral multiples of the channel spacing;

2. to submit, if necessary, proposals to this effect to the next competent World Administrative Radio Conference.

Addendum No. 1 to
Document No. 140-E

RESOLUTION No. D

Relating to the Report of the First Session

The Regional Administrative LF/MF Broadcasting Conference (First Session), Geneva, 1974,

considering

a) that according to Administrative Council Resolution 743 the agenda of the Second Session of the Conference shall be :

" a) to consider the Report of the First Session of the Regional Administrative LF/MF Broadcasting Conference on technical and operational criteria and methods for frequency planning in the LF/MF broadcasting bands in Regions 1 and 3";

"b) on the basis of these technical and operational criteria and planning methods, to draw up an agreement and an associated frequency plan of assignments in the LF/MF broadcasting bands in Regions 1 and 3 to replace, as appropriate, existing plans for those bands";

b) that many delegations are of the opinion that the Report of the First Session should be signed only by the Chairman of the Conference, and that, on the contrary, a number of delegations feel that individual delegations should sign the Report of this Conference;

c) that compromise results were obtained after difficult discussions, due in particular to the different situations prevailing in Regions 1 and 3;

resolves

that the Second Session apply the technical and other criteria defined in the Report of the First Session;

instructs

1. the Chairman of the Conference to transmit under his signature the Report of the First Session to the Second Session of the Conference;

2. the Secretary-General to transmit the Report of the First Session to all administrations of Regions 1 and 3.

ANNEXE 1 - ANNEX 1 - ANEXO 1

CANAUX DE 9 kHz DANS LA BANDE DES ONDES HECTOMETRIQUES (ECARTEMENT UNIFORME)

UNIFORM CHANNEL SPACING OF 9 kHz IN THE MF BAND

CANALES DE 9 kHz EN LA BANDA DE ONDAS HECTOMETRICAS (SEPARACIÓN UNIFORME)

Canal Channel Canal No.	Fréquence Frequency Frecuencia (kHz)	Canal Channel Canal No.	Fréquence Frequency Frecuencia (kHz)	Canal Channel Canal No.	Fréquence Frequency Frecuencia (kHz)
1	531*)	41	891	81	1251
2	540	42	900	82	1260
3	549	43	909	83	1269
4	558	44	918	84	1278
5	567	45	927	85	1287
6	576	46	936	86	1296
7	585	47	945	87	1305
8	594	48	954	88	1314
9	603	49	963	89	1323
10	612	50	972	90	1332
11	621	51	981	91	1341
12	630	52	990	92	1350
13	639	53	999	93	1359
14	648	54	1008	94	1368
15	657	55	1017	95	1377
16	666	56	1026	96	1386
17	675	57	1035	97	1395
18	684	58	1044	98	1404
19	693	59	1053	99	1413
20	702	60	1062	100	1422
21	711	61	1071	101	1431
22	720	62	1080	102	1440
23	729	63	1089	103	1449
24	738	64	1098	104	1458
25	747	65	1107	105	1467
26	756	66	1116	106	1476
27	765	67	1125	107	1485
28	774	68	1134	108	1494
29	783	69	1143	109	1503
30	792	70	1152	110	1512
31	801	71	1161	111	1521
32	810	72	1170	112	1530
33	819	73	1179	113	1539
34	828	74	1188	114	1548
35	837	75	1197	115	1557
36	846	76	1206	116	1566
37	855	77	1215	117	1575
38	864	78	1224	118	1584
39	873	79	1233	119	1593
40	882	80	1242	120	1602*)

*) Lors de l'établissement du plan, les dispositions du N° 116 du Règlement des Radiocommunications, devront être appliquées.

*) On planning, the provisions of Radio Regulation 116 shall apply.

*) Al establecer el Plan se aplicará lo dispuesto en el número 116 del Reglamento de Radiocomunicaciones.

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Addendum N° 1 au
Document N° 140-F/E/S

A N N E X E 2 - A N N E X 2 - A N E X O 2

CANAUX DE 9 kHz DANS LA BANDE DES ONDES KILOMETRIQUES (ECARTEMENT UNIFORME)

UNIFORM CHANNEL SPACING OF 9 kHz IN THE LF BAND

SEPARACIÓN UNIFORME DE CANALES DE 9 kHz EN LA BANDA DE ONDAS KILOMÉTRICAS

Canal Channel Canal N°	Fréquence Frequency Frecuencia (kHz)
1	155 *)
2	164
3	173
4	182
5	191
6	200
7	209
8	218
9	227
10	236
11	245
12	254
13	263
14	272
15	281 *)

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*) Lors de l'établissement du plan, les dispositions du N° 116 du Règlement des Radiocommunications devront être appliquées.

*) In planning, the provisions of Radio Regulation 116 shall apply.

*) Al establecer el Plan se aplicará lo dispuesto en el número 116 del Reglamento de Radiocomunicaciones.

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Document No. 140-E
25 October 1974

PLENARY MEETING

R.1

1st SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The attached texts are submitted to the Plenary Meeting for second reading.

Miss M. HUET
Chairman of the
Editorial Committee

Annexes

PINK PAGES

Document No. 140-E

REPORT OF THE FIRST SESSION

PINK PAGES

Document No. 140-E

CHAPTER 1

DEFINITIONS

Necessary bandwidth

For a given class of emission, the necessary bandwidth is the minimum value of the occupied bandwidth sufficient to ensure the transmission of information with the quality required for the system employed, under specified conditions.

Channel (in AM broadcasting)

Part of the frequency spectrum, the width of which is equal to the necessary bandwidth of the broadcasting emission, and which is characterized by the nominal value of carrier frequency.

Channel spacing (in AM broadcasting)

The frequency difference between the nominal carrier frequencies of two succesive channels. This concept is of practical interest only if the difference is constant in a given frequency band.

Low-power channel (LPC)[1)]

Channel to be used by medium frequency broadcasting stations employing a maximum e.m.r.p. of 1 kW (c.m.f. of 300 V) and for which simplified planning and coordinating methods may be used.

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1) These low-power channels are intended to replace the International Common Frequencies defined in the 1948 Copenhagen Plan.

Audio-frequency signal-to-interference ratio

Ratio between the values of the voltage of the wanted signal and the voltage of the interfering signal, measured under specified conditions, at the audio-frequency output of the receiver.

This ratio is generally expressed in dB, and corresponds closely to the difference in volume of sound (expressed in dB) between the wanted programme and the interference.

Audio-frequency protection ratio

Agreed minimum value of the audio-frequency signal-to-interference ratio considered necessary to achieve a subjectively defined reception quality.

This ratio may have different values according to the type of service desired.

Radio-frequency wanted-to-interfering signal ratio

Ratio between the values of the radio-frequency voltage of the wanted signal and the interfering signal, measured at the input of the receiver under specified conditions.

This ratio is generally expressed in dB.

For example, in the case of wanted and interfering transmissions of the classical type (full carrier with double sideband), the chosen values will be the effective radio-frequency voltages that correspond to the wanted and interfering carriers.

Radio-frequency protection ratio

Value of the radio-frequency wanted-to-interfering signal ratio that enables, under specified conditions, the audio-frequency protection ratio to be obtained at the output of a receiver.

These specified conditions include such diverse parameters as spacing Δf of the wanted and interfering carrier, emission characteristics (type of modulation, modulation depth, etc.), receiver input and output levels as well as the receiver characteristics (selectivity and susceptibility to cross-modulation, etc.).

Usable field strength (E_u)

The minimum value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of natural noise, man-made noise and interference in a practical situation (or in one resulting from a frequency plan).

Where the wanted or unwanted signal is fluctuating, or both are fluctuating, the percentage of the time during which the value E_u is exceeded shall be specified.

Nominal usable field strength (E_{nom})

The agreed minimum conventional value of the field strength necessary to permit satisfactory reception, under specified conditions, in the presence of natural noise, man-made noise and interference from other transmitters.

Where the wanted or unwanted signal is fluctuating, or both are fluctuating, the percentage of the time during which the value of E_{nom} is exceeded shall be specified.

The value of the nominal usable field strength is taken as a reference for planning purposes.

Service area (of a broadcasting transmitter)

The area in which the field strength of a transmitter is equal to or greater than the usable field strength.

Nominal service area (of a broadcasting transmitter)

The area within which the field strength of a transmitter is equal to or greater than the nominal usable field strength.

Cymomotive force (in a given direction) (c.m.f.)
(See Report 618 of the C.C.I.R.)

The product formed by multiplying the electric field-strength at a given point in space, due to a transmitting station, by the distance of the point from the antenna. This distance must be sufficient for the reactive components of the field to be negligible; moreover the finite conductivity of the ground is supposed to have no effect on propagation.

The cymomotive force (c.m.f.) is a vector; when necessary it may be expressed in terms of components along axes perpendicular to the direction of propagation.

The c.m.f. is expressed in volts; it corresponds numerically to the field strength in mV/m at a distance of 1 km.

Effective monopole radiated power (e.m.r.p.)
(See Report 618 of the C.C.I.R.)

The power supplied to an antenna, multiplied by its gain in a given direction, referred to that of a short vertical antenna in the horizontal direction.

Gain of an antenna (in a given direction) referred to a short vertical antenna

The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna in a given direction referred to a short vertical antenna either of the two following definitions should be adopted :

- the ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennae being supplied with the same power;

- the ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force of 300 V) in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.

The ratio, expressed in dB, is the same for the two definitions.

Synchronized network

A group of transmitters whose carrier frequencies are identical or differ only slightly, usually by a fraction of a Hz, and which broadcast the same programme.

CHAPTER 2

PROPAGATION

2.1 Ground-wave propagation

2.1.1 The curves of C.C.I.R. Recommendation 368-2 should be used to determine the ground-wave field-strength.

In the case of a mixed path (i.e., with different values of ground conductivity), the method described in C.C.I.R. Recommendation 368-2 should be used[1]. Appendix A contains a simplified graphical procedure which enables a more rapid approximate calculation to be made.

2.1.2. In the absence of detailed information on ground conductivity or any other relevant information, (for example, the map included in the Final Acts of the African Broadcasting Conference, Geneva, 1966) the value of 10^{-2} S/m should be used.

C.C.I.R. Report 229-2 contains information on the electrical characteristics of the surface of the Earth and on their measurement.

2.2 Sky-wave propagation

Within Region 1 and for Australia and New Zealand[2], the sky-wave propagation prediction method described in Appendix B should be used. In Region 1 the basic propagation formula is given by Equation (1) of that Appendix. In Australia and New Zealand the basic propagation formula is given by Equation (13) of the same Appendix. Some examples of the use of this method are given in the Annex to this Appendix.

Within the Asian part of Region 3[2], the Cairo North-South curve, given in Appendix E, or a mathematical formula which gives the same result, should be used. No corrections should be made for sea gain. Polarization coupling loss should be calculated according to the method described in Appendix E.

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1) A computer programme has been given to the I.F.R.B.

2) For sky-wave field-strength prediction, the boundary between Australia and New Zealand, on the one hand, and the Asian part of Region 3, on the other hand, shall be described by geographic latitude 11° South.

For paths which pass from one region to another, the method used should be that which applies at the mid-point of the great-circle path.

Within the whole of Regions 1 and 3 the radiation in a given direction is expressed in dB with reference to 300 V cymomotive force or 1 kW e.m.r.p. The powers are expressed in dB relative to 1 kW.

2.3 Ionospheric cross-modulation[1)]

For planning no account should be taken of the influence of ionospheric cross-modulation.

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1) Information on ionospheric cross-modulation is to be found in the C.C.I.R. texts, particularly in Recommendation 498 and Report 460.

CHAPTER 3

AMPLITUDE MODULATION BROADCASTING STANDARDS

3.1 Channel spacing and carrier frequency of each channel

See Resolution C.

3.2 Class of emission

The work of the Broadcasting Conference shall be based on a system with double sideband amplitude modulation with Full carrier.

3.3 Necessary bandwidth

For a broadcasting station, the Administration responsible for the transmitter should select a value within the range 9 kHz (audio-frequency bandwidth 4.5 kHz) to 20 kHz (audio-frequency bandwidth 10 kHz).

The necessary bandwidth of the emission is one of the parameters that influence the adjacent channel protection ratio as indicated by the curves of Appendix C. This is one of the parameters that may in certain cases be the subject of negotiations between the Administrations concerned in the second session of the Conference.

CHAPTER 4

TRANSMISSION CHARACTERISTICS

4.1 Power

The power of a transmitter shall be specified as carrier power in the absence of modulation.

C.C.I.R. Recommendation 326-1 gives useful information on the definition and the measurement of power.

4.2 Directional antennae

In order to facilitate planning, it should be noted that in some cases directional transmitting antennae can be used.

Present knowledge shows that there are no particular technical difficulties in constructing antennae with reduced radiation over a wide range of angles in the horizontal and vertical planes.

Thus it has been possible to obtain with a three-mast antenna a front-to-back ratio of over 25 dB over a conical sector, with a horizontal axis, subtending an angle of 80° in the horizontal plane and 40° in the vertical plane. For planning purposes, a maximum value of 20 dB would appear to be reasonable for radiation in the horizontal plane and 15 dB for radiation in the vertical plane, provided the antenna is situated on level ground. Administrations could, however, agree to other values of protection in special cases.

Present techniques also make it possible to obtain a variety of radiation diagrams for use in certain cases.

Antennae with low radiation at high elevation angles can also be built, which, for a ground-wave service at night, enable the area affected by fading to be farther away from the transmitter.

Note : 1. Radiation in the horizontal plane concerns primarily the ground wave.

2. Radiation in the vertical plane concerns the sky wave.

4.3 Radiated power of transmitting stations

To express the radiated power of a transmitting station the two concepts of cymomotive force (c.m.f.) and effective monopole radiated power (e.m.r.p.), defined in Chapter 1, should be used together.

CHAPTER 5

RADIO-FREQUENCY PROTECTION RATIOS

5.1 Co-channel protection ratios

For planning purposes, the following values of the co-channel protection ratio should be used :

a) - 30 dB for a stable wanted signal interfered with by a stable or fluctuating signal,

- 27 dB for a fluctuating wanted signal interfered with by a stable or fluctuating signal.

b) However, upon agreement between the Administrations concerned, the following values may be used :

- up to 40 dB (when the conditions permit) for a stable wanted signal interfered with by a stable or fluctuating signal,

- up to 37 dB (when the conditions permit) for a fluctuating wanted signal interfered with by a stable or fluctuating signal.

  These values apply to countries where MF is the principal means of providing a broadcasting service.

Note : In the case of fluctuating wanted or unwanted signals, the values of the co-channel protection ratio apply for at least 50% of the nights of the year at midnight.

5.2 Adjacent channel protection ratios

The curves in Appendix C enable the adjacent channel protection ratio to be determined. At the second session of the Conference planning should be based on curve A of this Appendix i.e. using an audio-frequency bandwidth of 10 kHz. On completion of the first draft of the Plan, curves B, C and D may be used, subject to agreement between the Administrations concerned.*)

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*) The delegation of Australia stated that where Administrations considered it necessary to provide a high quality medium frequency broadcasting service, an appropriate value of adjacent channel relative protection ratio cannot be taken from the curves of Appendix C. A value of up to 0 dB may be adopted, following agreement between the Administrations concerned.

CHAPTER 6

MINIMUM VALUES OF FIELD STRENGTH

6.1 In order to reduce the number of variables, it was decided not to take account of man-made noise in evaluating the "minimum value of field strength".1)

6.2 Information on atmospheric noise available in C.C.I.R. Report 322 and values resulting from experience and measurements in the countries concerned were used as a basis for establishing "minimum values of field strength" for the three zones A, B and C in Regions 1 and 3.

6.2.1 The dividing line between zones A and B begins at the point of intersection of parallel 20°N with the western border of Region 1 (No. 126 of the Radio Regulations). Thence it follows the parallel 20°N up to the point of intersection with meridian 20°E; thence by great circle arc to the intersection of meridian 44°E with the Equator; thence it follows the Equator up to the intersection with meridian 80°E; thence by great circle arc to the point with coordinates 100°E, 20°N; thence it follows the parallel 20°N up to the point of intersection with the eastern border of Region 3 (No. 128 of the Radio Regulations).

6.2.2 The dividing line between zones B and C begins at the point of intersection of parallel 6°S with the western border of Region 1 (No. 126 of the Radio Regulations); thence it follows the parallel 6°S up to the point of intersection with meridian 20°E; thence by great circle arc to the point with coordinates 46°E, 26°S; thence by great circle arc up to the point with coordinates 80°E, 20°S; thence it follows the parallel 20°S up to the point of intersection with the eastern border of Region 3 (No. 128 of the Radio Regulations).

6.3 The limits of the three zones are given in the map which follows.

6.4 The following "minimum values of field strength" necessary to overcome natural noise (at 1 MHz) have been adopted :

Zone A : 60 dB/1μVm

Zone B : 70 dB/1μVm

Zone C : 63 dB/1μVm

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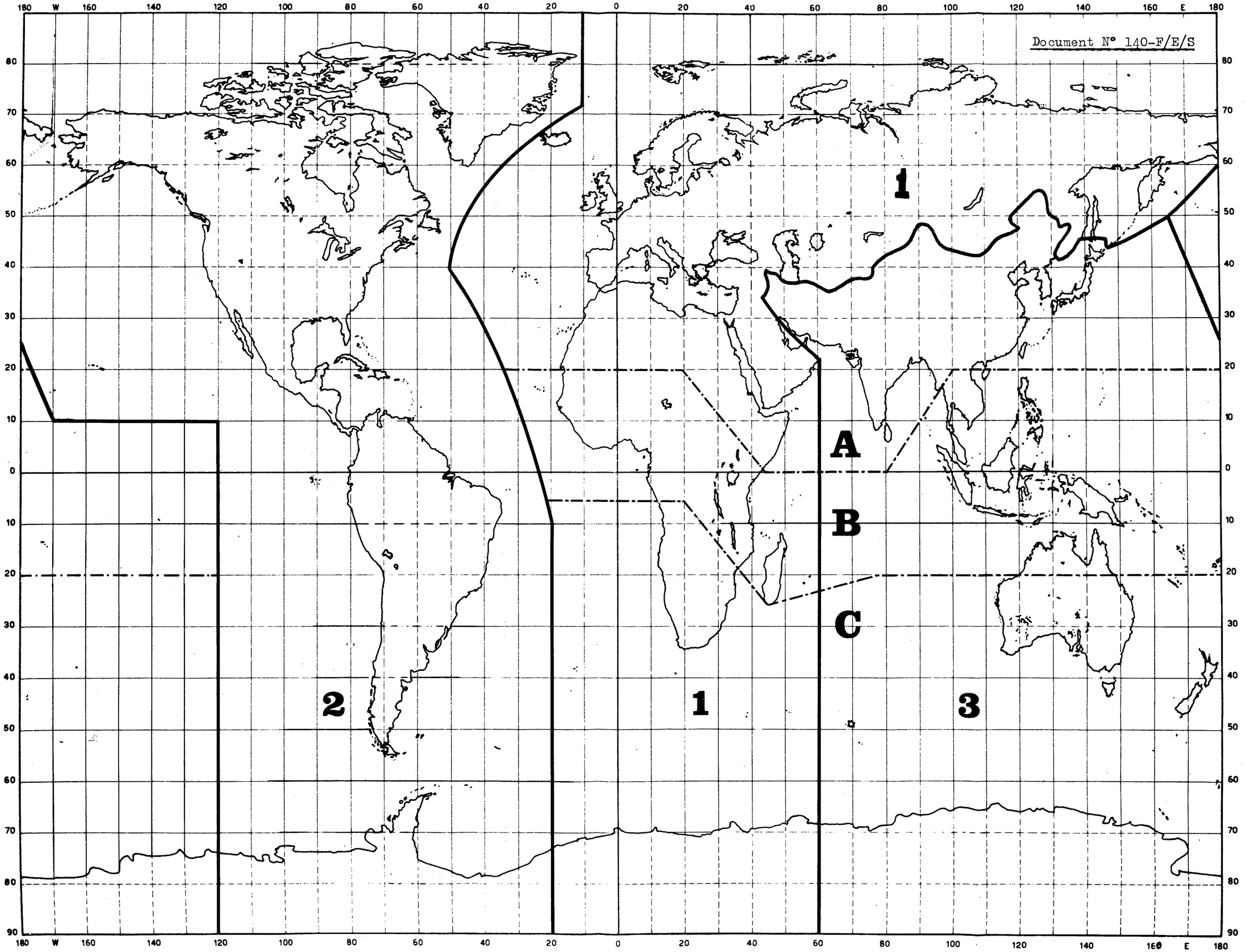
1) The "minimum value of field strength" corresponds to the minimum usable field strength defined in C.C.I.R. Recommendation 499, except that man-made noise has not been taken into account.

6.5 Frequency dependence of "minimum value of field strength"

The correction value Δa to be added to the "minimum value of field strength" to overcome natural noise for frequencies other than 1 MHz may be derived from the curve in Appendix D.[1)]

1) The delegations of Finland, France and Sweden consider that this curve is not valid for LF and that lower "minimum values of field strength" can be accepted.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1
A
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80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90

CHAPTER 7

RECEIVERS

CHAPTER 8

BANDS SHARED BETWEEN BROADCASTING SERVICE AND OTHER RADIOCOMMUNICATION SERVICES

8.1 The existing provisions relating to the conditions of sharing among services which are established by the texts in force should be kept in mind.

The various cases encountered are listed below.

8.1.1 150 - 160 kHz band (Region 1) : shared between the maritime mobile and broadcasting services :

- Nos. 174 and 175 of the Radio Regulations
- European Broadcasting Convention, Copenhagen, 1948 (Article 2, paragraph 2a; Article 6, paragraph 3a)
- Procedure of Article 9 of the Radio Regulations.

8.1.2 255 - 285 kHz band (Region 1) : shared among the maritime mobile, broadcasting and aeronautical radionavigation services :

- Nos. 174, 176 (alternative allocation), 177 and 178 of the Radio Regulations
- Document annexed to the Additional Protocol to the Final Acts of the International Radio Conference, Atlantic City, 1947, paragraph 7
- European Broadcasting Convention, Copenhagen, 1948 (Article 2, paragraph 2a; Article 6, paragraph 4(2))
- Service range of radiobeacons : Nos. 435, 436, 437 of the Radio Regulations
- Protection of radiobeacons against interference : Nos. 433 and 434 of the Radio Regulations (at least 10 dB).

  (Note : I.C.A.O. prescribes 15 dB in Annex 10 to the Chicago Convention)

- Procedure of Article 9 of the Radio Regulations.

8.1.3 525 - 535 kHz band (Region 3) : shared between the mobile and broadcasting services (broadcasting service is a permitted service) :

- No. 138 of the Radio Regulations for the broadcasting service
- Procedure of Article 9 of the Radio Regulations

8.2 In addition, the provisions of Nos. 116 and 117 of the Radio Regulations (protection of band-edges and coordination between Regions) are applicable.

8.3 Finally, at the second session of the Broadcasting Conference, which will be required to establish a Plan, the conditions for putting into use any new assignments in the shared bands will have to be laid down in the form of an appropriate coordination procedure (Article 9 of the Radio Regulations).

8.3.1 However, the present Conference has no powers to fix technical criteria concerning radiocommunication services other than the broadcasting service in the LF/MF bands for Regions 1 and 3.

8.4 The First Session of the Broadcasting Conference considers that, during the next revision of the Table of Frequency Allocations (at the World Administrative Radio Conference scheduled to be held in 1979), it would be desirable to avoid allocations which provide for sharing between broadcasting service and other services, such as the maritime mobile and aeronautical radionavigation services.

CHAPTER 9

METHODS OF PLANNING

9.1 Planning principles

The LF/MF Broadcasting Conference will draw up a new LF/MF frequency assignment Plan in Regions 1 and 3.

The Plan will be drawn up in accordance with the principle that all countries, large and small, have equal rights. It should also be based on the needs of administrations and should bring about satisfactory reception conditions for all peoples, having regard to the different conditions of the countries in Regions 1 and 3 and, in particular, the needs of the developing countries.[1)]

The Plan will be drawn up having regard to ground-wave service areas and, in certain cases, of sky-wave service areas. The ground-wave may be used to cover large or small areas.

It is extremely desirable that the channel spacing should be uniform over the whole area covered by the Plan. (The ideal would obviously be for this principle to apply throughout the world.)

The nominal carrier frequencies should be integral multiples of the channel spacing.

The Plan should be drawn up without taking into account the directivity of receiving antennae.

It is noted that by selecting integral multiples of the channel spacing for use as the intermediate frequency or frequencies of future receivers, some advantage may be gained by reducing interference generated internally in these receivers (see C.C.I.R. Report 458-1, item 3.2.4). Such an arrangement is of value only when the carrier frequencies are themselves integral multiples of their spacing.

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1) The Administrations of Austria, Belgium, Vatican City, Denmark, Spain, Ireland, Italy, Netherlands, Sweden and Switzerland expressed a preference for basing this planning principle on a definition of a coverage unit.

9.2 Planning methods

The plan must be established in the spirit of the planning principles, but account should be taken of the following facts:

a) the available frequency spectrum is limited, as are the capital and human resources;

b) the problem of providing a fair and rational allocation of channels and adequate powers is particularly difficult in those regions of the world where there is a large number of countries or population groups in relatively close proximity.

A rational planning method is needed to maximize the number of programmes and the quality of coverage that is given to the radio broadcasting listener.

9.2.1 Basic considerations

When planning, it is necessary to observe the following basic considerations :

a) the use of identical carrier frequencies, with uniform channel spacing, throughout Regions 1 and 3;

b) the retention and, possibly, improvement of the coverage of the existing broadcasting stations to the maximum extent possible, having regard to the commitments of many countries;

c) the reduction to a minimum, of changes in existing frequencies;

d) the endeavour to meet to the maximum extent possible, the requirements of all administrations for the broadcasting services taking into account administrative subdivisions and the number of languages involved;

e) the technical parameters adopted by this session of the Conference for different broadcasting areas;

f) the taking into account of the specific needs of certain countries, in view of the insufficient availability of alternative means in other frequency bands (for example VHF-FM), noting that the LF/MF bands are particularly suitable as an economic medium for mass communication over large areas;

g) the setting aside of a certain number of low-power channels for exclusive use by stations using powers of 1 kW or less (Chapter 9.6)

9.2.2 Practical aspects of planning

a) A theoretical lattice for frequency channel distribution should assist in the basic planning approach adopted in certain very large areas;

b) however, in view of the existing broadcasting systems and their frequency assignments, some changes may, nevertheless, have to be introduced to modify the theoretical lattice distribution configuration. In areas at the limits of a theoretical lattice plan, simplified coordination procedures could be adopted, in the form of coordination distances and powers, within the limits of which additional transmitters would not significantly affect the service of planned stations;

c) when a draft plan is prepared, the existing frequency assignments in Region 3 shall first be aligned to the nearest multiple of the channel spacing;

d) the theoretical network should be supplemented with other transmitters having different technical parameters in order to provide the service required, as described in paragraph 9.2.1;

e) using the above method of frequency assignment, it is in the common interest that Administrations should exercise goodwill and mutual understanding in coordinating national requirements to obtain the best possible result.

The two planning methods mentioned above are described in general terms in Appendix G, and in detail in Annexes 1 and 2 to this Appendix.

9.3 Planning of the band 525-1 605 kHz

9.3.1 Planning criteria

Some delegations favoured the use of the sky-wave for night-time coverage, and, of these, some also thought that a certain number of channels should be reserved for this service so that the sky-wave fields might be suitably protected. Channels for sky-wave services should preferably be located in the higher part of the band; the lower part of the band should be used for ground-wave services as the lowest frequencies are most suitable for the coverage of very large areas by ground-wave.

Other delegations held the view that the band should not be split into sub-bands and felt that the whole band should be used both for the ground-wave and sky-wave services. These delegations considered that this would allow the possibility of planning in an optimum manner thus satisfying the needs of the various countries.

Both criteria for the planning of the MF band could be used by the Second Session of the Conference and coordination between countries using different criteria could take place at that time.

9.3.2 Nominal usable field strength

9.3.2.1 Sky-wave service

The sky-wave service is generally intended for rural areas where the man-made noise is low. The nominal usable field strength (E_{nom}) for the service provided by the sky-wave shall be E_m + 6 dB*). This value of E_{nom} is considered adequate and takes into account the fluctuation of the received signal.

9.3.2.2 Ground-wave service

In daytime, the service area will in general be limited by natural noise. Accordingly, under these conditions, the value of E_{nom} will be identical to that assigned to E_m. However, in the presence of interference by ground-wave due to other transmitters E_{nom} will be E_m + 3 dB. In the presence of severe man-made noise the value of E_{nom} could be higher.

At night, two cases can occur :

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*) The values of E_m given in paragraphs 9.3 and 9.4 are those given in Chapter 6 for 1 MHz.

a) Where the ground-wave service area is not limited by the onset of fading caused by the sky-wave of the same transmitter, the nominal usable field strength is :

$$E_{nom} = E_m + X \text{ dB}$$

X = 11 dB for rural areas *)

X = 17 dB for urban areas

b) Where the transmitter power is sufficiently great for the ground-wave service area to be limited by fading due to the sky-wave of the same transmitter, the nominal usable field strength may be chosen to be greater than the value given above. It should not, however, be made greater than the ground-wave field strength at the beginning of the fading zone.

The usable field strength at the beginning of the fading zone is a function of the transmitter power, the antenna characteristics**) and the ground conductivity. The fading zone may be defined by taking the protection ratio between the ground-wave and the sky-wave to be equal to the internal protection ratio applicable to a synchronized network, i.e. 8 dB.

9.4 Planning of the band 150-285 kHz

9.4.1 Planning criteria

The LF band should be used for the coverage of extensive areas, mainly by ground-wave. Where used, its use should be planned jointly with the lower part of the MF band.

9.4.2 Nominal usable field strength

Assuming that the LF service is not affected by man-made noise and taking account of the correction factor Δa for natural noise at frequencies other than 1 MHz (paragraph 6.5 and Appendix D) :

$$E_{nom} = E_m + 17 \text{ dB} \quad ***)$$

---

*) Some delegations considered a nominal usable field strength of 65 dB to be suitable for rural areas in their countries.

**) The use of an anti-fading antenna reduces the probability of occurrence of this case.

***) Certain delegations considered a value of E_{nom} of the order of 73 dB to be appropriate in non-tropical rural areas.

9.5 Synchronized Network

For the purposes of planning and for determining the probabilities of harmful interference, a network of synchronized transmitters may generally be represented by an equivalent single transmitter the characteristics of which are calculated according to the method described below[1].

9.5.1 Calculation of interference in the case of a synchronized network

9.5.1.1 Interference caused by a synchronized network

In the simple but frequent case in which the transmitters of the synchronized network use omnidirectional antennae and in which the transmitters are sufficiently close together, the interference can be calculated by replacing the transmitters by an equivalent single transmitter. This transmitter will be located at the "centre of gravity" of the network. This centre is determined as that of various masses, the mass in this case being the square of the c.m.f. of each of the transmitters (or the e.m.r.p. of each transmitter). The radiation of this equivalent transmitter will be the sum of the radiations of each transmitter of the network (i.e. the sum of the squares of the c.m.f.'s or the arithmetical sum of the e.m.r.p.'s).

If the transmitters of the network are equipped with directional antennae, the same rules apply for the calculation of the interference in a given direction (that of the transmitter to be protected). In this case, the centre of gravity and the radiated power of the equivalent transmitter will depend on the direction considered. The calculation of the centre of gravity must be effected with the masses proportional to the radiated power of the transmitters in the direction considered. In the same way, the radiated power of the equivalent single transmitter will be determined by adding up the radiated powers of each transmitter in the direction considered.

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1) More details can be found in C.C.I.R. Reports Nos. 459 and 616.

Let D be the distance between any transmitter of the network and any transmitter not belonging to the group and suffering interference, and D' the distance of the centre of gravity of the network from this transmitter. It is assumed that the previous method is acceptable only if :

$$|D - D'| \leq 0.15D \text{ in the case of co-channel interference}$$

$$|D - D'| \leq 0.25D \text{ in the case of adjacent channel interference}$$

If the conditions described above for the distances are not fulfilled, the general method will be applied, which consists of calculating the interference caused by each transmitter in the synchronized network and adding up the squares of the interference fields. This method is clearly valid in all cases, and can be applied systematically if the validity of the equivalent transmitter method is challenged.

The radio-frequency protection ratio to be applied for interference caused by a synchronized network suffered by the service of any other transmitter is the same as for a single transmitter.

9.5.1.2 Interference suffered by a transmission of a synchronized network

The interference suffered by a transmission belonging to a synchronized network may be due to :

- the other transmitters of the synchronized network (internal interference);
- other transmitters (external interference).

In the case of external interference, the radio-frequency protection ratio is considered to be the same as in the case of a single transmitter.

In the case of internal interference, the radio-frequency protection ratio is regarded as a problem specific to each country. However, in order to compare different frequency plans, it is necessary to calculate the coverage of the transmitters of a synchronized network. This coverage is determined in the same way as in the general case, namely by calculating for each transmitter the usable field strength by the formula :

$$E_u = \sqrt{\Sigma(a_e E_{be})^2 + \Sigma(a_i E_{bi})^2 + E_{min}^2}$$

where E_{be} and E_{bi} are the external and internal interference fields,

a_e and a_i are the corresponding protection ratios, and

E_{min} is the minimum usable field strength which is defined in Recommendation 499 of the C.C.I.R., and which at the same time takes into account natural and man-made noise.

This formula corresponds to that given in C.C.I.R. Recommendation 499.

In this calculation, the internal protection ratio a_i for planning purposes is taken as 8 dB.

9.5.2 Recommendation No. AA deals with the use of synchronized networks.

9.6 Low-power channels

9.6.1 Principles of planning

It is recommended :

- that simplified methods should be used for the preparation of the Plan and also for coordination of any subsequent additions or modifications;
- that low-power channels (LPCs) should not be adjacent to channels used by transmitters providing a service in the same area with low usable field strengths;
- that LPCs should be sufficiently separated from each other in frequency in order to allow simultaneous use in the same area;
- that LPCs should be reserved for transmitters which cannot form part of a synchronized network on another channel.

The value of the nominal usable field strength in low-power channels should be 88 dB(μV/m). However, the resultant field strength of a low-power transmitter network at the boundary of the territory of any other country should not exceed 0.5 mV/m except by agreement with the Administration concerned. In cases where countries are separated by sea water, the 0.5 mV/m field strength shall, in principle, be met at the mid-point of the over-water path, unless other agreement between the Administrations concerned is achieved.

Paragraph 9.6.2 shows the method of calculating this field strength.

9.6.2 Methods of planning low-power channels

9.6.2.1 Method of planning[1)]

The nominal usable field strength in these channels is limited to 88 dB(μV/m). To ensure that this value is not exceeded as a result of interference from transmitters in other countries, the transmitter network of each country should be so regulated that the resultant field strength at the border of any neighbouring country or at the mid-point of an over-water path does not exceed 0.5 mV/m in any LPC.

The resultant field strength in mV/m is calculated according to the formula $\sqrt{E_1^2 + E_2^2 + E_3^2 + \ldots}$, where E_1, E_2, E_3, ... are the values of field strength in mV/m due to each individual transmitter in a country operating in a given LPC. Only field strengths due to stations within 500 km of the border of a neighbouring country or at the mid-point of an over-water path will be included in the calculation.

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1) It may be of assistance to Administrations when drawing up their requirements for LPC assignments to note that an approximate indication of their quota of assignments in these channels may be assessed on the basis of uniform power density. The total power used in a country of area A km^2 is then approximately A times 50 mW in any LPC. The exact total power will depend upon local conditions and will, in any case, be less if transmitters are concentrated near the borders with other countries.

These values of field strength E_1, E_2, E_3, etc. are to be calculated according to the curves shown in following figure, taking account of the radiated power of the transmitter and the distance from the border of the neighbouring country, or at the mid-point of an over-water path. These curves are for ground wave propagation and an e.m.r.p. of 1 kW (c.m.f. of 300 V) in the horizontal plane, and for a frequency of 1 MHz. Curves A and B are based upon a ground conductivity of 10 mS/m over land and 4 S/m over sea (which are normally used for planning purposes). Where the ground conductivity is known to be significantly greater than 10 mS/m, the Curve C (30 mS/m) should be used for calculation.

Curve D should be used for sky wave propagation; it has been assumed that the transmitting antenna is a short, vertical antenna.

9.6.2.2 Modification of the Plan[1)]

Subsequent to the Second Session of the Conference, certain administrations may require to modify or add to their requirements for LPCs. In these circumstances, administrations may make changes, coordinating only with those countries whose borders are within a certain distance of the new or modified station. This coordination distance depends upon the radiating characteristics of the new or modified station; it is shown in Table 1.

This Table is based on the assumption that the addition of a further transmitter does not increase the nominal usable field strength due to the other transmitters in the same channel by more than 0.2 dB, taking into account both ground-wave and sky-wave propagation.

The simplified coordination should not be used for the addition of synchronized transmitters if the total equivalent power of the group exceeds 1 kW.

Where new requirements are such that the simplified coordination cannot be used, the normal coordination procedure will be applied.

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1) This text should be added in the provisions for coordination procedures which will be adopted by the Second Session of the Conference.

TABLE 1

c.m.f. (V)	e.m.r.p. (kW)	Coordination distance (km)
300	1.0	700
260	0.75	500
212	0.5	400
150	0.25	200, 350*)
95	0.1	70, 250*)
67	0.05	50, 200*)

*) Values for a propagation path over sea.

Courbes pour la planification des canaux pour émetteurs de faible puissance (f = 1 MHz)

Curves for planning low-power channels (f = 1 MHz)

Curvas para la planificación de canales de baja potencia (f = 1 MHz)

Champ en dB (μV/m) pour une p.a.r.v. de 1 kW ou une f.c.m. de 300 V, dans le plan horizontal

Field strength dB (μV/m) for a e.m.r.p. of 1 kW or a c.m.f. of 300 V, in the horizontal plane

Intensidad de campo en dB (μV/m) con relación a 1 kW p.a.r.v. (f.c.m. = 300 V) en el plano horizontal

CHAPTER 10

FORM OF SUBMISSION OF REQUIREMENTS

Frequency requirements must be submitted on the form shown in Appendix F.

The Annex to this Appendix contains detailed instructions concerning the manner in which the form should be completed.

APPENDIX A

A GRAPHICAL METHOD FOR ESTIMATION OF PROPAGATION OVER MIXED PATHS

C.C.I.R. Recommendation 368-2(Rev.74) contains a semi-empirical method to be used for the calculation of field-strengths over mixed paths (inhomogeneous smooth earth). This method is generally easy to use, particularly with the aid of a computer.

For planning purposes where the coverage of a certain transmitter has to be determined, a graphical procedure, based on the same method, might be convenient for a rapid estimation of the distance at which the ground-wave field-strength has a given value.

A short description of the graphical method is given here.

Figure 1 applies to a path having two sections, of lengths d_1 and d_2, with different electrical constants σ_1, ε_1 and σ_2, ε_2 respectively. In this example, the complex dielectric constant $\varepsilon(\sigma_1\ \varepsilon_1)$ is assumed to be greater than $\varepsilon(\sigma_2\ \varepsilon_2)$. For distances $d > d_1$, the field-strength curve obtained by the method described in C.C.I.R. Recommendation 368-2. lies between the curves corresponding to the two different electrical properties $E(\sigma_1\ \varepsilon_1)$ and $E(\sigma_2\ \varepsilon_2)$. At the distance $2\ d_1$ (where d_1 is the distance from the transmitter to the border separating the two sections), the curve is half-way between the curves $E(\sigma_1\ \varepsilon_1)$ and $E(\sigma_2\ \varepsilon_2)$, provided that the field-strength is plotted linearly in dB. In addition, this curve has an asymptote, which differs by m dB from the $E(\sigma_2\ \varepsilon_2)$ curve, as indicated in Figure 1, where m is half the difference in dB, at $d = d_1$, between the curves $E(\sigma_1\ \varepsilon_1)$ and $E(\sigma_2\ \varepsilon_2)$. It is easy to draw the resulting field-strength curve from the point through which it passes at $d = 2d_1$ and its asymptote.

Figure 2 shows the curve obtained for a two-section path with electrical constants now changing from σ_2, ε_2 to σ_1, ε_1, where the complex dielectric constant $\varepsilon(\sigma_1\ \varepsilon_1)$ is greater than $\varepsilon(\sigma_2\ \varepsilon_2)$, as above. The same procedure can be applied here, bearing in mind that the asymptote is now parallel to the $E(\sigma_1\ \varepsilon_1)$ curve.

For paths consisting of more than two sections, each change of constants is dealt with separately, in the same way as the first change. The resulting curve is continuous, each portion being displaced to correspond with the value at the end of the previous section.

Figure 3 indicates how the approximate graphical procedure can be used to determine the distance at which the field-strength is 1 mV/m for a transmitted power of 100 kW over a path having several sections with different values of conductivity.

By means of ground-wave propagation curves for the three different values of conductivity, where the field-strength is given in dB relative to 1 μV/m for a transmitted power of 1 kW, the graphical procedure is repeated for the various sections. The values 1 mV/m and 100 kW correspond to 40 dB relative to 1 μV/m and 1 kW, which gives a distance of 170 km in the example.

For the use of the graphical procedure, it would be convenient, on the same graph, to have ground-wave propagation curves for various electrical constants at each frequency concerned. Examples of such curves are given in Figures 4 and 5 for 200 and 700 kHz; the dashed curves each represent the arithmetic mean of the field strengths in dB (i.e. the geometric mean of the field strengths in absolute terms) corresponding to the two adjacent solid curves. Further sets of curves can easily be prepared for a number of frequencies by means of C.C.I.R. Recommendation 368-2.

The accuracy of this graphical procedure depends on the difference in slope of the propagation curves, and is therefore to an extent dependent on the frequency. For LF frequencies, the difference between the result obtained by the method described in C.C.I.R. Recommendation 368-2 and that obtained by the approximate procedure is normally minimal, but for the highest MF frequencies there may be a difference of up to 3 dB for many paths.

Figure 6 of this Appendix is a comparison between results obtained by computer using the procedure described in C.C.I.R. Recommendation 368-2 and those obtained by the approximate graphical procedure.

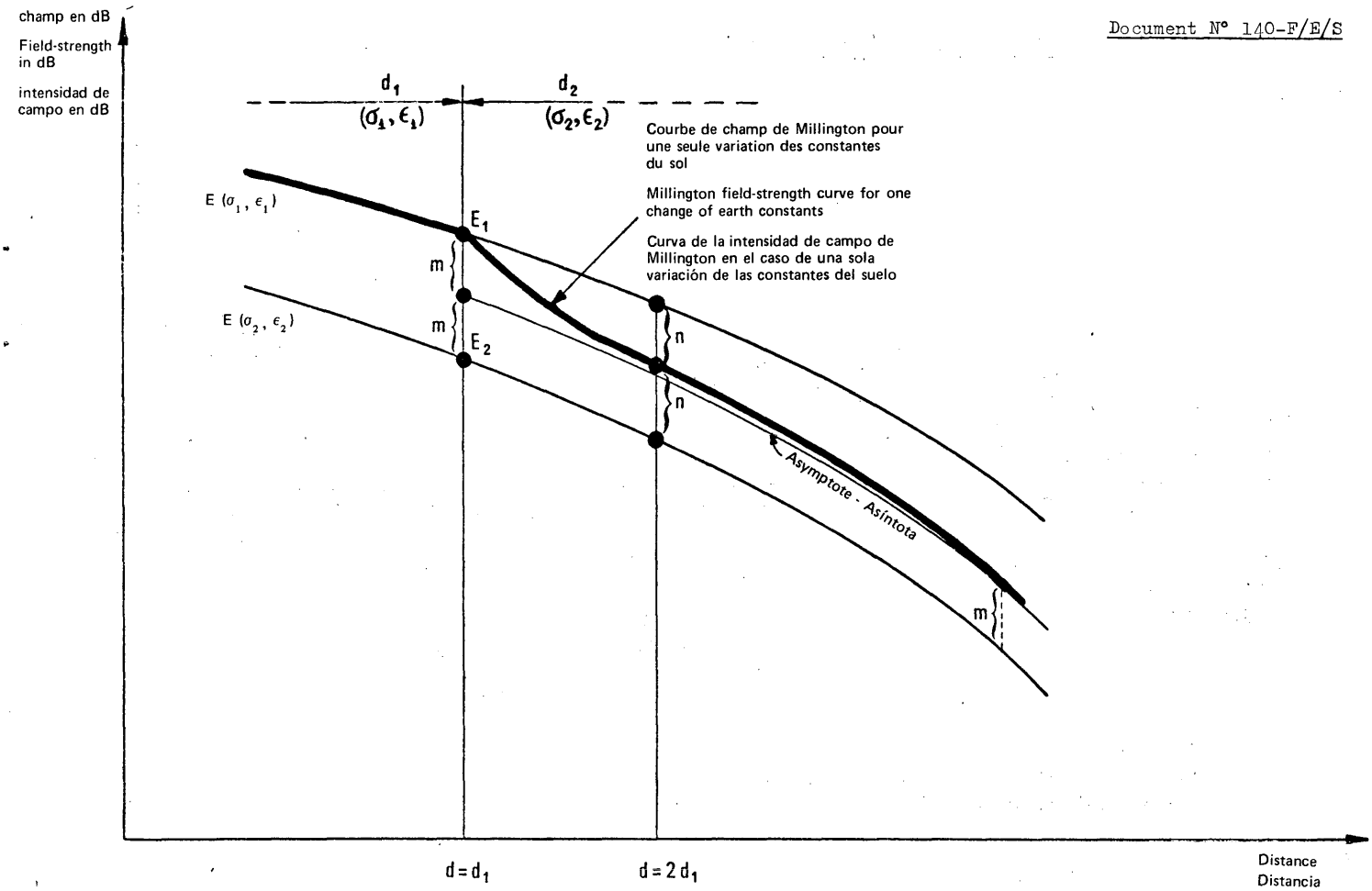


FIGURE 1 – FIGURA 1

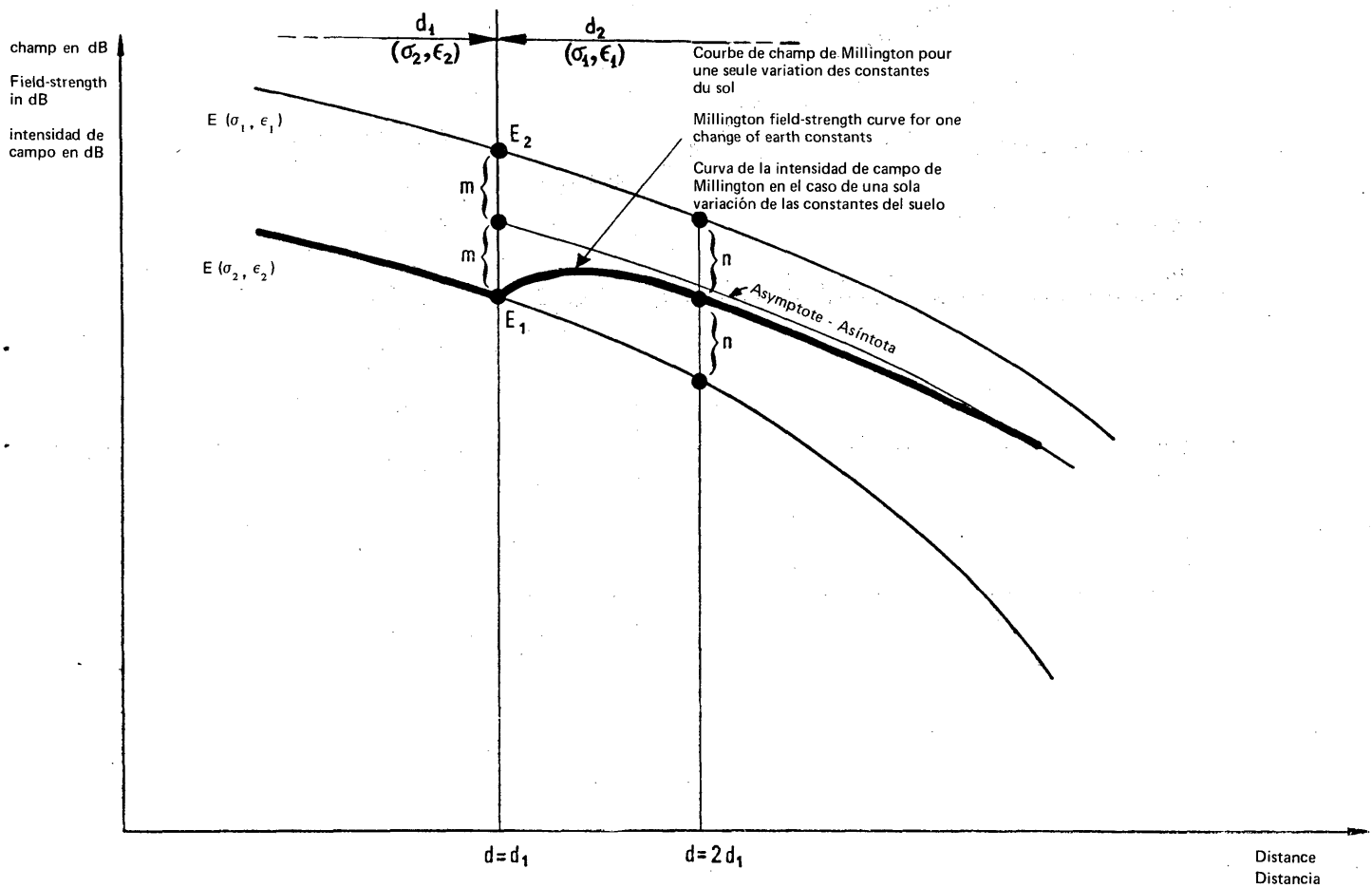
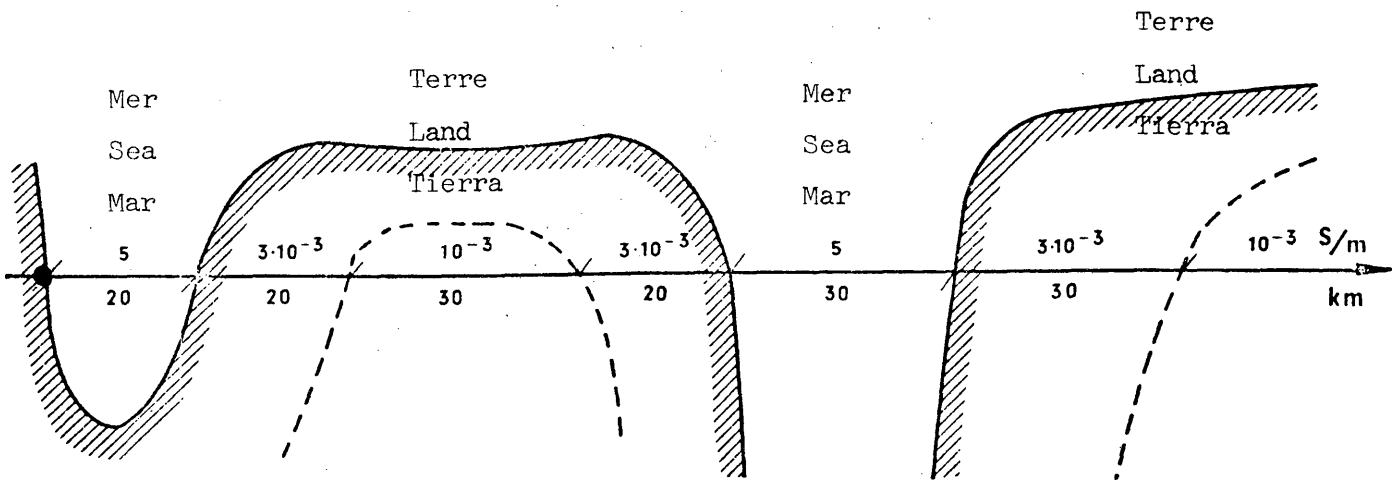
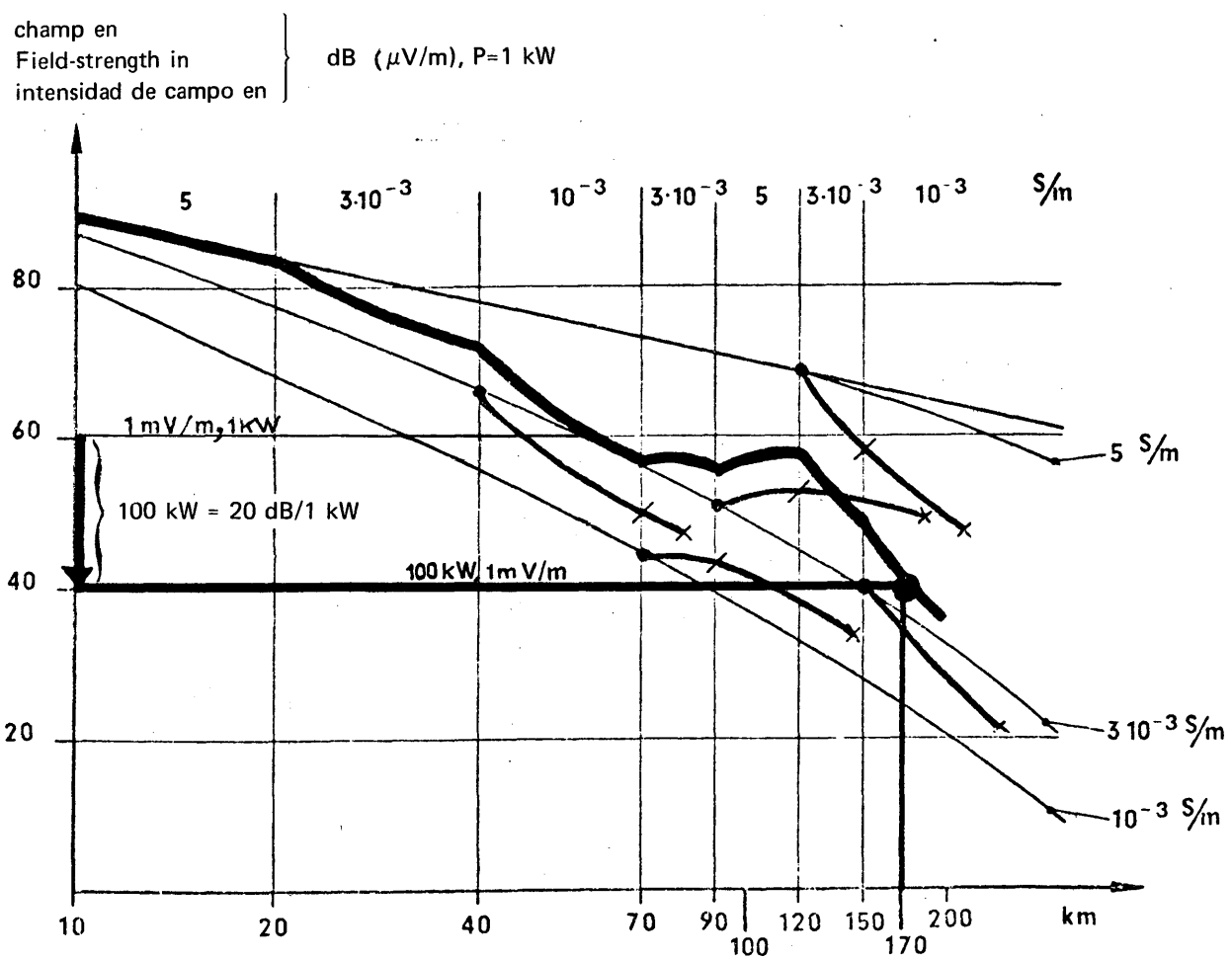


Figure 2 - Figura





700 kHz

FIGURE 3 – FIGURA 3

champ en
Field-strength in
intensidad de campo en

dB (μV/m), P = 1 kW

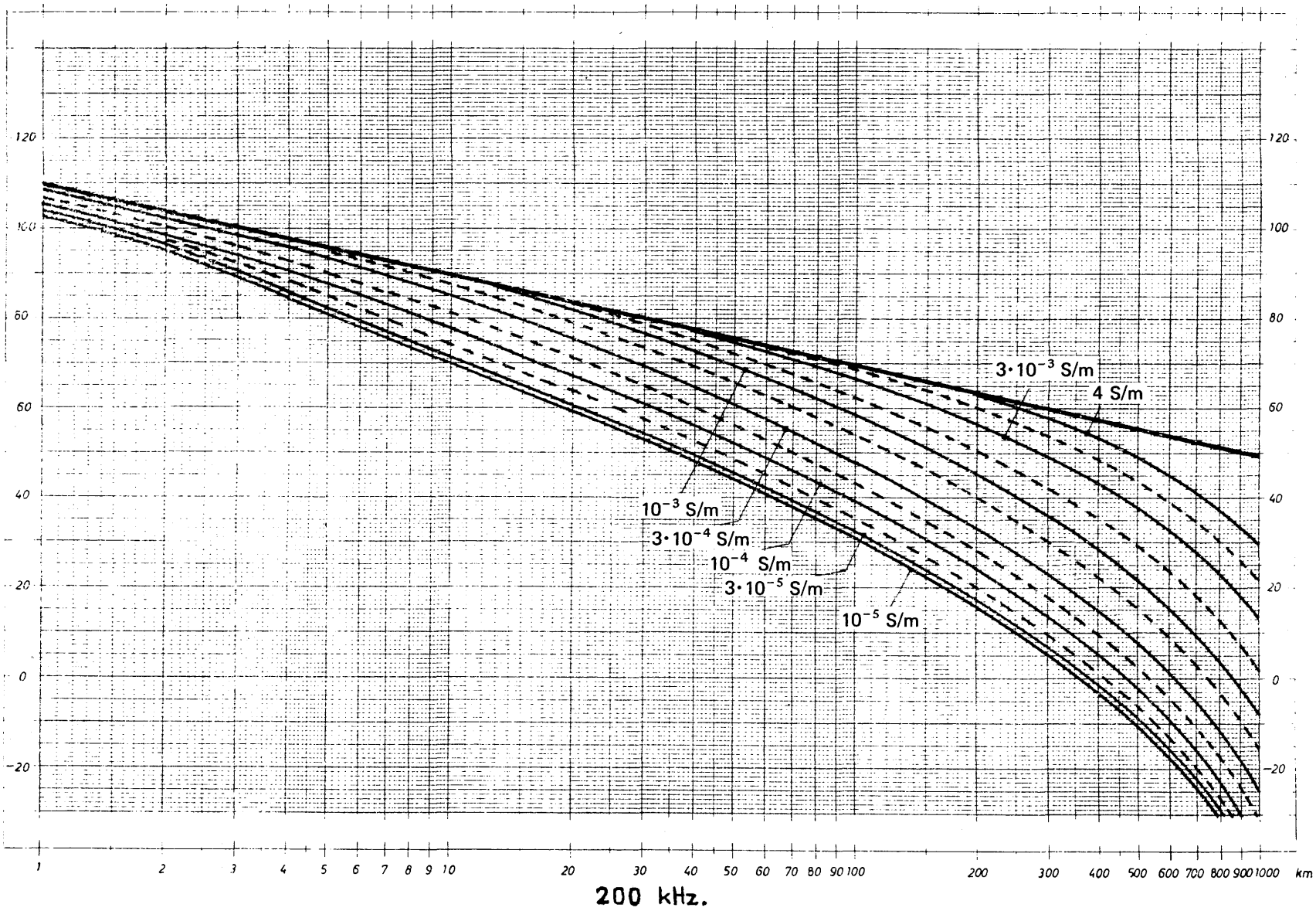


FIGURE 4 – FIGURA 4

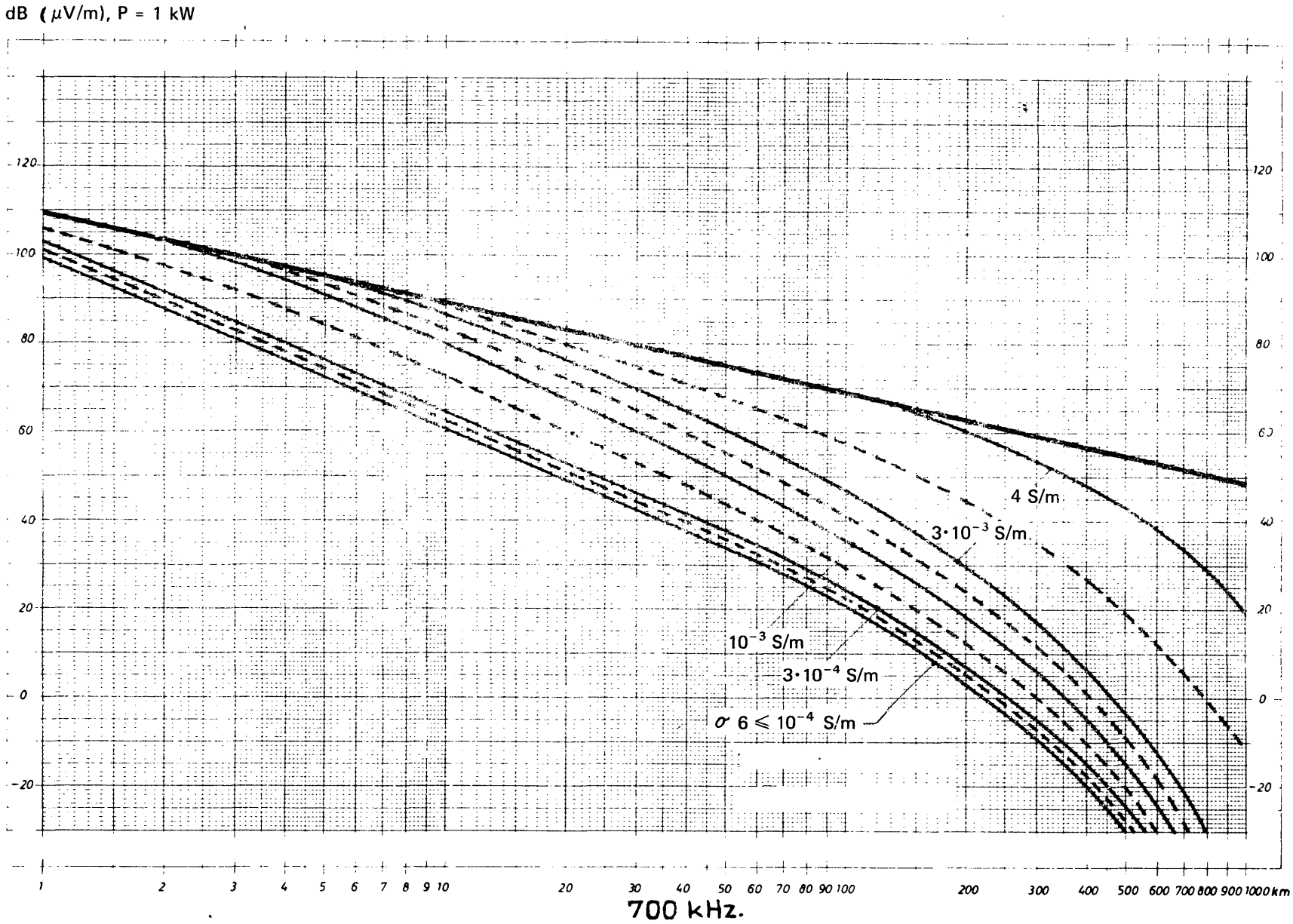
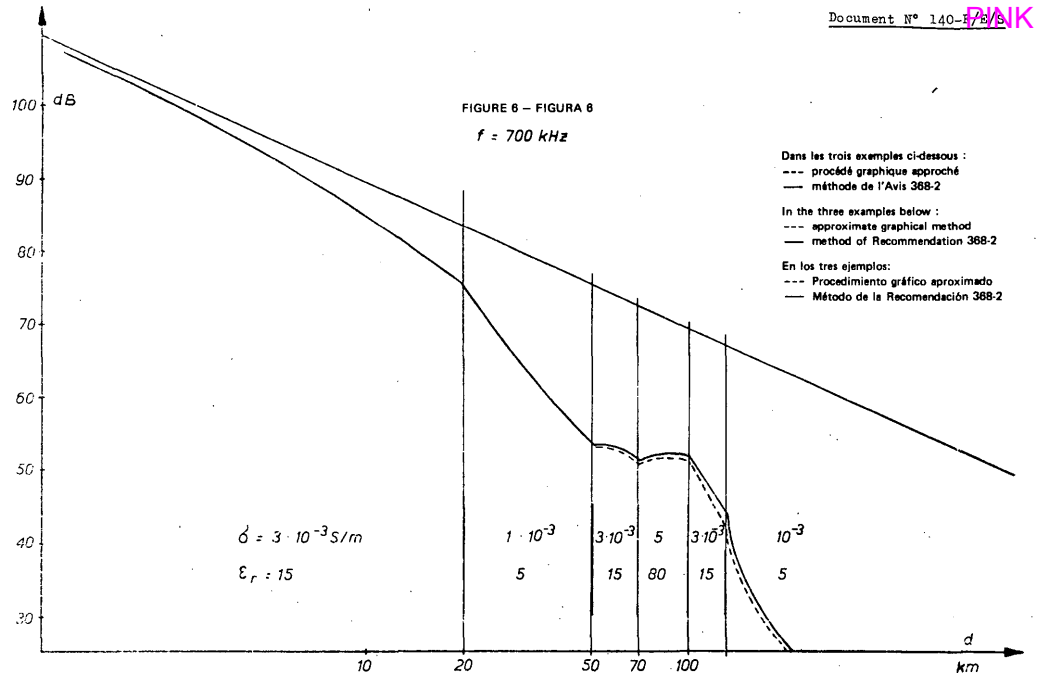
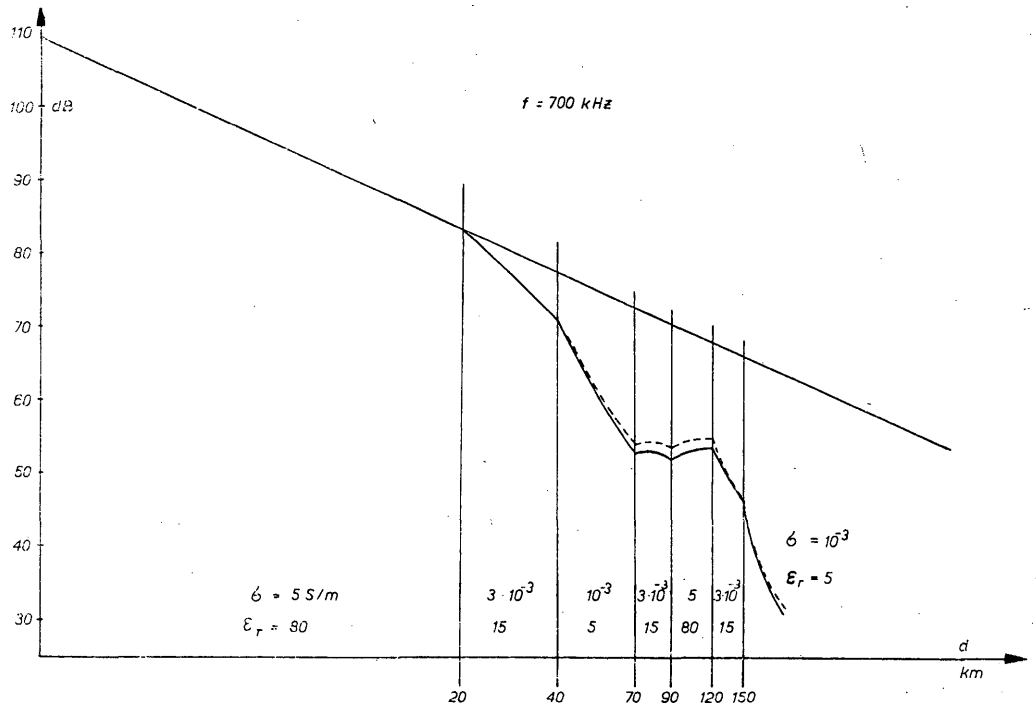
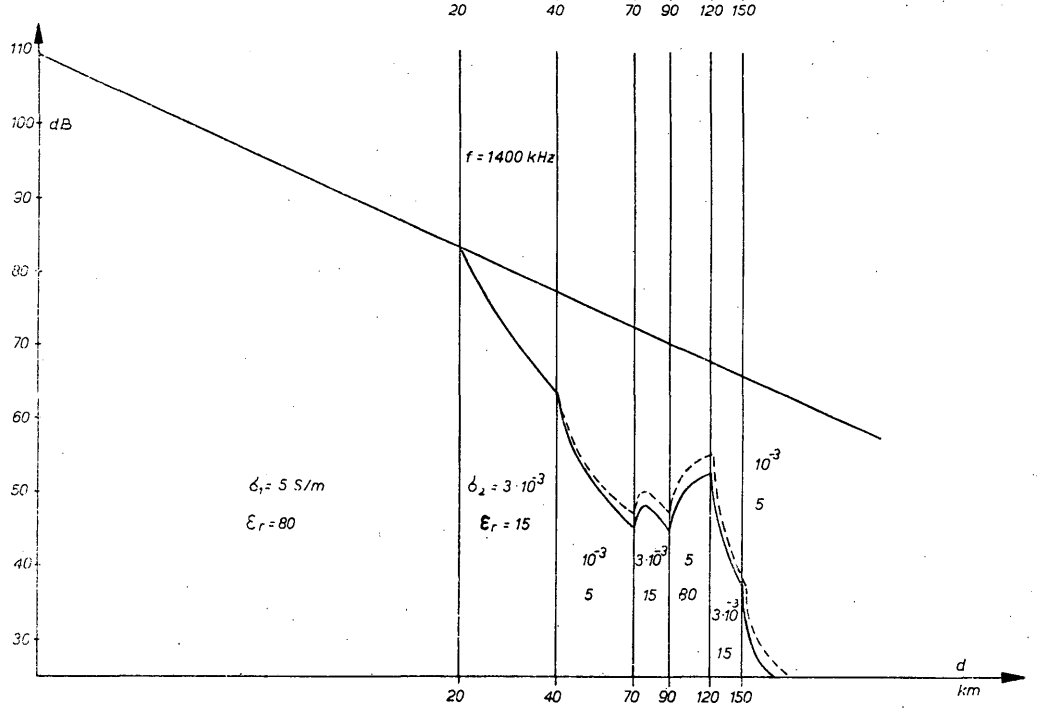


FIGURE 5 – FIGURA 5

FIGURE 6 – FIGURA 6







APPENDIX B

SKY-WAVE FIELD-STRENGTH PREDICTION METHOD FOR THE FREQUENCY RANGE 150 TO 1605 kHz FOR REGION 1, AUSTRALIA AND NEW ZEALAND

List of symbols

b	Solar-activity factor given in Section 2.6
d	Ground distance between transmitter and receiver (km)
F_o	Annual median field strength at the reference time defined in Section 2 (db above 1 μV/m)
F_t	Annual median field strength at time t (dB above 1 μV/m)
f	Frequency (kHz)
f'	A frequency defined in Equation (6) (kHz)
G	Antenna gain referred to a short vertical antenna in the direction of propagation
G_o	Sea gain for a terminal on the coast (dB)
G_S	Sea gain for a terminal near the sea (dB)
h	Transmitting antenna height
h_r	Height of reflecting layer (km)
I	Magnetic dip angle (degrees)
k	Basic loss factor due to the absorption in the ionosphere
k_R	Loss factor due to absorption in the ionosphere
L_P	Excess polarization coupling loss (dB)
L_t	Diurnal loss factor (dB)
P	Radiated power (dB above 1 kW)
p	Slant propagation distance (km)
Q	A sea-gain parameter given in Section 2.3
R	Twelve-month smoothed Zurich sunspot number
s	Distance of terminal from sea, measured along great-circle path (km)
t	Time relative to sunset or sunrise (hours)
V	Transmitter cymomotive force (dB above 300 volts)
θ	Direction of propagation relative to magnetic East-West (degrees)
λ	Wavelength
Φ	A geomagnetic latitude parameter
Φ_T	Geomagnetic latitude of transmitter (degrees, positive in northern hemisphere, negative in southern hemisphere)
Φ_R	Geomagnetic latitude of receiver (degrees, positive in northern hemisphere, negative in southern hemisphere)

1. Introduction

This method of prediction gives the night-time sky-wave field strength produced for a given power radiated from one or more vertical antennae, when measured by a loop aerial at ground level aligned in a vertical plane along the great circle path to the transmitter. It applies for paths of lengths up to 12,000 km. However in band 5 it was only verified for paths of up to 5000 km. The accuracy of prediction varies from region to region and may be improved in certain regions by applying modifications such as those shown in Section 5. In any case the method should be used with caution for geomagnetic latitudes greater than 60° or for distances less than 300 km.

2. Annual median night-time field strength

The predicted sky-wave field strength is given by :

$$F_o = V + G_S - L_P + 105.3 - 20 \log_{10} p - 10^{-3} k_R p \qquad (1)$$

where F_o = annual median of half-hourly median field strengths (dB above 1 μV/m) at the reference time defined in Section 2.1.

V = transmitter cymomotive force, dB above a reference cymomotive force of 300 volts

G_S = sea-gain correction, dB

L_P = excess polarization-coupling loss, dB

p = slant-propagation distance, km

k_R = loss factor incorporating effects of ionospheric absorption, focusing and terminal losses, and losses between hops on multi-hop paths

2.1 Reference time

The reference time is taken as six hours after the time at which the sun sets at a point S on the surface of the earth. For paths shorter than 2000 km, S is the mid-point of the path. On longer paths, S is 750 km from the terminal where the sun sets last, measured along the great-circle path.

2.2 Cymomotive force

The cymomotive force V in the azimuth and the elevation of the direction of propagation is calculated by the formula :

$$V = P' + G \qquad (2)$$

where P', expressed in dB (kW), is the power supplied by the transmitter to the antenna transmission line, while neglecting for planning purposes various losses in the antenna and its transmission line,

and where G is the gain of the antenna in dB in the direction of propagation referred to a short vertical antenna (see Chapter 1).

For a simple vertical antenna, without losses, this gain is given by Figure 1.

2.3 Sea gain

G_S is the additional signal gain when one or both terminals is situated near the sea. G_S for a single terminal is given by :

$$G_S = G_o - 10^{-3}\,\frac{Q\,s\,f}{G_o} \quad (dB) \qquad (3)$$

where G_o is the gain when the terminal is on the coast, f is the frequency in kHz and s is the distance in km of the terminal from the sea, measured along the great-circle path. Q = 0.44 in band 5 and 1.75 in band 6. G_o is given in Annex Figure 2 as a function of d for bands 5 and 6. In band 5, G_o = 10 dB when d > 6500 km. Equation (3) applies for values of s such that $G_S > 0$. For larger values of s, $G_S = 0$. If both terminals are near the sea, G_S is the sum of the values of G_S for the individual terminals.

2.4 Polarization coupling loss

L_P is the excess polarization coupling loss. In band 5, $L_P = 0$. In band 6 at low latitudes, for $|I| \leq 45^o$.

$$L_P = 180\,(36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2 \text{ (dB/terminal)} \qquad (4) \quad \text{(see Figure 7)}$$

where I is the magnetic dip in degrees at the terminal and θ is the path azimuth measured in degrees from the magnetic E-W direction, such that $|\theta| \leq 90^o$. For $|I| > 45^o$, $L_P = 0$. L_P should be evaluated separately for the two terminals, because of the different θ and I that may apply, and the two L_P values added. The most accurate available values of magnetic dip and declination should be used in determining θ and I (see Figures 8 and 9).

2.5 Slant propagation distance

For paths longer than 1000 km, p is approximately equal to the ground distance d (km). For shorter paths

$$p = (d^2 + 4h_r^2)^{\frac{1}{2}} \qquad (5)$$

where h_r = 100 km if $f \leq f'$ and 220 km if $f > f'$, where f' (in kHz) is given by

$$f' = 350 + \sqrt{(2.8d)^3 + 300^3}^{1/3} \qquad (6)$$

Equation (5) may be used for paths of any length with negligible error.

2.6 Loss factor due to absorption in the ionosphere

The loss factor due to absorption in the ionosphere k_R is given by

$$k_R = k + 10^{-2}\, bR \qquad (7)$$

where R = twelve-month smoothed Zurich sunspot number. In band 5, b = 0. In band 6, b = 1 for Europe and Australia and 0 elsewhere.

$$k = 1.9f^{0.15} + 0.24f^{0.4}(\tan^2\Phi - \tan^2 37^\circ) \qquad (8)$$

where f = frequency (kHz)

For paths shorter than 3000 km

$$\Phi = (\Phi_T + \Phi_R)/2 \qquad (9)$$

where Φ_T and Φ_R are the geomagnetic latitudes (see Figure 10) at the transmitter and receiver respectively, determined by assuming an earth-centred dipole field model with northern pole at 78.5°N, 69°W geographic coordinates. Φ_T and Φ_R are taken as positive in the northern hemisphere and negative in the southern hemisphere. Paths longer than 3000 km are divided into two equal sections which are considered separately. The value of Φ for each half-path is derived by taking the average of the geomagnetic latitudes at one terminal and at the mid-point of the whole path, the geomagnetic latitude at the mid-point of the whole path being assumed to be the average of Φ_T and Φ_R. As a consequence

$$\Phi = (3\Phi_T + \Phi_R)/4 \qquad (10)$$

for the first half of the path and

$$\Phi = (\Phi_T + 3\Phi_R)/4 \qquad (11)$$

for the second half. The values of k calculated from Equation (8) for the two half-paths are then averaged and used in Equation (7).

If $|\Phi| > 60^\circ$, Equation (8) is evaluated for $\Phi = 60^\circ$

3. Nocturnal variation of annual median field strength

$$F_t = F_o - L_t \qquad (12)$$

where F_t = annual median field strength at time t, dB above 1 μV/m

F_o = annual median field strength at reference time defined in Section 2.1, dB above 1 μV/m, given by Equation (1)

L_t = diurnal loss factor, dB, given in Fig. 3

Fig. 3 shows the average of the annual median nocturnal variations for Europe and Australia, derived from Fig. 8 of C.C.I.R. Report 264 and Fig. 5 of C.C.I.R. Report 431 respectively; the time t is the time in hours relative to the sunrise or sunset reference times as appropriate. These are taken at the ground at the midpath position for d ≤ 2000 km and at 750 km from the terminal where the sun sets last or rises first for longer paths.

4. Day-to-day and short-period variations of field strength

The field strength exceeded for 10% of the total time on a series of nights, during short periods centred on a specific time is :

8 dB greater in band 5

10 dB greater in band 6

than the values of F_o and F_t given above.

5. Accuracy of the method

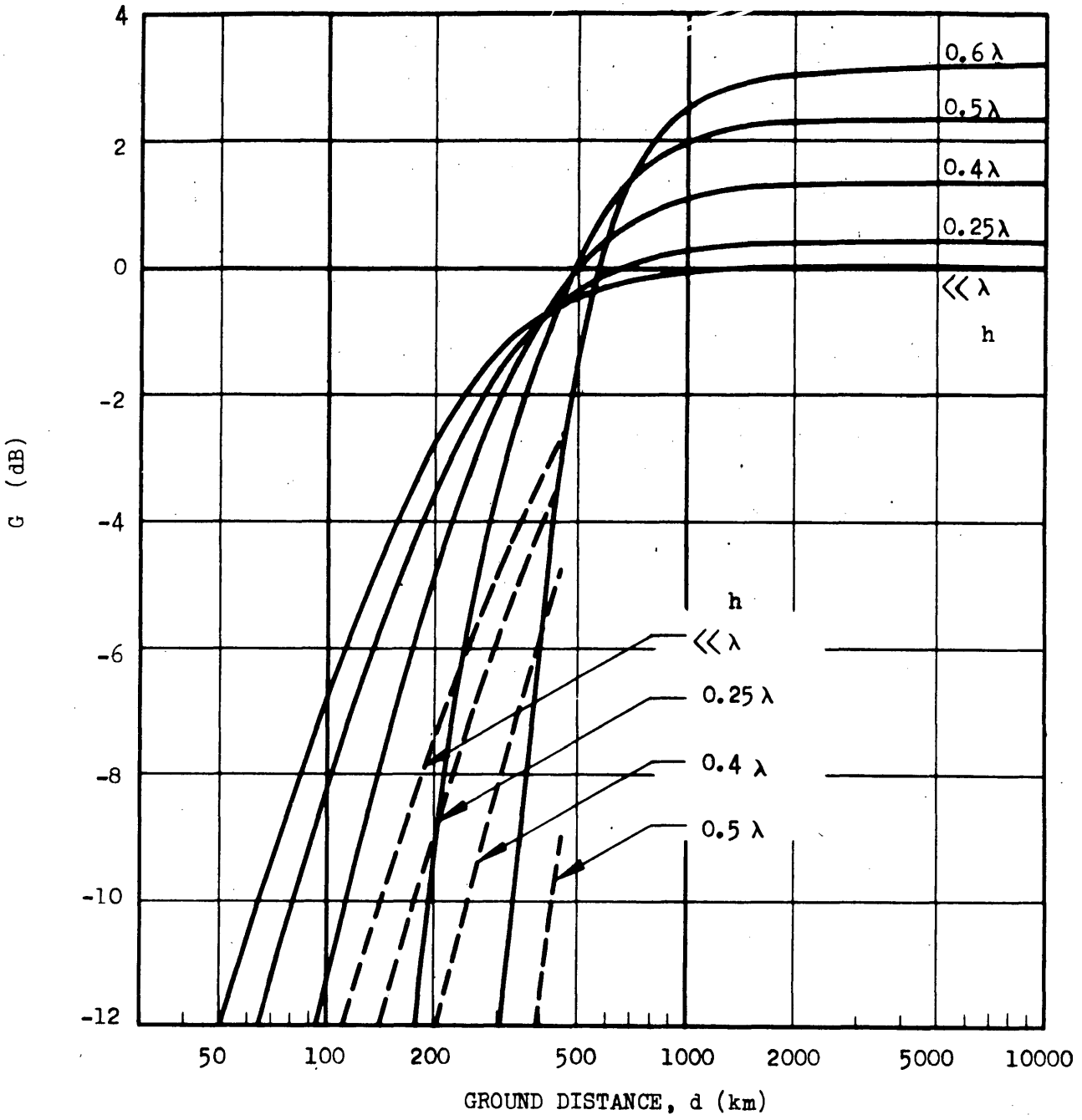
This method is believed to be reasonably accurate in Regions 1 and 3. Comparison of predicted and measured values shows, however, that its accuracy in certain regions may be further improved by making the following corrections.

Since field strengths measured in Australia and New Zealand are 4 to 7 dB higher than those predicted by the method, a better prediction formula for this area is

$$F_o = V + G_S - L_P + 108 - 20 \log_{10} p - 0.8 \times 10^{-3} k_R p \qquad (13)$$

The field strength exceeded on band 6 for 10% of the total time on a series of nights, during short periods centred on a specific time, is only 7 dB greater than the annual median in this area.

6. The Annex to the Appendix contains some examples of the use of this method.



h = Aerial height

——— h_r = 100 km (E layer reflection)

– – – – h_r = 220 km (F layer reflection)

FIGURE 1

Transmitting antenna gain for
a simple vertical antenna

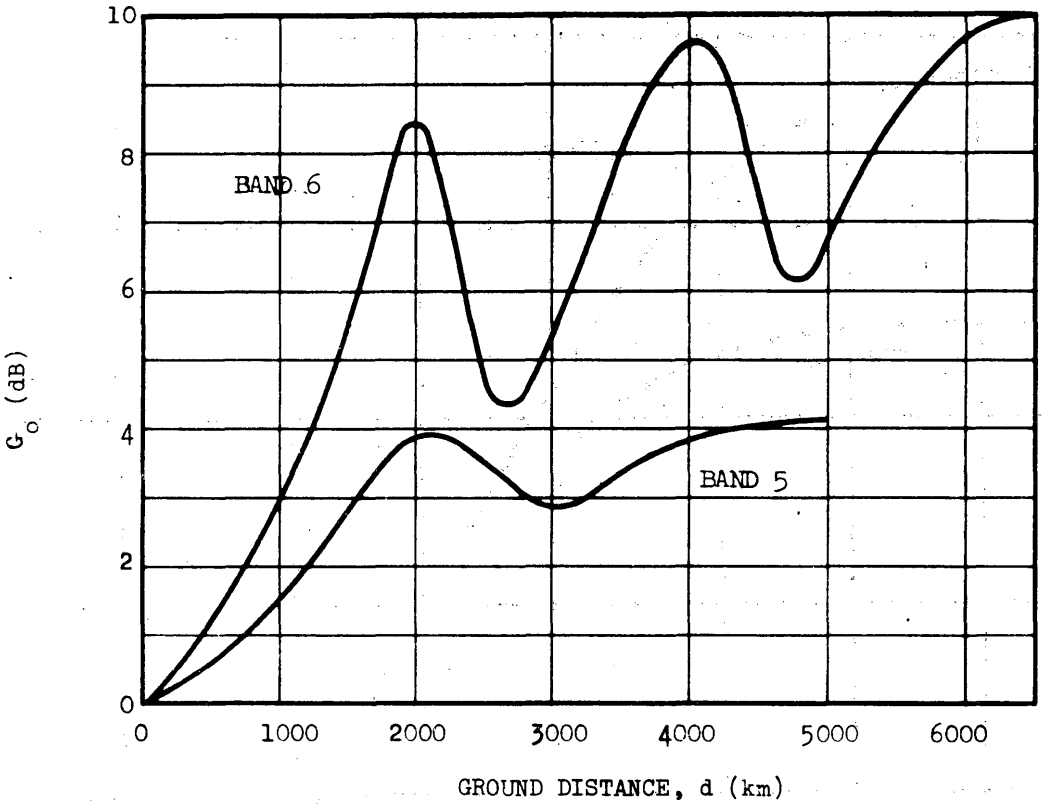


FIGURE 2

Sea gain (G_o) for a single terminal on the coast

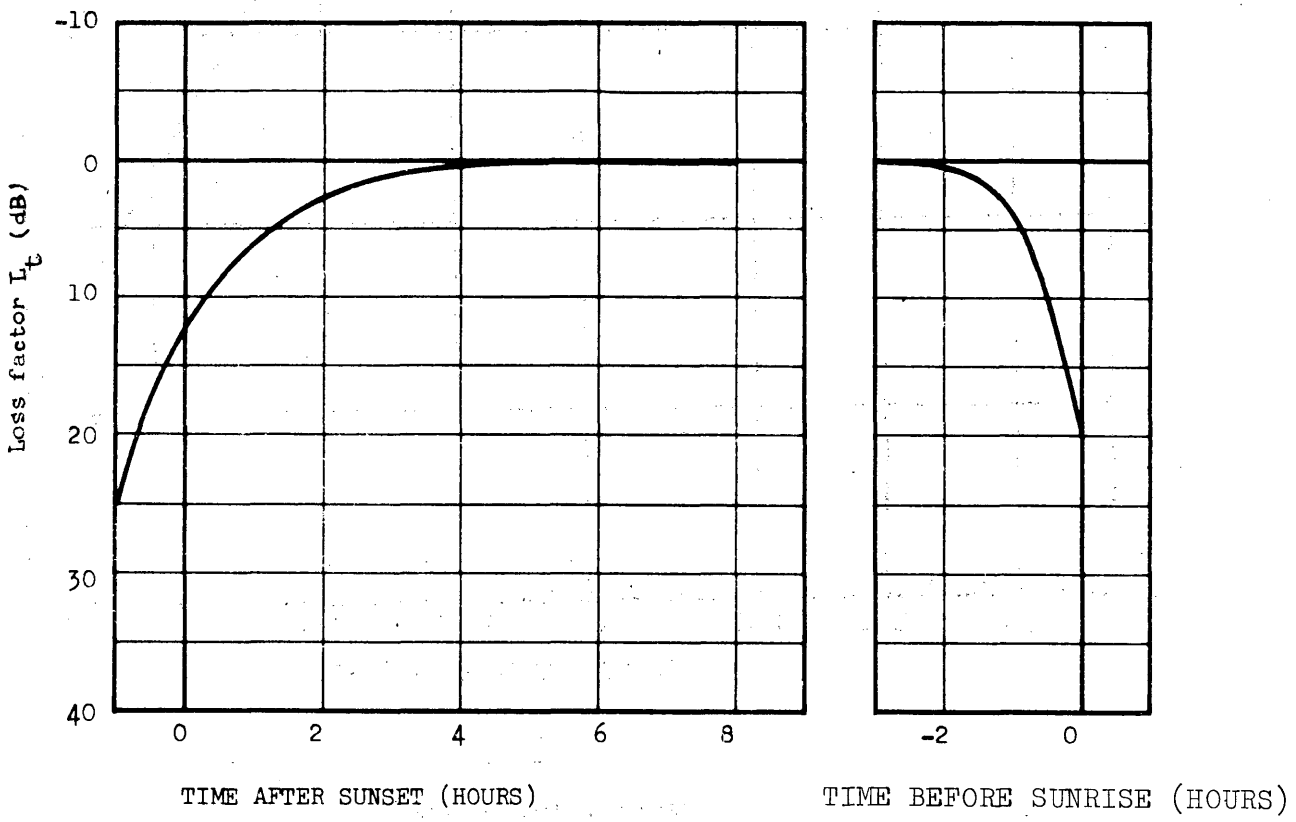


FIGURE 3

Diurnal loss factor (L_t)

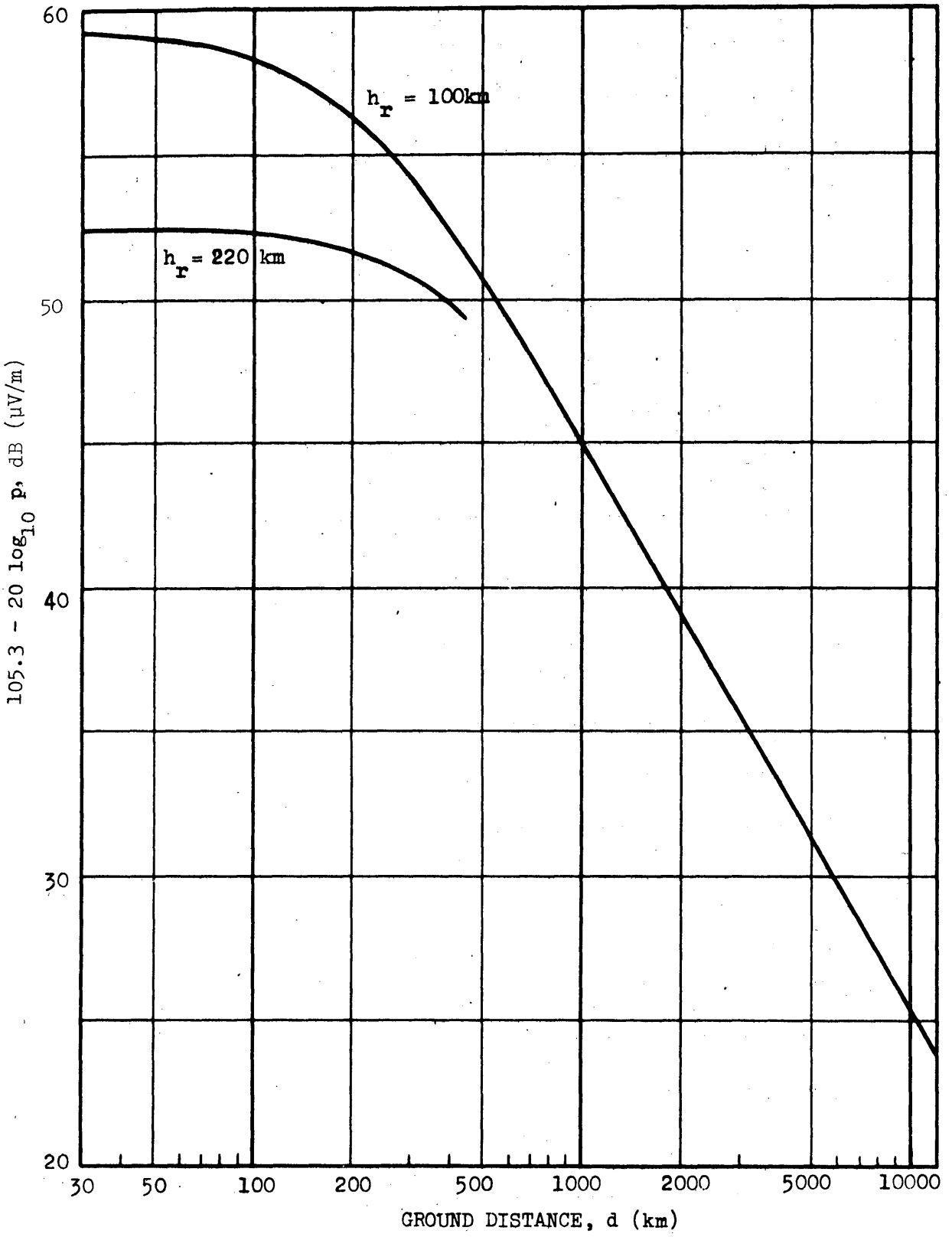


FIGURE 4

Basic field strength

The curves show $105.3 - 20 \log_{10} p$
where $p = (d^2 + 4h_r^2)^{\frac{1}{2}}$

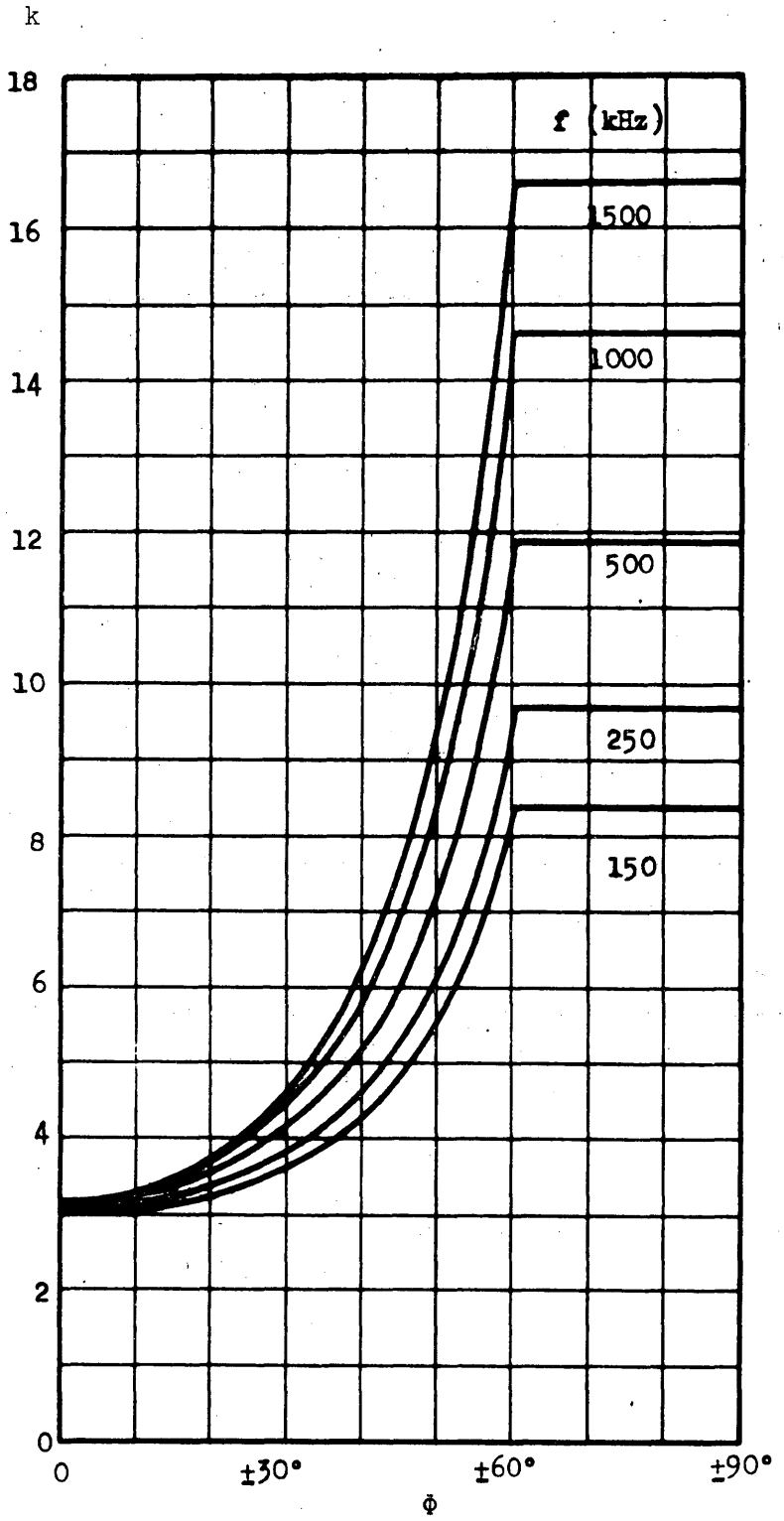


FIGURE 5

Basic loss factor due to ionospheric absorption

$$k = 1.9f^{0.15} + 0.24f^{0.4} (\tan^2 \Phi - \tan^2 37^\circ)$$

$$(0 \leq \Phi \leq 60^\circ)$$

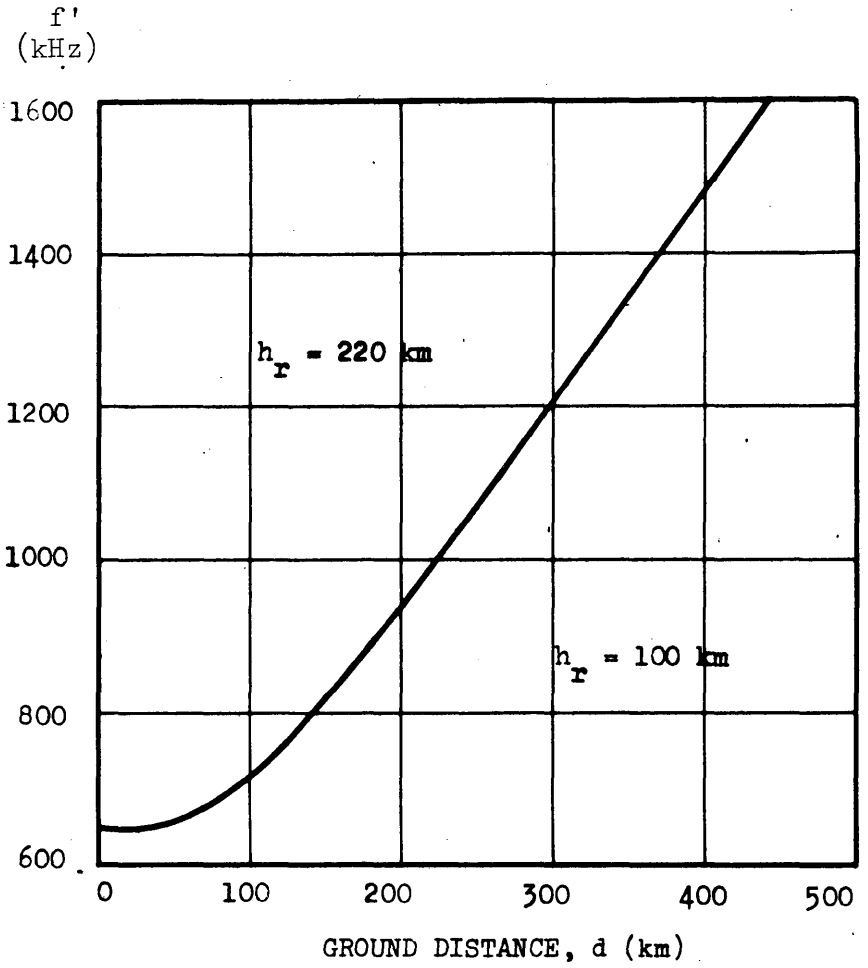


FIGURE 6

Frequency defined in equation (6)

$$f' = 350 + \left[(2.8\ d)^3 + 300^3 \right]^{\frac{1}{3}}$$

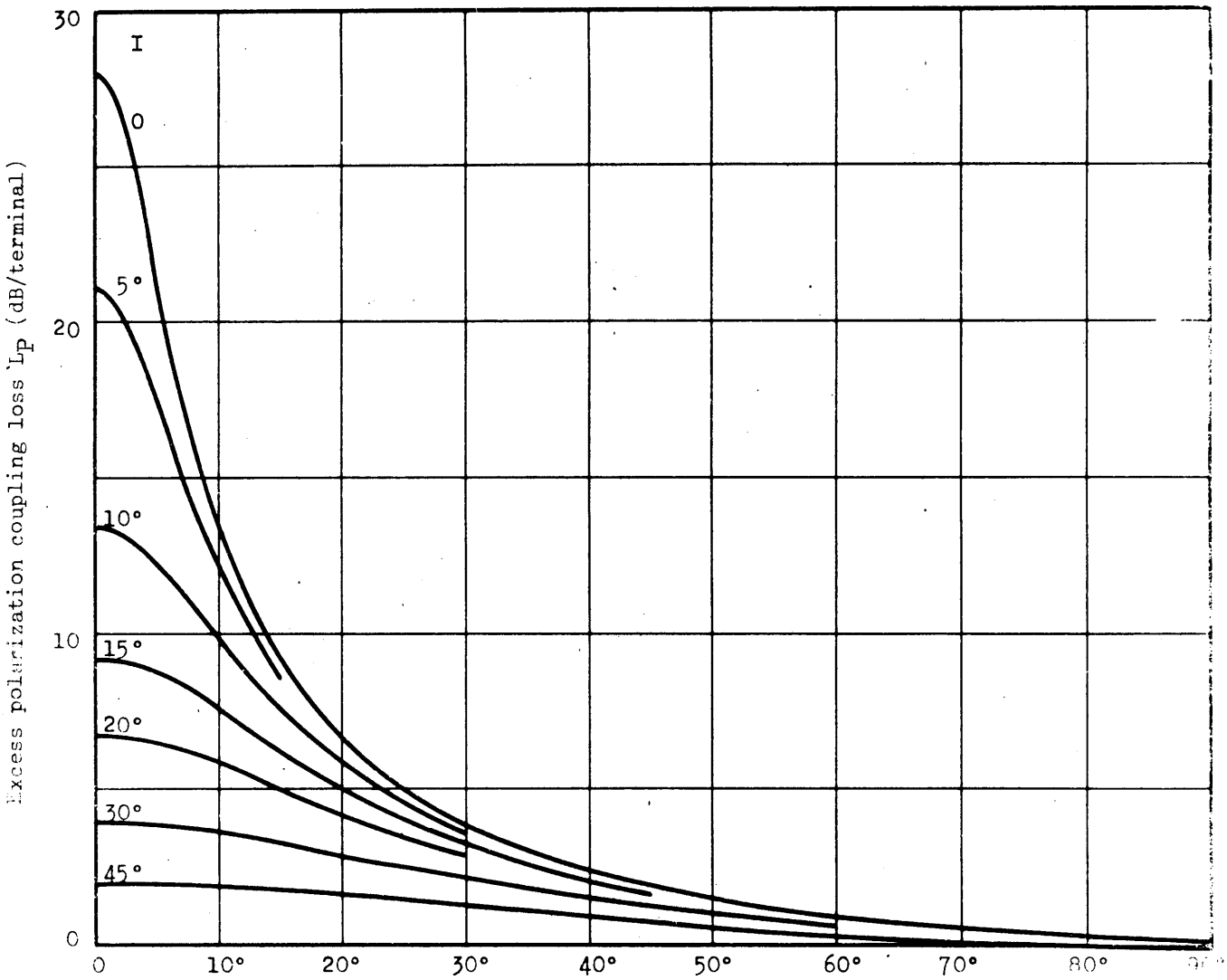
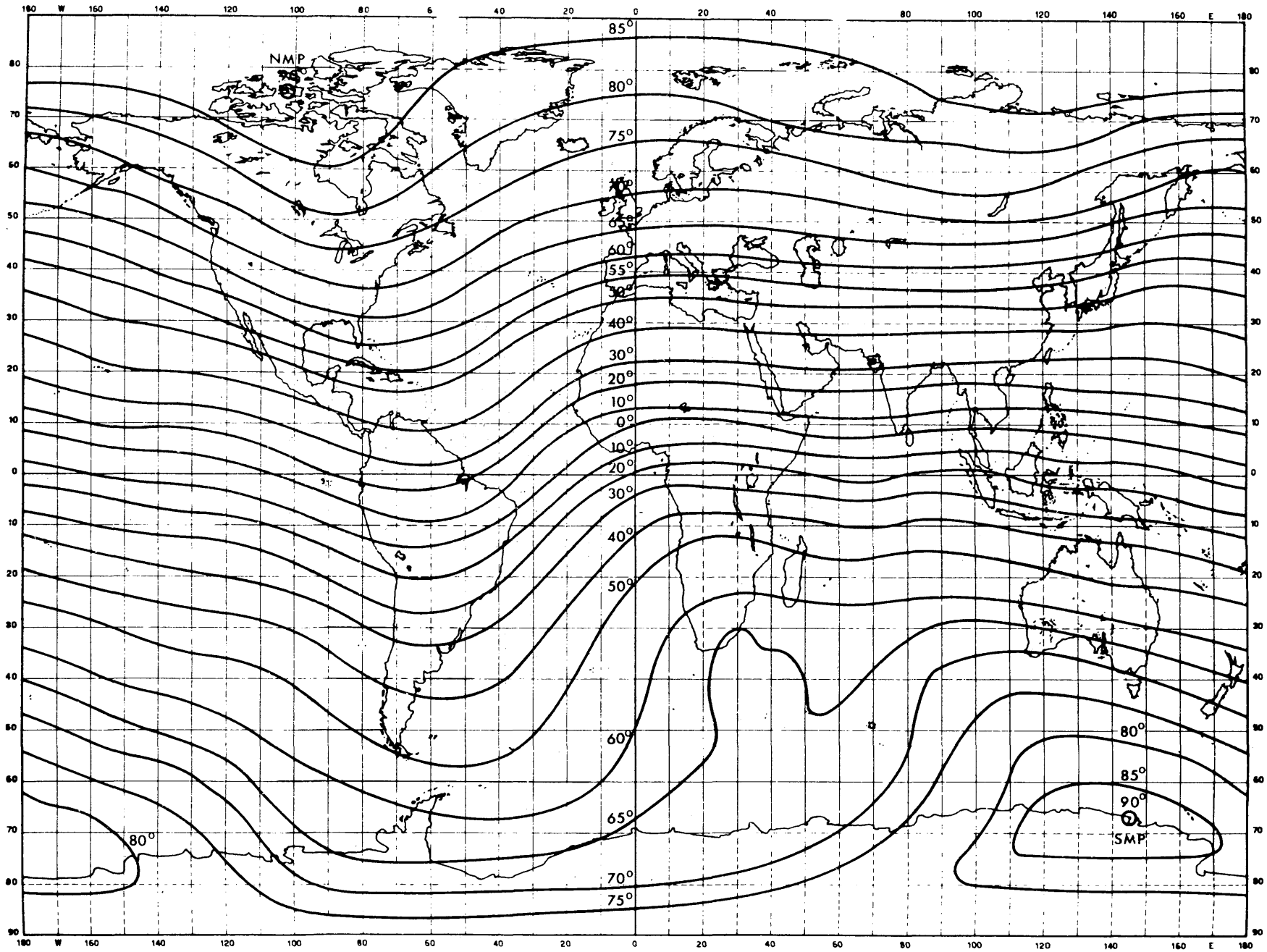


FIGURE 7

Excess polarization coupling loss L_p

FIGURE 8* - FIGURA 8*

Map of magnetic dip - Carte de l'inclinaison magnétique - Mapa de la inclinación magnética



* Cette carte, provisoire, sera remplacée par une carte mise à jour.
A provisional map to be replaced by on up dated map.
Este mapa, provisional, será sustituido por un mapa puesto al día.

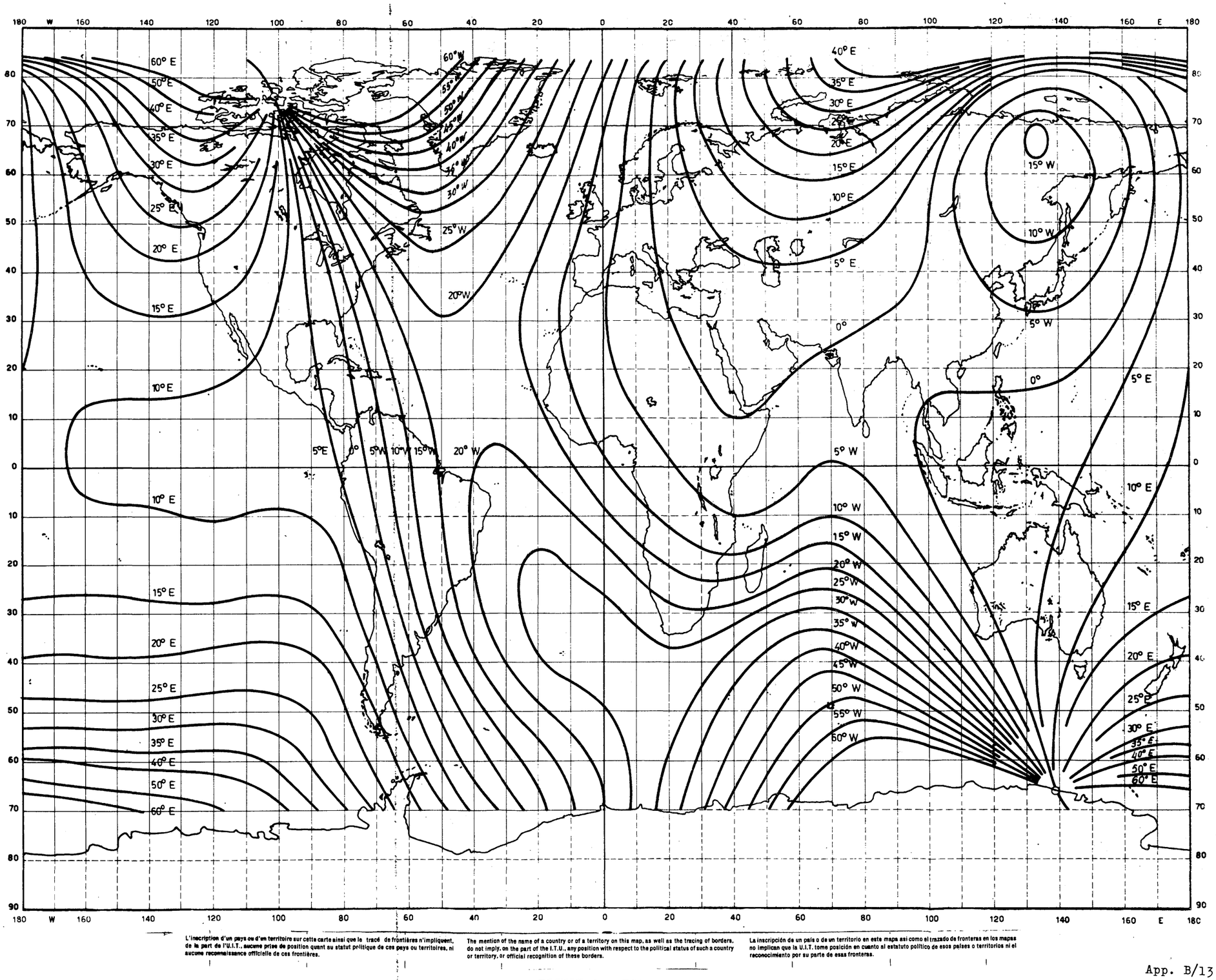


FIGURE 9 - FIGURA 9

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

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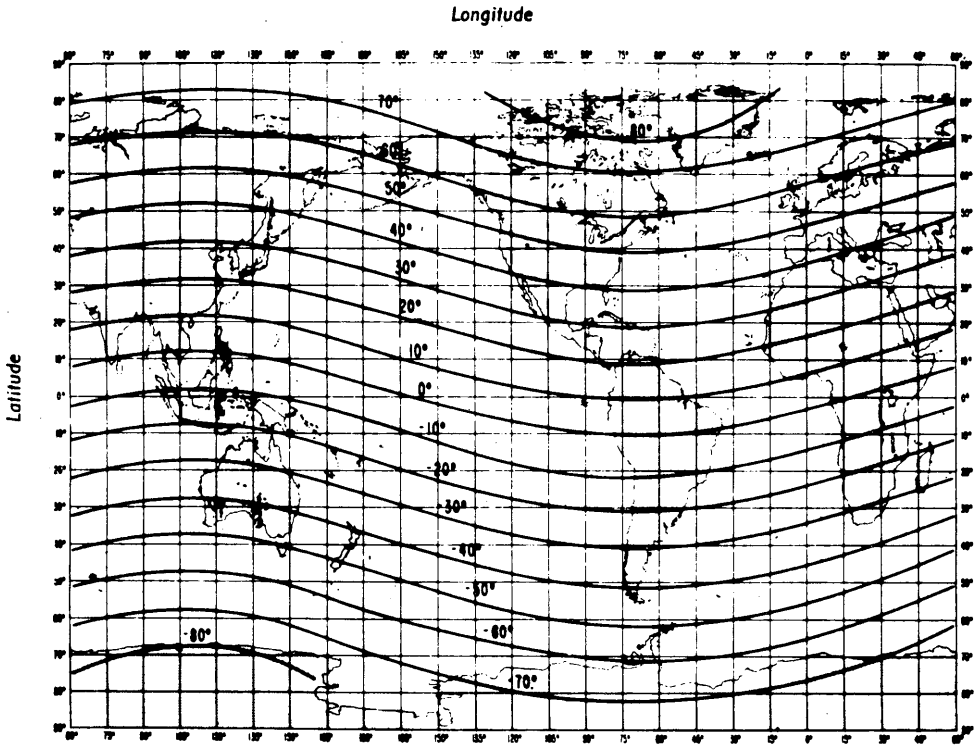

FIGURE 10

Geomagnetic latitudes

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ANNEX TO APPENDIX B

Example of the use of the sky-wave field-strength prediction method

1) Short-distance path

Data

Transmitter	Rome (Italy)	
Receiver	Darmstadt (F.R.G.)	
Great-circle distance	950 km	
Frequency	845 kHz	
Basic field strength (Fig. 4)	45.5	dB(μV/m)
Geomagnetic latitude of transmitter	$\Phi_T = 44°$	Fig. 10
Geomagnetic latitude of receiver	$\Phi_R = 52°$	
Geomagnetic latitude parameter	$\Phi = \frac{\Phi_T + \Phi_R}{2} = 48°$	
Basic loss factor (Fig. 5)	7.2	

Attenuation contributed by loss factor = $7.2 \times 950 \times 10^{-3} = 6.9$ dB

Annual median field strength = 45.5 - 6.9 = 38.6 dB(μV/m)

2) Long-distance path with one terminal near the sea and the other in the tropical region

Data

Transmitter	Riyad (Saudi Arabia)	
Receiver	Helsinki (Finland)	(2 km from sea)
Great-circle distance	4,280 km	
Frequency	587 kHz	
Basic field strength (Fig. 4)	32.5	dB(μV/m)
Geomagnetic latitude of transmitter	$\Phi_T = 18°$	Fig. 10
Geomagnetic latitude of receiver	$\Phi_R = 58°$	

	First half of path	Second half of path
Geomagnetic latitude parameter	$\frac{3\Phi_T + \Phi_R}{4} = 28°$	$\frac{\Phi_T + 3\Phi_R}{4} = 48°$
Basic loss factor (Fig. 5)	4.1	6.9

Average loss factor = $\frac{4.1 + 6.9}{2} = 5.5$

Attenuation contributed by loss factor = $5.5 \times 4{,}280 \times 10^{-3} = 23.5$ dB

Dip latitude of transmitter, I (Fig. 8) = 30°

Direction of propagation relative to magnetic east-west at transmitter, θ = 70°

Polarization coupling loss at transmitter (Fig. 7) = 0.5 dB

Sea-gain :

for terminal on the coast, G_o (Fig. 2) = 9.0 dB

reduction because receiver is 2 km from sea = $\frac{10^{-3} \times 1.75 \times 2 \times 587}{9.0} = 0.2$ dB

resultant gain, G_s = 9.0 - 0.2 = 8.8 dB

Annual median field-strength = 32.5 - 23.5 + 8.8 - 0.5 = 17.3 dB(μV/m)

Note : These two examples give the field-strength produced by a source radiating with a c.m.f. of 300 V or an e.m.r.p. of 1 kW in the direction of propagation. Corrections for antenna gain (Fig. 1) and for transmitter power are not included. The reference time is 6 hours after sunset. For other times, use should be made of Fig. 3.

APPENDIX C

RELATIVE RADIO-FREQUENCY PROTECTION RATIO CURVES

(Based on C.C.I.R. Recommendation 449)

The relative values of the radio-frequency protection ratio, expressed as a function of the carrier-frequency spacing, are given by the curves of Fig. 1 :

- curve A, when a limited degree of modulation compression is applied at the transmitter input, such as in good quality transmissions, and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;

- curve B, when a high degree of modulation compression (at least 10 dB greater than in the preceding case) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 10 kHz;

- curve C, when a limited degree of modulation compression (as in the case of curve A) is applied and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz;

- curve D, when a high degree of modulation compression (as in the case of curve B) is applied by means of an automatic device and when the bandwidth of the audio-frequency modulating signal is of the order of 4.5 kHz.

The curves A, B, C and D are valid only when the wanted and unwanted transmissions are compressed to the same extent.

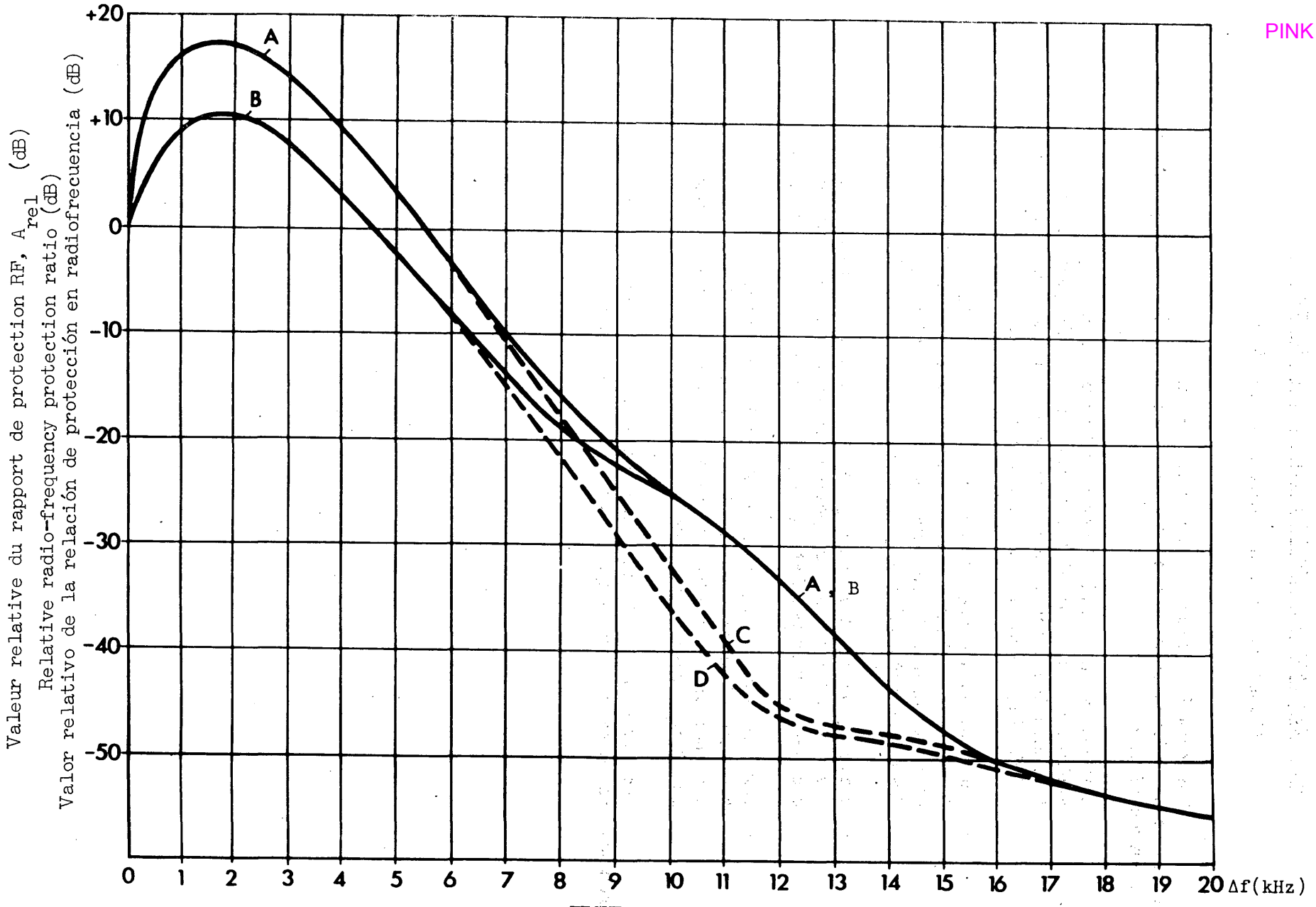
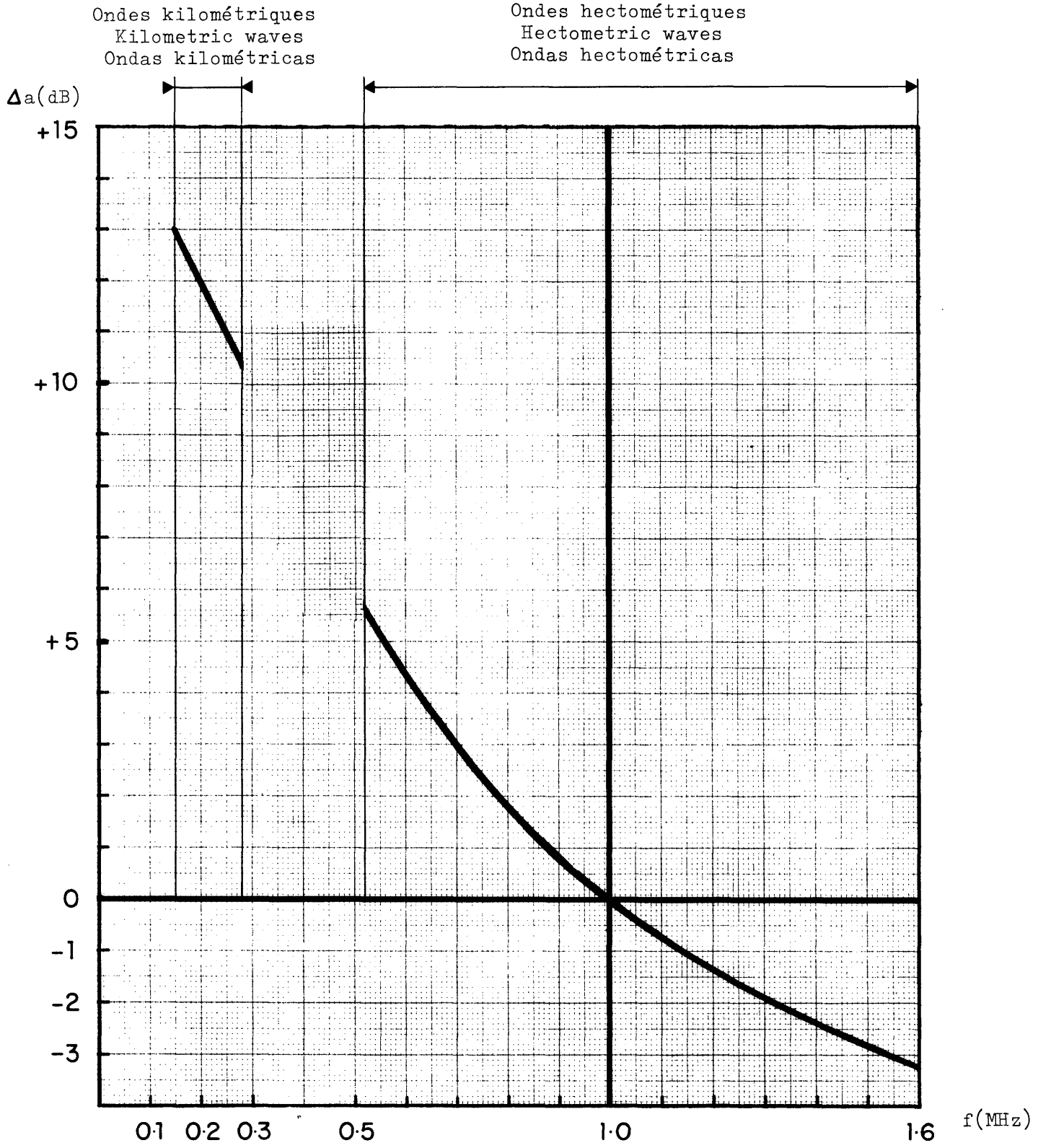


FIGURE 1 FIGURA 1

VALEURS RELATIVES DU RAPPORT DE PROTECTION AUX FREQUENCES RADIOELECTRIQUES EN FONCTION DE L'ECARTEMENT DES PORTEUSES
RELATIVE VALUE OF THE RADIO-FREQUENCY PROTECTION RATIO AS A FUNCTION OF THE CARRIER FREQUENCY SEPARATION
VALORES RELATIVOS DE LA RELACIÓN DE PROTECCIÓN EN RADIOFRECUENCIA EN FUNCIÓN DE LA SEPARACIÓN ENTRE LAS PORTADORAS

APPENDICE D - APPENDIX D - APÉNDICE D

"VALEUR MINIMALE DU CHAMP" EN FONCTION DE LA FREQUENCE
FREQUENCY DEPENDENCE OF "MINIMUM VALUE OF FIELD-STRENGTH"
"VALOR MÍNIMO DE LA INTENSIDAD DE CAMPO" EN FUNCIÓN DE LA FRECUENCIA



APPENDIX E

SKY-WAVE FIELD STRENGTH PREDICTION METHOD FOR THE FREQUENCY RANGE 525 TO 1605 kHz FOR THE ASIAN PART OF REGION 3 NORTH OF 11°S

1. Symbols

d	Ground distance between transmitter and receiver (km)
F_o	Annual median field strength at midnight (dB above 1 μV/m)
F_c	Field strength, in dB, derived from the Cairo curve (Figure 1)
F_t	Annual median field strength at time t (dB above 1 μV/m)
f	Frequency (kHz)
I	Magnetic dip angle (degrees)
L_p	Excess polarization coupling loss (dB)
L_t	Diurnal loss factor (dB)
P	Radiated power (dB above 1 kW)
t	Time relative to sunset or sunrise (hours)
V	Transmitter cymomotive force (dB above 300V)
Θ	Direction of propagation relative to magnetic East-West (degrees)

2. Propagation curve

In the Asian area of the Region 3 situated to the north of 11°S the "Cairo North-South" propagation curve referred to the annual midnight median value should be used for sky wave predictions. This curve appears in Figure 1 of this Appendix. This curve refers to an effective radiated power (e.m.r.p.) of 1 kW or a c.m.f. of 300 V of a short vertical antenna. The field F_o, in dB, is given by the formula

$$F_o = F_c - L_p \qquad (1)$$

where F_c is the field strength, in dB, derived from the Cairo curve (see Figure 1) or deduced from an equivalent mathematical formula

L_p is the polarization coupling loss, in dB

3. Polarization coupling loss (L_p)

L_p is the excess polarization coupling loss. In band 5 $L_p = 0$. In band 6 at low latitudes for $|I| \leq 45°$

$$L_p = 180\ (36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2 \text{ (dB/terminal)} \qquad (2) \text{ (see Figure 2)}$$

where I is the magnetic dip in degrees at the terminal and θ is the path azimuth measured in degrees from the magnetic E-W direction, such that $|\theta| \leq 90°$. For $|I| > 45°$, $L_p = 0$. L_p should be evaluated separately for the two terminals, because of the different θ and I that may apply, and the two L_p added. The most accurate available values of magnetic dip and declination should be used in determining θ and I (see Figures 3 and 4).

4. Nocturnal variation of annual median field strength

$$F_t = F_o - L_t \qquad (3)$$

where F_t = annual median field-strength at time t, dB above 1 μV/m

F_o = annual median field strength at midnight, dB above 1 μV/m, given by formula 1

L_t = diurnal loss factor, dB, given in Figure 5

In Figure 5 time t is the time in hours relative to the sunrise or sunset reference times as appropriate. These are taken at the ground at the midpath position for $d < 2000$ km and at 750 km from the terminal where the sun sets last or rises first for longer paths.

5. Day-to-day and short-period variations of field strength

The field strength exceeded for 10% of the total time on a series of nights, during short periods centred on a specific time is 10 dB greater than the median value.

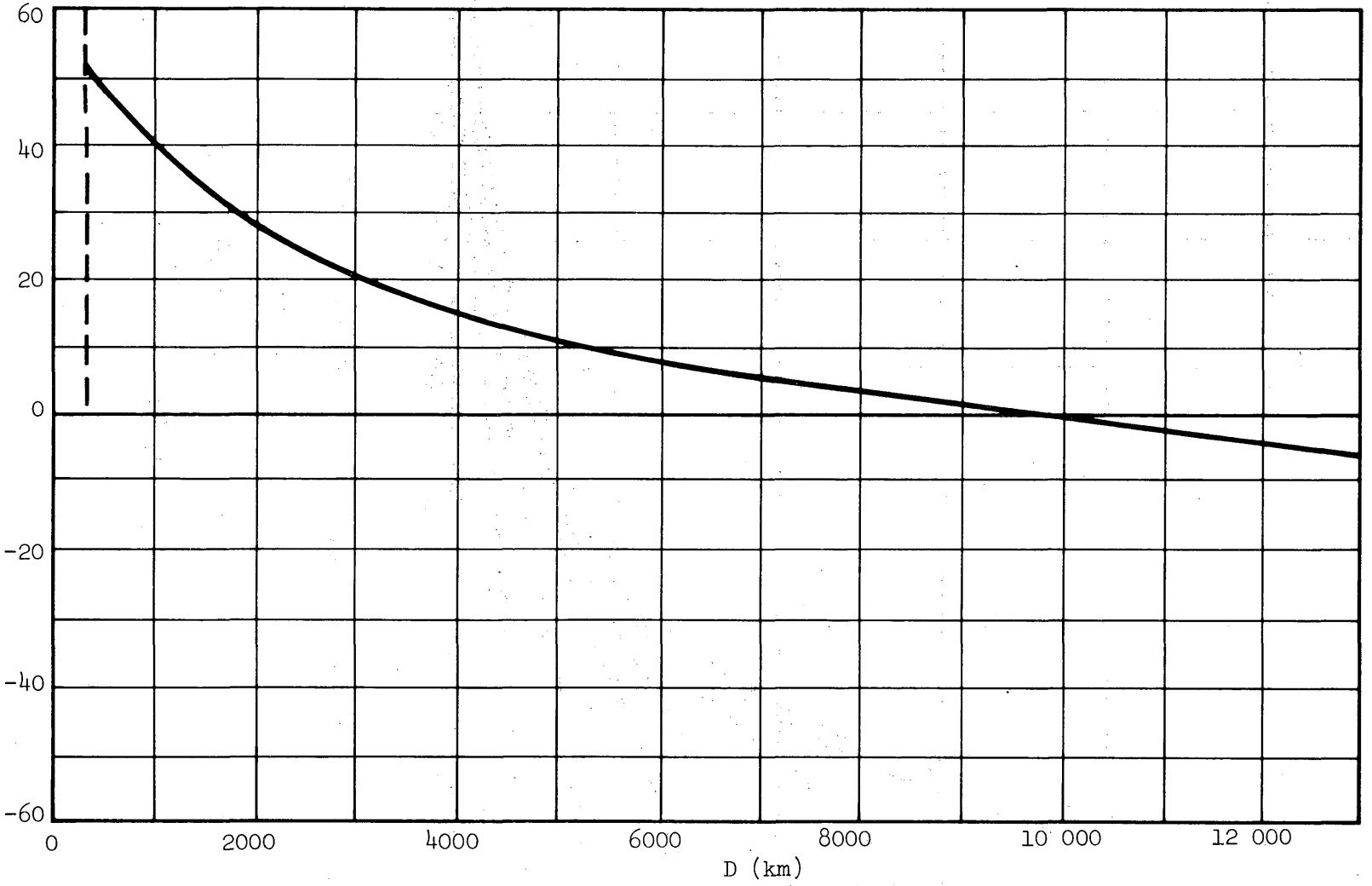


FIGURE 1

Annual midnight median value of ionospheric field strength of Cairo North/South curve

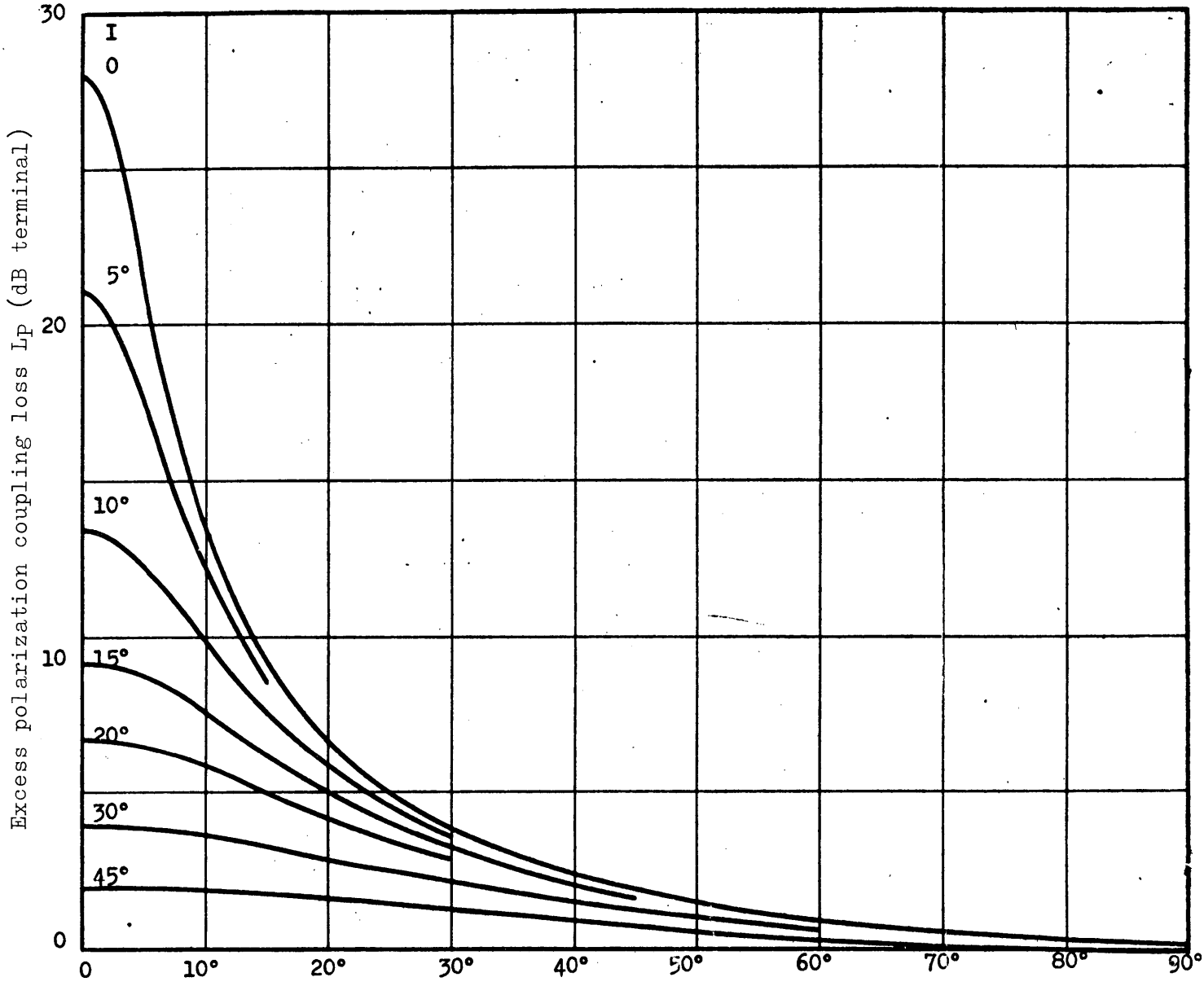


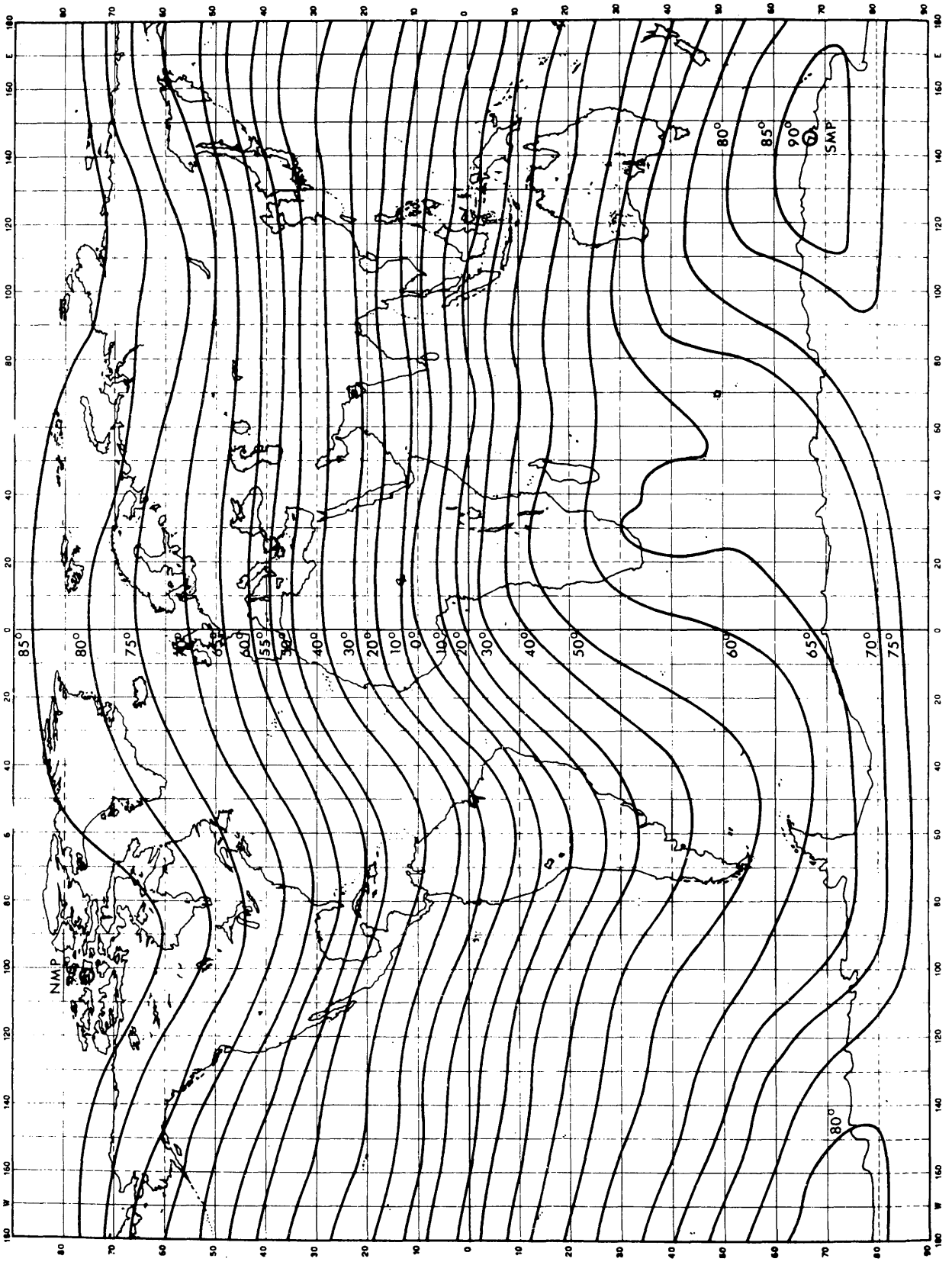
FIGURE 2

Excess polarization coupling loss L_P

$$L_P = 180\ (36 + \theta^2 + I^2)^{-\frac{1}{2}} - 2$$

FIGURE 3* - FIGURA 3*

Map of magnetic dip - Carte de l'inclinaison magnétique - Mapa de la inclinación magnética



* Cette carte, provisoire, sera remplacée par une carte mise à jour.
A provisional map to be replaced by on up dated map.
Este mapa, provisional, será sustituido por un mapa puesto al día.

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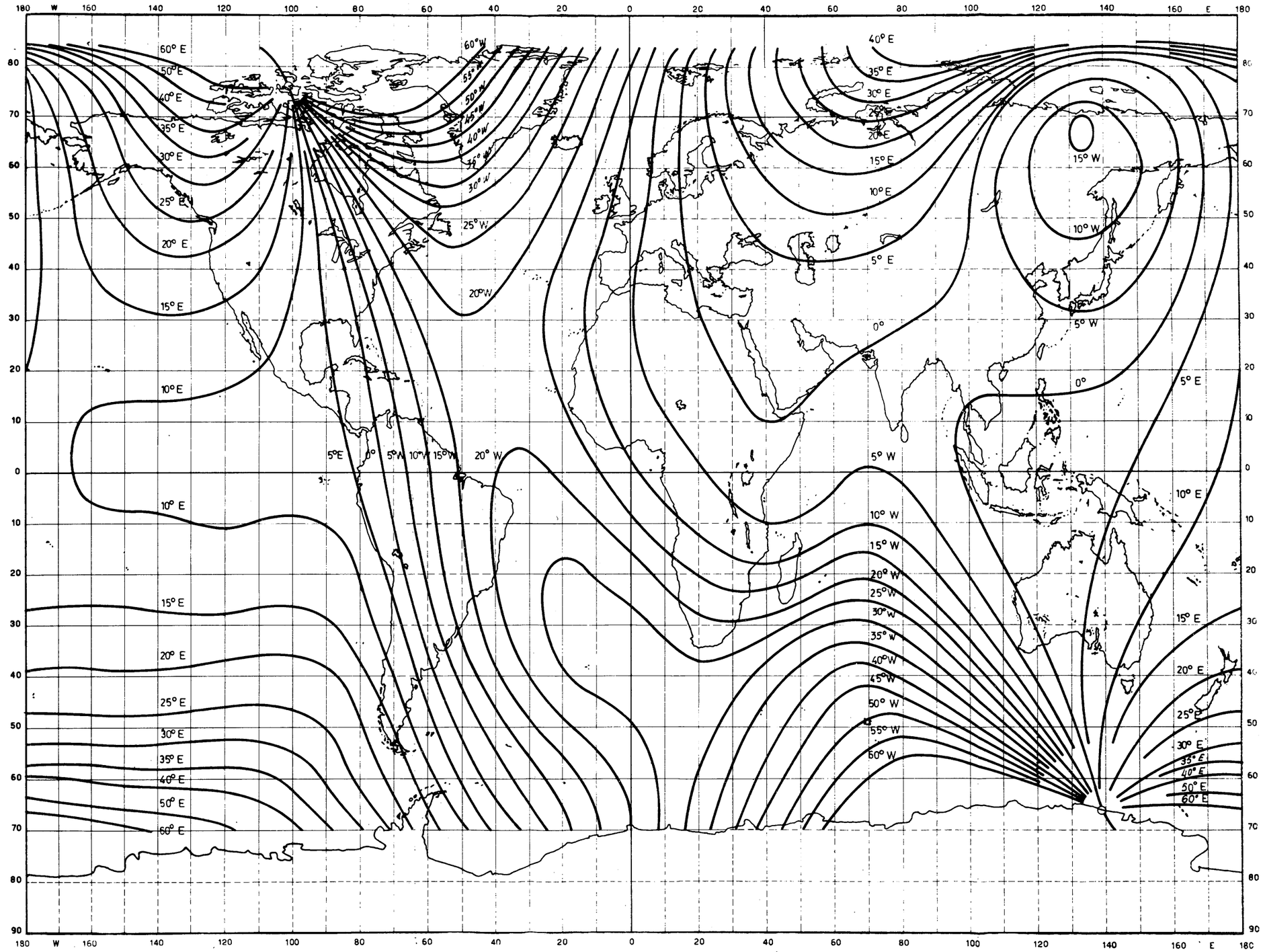

FIGURE 4 - FIGURA 4

Carte de déclinaison géomagnétique - Map of geomagnetic declination - Mapa de declinación geomagnética

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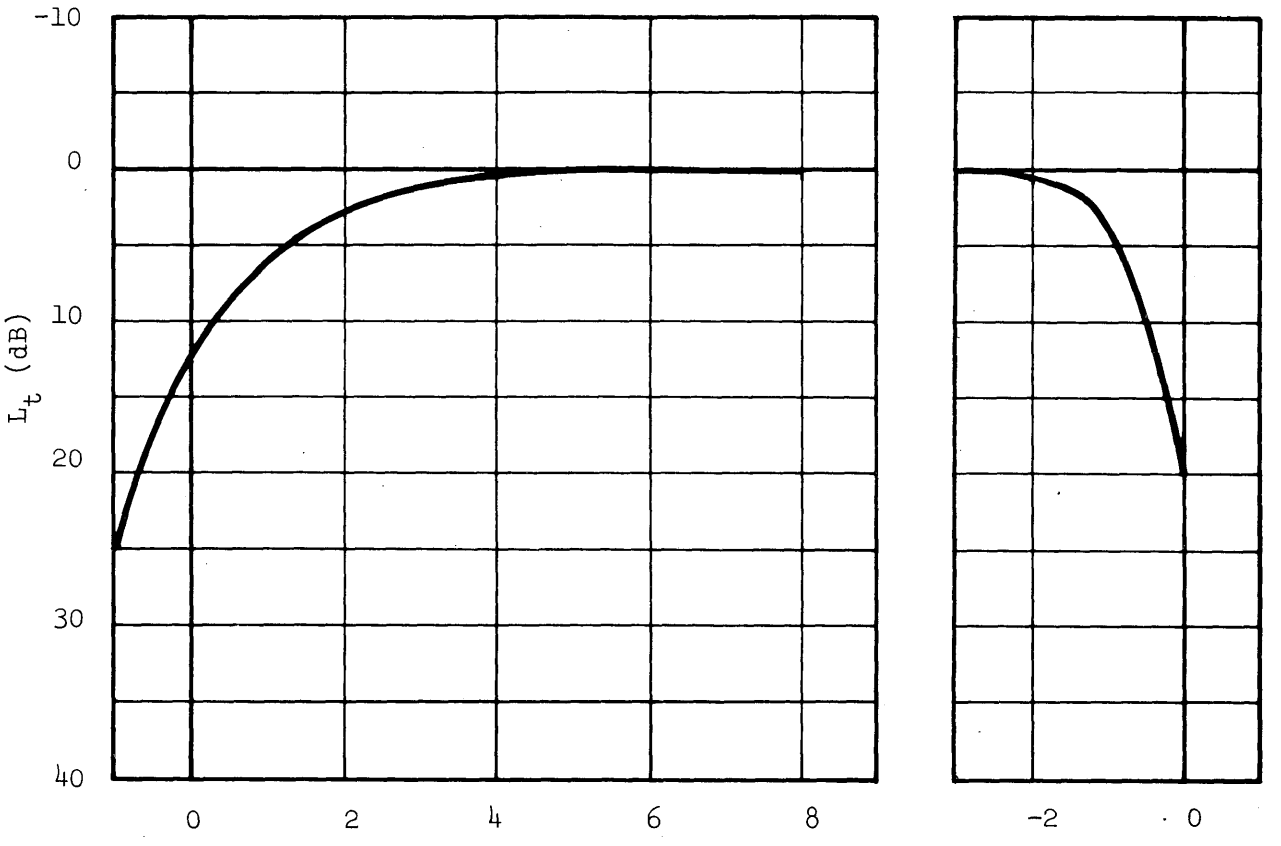

Heures après le coucher du soleil

Time after sunset (hours)

Horas después de la puesta del Sol

Heures avant le lever du soleil

Time before sunrise (hours)

Horas antes de la salida del Sol

FIGURE 5 - FIGURA 5

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Document No. 140-E

APPENDIX F

FORM FOR THE SUBMISSION OF A FREQUENCY ASSIGNMENT REQUIREMENT
(See detailed instructions in Annex)

Regional Administrative Conference for LF/MF Broadcasting (Geneva, 1975)

1) Administration	Requirement sheet No.

Transmitting station

2) Name	3) Country	4) Coordinates of antenna site: Longitude (degrees and minutes) E W	Latitude (degrees and minutes) N S

5) Desired frequency (kHz)	6) Frequency ranges desired for alternative frequencies (kHz)
	to / or / to

7) Necessary bandwidth in kHz	8) Carrier power Pc (kW)	9) Hours of operation GMT
A3		from / to

Required service area

	a) Coordinates of the centre of the area	b) Radius in km
10) Ground-wave		
11) Sky-wave		

12) Ground conductivity in service area (S/m)

3×10^{-2}	10^{-2}	3×10^{-3}	10^{-3}
3×10^{-4}	10^{-4}	3×10^{-5}	10^{-5}

Antenna characteristics

Simple vertical antenna

13) Height (metres)

14) Gain in dB

Antenna other than simple vertical antenna

15) Attach the radiation diagrams in the horizontal and/or vertical planes.

	a) azimuth of maximum radiation (in degrees)	b) angular width of the main lobe (in degrees)	c) gain (in dB)
16) Horizontal plane			
17) Vertical plane	a) angle of elevation of maximum radiation (in degrees) where other than zero	b) angular width of the main lobe (in degrees)	c) gain (in dB)

18) For stations less than 100 km from the sea, attach a map showing the antenna site relative to the coastline

19) **Synchronized network**

If the station forms part of a synchronized network, list below other stations forming part of the network (if necessary, continue on the back) and for each such station complete a separate requirement sheet

Name of the station	Requirement sheet No.

20) If this requirement covers an assignment in use indicate the frequency and the power	kHz	kW
21) If this requirement covers an assignment contained in the African Plan, Geneva, 1966, but which is NOT in service, indicate the frequency appearing in the Plan		kHz

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ANNEX 1 TO APPENDIX F

Instructions for completing the form

Box No.

1. Administration — Name of the Administration.

2. Name of transmitting station — **Indicate the name of the locality by which the station is (or will be) known or in which it is (or will be)** situated. Use the name **shown in the International Frequency List where this exists. Limit the number of letters and numerals to a total of 14.**

3. Country — Indicate the country in which the station is (or will be) located. Use the symbols in Table 1 of the Preface to the International Frequency List. **(Seventh Edition, together with the latest Recapitulative Supplement).**

4. Coordinates of the antenna

Indicate the geographical coordinates of the site of the transmitter antenna (longitude and latitude, in degrees and minutes).

5. Frequency desired — Indicate : - either the assigned frequency of the channel (see No. 85 of the Radio Regulations) your Administration would prefer to use. For this purpose, indicate the centre frequency of the channels adopted at the present Session of the Conference.

- or enter in the next box the frequency ranges within which the most suitable frequency could be selected during planning. If the requirement is for a low-power transmitter channel, insert the symbol "LPC" in this box, in place of the desired frequency.

6. Frequency range desired

If a frequency has been indicated in the preceding box, indicate here the frequency range(s) within which an alternative frequency could be selected.
Example : 680 - 740 kHz or 1200 - 1300 kHz

7. Necessary bandwidth

Indicate the necessary bandwidth of the emission as defined in No. 91 of the Radio Regulations. The value of this bandwidth should be between 9 kHz (AF-bandwidth: 4.5 kHz) and 20 kHz (AF-bandwidth: 10 kHz).

8. Carrier Power

Indicate the power supplied to the antenna transmission line by the transmitter, as defined in No. 97 of the Radio Regulations. The last column in this box is for the decimal.

9. Hours of operation (GMT)

Indicate the daily hours of operation of the transmitter (GMT), to the nearest hour. The first pair of figures should show the time the first emission of the day begins, and the second the time the last emission ends.

Example :

from	0	7	to	2	3

10. and 11. Required service area

Indicate the radius of the proposed service area round the transmitter, in km, specifying whether the area is to be served by ground-wave and/or sky-wave. If a directional antenna is used, indicate the approximate co-ordinates of the centre of the required service area and its radius, in km.

12. Ground conductivity in the required service area

Give particulars, in the greatest possible detail, of ground conductivity, preferably rounded off to the nearest values for which the curves in C.C.I.R. Recommendation 368-2 are plotted, namely :

3×10^{-2}, 10^{-2}, 3×10^{-3}, 10^{-3}, 3×10^{-4}, 10^{-4},

3×10^{-5}, 10^{-5} (in S/m)

Put a cross in the appropriate box.

Antenna characteristics

13. and 14. Simple vertical antenna (see Annex 2).

13. Indicate the height of the antenna (in metres)

PINK PAGES

14. Indicate the gain (in dB) of the antenna referred to a short vertical antenna in a given direction. The radiation may be expressed either in effective monopole radiated power (e.m.r.p.) or in cymomotive force (c.m.f.); to define the gain of an antenna referred to a short vertical antenna in a given direction, either of the two following definitions should be adopted :

- the ratio between the cymomotive force of the actual antenna in a given direction and the cymomotive force in the horizontal plane of a short vertical antenna without losses on a perfectly conducting plane, the two antennae being supplied with the same power;

- **the ratio of the power required at the input of a short vertical antenna without losses situated on perfectly conducting horizontal plane to produce the reference effective monopole radiated power (e.m.r.p.) of 1 kW (cymomotive force 300 V) in the horizontal direction, to the power supplied to the actual antenna to produce the same e.m.r.p. (c.m.f.) in the given direction.**

The ratio, expressed in dB, is the same for the two definitions.

15. to 17. Antenna other than a simple vertical antenna

15. The form should be accompanied by radiation diagram(s) of the antenna in the horizontal and/or vertical plane(s).

Or, if this is impossible, indicate :

16. in the horizontal plane:

a) the azimuth of maximum radiation, in degrees, (clockwise) from True North;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain (in dB) (see item 14 above).

17. in the vertical plane:

a) the angle of elevation, in degrees, of maximum radiation;

b) the total angle, in degrees, within which the power radiated in any direction does not fall more than 6 dB below the power radiated in the direction of maximum radiation;

c) the gain (in dB) (see item 14 above).

When the antenna diagram shows substantial secondary lobes, indicate on a separate sheet for each lobe the azimuth and the angle of elevation of the lobe axis and the gain, in dB.

18. Stations less than 100 km from the sea

If the station is less than 100 km from the sea, attach a map (on a scale not smaller than 1/1,000,000) showing the site of the antenna, the scale of the map and the direction of True North.

19. Synchronized network

If the transmitter forms part, or is intended to form part, of a synchronized network, indicate the name and the corresponding requirement sheet number of the other transmitters in the network. A separate form must be filled in for each of these stations.

20. If the **requirement corresponds to a frequency assignment** already in service, that frequency together with its power should be indicated irrespective whether the Administration wishes to retain the frequency or agrees to its transfer.

21. If the requirement corresponds to a frequency assignment contained in the African Plan, Geneva, 1966, but NOT yet in service, the frequency appearing in the Plan should be indicated.

The Administration may supply, on a separate sheet and in a simplified form, if possible, suitable for electronic processing, such additional information as it may consider useful.

ANNEX 2 TO APPENDIX F

Vertical antennae

The following description of radiation patterns of vertical antennae is based on the C.C.I.R. publication entitled "Antenna Diagrams".

Figure No. 1 gives curves drawn so that the radius vector is proportional to the field in a given direction in a vertical plane at 1 km distance for a radiated power of 1 kW.

Figure No. 2 gives the maximum field expected in any horizontal direction as a function of the length of the antenna, the total power radiated being kept constant at 1 kW.

The formulae used for calculating these curves are given below. It is assumed that the antennae are on perfectly conducting ground and that one kilowatt is radiated.

1. *Uniform current element* (short vertical antenna)

$E = 300 \cos \theta$, in mV/m at one kilometre distance where

θ = elevation angle (latitude)

$(Ed)_{max} = 300$ mV/m $\sqrt{P}$ ($\theta = 0^0$ on horizon)
($\theta = 90^0$ in zenith)

2. *Quarter wave antenna*

$$E = 313.6 \frac{\cos (90^0 \sin \theta)}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 313.6$ mV/m $\sqrt{P}$

3. .311 *wave antenna*

$$E = 234.21 \frac{\cos (112^0 \sin \theta) + 0.3740}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 321.8$ mV/m $\sqrt{P}$

4. *Half wave antenna*

$$E = 190.26 \frac{\cos (180^0 \sin \theta) + 1}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 380.52$ mV/m $\sqrt{P}$

5. .625 *wave antenna*

$$E = 261 \frac{\cos (225^0 \sin \theta) - \cos 225^0}{\cos \theta}$$ in mV/m at one kilometre distance

$(Ed)_{max} = 445$ mV/m $\sqrt{P}$

Notes - 1. E in the above equations is the same in value as the cymomotive force expressed in volts in Figure 1
2. d is the distance (taken as 1 km in the above equations)
3. P is the transmitter power in kW fed to the input of the antenna ignoring losses along the transmission line.

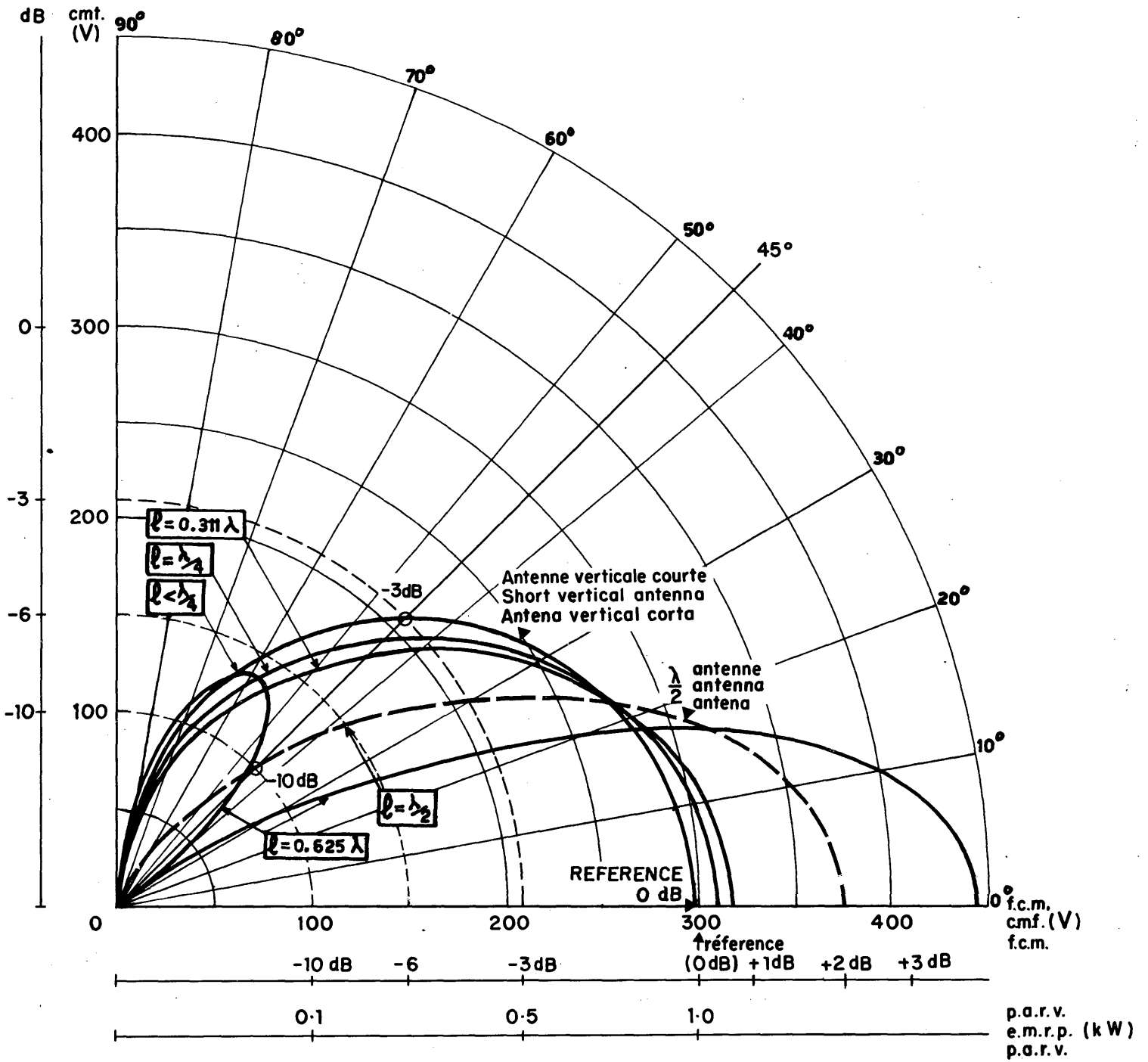

Figure 1 - Figura 1

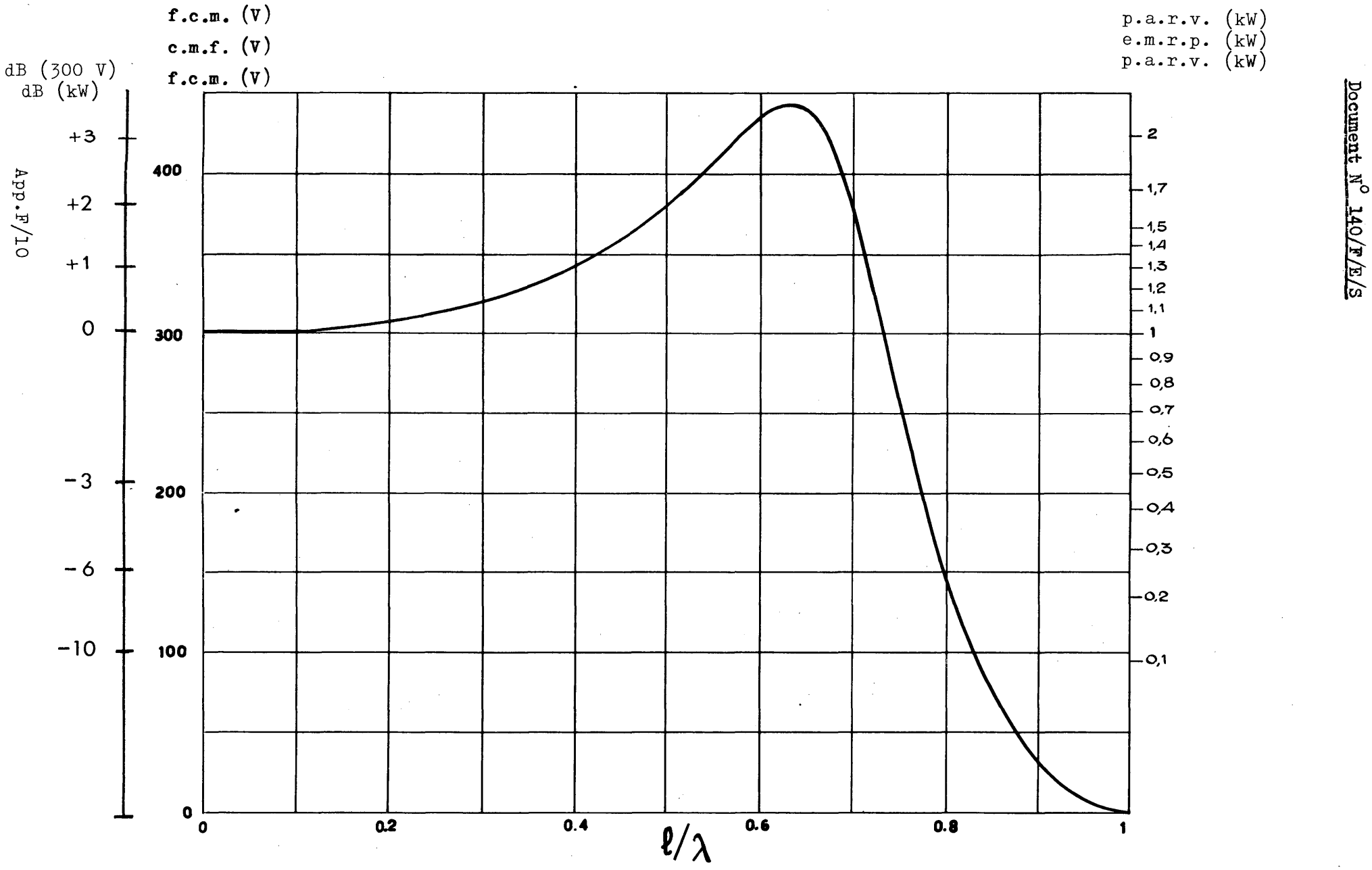

Figure 2 - Figura 2

APPENDIX G

LATTICES AND OTHER METHODS OF PLANNING

1. In a congested area, high-power stations are distributed throughout the band in virtually every channel. A planning method must be able to cope with this situation and take account of the great importance attached by various administrations to maintaining the essential form of their existing services and the need to keep the cost of any changes to a minimum.

2. There are several aspects of planning methods. It is noted that :

   a) there is a minimum power level that is required to overcome noise levels,

   b) there is a limitation on powers used in particular channels if they are to be used many times over in different parts of the world for different programmes.

3. World-wide, three major power categories may be distinguished - high, medium and low, with an extension upwards to super-power and an extension downwards to very low power. The power level in these three groupings varies from one congested region to another. In this context, as a generalization, low power can be defined as below 10 kW, medium power 10 kW to below 50 kW, and high power as 50 kW and above. It is noted that the maximum powers used in different parts of the world vary quite widely, but it is desirable that these maximum powers should merge smoothly from one area to another or be the same.

4. Four complementary techniques can be used to improve the efficiency of an assembly of transmitting stations :

   a) The coverage of all stations can be maximized by ensuring that they all provide coverage to roughly the same usable field strength. This implies that stations of similar power should be associated in frequency blocks.

   b) The coverage of all stations should be maximized by ensuring that adjacent channels do not contain stations too widely differing in power levels.

   c) The systematic spacing of co-channel stations according to the power level. If account is taken of paragraph a), this leads to equilateral triangular configurations.

d) A certain minimum number of stations should be grouped in a block of channels having transmitters of similar power, such that linear channel distribution schemes can be used to arrange the adjacent channel frequencies into a pattern that minimizes adjacent channel interference.

5. The question which then arises is, can some of the above components of the full lattice grid planning method be applied to the MF band and still retain mixed transmitter powers distributed throughout it? This is indeed possible, and would give some adjacent channelling improvements. However the penalty for mixing different transmitter powers is that the lower-power stations would have to accept a higher usable field strength.

6. To improve this situation further, it could be argued that all the powers could gradually be adjusted to the same level; this would equalize the usable fields but it would mean that the powers would tend to be either too low or too high for the service required.

7. If, on the other hand, the transmitter powers were separated into different frequency blocks for each power class, each station would still be tailored to do its particular job, and the lower-power stations could then be working with much lower usable fields, with the result that their coverage would be noticeably increased. This advantage could require more frequency changes.

8. Many countries consider that, in situations where transmitters of different power levels share the same channel, the higher usable field strengths of the lower-power stations are acceptable because of the higher man-made noise levels in their service areas. In such situations, low-power transmitters can be integrated into the high-power lattice. However, it might be necessary to increase the spacing between high-power stations to accommodate this.

9. As a compromise, it might be possible to group together channels containing transmitters of similar power into blocks of, say, three channels for each power class in accordance with the requirements submitted. This idea should be applied only where practicable. Although this would be an improvement over existing mixed systems, adjacent channel interference would be present between power blocks. This may not be ideal, because it would still leave large numbers of power block transitions. However, this compromise would render larger frequency changes unnecessary.

10. A fuller application of a lattice approach could ease the adjacent channel interference problem, and the use of larger power blocks should reduce the usable field strengths. However, recognizing at least three power categories and the need to avoid placing low-power groups next to high-power groups and a minimum number of channels in a group (about 9 or 12), it will be seen that advantages cannot be gained without some frequency shifting equal to one or more block-widths.

11. As a practical approach, it may be necessary to leave the pattern of stations below a frequency of about 1 000 kHz, as it exists at present. In this part of the frequency band, a computer analysis could be carried out to see whether some minor frequency changes might produce any significant improvements.

12. Taking into account existing systems and the requirements of Administrations, a computer analysis could be carried out to show the advantages and disadvantages of the four method components outlined above, and any other methods that come to light.

13. In applying the lattice grid concepts, it should be noted that additional methods may be needed to make the results correspond more closely to the particular objectives. There may be some merit in distorting the map to take account of other factors e.g. geomagnetic characteristics. A fuller description of the lattice grid theory is given in Annex 1 to this Appendix.

14. For areas remote from regions of high population density, in which low- and medium-power stations are involved, simplified coordination procedures can be contemplated. One such method is described in Annex 2 to this Appendix.

ANNEX 1 TO APPENDIX G

FREQUENCY PLANNING METHOD FOR LF/MF BROADCASTING BASED ON GEOMETRICALLY REGULAR LATTICES AND LINEAR CHANNEL DISTRIBUTION SCHEMES

In geometrically regular lattices, it is possible to use linear channel distribution schemes in such a way that mutual interference is reduced to a minimum. In principle, the lattice consists of a sufficient number of equilateral or nearly equilateral spherical triangles having sides corresponding to the distance necessary between transmitters sharing the same channel (the co-channel distance). In the ideal case, the number C of channels available in the whole band, or, if desired, in a part of it, is evenly distributed over the surface of any pair of triangles having one side in common (a rhombus in the case of equilateral triangles). Thus, all channels used are allocated to elementary areas of identical size (see Figure 1).

In linear channel distribution schemes, channels are arranged in such a way that, in any direction considered, frequency spacings between channels allocated to equally spaced areas are constant (on the condition that channel numbers n and (C + n) are considered to be identical). The use of linear channel distribution schemes, therefore, ensures that interference conditions are identical in any channel involved throughout the network. Differences between interference in different channels are due solely to the effects of frequency on propagation. The utility of any linear channel distribution scheme can thus easily be checked by computing, for instance, the interference caused to the channel assigned to the apices of the quadrilateral. It is obvious that interference other than co-channel interference will be lowest when the relevant channels, e.g., the adjacent channels, are assigned to areas close to the centres of gravity of the two triangles constituting the equilateral. In the case of a rhombus, the distance of the centres of gravity from the apices is $1/\sqrt{3}$ times the co-channel distance.

The application of geometrically regular lattices and linear channel distribution schemes in practical planning is fairly easy. It presupposes, however, that planning is not restricted by numerous existing frequency assignments that have to be respected within very close limits. In the latter case, this planning method would not be appropriate because the adaptation of the regular lattice, including its channel distribution, to actual transmitter sites, while simultaneously respecting existing assignments, would seriously affect coverage.

In all other cases, this method would lead to satisfactory results when, by means of distortion of the regular lattice's channel positions, channels are adapted to actual transmitter sites (see Figure 2). Although it would be desirable that the distortions be small they may be quite large and numerous. The method would still be applicable in these circumstances provided that the same amount of care is exercised in these circumstances as would have been necessary if this method had not been applied. Normally, the effects of lattice distortions on interference tend to cancel each other out.

In order to facilitate the adaptation of the regular lattice channel positions to actual transmitter sites, it is useful to subdivide the planning area into quadrilaterals (of rhombic or near-rhombic shape) having sides corresponding to the predetermined co-channel distance. If different co-channel distances have to be respected in different parts of the area in question, this may well be covered by suitable adaptation of the subdividing lattice to the particular needs of any of these parts.

Should, after adequate subdivision of the planning area, one or more quadrilaterals contain a number of transmitters greater than the number C of channels available in any quadrilateral, then channels can only be assigned when the excess transmitters in the quadrilaterals are grouped together to form synchronized networks. Difficulties that would arise in cases where excess transmitters cannot be accommodated in synchronized groups would also occur if the planning procedure were not based on the method described here. Agreement will then have to be reached on either a modification of the technical parameters or a reduction in the number of requirements in the area where the difficulties occur.

It should be stressed that the planning method outlined above is primarily intended to give guidance in the planning procedure. It facilitates the assignment of frequency channels starting with the most suitable. The planning method can, however, never supersede the negotiations required between the Administrations concerned to determine the radiated power or antenna radiation patterns of the transmitters concerned.

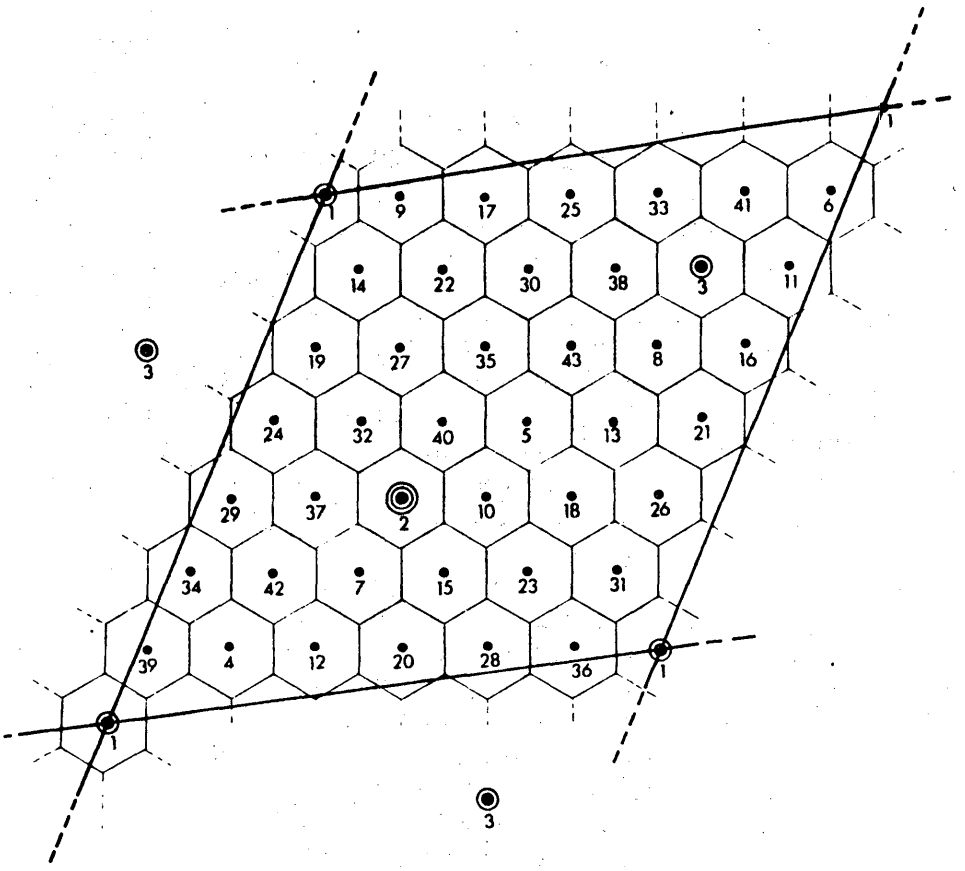

Fig. 1. - Example of a linear distribution of 43 channels.

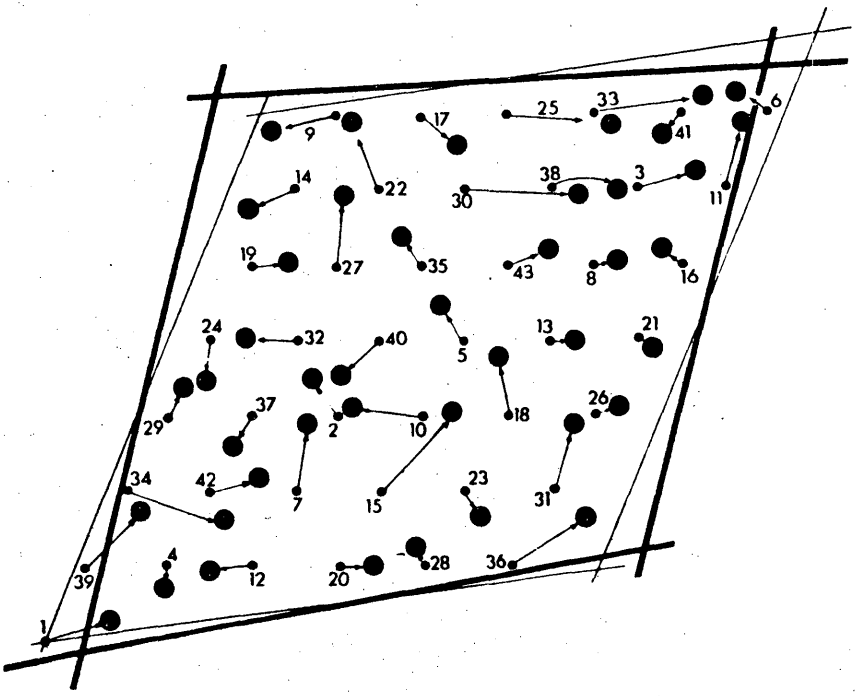

Fig. 2. - Application of a linear distribution to a network of real transmitters.

The numbered points correspond to the sites of the transmitters in the ideal network of Fig. 1. The black circles represent the real positions of the transmitters.

ANNEX 2 TO APPENDIX G

THE USE OF COORDINATION DISTANCES IN PLANNING

At the limits of lattice planning areas where, for instance, irregular concentrations of population exist on widely scattered islands, it would be possible to introduce the concept of coordination distances, as has been done in VHF and UHF planning.

It is obvious that if an assignment is required for a remote Pacific island, it would be illogical to develop a further series of lattices (outside the main area to be covered) just to make such an allocation fit into a particular planning pattern. It is here and in similar areas that the coordinated distance concept is applicable, providing the means by which one or a number of channels could be allocated without affecting a basic lattice plan.

The overall test of the possibility of using coordination distances is that the addition of transmitters to the overall system should not significantly change the planned operating conditions. It is considered, therefore, that where the co-channel station to be protected is situated in area A, as defined in Chapter 6, a nominal usable field strength of 66 dBμ might be considered the limiting field to which additional interference should not be added, with corresponding field strengths of 76 dBμ and 69 dBμ in areas B and C respectively.

Typical powers and distances for each of the areas concerned are given in the table below. The propagation information has been taken from C.C.I.R. Report 264-2 and, although it is appreciated that this basic information is not to be used for final planning purposes, the C.C.I.R. information is suitable for comparison purposes. It is proposed that the maximum permissible interfering field strength yielding a negligible increase in interference in the planned co-channel assignment area should be approximately - 16 dB with respect to that interference.

TABLE 1

Nominal usable field strength	Power	Coordination distance
Area A 66 dB(μV/m)	10 kW	3300 km
Area B 76 dB(μV/m)	10 kW	2500 km
Area C 69 dB(μV/m)	10 kW	3100 km

It is considered that transmitters meeting the above criteria should be permitted to be established on a non-interference basis.

In the case of multiple transmitters operating in such a channel, the r.m.s. power, taking into consideration any difference in distances, should be the measure of the interfering field. Obviously, lower-power transmitters might be located at shorter distances from the planned co-channel assignment.

RESOLUTION A

Relating to Bandwidth Saving Modulation Systems

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

a) the improved efficiency in the use of the frequency bands 5 (LF) and 6 (MF) that might be achieved by the application of bandwidth saving modulation systems;

b) the difficulties associated with transmitters and receivers and with frequency planning if transition to bandwidth saving modulation systems is contemplated;

requests

the C.C.I.R. to expedite its studies of bandwidth saving modulation methods with particular reference to the technical, operational and economic aspects of single-sideband and independent sideband modulation, taking into account the problems of compatibility with existing receivers;

resolves

to ask the next competent World Administrative Radio Conference to decide, in the light of the results of the C.C.I.R. studies, on the feasibility of introducing such techniques in the LF/MF broadcasting service.

RESOLUTION No. B

Relating to studies to be made by the International Frequency Registration Board before the Second Session of the Conference

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

that it is essential for the proper conduct of its Second Session on Planning that preparatory work should be carried out by the I.F.R.B. on the basis of the requirements submitted by Administrations and the standards adopted at the First Session,

invites Administrations

to submit their frequency requirements to the I.F.R.B. on the appropriate forms, a model of which is to be found in Appendix F, as soon as possible, after the end of the First Session, so that they are received by the I.F.R.B. not later than 1 May 1975,

instructs the I.F.R.B.

1. to supplement the information it receives by means of the following data:

- carrier power in dB (kW),
- cymomotive force (c.m.f.) in the horizontal plane,
- effective monopole radiated power (e.m.r.p.) in the horizontal plane,
- magnetic dip and declination and geomagnetic latitude at the transmitter,

2. to prepare a list of all the requirements it receives, supplemented by the data listed in paragraph 1 above and to send a copy to each Administration in Regions 1 and 3 not later than 1 June 1975,

3. to study the requirements it receives on the basis of the decisions taken at the First Session, proceeding as follows:

3.1 calculate provisionally, for each transmitter, the usable field strength resulting from the requirements, in cases where the Administration has not indicated a preferred frequency, it chooses the frequency it considers most suitable in the desired frequency range,

3.2 collect this information in statistical form in order to provide a summary of the situation resulting from:

3.2.1 transmitters already in service, taking into account their present frequencies and powers;

3.2.2 transmitters already in service, as in 3.2.1 above, together with those contained in the African Plan, Geneva, 1966, which are NOT in service, taking into account their frequencies and powers;

3.2.3 the total future requirements for transmitters, whether already in service or in the African Plan or not,

3.3 draw up a report containing the foregoing results and send it to all Administrations in Regions 1 and 3, preferably by 1 July 1975, and in any case not later than 15 July 1975,

3.4 make to each Administration individually whatever suggestions it sees fit with a view to eliminating any apparent incompatibilities,

4. to prepare for the Second Session of the Conference a document containing the report sent to Administrations, together with any comments it has received since sending it.

RECOMMENDATION NO. AA

Relating to the Use of Synchronized Networks

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

that synchronized networks present considerable advantages over an equivalent single transmitter and therefore should be employed in much larger numbers in any frequency assignment plan;

that a synchronized network covers a greater area than the equivalent single transmitter; this increase, which depends on local conditions and the constitution of the network, may be large;

that the population coverage is in most cases increased to an even greater extent, since a synchronized network makes it possible to set up transmitters providing a higher field strength in the most densely populated areas; the population coverage may be more than doubled;

that subject to the rules given in Chapter 9, the interference caused by a synchronized network to signals from transmitters in the same channel or adjacent channels is practically identical to that which would be caused by the equivalent single transmitter;

that in view of the present congestion of the LF and MF bands, transmitter synchronization is one of the few ways of keeping most of the transmitters in operation in a country and reducing the number of channels required; this is a particularly important advantage;

that transmitters can be synchronized on any channel in the LF or MF bands;

that the constitution of a synchronized network may take a wide variety of forms, for example, a small number of high-power transmitters or a large number of low-power transmitters, or a combination of both types of transmitter;

that synchronization methods, which previously called for complex equipment, monitoring centres and a large number of highly skilled technicians, are nowadays simplified; indeed there is no problem at all if atomic oscillators are used since these oscillators provide a more than adequate frequency stability for many years without requiring any maintenance or supervision; various countries are already using such oscillators while others are planning to introduce them;

that the only limitation of the synchronized network is the need to broadcast the same programme at night. However, different programmes may be broadcast during the day except where the transmitters are very close together causing mutual ground-wave interference;

recommends

that in developing their broadcasting network in the LF and MF bands administrations use synchronized networks to the maximum extent possible.

Note : Additional technical information of synchronized networks will be found in C.C.I.R. Reports Nos. 459 and 616, and in E.B.U. Publication TECH 3210 "Synchronized groups of transmitters in LF and MF broadcasting".

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Document No. 141-E
24 October 1974

PLENARY MEETING

B.9

9TH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

As requested in Plenary Meeting the texts published in B.8 (Document No. 131) and relative to Planning Methods are published again after having been aligned on the original texts as submitted by Committee 5 (Document No. 112).

Miss M. HUET

Chairman of the
Editorial Committee

Annexes : 13 pages

9.2 Planning methods

The plan must be established in the spirit of the planning principles, but account should be taken of the following facts:

a) the available frequency spectrum is limited, as are the capital and human resources;

B.9 b) the problem of providing a fair and rational allocation of channels and adequate powers is particularly difficult in those regions of the world where there is a large number of countries or population groups in relatively close proximity.

A rational planning method is needed to maximise the number of programmes and the quality of coverage that is given to the radio broadcasting listener.

B.9 9.2.1 Basic criteria

When planning, it is necessary to observe the following basic criteria:

a) the use of identical carrier frequencies, with uniform channel spacing, throughout Regions 1 and 3;

B.9 b) the retention, and possibly improvement, of the coverage of the existing broadcasting stations to the maximum extent possible, having regard to the commitments of many countries;

c) the reduction to a minimum of changes in existing frequency assignments;

B.9 d) the endeavour to meet to the maximum extent possible, the requirements of all administrations for the broadcasting services taking into account administrative subdivisions and the number of languages involved;

e) the technical parameters adopted by this session of the Conference for different broadcasting areas;

B.9 f) the taking into account of the specific needs of certain countries, in view of the insufficient availability of alternative means in other frequency bands (for example VHF-FM), noting that the LF/MF bands are particularly suitable as an economic medium for mass communication over large areas;

B.9

B.9 g) the setting aside of a certain number of low-power channels for exclusive use by stations using powers of 1 kW or less (Chapter 9.6)

9.2.2 Practical aspects of planning

a) A theoretical lattice for frequency channel distribution should assist in the basic planning approach adopted in certain very large areas;

B.9 b) however, in view of the existing broadcasting systems and their frequency assignments, some changes may, nevertheless, have to be introduced to modify the theoretical lattice distribution configuration. In areas at the limits of a theoretical lattice plan, simplified coordination procedures could be adopted in the form of coordination distances and powers within the limits of which additional transmitters would not significantly affect the service of planned stations;

c) when a draft plan is prepared, the existing frequency assignments in Region 3 shall first be aligned to the nearest multiple of the channel spacing;

B.9 d) the theoretical network should be supplemented with other transmitters having different technical parameters in order to provide the service required, as described in paragraph 9.2.1;

e) using the above method of frequency assignment, it is in the common interest that Administrations should exercise goodwill and mutual understanding in coordinating national requirements to obtain the best possible result.

B.9 The two planning methods mentioned above are described in general terms in Appendix G, and in detail in Annexes 1 and 2 to this Appendix.

B.9

B.9

9.3 Planning of the band 525-1 605 kHz

9.3.1 Planning criteria

Some delegations favoured the use of the sky-wave for night-time coverage, and, of these, some also thought that a certain number of channels should be reserved for this service so that the sky-wave fields might be suitably protected. Channels for sky-wave services should preferably be located in the higher part of the band and the lower part of the band should be used for ground-wave services as the lowest frequencies are most suitable for the coverage of very large areas by ground-wave. B.9

Other delegations held the view that the band should not be split into sub-bands and felt that the whole band should be used both for the ground-wave and sky-wave services. These delegations considered that this would allow the possibility of planning in an optimum manner thus satisfying the needs of the various countries.

Both criteria for the planning of the MF band could be used by the Second Session of the Conference and coordination between countries using different criteria could take place at that time. B.9

9.3.2 Nominal usable field strength

9.3.2.1 Sky-wave service

The sky-wave service is generally intended for rural areas where the man-made noise is low. The nominal usable field strength (E_{nom}) for the service provided by the sky-wave shall be E_{min} *) + 6 dB. This value of E_{nom} is considered adequate and takes into account the fluctuation of the received signal. B.9

9.3.2.2 Ground-wave service

During daytime, the service area will in general be limited by natural noise. Accordingly, under these conditions, the value of E_{nom} will be identical to that assigned to E_{min}. However, in the presence of interference due to ground-wave of other transmitters E_{nom} will be E_{min} + 3 dB. In the presence of severe man-made noise the value of E_{nom} could be higher. B.9

At night, two cases can occur : B.9

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*) The values of E_{min} given in paragraphs 9.3 and 9.4 are those given in Chapter 6 for 1 MHz.

B.9

a) Where the ground-wave service area is not limited by the onset of fading caused by the sky-wave of the same transmitter, the nominal usable field strength is :

$$E_{nom} = E_{min} + X \text{ dB}$$

X = 11 dB for rural areas*)

X = 17 dB for urban areas

B.9

b) Where the transmitter power is sufficiently great for the ground-wave service area to be limited by fading due to the sky-wave of the same transmitter, the nominal usable field strength may be chosen to be greater than the value given above. It should not, however, be made greater than the ground-wave field strength at the beginning of the fading zone.

The usable field strength at the beginning of the fading zone is a function of the transmitter power, the antenna characteristics**) and the ground conductivity. The fading zone may be defined by taking the protection ratio between the ground-wave and the sky-wave to be equal to the internal protection ratio applicable to a synchronized network, i.e. 8 dB.

B.9

9.4 Planning of the band 150-285 kHz

9.4.1 Planning criteria

The LF band should be used for the coverage of extensive areas, mainly by ground-wave. Where used, its use should be coordinated with that of the lower part of the MF band.

B.9

9.4.2 Nominal usable field strength

Assuming that the LF service is not affected by man-made noise and taking account of the correction factor Δa for natural noise at frequencies other than 1 MHz (paragraph 6.5 and Appendix D) :

$$E_{nom} = E_{min} + 17 \text{ dB}^{***)}$$

B.9

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*) Some delegations considered a nominal usable field strength of 65 dB to be suitable for rural areas in their countries.

**) The use of anti-fading antennae reduces the probability of occurrence of this case.

***) Certain delegations considered a value of E_{nom} of the order of 73 dB to be appropriate in non-tropical rural areas.

B.9

APPENDIX G

LATTICE AND OTHER METHODS OF PLANNING

B.9 1. In a congested area, high-power stations are distributed throughout the band in virtually every channel. A planning method must be able to cope with this situation and take account of the great importance attached by various administrations to maintaining the essential form of their existing services and the need to keep the cost of any changes to a minimum.

2. There are several aspects of planning methods. It is noted that :

B.9 a) there is a minimum power level that is required to overcome noise levels,

b) there is a limitation on powers used in particular channels if they are to be used many times over in different parts of the world for different programmes.

3. World-wide, three major power categories may be distinguished - high, medium and low, with an extension upwards to super-power and an extension downwards to very low power. The power level in these three groupings varies from one congested region to another. In this context, as a generalization, low power can be defined as below 10 kW, medium power 10 kW to below 50 kW, and high power as 50 kW and above. It is noted that the maximum powers used in different parts of the world vary quite widely, but it is desirable that these maximum powers should merge smoothly from one area to another or be the same.

B.9

4. Four complementary techniques can be used to improve the efficiency of an assembly of transmitting stations :

B.9 a) The coverage of all stations can be maximized by ensuring that they all provide coverage with respect to roughly the same usable field strength. This implies that stations of similar powers should be associated in frequency blocks.

b) The coverage of all stations should be maximized by ensuring that adjacent channels do not contain stations of too widely differing power levels.

B.9 c) The systematic spacing of co-channel stations according to the power level. If account is taken of paragraph a), this leads to equilateral triangular configurations.

B.9

d) A certain minimum number of stations should be grouped in a block of channels having transmitters of similar power so that linear channel distribution schemes can be used to arrange the adjacent channel frequencies into a pattern that minimizes adjacent channel interference.

5. The question which then arises is, can some of the above components of the full lattice grid planning method be applied to the MF band and still retain mixed transmitter powers distributed throughout it? This is indeed possible, and would give some adjacent channelling improvements. However the penalty for mixing different transmitter powers is that the lower-power stations would have to accept a higher usable field strength. B.9

6. To improve this situation further, it could be argued that all the powers could gradually be adjusted to the same level; this would equalize the usable fields but it would mean that the powers would tend to be either too low or too high for the service required.

7. If, on the other hand, the transmitter powers were separated into different frequency blocks for each power class, each station would still be tailored to do its particular job, and the lower-power stations could then be working with much lower usable fields, with the result that their coverage would be noticeably increased. This advantage could imply more frequency changes. B.9

8. Many countries consider that, in situations where transmitters of different power levels share the same channel, the higher usable field strengths of the lower-power stations are acceptable because of the higher man-made noise levels in their service areas. In such situations, low-power transmitters can be integrated into the high-power lattice. However, it might be necessary to increase the spacing between high-power stations to accommodate this. B.9

9. As a compromise, it might be possible to group together channels containing transmitters of similar power into blocks of, say, three channels for each power class in accordance with the requirements submitted. This idea should be applied only where practicable. Although this would be an improvement over existing mixed systems, adjacent channel interference would be present between power blocks. This may not be ideal, because it would still leave large numbers of power block transitions. However, this compromise would render larger frequency changes unnecessary. B.9

B.9

10. A fuller application of a lattice approach could ease the adjacent channel interference problem, and the use of larger power blocks should reduce the usable field strengths. However, recognizing at least three power categories and the need to avoid placing low-power groups next to high-power groups and a minimum number of channels in a group (about 9 or 12), it will be seen that advantages cannot be gained without some frequency shifting equal to one or more block-widths. B.9

11. As a practical approach, it may be necessary to leave the pattern of stations below a frequency of about 1 000 kHz, as it exists at present. In this part of the frequency band, a computer analysis could be carried out to see whether some very elementary frequency changes might produce any significant improvements. B.9

12. Taking into account existing systems and the requirements of Administrations, a computer analysis could be carried out to show the advantages and disadvantages of the four method components outlined above, and any other methods that come to light. B.9

13. In applying the lattice grid concepts, it should be noted that additional methods may be needed to make the results correspond more closely to the particular objectives. There may be some merit in distorting the map to take account of other factors e.g. geomagnetic characteristics. A fuller description of the lattice grid theory is given in Annex 1 to this Appendix. B.9

14. For areas remote from regions of high population density, in which low- and medium-power stations are involved, simplified coordination procedures can be contemplated. One such method is described in Annex 2 to this Appendix. B.9

B.9

ANNEX 1 TO APPENDIX G

FREQUENCY PLANNING METHOD FOR LF/MF BROADCASTING BASED ON GEOMETRICALLY REGULAR LATTICES AND LINEAR CHANNEL DISTRIBUTION SCHEMES

B.9

In geometrically regular lattices, it is possible to use linear channel distribution schemes in such a way that mutual interference is reduced to a minimum. In principle, the lattice consists of a sufficient number of equilateral or nearly equilateral spherical triangles having sides corresponding to the distance necessary between transmitters sharing the same channel (the co-channel distance). In the ideal case, the number C of channels available in the whole band, or, if desired, in a part of it, is evenly distributed over the surface of any pair of triangles having one side in common (a rhombus in the case of equilateral triangles). Thus, all channels used are allocated to elementary areas of identical size (see Figure 1).

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In linear channel distribution schemes, channels are arranged in such a way that, in any direction considered, frequency spacings between channels allocated to equally spaced areas are constant (on the condition that channel numbers n and (C + n) are considered to be identical). The use of linear channel distribution schemes, therefore, ensures that interference conditions are identical in any channel involved throughout the network. Differences between interference in different channels are due solely to the effects of frequency on propagation. The utility of any linear channel distribution scheme can thus easily be checked by computing, for instance, the interference caused to the channel assigned to the apices of the quadrilateral. It is obvious that interference other than co-channel interference will be lowest when the relevant channels, e.g., the adjacent channels, are assigned to areas close to the centres of gravity of the two triangles constituting the equilateral. In the case of a rhombus, the distance of the centres of gravity from the apices is $1/\sqrt{3}$ times the co-channel distance.

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The application of geometrically regular lattices and linear channel distribution schemes in practical planning is fairly easy. It presupposes, however, that planning is not restricted by numerous existing frequency assignments that have to be respected within very close limits. In the latter case, this planning method would not be appropriate because the adaptation of the regular lattice, including its channel distribution, to actual transmitter sites, while simultaneously respecting existing assignments, would seriously affect coverage.

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In all other cases, this method would lead to satisfactory results when, by means of distortion of the regular lattice's channel positions, channels are adapted to actual transmitter sites (see Figure 2). Although it would be desirable that the distortions be small they may be quite large and numerous. The method would still be applicable in these circumstances provided that the same amount of care is exercised in these circumstances as would have been necessary if this method had not been applied. Normally, the effects of lattice distortions on interference tend to cancel each other out. B.9

In order to facilitate the adaptation of the regular lattice channel positions to actual transmitter sites, it is useful to subdivide the planning area into quadrilaterals (of rhombic or near-rhombic shape) having sides corresponding to the predetermined co-channel distance. If different co-channel distances have to be respected in different parts of the area in question, this may well be covered by suitable adaptation of the subdividing lattice to the particular needs of any of these parts. B.9

Should, after adequate subdivision of the planning area, one or more quadrilaterals contain a number of transmitters greater than the number C of channels available in any quadrilateral, then channels can only be assigned when the excessive transmitters in the quadrilaterals are grouped together, to form synchronized networks. Difficulties that would arise in cases where excessive transmitters cannot be accommodated in synchronized groups would also occur if the planning procedure were not based on the method described here. Agreement will then have to be reached on either a modification of the technical parameters or a reduction in the number of requirements in the area where the difficulties occur. B.9

It should be stressed that the planning method outlined above is primarily intended to give guidance in the planning procedure. It facilitates the assignment of frequency channels starting with the most suitable. The planning method can, however, never supersede the negotiations required between the Administrations concerned to determine the radiated power or antenna radiation patterns of the transmitters concerned. B.9

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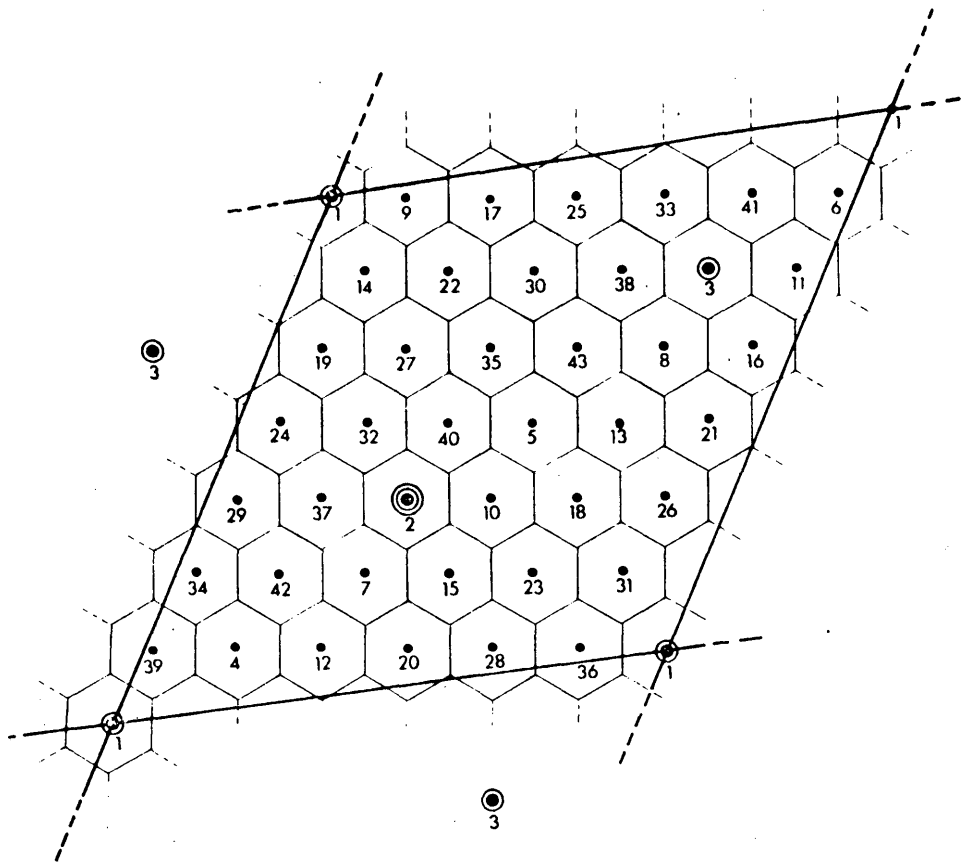

Fig. 1. - Example of a linear distribution of 43 channels.

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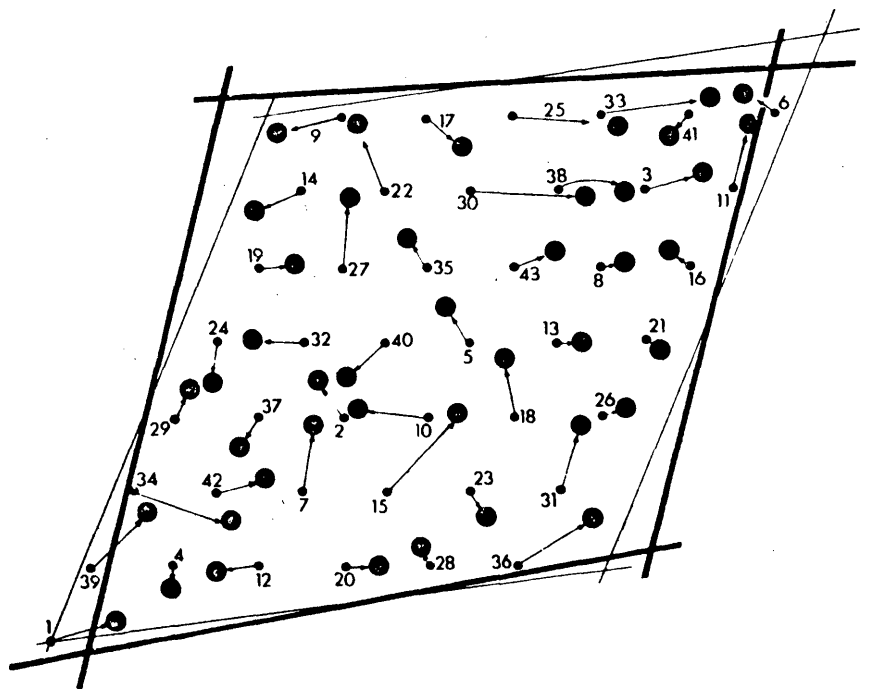

Fig. 2. - Application of a linear distribution to a network of real transmitters.

The numbered points correspond to the sites of the transmitters in the ideal network of Fig. 1. The black circles represent the real positions of the transmitters.

ANNEX 2 TO APPENDIX G

THE USE OF COORDINATION DISTANCES IN PLANNING

B.9 At the limits of lattice planning areas where, for instance, irregular concentrations of population exist on widely scattered islands, it would be possible to introduce the concept of coordination distances, as has been done in VHF and UHF planning.

It is obvious that if an assignment is required for a remote Pacific island, it would be illogical to develop a further series of lattices, outside the main area to be covered, just to make such an allocation fit into a particular planning pattern. It is here and in similar areas that the B.9 coordinated distance concept is applicable, providing the means by which one or a number of channels could be allocated without affecting a basic lattice plan.

The overall test of the possibility of using coordination distances is that the addition of transmitters to the overall system should not significantly change the planned operating conditions. It is considered, therefore, that where the co-channel station to be protected is situated in B.9 area A, as defined in Chapter 6, a nominal usable field strength of 66 dBμ might be considered the limiting field to which additional interference should not be added, with corresponding field strengths of 76 dBμ and 69 dBμ in areas B and C respectively.

Typical powers and distances for each of the areas concerned are given in the table below. The propagation information has been taken from C.C.I.R. Report 264-2 and, although it is appreciated that this basic information is not to be used for final planning purposes, the C.C.I.R. information is suitable for comparison purposes. The permissible interfering B.9 field strength which would yield a negligible increase in interference in the planned co-channel assignment area is proposed as approximately - 16 dB with respect to that interference.

TABLE 1

B.9

Nominal usable field strength	Power	Coordination distance
Area A 66 dBμ	10 kW	3300 km
Area B 76 dBμ	10 kW	2500 km
Area C 69 dBμ	10 kW	3100 km

B.9

It is considered that transmitters meeting the above qualifications should be permitted to be established by direct coordination, applying a basic plan, but on the understanding that no interference is caused.

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In the case of multiple transmitters operating in such a channel, the r.m.s. power, taking into consideration any difference in distances, should be the measure of the interfering field. Obviously, lower-power transmitters might be located at shorter distances from the planned co-channel assignment.

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4.3.3 In order to facilitate planning, it should be noted that in some cases directional transmitting antennae can be used.

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INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 142-E
24 October 1974
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

FIFTH MEETING OF COMMITTEE 5

(Planning Methods)

Saturday, 19 October 1974, at 0940 hrs

President : Mr. K.R. BINZ (Federal Republic of Germany)

Subjects discussed	Document No.
1. Report of Working Group 5A	102
2. Pending discussion on Document No. 87	87
3. Other business	66, 78, 99, 101

1. Report of Working Group 5A (Document No. 102)

The delegate of Norway, introducing Document No. 102, said that his delegation interpreted the concept of "equal rights" in regard to broadcasting as meaning the right of each individual in each country to be provided by the Government with a broadcasting programme in a language he understood. The document contained a definition to that effect as well as a definition of the word "State" taken from a well-known dictionary. He drew attention to two typing errors in the document.

The delegate of India supported Document No. 102.

The Chairman suggested that the Norwegian document should be added to the list of documents referred to Working Group 5A (Document No. DT/31).

It was so agreed.

The Chairman of Working Group 5A said that he had nothing new to report to the Committee at the present stage.

2. Pending discussion on Document No. 87 (Document No. 87)

The Chairman reminded the Committee that Document No. 87 had been approved at the previous meeting, with the exception of paragraph 2 on page 1, to which amendments had been proposed by the delegates of Norway and the Netherlands. He asked whether the delegations concerned were now in a position to submit a proposal upon which agreement could be reached.

The delegate of Norway read out a draft amendment which he and the delegate of the Netherlands had prepared to serve as a basis for the Committee's discussions.

The delegate of the United Kingdom said that the text prepared by the delegates of Norway and the Netherlands contained expressions which caused his delegation some difficulty. He proposed that the following new sentence should be added after the second sentence under point 9.3.1. "In cases where countries are separated by sea water, the 0.5 mV/m field strength shall, in principle, be met at the mid-point of the over-water path subject to agreement between the administrations concerned."

The delegates of Norway and the Netherlands said that the United Kingdom proposal seemed at first sight to be acceptable, provided that the corresponding changes were introduced in the Annexes to the document. For instance, a phrase such as "or at the mid-point of an over-water path" would have to be inserted after the word "country" in the penultimate line of the first paragraph on page 3.

The delegate of Japan said that the subject under discussion was highly complex and likely to cause problems from the standpoint of international law. In his view, it would be unwise to lay down any general principle relating to demarcation at sea. The text of point 9.3.1. was flexible enough to cover any exceptional cases that might arise and should be left as it stood.

The delegate of Spain supported the United Kingdom proposal and said that, in his view, the fears of the Japanese delegate were unfounded.

Replying to comments by the delegates of India on the nominal usable field strength of 88 dB, the Chairman said that discussion on other parts of the document could not be re-opened in the Committee, which had already formally approved the text with the exception of the point under consideration.

Following a discussion on the United Kingdom proposal in which the delegates of Japan, the Netherlands, Sweden and the United Kingdom took part, the delegate of Norway proposed that the phrase "if no other agreement is reached between the administrations concerned" should be substituted for "subject to agreement between the administrations concerned" at the end of the proposed sentence.

The delegate of Sweden supported that proposal. If the Norwegian sub-amendment was not accepted, he would have to reserve his right to submit a new proposal to the Plenary Meeting.

The delegate of the United Kingdom said that the Norwegian sub-amendment was not acceptable to his delegation.

The Chairman said that he would be reluctant to take a vote on an issue of substance. It might, however, be helpful to sound out the Committee informally by asking for a show of hands on the various alternatives which existed in respect of the text of point 9.3.1.

A procedural discussion ensued in which the delegates of Japan, Sweden, the United Kingdom, Denmark, the Federal Republic of Germany, the Netherlands and Mauritania took part.

A show of hands was called for.

The result of the show of hands in respect of the amended U.K. proposal was : 17 for, 2 against and 30 abstentions.

The result of the show of hands on the question of whether the text of 9.3.1 should be left unchanged was : 16 for, 16 against and 23 abstentions.

The Chairman, therefore, said that opinion in the Committee appeared to be too evenly divided between those in favour of the United Kingdom proposal as amended by Norway and those in favour of the text of point 9.3.1 as it stood, for an agreement to be reached at the current meeting. Under those circumstances, he believed that the only possible course of action was to refer Document No. 87, as approved in the previous meeting of the Committee, to the Plenary Meeting.

It was so agreed.

3. Other business (Documents Nos. 66, 78, 99 and 101)

The Chairman drew attention to the note from the Chairman of Committee 4 in Document No. 101, and suggested that Document No. 66 should be referred to Working Group 5A for consideration in its further work.

It was so agreed.

The Chairman drew attention to the note from the Chairman of Committee 4 in Document No. 99, requesting Committee 5 to take into account paragraphs 4 and 5 of Document No. 78. As the points raised in those paragraphs had already been taken into account by the Committee and its Working Groups, he suggested that no further action was required in that connection.

It was so agreed.

In reply to a question by the delegate of Pakistan concerning the situation with regard to Document No. 84, the Chairman recalled that at a previous meeting the Committee had decided to close the debate on that document, which would consequently be submitted as a blue document to the Plenary Meeting in the form in which it had stood when the debate had been closed.

The meeting rose at 1100 hours.

The Secretary :

M. AHMAD

The Chairman :

R.K. BINZ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 143-E
24 October 1974
Original : English

PLENARY MEETING

MINUTES

OF THE

THIRD PLENARY MEETING

Monday, 21 October 1974, at 0930 hrs

Chairman : Mr. Fritz LOCHER (Confederation of Switzerland)

Subjects discussed :	Document No.
1. Approval of the minutes of the first Plenary Meeting	76
2. Second and third series of texts submitted by the Editorial Committee	85, 98 + Corr.
3. Form of the report of the first session	
4. Any other business	

1. Approval of the minutes of the first Plenary Meeting (Document No. 76)

The minutes of the first Plenary Meeting (Document No. 76), were approved, subject to correction of line 3, page 3, to read "Mr. K.P.R. Menon (Malaysia) for Asia".

2. Second and third series of texts submitted by the Editorial Committee (Documents No. 85 and 98 + Corr.)

The delegate of France, speaking as Chairman of the Editorial Committee, introduced the second series of texts submitted by the Editorial Committee (Document No. 85).

The delegate of France said that in paragraph 3.2 on page 4 the words "with full carrier" (et à porteuse complète) should be added after "double sideband amplitude modulation", because there were several modulation systems and the present text was not specific enough.

It was so agreed.

The second series of texts as thus amended was approved, subject to editorial corrections to the English, French and Spanish texts.

The delegate of France, speaking as Chairman of the Editorial Committee, introduced the third series of texts submitted by the Editorial Committee (Document No. 98 + Corr.) indicating that page 2 should not be considered at that meeting because the Editorial Committee intended to redraft it to give a better presentation of the subject.

The delegate of the Federal Republic of Germany proposed the deletion, in paragraph 8.1.2 on page 4, of "No. 423 of the Radio Regulations" because that provision applied equally to the other bands but had not been mentioned in the paragraphs dealing with them.

It was so agreed.

The delegate of France, speaking as Chairman of the Editorial Committee, said that the Note at the foot of page 7 had caused problems, and proposed that the Chairman of Committee 4 be asked to set up an ad hoc Working Group to study the Note and report to the Editorial Committee. If it was considered necessary to define "channel" and "channel spacing", the Chairman of Committee 4 might also establish a small ad hoc group for that purpose. Finally, the Editorial Committee was experiencing difficulties with Document No. 87, a report by Working Group 5B, and she asked the Chairman of Committee 5 to nominate a delegate from Working Group 5B to help the Editorial Committee with that point.

The action she had suggested was approved.

Subject to the points left in abeyance, the third series of texts (Document No. 98 + Corr.), as amended, and with minor editorial amendments, was approved.

3. Form of the report of the first session

The Chairman said that in view of the comments made at an earlier meeting indicating that a number of delegates would be unwilling or unable to sign the report of the first session, or would formulate reservations to it, he thought it would be wiser to transmit the report to the second session signed only by himself as Chairman. The report would contain the texts of appropriate resolutions stipulating the work which should be carried out in preparation for the second session.

The delegate of the United Kingdom supported the Chairman's proposal both on grounds of practicality and because of the precedent of the Aeronautical Conference. The delegates of Italy, Japan, the Federal Republic of Germany, Ireland, U.S.S.R. and Yugoslavia also endorsed the Chairman's proposal.

The delegates of Pakistan, India, the Togolese Republic and Nigeria were worried about the way in which reservations to the report would be handled, and the deleterious effect such reservations might have on what had already been achieved by the first session. In their view all delegates were fully empowered by their credentials to sign the report, and it was essential for them to do so in order to authorize the Secretariat of the C.C.I.R. and I.F.R.B. to carry out the preparatory work for the second session.

In reply to questions by the delegates of Malaysia, Mauritania and Senegal, the Deputy Secretary-General explained that whether or not the report of the first session was signed by all participants, it would not be finally binding on the second session; indeed, the first item on the agenda of the second session was consideration of the report of the first session, which implied the right of the second session to make changes in the report. Whether such changes would be of a substantial nature was for the second session to decide.

The precedent set by the Aeronautical Conference, at which signature of the Final Acts had taken place at the end of the second session and the report of the first session had been authenticated by the Chairman, was based on No. 75 of the Montreux Convention.

Finally, the Deputy-Secretary-General believed it would be perfectly legal for authority for the preparatory work to be done by the organs of the Union to be couched in the form of an appropriate resolution.

The delegate of New Zealand, supported by the delegate of Switzerland, said he was convinced, in accordance with Nos. 75 and 73 of the Montreux Convention, that the present session was a preparatory one. As a compromise solution, he proposed the drafting of a resolution whereby the Conference would recommend that the second session apply the technical bases defined in the report of the first session, and instruct the Chairman of the first session to transmit the report under his signature to the second session.

The delegates of Spain and Italy said that in drawing up the draft resolution the Conference should be considered as a preparatory meeting rather than a first session.

It was agreed, on the proposal of the Chairman, to establish a Working Group under the Chairmanship of the delegate of New Zealand, and consisting of the delegates of Mauritania, Senegal, Spain, Sweden, Switzerland, the United Kingdom and the U.S.S.R. to draft a resolution, as suggested by the delegate of New Zealand, and which would take into account the views of those opposed to not signing a report.

The delegate of the U.S.S.R. said that he believed a plan for LF/MF frequency distribution aimed at improving the quality and ensuring the development of broadcasting in accordance with the latest techniques was in the best interests of Regions 1 and 3. He confirmed his delegation's desire to cooperate in choosing proposals and recommendations which would provide a basis for the work of the second session, and hoped that an atmosphere of collaboration and mutual understanding would enable the Conference to find means of solving the crucial problems still outstanding, before the end of the session.

The Chairman and the delegate of the United Kingdom endorsed those views.

The meeting rose at 1055 hours.

The Secretary-General :

M. MILI

The Chairman :

F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 144-E
24 October 1974
Original : English

Note by the Chairman of the Conference

At the request of the Heads of the Delegations of France and the United Kingdom, the attached letters are brought to the attention of the Conference.

Annexes : 2

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ANNEX 1

Geneva, 24 October 1974

Mr. F. Locher
Chairman of the Broadcasting Conference

GENEVA

Delegation of France
to the Regional Administrative LF/MF
Broadcasting Conference

(First Session - Geneva, 1974)

Dear Mr. Chairman,

I should be grateful if you would bring to the notice of the Conference that the Delegation of France shares the views of the Delegation of the Federal Republic of Germany as expressed in Mr. J. Kupper's letter annexed to Conference Document No. 135 dated 23 October 1974.

I should like to ask you to circulate this letter as a Conference document.

Accept, Mr. Chairman, the assurances of my highest consideration.

Jean FEVRE
Head of Delegation

ANNEX 2

Geneva, 24 October 1974

Mr. M.F. Locher
Chairman of the Broadcasting Conference
GENEVA

Delegation of the United Kingdom
and Northern Ireland

Dear Mr. Chairman,

I would be grateful if you could bring to the notice of the Conference that the United Kingdom delegation shares the views of the Federal Republic of Germany as expressed in Mr. J. Kupper's letter annexed to Document No. 135 dated 23 October.

I would like to ask you to circulate this letter as an official Conference document.

Please accept, Mr. Chairman, the assurances of my distinguished consideration.

T. KILVINGTON
Head of Delegation

BLUE PAGES

Document No. 145-E
24 October 1974

PLENARY MEETING

B.10

10TH SERIES OF TEXTS SUBMITTED BY THE EDITORIAL COMMITTEE TO THE PLENARY MEETING

The following texts are submitted to the Plenary Meeting for first reading :

Source	Document No.	Title
-	126	Resolution C
PL	117	Resolution D

Miss M. HUET

Chairman of the
Editorial Committee

Annexes : 6 pages

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RESOLUTION No. C

Channel spacing

The Regional Administrative LF/MF Broadcasting Conference (First Session), Geneva, 1974

noting

Resolution No. 4 of the African LF/MF Broadcasting Conference (Geneva, 1966),

considering

a) that the use of a uniform channel spacing throughout Regions 1 and 3 would facilitate the use of the frequency bands allocated for broadcasting in a more rational way than at present;

b) that a majority of administrations is in favour of a plan with 9 kHz channel spacing and with carrier frequencies equal to integral multiples of 9 kHz;

c) that a substantial minority of administrations is in favour of a plan with 8 kHz channel spacing and with carrier frequencies equal to integral multiples of 8 kHz;

d) that, nevertheless, the countries of Regions 1 and 3 have agreed that a new draft plan should be prepared with 9 kHz channel spacing and with carrier frequencies equal to integral multiples of 9 kHz;

e) that the adoption of such a uniform channel spacing would mean changing the carrier frequencies of most stations in Regions 1 and 3;

f) that, whilst recognizing the usefulness of having in the LF broadcasting band carrier frequencies which are integral multiples of the channel spacing, the adoption of such a relationship, and consequently the displacement of each carrier frequency (-2kHz), would give rise to problems with respect to sharing with other radio services

unanimously resolves

1. that, a draft plan for broadcasting frequency assignments in the MF band for Regions 1 and 3 should be prepared by the Second Session on the basis of a uniform 9 kHz channel spacing using the carrier frequencies listed in Annex 1 hereto;

B.10 2. that a draft plan for broadcasting frequency assignments in the LF band for Region 1 should be prepared by the Second Session on the basis of a uniform 9 kHz channel spacing using the carrier frequencies listed in Annex 2;

B.10 3. that when the draft plan is prepared, any frequency that is already being used shall first be replaced by the frequency of the nearest new channel and subsequent changes desired should be negotiated between the administrations concerned or groups of administrations concerned during the Second Session;

B.10 4. that, however, if the majority of Administrations represented at the Second Session of the Conference, after careful examination, finds that the draft plan is unsatisfactory, the Conference may consider the possibility of preparing a plan based on a different channel spacing common to Region 1 and 3; in this case the provision of paragraph 3 above shall also apply;

B.10 5. that the Second Session of the Conference shall adopt for the frequency changes required in Regions 1 and 3 a time table which takes into account the special conditions of the developing countries.

invites Administrations

B.10 1. to study, taking into account paragraph 8.4 of this Report, the problems of frequency sharing of the LF band allocated to the Broadcasting Service in order to make it possible to change the carrier frequencies appearing in Annex 2 to frequencies which are integral multiples of the channel spacing.

B.10 2. to submit, if necessary, proposals to this effect to the next competent World Administrative Radio Conference.

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Annexes : 2

B.10

A N N E X E 1 - A N N E X 1 - A N E X O 1

CANAUX DE 9 KHZ DANS LA BANDE DES ONDES HECTOMETRIQUES (ECARTEMENT UNIFORME)

UNIFORM CHANNEL SPACING OF 9 KHZ IN THE MF BAND

SEPARACION UNIFORME DE CANALES DE 9 KHZ EN LA BANDA DE ONDAS HECTOMETRICAS

B.10

Canal No.	Fréquence kHz	No.	kHz	No.	kHz
1	531 1)	41	891	81	1251
2	540	42	900	82	1260
3	549	43	909	83	1269
4	558	44	918	84	1278
5	567	45	927	85	1287
6	576	46	936	86	1296
7	585	47	945	87	1305
8	594	48	954	88	1314
9	603	49	963	89	1323
10	612	50	972	90	1332
11	621	51	981	91	1341
12	630	52	990	92	1350
13	639	53	999	93	1359
14	648	54	1008	94	1368
15	657	55	1017	95	1377
16	666	56	1026	96	1386
17	675	57	1035	97	1395
18	684	58	1044	98	1404
19	693	59	1053	99	1413
20	702	60	1062	100	1422
21	711	61	1071	101	1431
22	720	62	1080	102	1440
23	729	63	1089	103	1449
24	738	64	1098	104	1458
25	747	65	1107	105	1467
26	756	66	1116	106	1476
27	765	67	1125	107	1485
28	774	68	1134	108	1494
29	783	69	1143	109	1503
30	792	70	1152	110	1512
31	801	71	1161	111	1521
32	810	72	1170	112	1530
33	819	73	1179	113	1539
34	828	74	1188	114	1548
35	837	75	1197	115	1557
36	846	76	1206	116	1566
37	855	77	1215	117	1575
38	864	78	1224	118	1584
39	873	79	1233	119	1593
40	882	80	1242	120	1602 2)

1) Au plus 12A3

2) Au plus 6A3

A N N E X E 2 - A N N E X 2 - A N E X O 2

B.10

CANAUX DE 9 KHZ DANS LA BANDE DES ONDES KILOMETRIQUES (ECARTEMENT UNIFORME)

UNIFORM CHANNEL SPACING OF 9 KHZ IN THE LF BAND

SEPARACION UNIFORME DE CANALES DE 9 KHZ EN LA BANDA DE ONDES KILOMETRICAS

B.10

N°	(kHz)
1	155 1)
2	164
3	173
4	182
5	191
6	200
7	209
8	218
9	227
10	236
11	245
12	254
13	263
14	272
15	281 2)

B.10

B.10

B.10

B.10

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1) Au plus 10A3 — A lo más 10A3

2) Au plus 8A3 — A lo más 8A3

B.10

B.10

B.10

RESOLUTION D

Report of the First Session

The Regional Administrative LF/MF Broadcasting Conference, Geneva, 1974,

considering

1. that according to Administrative Council Resolution 743 the agenda of the Second Session of the Conference shall be

" a) to consider the Report of the First Session of the Regional Administrative LF/MF Broadcasting Conference on technical and operational criteria and methods for frequency planning in the LF/MF broadcasting bands in Regions 1 and 3;

b) on the basis of these technical and operational criteria and planning methods, to draw up an agreement and an associated frequency plan of assignments in the LF/MF broadcasting bands in Regions 1 and 3 to replace, as appropriate, existing plans for those bands",

2. that many delegations are of the opinion that the Report of the First Session should be signed only by the Chairman of the Conference, and that, on the contrary, a number of delegations feel that individual delegations should sign the Report of this Conference,

3. that compromise results were obtained after difficult discussions, due in particular to the different situations prevailing in Regions 1 and 3,

B.10

resolves

that the Second Session apply the technical, and other, criteria defined in the Report of the First Session,

B.10

instructs

1. the Chairman of the Conference to transmit under his signature the Report of the First Session to the Second Session of the Conference,

B.10

2. the Secretary-General to transmit the Report of the First Session to all administrations of Regions 1 and 3.

B.10

B.10

B.10

B.10

B.10

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 146-E
25 October 1974
Original : English

Statement by the United Kingdom Delegation

Although the unanimous adoption of 9 kHz spacing throughout Regions 1 and 3 for the preparation of a plan will meet the wishes expressed in Resolution No. 4 of the Final Acts of the African LF/MF Broadcasting Conference, Geneva, 1966, the United Kingdom considers that it offers no hope of a satisfactory solution to the chaotic situation of medium frequency broadcasting in the congested parts of Region 1; nor does it offer sufficient opportunity for future expansion to meet the growing needs of the developing countries of Region 1. For these reasons the United Kingdom considers that two of the important objectives of the Second Session of the Conference may be frustrated, and the likelihood of a successful outcome of the Conference must necessarily be be in doubt if it is based on a uniform channel spacing of 9 kHz. The United Kingdom remains firmly of the view that the possibility of a uniform channel spacing of 8 kHz should be kept open.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 147-E
29 October 1974
Original : English

COMMITTEE 7

SUMMARY RECORD

OF THE

FIRST MEETING OF COMMITTEE 7

(EDITORIAL)

Monday, 14 October 1974, at 1130 hrs

Chairman : Miss M. HUET (France)

Subjects discussed	Document No.
1. Terms of reference of the Committee	
2. Composition of the Committee	
3. Draft plan for the Report of the First Session of the Conference	DT/20

1. Terms of reference of the Editorial Committee

The terms of reference laid down in No. 759 of the Montreux Convention were noted.

2. Composition of the Committee

It was agreed that the Committee would be composed of the following members :

- Miss Huet (Chairman, France), Mr. Kilvington (Vice-Chairman, United Kingdom) and Mr. Arto Madrazo (Vice-Chairman, Spain) assisted or replaced as necessary by other members of their delegations;

- a member of each of the three Language Sections in the General Secretariat.

The Vice-Chairman of the I.F.R.B. said that at least one member of the Board would attend each meeting.

3. Draft plan for the Report on the First Session of the Conference (Documents No. DT/20 and DT/22)

The Chairman pointed out that the Committee's first task was to consider the form of the texts to be submitted by the various Committees; if it were assumed that the Report would be signed at the end of the Session, the main body of the Report would have to consist of short texts in the form of provisions, with all the technical explanations, recommendations, etc., appearing as Appendices. The Committee Chairmen should be requested, if that procedure were adopted, to prepare their texts accordingly.

Both the Vice-Chairmen agreed that it was preferable to work on the assumption of a signed text.

The Chairman of Committee 5 thought there might be some difficulty in producing the texts in the form that had been suggested. The delegate of France offered to raise the matter in the Committee 4 meeting that afternoon, as six working group reports were already submitted for approval.

The Chairman, referring to Document No. DT/20, emphasized that Committee Chairmen were free to add or delete items as they considered necessary. She suggested deletion of "definition" as sub-item 4.1 and insertion in the plan of the question of shared bands.

The delegate of France considered that shared bands should be the subject of a new Chapter 8. The principle of a separate chapter was supported by both the Vice-Chairmen, though the Vice-Chairman (English) felt it should follow Chapter 5 (Protection) with which it was associated. The Vice-Chairman of the I.F.R.B. also agreed with a separate chapter for shared bands but pointed out that references should also be included in Chapters 4, 5 and 9 to cover all aspects of the question. He made several suggestions for amending the draft plan, including that of grouping all definitions in a single chapter for ease of reference.

It was agreed that the Editorial Committee would produce a revised version of the draft plan*) to take account of the amendments adopted and that the Chairman of Committee 5 would incorporate the changes suggested by the Vice-Chairman of the I.F.R.B. in Document No. DT/22(Rev.) which was regarded as a complement to the draft plan.

The meeting rose at 1235 hours.

The Secretary : The Chairman :

R. MACHERET Miss M. HUET

*) subsequently issued as Document No. 64

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 148-E
1 November 1974
Original : English

PLENARY MEETING

MINUTES

OF THE

FOURTH PLENARY MEETING

Tuesday, 22 October 1974, at 1645 hrs

Chairman : Mr. F. LOCHER (Switzerland)

Subjects discussed :	Document No.
1. Fourth series of texts submitted by the Editorial Committee	108
2. Final Report of Committee 2 (Credentials)	96 and Corr. 1
3. Deadline for submitting statements	

1. Fourth series of texts submitted by the Editorial Committee (Document No. 108)

The Chairman of the Editorial Committee drew attention to a typing error on the first page of Document No. 108.

The Chairman invited the meeting to consider Document No. 108 page by page.

Page 2

The delegate of France proposed that the phrase "expressed in dB" in the first line of the first and third definitions should be deleted and that the following new sentence should be added at the end of the first paragraph of each of those definitions : "This ratio is generally expressed in dB". He also proposed that the phrase appearing between brackets in the second paragraph of the third definition should be amended to read "(full carrier with double sideband)".

Page 2, as amended, was approved.

Page 3

The Chairman of the Editorial Committee, referring to the English text only, said that the word "must" in the last line of the third definition should be replaced by "shall".

The delegate of the United Kingdom proposed that the words "minimum conventional" in the first line of the first definition should be replaced by "agreed minimum", in order to bring the English text more closely in line with the French.

The Director of the C.C.I.R., referring to the first definition, said that it had been customary in the past to separate the definition properly speaking from any explanatory material which followed. It might therefore be appropriate to divide the text into two paragraphs, one containing the first sentence and the other containing the second and third sentences.

Page 3, as amended, was approved.

Page 4

The delegate of India said that the word "further" in the last line of the fourth paragraph should be replaced by "farther". He also proposed an amendment to the first paragraph.

After a discussion in which the delegates of New Zealand, the Netherlands, Australia, France, Turkey, India and the United Kingdom took part, it was agreed to replace the phrase "with high back protection" in the first paragraph by the phrase "with reduced radiation".

In response to a comment by the Vice-Chairman of the I.F.R.B., the delegate of France proposed that the word "maximum" should be added before "value" in the second sentence of the second paragraph.

Page 4, as amended, was approved.

Page 5

Approved subject to deletion of the word "Reliable" from the first line of paragraph 6.2.

Page 6

Approved.

Page 7

Approved subject to the addition of Finland to the delegations mentioned in the footnote.

Page 8

The Chairman of the Editorial Committee said that at the request of the Chairman of Committee 5, the text on page 8 would be included under another chapter. Consequently, there was no need to retain the heading "Chapter 7", and the following chapters would be renumbered accordingly.

Pages 9 and 10

Approved.

Page 11

The delegate of France said that the mathematical formula at the top of the page was incorrect since it was based on the C.C.I.R. definition of minimum usable field strength which, unlike the definition drawn up by the Conference, took account of man-made noise.

Following a discussion in which the delegates of the Federal Republic of Germany, France, Sweden and Italy took part, it was decided to set up a working group, entitled Working Group PL-B and

composed of France (Chairman), the Federal Republic of Germany, Italy, Spain, the United Kingdom, Japan and the Director of the C.C.I.R., to study the problem and propose an appropriate solution.

Pages 12 to 14

Approved.

Page 15

Approved subject to deletion of the figure "1." under the heading "requests".

Page 16

The delegate of India observed that the full official title of the Conference had not been reproduced in the third line from the top of the page.

The Chairman of the Editorial Committee said that that error, which appeared only in the English text, would be corrected. Referring to the French text only, she said that the word "l'émission" in the penultimate line of the fourth paragraph under "considering" should be replaced by "l'émetteur".

The delegate of the United Kingdom proposed that the words "signals from" should be added before the word "transmitters" in the second line of the fourth paragraph under "considering".

Page 16, as amended, was approved.

Page 17

The delegate of France, speaking as Chairman of the small working group which had drafted the text, said that an earlier version had contained a sentence referring to the economic aspects of atomicrons. That sentence had subsequently been deleted, but he wished to draw attention to the fact that an atomicron was no longer a luxury since it did not cost very much more than an oscillator. His remarks were addressed to those administrations that might abandon the idea of introducing a synchronized network simply because they believed that an atomicron would be too costly.

The observer for Brazil drew attention to an apparent contradiction between the definition of a synchronized network given on page 3 and the contents of the first paragraph on page 17.

Following a discussion in which the delegates of France and Poland and the observer for Brazil took part, it was decided not to modify the text of the first paragraph on page 17.

Page 17 was approved subject to a minor drafting amendment to the title of the publication mentioned in the Note.

Document No. 108, as a whole, was approved as amended, subject to modification of the text on page 11 consequential upon the deliberations of Working Group PL-B.

2. Final Report of Committee 2 (Credentials) (Document No. 96 and Corr.1)

The Chairman of Committee 2 introduced Document No. 96 and Corr. 1. Since the last meeting of Committee 2, credentials from Bulgaria had been received, examined and found to be in order, and provisional credentials had been received from Senegal. The necessary modifications would be made in Annex 1 to the Report. The correct title of the Conference would be substituted for that appearing at the head of Annex 1. Referring to the English text of the Corrigendum, he said that the U.S.S.R. should be added to the list of delegations in paragraph 4 on page 1.

The delegate of Dahomey said that the decision to authorize his Administration to participate in the Conference had been taken by the Council of Ministers of Dahomey at a meeting presided by the Head of State. The text of that decision had been duly communicated to the Secretariat of the Conference. Having been informed that his delegation's credentials were not in order, he had contacted his Administration and was awaiting its reply. The question would certainly have been settled to the satisfaction of all concerned by the time the Final Acts were opened for signature at the second session of the Conference.

The delegate of Viet-Nam rejected as unfounded the statements contained in Annexes 2 and 4 to the Report. No article of the Paris Agreement on Viet-Nam either referred to the Viet-Cong or described it as an administration or government. The Paris Agreement called for the Viet-Cong to join the South Viet-Namese people to elect one government for South Viet-Nam, not for North Viet-Nam to create a separate entity under the label of the so-called "Provisional Revolutionary Government". The Paris Agreement had neither set up, nor was it within its competence to set up, the "P.R.G." or any entity other than the Republic of Viet-Nam as a "legal government in South Viet-Nam". Furthermore, the Paris Agreement had not changed, nor was it within its competence to change, the legal and constitutional character of the government of the Republic of Viet-Nam.

The delegate of Albania stated that his delegation did not recognize the validity of the credentials of the Saigon South Viet-Nam clique. The Provisional Revolutionary Government of the Republic of South Viet-Nam was the lawful representative of the South Viet-Nam people. Furthermore, the Albanian delegation opposed the credentials issued by the South Korean authorities, which had been put in power illegally by the American imperialists during their aggression against Korea. The only lawful representative of the Korean people was the Government of the Democratic People's Republic of Korea.

The delegate of Korea said it was regrettable that the Albanian delegate had thought fit to engage in political polemics which were totally unrelated to the Conference. His Government had no particular objection to North Korea's participation in any conference together with the Republic of Korea, if that could serve to ease tension and to further international cooperation.

The Final Report of Committee 2 and Annex 1 to the Report were adopted as amended.

Annexes 2, 3 and 4 and the oral statements by the delegates of Dahomey, Viet-Nam, Albania and Korea were noted.

3. Deadline for submitting statements

On a proposal by the Deputy Secretary-General, it was agreed that the deadline for receipt by the Secretariat of any general statements to be reproduced and published before the end of the current session of the Conference would be 23 October 1974 at 1800 hours.

The meeting rose at 1825 hours.

The Secretary-General :

M. MILI

The Chairman :

F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 149-E
29 October 1974
Original : English

PLENARY MEETING

MINUTES

OF THE

FIFTH PLENARY MEETING

Wednesday, 23 October 1974, at 0930 hrs

Chairman : Mr. F. LOCHER (Switzerland)

Subjects discussed :	Document No.
1. Approval of the minutes of the second Plenary Meeting	118
2. Final report of Committee 3 (Budget Control)	122
3. Fifth series of texts submitted by the Editorial Committee	124, 121

1. Approval of the minutes of the second Plenary Meeting (Document No. 118)

Approved.

2. Final report of Committee 3 (Budget Control) (Document No. 122)

After the Chairman of Committee 3 had introduced Document No. 122, that report was unanimously approved.

The Chairman thanked the Chairman of Committee 3 and congratulated him, the Vice-Chairman of the Committee and the members of the Committee for the efficient way they had accomplished their work.

3. Fifth series of texts submitted by the Editorial Committee (Documents Nos. 124 and 121)

The Chairman of the Editorial Committee introduced Document No. 124 and pointed out two small editorial corrections to the text.

The Chairman invited the meeting to consider Document No. 124, page by page.

Page 2

Approved, with the editorial amendment indicated by the Chairman of the Editorial Committee.

Page 3

The delegate of Pakistan proposed that the words "in all countries" in the second paragraph, fourth line, should be replaced by "for all people". The latter phrase had appeared in the original text (Document No. DT/19), and had been approved by Working Group 5A, but it had inadvertently been changed in the passage of the text through Documents Nos. 84 and 124.

The delegate of Papua New Guinea, speaking as representative of a country with many language groups, felt that it would be preferable to keep the wording as it stood in Document No. 124. It was difficult to give a satisfactorily precise definition of the concept "people". A "country" was the only unit that could reasonably be defined and it was the responsibility of each individual country to see that the requirements of its various population groups were met.

As no support was expressed for the Papua New Guinea objection, the Pakistan proposal was approved.

The delegate of China, supported by the delegates of Japan, Nigeria, Mauritania, Albania, Syria, Cameroon, Kuwait, India, Zaire, Gabon, Algeria and Pakistan, pointed out that, as a result of the deletion by Committee 5 of Document No. 102 and of paragraph e) of section 9.6.1 of Document No. 112, the concept of the broadcasting coverage unit would appear nowhere in the report of the First Session. Footnote 1) should therefore be deleted.

Various amendments were suggested to make the wording of the footnote more acceptable : the delegate of Spain, supported by the delegates of Norway and Sweden, proposed replacing the last two words by "the definition of the coverage unit", the delegate of the Vatican City State proposed replacing those words by "an agreement leading to a definition of a coverage unit", while the delegate of New Zealand, supported by the delegates of the Netherlands, the Federal Republic of Germany, Italy and Ireland, proposed deleting the last four words entirely. The delegate of Lebanon, supported by the delegate of Senegal, considered that the main objection to the footnote was the reference to a "more technical" planning principle, which implied that the work of the Conference had been based on non-technical or less technical principles, and proposed that the words "a more technical" be replaced by "another".

The Chairman of Committee 5 explained that when, earlier, there had been a suggestion to delete the footnote, he had proposed that as it was not known at that time whether any of the results in Chapter 9, section 2, would be adopted the footnote should be retained as well. Since there was to be no definition of the coverage unit elsewhere he saw no difficulty in accepting the footnote with a compromise wording.

As objections were still raised to the footnote, the delegate of New Zealand, supported by the delegates of Sweden, Switzerland, Spain, Norway and Austria, said that, to meet those objections and still respect the rights of minority views to be expressed, the individual Administrations expressing a preference for the use of the coverage unit should be named in the footnote.

The delegate of Italy, supported by the delegate of Mauritania, said that the expression of the reservations embodied in the footnote could perhaps be confined to the minutes of the present meeting and not appear in the report.

The delegate of Algeria said that the object of a footnote was to clarify a point in the body of the text or to express a specific view on a specific subject. The present footnote did not fulfil that condition and should be deleted.

The delegate of Nigeria said that expressing the reservations of a group of countries as a footnote to the report would create a dangerous precedent leading to a proliferation of such notes. The proper place for reservations was in a separate document submitted at the end of the Conference.

The delegate of Spain considered that a precedent had already been set (see page 7 of Document No. 108) for recording reservations as a footnote. He proposed that the New Zealand suggestion of naming the individual Administrations concerned should be followed (Spain should be included in that list) and that the wording of the footnote should be amended, in the light of the discussion, to read as follows : "The Administrations of ..... expressed a preference for basing this planning principle on the definition of a coverage unit".

The delegates of Switzerland, Belgium, Ireland, Denmark, Italy, the Vatican City State, Sweden, Austria and the Netherlands supported that proposal and wished the names of their Administrations to appear in the footnote.

The Spanish proposal was approved.

The delegate of Nigeria wished his opposition to that solution recorded.

The delegate of Italy, supported by the delegates of China and Sweden, said it would be more appropriate not to have the footnote attached to the title of the section but to refer it to the end of the second paragraph on page 3.

Page 3, as amended, was approved.

Page 4

On a proposal by the delegate of New Zealand, it was agreed that in paragraph 9.6.1, last paragraph, second line, and paragraph 9.6.1.2, second line, of the English text, the notation "dB/1μVm" should be replaced by "dB(μV/m)" to bring it in line with the French text, and that the expression "A.50 mW" in line 5 of footnote 1) should be replaced by "A times 50 mW".

The delegate of Norway, with the support of the delegates of the Netherlands, Sweden, Denmark, Belgium, France, Yugoslavia and Ireland, proposed inserting after "... the Administration concerned." near the end of paragraph 9.6.1, the sentence quoted in Document No. 121, paragraph 1, to cover the case of countries separated by sea water.

The delegate of the United Kingdom did not support the proposal, as such problems could be settled by negotiations between the Administrations concerned, on the basis of paragraph 9.6.2.1, and as the proposal would give rise to certain difficulties; it was wise to avoid any legislation on the sea, and an artificial limit of that kind would unnecessarily restrict the most efficient use of the spectrum. Moreover, the definition of the mid-point of an over-water path was difficult to apply in practice, when two coasts were not parallel straight lines; the mid-point might in fact be very close to one of the coasts.

The delegate of Japan agreed that the mid-point of the over-water path was not only difficult to calculate in practice, but that such a demarcation on sea water would imply the protection of broadcast transmissions at sea, which was not defined by any law or regulation. Bilateral agreements could solve all problems arising in special cases like the North Sea.

The delegates of Norway, Denmark and the Netherlands replied that the proposed amendment was intended merely to provide a principle for planning, and as such did not affect the Law of the Sea. The present text was unclear, as the value of 0.5 mV/m should be met at the boundary of the transmitting country rather than at its neighbour's, in accordance with Radio Regulation No. 423. The proposed amendment would relax this condition to some extent, and would in no way preclude negotiations between the Administrations concerned, in the course of which any doubts as to the exact location of the mid-point line could easily be settled.

Referring to Document No. 121, the representative of the I.F.R.B. remarked that broadcasting at sea had always been a problem which the Union approached only with the greatest care. On the one hand, Radio Regulation No. 422 prohibited broadcasting on board ships outside territorial waters; on the other hand, the Regulations did not contain a provision of any kind for the protection of broadcast transmissions at sea. Any dispute between Administrations on that question would therefore force those Administrations to come to an agreement, which was explicitly provided for by the text of page 4 of Document No. 124.

The representative of the I.F.R.B. considered that fixing a maximum field strength of 0.5 mV/m for a point located at sea, as was suggested in Document No. 121, might ultimately lead to contemplating a regulation on protection at sea, and might again cast doubt on the provisions of No. 422, which it had only been possible to apply in Northern Europe after great effort of the countries concerned. The representative of the I.F.R.B. therefore thought that, should the Conference approve a provision of that kind, it would be preferable if the text to be inserted in paragraph 9.6.1 were to read as follows :

"In cases where countries are separated by sea water, this value of 0.5 mV/m shall be reduced by 4 dB for each section of sea water of 100 km separating the two countries".

The value of 4 dB/100 km is based on the ground-wave propagation curve at sea.

The delegate of Italy considered the method of modification outlined in paragraph 9.6.2.2 quite sufficient for low power channels. The condition that the field strength of a low power transmitter network should not exceed 0.5 mV/m at another country's boundary resulted in a usable field strength of 84 dB(μV/m); a further reduction of 4 dB(μV/m) for over-water paths would create a margin of 8 dB(μV/m) between the nominal and actual usable field strengths, which was an unnecessary restriction, especially for countries with a long coast-line. Where countries were separated by small bodies of water, the Norwegian proposal seemed of some value, but in the case of larger stretches of sea, i.e. of several 100 km, that proposal would impose a considerable limitation on countries setting up low power transmitters, without benefit to anyone.

Following a proposal by the delegate of Japan, which was supported, the Chairman proposed voting on the Norwegian proposal at a following Plenary Meeting.

It was so decided.

The delegate of Denmark remarked that a vote would not solve the problem, as he would then have to ask for a footnote or a reservation to be added.

Pages 5 and 6

The delegate of France pointed out that texts defining the procedure for modifying a plan were usually included in the Final Acts of a conference; paragraph 9.6.2.2 should therefore be issued as a Recommendation to the Second Session of the Conference.

The delegate of Italy suggested adding a note drawing the attention of the Second Session to the text in question.

It was so agreed.

The Chairman of the Editorial Committee suggested deleting the square brackets in line 7 of the second paragraph and in line 3 of the fifth paragraph.

Pages 5 and 6 were approved as amended.

Page 7

Page 7 was approved after attention had been drawn to a draughtsman's error.

The meeting rose at 1200 hours.

The Secretary :
H. POULIQUEN

The Chairman :
F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 150-E
10 February 1975
Original : English

PLENARY MEETING

MINUTES

OF THE

SIXTH PLENARY MEETING

Wednesday, 23 October 1974, at 1600 hrs

Acting Chairman : Mr. G.C. OKOLI (Federal Republic of Nigeria) (Vice-Chairman)

Subject discussed :	Document No. :
1. Sixth, seventh and eighth series of texts submitted by the Editorial Committee	129, 130, 131

1. Sixth, seventh and eighth series of texts submitted by the Editorial Committee (Documents Nos.129, 130, 131)

Seventh series of texts (Document No. 130)

The Chairman of the Editorial Committee introduced Document No. 130, which gave the results of the work of Committee 6 as a whole. She indicated that on page 10 some delegates wished + 1 dB and + 3 dB to figure as abscissae. That had not yet been done because the figure was on a logarithmic scale and it was difficult to insert them exactly, but it would be done later by the Secretariat.

The delegate of Pakistan said that during discussion of the definition of a coverage area some delegates had maintained that language requirements could not be included in the definition, but that they could be submitted by the countries interested at the time of planning and would then be given due consideration. He therefore proposed that Appendix F on page 3 should include an extra column headed "Any special requirement".

The Chairman of Committee 6 reminded delegates that Committee 6 and its Working Groups had had great difficulty in drawing up a form for the submission of frequency assignment requirements satisfactory to all delegations, and it had been decided to keep the form as simple as possible to expedite its processing by administrations. He drew attention to the note at the bottom of page 8 which he thought might cover the point made by the delegate of Pakistan.

The delegate of Pakistan said that the expression "in a simplified form suitable for electronic processing" in the note was not sufficiently explicit. He would like the words "suitable for electronic processing" either deleted or explained in greater detail.

In reply to a question by the delegate of Qatar, the Deputy Secretary-General and the Vice-Chairman of the I.F.R.B. advised that there was a distinction between a request in respect of planned channel use solely on technical criteria and the justification of needs by an administration - in the present case language requirements. The form of presentation of requirements had been designed only to give the I.F.R.B. an indication of prospective frequency use for planning purposes. It was not intended to include information justifying planned use by an administration. Separately, the Conference would be considering proposals submitted by administrations. These would need to be sent to the Secretary-General in accordance with the International Telecommunication Convention and it was for each administration to decide whether or not it wished to put forward, as part of its proposals, for example, special treatment for linguistic requirements, any material it intended to present in support of its planned use of the spectrum and any

...

other information which it judged necessary to assist the bilateral and multilateral discussions during the second session. Such material would be collated and indicated as part of the process of coordination of proposals by the Secretary-General in the normal way.

After further discussion, in which the delegates of Pakistan and India stressed that the important matter of language requirements should not be overlooked when individual Administrations filed their requirements, the delegate of India proposed that the note on page 8 be amended to read " ... in a simplified form, if possible suitable for electronic processing ...".

That amendment, supported by the Vice-Chairman of the I.F.R.B. and accepted by the delegate of Pakistan, was adopted.

An editorial point relating to page 3 was raised by the delegate of the U.S.S.R. and one relating to page 7 by the delegate of Spain, and it was agreed that those should be dealt with by the Editorial Committee.

The delegate of the United Kingdom proposed the addition, at the end of the third paragraph on page 9, of the words "... at 1 kW", and the deletion of the sentence : "The functions are independent of the azimuth, so the power contours become horizontal, straight lines" at the beginning of the fourth paragraph on page 9.

It was so agreed.

The United Kingdom delegate further drew attention to drafting amendments affecting only the English text on page 9 and page 13.

The delegate of India said that it would be the task of the second session of the Conference to draft a plan to improve the existing chaotic situation of LF/MF broadcasting. The I.F.R.B. would have a lighter workload during the period between the end of the first session and 1 May 1975 by which time it would have received the frequency requirements submitted by administrations, and that period might usefully be employed by the I.F.R.B. in producing valuable background information to assist the second session in its planning. He therefore proposed the insertion on page 13 of a new paragraph 2, under "instructs" : "to calculate, for each MF transmitter in use in Regions 1 and 3 as on 25 October 1974, the usable field strength, and communicate this information to all administrations as soon as possible but not later than 31 December 1974.".

The Vice-Chairman of the I.F.R.B. explained that as from the end of the first session administrations might begin to submit requirements and the I.F.R.B. would have to begin calculations for frequency assignments in the Master Register and for programming the computer in addition to its normal day-to-day work and additional work assigned to it by the Maritime Conference. The I.F.R.B. could undertake the extra task suggested by the

delegate of India, if so desired, but the time limit of December 1974 was too short and he doubted whether the work could be completed before 1 May 1975.

The delegate of Pakistan endorsed the Indian delegate's proposal, and suggested that if the information could be provided shortly before the 1 May deadline for the submission of administrations' requirements that would be satisfactory.

The delegate of New Zealand doubted the value of overloading the I.F.R.B. with work which could be done by individual administrations for themselves.

In reply to a question by the delegate of France, the Vice-Chairman of the I.F.R.B. said that notification of all stations to the I.F.R.B. was compulsory under the Radio Regulations, but it was a fact that a number of stations were in service which had not been notified. Moreover, the information notified to the I.F.R.B. was not so detailed as that required in the form in Appendix F. The results of the work which the Indian delegate wished the I.F.R.B. to undertake could therefore be only approximate; and calculations based on replies to the Appendix F form would give a different result from those based on entries in the Master International Frequency Register.

The delegate of Sweden endorsed the Indian proposal, saying that the I.F.R.B. was at least as well informed as any individual administration and it was preferable for the work to be centralized.

The delegates of Italy, Spain and Algeria queried the practical value of the results which could be produced by the I.F.R.B., in view of the fact that the Master Register was not entirely up to date.

The delegate of the U.S.S.R., supported by the delegates of Australia, the German Democratic Republic and the Bielorussian S.S.R. proposed that the I.F.R.B. should undertake the calculations for any administration requesting the information, but that it should not be made a general requirement.

The delegate of Australia pointed out that his Administration had a much better idea of the coverage of its stations than the I.F.R.B. because it knew the local ground conductivity, which the I.F.R.B. did not.

The observer from the E.B.U., speaking on a point of clarification said it was necessary to know the ground conductivity in order to calculate the service range, but not to calculate the usable field strength.

The delegate of Nigeria proposed that the I.F.R.B. should wait to begin its calculations until they could be based on the information filed by administrations, and not that in the Master Frequency Register.

The delegate of Qatar said that in drawing up his country's requirements he wanted to know not only the strength of his country's transmitters but also, for practical reasons, the strength of the transmitters of neighbouring countries. It was in that connection that the information requested from the I.F.R.B. would be most helpful.

The Chairman of Committee 6 proposed, in order to take into account all the points of view expressed, that the words "the requirements" at the end of paragraph 3.2 on page 14 should be replaced by the following two sub-paragraphs :

"3.2.1 transmitters already in service, taking into account their present frequencies

3.2.2 total requirements".

The delegates of the United Kingdom, New Zealand, the Federal Republic of Germany and Spain supported the proposal.

The delegate of Nigeria proposed that the words "or in an agreed plan" should be inserted after the word "use" in point 20 of the form reproduced on page 3.

The delegate of the United Kingdom supported the idea behind the Nigerian proposal, but considered that it would be preferable to make specific reference to the Africa Plan. Such a reference might also be included in the first of the two sub-paragraphs proposed by the Chairman of Committee 6, perhaps by inserting the phrase "or included in the Africa Plan" after the word "service". If that was done, sub-paragraph 3.2.2 should be amended to read : "total future requirements for transmitters".

The delegates of India and Nigeria agreed with the United Kingdom delegate that it would be appropriate to make specific mention of the Africa Plan.

The Chairman of the Editorial Committee said that if point 20 of the form was amended along the lines suggested by either Nigeria or the United Kingdom, care would have to be taken to ensure that a clear distiction was made between assignments actually in use and those included in the Africa Plan but not yet in use.

The Vice-Chairman of the I.F.R.B., referring to paragraph 3.2 on page 14, said that it would be possible for the I.F.R.B. to process the information in such a way as to provide three sets of answers relating respectively to the situation resulting from existing assignments, that resulting from assignments together with the assignments in the Africa Plan, and that resulting from the requirements received. Turning to the form on page 3, he said that if a reference was made to assignments in the Africa Plan which were not yet in service, it would have to be specified that only assignments which were the object of a requirement should be mentioned, otherwise it would not be possible for the I.F.R.B. to process the information properly. Consequently, he suggested that a new box numbered 21 should be added at the bottom of the form together with a text along the following lines : "If this requirement covers an assignment in the Africa Plan not yet in service, indicate the frequency". If that was done, it would be necessary to add an appropriate new paragraph numbered 21 after paragraph 20 on page 8 of the document.

The delegate of Kenya supported those suggestion.

The delegate of Nigeria stressed the importance of distinguishing between transmitters already in service and those projected in the Africa Plan. He therefore considered that three sub-paragraphs, instead of only two, should be added to paragraph 3.2 on page 14. They should relate respectively to transmitters already in service, those projected in the African Plan, and total future requirements.

The delegate of the United Kingdom supported the views expressed by the Nigerian delegate. With regard to the suggestion by the Vice-Chairman of the I.F.R.B., he said that it would also be important to obtain information concerning the power of the transmitters in question. The text of new box 21 on page 3, the explanatory text to be inserted in page 8 and the relevant sub-paragraphs of paragraph 3.2 on page 14 would all need to be expanded accordingly.

The delegate of New Zealand, supported by the delegates of Malaysia and Nigeria, considered that the proposals for the addition of a new box on page 3, the insertion of an explanatory paragraph in page 8 and the addition of three sub-paragraphs to paragraph 3.2 on page 14 were complementary and would serve to remove any ambiguities. He suggested that they should be accepted in principle and referred to the Editorial Committee, which would work out appropriate wording for each text.

In response to a request for clarification by the delegate of the Netherlands, the delegate of the United Kingdom said that as he understood it the three sub-paragraphs to be added to paragraph 3.2 would read along the following lines :

"3.2.1 transmitters already in service, taking into account their present frequencies and powers

3.2.2 transmitters already in existence, taking into account their present frequencies and powers, together with stations in the Africa Plan but not yet constructed

3.2.3 total future requirements to be included in the new plan to be prepared by the Broadcasting Conference".

The delegate of the Netherlands said that he was not enthusiastic about the proposal. In his view, the first study should set out the recognized situation in the spectrum, namely, the situation which was previewed in the Africa Plan together with the existing situation according to the Master Frequency Register. The second set of information should relate to the Africa Plan as previewed together with the existing situation of transmitters in the frequency spectrum, in respect of both power and frequency usage. The third and last summary should relate to future requirements, as proposed by the delegate of the United Kingdom.

The delegate of the U.S.S.R. supported the suggestion by the New Zealand delegate, on condition that the texts prepared by the Editorial Committee were submitted in writing to the Plenary Meeting for approval. The suggestions by the Vice-Chairman of the I.F.R.B. and the delegate of the Netherlands did not appear to contradict each other and might serve as the basis for the Editorial Committee's work.

Replying to a question by the delegate of France, the Vice-Chairman of the I.F.R.B. said that the I.F.R.B. would be able to communicate the information mentioned in paragraph 2 on page 13 in the form of magnetic tapes, punched cards or tables, according to the wishes of administrations.

The Chairman said that if he heard no objection he would take it that Document No. 130, as a whole, was approved as amended with the exception of the additions to pages 3, 8 and 14, which should be referred to the Editorial Committee.

It was so agreed.

Sixth series of texts (Document No. 129)

The Chairman of the Editorial Committee introduced Document No. 129.

The Chairman invited the meeting to consider the document page by page.

Pages 2 and 3

Approved.

Page 4

The Chairman of Committee 4 proposed that the second sub-paragraph of paragraph 2.2 should be amended to read :

"where P (expressed in dB/kW) will be taken to be the power supplied to the antenna transmission line neglecting, for the purpose of planning, the losses in the antenna and its transmission line".

The Vice-Chairman of the I.F.R.B. observed that if that amendment was accepted it would be necessary to amend the definition of the symbol "P" on page 3.

The delegate of France disagreed. The definition of "P" should not be changed. However, "P_1" should be used instead of "P" in the text proposed by the Chairman of Committee 4, and the consequential addition should be made to the list of symbols on page 3.

The Chairman said that if he heard no objection he would take it that the amendment to paragraph 2.2, sub-amended by the delegate of France, was accepted and would be referred to the Editorial Committee.

It was so agreed.

The delegate of the U.S.S.R. suggested that the text of the footnote on page 207 of the Annex to Document No. 10 should be reproduced as a footnote referring to the fourth line of paragraph 2.

The Vice-Chairman of the I.F.R.B. said that acceptance of that suggestion might lead to misinterpretation of paragraph 2. To meet the concern of the U.S.S.R. delegate, he suggested that the phrase "and for distances less than 300 km" should be added after "60°" at the end of paragraph 1.

It was so agreed.

Page 4, as amended, was approved.

Page 5

Approved, subject to printing corrections to formulae (4), (5) and (6) (French text) and to formula (4) (English text).

Page 6

Approved, subject to editorial correction to the English text of paragraph 5.

Page 7

The delegate of the United Kingdom pointed out that Figure 1 referred to the text on page 4 (end of paragraph 2.2) and he suggested inserting the words "in the absence of loss in the aerial system". It was so agreed.

The page was approved, with that amendment.

Page 8

The delegate of Australia, noting that the grid in Figure 3 was incorrectly drawn, said he would check the original drawings and provide the Secretariat with a corrected version.

Approved, subject to that correction.

Pages 9 - 10

Approved.

Page 11

Approved, subject to an editorial correction in the last line pointed out by the representative of the C.C.I.R.

Page 12

Approved.

Pages 13, 14 and 15

The representative of the C.C.I.R said that the Corrigendum to Document No. 10 stated that the maps were provisional and the map on page 13 had been inserted because at the time no up-to-date map on magnetic inclination was available. It was understood that it would be revised for publication in the C.C.I.R. Volumes. Large-scale maps, published by other sources, were at the disposal of delegates.

The Chairman suggested that the map on page 13 might be retained in the Report, with a footnote stating that it was not up to date.

The delegate of the United Kingdom thought the maps on pages 14 and 24 (for Polar regions) were unnecessary and could be deleted.

The Chairman of Committee 4 agreed with that deletion but insisted that an up-to-date map (page 13) was necessary for the work of the next session and should be sent to administrations when available. The representative of the C.C.I.R. assured him that that would be done.

It was therefore agreed to replace the maps on pages 13 and 15 when up-dated versions were available and to delete page 14.

Pages 16 - 18

Approved.

Page 19

Approved, subject to alignment of the English symbols F_o and F_t on the French text.

Page 20

The Chairman of the Editorial Committee drew attention to the addition of the phrase "or from an equivalent mathematical formula" in paragraph 2 and the removal of the square brackets in paragraph 4.

Approved, as amended.

Pages 21 - 23

Approved.

Page 24

Deleted, according to decision taken earlier.

Page 25

Approved.

Page 26

Approved, subject to corrected drawing to be provided by the delegate of Australia.

Document No. 129 was thus approved, as amended.

Eighth series of texts (Document No. 131)

The Chairman of the Editorial Committee introduced the texts, explaining that paragraph 2.1.2 on page 2 should be inserted on page 3 of Document No. 85 (concerning groundwave propagation).

The representative of the C.C.I.R. pointed out that Report 229-2 also described methods of determining the characteristics and it would be useful to point that out.

It was so agreed.

Page 2 was approved, as amended.

Page 3

The delegate of India thought it would have been preferable to retain the English text as approved in Document No. 112. The delegate of the United Kingdom and the Chairmen of Committees 4 and 5 agreed that the French and Spanish versions should be retranslated from the amended English text as approved by Committee 5. The Chairman of the Editorial Committee said that the same remark applied to other pages of the document and suggested that the translators be assisted by delegates who had attended the meetings of the Groups and Sub-Groups in question.

The Chairman requested the assistance of members of English, French and Spanish-speaking delegations for the purpose and it was decided to defer discussion pending production of the revised texts.

The meeting rose at 2215 hours.

The Secretary-General :

M. MILI

Acting Chairman :

G.C. OKOLI
(Vice-Chairman)

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 151-E
30 January 1975
Original : French

PLENARY MEETING

MINUTES

OF THE

SEVENTH PLENARY MEETING

Thursday, 24 October 1974, at 1100 hrs

Chairman : Mr. Fritz LOCHER (Confederation of Switzerland)

Subjects discussed :	Document No.
1. Draft Resolution (Channel spacing)	126
2. Credentials of certain delegations	-
3. Draft Resolution (Report of the First Session)	117
4. Draft amendment to pages 4 and 5 of Document No. 124	DL/18

1. Draft Resolution (Channel spacing) (Document No. 126)

The Chairman of Committee 4 introduced the draft Resolution and explained that it represented a compromise between the various opinions expressed during the discussions. The text had been approved unanimously with the exception of paragraph 3 of the operative part, which had been inserted at the request of the countries which have signed Document No. 110, while several countries of Region 3 which had signed Document No. 113, as well as a certain number of countries which had signed Document No. 109, had been opposed to that insertion.

The delegate of New Zealand emphasized that the draft Resolution was the result of considerable effort and reflected the points of view of all delegations; he therefore recommended that the text should be adopted in its entirety, as it stood.

The delegate of Yugoslavia, referring simultaneously to the two draft Resolutions contained in Documents Nos. 126 and 117 respectively, made the following statement :

"As is generally known, Yugoslavia is a country situated in a very densely populated part of Region 1 containing a large number of countries and a still greater number of languages.

In addition, Yugoslavia itself is a multi-national country composed of a relatively large number of States having several officially recognized languages.

The existing situation in broadcasting, from the point of view of interference levels on all the channels used by Yugoslav transmitters, is very unsatisfactory. These levels clearly exceed all the values mentioned at this Conference as the standards for future planning. Therefore, taking into account the above-mentioned specific conditions, the delegation of Yugoslavia is of the opinion that problems of LF/MF broadcasting services in Region 1 could be solved only within the framework of a system which offers greater possibilities than the present one. This is why we supported the adoption of 8 kHz channel spacing at this Conference. We are, in fact, persuaded that such a solution would be advantageous for all other countries as well.

However, bearing in mind the desire of the majority of delegations to arrive at a compromise solution enjoying the support of all countries from Regions 1 and 3 and considering that unanimity is the greatest goal of this Conference, Yugoslavia also supports the draft Resolution.

In the light of the introductory statements, the delegation of Yugoslavia particularly supports paragraph 3 under "resolves" in Document No. 126, corresponding to Document No. 117, because it offers a guarantee that the second session of the Conference will do its best to achieve the greatest benefit for all countries severally and together, and that we shall be able to work at the Second Session to the best of our knowledge and abilities."

The delegate of Spain, referring to the foregoing remarks, made the following statement :

"Spain associates itself with the statement made by the delegate of Yugoslavia as regards the unsatisfactory situation in the European broadcasting area, and particularly in the Mediterranean countries. This situation is even more serious for my country, which has to develop its broadcasting service taking account of the shortage of frequencies so as to avoid causing interferences. As the delegate of Yugoslavia said, the only way to resolve those problems would have been to adopt a plan based on 8 kHz channel spacing. However, wishing as we do to arrive at a compromise, we accept Document No. 126 while pointing out that, with a plan based on a spacing of 9 kHz whose application will entail the loss of a channel in Region 1, the situation is in danger of further deterioration, especially in the Mediterranean area."

The delegate of Tunisia wondered why the LF band was not mentioned in paragraph 1 of the operative part. The basic text contained in Document No. 109 had been more general. He also asked for an explanation of the words "any frequency that is already being used" in paragraph 2 of the operative part. Did those words refer to stations entered in the International Master Register, or did they refer to ghost stations not appearing on any register, in which case it was known in advance that there was some incompatibility?

The Chairman of Committee 4 said that in paragraph 1 mention should be made not only of the MF band but also of the LF band; the latter had been omitted owing to an oversight.

The delegate of the United Kingdom remarked that the LF band was not used at all in Region 3 and very little used in a large part of Region 1. That was why it had not been discussed. Furthermore, any modification in the LF band would give rise to considerable difficulties because certain portions of that band were shared between broadcasting and other services.

After hearing the views of the delegates of Norway, Libya, Egypt, and Italy, the Chairman noted that several delegations were of the opinion that a reference to LF bands should be included in the text of paragraph 1 of the operative part of the draft Resolution on channel spacing.

The delegate of the United Kingdom also considered that a plan should be prepared for the LF band; however, it would seem wise to give attention to the problem of spacing, which was not always of 9 kHz. He suggested certain rearrangements that might be appropriate within that band, taking account of the other services which shared it with broadcasting.

The Chairman of Committee 4 suggested that a small working party should be appointed to study the question and to reword the text to include a reference to the LF band, for which a plan should be prepared.

It was so agreed.

It was decided that the working party set up for that purpose should be composed of the delegations of Egypt, Finland, Italy, Netherlands, Norway, Tunisia, United Kingom and U.S.S.R., and should be convened without delay by the Chairman of Committee 4, who would act as Chairman.

The delegate of Tunisia, reiterating the second part of his previous remarks, asked whether the phrase "any frequency that is already being used" in paragraph 2 of the operative part meant a frequency already assigned under the Copenhagen or African Plan, or on the contrary, any frequency whatever which was already in use.

The Chairman of Committee 4 thought that the phrase meant "frequencies actually being used at the present time and appearing in the African Plan".

The delegate of Tunisia said that he was satisfied with that explanation. The delegate of Belgium, on the other hand, thought that the question raised by the delegate of Tunisia was of a more general kind. While fully agreeing with the definition given by the Chairman of Committee 4, he considered that it should be clearly indicated whether the passage in question referred to all existing transmitters or only to those entered in the Master Register with acceptance in Columns 2a and 2b.

The delegate of the Netherlands said that paragraph 2 of the operative part gave rise to some problems. A new broadcasting plan should not, in principle, take the existing situation into account; that would obviously be the best solution. However, such a procedure would lead to a large number of changes in operating frequencies in use by existing stations, as well as to considerable expense for the countries concerned, which the developing countries could not be asked to incur.

The Agreement recently concluded for the African broadcasting area was at present in the implementation stage, which provided an additional reason for keeping changes to a strict minimum.

However, to retain the greatest possible flexibility in planning, it would be desirable that the economic advantage of minimum frequency changes should be given only to the countries of Region 3 and of the African broadcasting area. Only in that way could the existing situation in Europe be improved and interference in the African broadcasting area and in Region 3 be reduced.

For those reasons, the Netherlands delegation wished to propose the following change in paragraph 2 of the operative part under "resolves" : after the words "already being used" add : "in the African broadcasting area in accordance with the African Broadcasting Plan 1966 and in Region 3.".

The proposed amendment was supported by the delegate of Mauritania, while the delegates of Czechoslovakia, Yugoslavia, Hungary, Greece, Egypt, Liberia, Algeria and Syria spoke in favour of retaining without change the text of paragraph 2 under "resolves".

The delegate of Tunisia recalled that, on the previous day, several delegations had spoken of broadcasting stations which did not appear in the International Master Register. He asked whether paragraph 2 referred exclusively to stations appearing in the Register or, on the contrary, to all existing stations, whether legal or illegal.

The Chairman of Committee 4 repeated that while the term "existing station" particularly concerned Region 3 - where there were many stations not appearing in the Register - it also related to Region 1. As had been decided in Committee 6, information on frequencies of stations actually in existence should appear in box 20 of the form for submission of new requirements, while countries of the African broadcasting area belonging to Region 1 should enter the frequencies appearing in the African Broadcasting Plan in box 21.

The Chairman noted that a large number of delegations were in favour of retaining the text without change.

The delegate of the Netherlands also supported that solution, while drawing the attention of the Conference to the arguments he had adduced in support of his amendment.

In reply to a request for clarification by the delegate of Belgium, the Vice-Chairman of the I.F.R.B. stated that in the Master Register there were some broadcasting frequency assignments which did not include any date in Column 2. Those frequency assignments were given a symbol "T" in Column 13c, the explanation of which was to be found in the preface to the International Frequency List and had been published in Document No. 41 of the Conference, as follows : "The retention or recording, as appropriate, of this information, which does not include any date in Column 2, in the

Master International Frequency Register, and its publication in the International Frequency List are for information only and are not intended to ensure formal recognition as provided in No. 165 of the Convention.".

After the delegate of Tunisia had observed that the explanation he had requested had not been supplied, the Vice-Chairman of the I.F.R.B. stated that, in his opinion, it was for the Conference itself to define the terms "frequencies already being used" and "existing station" or "station in use".

The delegate of the Netherlands proposed that the problem should be solved by replacing the words "frequency already being used" by "frequency that is recognized".

The proposal gave rise to some perplexity among various delegations, particularly those of Pakistan and Zambia, which were opposed to the adoption of the phrase "frequency that is recognized".

The delegate of Belgium thought that once the I.F.R.B. had decided, after examining the case, not to grant international recognition to a transmitter, it would be illogical if, by adopting a resolution, the Conference were, within the very framework of the Plan, to give that transmitter the right to use a spare frequency in the nearest new channel. As for the definition, it would be preferable to state, for example, "any frequency already being used and entitled to international recognition".

The Chairman of Committee 4 pointed out that the first draft Plan would not come into force by international law until it was signed. Besides, all administrations were entitled to submit requests, whether the stations existed or not. The instructions in paragraph 2 were intended simply to facilitate the preparation of the Plan during the first stage of work.

The delegate of Belgium did not object to treating the transmitters included in the African Broadcasting Conference Plan (1966) as existing transmitters, even if their construction had not yet been completed or begun. He also had no objection to giving information on all existing transmitters, if necessary, in box 20 of the frequency requirement form (page 3 of Document No. 130). But it seemed inadmissible and illogical for existing transmitters not entitled to international recognition according to the I.F.R.B. Master Register (symbol T in column 13c of the Master Register) to be assigned the frequency of the nearest new channel in the draft Plan, as proposed in Document No. 126, in paragraph 2 under "resolves". Those comments referred to the substance. As to the form, the situation could be corrected by inserting in the text of paragraph 2 under "resolves", in line 2, after the words "already being used", the following text in quotation marks :

> ", except for the frequencies of transmitters which are not entitled to international recognition according to the Master International Frequency Register".

The delegate of Spain considered the statements made by the delegate of Belgium unacceptable, as the situation that had arisen - especially in Spain - called for a search for new solutions. The problem of "recognized stations" was quite new. It was necessary in preparing a new plan to take existing stations into account, treating them as new elements to be incorporated in the Plan.

For the delegate of Tunisia, there was no question of restricting certain countries' utilization of the frequency spectrum, but simply of pointing out that a choice might sometimes be bad. If the I.F.R.B. refused to ratify certain choices, then it was wrong to legitimize them. He therefore supported the suggestions of the delegate of Belgium.

The delegate of Algeria fully supported the views expressed by the delegate of Pakistan, and categorically rejected the proposal of the Netherlands, supported by Belgium and Tunisia.

The delegate of Turkey pointed out that countries that were behind in preparing their plan could not win international recognition of the frequencies they were using. Although all were to have the same rights, the countries that first completed their plans would, he felt, be served best. He therefore opposed the proposal of the delegate of Belgium, and requested that the text of paragraph 2 of the operative part of the draft Resolution in Document No. 126 should be left unchanged.

The delegate of the Netherlands replied that an administration now using frequencies not recognized by the I.F.R.B. would find itself in the same position after the new plan had been prepared. He therefore stressed the importance, from the international point of view, of administrations putting themselves in order.

The delegates of the U.S.S.R., Pakistan and Zambia favoured leaving paragraph 2 unchanged.

It was finally agreed that it would not be amended.

The delegate of France reminded the meeting that he had pointed out in the Editorial Committee that the term "espacement" applied to channels was wrong, and should be replaced by "écartement". That correction should be made in Documents Nos. 126 and 131 (8th series of texts).

The Chairman said that the Editorial Committee would be reminded of that point so that it would amend the texts mentioned above accordingly.

The delegate of Mauritania remarked that paragraph 1 of the operative part did not specify that the draft plan should be "with 9 kHz channel spacing", although that was explicitly stated in paragraph b) under "considering"; he therefore proposed that that phrase should be inserted in line 3 of paragraph 1 of the operative part, after : "in Regions 1 and 3".

The Chairman of Committee 4 commented on the layout of paragraphs in the draft Resolution, and gave reasons for their order. He pointed out in particular that paragraph 1 of the operative part referred to a concrete agreement that had been arrived at; its substance was given in the Annex to Document No. 126, namely the utilization of the centre frequencies listed in that Annex, which would be used as a basic document for all planning work.

The delegate of Mauritania failed to understand why it was inconvenient to specify in paragraph 1 of the operative part that the agreed spacing was 9 kHz.

The delegate of China firmly supported the proposal of the previous speaker, as it was important that the provision of the Resolution should state that the draft plan was to be based on a channel spacing of 9 kHz.

The delegates of Algeria, Egypt, Zaïre, Albania, Nigeria and the United Kingdom supported the amendment proposed by the delegate of Mauritania.

As no objections were raised, it was decided that the text of paragraph 1 of the operative part would be appropriately amended.

The delegate of Pakistan pointed out that the words "paragraph 2" in the last line of paragraph 3 of the operative part might lead to confusion, and that more precise terms should be used. The delegate of France replied that he had taken note of that point, and that the Editorial Committee would try to avoid any ambiguity.

The delegate of Syria observed that the majority of administrations had accepted a spacing of 9 kHz, but that that decision had only been adopted after numerous delays and prolonged discussions, as could be seen from the wording of paragraph 3. Several delegations had agreed to make concessions so that the Conference would be crowned with success. He therefore considered it preferable to delete paragraph 3 in order to increase the coherence of the draft Resolution.

The delegate of Pakistan, too, was not satisfied with the wording of that paragraph. He pointed out that Document No. 126 was the result of a compromise between diverging opinions, and that it had only been reached after numerous efforts on the part of several delegates. He did not consider it useful to bind the Second Session of the Conference at the present time, and favoured deleting paragraph 3 unless a majority of delegates wished it to be retained.

Moreover, in order to show clearly the spirit of compromise that had inspired the Conference, he requested that the word "resolves", on the first page of Document No. 126, should be preceded by "unanimously", so that the situation would be quite clear at the Second Session of the Conference.

The delegates of Malaysia and Nigeria shared the views expressed above.

The delegate of Senegal did not think it necessary to reopen discussion on the text of Document No. 126, as it reflected in substance Document No. 109, which had already been approved. The draft Resolution submitted to the Plenary Meeting was the result of concessions made by various administrations, and he thought that paragraph 3 should be retained, and that the word "unanimously" would be an excellent addition.

The delegate of China also thought that the idea of unanimity might suitably be included in the text, as the draft Resolution had resulted from over two weeks of discussion, and had only been arrived at through the spirit of solidarity of the countries in Regions 1 and 3, especially of the developing countries. The adoption of a channel spacing of 9 kHz was a positive result, which was why he was not entirely satisfied with the rather negative tone of the wording of paragraph 3.

After those various comments, the Chairman asked the meeting whether it agreed to retain paragraph 3 and to add the word "unanimously" on page 1 of Document No. 126, before "resolves".

The meeting gave its approval by applause.

Taking into account what went before, the draft Resolution given on pages 1 and 2 of Document No. 126 was approved.

With reference to page 3 of that document, the Vice-Chairman of the I.F.R.B. considered that, in view of the Conference's decision to leave administrations free to choose their low-frequency bandwidths between 4.5 and 10 kHz, and in view of the texts of regulations of the I.T.U., i) in the 2nd column, the frequencies 531 kHz and 540 kHz should be preceded, respectively, by the following texts : "Region 3 only - at most 12 A 3" and "at most 10 A 3 for Region 1"; ii) in the last column, the frequency 1 602 kHz should be preceded by the words "at most 6 A 3".

Moreover, he favoured giving i) columns 1, 3 and 5 one of the following headings : "No. of channel" or "No. of frequency", and ii) columns 2, 4 and 6 one of the following headings : "centre frequency" or "nominal frequency".

As no objections were raised, it was decided that the above additions should be made on page 3, and that the Editorial Committee should choose for the column headings the ones it judged most appropriate.

The Chairman of Committee 4 sincerely thanked the members of the Committee, in particular those of the Working Party (he mentioned the names of Messrs. Kilvington (United Kingdom), Tanaka (Japan), Harbi (Algeria) and Horvath (Hungary)), who had prepared the draft Resolution contained in Document No. 126 and had thus made a considerable contribution towards solving the problems raised.

The Chairman then warmly congratulated the members of the Working Party for their excellent work.

The Vice-Chairman of the I.F.R.B having requested the meeting to authorize the Working Party to study the problems connected with other services that shared the frequency bands used for LF broadcasting, the delegate of Egypt suggested that he should take part in the activities of the Group.

It was so decided.

The meeting was suspended at 1315 hours and resumed at 1500 hours.

2. Credentials of certain delegations

Speaking for the Chairman of Committee 2 (Credentials), its Vice-Chairman said that the credentials of the following countries had been examined and found to be in order : Republic of Gambia, Republic of Indonesia and Republic of Senegal.

3. Draft Resolution (Report of the First Session) (Document No. 117)

The Chairman of Sub-Group Plen-A said that that Sub-Group had had two meetings, at which it had prepared the draft Resolution contained in Document No. 117, basing its work on the various views expressed in the Plenary Meeting and in the Sub-Group itself. He gave some explanations of the text of that document, and said that the Sub-Group had thought that the Second Session should use the technical bases defined in the Report of the First Session.

The consideration of Document No. 117 was then begun.

The delegate of Nigeria thought it would be desirable to add on page 2 a third paragraph, requesting the C.C.I.R. and the I.F.R.B. to implement the Resolutions concerning them, and to fulfil the tasks assigned to them in the Report of the First Session.

The delegate of New Zealand thought it superfluous to add anything as far as instructions to the I.F.R.B. were concerned as that had already been done according to the normal practice of administrative conferences. He wondered, however, whether any instructions had been given to the C.C.I.R.

The Deputy Secretary-General felt that enough instructions had already been given to those organs in other Resolutions of the Report and that there was no point in raising the question again in Document No. 117 which dealt with the signing of the Report of the First Session and with the responsibilities which the Chairman of the Conference and the Secretary-General of the I.T.U. would have to assume in that respect. The Deputy Secretary-General recalled that in one case the Conference had expressed the wish that the C.C.I.R. accelerate certain studies relating to modulation systems which would permit a saving in bandwidth and that question had been entrusted to the competent Study Group.

The delegate of the United Kingdom confirmed the preceding statement, that the tasks conferred upon the C.C.I.R. were described on page 15 of Document No. 108, while those of the I.F.R.B. were specified on page 13 of Document No. 130. The Resolutions on those two pages had already been approved by the Conference, and it was therefore not necessary to resume discussion of that question in connection with Document No. 117.

The delegate of Nigeria considered that the document in question was at once a compromise and a summary of the debates and activities of the First Session, for which reason he thought it desirable to include in it the Conference's decisions. Even so, in order not to prolong its work unduly, he would withdraw his proposal if it were not supported. He further pointed out that a large number of delegations would prefer the Report of the First Session to be signed by all delegations.

The delegate of Spain thought that the addition proposed by the delegate of Nigeria would only complicate the text of the draft Resolution under examination, which was relevant only to the Report of the First Session. Moreover, he agreed that the Report should be signed by each delegation, but he was prepared, in a spirit of cooperation, to accept the provisions of paragraph 1 of the operative part, and requested the delegate of Nigeria to do the same, and to withdraw his proposal in connection with paragraph 3, given above.

The delegate of Nigeria agreed to that request.

The delegate of Belgium did not oppose adopting the draft Resolution as given in Document No. 117, but he wished it to be included in the minutes of the meeting that in spite of all that had been said and discussed in the course of the Conference, he was himself convinced that the Report of the First Session might have been signed by all the delegations.

The delegate of India felt that the phrase under the heading "resolves" on page 2 of Document No. 117 was too restrictive, and should be completed by the words "and other criteria" inserted after "technical bases".

That view was shared by the delegate of Pakistan.

As no objections were raised, it was agreed that the suggested change would be made to the text.

In reply to a remark by the delegate of the U.S.S.R., the Deputy Secretary-General said that the Secretary-General had already sent an invitation to the governments concerned. The Circular-letter (dated 6 October 1974) consisted simply of an invitation to take part in the Second Session and made no mention of proposals. The proposals should be submitted in the normal way within the coming four months, as it had seemed prudent to await the results of the First Session. The First Session had nevertheless produced a report which would distributed shortly. The Secretary-General had already prepared a draft letter inviting administrations to submit proposals for the Second Session and referring to the procedures adopted for the receipt of requests. The letter would contain information on the Second Session and its importance for the establishment of new intergovernmental agreements and also on the credentials required to enable delegations not only to take part in the work but also to vote and sign on behalf of their respective governments.

4. Text proposed for the amendment of Document No. 124, pages 4 and 5 (Document No. DL/18)

The delegate of Norway pointed out that, when pages 4 and 5 of Document No. 124 were being discussed, he had proposed certain changes, as a result of which he had been invited to discuss them with other affected delegations, in view of preparing an amended text for those pages. That, indeed, was what Document No. DL/18 contained, which was now submitted for approval to the Plenary Meeting.

In reply to a question asked by the delegate of the United Kingdom, the delegate of Norway indicated the different places in the document where the changes he advocated had been made.

Having received that information, the delegate of the United Kingdom, with the support of the delegate of Japan, stated that he could not accept the amendments in question, and requested that the original text of pages 4 and 5 of Document No. 124 should be retained.

Thereupon, the delegates of the Netherlands, Yugoslavia and Sweden supported the proposal of the delegate of Norway, the last speaker considering that it should be put to the vote.

The Chairman said that that would be done, but the Deputy Secretary-General of the I.T.U. first pointed out that, as the Report of the Credentials Committee had been approved, the following countries were not entitled to vote : People's Republic of the Congo, Republic of Dahomey, Ethiopia, Iran, Hashemite Kingdom of Jordan, Libyan Arab Republic, Malta, Islamic Republic of Mauritania, Mongolian People's Republic, Republic of Uganda, State of Qatar, Democratic Republic of the Sudan, United Republic of Tanzania, Republic of the Chad, Republic of Viet-Nam and Republic of Zambia.

A vote was then taken, with the following results :

In favour of the text proposed in Document No. DL/18 : 20 votes.

Against that text : 4 votes.

Abstentions : 34.

The Chairman stated that, in accordance with the provisions of No. 723 of the General Regulations annexed to the International Telecommunication Convention, a further vote would have to be taken in the following Plenary Meeting.

The meeting rose at 1610 hours.

The Secretary-General :

M. MILI

The Chairman :

F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 152-E
9 January 1975
Original : French

PLENARY MEETING

MINUTES

OF THE

EIGHTH PLENARY MEETING

Thursday, 24 October 1974, at 1640 hrs

Chairman : Mr. Fritz LOCHER (Swiss Confederation)

Subjects discussed :	Document No.
1. Credentials	-
2. 9th series of texts submitted by the Editorial Committee to the Plenary Meeting	141
3. Draft amendment to pages 4 and 5 of Document No. 124	DL/18

1. Credentials

The Vice-Chairman of Committee 2 (Credentials) said that the credentials received from Libya had been examined and found in order, in accordance with the relevant provisions of Chapter 5 of the General Regulations annexed to the Montreux Convention, 1965.

2. 9th series of texts submitted by the Editorial Committee to the Plenary Meeting (Document No. 141)

The Chairman of the Editorial Committee said that there were a number of corrections to be made to the document :

Page 2, 9.2.1 Replace : "Basic criteria" by "Basic considerations" in the title of the text.

9.2.1 Subparagraphs b) and c) : Two typographical corrections should be made to the English text.

Page 6, in the title, "LATTICE" to become "LATTICES".

Page 13, replace the text of the first sub-paragraph by :

"It is considered that transmitters meeting the above criteria should be permitted to be established on a non-interference basis."

Page 14, Text already approved (and reproduced by mistake in the 9th series).

Page by page consideration

Page 2, sub-paragraph c). At the proposal of the delegate of the Vatican, it was decided to replace the words "frequency assignments" by the word "frequencies".

Page 5, The delegate of Spain, referring to the Third Report of Working Party 5A contained in Document No. 105, requested that the text of the second sentence in paragraph 9.4.1 should be amended to read :

"Their use should be planned in conjunction with the lower part of the MF bands."

The proposed amendment was approved.

Page 6, paragraph 3

Following statements by the delegates of Libya and Syria, who questioned the definition of power ("high power (can be defined) as 50 kW and above"), the Chairman of Committee 5 recalled that the question had already been discussed at length following a proposal by Libya and Syria to define 50 kW as a "medium power", whereas the delegate of Japan had finally persuaded the Committee to submit the text to the Plenary Meeting in the form given in Document No. 141.

The delegate of New Zealand, supported by the delegate of Switzerland, proposed that the text of paragraph 3 be adopted without amendment.

After a long discussion in which the delegates of Libya, Mauritania, India, Australia, Sweden, Japan, Nigeria, New Zealand, Zaïre and Pakistan and the Chairman of Committee 5 took part, it was decided to maintain paragraph 3 unchanged.

The 9th series of texts, as amended, was adopted as a whole.

3. Draft amendments to pages 4 and 5 of Document No. 124 (Document No. DL/18)

The Chairman proposed that the Conference should take a new vote on the adoption of the draft amendment contained in Document No. DL/18.

The Deputy Secretary-General referred to the voting procedure prescribed in No. 723 of the Convention and stated that the following countries were not eligible to vote : the People's Republic of the Congo, Republic of Dahomey, Ethiopia, Iran, Jordan, Malta, Mauritania, Mongolia, Uganda, Qatar, Sudan, Tanzania, Chad, Vietnam and Zambia.

The delegate of the United Kingdom said that, in view of the strength of the vote in favour of the amendment and to facilitate the work of the Conference, he would withdraw his opposition to its adoption.

The delegate of Japan said that his delegation would do the same provided that a statement appeared in the record to the effect that the Japanese Delegation could in no circumstances consider the amendment as constituting a general principle.

The observations by the United Kingdom and Japanese delegates were noted.

The draft amendment to pages 4 and 5 of Document No. 124 (Document DL/18) was adopted unchanged.

The meeting rose at 1750 hours.

The Secretary-General : M. MILI

The Chairman : F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 153-E
30 January 1975
Original : English

PLENARY MEETING

MINUTES

OF THE

NINTH PLENARY MEETING

Friday, 25 October 1974, at 0945 hrs

Chairman : Mr. Fritz LOCHER (Confederation of Switzerland)

	Subjects discussed :	Document No.
1.	Report of Committee 2	--
2.	Approval of the minutes of the third Plenary Meeting	143
3.	Tenth series of texts submitted by the Editorial Committee	145

1. Report of Committee 2

The Vice-Chairman of Committee 2 announced that the delegations of the Democratic Republic of the Sudan and the Republic of the Chad had been provisionally accredited in accordance with number 631 of the Convention by the heads of those countries' permanent delegations to the European Office of the United Nations.

2. Approval of the minutes of the third Plenary Meeting (Document No. 143)

The minutes of the third Plenary Meeting were approved.

3. Tenth series of texts submitted by the Editorial Committee (Document No. 145)

The delegate of France, speaking as Chairman of the Editorial Committee, introduced the tenth series of texts submitted by the Editorial Committee (Document No. 145) and drew attention to certain typographical errors.

The Chairman of Committee 4 explained that Resolution C was a revised version of the draft Resolution appearing in Document No. 126. The changes consisted in the addition of sub-paragraph (f) under "considering" and of sub-paragraph 2 under "unanimously resolves", sub-paragraphs 3 and 4 being re-numbered accordingly.

The Chairman of Committee 5 proposed that a footnote be added to both Annexes to Resolution C. He agreed with a comment by the Vice-Chairman of the I.F.R.B. as a result of which the following footnote to pages 4 and 5 was adopted :

"In planning in the two bands, the provisions of Radio Regulation 116 shall apply".

The Chairman of Committee 4 pointed out that, in consequence, footnote 2 on pages 4 and 5 should be deleted and the reference after the figures at the foot of the last columns on both those pages should be changed to "1)".

It was so agreed.

Document No. 145, as amended, was approved.

The representative of the C.I.S.P.R. said that the measure advocated in paragraph 1 under "invites Administrations" in Resolution C was of particular interest to the C.I.S.P.R. and would facilitate the work of that body.

In reply to a question by the Chairman of Committee 4 as to whether the second session would be at liberty to introduce changes in the technical criteria adopted by the first session, the Deputy Secretary-General reiterated the explanation he had given at the third Plenary Meeting and drew attention to the decision adopted at the same meeting to draft a resolution whereby the Conference would recommend

that the second session apply the technical bases defined in the Report of the first session (Document No. 143, pages 3 and 4). In the Secretariat's view, the second session had the sovereign right to make changes in the Report it received from the first session and was not bound to accept the first session's recommendations.

The meeting rose at 1020 hours.

The Secretary-General :

M. MILI

The Chairman :

F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 154-E
9 January 1975
Original : English

PLENARY MEETING

MINUTES

OF THE

TENTH AND LAST PLENARY MEETING

Friday, 25 October 1974, at 1515 hrs

Chairman : Mr. Fritz LOCHER (Confederation of Switzerland)

Subjects discussed	Document No.
1. Texts submitted by the Editorial Committee for second reading	140 and Addendum No. 1
2. Report of Committee 2	
3. Closure of the session	

1. Texts submitted by the Editorial Committee for the second reading (Document No. 140 and Addendum No. 1)

The Chairman of the Editorial Committee introduced Document No. 140.

Chapter 1/1

The delegate of Switzerland suggested that the words "and referred to in the African Plan, Geneva 1966" should be added to the footnote.

It was so agreed.

Chapter 1/1 was approved with that amendment.

Chapter 1/2

The Chairman of the Editorial Committee said that the words "interfering signal" in the second line of the definition of "audio-frequency signal-to-interference ratio" should be replaced by the word "interference".

It was so agreed.

Chapter 1/2 was approved with that amendment.

Chapter 1/3

The delegate of the United Kingdom said that the word "conventional" in the top line of the definition of "Nominal usable field strength (E_{nom})" should be deleted.

It was so agreed.

The delegate of Papua New Guinea wondered whether the definition of "minimum value of field strength" which appeared in the footnote in Chapter 6/1 should not also be included among the definitions in Chapter 1.

The Chairman of the Working Party set up to draft the definitions, explained that it had not been considered necessary to include the concept of "minimum value of field strength" among the definitions as it was used only during the first session and would later be superseded by the concept of "nominal usable field strength".

Chapter 1/3, as amended by the delegate of the United Kingdom, was approved.

Chapter 1/4

The delegate of Switzerland wondered whether, in the light of previous discussions, the words "in the horizontal direction" at the end of the definition of "effective monopole radiated power (e.m.r.p.)" should not be deleted.

The Vice-Chairman of the I.F.R.B. said that those words were essential to the clarity of the definition.

Chapter 1/4 was approved without change.

Chapters 2/1, 2/2 and 3/1 were approved.

Chapter 4/1

The delegate of France suggested that, for the sake of logical presentation, the first sentence of paragraph 4.2 should be inserted between the penultimate and last sub-paragraphs in Chapter 9/1.

It was so agreed.

Chapter 4/1, as amended, was approved.

Chapters 5/1, 6/1, 6/2 and 6/3 were approved.

Chapter 7/1

The delegate of the United Kingdom suggested that the last paragraph in Chapter 9/1 should be transferred to Chapter 7/1.

It was so agreed.

Chapter 7/1, as amended, was approved.

Chapters 8/1 and 8/2 were approved.

Chapter 9/1

The modifications consequent upon the amendments to Chapters 4/1 and 7/1 were noted.

The delegate of Pakistan, supported by the delegates of France and Poland, remarked that the statement contained in the fifth sub-paragraph did not apply to the LF band. That fact should be reflected in the text.

The delegate of the United Kingdom said that the insertion of the words "It is desirable that" at the beginning of the sub-paragraph would make it clear that the statement was merely a general planning principle.

The delegate of New Zealand agreed and suggested that a reference to Resolution C should also be added to the sub-paragraph.

After a discussion in which the delegates of Italy, Pakistan, the Federal Republic of Germany, Poland, Spain, China, New Zealand, the United Kingdom and France took part, it was agreed that the fifth sub-paragraph should read as follows :

> "It is desirable that the nominal carrier frequencies should be integral multiples of the channel spacing (but see Resolution C)."

Chapter 9/1, as amended, was approved.

Chapters 9/2 to 9/8 were approved.

Chapter 9/9

The delegate of the Vatican City State observed that the phrase "shall ..... be met" in the sixth line of the top paragraph was too restrictive.

The delegate of the United Kingdom agreed, and suggested that the words "be met" should be replaced by the words "not be exceeded".

It was so agreed.

Chapter 9/9, as amended, was approved.

Chapters 9/10 to 9/12, Chapter 10/1, App. A/1 to 7 and App. B/1 were approved.

App. B/2

The delegate of the U.S.S.R. proposed that the word "or" at the beginning of the last line of the introduction should be replaced by "and".

After a brief discussion in which the delegates of France, New Zealand and the United Kingdom took part, that proposal was adopted.

App. B/2, as amended, was approved.

App. B/3 to B/6 were approved.

App. B/7

The delegate of Australia recalled that he had previously expressed doubt as to the accuracy of the curves in Figure 3. The correct curves, as produced by Interim Working Party 4/6 in May 1974, should be inserted in their place.

It was so agreed.

App. B/7 was approved on the understanding that the curves in Figure 3 would be replaced.

App. B/8 to B/12 were approved.

App. B/13

The Vice-Chairman of the I.F.R.B. said that the word "geomagnetic" in the caption to Figure 9 should read "magnetic".

App. B/13 was approved with that amendment.

App. B/14 and B/15 were approved.

App. B/17

The delegate of the Federal Republic of Germany said that his country's name in the fifth line should be written out in full.

App. B/17 was approved with that amendment.

App. B/18, App. C/1 and C/2, App. D/1 and App. E/1 were approved.

App. E/2

The delegate of the Federal Republic of Germany suggested that the word "excess" should be inserted before the words "polarization coupling loss" in the last line of paragraph 2 and the heading of paragraph 3.

It was so agreed.

The delegate of India said that, in that case, the word "excess" should also be inserted in the heading of paragraph 2.4, App. B/3.

It was so agreed.

The delegate of the United Kingdom said that the second sentence of paragraph 3 in the English text ("In band 5 Lp = 0.") should be deleted.

It was so agreed.

Replying to the delegate of New Zealand, the Chairman of the Editorial Committee explained that while the sentence was out of place in Appendix E which related to Region 3, it should be retained in paragraph 2.4 of Appendix B, which concerned Region 1.

App. E/2, as amended, was approved.

App. E/3 to E/5 were approved.

App. E/7

The Vice-Chairman of the I.F.R.B. said that the word "geomagnetic" in the caption to Figure 4 should be replaced by "magnetic".

App. E/7 was approved with that amendment.

App. E/9

The delegate of Australia said that his remarks in connection with App. B/7 applied also to App. E/9.

App. E/9 was approved subject to the curves in Figure 5 being replaced.

App. F/1

The delegate of the United Kingdom proposed that the word "carrier" be inserted before the word "power" in box 20.

It was so agreed.

App. F/1 was approved with that amendment and subject to minor drafting changes in the French and Spanish texts.

App. F/2 to F/5 were approved.

App. F/6

The delegate of the Federal Republic of Germany wondered whether the words "in a given direction" in the second line of paragraph 14 should not be inserted between the words "antenna" and "referred to" in the first line.

The Vice-Chairman of the I.F.R.B. said that the order of words was correct, but suggested that, for greater clarity, the first two lines of paragraph 14 should be separated from the remainder of the text by a space.

App. F/6 was approved with that change.

App. F/7

The delegate of Spain said that the word "carrier" should be inserted before the word "frequency" in the last line of paragraph 20.

It was so agreed.

App. F/7 was approved with that amendment.

App. F/8 to F/10 and G/1 to G/6 were approved.

App. G/7

The Vice-Chairman of the I.F.R.B. said that the table at the bottom of the page should not be numbered.

It was so agreed.

App. G/7 was approved with that amendment.

App. G/8 was approved.

Res. A/1

The delegate of Nigeria said that a comma should be inserted after the word "receivers" in sub-paragraph (b) under "considering".

Res. A/1 was approved with that amendment.

Res. B/1 was approved.

Res. B/2

The Chairman of the Editorial Committee said that the comma after the word "requirements" in sub-paragraph 3.1 should be replaced by a semicolon.

Res. B/2 was approved with that amendment.

Rec. AA/1 was approved.

Rec. AA/2

After a brief discussion in which the delegates of the Vatican City State and France took part, it was agreed that the full stop at the end of the first sentence of the sub-paragraph at the top of the page should be replaced by a semicolon and that the second sentence should read as follows :

"however, where the transmitters are sufficiently far apart not to cause mutual ground-wave interference, their synchronization during the day is not necessary and they may then broadcast different programmes."

Rec. AA/2, as amended, was approved.

The Chairman of the Editorial Committee introduced Addendum No. 1 to Document No. 140, drawing attention to the fact that Annexes 1 and 2 should follow Resolution C rather than Resolution D.

Addendum 1 to Document No. 140 was approved.

The Chairman of the Editorial Committee read out a list of documents received from the C.C.I.R. which would be annexed to the Final Report of the first session.

That list was approved.

2. Report of Committee 2

The Chairman of Committee 2 stated that the credentials received in respect of the delegations of the United Republic of Tanzania and the Republic of Viet-Nam had been examined and found in order.

3. Closure of the session

The Chairman, summing up the work of the session, referred to the complexity of the numerous technical problems which the Conference had

to resolve, a task rendered more difficult by the diversity of conditions in the Regions represented. With goodwill on the part of all concerned, positive results had nevertheless been achieved. It had, of course, proved necessary to accept compromise solutions which were not to everyone's liking, but there would have been no other way of continuing the common task, and he was happy to note that the spirit of cooperation had finally prevailed over every obstacle. In conclusion, after thanking the Chairmen and Vice-Chairmen of the Committees and particularly the Chairman of the Editorial Committee, the Secretariat and all others connected with the work of the Conference for their untiring efforts, he emphasized the importance of making rational use of the frequency spectrum and, in support of his remarks, quoted Article 46 of the I.T.U. Convention.

The delegate of Spain made the following statement :

"Mr. Chairman,

It is an honour for me to take the floor once again at the close of the first session of the Conference to express, as Dean of the Conference on behalf of all delegations, our congratulations to you on having, by your skill and tact, brought our work to a successful conclusion.

When, at the opening of this first session of the Conference, I proposed your nomination for the Chairmanship on behalf of the heads of delegations, I did so not merely as a tribute to our host country, but as one who knew your personal capabilities and was keenly aware of the significance of the choice we were about to make in view of the problems with which we were to be called upon to deal. Now that the time has come to make my closing statement, I feel even more proud of my role in your election.

You, Mr. Chairman, and all the delegates will remember that, during my opening address, I expressed my optimism despite the difficulties to be overcome. I expressed the hope that we should reach agreement on all the technical problems we had to solve and appealed to all participants for great understanding so that, when the time for planning comes, the needs of the new countries which have come into being as a result of the decolonization policy, are fully taken into account.

I have to confess, Mr. Chairman, that, as the Conference proceeded, my optimism protection fluctuated by many dB and even assumed a negative value with respect to the possibility of completing our work successfully. But you, Mr. Chairman, have managed to bring this about,

even if this meant that we had to work out compromise solutions, so that I am again optimistic. I hope that the interval between the two sessions will enable us all to reflect and to derive the greatest possible advantage from our work and from the abundant technical documentation now available to us.

The curve of technical developments in telecommunications is such that all countries, developed and developing, are compelled to follow a rising trend.

A little while ago, in Spain, we celebrated the fiftieth anniversary of the entry into service of our transmitter EAJ-1 Radio Barcelona, many years before the first European Agreement; L/F and MF broadcasting have, of course, developed enormously since then.

There are still many countries which have not yet installed FM broadcasting, a solution complementary to LF/MF broadcasting which, in some countries, has provided economical coverage for certain densely-populated areas.

When speaking of the development of technique, we should not forget that it was only in November 1963, just over ten years ago, while we were attending the first Radio Administrative Conference for Space Telecommunications, that we had the opportunity of taking part in the experimental telephone calls between Geneva and New York, using the "Syncom" satellite.

During the past ten years, you have all been able to read in the I.T.U. publications of the large number of satellites that have been launched - unfortunately I cannot quote the exact figure; it is worth mentioning, however, that a World Administrative Radio Conference for the Planning of the Broadcasting-Satellite Service in the 12 GHz frequency band is to be held not later than April 1977, and that tests are being carried out under UNESCO auspices by one of the countries represented here on the use of direct satellite broadcasting for educational purposes. And I should like to remind you lastly that, just a year ago, at the request of a large number of countries most of which are also represented here, the Plenipotentiary Conference of Malaga-Torremolinos approved a Resolution instructing the C.C.I.R. to pursue its studies on technical and operational questions leading to the establishment of low-capacity earth stations and associated satellite systems in order to satisfy the urgent needs of the least developed countries.

If I refer to these matters here, it is because I am convinced that all the participants at this Conference are in their heart of hearts convinced of the need to pursue the development of broadcasting techniques,

since to maintain the status quo is tantamount to renouncing that development to which all countries are entitled and would stultify the Plenipotentiary Conference Resolution to which I have just referred, which was requested precisely by the countries which described themselves as "the least developed countries".

In conclusion, Mr. Chairman, I should like to appeal once again to all distinguished delegates that, when they return home after our long and arduous working meetings, they should reflect on the fact that, while LF/MF sound broadcasting plays a fundamental role in social communications in all countries, the rapid advances of technology have made available new, complementary procedures; we should, I repeat, reflect that, given the limitation of the LF/MF spectrum, our planning at the second session must, to the exclusion of all other considerations, be based solely on technical grounds and principles so as to ensure the rational use of that part of the spectrum allocated to broadcasting in the bands in question which, unfortunately, it is not in our power to expand.

Once again, many thanks, Mr. Chairman."

The delegates of the U.S.S.R., Nigeria and Pakistan, speaking on behalf of their respective regions, thanked the Chairman for the tact and patience with which he had conducted the work of the Conference and expressed the firm conviction that a solid foundation had been laid for improving LF/MF broadcasting in Regions 1 and 3. They associated themselves with the thanks addressed to the Chairman of the Editorial Committee and the Headquarters' staff.

The Deputy Secretary-General expressed appreciation of the Conference's recognition of the efforts made by the staff to bring the first session to a successful conclusion, and wished delegates further success in their work towards the preparation of an effective plan at the second session.

The Chairman declared the first session closed.

The meeting rose at 1800 hours.

The Secretary-General :

M. MILI

The Chairman :

F. LOCHER

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 155-E
30 October 1974
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

EIGHTH MEETING OF COMMITTEE 4

(TECHNICAL DATA AND CRITERIA)

Monday, 21 October 1974, at 1705 hrs

Chairman : Mr. J. RUTKOWSKI (People's Republic of Poland)

Subjects discussed :	Document No.
1. Organization of work	
2. Channel spacing	109 and Corr. 1, 110, 113

1. Organization of work

The Chairman said that the Committee had been requested by the Plenary Meeting to set up a small ad hoc group to prepare for the Editorial Committee a definition of the terms "channel spacing" and "channel" and to draft the final version of the footnote concerning cymomotive force for inclusion in one of the documents that had already been submitted to the Plenary Meeting. He suggested that the group should be chaired by Mr. Lacharnay (France), and that a member of the United Kingdom delegation, the Vice-Chairman of the I.F.R.B. and a delegate of one Region 3 country should participate in its work.

It was so agreed.

On the proposal of the delegate of Lebanon, it was agreed that India would represent Region 3 in the ad hoc group.

2. Channel spacing (Documents Nos. 109 and Corr. 1, 110 and 113)

The Chairman drew attention to Documents Nos. 109 and Corr. 1, 110 and 113, submitted respectively by a group of African and Middle East countries, a group of countries members of the E.B.U., and a group of Region 3 countries.

The delegate of Algeria, introducing Document No. 109 and Corr. 1, said that Gambia, Liberia, Oman, Qatar, Sierra Leone, Sudan and Uganda should be added to the list of sponsors. The draft resolution in the document was being submitted in an attempt to solve the fundamental problem facing the Conference. The Region 3 countries had indicated their willingness to accept, as a compromise solution, a uniform channel spacing of 9 kHz on two conditions, namely, that planning within the framework of a standard spacing of 9 kHz between carrier frequencies (which must be integral multiples of that spacing) should restrict to a minimum any changes in the carrier frequencies of their stations, and that the second session of the Conference should adopt a time-table which allowed for the special circumstances of developing countries. In the view of its sponsors, the draft resolution in Document No. 109 represented the only possible compromise solution acceptable to the majority of countries in Regions 1 and 3.

The delegate of the United Kingdom, introducing Document No. 110 on behalf of the sponsors, said that the arguments set forth in it clearly demonstrated the superiority, from the technical standpoint, of 8 kHz spacing. Paragraph 7 listed seven available options in order of merit, and the sponsors strongly urged that one of the first three options should be adopted.

The delegate of Japan, introducing Document No. 113, stressed that the compromise it contained was the result of concessions made by a large number of countries. The sponsors had been prompted only by their desire that unanimous agreement should be reached at the current session of the Conference. In the absence of such agreement, the countries of Region 3 reserved their right to revert to 10 kHz channel spacing. Documents Nos. 109 and 113, which were almost identical in substance, might advantageously be merged into a single document.

The delegate of China, referring to Documents Nos. 113 and 109 submitted respectively by most countries in Region 3 and by a majority of the African and Arab countries in Region 1, stated that his delegation entirely agreed to, and fully supported, the proposal in those documents that a uniform channel spacing of 9 kHz with centre frequencies being integral multiples of that value should be adopted throughout Regions 1 and 3. The two documents constituted a positive response to the present Conference initiated by the African countries. They reflected a strong desire to unify channel spacing in Regions 1 and 3 so as to eliminate heterodyne interference in the border areas between the two regions. They had contributed a great deal and had paved the way to the success of the Conference.

The Chinese delegation highly appreciated the spirit shown by the majority of the countries in Asia, Africa and Oceania, particularly the developing countries, namely, the spirit of unity, full consultation, consideration of the interests of the whole, mutual understanding and mutual accommodation. It hoped that all participants present would act in that spirit, which was indispensable for the success of the Conference.

He proposed that the Conference should initiate forthwith consultations and discussions on the channel spacing proposed in the two documents in question, and should take a decision. The Chinese delegation had consistently respected the aspirations of the great majority of the developing countries and was ready, together with the developing countries and all others who were willing to do so, to contribute its share to bringing the Conference to a successful conclusion.

The delegate of the United Kingdom said that two substantial groups of countries in Regions 1 and 3 had indicated their readiness to change from existing channel plans in the MF band to a new channelling plan that would serve the interests of all countries in both regions. In Document No. 110 a further group of countries, including the United Kingdom, had reaffirmed its readiness to change. It was encouraging to note that more than half the countries present at the Conference had indicated their willingness to change in the interest of all. The Chinese delegation had just signified that intention, and he was sure that other delegations would follow suit.

The only outstanding question, namely, whether the change should be to 8 kHz or 9 kHz, deserved very serious consideration, since the ultimate decision would set the pattern for bradcasting for the coming 25 years at least. In his view, that question should be approached first and foremost from the technical standpoint.

What would a change from 10 kHz to a uniform channel plan for Regions 1 and 3 entail for the countries of Region 3? In that connection, it might be appropriate to refer to Document No. 104. Assuming that each transmitter would have to change to the nearest frequency in the new plan, a change to 9 kHz would mean that approximately 11 per cent of transmitters would not have to change at all, and that the average change for the others would be 2.5 kHz with a maximum of 4 kHz. In addition, 12 spare channels would be created which could be used, for example, to improve the service by reducing interference in areas that were already congested. However, a change to 8 kHz would be even more beneficial for Region 3, since the average change involved would be 3 kHz, the maximum change would not be greater than 4 kHz, and 27 spare channels would be created.

In Region 1, the adoption of a uniform channel plan with Region 3 would eliminate existing heterodyne whistle problems, but the adoption of 9 kHz spacing would bring no other advantages to any part of Region 1. No spare channels would be provided for use in Africa or other parts of Region 1 or to alleviate the serious interference problems which existed in some parts of the region. Indeed, the adoption of 9 kHz would reduce the number of available channels by one. On the other hand, a uniform spacing of 8 kHz in both regions would eliminate heterodyne interference problems and bring other real benefits to Region 1, since approximately 12 per cent of transmitters in that region would remain on the same frequency, the average change involved would be just over 2 kHz and the maximum would be 4 kHz.

If the issue was not settled, the future of the Conference would be at stake. Agreement was certainly possible, but every care should be taken to ensure that the right answer was chosen. It was his firm conviction that the adoption of 8 kHz for Regions 1 and 3 would be the best possible solution for all countries.

The delegate of Pakistan said it had been implied on various occasions during the Conference that failure on the part of the countries in Region 3 to conform exactly to the wishes of a certain group would seriously compromise the second session of the Conference, and that the responsibility would lie with those countries which were striving to

protect their rights. The difficulties involved in changing from 10 kHz spacing had been explained at length by the Region 3 countries. The fact that those countries were present at the Conference was proof enough of their sincere desire that broadcasting should be improved for all concerned.

The compromise contained in Document No. 113 was a major departure from the initial position of the Region 3 countries. It reflected their willingness to reach agreement with Region 1 and to satisfy the requirements of the African countries while causing the latter as little inconvenience as possible. However, the conditions attached to that compromise were essential in order to minimize the cost to Region 3 countries of the changes involved. His delegation had commented on the cost of major frequency changes at an earlier stage in the Conference, and he did not intend to repeat those arguments. It was worth noting that the comments by the United Kingdom delegate were based on the assumption, which was not stated in Document No. 104, that frequencies would be changed to the nearest multiple of whatever channelling was adopted. It was not certain, however, that that assumption could be accepted.

The Region 3 countries had gone as far as they could to ensure the success of the Conference in a sincere spirit of compromise. They were now waiting for the other region involved to demonstrate its desire for a successful outcome by conceding the essential conditions attached to Document No. 113.

The delegate of Albania fully supported Documents Nos. 109 and 113, which should serve as the basis for a new channelling plan that would better meet the needs of the countries in Regions 1 and 3.

The delegate of Belgium noted with satisfaction that considerable progress had been made thanks to the willingness of two large groups of countries to accept a change in their present channel spacing. As had rightly been pointed out by the delegate of the United Kingdom, the question of which channel spacing to adopt deserved the most thorough consideration from the technical standpoint.

Many African and Asian countries clearly considered it essential that changes in the carrier frequencies of their transmitters should be restricted to a minimum. It was precisely in order to cater to that desire that option 7.3 had been included in Document No. 110. As far as the Western European countries were concerned, planning could be carried out more efficiently if greater changes were introduced, on the basis of methods such as those advocated by the E.B.U. or by New Zealand in Document No. 25. However, Proposal No. 7.3 had been drawn up in order to take into account the opposition voiced by a number of delegations. The

advantages of that proposal had been enumerated by the delegate of the United Kingdom, and it would be unfortunate if they were not recognized by the Conference. The sponsors of Document No. 110 agreed that the changes to be introduced by the countries in Region 3 should be kept to a minimum, and were also willing to give the developing countries the time needed to allow for their special circumstances. However, they urged that the most serious consideration should be given to the adoption of 8 kHz channel spacing.

The delegate of Ireland said that two conclusions could be drawn from the proposals before the Committee, namely, that all delegations sincerely wished to reach agreement, and that there was general willingness to change from existing systems to a new system subject to certain conditions. The only issue on which agreement had not yet been reached was what the optimal system would be, at the present stage his delegation had no specific suggestion to make in that connection.

The delegate of New Zealand said that reference had been made to the economic penalties which a change from one channel spacing to another would entail. If the Conference agreed that there would be no division of the frequency band into blocks, the economic repercussions of changing from 10 kHz to 9 kHz or to 8 kHz would be virtually the same, since there was very little difference in the number and magnitude of the frequency changes involved in each case. Under those circumstances, the choice between 9 kHz and 8 kHz would seem to rest entirely on the technical parameters set out in Document No. 104.

The delegate of India stressed the importance which many countries attached to quality, and thence to 10 kHz channel spacing. The MF band was the only medium available to developing countries for both high-quality and general mass broadcasting. In striving to reach an acceptable compromise, the countries concerned had been obliged to think in terms of the maximum concession they could make while ensuring that quality was protected. It must be stated unequivocally that those countries would either retain 10 kHz or, at the very most, change to 9 kHz.

The meeting was suspended at 1810 hours and resumed at 2005 hours.

The delegate of Zambia felt that the proposal of a channel spacing of 8 kHz did not sufficiently take into account the needs of the developing countries. As a compromise could not be one-sided, point 7.4 of Document No. 110 should be the basis of discussion.

The delegate of the United Kingdom replied that although division of the band into blocks had formed the basis of much research, it did not seem acceptable to many countries; point 7.3 of Document No. 110, however, appeared to be a possible compromise, as a change from a channel spacing of 10 kHz to 8 kHz would in fact cost less than a change to 9 kHz, and as the only advantage of a change to 9 kHz was the elimination of heterodyne whistles in border areas, while it had the disadvantage of providing one channel less. A channel spacing of 8 kHz would not only allow developed countries to solve their interference problems, but would also enable developing countries to set up more transmitters, and to avoid interference that might arise in the future.

The delegate of Japan considered the information given in Document No. 104 misleading, as the number of transmitters that had to be changed was more important than the number of channels gained.

The delegate of Poland felt that it would be a sign of mutual understanding between countries if it could be agreed to compromise on a channel spacing of 9 kHz, as described in Document No. 70.

The delegate of Mauritania pointed out that it was a world-wide tendency to use natural resources rationally; if the spectrum were used optimally now, there would be no room for future improvement. In developing countries, the problem was one of money rather than lack of channels. A channel spacing of 9 kHz was therefore in the interest of those countries until they reached the stage of congestion now prevailing in developed countries.

The delegate of Spain considered that interference was a problem in the Mediterranean area as well as in Western Europe. Spain had so far had to find suitable channels itself, as it was not included in any agreements, and was now finding it increasingly difficult to achieve complete coverage, especially at night, because of interference from North African transmitters. It was necessary to use the spectrum optimally in densely populated areas, at any rate, and therefore the increase of the number of channels offered by a channel spacing of 8 kHz was to be welcomed. Developing countries would not be under pressure to use all the channels available to them immediately, so argument in terms of preserving natural resources was not valid.

The delegate of Mauritania said that Spanish radio programmes could be received with good quality in Mauritania.

The delegate of Spain replied that coverage in Spain, which was 90% during the day, was reduced to 20% at night due to interference from North Africa.

The delegate of Belgium said that congestion in Europe was due to the fact that European countries were small, with high population densities and a large variety of languages. It was not generous of countries that did not yet have such problems, but probably would before the plan expired, to oppose optimal utilization of the spectrum, which was a rare resource. Technically, a channel spacing of 8 kHz was clearly the best solution.

The delegate of Tanzania considered the scientific arguments put forward in favour of a channel spacing of 8 kHz convincing, but felt that the compromise of 9 kHz, which was favoured by a majority, was also well-founded scientifically.

The delegate of Libya considered, after careful examination of the advantages and disadvantages of either solution, that a channel spacing of 9 kHz would constitute the best compromise.

The delegate of Nigeria felt that all relevant arguments had already been heard, and therefore proposed that the debate should be closed after the seven speakers who had already indicated their wish to speak had been given the floor.

The proposal having been supported, the Chairman put the proposal to the vote, and it was adopted by 38 votes to 25 with 12 abstentions.

The delegate of Lebanon said that his country and others on the borders between Regions 1 and 3 suffered greatly from the present non-uniformity of channels. There was no point in them spending large sums on improving broadcasting services if they were to be subjected to interference from both sides. He stressed that the greatest need was to achieve uniformity of channel spacing and that it would be worth-while to sacrifice a number of channels if that goal could be reached.

The delegate of Syria said that all aspects of the channel spacing problem had been thoroughly discussed and that it was time to take the final decision. He shared the views of those countries supporting the compromise proposal for 9 kHz spacing. It was in the interest of all countries to standardize their channel spacing rather than operate a haphazard system.

The delegate of the U.S.S.R. noted that in the attempts to reach a compromise solution many delegations had offered to withdraw their suggestions for a breakdown of the band into power blocks. He doubted whether that represented a real effort towards a compromise as power blocks did not exist in nature. He suggested that the proposal put forward in Document No. 113 should be accepted by consensus.

The delegate of Bulgaria noted with approval the remark made earlier by the Belgian delegate that each administration should show a spirit of goodwill in making the effort to understand the complexity of the problem so as to reach an acceptable compromise. However, the present direction of discussion, in which delegations commented on the difficulties encountered by their own broadcasting services, was not one likely to lead to a correct solution. She considered the proposals in Documents Nos. 109 and 113 to represent a true compromise and supported their adoption.

The delegate of Papua New Guinea indicated his support for those delegates that had pointed out that the spectrum was a natural resource and that maximum use should be made of it. The possiblity of proposals in coming decades for 7 kHz spacing was by no means an impossibility, there might even be the likelihood of SSB broadcasting being made available in some 15 years time, which would double the channels available without real effort. He had been in favour of the compromise proposal, but after hearing all the arguments developed felt that there was a case for 8 kHz spacing.

The delegate of the German Democratic Republic reminded the Committee of the compromise views put forward by 7 European countries in Document No. 70. He felt that an agreement on the basis of the compromise proposals in Documents Nos.113 and 109 would pave the way to success. At present about 60 countries supported 9 kHz spacing while some 20 opposed it, and he felt that a final conclusion could therefore be reached.

The delegate of Australia said that although he agreed to the compromise solution he was struck by the fact that almost all delegations were prepared to change their existing channelling plans, either in the interests of reaching a compromise or because there were advantages in doing so. He hoped, as the Chairman had said earlier, that all delegates were prepared to work for the maximum benefit of MF broadcasting. With regard to broadcasting quality, experiments in Australia had shown that with a 10 kHz radio-frequency bandwidth there was no significant difference in quality between 8, 9 or 10 kHz channel spacing, provided the appropriate whistle filters were used. On the evidence of the channel gains and losses involved in the various frequency changes (see Document No. 104) and the fact that there would be no significant

difference in cost in changing to either 8 or 9 kHz spacing from the Copenhagen Plan or from 10 kHz spacing he felt that on a cost/benefit basis there was a case for favouring the adoption of 8 kHz spacing, with each channel frequency being a multiple of that spacing.

In accordance with the vote taken earlier, the Chairman then closed the discussion. Summing up the course of the debate, he noted that the African, Middle East and Region 3 countries (Documents Nos. 109 (Corr.1) and 113) were prepared to support a compromise solution of 9 kHz spacing provided they were assured that the frequency changes involved would be minimal, that use of the concept of frequency blocks would be excluded (as that would involve a complete rearrangement of channels) and that a suitable timetable be set up for carrying out the frequency changes. The present session could accept the need to prepare such a timetable but its actual preparation would be the responsibility of the second session. The Region 3 countries stressed that their agreement to 9 kHz spacing was conditional on acceptance of that spacing by all countries in Regions 1 and 3. Document No. 110 put forward 7 proposals from the C.E.P.T. countries, listed in order of preference. He interpreted that document to mean that those countries did not exclude the possibility of accepting Proposal No. 7.6 on their list (p. 3), which specified 9 kHz spacing without division of the band into blocks. The East European countries, in Document No. 70, and the delegates of China and Albania, verbally, had supported a compromise on 9 kHz spacing. Approximately 60 countries supported the compromise of 9 kHz spacing while some 20 countries preferred 8 kHz spacing, although, as he understood it, they did not exclude acceptance of 9 kHz spacing. Many different arguments had been raised on both sides but he reminded delegates that they were participating in an Administrative Conference and that the decisions they were called upon to take, although they had to be based on technical considerations, could not ignore the economic and other aspects of the problem. The decision was of such importance that a vote on it was inappropriate and it could only be carried by consensus. The vital issue, as several delegations had pointed out, was to achieve uniform frequency spacing throughout the spectrum and throughout the regions to eliminate the heterodyne interference now prevalent over a large area. In view of all those factors, he proposed that the Committee be prepared to submit its conclusions to the Plenary in the following terms : "that Committee 4 had reached a consensus on a compromise plan to accept a channel spacing of 9 kHz, which would be uniform throughout the spectrum and throughout Regions 1 and 3 and would have carrier frequencies that were multiples of the channel spacing."

The delegate of Pakistan agreed with the Chairman's summing up but drew attention to another specific condition, set out in the fourth to seventh lines of Document No. 113, to the countries named in that document accepting a 9 kHz spacing.

The delegates of Lebanon, Kuwait, Nigeria, Egypt, Syria, Liberia, Albania and the German Democratic Republic supported the Chairman's proposal.

The delegate of Kuwait pointed out that Document No. 109 had been proposed by the Middle East countries as well as by African countries.

In reply to a question by the delegate of the United Kingdom, the Chairman said that he had used the word "consensus" in the sense of unanimous agreement.

The delegates of the United Kingdom, Switzerland, the Federal Republic of Germany, Italy and Spain said that in that case they could not support the Chairman's proposal.

The delegates of Qatar and Albania felt it would be more correct to consider the word "consensus" in the sense of a majority decision.

The Chairman reminded the Committee that the group of Region 3 countries which, in Document No. 113, had agreed to a compromise 9 kHz spacing had done so on condition that there was unanimous agreement to that solution. He appealed to the good will of the C.E.P.T. countries and noted that a 9 kHz spacing was one of the options mentioned in their own document. The present session had been instructed by the Administrative Council to find solutions to the technical problems before it. The task was a heavy responsibility, and it was indispensable for its successful accomplishment to reach unanimous agreement on uniform spacing.

The delegate of the United Kingdom, supported by the delegates of the Netherlands, Switzerland and Sweden proposed that the present meeting should close so as to allow a further period for reflection.

The delegate of Libya, supported by the delegate of Kuwait, felt that as the subject had already been amply discussed a decision should be taken at once.

The delegate of Pakistan said that, as the crux of the problem was reached unanimity among all delegations, forcing the issue would not be a proper solution. He was very much against seeing the new plan

going the way of the Copenhagen Plan and proposed that, if there was the slightest possibility of reaching unanimity, the request by the C.E.P.T. countries for extra time to consider the matter should be accepted.

It was so agreed.

The meeting rose at 2155 hours.

The Secretary :

C. GLINZ

The Chairman :

J. RUTKOWSKI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 156-E
30 October 1974
Original : English

COMMITTEE 4

SUMMARY RECORD

OF THE

NINTH AND LAST MEETING OF COMMITTEE 4

(TECHNICAL DATA AND CRITERIA)

Tuesday, 22 October 1974, at 1500 hrs

Chairman : Mr. J. RUTKOWSKI (People's Republic of Poland)

Subjects discussed :	Document No.
1. Approval of the summary record of the 5th meeting	116
2. Channel spacing (continued)	-
3. Completion of the Committee's work	-

1. Approval of the summary record of the 5th meeting (Document No. 116)

The summary record was approved.

2. Channel spacing (continued)

The Chairman reminded the Committee that the authors of Document No. 110 had asked for time to reflect following the outcome of the previous meeting, and he invited the delegate of the United Kingdom to give their views.

The delegate of the United Kingdom said he was speaking on behalf of all the C.E.P.T. countries (European Conference of Posts and Telecommunication Administrations).

During the course of the Conference, various other groups of countries had indicated their position. Document No. 70 (Eastern Europe) indicated a possibility of adopting 9 kHz as a uniform channel spacing but gave no firm undertaking to change to that spacing. However, his understanding of the debate was that those countries would in fact be willing to change to 9 kHz spacing if a plan were prepared on that basis. Document No. 109 from a large group of African and Middle East countries made a positive proposal for a resolution which would lead to the preparation of a plan based on 9 kHz spacing and a timetable for its adoption. Document No. 113 from a group of Asian countries indicated a positive willingness on the part of the countries concerned to adopt a plan based on 9 kHz spacing, under certain conditions.

Document No. 110 from the C.E.P.T. countries was a real attempt to set out objectively the advantages and disadvantages for Regions 1 and 3 of changing from their present channelling plan to new channelling plans. It also set out the considered views of the C.E.P.T. countries on the order of merit of the various possibilities and urged all countries to adopt one of the 8 kHz plans. Although the document implied a readiness to change, the C.E.P.T. countries had not yet declared how far they would be prepared to go. They were still of the opinion that a 8 kHz plan would provide the best technical solution and the greatest benefits to all countries in Regions 1 and 3. Nevertheless, in the interests of obtaining a unanimous position at the First Session of the Conference, they were prepared to reach a compromise.

Referring specifically to the Draft Resolution contained in Document No. 109, the delegate of the United Kingdom felt that the Draft Resolution contained in Document No. 109 could become acceptable to all countries, including those of C.E.P.T., if a few editorial changes and some additions were made.

He would thus suggest adding two further paragraphs under considering, i.e.

"- a majority of administrations in Regions 1 and 3 favour the adoption of a channelling plan with 9 kHz channel spacing and carrier frequencies equal to integral multiples of 9 kHz;

- a significant minority of administrations in these Regions favour the adoption of a channelling plan with 8 kHz spacing and carrier frequencies equal to integral multiples of 8 kHz".

He believed the first paragraph under resolves could be improved by inserting the appropriate words from Document No. 113 "in preparing the draft of the plan, every frequency in use in Region 3 should first be changed to the nearest new channel frequency within ± 5 kHz for the existing transmitters". The second paragraph of resolves could be accepted with some editorial amendments, and he proposed adding a third paragraph, as follows :

"3. That a draft plan for broadcasting frequency assignments in the medium frequency band for Regions 1 and 3 should be prepared by the Second Session based on a 9 kHz channelling plan with carrier frequencies equal to integral multiples of 9 kHz; however, should such a draft plan, after careful consideration by the Second Session, prove to be unsatisfactory to Administrations of Regions 1 and 3, the possibility of preparing a plan based on 8 kHz channelling should be considered."

The Chairman said that the proposal was evidently aimed at reaching a compromise and the suggestions for inclusion in the Draft Resolution could be used as a basis for the final drafting. If the Committee could accept the ideas formulated by the delegate of the United Kingdom in principle, he would ask for the Committee's authorization to convene an ad hoc drafting group composed of the delegates of the United Kingdom, Hungary, Algeria and Japan representing the groups of countries which had signed the various proposals.

The Chairman's suggestion was supported by the delegates of Algeria, Senegal and Nigeria, the latter, however, considering that some time should be allowed for study of the proposals before final comments were made.

The delegate of Pakistan wondered whether the last clause of the proposed third paragraph under resolves would also be subjected to the essential condition laid down in Document No. 113.

The delegate of the United Kingdom having replied that the final decision would be made by the Second Session, the delegate of Pakistan said that if the issue were left open, he was afraid the change from 10 kHz would also remain open.

Those comments were supported by the delegate of India, who thought it unwise to include mention of a possible failure of the plan; if that eventuality were taken into account then the alternative should not only be 8 kHz but also a reversal to the status quo.

The delegate of Mauritania asked if the word "unanimously" could appear under resolves, as the signatories of Document No. 110 had rallied to a compromise solution. He supported the Chairman's suggestion to convene an ad hoc group and said that the wording of the Draft Resolution should be harmonized with that of the Draft Resolution in Document No. 117 (Report of the First Session).

The delegate of Japan said the compromise reached was agreeable but the last clause of the Draft Resolution implied that the main problem had not yet been solved.

The meeting was suspended at 1550 hours and resumed at 1600 hours.

The delegate of Nigeria said that the African group did not regard the second sentence of the third "resolves" paragraph as entirely acceptable. Nevertheless, it was prepared to accept the Chairman's proposal.

The delegate of Pakistan said that the sentence referred to by the delegate of Nigeria was also unacceptable to the countries of Region 3, first, because it opened the possibility of failure to reach unanimous agreement on a plan based on 9 kHz channel spacing and secondly, because the possibility of reversion to the status quo, mentioned by the delegate of India, was hardly satisfactory: in that case, would there be any need for a second session of the Conference? His delegation considered that a unanimous decision to adopt a spacing of 9 kHz would be beneficial to all concerned; even if the plan adopted at the Second Session did not prove to be effective, all countries would at least benefit by the disappearance of the heterodynes causing a deterioration of 20 dB.

The delegate of the United Kingdom said he was sorry that the delegate of Pakistan had taken such a firm stand against a paragraph of the Draft Resolution before seeing the outcome of the work of the new ad hoc group. The group was being formed in order to take all possible variants into account: it was by no means impossible that the sentence to which the delegates of Nigeria and Pakistan had taken exception would be amended or even deleted.

The delegate of New Zealand said that the delegate of Pakistan had not consulted his delegation before assuming that the countries of Region 3 could not accept the paragraph under consideration. In any case, the valid points made by the delegates of India and Pakistan would certainly be taken into account during the deliberations of the ad hoc group, as would other points made during the debate.

The Chairman declared the discussion closed and asked the Committee to authorize the establishment of the ad hoc group according to his previous proposal. The following members were designated to participate in the group : Mr. Kilvington (United Kingdom), Mr. Horváth (Hungary), Mr. Harbi (Algeria) and Mr. Tanaka (Japan).

The ad hoc group was established.

The Chairman asked the Committee to authorize him to approve the summary records of the sixth, seventh, eighth and ninth meetings.

It was so decided.

3. Completion of the Committee's work

The Chairman thanked all delegations, chairmen of working groups and the Secretariat for their goodwill and hard work which had made it possible to achieve the positive accomplishment of a very difficult task.

The delegate of New Zealand, speaking on behalf of the whole of Committee 4, said that the onerous task of Committee 4 could not have been accomplished as successfully as it had been without the outstanding guidance of its Chairman.

The Chairman thanked the delegates of New Zealand and announced that the Committee had completed its work for the First Session of the Conference.

The meeting rose at 1620 hours.

The Secretary :

C. GLINZ

The Chairman :

J. RUTKOWSKI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 157-E
5 November 1974
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

SIXTH MEETING OF COMMITTEE 5

(PLANNING METHODS)

Monday, 21 October 1974, at 1135 hrs

Chairman : Mr. K.R. BINZ (Federal Republic of Germany)

Subject discussed :	Document No.
1. Report of Working Group 5A	66, 80, 101, 102, 102(Corr.1)+ 102(Rev.), 103, 105, 112
2. Other business	104

1. Report of Working Group 5A (Documents Nos. 66, 80, 101, 102, 102(Corr.1)+ 102(Rev.), 103, 105, 112)

The Chairman of Working Group 5A, commenting on Document No. 101 suggested that the text of Document No. 66 which accompanied it should be added to Chapter 9, paragraph 9.1.

It was so agreed.

The Chairman of Working Group 5A, introducing the third report of Working Group 5A (Document No. 105), drew attention to the divergencies of opinion referred to in the third and fourth paragraphs of the Introduction (page 1). In the fifth paragraph on p.1, the word "Sky-wave" should be replaced by "Ground-wave", the words "the Indian delegate" by "some delegations" and the words "his country" by "their countries". He suggested that the fifth paragraph on page 1 beginning "Some delegations ..." should be reproduced, with those amendments, at the bottom of page 3 as a footnote to the last sub-paragraph of paragraph 9.3.2.2, and that the last paragraph on page 1 should be reproduced as a footnote to paragraph 9.4.2.

It was so agreed.

The delegate of Finland wished it to be put on record that his delegation was among those delegations referred to in the last paragraph on page 1 (now footnote to 9.4.2) which considered that a value of the order of 73 dB would be appropriate in non-tropical rural areas.

The delegate of the United Kingdom suggested that the word "waves" in "LF waves" at the beginning of paragraph 9.4.1 on page 3 should be deleted.

It was so agreed.

The delegate of Ireland said that the words "correction factor $\Delta 3$" in paragraph 9.4.2 on page 3 should read "correction factor Δa".

It was so agreed.

The delegate of the Netherlands said that the words "industrial noise" in the first line of paragraph 9.4.2 in the English text should read "man-made noise".

It was so agreed.

The delegate of Nigeria said that he would not insist on the retention of the passage appearing in square brackets in the second sub-paragraph of paragraph 9.3.1, page 2.

It was agreed to delete the passage in square brackets in paragraph 9.3.1.

The Chairman of Working Group 5A suggested that, in accordance with a point made in the Working Group by the delegate of Yugoslavia, the word "E_{nom}" in the last line of page 2 (third sub-paragraph of paragraph 9.3.2.2) should be replaced by "E_u".

The delegate of Spain, while agreeing in principle with that suggestion, thought that the abbreviation "E_u" was unclear and the words "usable field strength" should be inserted in full.

The delegate of Japan remarked that the term "E_{nom}" had been approved by Working Group 5A. If the Committee decided to replace it by "usable field strength", an indication should be given that in the envisaged situation E_{nom} should be equal to the usable field strength.

The delegate of France suggested that the sentence in question should read as follows :

> "In this case, the usable field strength at the beginning of the fading zone is a function of the transmitter power. The value adopted for the nominal field strength should also be a function of this power."

After further discussion, in which the delegates of Japan, the Federal Republic of Germany, France, Sweden, Hungary, United Kingdom and Yugoslavia and the Chairman of Working Group 5A took part, the Chairman proposed that a drafting group composed of the delegates of France, Sweden, the Federal Republic of Germany and the United Kingdom and the Chairman of Working Group 5A should prepare a new draft of the second sub-paragraph of 9.3.2.2 and submit it during the second part of the meeting, it being understood that the remaining part of Document No. 105 should be considered adopted.

It was so agreed.

The delegate of France observed that many delegations were against the use of directional antennae on the grounds of their alleged high cost. He quoted figures to refute that argument and expressed the view that the objection to directional antennae was, in many cases, psychological rather than economic in nature.

The Chairman suggested that the Committee should take note of Document No. 103, no further action being required in that connection.

It was so agreed.

2. Other business

It was agreed to take note of Document No. 104.

The meeting was suspended at 1245 hours and resumed at 1510 hours.

The delegate of Norway, introducing Corrigendum No. 1 to Document No. 102, now also sponsored by Yugoslavia, said that the principal modifications concerned the last paragraph, where the words "to 100% of the population" had been replaced by "to the whole of the population" and to the definition of the word "state". The sponsors now thought that the definition was unnecessary, since the concept of a State was generally enough recognized; the footnote should therefore be deleted, and the word "state" at the end of the second paragraph should begin with a capital letter in the English text.

A long discussion ensued during which the Chairman pointed out that a distinction should be made between cases where different languages were used in different areas and in the same area of a country and the delegate of Spain stressed the importance of equal distribution of frequencies. The delegate of Italy said that coverage of different languages in a country should in all cases be effected without impinging on the needs of adjacent countries. The delegates of Singapore and Malaysia drew attention to the pressing needs of multilingual countries where different languages were spoken in the same area. The delegate of the United Kingdom expressed the view that administrations would in any case take the problem into account in submitting their requirements. The delegate of the Netherlands objected to the proposal because it did not follow the planning principles already adopted, and the delegate of Sweden strongly supported the proposal. The delegate of France, supported by the delegate of Australia, proposed that the second and third paragraphs of the document should be deleted, since the requirements submitted by administrations would no doubt be reasonable and would take both language and territorial factors into account. The whole question had been discussed at great length in Working Group 5A and in Drafting Group 5A-1 and it was unlikely that agreement could be reached in the Plenary Committee; moreover, the question of equal rights was dealt with among the planning principles.

After further discussion, in which the delegates of Norway, Pakistan and Yugoslavia took part, it was pointed out that the absence of a specific provision in the report would place multilingual countries at a definite disadvantage which could, however, be eliminated by adopting the system of broadcasting units; a show of hands was taken, whereby the majority of the Committee (28 to 18, with 16 abstentions) was found to be in favour of the French proposal.

After a brief discussion on the place where the remaining paragraph of the document should appear in the final report, during which it was pointed out that a text on equal rights had already been adopted as a principle of planning (Document No. 84, paragraph 2), it was decided to delete Document No. 102(Corr.1) in its entirety.

The delegate of Sweden expressed his delegation's regret that it had proved impossible to agree on a satisfactory statement of exactly what was involved in the concept of equal rights. Sweden hoped that a better solution would be found at the second session.

The Chairman invited the Chairman of the ad hoc Drafting Group to read out the new text of the second paragraph of point 9.3.2.2 of Document No. 105.

That text, read out in French, was approved, subject to alignment in the other working languages. The delegate of the U.S.S.R. reserved the right to discuss the point in the Plenary, if necessary, as the text was not yet available in Russian.

Document No. 105, as amended, was approved.

The Chairman drew the Committee's attention to the fourth report of Working Group 5A (Document No. 112), which had just been circulated.

The Chairman of Drafting Group 5A-4, introducing the document, said that the figures 9.6, 9.6.1 and 9.6.2 on pages 2 and 3 should be changed to 9.2, 9.2.1 and 9.2.2, respectively. The texts on which agreement had not yet been reached when the document had been drafted had been left in square brackets. The report was based on discussions and documents of Working Group 5A and an attempt had been made to take the spirit of certain criticisms into account. More detailed information on different methods of planning was given in the three Annexes to the report.

The Chairman suggested that the discussion of the report should be deferred until the following meeting.

It was so agreed.

The meeting rose at 1645 hours.

The Secretary :
M. AHMAD

The Chairman :
K.R. BINZ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 158-E
5 November 1974
Original : English

COMMITTEE 5

SUMMARY RECORD

OF THE

SEVENTH MEETING OF COMMITTEE 5

(PLANNING METHODS)

Tuesday, 22 October 1974, at 0900 hrs

Chairman : Mr. K.R. BINZ (Federal Republic of Germany)

Subjects discussed	Document No.
1. Report of Working Group 5A	112
2. Consideration of the results of Committee 4 concerning channel spacing	
3. Text proposed by the delegation of Norway for the amendment of Document No. 87	DT/38

1. Report of Working Group 5A (Document No. 112)

The Chairman invited the Committee to examine Document No. 112 with the exception of the last sentence of the third paragraph of the Introduction on page 1, which would be considered at a later stage.

Paragraph 9.2.1

After a lengthy discussion in which the delegates of the Federal Republic of Germany, India, Zambia, U.S.S.R., Pakistan, Libya, New Zealand, Norway, Papua New Guinea, Tunisia, Austria and the United Kingdom took part, it was agreed to:

- replace the word "principles" at the end of the introductory sentence by the words "basic considerations";
- add the words "throughout Regions 1 and 3" at the end of sub-paragraph a);
- modify the beginning of sub-paragraph b) to read :

  "to retain and possibly improve the existing coverage of broadcasting....";
- replace the word "countries" by "administrations" and delete the word "national" in sub-paragraph d);
- delete sub-paragraph e);
- delete the word "different" in the first line of sub-paragraph f) and renumber it as e);
- renumber sub-paragraph g) as f);
- remove square brackets in sub-paragraph h) and renumber it as g).

Paragraph 9.2.2

After a discussion in which the delegates of Pakistan, the Federal Republic of Germany, New Zealand, the Netherlands, Spain, Turkey, Australia, the People's Republic of China, Japan, India, the United Kingdom and Sweden took part, it was agreed to amend paragraph 9.2.2 as follows:

- add the words "in certain very large areas" at the end of sub-paragraph a);

- add the following sentence at the end of sub-paragraph b):

  "In areas at the limits of a theoretical lattice plan simplified coordination procedures could be adopted taking the form of coordination distances and powers within which limits additional transmitters would not significantly affect planned services";

- add a new sub-paragraph c):

  "The existing frequency assignments in Region 3, when the draft plan is prepared, shall be fixed first to the nearest multiple of channel spacing";

- renumber existing sub-paragraphs c) and d) as d) and e) respectively;

- replace the last sentence by the following:

  "The two methods of planning referred to in the foregoing are described in a general statement in Annex 1, and in a detailed manner in Annexes 2 and 3";

The amendment was adopted.

Annex 1

The title proposed for Annex 1 by the delegate of New Zealand "Lattice and Other Methods of Planning" was adopted.

After a discussion, in which the delegates of Japan, the United Kingdom, Malawi, New Zealand, Italy, Sweden, the Federal Republic of Germany, India, Norway, Ireland, Switzerland, Syria, Spain, Libya and Japan intervened, it was agreed that the fourth sentence of paragraph 3 should be redrafted to read: "In this context, as a generalization, low power can be defined as below 10 kW, medium power 10 kW to 50 kW, and high power as 50 kW and above".

The delegate of Syria, supported by the delegates of Libya and the Federal Republic of Germany, proposed deletion of the words: "There is roughly 10 dB between the main categories and...". The delegate of Austria, supported by the delegate of the Netherlands, pointed out that, in view of the redrafting just agreed upon, the entire sentence starting "There is roughly 10 dB..." could be deleted.

It was so agreed.

Annex 2

The delegate of the Federal Republic of Germany announced editorial corrections to the first and third paragraphs on page 8.

The delegate of Japan proposed that the words "whole" and "(Regions 1 and 3)" be deleted from the second paragraph, third line, on page 8.

It was so agreed.

Annex 3

The title "The use of coordination distances in planning", proposed by the delegate of Australia, was adopted.

The delegate of Japan said that as a result of agreement reached in Committee 4, the word "unlikely" should be changed to "not" in the fourth paragraph, fourth line, on page 10.

It was so agreed.

The United Kingdom delegate said that the last sentence on page 10 was not very clear, and after a brief discussion in which the delegate of Australia and the observer of the European Broadcasting Union took part, it was agreed that it should read "...is proposed as approximately -16 dB with respect to that interference."

The fourth report of Working Group 5A (Document No. 112), as amended, was approved.

With the adoption of Document No. 112, as amended, the task of Working Group 5A was concluded.

The Chairman warmly thanked Mr. Terzani and the delegates taking part in the Working Group for the excellent manner in which they had carried out a very difficult assignment.

2. Consideration of the results of Committee 4 concerning channel spacing

The Chairman said that the matter could be handled in two different ways: one would be to reconvene a meeting of Committee 5 after Committee 4 had taken a decision on channel spacing; the other would be for the Committee to authorize him to make the consequential amendments to Document No. 105 by adding a new heading "Carrier frequencies" and inserting the appropriate figures.

The delegates of New Zealand and Pakistan supported the second alternative.

This was thus agreed.

3. Text proposed by the delegation of Norway for the amendment of Document No. 87 (DT/38)

The delegate of Norway asked that his delegation's proposed amendment (DT/38) to Document No. 87 should be discussed.

The Chairman said that the proposal had already been considered and rejected by the Committee in connection with its discussion of Document No. 87. It would not therefore be appropriate to bring it up again in committee, but the delegate of Norway was at liberty to raise the matter in Plenary.

The delegate of Norway agreed to that procedure.

The Chairman then reminded the Committee that its work had come to an end. He thanked the Chairmen of Working Groups 5A and 5B and all the delegates for their cooperation, without which he would not have been able to fulfil his obligations as chairman. He also thanked the interpreters and the staff of the Secretariat for their help.

The delegate of Pakistan congratulated the Chairman and expressed appreciation for the guidance he had given.

The meeting rose at 1240 hours.

The Secretary :
M. AHMAD

The Chairman :
K.R. BINZ

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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COMMITTEE 6

SUMMARY RECORD

OF THE

THIRD MEETING OF COMMITTEE 6

(Submission of Requirements)

Saturday, 19 October 1974, at 1500 hrs

Chairman : Mr. M. HARBI (Algerian Democratic and Popular Republic)

Subjects discussed :	Document No.
1. Summary record of the first meeting	92
2. Report of Working Group 6A	97
3. Deadline for submission of requirements by administrations to the I.T.U., for processing by the I.F.R.B.	

1. Summary record of the first meeting (Document No. 92)

At the suggestion of the Chairman and in order to speed up the work of the Committee, it was decided that delegations wishing to propose amendments to Document No. 92 should submit them direct to the Conference Secretariat.

2. Report of Working Group 6A (Document No. 97)

The Chairman said that Working Group 6A had held two meetings, at which a model form for submission of requirements, to be completed by administrations, had been drawn up. He warmly thanked the members of the Group and said that thanks to the help given by the I.F.R.B., its Vice-Chairman and the Committee Secretary, Document No. 97 had been produced in time.

When drawing up the form in Annex A to the document, the Working Group had been mindful of the need to provide administrations with a form that would be simple to complete. Some of the boxes in the initial draft form in Document No. DT/21 had, therefore, been eliminated (for instance, those on compression, cymomotive force and effective radiated power of short vertical antenna), and particulars requested on stations close to the sea had been cut down.

As mentioned in paragraph 4 of Document No. 97, the Delegation of the U.S.S.R. had made a suggestion to the Working Group, which had considered it best referred to the main Committee.

Annexes A and B to Document No. 97

At the request of the delegate of Italy and following the explanation provided by the Vice-Chairman of the I.F.R.B., it was agreed that :

i) the two sections of box 9 on hours of operation should be further sub-divided, to provide for insertion of the words "from" and "to" in the first and second parts respectively;

ii) box 12 should have eight squares for the insertion of the figures shown in columns in paragraph 12 of Annex B (page 7), and include the request : "Put a cross in the appropriate box".

The delegate of France supported the latter proposal, and asked for the words "to the nearest hour" to be inserted after "(GMT)" in the second line of paragraph 9.

It was so decided, and paragraph 9 would also contain an example, in accordance with the suggestion made by the Vice-Chairman of the I.F.R.B. and supported by the Chairman, to the effect that an example should be provided in each paragraph of Annex B, so that it should be clear to administrations just what information was required in each box of Annex A.

Referring to a remark made by the delegate of Senegal, the Chairman said that arrangements had been made (see the bottom of page 9) for administrations to supply any additional information as they might consider useful on a separate sheet.

Regarding another remark made by the delegate of Senegal on topography of the ground between a station and the sea, the Vice-Chairman of the I.F.R.B. said that for C.C.I.R. purposes, no particulars were required on the nature of the ground between antennae and the sea. What was primarily needed was the distance between the two. The I.F.R.B. would have to devise a simplified system for feeding data on the distance between a station and the sea into the computer. To avoid confusion, the words "distance between antenna and the sea" should be deleted from box 18.

That proposal was approved.

Replying to a question put by the delegate of the United Kingdom concerning sub-divisions in box 8, the Chairman said that the decimal was indeed required so that the last vertical line should cut right through the box.

In view of the suggestion made by the delegate of the United Kingdom, it was decided that a sentence reading "The last column in this box is for the decimal" should be added to paragraph 8 of Annex B.

To the suggestion of the delegate of Sweden that carrier power be shown in decibels in box 8 of Annex A, the Vice-Chairman of the I.F.R.B. replied that the information was required in kW for recording in the Master International Frequency Register, where that unit was used. Since, however, the I.F.R.B. itself preferred decibels, he thought the Delegation of Sweden should put forward its suggestion to the 1979 Conference.

The delegate of the United Kingdom proposed an amendment to the English version of the first line of paragraph 14 of Annex B (page 8) and asked that the brackets should be removed. His proposal applied equally to the fifth line of paragraph 14 and to the definition in Annex C (page 11).

The proposal was approved.

The Spanish and French versions would remain unchanged, except for the deletion of the brackets.

After the Vice-Chairman of the I.F.R.B. had mentioned an idea put forward in Working Group 6A, it was decided to insert the word "or" at the beginning of the fourth line of paragraph 15, Annex B.

Referring to a remark made by the delegate of Spain on box 19 in Annex A, the Vice-Chairman of the I.F.R.B. said that after the word "network" in the first line, the phrase "if necessary, continue overleaf" should be added in brackets.

It was so decided.

The delegate of the U.S.S.R. asked that consideration be given to his Delegation's proposal to include on the submission form the date of bringing into service of the assignment in cases where a requirement corresponded to an assignment already in service.

In the ensuing discussion the delegates of Italy, Mauritania, Spain and the People's Republic of China said that they saw no need for such information, and that the form should contain only the technical data needed for planning purposes. The information was already given in column 2(c) of the Master Register, and including it again would only complicate the form unnecessarily.

Replying to the objections raised, the delegate of the U.S.S.R. pointed out that it would be useful to know, for planning purposes, from what date an administration had been using a given frequency. This information could be added to the footnote to Annex A.

The delegates of the People's Republic of Poland and the Bielorussian S.S.R. agreed with that view.

The delegate of Nigeria thought that the suggestion made by the delegate of the U.S.S.R. might prove useful for planning purposes.

At the close of the discussion, the Chairman asked the delegate of the U.S.S.R. whether he stood by his proposal.

The reply being in the negative, it was decided not to amend the footnote to Annex A.

The representative of the C.C.I.R. pointed out that the English version of box 12 in Annex A did not match the Spanish and French versions, which were preferable in his opinion, since there was no way of giving a mean value of ground conductivity.

The Vice-Chairman of the I.F.R.B., the delegate of France and the Chairman supported that view which, in the opinion of the Chairman, applied equally to paragraph 12 of Annex B.

The representative of the C.C.I.R. said that in the case in point conductivity values were estimated only approximately and it would be preferable to give actual values.

The Vice-Chairman of the I.F.R.B. pointed out that the question had been discussed at length in Committee 4 and that in drafting the text due allowance had been made for administrations which had no computers. That had been the reason for adopting the idea of values rounded off to those for which the curves in C.C.I.R. Recommendation 368-2 had been plotted.

The delegate of France did not think there was any point in calling for extremely precise information at the present early stage.

Page by page consideration :

Annex A - approved, subject to amendments made during the meeting.

Annex B - page 5, paragraph 5, third and fourth lines : the words "frequency and channel designations" should be replaced by "centre frequency of the channels".

page 7, paragraph 12 : the part about values and symbols should be amended to take into account the various comments made during the debate.

page 9 : after a brief discussion, it was decided to replace the text of the last paragraph by the following : "/ The Administration may supply such additional information as it may consider useful on a separate sheet, in a simplified form so that it can be processed by electronic means. /".

Annex B, as amended, was approved, subject to the other amendments decided on in the course of the meeting.

Annex C - approved, subject to the amendment made during the meeting.

3. Deadline for submission of administrations' requirements to the I.T.U. for processing by the I.F.R.B.

The Vice-Chairman of the I.F.R.B. explained that the Board would ask administrations to inform it of their requirements as soon as possible, using the forms which the General Secretariat was going to send them. The forms would be checked and the information on them fed into the computer, and then, on the date fixed as the deadline for the submission of requirements to the I.F.R.B., the Board would make an extract from the computer containing the information from the form just adopted, to which should be added, in accordance with the decision taken by Working Group 6A, cymomotive force, effective monopole radiated power and magnetic dip.

Further items of supplementary information could still be added before the extract was sent to administrations, if the Committee thought it advisable.

At all events, it was essential that the Committee should take a decision on what the I.F.R.B. was to do between the two sessions of the Conference.

The Chairman invited the Committee to give the I.F.R.B. instructions.

The delegate of France noted that the I.F.R.B. would have requirements submitted to it and would also have before it the technical standards adopted at the first session. One of its tasks would thus be to consider whether there was any incompatibility between the two. If it found that there was, should it try to draw up plans by modifying the requirements, or should it confine itself to making suggestions without modifying the requirements? The first method would inevitably lead to the plans being rejected by the second session of the Conference. Should the I.F.R.B., therefore, be authorized to modify the requirements in subsequent processing, if they were found to be incompatible?

The Vice-Chairman of the I.F.R.B. thought that a preliminary question would arise in the fairly probable event that a number of administrations indicated, not a preferred frequency, but a range of preferred frequencies. In that event, after checking for incompatibility, the Board should first determine what was the most suitable channel and suggest it to the administrations concerned. If there was any incompatibility, the Board would not consider itself authorized to modify administrations' requirements on its own initiative. All it could do would be to suggest alternative solutions. In any case, it would be better to avoid using the word "plan" at the present stage.

The delegates of Italy, New Zealand and Spain agreed with the previous speaker.

The delegate of the Federal Republic of Germany, who shared the views of the delegate of France, said that in the eleven months before the second session, administrations would have to submit their technical requirements as soon as possible to the I.F.R.B. The Board, however, must be given enough time to collect all the information and compile it, and then arrange for it to be reproduced and circulated. It would then have to prepare the ground for a draft proposal based on all the information received and the technical standards adopted at the first session. The draft, accompanied by an analysis, should be sent for study to all the administrations concerned two months before the start of the second session. Accordingly, the deadline for the submission of requirements should be fixed at least five months before the second session, so that the I.F.R.B. could process them and send them to administrations in good time.

The delegate of Sweden supported the suggestions made regarding the work of the I.F.R.B., but questioned whether the period envisaged would be long enough.

The Vice-Chairman of the I.F.R.B. was also doubtful on that score. The problem could only be resolved by means of a compromise. At all events the period proposed by the Federal Republic of Germany seemed to him quite insufficient.

The delegate of Italy was of the same opinion.

The Chairman noted that the question could not be settled yet and should therefore be held over to the next meeting.

The procedure to be adopted in order to deal with the problem gave rise to a discussion, in which the delegates of Nigeria, Spain and Sweden, the Vice-Chairman of the I.F.R.B. and the Deputy Secretary-General took part.

The meeting rose at 1815 hours.

The Secretary :

R. PLUSS

The Chairman :

M. HARBI

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

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COMMITTEE 6

SUMMARY RECORD

OF THE

FOURTH AND LAST MEETING OF COMMITTEE 6

(SUBMISSION OF REQUIREMENTS)

Monday, 21 October 1974, at 1130 hrs

Chairman : Mr. M. HARBI (Algerian Democratic and Popular Republic)

Subjects discussed	Document No.
1. Draft First Report of Committee 6 to the Plenary Meeting	DT/39 107, 87
2. Deadline for submission of Administrations' requirements to the I.T.U., for processing by the I.F.R.B.	DT/40
3. Closure of the Committee's proceedings	

1. Draft First Report of Committee 6 to the Plenary Meeting (Documents Nos. DT/39, 107, 87)

1.1 Document No. DT/39

The Chairman said that Document No. DT/39 took account of all the amendments made to Document No. 97 at the previous meeting. He suggested that the Committee should ask the I.F.R.B. to add an example illustrating each of the boxes on the form under each paragraph of the instructions.

The Observer for the E.B.U., referring to box 10 of Annex A, asked whether the information concerning the ground-wave service area referred to day-time or night-time conditions.

The Vice-Chairman of the I.F.R.B. said that, at the present stage of the work, it was sufficient to have very approximate information. The Administration could confine itself, therefore, to giving an idea of the area it wanted to cover. At the planning stage, the difference between the day-time and the night-time area would be determined by the values adopted by Committee 5 for the nominal day-time field strength and the nominal night-time field strength.

The Observer for the E.B.U. said that there were considerable differences between nominal day-time and night-time values, which might lead to disappointments if they were not taken into account at the planning stage. To avoid that difficulty, it would perhaps be preferable if Administrations supplied the information requested exclusively for night conditions.

The Vice-Chairman of the I.F.R.B. said that, when the Committee 5 Working Group had sought to determine the value of the nominal field strength, it had been intended that the indications supplied would refer only to night conditions. Certain delegations, however, had requested that day-time conditions should also be taken into consideration in view of the fact that, in certain countries or groups of countries, there would probably be transmitters which operated only during the day and that interference between neighbouring transmitters might occur in the day-time.

The Vice-Chairman of the I.F.R.B. said that it should also be borne in mind that, the more details were asked for, the more complicated became the task of Administrations; in that connection one had to think in the first place of those Administrations which did not possess the necessary administrative infrastructure for formulating their requirements.

It was at the planning stage that the Administrations concerned could indicate, in the course of bilateral negotiations, the areas which they intended to serve by the ground wave by day or by night.

The Chairman pointed out that, when preparing the draft form, the Working Group set up by Committee 6 had decided to make it as simple as possible so as to facilitate the task of all Administrations. That being the case, he thought that the information requested was amply sufficient at the preliminary planning stage. There appeared, in any case, to be no objections on that point.

Consideration of Report, page by page

Page 3, box 12, English text, replace the word "alternate" by "alternative".

Page 5, paragraph 5, delete the square brackets.

Page 7, paragraphs 13 and 14, replace the text in brackets by : "(see pages 11 and 12 of this Annex)" and amend the title on page 11 accordingly.

Referring to the last line of paragraph 12, the delegate of Ireland said that to put a cross in a box seemed equivalent to striking it out.

The Vice-Chairman of the I.F.R.B. said that it was a common procedure used in many forms which Administrations had to complete in connection with Article 9 of the Radio Regulations.

Page 8, paragraph 15, third line, in the French text, replace : "ou cela ..." by "ou, si cela ...".

Page 9, following discussion, it was decided to separate the last two paragraphs clearly from the rest of the text and to delete the indication "N.B." before the penultimate paragraph and the square brackets around the last paragraph. The paragraphs might be preceded by "Note 1" and "Note 2" respectively.

It was decided to replace "N.B." by the figure "20" on pages 3 and 9 of the Report.

Page 11, replace the title by : "Extract from the C.C.I.R. publication entitled 'Antenna Diagrams'".

The delegate of Spain said that it would be desirable to include a key to the symbols contained in the extract on page 11 and to provide explanations of the measurement units used.

It was so decided.

The delegate of Italy suggested that another very simple diagram concerning the horizontal plane, which was to be found in the C.C.I.R. publication and in a number of other texts should be added after the diagram on page 12; on the abscissae axis, it showed the electrical length of the antenna and, on the ordinates axis, the gain (or field strength) as compared with a short vertical antenna. That addition would greatly facilitate the work of those who had to complete the form.

It was decided to make the proposed addition provisionally, subject to any objections which might subsequently be made.

The draft first report of Committee 6, as amended, was approved subject to an addition to the preamble on the cover page to the effect that the form and instructions should be reproduced and distributed in sufficient numbers to Administrations in Regions 1 and 3.

1.2 Document No. 87

The Chairman recalled that Committee 5 had invited Committee 6 to study the preparation of a special simplified form for the requirements of administrations needing LPC allocations.

Working Group 6A had come to the conclusion that the same forms could be used for LPCs, but in that case Administrations would not be required to supply all the information requested.

Replying to a question from the delegate of the Netherlands, the Vice-Chairman of the I.F.R.B. said that, for the sake of simplicity, one might omit boxes 5, 6, 10 and 11; the same applied to some of the characteristics of the simple vertical antenna.

During the discussion of Document No. 87, the I.F.R.B. had asked Committee 5 to specify LPC carrier frequencies. The Chairman of Committee 5 had replied that it was impossible to provide that information at the first session of the Conference. If that was so, the I.F.R.B. would have difficulty in doing what was required of it; Administrations too would have difficulty in determining the LPCs for which they were requested to fill in a simplified form. It should further be pointed out that, whereas in Region 1 there were international channels which might become LPCs, there were no such channels in Region 3.

The delegate of the Netherlands said that it would definitely be preferable in all cases for complete information to be provided in each of the boxes and for Administrations to use the same form for LPCs.

The Observer from the E.B.U. and the Representative of the I.F.R.B. suggested that a box might be added when LPCs were acceptable because, in that case, it would be unnecessary to fill in box 10.

The delegate of Spain said that Administrations might simply put the indication "LPC" in box 5.

The Vice-Chairman of the I.F.R.B. said that he understood the Committee's desire to defer the designation of carriers until the requirements of administrations for low-power channels were known; but the difficulties which that situation caused for the I.F.R.B. should not be overlooked.

The delegate of the Netherlands, having supported the proposal of the delegate of Spain concerning box 5 of Annex A, it was agreed that the necessary amendments would be made and transmitted directly to the Editorial Committee so that they could later be considered in Plenary.

Subject to the various amendments decided by the Committee, Document No. 87 was approved.

2. Deadline for submission of administrations' requirements to the I.T.U. for processing by the I.F.R.B. (Document No. DT/40)

The Chairman suggested the Committee to go through the various paragraphs of the draft resolution reproduced in Document No. DT/40. He drew attention to the fact that it would be for the Editorial Committee to fill in the blank left between square brackets in the paragraph beginning "invites", indicating where the model form was to be found.

In reply to a comment by the delegate of New Zealand, who felt that the requests concerning frequency requirements should be sent to the Secretary-General of the I.T.U. rather than to the I.F.R.B., the Chairman said that the procedure proposed was based on the example set by the first session of the Aeronautical Conference, which had invited administrations to send their information directly to the I.F.R.B.

The delegate of Spain thought the procedure proposed was the better; it would prevent waste of time.

There being no objections, it was decided that the frequency requirements should remain addressed to the I.F.R.B.

The observer for the E.B.U., supported by the delegate of France, considered that the reference to "magnetic dip" in paragraph 1 ought to be accompanied by other helpful data such as geomagnetic latitude at the point of the transmitter.

He also asked for clarifications about cymomotive force and effective monopole radiated power with vertical antenna.

The Vice-Chairman of the I.F.R.B. replied that those two points had been introduced into Document No. DT/40 as supplementary data and that the information concerning them should be supplied in relation to the horizontal plane.

It was accordingly decided that that explanation should be added to paragraph 1.

Reverting, in connection with that paragraph, to the form for the submission of a frequency assignment (Document No. DT/39, Annex A), the observer for the E.B.U. said that the information asked for in the shape of diagrams and maps, under items 15 and 18 of the form, should be submitted to the I.F.R.B. in a simplified and easily legible form.

The Vice-Chairman of the I.F.R.B. reminded the meeting of what he had said earlier, namely that the Committee was engaged in trying to find a simple way of converting diagrams into data form, and a suitable solution would doubtless be found before the information was sent off.

At the proposal of the delegate of France, it was decided that the words "with the aid of a computer" in the first line of paragraph 2, should be deleted.

Paragraph 3 gave rise to a discussion of some length, and several delegates wished the text to be substantially changed.

Those delegates included the delegate of Italy, who was supported by the delegate of Sweden. He felt it would be advisable not to give the I.F.R.B. too much work since time was short. He accordingly suggested that sub-paragraph 3.1 be replaced by the following text : "It shall calculate the usable field strength of all the transmitters", and that sub-paragraphs 3.2 and 3.3 be deleted.

The delegate of France said he would like the following addition to be made to the text that had just been proposed : "selecting the frequency which appears to it most suitable in the desired range in cases in which an administration has not indicated its preferred frequency".

The delegate of Nigeria was in favour of the French proposal. The delegate of Italy also said he was prepared to accept it.

It was accordingly decided that a new text should be drafted taking into account the various suggestions that had been made.

The meeting was suspended at 1300 hours and was resumed at 1700 hours to continue consideration of paragraph 3 of Document No. DT/40, a new text of which had been drafted by the Secretariat.

The delegate of Finland felt the text of sub-paragraph 3.2 was not explicit enough.

In reply to a request for clarification about the expression "usable field strength" in sub-paragraph 3.1, made by the delegate of the Federal Republic of Germany, the Vice-Chairman of the I.F.R.B. explained that the field strength referred to was the field strength due to natural

noise, man-made noise and interference of any kind, i.e. resulting from a frequency plan or from a study taking into account the real situation of the transmitters. A distinction had however to be made between the usable field strength, the provisional usable field strength arrived at by calculation, and the final usable field strength emerging from the planning decided upon by the Conference.

After an exchange of views on that subject, at the suggestion of the delegate of France it was agreed that the words "It shall calculate the usable field strength" at the beginning of sub-paragraph 3.1 should be replaced by the words : "It shall calculate provisionally the usable field strength for each transmitter" etc.

The delegate of France proposed that the text of sub-paragraph 3.2 should be replaced by the following : "It shall collect information in the form of statistics, so as to submit a summary of the position as it emerges from the requirements".

The proposal was accepted.

In reply to a question by the Vice-Chairman of the I.F.R.B., the delegate of France said that the summary referred to would have to be available fairly quickly, at the same time as the utilizable field strength values.

The Vice-Chairman of the I.F.R.B. suggested that the following text be added, as sub-paragraph 3.3 : "It shall draw up a report setting out the foregoing results, and communicate it to all administrations in Regions 1 and 3, preferably before ..." (the date to be decided upon by Committee 6).

The present sub-paragraph 3.3 would then become sub-paragraph 3.4, paragraph 4 would be deleted, and the present paragraph 5 would consequently become paragraph 4.

Subject to the various corrections which had been proposed, new paragraphs 3 and 4 were approved.

The Chairman pointed out that various dates had to be inserted in the draft resolution, and invited delegates to give their views on the subject.

The delegates of Italy, France, the U.S.S.R., Spain, Ireland and the Federal Republic of Germany said they were in favour of administrations being allowed more time to submit their frequency requirements and asked that, on page 3 of Document No. DT/40, 1 May 1975 should be substituted for 1 April 1975.

The delegates of the Netherlands, Sweden, the United Kingdom, New Zealand and Japan wished to retain 1 April 1975.

The Vice-Chairman of the I.F.R.B. said the Board hoped administrations would submit their frequency requirements as and when those requirements were established, i.e. before the deadline. It would be advisable moreover for it to be specified that the deadline was the date at which the requirements submitted reached the I.F.R.B.

The Committee accordingly decided to set the date for receipt of requirements by the I.F.R.B. at 1 May 1975.

In view of the decision taken, the Chairman thought that the text of the paragraph beginning "invites", on page 1 of Document No. DT/40, might be modified and supplemented as follows : delete the words "and in any case not later than", at the end of the paragraph, and substitute for them : "and so that they reach the I.F.R.B. not later than 1 May 1975".

The Chairman's suggestion was approved.

In regard to the end of paragraph 2, the Chairman said the date to be added was "1 June 1975".

It was so agreed.

In conclusion, at the invitation of the Vice-Chairman of the I.F.R.B., it was agreed that the following words should be added at the end of sub-paragraph 3.3, which had already been approved : "on 1 July 1975 and in any case not later than 15 July 1975".

Subject to the various alterations and additions which had been made, the draft resolution constituting Document No. DT/40 was adopted.

At the request of the Chairman, it was agreed that the final report of Committee 6 would be transmitted directly to the Editorial Committee in the form of a white document.

3. Closure of the Committee's proceedings

The Chairman congratulated the members of the Committee on the excellent spirit of cooperation they had displayed throughout the Committee's deliberations. He thanked the Vice-Chairman of the I.F.R.B. and the Committee Secretariat, under Mr. Plüss, for the valuable help they had given the Committee in its work. He also thanked the interpreters and all the Committee's other helpers who had contributed toward the successful performance of its task.

The meeting rose at 1600 hours.

The Secretary :

R. PLÜSS

The Chairman :

M. HARBI

UNION INTERNATIONALE DES TELECOMMUNICATIONS

CONFERENCE DE RADIODIFFUSION

(PREMIERE SESSION) GENEVE, 1974

Document N° 161-F/E/S
25 octobre 1974

LISTE DES PARTICIPANTS

LIST OF PARTICIPANTS

LISTA DE PARTICIPANTES

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PAGE LAISSEE EN BLANC INTENTIONNELLEMENT

I. Cette liste comprend les sections suivantes :

1. Délégations (Régions 1 et 3)
2. Observateurs des Membres de la Région 2
3. Exploitations privées reconnues
4. Organisations internationales
5. Siège de l'Union
6. Secrétariat de la Conférence

This list includes the following sections :

1. Delegations (Regions 1 and 3)
2. Observers from Members of Region 2
3. Recognized private operating agencies
4. International Organizations
5. Union Headquarters
6. Secretariat of the Conference

Esta lista comprende las secciones siguientes:

1. Delegaciones (Regiones 1 y 3)
2. Observadores de los Miembros de la Región 2
3. Empresas privadas de explotación reconocidas
4. Organizaciones Internacionales
5. Sede de la Unión
6. Secretaría de la Conferencia

II. Les symboles suivants sont utilisés :

C : Chef de délégation
CA : Chef adjoint de délégation
D : Délégué
A : Conseiller
S : Membre du secrétariat de la délégation

The following symbols are used :

C : Head of delegation
CA : Deputy Head of delegation
D : Delegate
A : Adviser
S : Member of delegation secretariat

Se utilizan los símbolos siguientes:

C : Jefe de delegación
CA : Jefe adjunto de delegación
D : Delegado
A : Consejero
S : Miembro de la secretaría de la delegación

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1. DELEGATIONS - DELEGATIONS - DELEGACIONES

A. MEMBRES - MEMBERS - MIEMBROS

Albanie (Rép. Pop. d') - Albania (P. R. of) - Albania (R. P. de)

C M. KLOSI Emin
Direction générale des Postes
et Télécommunications
Tirane

D M. BOCI Kosta
Direction générale des Postes et
Télécommunications
Tirane

Algérie (Rép. Algérienne Démocratique et Populaire) - Algeria (Algerian Democratic and Popular Rep.) - Argelia (Rep. Argelina Democrática y Popular)

C M. ZERROUKI Belahcéne
Directeur des Services techniques
et de l'équipement
Radiodiffusion, Télévision Algérienne
Alger

D M. BENSAÏD Mustapha
Ingénieur, Chef du Département
Equipement
Radiodiffusion, Télévision Algérienne
Alger

D M. HARBI Mohamed
Ingénieur, Chef du Service des Etudes
Radiodiffusion, Télévision Algérienne
Alger

D SAÏD Mohamed
Ingénieur, Chef du Service Exploitation
Radiodiffusion
Radiodiffusion, Télévision Algérienne
Alger

D M. BOUTELDJA Ahmed
Ingénieur d'application au Comité
de Coordination des Télécommunications
Alger

Allemagne (Rép. Féd. d') - Germany (Fed. Rep. of) - Alemania (Rep. Fed. de)

C M. KUPPER Johannes, F.A.E.
Ministerialdirigent
Bundesministerium für das Post- und
Fernmeldewesen
Bonn

CA M. BINZ K. Rudolf
Ministerialrat
Bundesministerium für das Post- und
Fernmeldewesen
Bonn

D M. BIERMANN Willy
Oberamtsrat
Bundesministerium für das Post- und
Fernmeldewesen
Bonn

D M. BÖHNKE F.K.E.
Technischer Direktor
Sender Freies Berlin
Berlin (West)

D M. EDEN Hermann
Abteilungsleiter
Institut für Rundfunktechnik der ARD
Hamburg

D M. GROESCHEL Günther
Wissenschaftlicher Mitarbeiter
Fernmeldetechnisches Zentralamt der
Deutschen Bundespost
Darmstadt

D M. IMELMANN Ehrhardt
Direktor für Programmbetrieb
und Sendeleitung
Deutschlandfunk
Köln

D M. KNIESTEDT Joachim
Oberamtsrat
Bundesministerium für das Post- und
Fernmeldewesen
Bonn

Allemagne (Rép. Féd. d') (suite) - Germany (Fed. Rep. of) (cont.) - Alemania (Rep. Fed. de) (cont.)

D M. KRATH Herbert
Ministerialrat
Bundesministerium für das Post- und Fernmeldewesen
Bonn

D Dr LINSMAYER E. (Mme)
Botschaftsrätin
Ständige Vertretung der Bundesrepublik Deutschland bei den internationalen Organisationen
Genf

D Mme LUTZ Petra
Angestellte
Fernmeldetechnisches Zentralamt der Deutschen Bundespost
Darmstadt

D Dr von PLOETZ H.F.
Legationsrat I Klasse
Auswärtiges Amt
Bonn

D Dr von RAUTENFELD Friedrich
Abteilungsleiter
Institut für Rundfunktechnik der ARD
Hamburg

D M. SCHAEDLICH Alfred
Technischer Angestellter
Fernmeldetechnisches Zentralamt der Deutschen Bundespost
Darmstadt

D M. SEIDELMANN Oskar
Abteilungspräsident
Fernmeldetechnisches Zentralamt der Deutschen Bundespost
Darmstadt

D M. STUCKERT Klaus-Peter
Regierungsdirektor
Senator für Bundesangelegenheiten
Berlin (West)

D M. WERLE Horst
Oberpostdirektor
Fernmeldetechnisches Zentralamt der Deutschen Bundespost
Darmstadt

Allemagne (Rép. Féd. d') (suite) - Germany (Fed. Rep. of) (cont.) - Alemania (Rep. Fed. de) (cont.)

D Dr WICHT Henning
Programmdirektor Hörrundfunk
Hessischer Rundfunk
Frankfurt

Arabie Saoudite (Royaume de l') - Saudi Arabia (Kingdom of) - Arabia Saudita (Reino de)

C M. AL NOURI Abdul Motey
Chief of Network Department
General Technical Administration
Ministry of Communications
Riyadh

D M. AL BABTAIN Ali
Frequency Management Engineer
Ministry of Information
Riyadh

D M. AL SAHELI Mohammad Ahmad
Director of MW TX
Ministry of Information
Riyadh

A M. AHMED Rafique
I.T.U. Expert
Riyadh

Australie - Australia

C M. O'SHANNASSY J.A.
Assistant Director-General
Radiocommunications Branch
Australian Post Office
Melbourne

D M. ELWORTHY C.G.
Assistant Director
Engineering Services Division
Australian Broadcasting Control Board
Melbourne

D M. MEDLIN N.J.
Sectional Engineer
Station Planning and Survey
Australian Broadcasting Control Board
Melbourne

Australie (suite) - Australia (cont.)

D M. SHEPHERD Frank MacPherson
Assistant Controller Technical
Services (Radio)
Australian Broadcasting Commission
Sydney

Autriche - Austria

C Dr BÖNISCH Alfred
Ministerial Counsellor
Headquarters of the Postal and
Telegraph Administration
Wien

CA M. STEINER Ernst
Counsellor
Headquarters of the Postal and
Telegraph Administration
Wien

D Dr BERGER Josef
Head of Frequency and Coverage Planning
Österreichischer Rundfunk
Wien

D M. BURGSTALLER Josef
Head of Transmitter Projecting and
External Relations
Österreichischer Rundfunk
Wien

D M. JASCHEK Josef
Head of Transmitter Network Planning
Österreichischer Rundfunk
Wien

D M. LETTNER Gerd
Counsellor
Headquarters of the Postal and
Telegraph Administration
Wien

Belgique - Belgium - Bélgica

C M. BOUCHIER P.C.M.
Directeur général
Régie des Télégraphes et des Téléphones
de Belgique
Bruxelles

CA M. GEWILLIG Michel
Ingénieur en chef
Radiodiffusion-Télévision Belge
Bruxelles

CA M. HAUSEUX Raymond
Ingénieur-Directeur
Radiodiffusion-Télévision Belge
Bruxelles

D M. AUDENAERT Désiré
Ingénieur-Directeur
Radiodiffusion-Télévision Belge
Bruxelles

D M. HANSEN Georges
Conseiller technique
Radiodiffusion-Télévision Belge
Bruxelles

D M. REYNIERS Maurice
Expert Principal
Régie des Voies Aériennes
Bruxelles

Biélorussie (Rép. Socialiste Soviétique de) - Byelorussian Soviet Socialist Republic - Bielorrusia (Rep. Socialista Soviética de)

C M. PODORSKY Lev
Chief Radio Department
Ministry of Posts and Telecommunications
of the Byelorussian Soviet Socialist Republic
Minsk

D M. ASTRABAKHINE Gavriil
Chief of the Department
Ministry of Posts and Telecommunications
of the Byelorussian Soviet Socialist Republic
Minsk

Bulgarie (Rép. Pop. de) - Bulgaria (People's Republic of) - Bulgaria (Rep. Pop. de)

C M. IGNATOV Ivan
Ministre-adjoint de l'Information et des Postes et Télécommunications
Ministère de l'Information et des Postes et Télécommunications
Sofia

CA M. IANEV Ianko
Chef du Département Radio et Télévision
Ministère de l'Information et des Postes et Télécommunications
Sofia

D M. MINTZEV Dimitar
Chef de la Division de Radiodiffusion
Ministère de l'Information et des Postes et Télécommunications
Sofia

D Mme MILTCHEVA Violeta
Spécialiste
Ministère de l'Information et des Postes et Télécommunications
Sofia

A M. DATZKOV Nedeltcho
Conseiller Mission Permanente de la Rép. Pop. de Bulgarie
Genève

Burundi (Rép. du) - Burundi (Rep. of) - Burundi (Rep. de)

D M. HUMUZA Bernard
Directeur Technique
Bujumbura

Cameroun (Rép. Unie du) - Cameroon (United Rep. of) - Camerún (Rep. Unida del)

C M. KAMDEM Maurice
Directeur Adjoint de la Radiodiffusion du Cameroun
Yaoundé

D M. NLOM NLOM Pierre-Marie
Ministère des Postes et Télécommunications
Yaoundé

Centrafricaine (Rép.) - Central African Republic - Centroafricana (Rep.)

C M. M'BILO Jacques
Directeur des Services techniques de
la Radiodiffusion Télévision
Centrafricaine
Bangui

CA M. DEKEZANDJI Patrice
Chef des Services techniques de
l'Office Centrafricain des Postes
et Télécommunications
Bangui

Chine (Rép. Pop. de) - China (People's Rep. of) - China (Rep. Pop. de)

C M. LU Ke-chin
Deputy Director of the
Technical Department of the
Broadcasting Administration
Bureau of P.R.C.
Peking

CA M. HO Ta-chung
Deputy Chief Engineer of Radio Peking
Peking

D M. FAN Kuang-ti
Engineer of the Central People's
Broadcasting Station of P.R.C.
Peking

D M. KAO Fu-tseng
Engineer of the Broadcasting
Administration Bureau of P.R.C.
Peking

D M. MA Yu-pen
Engineer of Radio Peking
Peking

A M. HSIEN Shou
Engineer of the Central People's
Broadcasting Station of P.R.C.
Peking

A M. PAN Chen-chung
Engineer of the Broadcasting
Administration Bureau of P.R.C.
Peking

Chine (Rép. Pop. de) (suite) - China (People's Rep. of) (cont.) - China (Rep. Pop. de) (cont.)

A M. TING Yi-hsing
Engineer of the Ministry of Posts
and Telecommunications of the P.R.C.
Peking

A M. WU Hsien-lun
Engineer of Radio Peking
Peking

A M. YANG Chih-wei
Engineer of the Central People's
Broadcasting Station of P.R.C.
Peking

S M. CHAO Chang-ying
Staff Member of the Permanent
Mission of China
Geneva

S M. CHEN Chun
Officer of the Ministry of Posts and
Telecommunications of P.R.C.
Peking

S M. HU Jung-chuan
Translator of Radio Peking
Peking

S M. LI Shu-tien
Translator of Radio Peking
Peking

S M. TSOU Shu-ling
Translator of Radio Peking
Peking

Cité du Vatican (Etat de la) - Vatican City State - Ciudad del Vaticano (Estado de la)

C M. MAFFEO Sabino
Directeur Technique
Radio Vatican
Cité du Vatican

D M. GIUDICI Pier Vincenzo
Ingénieur Fonctionnaire
Radio Vatican
Cité du Vatican

Congo (Rép. Pop. du) - Congo (People's Rep. of the) - Congo (Rep. Pop. del)

C M. EDJAKA-DEMONTES Dominique
Directeur de Cabinet du
Ministère de l'Information
Radiodiffusion Télévision Congolaise
Brazzaville

CA M. LOUVEZO Sylvestre
Chef de Centre d'Emission
Radiodiffusion Télévision Congolaise
Brazzaville

Corée (Rép. de) - Korea (Rep. of) - Corea (Rep. de)

C M. LEE Boh
Counsellor
Korean Mission in
Geneva

D M. KIM Hyun Duk
Telecommunication Officer
Radio Frequency Division
Office of Radio Regulatory
Seoul

Côte d'Ivoire (Rép. de) - Ivory Coast (Rep. of the) - Costa de Marfil (Rep. de la)

C M. YAO Kouamé
Sous-Directeur des Liaisons Interurbaines
Ministère des Postes et Télécommunications
Abidjan

CA M. NOGBOU Christophe
Premier Conseiller Technique du
Ministère de l'Information
Abidjan

CA M. KOUAME Frédéric
Directeur de la Télévision Ivoirienne
Radio Télévision Ivoirienne
Abidjan

Dahomey (Rép. du) - Dahomey (Rep. of) - Dahomey (Rep. de)

C M. BOURAIMA Taofiqui
Directeur Général de l'Office des
Postes et Télécommunications
Postes et Télécommunications
Cotonou

Dahomey (Rép. du) (suite) - Dahomey (Rep. of) (cont.) - Dahomey (Rep. de) (cont.)

CA M. MARTIN Léopold
Ingénieur de Radiodiffusion
Radiodiffusion du Dahomey
Cotonou

Danemark - Denmark - Dinamarca

C M. LOENBERG Ib
Deputy Head of Radio Section
General Directorate of Posts and
Telegraphs
Copenhagen

D M. HANSEN Joergen
Senior Engineer
General Directorate of Posts and
Telegraphs
Copenhagen

D M. HEEGAARD J.A.
Senior Engineer
Danmarks Radio
Copenhagen

D M. JOERGENSEN H.C.
Chief Engineer, Technical Section
Danmarks Radio
Copenhagen

Egypte (Rép. Arabe d') - Egypt (Arab Rep. of) - Egipto (Rep. Arabe de)

C M. ANTAR Ahmed Hosni
Director General of Project Department
Egyptian Broadcast Engineering
Cairo

Espagne - Spain - España

C M. ARTO MADRAZO José María
Profesor Dr Ingeniero
Jefe de coordinación técnica
Dirección General de Radiodifusión
y Televisión
Madrid

D M. ALONSO MARTINEZ Isidoro
Ingeniero Jefe de Planificación O.M.
Dirección General de Radiodifusión
y Televisión
Madrid

Espagne (suite) - Spain (cont.) - España (cont.)

D M. CHAMORRO SANTA CRUZ Lorenzo
Ingeniero Jefe del Servicio de
Planificación de RTVE
Dirección General de Radiodifusión
y Televisión
Madrid

D M. DE PAULA PARDAL José
Ingeniero Jefe de Planificación Central
Dirección General de Radiodifusión
y Televisión
Madrid

D M. QUINTAS CASTAÑS Valentin
Dr Ingeniero de Telecomunicación
Dirección General de Radiodifusión
y Televisión
Madrid

Ethiopie - Ethiopia - Etiopia

D M. ABAI Gessese
Chief of Transmitting Section
Telecommunications Board of Ethiopia
Addis Abeba

Finlande - Finland - Finlandia

C M. TERÄSVUO Kalevi Ilmari
Head of Section
General Direction of Posts and
Telegraphs
Helsinki

CA M. SVENSSON Reijo Bertel
Staff Engineer
General Direction of Posts and
Telegraphs
Helsinki

D M. HELIÖ Eero Juhani
Head of Distribution Engineering
The Finnish Broadcasting Co. Ltd
Helsinki

D M. KOSKENNIEMI Osmo Matti
Head of Network Planning
The Finnish Broadcasting Co. Ltd
Helsinki

Finlande (suite) - Finland (cont.) - Finlandia (cont.)

D M. LARKKA Erkki Juhani
Acting Director of Engineering
The Finnish Broadcasting Co. Ltd
Helsinki

A M. LAIHO Jorma Kalevi
Planning Engineer
The Finnish Broadcasting Co. Ltd
Helsinki

France - Francia

C M. FEVRE Jean
Conseiller d'Ambassade
Représentant Permanent Adjoint auprès de
l'Office des Nations Unies à
Genève

CA Mlle HUET Marie
Ingénieur en chef
Office de Radiodiffusion-Télévision
Française
Paris

D M. ARNAUD Jean-François
Ingénieur en chef
Office de Radiodiffusion-Télévision
Française
Paris

D M. BERTHOD Henri
Ingénieur en Chef
Office de Radiodiffusion-Télévision
Française
Paris

D M. CHEF Maurice
Ingénieur en Chef
Aviation Civile
Paris

D M. FAURIS R.L.
Conseiller des Affaires Etrangères
Mission Permanente auprès de l'Office
des Nations Unies à
Genève

D M. FONTEYNE Jacques C.F.
Ingénieur
Office de Radiodiffusion-Télévision
Française
Paris

France (suite) - France (cont.) - Francia (cont.)

D M. de FRANCE Henri George
Directeur général Technique
Administration Française
Paris

D M. KELLER André
Ingénieur
Office de Radiodiffusion-Télévision
Française
Paris

D M. LACHARNAY Stéphane
Ingénieur en Chef
Office de Radiodiffusion-Télévision
Française
Paris

D M. MERCIER Claude
Directeur général Adjoint
Office de Radiodiffusion-Télévision
Française
Paris

D M. POIZAT Alain
Ingénieur
Office de Radiodiffusion-Télévision
Française
Paris

D M. POUZOLS Bernard
Ingénieur-conseil
Fédération Nationale des Industries
Electroniques (F.N.I.E.)
Paris

Gabonaise (Rép.) - Gabon Republic - Gabonesa (Rep.)

C M. N'GUEMA Samuel Parfait
Inspecteur Principal des Télécommunications,
Office des P. et T.
Libreville

CA M. ANGO-MENGOME Jean-Daniel
Chef du Bureau de Gestion des Fréquences
Ministère des Postes et Télécommunications
Libreville

D M. EDANE NKWELE Jacques
Chef de la Station Régionale de Franceville
Radiodiffusion et Télévision Gabonaise
Libreville

Gambie (Rép. de) - Gambia (Rep. of the) - Gambia (Rep. de)

C M. JOBE Amadou
Broadcasting Engineer
Radio Gambia
Banjul

Grèce - Greece - Grecia

C M. ECONOMOU Panayotis
Délégué Permanent Adjoint
Délégation Permanente de Grèce à
Genève

D M. CASMAS Apostolos
Director of E.I.R.T. Technical Services
Direction Générale des Postes et
Télécommunications
Athinai

D M. CASTANAS George
Director of Broadcasting and
Television Services
General Directorate of Posts and
Telecommunications
Athinai

D M. KOKOSSIS Theophanis
Engineer of Broadcasting and
Television Services
General Directorate of Posts and
Telecommunications
Athinai

Hongroise (Rép. Pop.) - Hungarian People's Republic - Húngara (Rep. Pop.)

C Dr HORVÁTH Lajos
Department Chief
General Post Office
Budapest

CA M. BUGYI Jozsef
Section Chief
General Post Office
Budapest

D M. BUKI ANDRAS Laszlo
General Post Office
Budapest

Hongroise (Rép. Pop.) (suite) - Hungarian People's Republic (cont.) - Húngara (Rep. Pop.) (cont.)

D M. FUCSKÓ Lajos
Chief Rapporteur
General Post Office
Budapest

D Dr GYÖRI Tibor
Chief Rapporteur
General Post Office
Budapest

D M. HECKENAST Gabor
General Post Office
Budapest

D PETE József
Chief Rapporteur
General Post Office
Budapest

D M. SOMOS Andras
Advisor
General Post Office
Budapest

Inde (Rép. de l') - India (Rep. of) - India (Rep. de)

C M. PHATAK D.V.
Chief Engineer
All India Radio
New Delhi

D M. MITRA S.N.
Additional Chief Engineer
All India Radio
New Delhi

D Dr M.K. RAO
Deputy Wireless Adviser to the
Government of India
New Delhi

Indonésie (Rép. d') - Indonésia (Rep. of) - Indonesia (Rep. de)

C M. PRATOMO Th. A.
Directorate General of Posts and Telecommunications
Djakarta

D M. ISKANDAR Arfan
Directorate General of Posts and Telecommunications
Djakarta

Iran - Irán

C M. EMADI Reza
Ministère des Postes, Télégraphes et Téléphones
Experts des Télécommunications
Teheran

D M. KHATIBI Nouri Mehdi
National Iranian Radio Television
Teheran

D M. TAHMASSEB ZAMANIAN Ali
Head of the Transmitter Installation
National Iranian Radio Television
Teheran

Irlande - Ireland - Irlanda

C M. MALONE J.J.
Staff Engineer
Department of Posts and Telegraphs
Dublin

D M. CALLENDER T.
Assistant Staff Engineer
Department of Posts and Telegraphs
Dublin

D M. DOYLE P.J.
Senior Engineer in charge
Special Projects
Radio Telefis Eireann
Dublin

D M. SLOWEY E.J.
Assistant Director of Engineering
Radio Telefis Eireann
Dublin

Italie - Italy - Italia

C M. PETTI Angelo
Dirigeant Supérieur
Ispettorato Generale delle
Telecomunicazioni
Roma

D M. ASLAN Piero
Attaché, Mission permanente d'Italie
Ministère affaires étrangères
Roma

D M. CITO Ruggero
Primo Dirigente
Administration des Postes et
Télécommunications
Roma

D M. GALLIANO Riccardo
Ingénieur
RAI - Radio Televisione Italiana
Torino

D M. LA PADULA A.
Consigliere Tecnico
Amministrazione delle Poste e
Telecomunicazione
Roma

D M. LARI Guido
Ingénieur
RAI - Radio Televisione Italiana
Roma

D M. MORO G.
Ingegnere
RAI - Radiotelevisione Italiana
Roma

D M. TERZANI Carlo
Directeur
Relations Techniques Internationales
Radio Televisione Italiana
Roma

Japon - Japan - Japón

C Mr. MAKI Yutaka
Director General
Monitoring Department
Radio Regulatory Bureau
Ministry of Posts and Telecommunications
Tokyo

Japon (suite) - Japan (cont.) - Japón (cont.)

CA Mr. TANAKA Shinzaburo
Head, Engineering Division of
Broadcast Department
Radio Regulatory Bureau
Ministry of Posts and Telecommunications
Tokyo

D Mr. FUJIKI Sakae
Special Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. JUJISHIMA Katsuki
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. FUJITA Takashi
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. IKEDA Masaru
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. KAJITANI Yoichi
First Secretary
Permanent Delegation of Japan to
International Organizations in
Geneva

D Mr. KONDO Zenzaburo
Ministry of Posts and Telecommunications
Tokyo

D Mr. MORISHIMA Nobukazu
Special Assistant to the Director General
Radio Regulatory Bureau
Ministry of Posts and Telecommunications
Tokyo

D Mr. NAKATANI Kazuo
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. OKA Shuichiro
Ministry of Posts and Telecommunications
Tokyo

Japon (suite) - Japan (cont.) - Japón (cont.)

D Mr. SUZUKI Yoshio
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. TADOKORO Yasushi
Advisor
Ministry of Posts and Telecommunications
Tokyo

D Mr. TATENO Satoshi
Deputy Head
Engineering Division of Broadcast Department
Radio Regulatory Bureau
Tokyo

Jordanie (Royaume Hachémite de) - Jordan (Hashemite Kingdom of) - Jordania (Reino Hachemita de)

C Mr. ASFOURA Osama
Director of Engineering
Hashemite Broadcasting Service
Amman

Kenya (Rép. du) - Kenya (Rep. of) - Kenya (Rep. de)

C M. MACHARIA Simeon Ndiritu
Chief Engineer
Ministry of Information and Broadcasting
Nairobi

Koweit (Etat de) - Kuwait (State of) - Kuwait (Estado de)

C M. AL MAZEEDI Jawad
C.E. Broadcasting
Ministry of Information
Kuwait

D M. AL REFAI Eisa
Director Telecommunication Institute
Ministry of Posts, Telegraphs
and Telephones
Kuwait

Laos (Royaume du) - Laos (Kingdom of) - Laos (Reino de)

C M. VINAIGNA Ounkham
Inspecteur Principal des Télécommunications
Ministère des Postes et Télécommunications
Vientiane

Laos (Royaume du) (suite) - Laos (Kingdom of) (cont.) - Laos (Reino de) (cont.)

D M. SANANIKONE Khammoune
Contrôleur Technique de la
Radiodiffusion Nationale
Ministère de l'Information Nationale
Vientiane

Lesotho (Royaume de) - Lesotho (Kingdom of) - Lesotho (Reino de)

C Mr. MALEBO Vincent Moeketse
Director of Broadcasting
Radio Lesotho
Maseru

Liban - Lebanon - Líbano

C M. ROHAYEM Joseph
Chef des Services Techniques à la
Radiodiffusion Libanaise
Beyrouth

A M. CHAMMA Samir
Conseiller-Représentant Permanent Adjoint
du Liban auprès de
l'Office des Nations Unies à
Genève

Libéria (Rép. du) - Liberia (Rep. of) - Liberia (Rep. de)

C Mr. BUTLER Samuel H.
Executive Officer
Liberia Telecommunications Corporation
Monrovia

Libyenne (République Arabe) - Lybian Arab Republic - Libia (Rep. Árabe)

C Mr. HAJJAJI Mohamed
Technical Director
People's Revolutionary Broadcasting Corporation
Tripoli

CA Mr. OUN Amer
Chief of Planning Department
People's Revolutionary Broadcasting Corporation
Tripoli

Liechtenstein (Principauté de - Principality of - Principado de)

C Comte de LEDEBUR Mario
Ambassade de la
Principauté de Liechtenstein
Berne

Luxembourg - Luxemburgo

C S.E. M. DUHR Albert
Ambassadeur
Ministère des Affaires Etrangères
du Grand Duché de Luxembourg
Berne

D M. DONDELINGER Charles
Ingénieur
Administration des Postes
et Télécommunications
Luxembourg

D M. FABER Paul
Ingénieur en Chef de la
Compagnie Luxembourgeoise de Télédiffusion
Luxembourg

D M. MAACK Léon
Directeur Technique de la
Compagnie Luxembourgeoise de Télédiffusion
Luxembourg

Malaisie - Malaysia - Malasia

C M. MENON K.P. Ramanathan
Director Telecommunications
Telecommunications Dept.
Government of Malaysia
Kuala Lumpur

CA M. VARIYAN David
Asst. Director Telecoms.
Telecommunications Dept.
Government of Malaysia
Kuala Lumpur

D M. JEGANATHAN
Superintending Engineer (Transmitters)
Department of Broadcasting
Government of Malysia
Kuala Lumpur

Malawi - Malaui

C M. MANDALASI Overton Christie
Acting Director of Engineering
Malawi Broadcasting Corp.
Blantyre

Malgache (Rép.) - Malagasy Republic - Malgache (Rep.)

C M. RAKOTOARIVELO Benjamin
Chef de Service Technique de la
Radio Télévision Malgache
Tananarive

CA M. RAKOTOMALALA Frédinard
Chef du Centre Réception et B.L.U.
Radio Télévision Malgache
Tananarive

Malte - Malta

D M. ABELA Costantino
Technician
Malta Broadcasting Authority

Maroc (Royaume du) - Morocco (Kingdom of) - Marruecos (Reino de)

C M. TANANE Jamal Eddine
Ingénieur
Chef de la Division de l'Equipement
Radiodiffusion Télévision Marocaine (RTM)
Rabat

Maurice - Mauritius - Mauricio

C M. RAMBERT J.M.H. Noël
Chief Engineer
Mauritius Broadcasting Corp.
Curepipe

D M. SODHOU Goordeo
Senior Engineer
Mauritius Broadcasting Corp.
Forestside

Mauritanie (Rép. Islamique de) - Mauritania (Islamic Rep. of) - Mauritania (Rep. Islámica de)

C M. LÔ Medoune
Chef du Service Technique
Radiodiffusion Nationale de Mauritanie
Nouakchott

Monaco - Mónaco

C S.E.M. SOLAMITO César Charles
Ministre Plénipotentiaire
Délégué Permanente auprès des
organismes internationaux
Direction Générale des Postes
et Télécommunications
Monaco

D M. AUVRAY G.G.
Ingénieur
Direction Générale des Postes
et Télécommunications
Monaco

Mongolie (Rép. Pop. de) - Mongolian People's Republic - Mongolia (Rep. Pop. de)

C S.E. Mr. DUGERSUREN Mangalyn
Ambassador,
Permanent Representative to the
U.N. Office and other
International Organizations
Geneva

D Mr. CHOINKHOR Jalbugyn
Attaché
Permanent Mission of the
Mongolian People's Republic
Geneva

A Mr. MIJID Lodoisambugyn
Engineer
Ministry of Communications
Ulanbator

Nigeria (Rép, Féd. de) - Nigeria (Fed. Rep. of) - Nigeria (Rep. Fed. de)

C M. OKOLI G.C.
Telecommunications Adviser
Ministry of Communications
Lagos

D M. EDEBOR B.O.E.
Chief Engineer
Midwest Broadcasting Corporation
Benin City

Nigeria (Rép. Féd. de) (suite) - Nigeria (Fed.Rep. of) (cont.)
Nigeria (Rep. Fed. de) (cont.)

D M. IFIDON R.O.
Deputy Chief Engineer
Western Nigeria Broadcasting Service
Ibadan

D M. KUFORIJI O.O.
Senior Engineer
Ministry of Communications
Lagos

D M. NZE N.A.
Principal Engineer
Nigeria Broadcasting Corporation
Lagos

D Mr. UGWU G.C.
Chief Engineer
East Central State Broadcasting Service
Enugu

Norvège - Norway - Noruega

C M. VEASTAD John Ragnar
Head of Division
Norwegian Telecommunications Adm.
Oslo

CA M. GRIMSTVEIT Lavrans
Chief Engineer
Norwegian Telecommunications Adm.
Oslo

D M. HANSEN Harald
Sectional Engineer
Norwegian Telecommunications Adm.
Oslo

D M. MICHALSEN Per
Sectional Engineer
Norwegian Telecommunications Adm.
Oslo

D M. NAVELSAKER Torbjørn
Director of Engineering
Norwegian Broadcasting Corp.
Oslo

Norvège (suite) - Norway (cont.) - Noruega (cont.)

D M. ØVENSEN T.
Chief Engineer
Norwegian Broadcasting Corp.
Oslo

D M. STOKKE Knut N.
Chief Engineer
Norwegian Telecommunications Adm.
Oslo

Nouvelle-Zélande - New Zealand - Nueva Zelandia

C M. ROSE Derek C.
Divisional Engineer
(Radio) Post Office Headquarters
New Zealand Post Office
Wellington

D M. BUNDELE Robert John
Principal, Radio Div.
Post Office Headquarters
New Zealand Post Office
Wellington

D M. CARTER J.P.
Controlling Engineer
(Transmission) Eng. Section, N.Z.B.C.
New Zealand Broadcasting Corp.
Wellington

Oman (Sultanat d') - Oman (Sultanate of) - Omán (Sultanía de)

C Mme AL KHARUSI Nashiah Saoud
Deputy Technical Director
Ministry of Information & Tourism
Muscat

A Dr. SOBOTKA Johann
Consultant to the Administration
Ministry of Information and Tourism
Muscat

Ouganda (Rép. de l') - Uganda (Rep. of) - Uganda (Rep. de)

C Mr. KATENDE Francis Xavier
Chief Broadcasting Engineer
Radio Uganda
Kampala

D Mr. OJOO Naphtali Ismael
Executive Engineer
East African Posts and
Telecommunications Corporation
Kampala

Pakistan - Pakistán

C Mr. IRFAN ULLAH
Director of Engineering
Pakistan Broadcasting Corporation
Rawalpindi

D Mr. BEG Mohammad Iqbal
Deputy Controller (Research)
Pakistan Broadcasting Corporation
Rawalpindi

Pays-Bas (Royaume des) - Netherlands (Kingdom of the) - Países Bajos (Reino de los)

C M. BAKKER B.J.
Director-in-chief of Telecommunications Services
Netherlands P.T.T.
The Hague

CA M. MAARLEVELD F.
Policy-advisor for Radiocommunications
Netherlands P.T.T.
The Hague

D M. DE ZWART Hendrik K.
Chief, Frequency Management Section
Netherlands P.T.T.
The Hague

D M. DITO J.C.
Deputy Chief Sound and Television
Broadcasting Branch
Netherlands P.T.T.
The Hague

Pays-Bas (Royaume des) (suite) - Netherlands (Kingdom of the) (cont.)
Países Bajos (Reino de los) (cont.)

D M. REINOLD J.W.
External Relations Manager
Sound and Television Broadcasting Branch
Netherlands P.T.T.
The Hague

A M. DE TROYE J.L.
Member of the Executive Board
Netherlands Broadcasting Foundation (N.O.S.)
Hilversum

A Prof. Dr. GELUK J.J.
Director Technical Developments
Radio Nederland Wereldomroep
Hilversum

A M. NIEUWENHUYSEN T.
Chairman of the Committee of Heads
of Programme Departments
Netherlands Broadcasting Foundation (N.O.S.)
Hilversum

A M. NOTEBOOM S.J.
Technical Director
Nederlandse Omroep Stichting
Hilversum

A M. TIJMSTRA L.F.
General Director
Radio Nederland Wereldomroep
Hilversum

A M. VIJZELAAR P.
Senior Engineer (Laboratory)
Nederlandse Omroep Stichting
Hilversum

A M. WAGENAAR W.J.A.
Member of the Executive Board
Nederlandse Omroep Stichting
Hilversum

Expert M. DE VRIJER F.W.
Expert
N.V. Philips' Gloeilampenfabrieken
Eindhoven

Philippines (Rép. des) - Philippines (Rep. of the) - Filipinas (Rep. de)

C Colonel CARLOS Zosimo C.
Telecommunications Control Bureau
Dept. of Public Works, Transportation
and Communications
Manila

D M. ESPEJO Calixto V.,
Attaché Permanent Mission of the Philippines
in Geneva

D M. ORDONA Godofredo
Board of Communications
Dept. of Public Works, Transportation
and Communications
Manila

D M. DIZON Roberto N. Jr.
Board of Communications
Department of P.W.T. & C.
Manila

Pologne (République Populaire de) - Poland (People's Republic of) - Polonia (República Popular de)

C Mme SMOLEŃSKA Halina
Director of Department
Ministry of P.T.T.
Warszawa

CA M. RUTKOWSKI Jerzy
Deputy Director
Ministry of P.T.T.
Institut of Telecommunication
Warszawa

D M. KALITA Henryk M.S.
Head of Panel
Ministry of P.T.T.
Institut of Telecommunication
Warszawa

Qatar (Etat du) - Qatar (State of) - Qatar (Estado de)

C Mr. MAKSOOD Abdul Malik
Radio Transmitter Engineer
Ministry of Communications and
Transport
Doha

République Arabe Syrienne - Syrian Arab Republic - República Árabe Siria

C Mr. BATTIKHI M. Nazih-Hassan
Director of T.V. and Radio Transmission
and Deputy Eng. General Director
Syrian Arab Republic T.V. & Radio
Broadcasting Service
Damascus

D Mr. MOUALLEM Mohamed
Director of Transmission
P.T.T.
Damascus

République Démocratique Allemande - German Democratic Republic - República Democrática Alemana

C M. CZERWINSKI Bruno
Stellvertreter des Ministers
Ministerium für Post
Fernmeldewesen
Berlin

CA M. SCHULZ Günter
Oberdirektor
Ministerium für Post- und
Fernmeldewesen
Berlin

D M. DIEKE Hans
Hauptdirektor
Ministerium für Post- und
Fernmeldewesen
Berlin

D M. GÖTZE Herbert
Oberdirektor
Ministerium für Post- und
Fernmeldewesen
Berlin

D Dr KNOPF Winfried
Oberrat
Rundfunk- und
Fernsehtechnisches Zentralamt
Berlin

D M. SCHUMANN Günter
Counsellor
Permanent Mission of the G.D.R.
Geneva

République Démocratique Allemande (suite) - German Democratic Republic (cont.) República Democrática Alemana (cont.)

D Dr SYDOW Werner
Stellvertreter des Vorsitzenden
Staatliches Komitee für Rundfunk
Berlin

D M. WOYTH Kurt
Diplomdolmetscher
Intertext
Berlin

A Mr. ZACHMANN Matthias
Adviser
Permanent Mission of the G.D.R.
Geneva

République Socialiste Soviétique d'Ukraine - Ukrainian Soviet Socialist Republic - República Socialista Soviética de Ucrania

C Mr. SAVANTCHOOK Vladimir
Vice-Minister of Telecommunications
Ukraine P.T.T.
Kiev

D Mr. ZYBANOV Iouri
Counsellor, Department of International
Economic Organizations
Ministry of Foreign Affairs of the
Ukrainian Soviet Socialist Republic
Kiev

Roumanie (Rép. Socialiste de) - Roumania (Socialist Rep. of) - Rumania (Rep. Socialista de)

C M. CEAUSESCU Constantin
Directeur Général Adjoint de la
Direction Générale des Postes et
Télécommunications
Ministère des Transports et des
Télécommunications
Bucarest

D M. IONITA Bujor
Directeur Général Adjoint
Radio Télévision Roumaine
Bucarest

D Mr. STOICA Mihail
Chef, Division Radiodiffusion et Télévision
Direction Générale des Postes et Télécommunications
Ministère des Transports et Télécommunications
Bucarest

Royaume-Uni de Grande-Bretagne et d'Irlande du Nord -
United Kingdom of Great Britain and Northern Ireland -
Reino Unido de Gran Bretaña e Irlanda del Norte

C M. KILVINGTON Thomas
Director of Radio Technology
Home Office
London SE1 8UA

CA M. DILWORTH R.A.
Deputy Director of Radio Technology
Home Office
London SE1 8UA

D M. BELL Colin P.
Engineer, British Broadcasting Corporation
London

D M. BYRNE Roger James
Head Of Service Area Planning Section
Independent Broadcasting Authority
London SW3

D M. DUNK Keith R.E.
Senior Engineer
Directorate of Radio Technology
Home Office
London SE1 8UA

D M. GRAHAM G.A.
Senior Engineer
British Broadcasting Corporation
London

D M. HARRIS B.V.
Deputy Chief Engineer
Communications Engineering Department
Foreign and Commonwealth Office
London

D M. LEACH A.A.
Head of Radio Section
(Broadcasting Group)
Communications Engineering Dept.
Foreign and Commonwealth Office
London

D M. MONTEATH George Dewar
Deputy Head of Research Department
British Broadcasting Corporation
London

Royaume-Uni de Grande-Bretagne et d'Irlande du Nord (suite) - United Kingdom of Great Britain and Northern Ireland (cont.) - Reino Unido de Gran Bretaña e Irlanda del Norte (cont.)

D Mme. MOXON Mary Elizabeth
Delegation Secretary
Broadcasting Department
Home Office
London SE1 8UA

D M. POOLEY D.A.
Engineer,
Directorate of Radio Technology
Home Office
London SE1 8UA

D M. REDMOND James
Director of Engineering
British Broadcasting Corporation
London

D M. WISE Frederick
Head of Network and Service
Planning Department
Independent Broadcasting Authority
London SW3

A M. CARTER A.O.
Head of Constitutional and
Technical Division
Broadcasting Department
Home Office
London SE1 8UA

A M. JONES Keith Inglis
Chief Engineer
British Radio Equipment
Manufacturers Association
London W1

A Dr. KNIGHT Philip
Senior Engineer
British Broadcasting Corporation
London

A M. TAYLOR John
Second Secretary
U.K. Mission
Geneva

Royaume-Uni de Grande-Bretagne et d'Irlande du Nord (suite) - United Kingdom of Great Britain and Northern Ireland (cont.) - Reino Unido de Gran Bretaña e Irlanda del Norte (cont.)

S M. POWELL C.M.
Delegation Secretariat
Directorate of Radio Technology
Home Office
London SE1 8UA

S Mlle. REGISTE E.C.
Secretary to Director of Radio Technology
Home Office
London SE1 8UA

Sénégal (Rép. du) - Senegal (Rep. of the) - Senegal (Rep. del)

C M. DIONE Alioune M'bodji
Directeur des Télécommunications
Office des Postes et Télécommunications
du Sénégal
Dakar

D M. MBAYE Malick
Chef des Services Techniques Radio
Office de Radiodiffusion Télévision du Sénégal
Dakar

Sierra Leone - Sierra Leone - Sierra Leona

C M. GREENE F.
Ag. Asst. Chief Engineer
Sierra Leone Broadcasting Service
Freetown

D M. AUBER E.B.A.
Telecommunications Superintendent
Posts and Telecommunications Department
Freetown

Singapour (République de) - Singapore (Republic of) - Singapur (República de)

C M. HO Siaw Hong
Engineer
Telecommunication Authority of Singapore
Singapore

D M. TAN Sebastian, C.H.
Higher Executive Engineer
Dept. of Broadcasting
Ministry of Culture
Singapore

Soudan (République Démocratique du) - Sudan (Democratic Republic of the) - Sudán (República Democrática del)

C M. HAG-AHMED Abdulla Sirageldin
Assistant Eng.
Director for Installation
Department of Telecommunication
Khartoum

Suède - Sweden - Suecia

C M. AKERLIND Per
Engineer-in-Chief
Central Administration of Swedish
Telecommunications
Stockholm

CA M. UHLÉN Nisse
Head of Office
Central Adm. of Swedish Telecommunications
Stockholm

D M. BERGLUND Ragnar
Head of Office
Central Adm. of Swedish Telecommunications
Stockholm

D M. PERSSON Valdemar
Head of Group
Central Adm. of Swedish Telecommunications
Stockholm

D M. ROHDIN Arne
Director of Engineering
Sveriges Radio AB
Stockholm

Suisse (Confédération) - Switzerland (Confederation of) - Suiza (Confederación)

C M. LOCHER Fritz
Directeur général des PTT
Chef du Département des télécommunications
Direction générale des PTT
Berne

CA M. PROBST Hans R.
Chef de la division radio et télévision
Direction générale des PTT
Berne

D M. ACKER Hans
Ing., Fonctionnaire technique
Direction générale des PTT
Berne

Suisse (Confédération) (suite) - Switzerland (Confederation of) (cont.) - Suiza (Confederación) (cont.)

D M. EBERT Walter
Ing., Chef de section Div. Radio et Tél.
Direction générale des PTT
Berne

D M. HUNKELER Adrian
Ing., Adjoint à la Division de la
recherche et du développement
Direction générale des PTT
Berne

D M. KIEFFER Henry A.
Ing., Chef de section Div. Radio et Tél.
Direction générale des PTT
Berne

D Dr PADEL Gerd H.
Directeur de la Radio-Télévision
Suisse Alémanique et Rhétoromande
Société Suisse de Radiodiffusion
et Télévision (SS)
Bern

D M. SCHNEEBERGER Jean
Conseiller d'ambassade
Mission permanente de la Suisse auprès
des organisations internationales
Genève

D M. SCHWARZ Ernest
Chef de section à la Division Radio
et Télévision
Direction générale des PTT
Berne

Tanzanie (Rép. Unie de) - Tanzania (United Rep. of) - Tanzania (Rep. Unida de)

C Mr. MHUMBIRA P. Ignatius
Chief Radio Engineer
Radio Tanzania
Dar-es-Salaam

Tchad (Rép. du) - Chad (Rep. of the) - Chad (Rep. del)

D M. HAMID Kante
Ingénieur de Radiodiffusion et
Télécommunication
Voix de la Révolution Culturelle
Tchadienne
N'Djamena

Tchécoslovaque (Rép. Socialiste) - Czechoslovak Socialist Republic - Checoeslovaca (Rep. Socialista)

C Mr. JÍRA Jiri
Deputy of Minister of
Posts and Telecommunications
Federal Ministry of Posts and Telecommunications
Prague

CA Mr. KRÁLÍK Frantisek
Head of Division of Radiocommunications
Federal Ministry of Posts and
Télécommunications
Prague

D Mr. DÉRER Ivan
Head of Research Institute
Federal Ministry of Posts and
Telecommunications
Prague

D Mr. HAUSKA Milan
Member of Research Institute
Federal Ministry of Posts and
Télécommunications
Prague

Thaïlande - Thailand - Tailandia

C M. MENASVETA V.
Chief of the Office of
Frequency Management
Post & Telegraph Dept.
Bangkok

D M. PORNSUTEE Kraisorn
Chief of Technical Section
Office of Frequency Management
Post & Telegraph Department
Bangkok

Togolaise (République) - Togolese Republic - Togolesa (República)

C M. GABA Joseph
Inspecteur des I.E.M.
Postes et Télécommunications
Lomé

Tunisie - Tunisia - Túnez

C M. CHAFFAI Mongi
Direction générale de la Radiodiffusion-Télévision Tunisienne
Tunis

CA M. HADIJI Salah
Direction générale de la Radiodiffusion-Télévision Tunisienne
Tunis

D M. BEN YOUSSEF Taieb
Direction générale de la Radiodiffusion-Télévision Tunisienne
Tunis

D M. SANSA Beji
Direction générale de la Radiodiffusion-Télévision Tunisienne
Tunis

Turquie - Turkey - Turquía

C Mr. ERDEN Doğan
Assistant Director General
Turkish Radio and Television Organization
Ankara

D Mr. ERMAN Aydemir
First Secretary
Turkish Permanent Mission
Geneva

D Mr. ERTEM Yalçin
Assistant Head of Planning Department
Turkish Radio and Television Organization
Ankara

D Mr. ESEN H. Hasmet
Head of Research Department
Turkish Radio and Television Organizations
Ankara

Union des Républiques Socialistes Soviétiques - Union of Soviet Socialist Republics - Unión de Repúblicas Socialistas Soviéticas

C Mr. CHAMCHINE Vassili
Deputy Minister of
Posts and Telecommunications of the U.S.S.R.
Ministry of Posts and Telecommunications
Moscow

Union des Républiques Socialistes Soviétiques (suite) - Union of Soviet Socialist Republics (cont.) - Unión de Repúblicas Socialistas Soviéticas (cont.)

CA Mr. VARBANSKI Alexandre
Chief Engineer
Radiocommunications Department
Ministry of Posts and Telecommunications
Moscow

CA Mr. PANKRATIEV Guéorgui
Specialist of the
Ministry of Posts and Telecommunications
Moscow

D Mr. CHALAEV Alexandre
Chief of the Section of the
Radiocommunications Department
Ministry of Posts and Telecommunications
Moscow

D Mr. DOBROVOLSKI Evguenii
Assistant Chief of the
Radiocommunications Department
Ministry of Posts and Telecommunications
Moscow

D Mr. GAPOTCHKO Vitalii
Expert of the
Ministry of Posts and Telecommunications
Moscow

D Mr. KOZYRITSKI Gleb
First Secretary
Permanent Mission of the U.S.S.R.
Geneva

D Mr. LIKHOUCHINE Iouri
Specialist of the
Ministry of Posts and Telecommunications
Moscow

D Mr. LOGUINOV Vladimir
Expert of the
Ministry of Posts and Telecommunications
Moscow

D Mr. MOTINE Efim
Vice-Directeur de
Département des relations extérieures
Ministère des Postes et Télécommunications
Moscou

Union des Républiques Socialistes Soviétiques (suite) - Union of Soviet Socialist Republics (cont.) - Unión de Repúblicas Socialistas Soviéticas (cont.)

D Mrs. NIKITINA Lioutchia
Chief Engineer of the
Radiocommunications Department
Ministry of Posts and Telecommunications
Moscow

D Mr. PAVLIOUK Alexandre
Scientific worker of the
Scientific and Research
Radiocommunications Institute
Ministry of Posts and Telecommunications
Moscow

D Mr. SERJANTOV Vladimir
Chief Engineer of the
Radiocommunications Department
Ministry of Posts and Telecommunications
Moscow

D Mr. STAROVEROV Nikolai
Chief of the Department
State Committee on Television
and Broadcasting
Ministry of Posts and Telecommunications
Moscow

D Mr. TICHINE Serguei
Scientific and Research
Radiocommunications Institute
Chief of the Laboratory
Ministry of Posts and Telecommunications
Moscow

Viet-Nam (République du) - Viet-Nam (Republic of) - Viet-Nam (República de)

C M. LE VAN Loi
Ambassadeur
Mission Permanente de la République de
Vient-Nam à Genève

D M. DO HUU Long
Conseiller
Mission permanente de la République du
Viet-Nam à Genève

D M. PHAM VAN Trinh
Deuxième Secrétaire
Mission permanente de la République de
Viet-Nam à Genève

Yougoslavie (République Socialiste Fédérative de) - Yugoslavia (Socialist Federal Republic of) - Yugoeslavia (República Socialista Federativa de)

C M. DULOVIĆ Ljubomir
Directeur de la Direction Fédérale
des Radiocommunications
Beograd

D M. BARDULJ Djinali
Directeur Technique
Radio Télévision Pristina
Pristina

D M. GALIĆ Roman
Directeur du Développement
Radio Télévision Zagreb
Zagreb

D M. GREGORAC Leopold
Ingénieur, Département de la Recherche
Radio Télévision Ljubljana
Ljubljana

D M. JANKOVIĆ Milenko
Directeur Technique
Radio Télévision
Beograd

D M. KOSOVIĆ Ljubomir
Président du Comité Technique de la
Radio Télévision Yougoslave
Radio Télévision Titograd
Titograd

D M. ONCEVSKI Blagoje
Manager of Division Transmitter & Links
Radio Television Skopje
Skopje

D M. RAJIĆ Milija
Direction Fédérale des Radiocommunications
Beograd

D M. ROJEC Stane
Conseiller Technique
Radio Télévision Ljubljana
Ljubljana

D Mme SARAMANDIE Jelisaveta
Secrétaire de la Commission Technique
Radio Télévision Yougoslave
Belgrade

D M. SURUTKA Jovan
Conseiller Technique
Radio Télévision Beograd
Beograd

Yougoslavie (République Socialiste Fédérative de) (suite) - Yugoslavia (Socialist Federal Republic of) (cont.) - Yugoeslavia (República Socialista Federativa de) (cont.)

D M. ZAGAR Vlatko
Chef du Service des Etudes
Radio Télévision Sarajevo
Sarajevo

Zaïre (République du) - Zaire (Republic of) - Zaira (República de)

C M. MBUMBA-MAVINGA
Sous-Directeur de la Radio H.F. des Télécommunications
Office National des Postes et Télécommunications de Zaïre
Kinshasa

CA M. MABUMBA Bulisi
Directeur Technique de la Voix du Zaïre
Radiodiffusion Télévision Nationale Zaïroise
Kinshasa

D M. MAMPUTU Mani
Ingénieur Chef des Services Techniques T.V. (Exploitation)
Radiodiffusion Télévision Nationale Zaïroise
Kinshasa

D M. YEMBI N'SAMPALA
Chef de Division du Bureau des Fréquences Radioélectriques
Office National des Postes et Télécommunications du Zaïre
Kinshasa

Zambie (République de) - Zambia (Republic of) - Zambia (República de)

C M. KALISILIRA Jairus David
Controller Superintendent Engineer
Zambia Broadcasting Services
Lusaka

D M. MUSUBA Peter Landan
Broadcasting Engineer
Zambia Broadcasting Services
Lusaka

B. MEMBRE ASSOCIE - ASSOCIATE MEMBER - MIEMBRO ASOCIADO

Papua-Nouvelle-Guinée - Papua New Guinea - Papua Nueva Guinea

C M. PEARSON Reginald Thomas
Director, Technical Services
National Broadcasting Commission
Port Moresby

CA M. KULUPI Sydney
Manager Radio Branch
Department of Posts and Telegraphs
Port Moresby

2. Observateurs des Membres de la Région 2 - Observers from Members of Region 2 - Observadores de los Miembros de la Región 2

Brésil (République Fédérative du) - Brazil (Federative Republic of) - Brasil (Republica Federativa del)

1) M. PEQUENO VIEIRA Jorge
Secretario de Radiodifusao

M. MENDES DA CUNHA Fernando

---

1) Chef du Groupe des observateurs - Head of the observers' group - Jefe del grupo de los observadores

3. Exploitations privées reconnues - Recognized private operating agencies - Empresas privadas de explotación reconocidas

Royaume-Uni - United Kingdom - Reino Unido

British Broadcasting Corporation

M. BELL Colin P. (voir Délégation du Royaume-Uni)
Engineer
B.B.C.
London

M. GRAHAM G.A.
Senior Engineer - id -
B.B.C.
London

M. MONTEATH George Dewar
Deputy Head of Research Department - id -
B.B.C.
London

M. REDMOND James
Director of Engineering - id -
B.B.C.
London

Dr. KNIGHT Philip
Senior Engineer - id -
B.B.C. London
London

Independent Broadcasting Authority

M. BYRNE Roger James (voir Délégation du Royaume-Uni)

M. WISE Frederick - id -

4. Organisations Internationales - International Organizations - Organizaciones Internacionales

Comité International Spécial des Perturbations Radio Electriques (C.I.S.P.R.) - International Special Committee on Radio Interference - Comité Internacional Especial de Pertubaciones Radioeléctricas

o

M. AKERLIND Per (voir Délégation de la Suède)
Stockholm

M. GRESSMANN R.
Directeur du Centre Technique
Bruxelles

Organisation Internationale de Radiodiffusion et Télévision (O.I.R.T.) - International Radio and Television Organization - Oganización Internacional de Radiodifusión y de Televisión

M. BOUTCHKOV Ivan
Directeur du Centre Technique
Prague

M. JERKOV Jerko
Directeur Adjoint du Centre Technique
Prague

M. KALITA H. (voir Délégation de la Pologne)

M. HAUŠKA M. (voir Délégation de la Tchécoslovaquie)

M. KNOPF W. (voir Délégation de la Rép. Dém. Allemande)

M. MINTZEV D. (voir Délégation de la Bulgarie)

M. STAROVEROV N. (voir Délégation d'U.R.S.S.)

M. IONITA Bujor (voir Délégation de la Roumanie)

Union Arabe des Télécommunications - Arab Telecommunication Union - Unión Arabe de Telecomunicaciones

M. AL NOURI Abdul Motey (voir Délégation de l'Arabie Saoudite)

Union Asiatique de Radiodiffusion - Asian Broadcasting Union (A.B.U.) - Union Asiatica de Radiodifusion

Mr. BALASUBRAMANYAM V.
Engineering Officer
Kuala Lumpur

4. Organisations Internationales (suite) - International Organizations (cont.) - Organizaciones Internacionales (cont.)

Union de Radiodiffusion des Etats Arabes - Arab States Broadcasting Union (A.B.S.U.) - Unión de Radiodifusión de los Estados Arabes

Dr. YOUSIF A.M.
Director
Technical Centre
Khartoum

Union de Radiodiffusions et Télévisions Nationales d'Afrique (U.R.T.N.A.) - Union of National Radio and Television Organizations of Africa - Unión de las Radiodifusiones y Televisiones Nacionales de Africa

M. KAMDEM Maurice (voir Délégation du Cameroun)

Union Européenne de Radiodiffusion (U.E.R.) - European Broadcasting Union (E.B.U.) - Unión Europea de Radiodifusión (U.E.R.)

M. GRESSMANN R.
Directeur du Centre Technique
Bruxelles

M. CASTANHEIRA A.M.
Ingénieur en Chef
Emissora Nacional de Radiodiffusao
Lisbonne

M. KOPITZ D.
Ingénieur principal
Bruxelles

M. BELL Colin P. (voir Délégation du Royaume-Uni)
M. GRAHAM G.A. - id -
M. MONTEATH G.D. - id -
M. REDMOND J. - id -
M. WISE F. - id -
Dr. KNIGHT P. - id -
M. ARNAUD J.F. (voir Délégation de la France)
M. BERTHOD H. - id -
M. LACHARNAY S. - id -
M. MERCIER C. - id -
M. FONTEYNE J. - id -
M. LARI G. (voir Délégation de l'Italie)
M. TERZANI C. - id -

Union Européenne de Radiodiffusion (U.E.R.) (suite) - European Broadcasting Union (E.B.U.) (cont.) - Unión Europea de Radiodifusión (U.E.R.) (cont.)

M. MORO G.	(voir Délégation de l'Italie)
M. EDEN H.	(voir Délégation de la République Fédérale d'Allemagne)
M. GROESCHEL G.	- id -
Dr. von RAUTENFELD F.	- id -
M. WERLE H.	- id -
Dr. WICHT H.	- id -
M. HANSEN G.	(voir Délégation de Belgique)
M. AUDENAERT D.	- id -
M. DITO J.C.	(voir Délégation des Pays-Bas)
Prof. Dr. GELUK J.J.	- id -
M. VIJZELAAR P.	- id -
M. SLOWEY E.J.	(voir Délégation d'Irlande)
M. CHAMORRO SANTA CRUZ L.	(voir Délégation d'Espagne)
M. EBERT W.	(voir Délégation de Suisse)
M. AUVRAY G.C.	(voir Délégation de Monaco)
M. BURGSTALLER J.	(voir Délégation de l'Autriche)

5. Siège de l'Union - Headquarters of the Union - Sede de la Unión

Secrétariat général

M. M. Mili, Secrétaire général

Assistante : Mlle M. Knight

M. R.E. Butler, Vice-Secrétaire général

Assistante : Mlle P. Taillefer

M. R. Cook, Département des conférences et services communs

M. M. Bardoux, Département du Personnel

M. R. Smith, Division "Relations avec les Membres"

I.F.R.B.

M. A. Gromov, Président

Assistante : Mme M. Zinovieff

M. A. Berrada, Vice-Président

Assistante : Mme D. Phené

M. F. Dellamula, membre

Assistante : Mlle M. Iglesias

M. T. Nishizaki, membre

Assistante : Mlle M. Pomel

M. R. Petit, membre

Assistante : Mme L. Michel

M. A. Matthey, Chef du Département des notifications

M. A. Pineda, Chef du Département technique

M. G. Monti, Chef du Département des Affaires communes

C.C.I.R.

M. R.C. Kirby, Directeur

Assistante : Mme W. Kingston

M. N.V. Gadadhar, Conseiller supérieur

Dr M. Joachim, Conseiller supérieur

M. R. Froom, Conseiller

M. A.W. Boyle, Ingénieur

C.C.I.T.T.

M. R. Croze, Directeur

M. E. Hummel, Conseiller supérieur

M. J. Lalou, Conseiller supérieur

M. R. Chapuis, Conseiller

M. D. Dormer, Conseiller

6. Secrétariat de la Conférence - Secretariat of the Conference - Secretaria de la Conferencia

Secrétaire de la Conférence : M. M. Mili, Secrétaire général

Secrétaire exécutif : M. Alf Winter-Jensen

Séance plénière et Commission 1 : M. H. Pouliquen

Commission 2 : M. P.A. Traub

Commission 3 : M. R. Prélaz

Commission 7 : M. R. Macheret

Conseiller Juridique : M. Ibnou Zékri

Assistantes

Mme Ch. Boccard

Mlle J. Collet

Mme J.L. Lecluyse

Mlle L. Ricci

Mlle D. Service

Mlle C. Wackenthaler

Division technique

Secrétaire technique : M. K. Comic

Commission 4 : M. C. Glinz

Commission 5 : M. M. Ahmad

Commission 6 : M. R. Pluss

Mlle M.L. Arocena

M. R. Froom

M. K. Khabiri

M. G. Korolev

M. G. Kovacs

M. W. Menzel

Mme R. Reinhard

M. G. Renn

Mme M.C. Revenga

M. M. Sant

M. S. Tsukada

Division "Services de la Conférence"

Service des délégués, de l'interprétation et de la documentation	: M. U. Petignat
Communiqués de presse	: M. R. Fontaine
Traduction française	: M. J. Revoy
Traduction anglaise	: M. R. Rees
Traduction espagnole	: M. F. Moreno
Service des interprétes	: Mme A. Bernasconi
Service des procès-verbalistes	: Mlle J. Barley
Salles	: Mme M. Grand
Contrôle des documents	: Mme L. Jeanmonod
Dactylographie	: M. J. Escudero
Reprographie	: M. R. Probst
Economat	: M. J. Barreau
Distribution des documents	: M. W. Gantert
Messagers	: M. C. Glappey
Huissiers	: M. G. Brunet

Concerne : Document 162E

CONFERENCE DE RADIODIFFUSION

(1ère session, Genève 1974)

Erratum

Les Corr. 1-3, attribués dans la présente liste au Doc. 23, l'ont été par erreur et se rapportent au Doc. 24.

INTERNATIONAL TELECOMMUNICATION UNION

BROADCASTING CONFERENCE

(FIRST SESSION) GENEVA, 1974

Document No. 162-E
1 November 1974

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A N N E X

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1	S.G.	Agenda of the Conference	-
2	U.K.	Preferred channel spacing in the LF/MF broadcasting bands	PL
3	U.K.	Alternative modulation systems for LF/MF sound broadcasting	PL
4	U.K.	Directional antennae in MF planning	PL
5	U.K.	International low-power channels	PL
6	F.R. of Germany	Proposals	PL
7	Rumania	Considerations on questions to be studied by the Conference at its first session	PL
8	Italy	Some points relating to the technical standards and planning methods proposed for the LF/MF Broadcasting Conference	PL
9	Norway	Some views on the frequency planning for broadcasting stations in the LF/MF bands	PL
10+Add. +Corr.1, 2	S.G.	Texts of the C.C.I.R. concerning broadcasting in bands 5 (LF) and 6 (MF)	PL
11	Norway	A graphical method for estimation of propagation over mixed paths	PL
12	Nigeria	Proposals	PL

No.	Origin	Title	Destination
13 + Corr.	Algeria	Determination of equivalent ground conductivity in the Region of Algiers by the ground-wave attenuation method	PL
14	Algeria	Results of sky-wave measurements (1973-1974 period) carried out in low and medium frequencies	PL
15	Pakistan	Proposals	PL
16	S.G.	Second session of the Conference	PL
17	U.S.S.R.	On the choice of carrier-frequency spacing in LF and MF bands	PL
18	U.S.S.R.	Concerning items on the agenda of the first session of the Regional Administrative Conference on LF/MF broadcasting	PL
19	S.G.	Budget of the Conference	C.3
20	S.G.	Convening of the Conference	PL
21	German D.R.	Comments to some technical criteria of frequency planning in LF and MF Broadcasting	PL
22	France	Proposals	PL
23(Rev.) + Corr. 1, 2, 3	S.G.	Notifications to International Organizations	PL
24(Rev.) + Corr.	S.G.	Invitations to the first session of the Conference	PL
25	New Zealand	Proposals	PL
26	France	MF Broadcasting. Antenna with high back protection	PL

No.	Origin	Title	Destination
27	France	LF/MF Broadcasting-Directional antennae	PL
28	Zambia	Proposals	PL
29	Zambia	Proposal alternative modulation system for LF/MF sound broadcasting	PL
30	Zambia	National Broadcasting frequency 818 kHz Chisamba 28/17-14526	PL
31	Zambia	Preparatory work required of each Administration before the forthcoming Conference	PL
32	Pakistan	Clarification in respect of protection ratio as discussed in document No. 15	PL
33	Netherlands	Proposals	PL
34	S.G.	Situation of the frequency bands allocated exclusively or otherwise to LF/MF broadcasting in Regions 1 and 3	C.4, 5 & 6
35	Japan	Proposals	C.4 & 5
36 + Corr.	India	Proposals	C.4
37	Philippines	Proposals	C.4 & 5
38	Belgium	Some considerations on the interference caused by broadcasting stations to the aeronautical radionavigation service	C.4
39	S.G.	Committee structure	PL
40	E.B.U.	Contribution to the I.T.U. Broadcasting Conference	C.4 & 5
41	S.G.	Extracts from the Master International Frequency Register	C.4, 5 & 6
42	C.4	Terms of reference of Committee 4	PL
43	S.G.	Conference Secretariat	PL

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44 (Rev.)	A.S.B.U.	Views on the technical parameters of frequency planning in LF and MF broadcasting	C.4 & 5
45	Finland	A computer method for calculation of ground-wave propagation over mixed paths	C.4
46	S.G.	Situation concerning expenditure for the Broadcasting Conference at 8 October 1974	C.3
47	WG-C2	First report of the working group of Committee 2 (Credentials)	C.2
48	U.K.	Effect of an 8 kHz channel spacing on the quality of reproduction	C.4
49	Italy	Channels for low-power transmitters	C.5
50	S.G.	List of documents	-
51	WG-4B	First report of Working Group 4B to Committee 4	C.4
52 + Corr.	F.R. of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Italy, Malta, Monaco, Norway, Netherlands, U.K., Sweden, Switzerland, Vatican, Yugoslavia	Channel spacing	C.4
53	U.S.S.R.	Draft resolution	PL
54	S.G.	Situation of broadcasting stations in Region 2 vis-à-vis those in Regions 1 and 3	C.4
55	Austria, Switzerland	Frequency changes on operating MF stations	C.5
56	WG-4A	First report of Working Group 4A to Committee 4	C.4
57	WG-4A	Second report of Working Group 4A to Committee 4	C.4
58	WG-4A	Third report of Working Group 4A to Committee 4	C.4

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59 + Corr.1, 2 and 3	Algeria, Burundi, Central African Rep., Ivory Coast, Dahomey, Egypt, Gabon, Gambia, Kenya, Lesotho, Liberia, Libya, Madagascar, Malawi, Morocco, Mauritius, Mauritania, Nigeria, Uganda, Senegal, Sierra Leone, Sudan, Tanzania, Tchad, Togo, Zambia	Channel spacing	C.4
60	WG 4B	Second report of Working Group 4B to Committee 4	C.4
61	WG 4C	Report of Working Group 4C to Committee 4	C.4
62 (Rev.1)	WG 5B	Report by Working Group 5B to Committee 5	C.5
63	C.4	Summary record of the first meeting of Committee 4	C.4
64	C.7	Draft plan for the document containing the decisions adopted at the 1st Session of the Conference	PL
65	WG 4A	Fourth report of Working Group 4A to Committee 4	C.4
66	WG 4A	Fifth report of Working Group 4A to Committee 4	C.4
67 (Rev.1)	Countries from Region 3	Channel spacing	C.4
68	New Zealand	Multi-frequency synchronized networks	C.5

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69	A.B.U.	Report of A.B.U. Study Group 10 on LF/MF planning in the A.B.U. Region	C.4 & 5
70	Byelorussia Bulgaria Hungary Poland German D.R. Ukraine Czecho-slovakia	Uniform channel spacing	C.4
71	C.2	Summary record of the first meeting of Committee 2	C.2
72	C.7	B.1	PL
73	C.4	Note from the Chairman of Comm.4 to the Chairman of Committee 6	C.6
74	C.3	Summary record of the first meeting of Committee 3	C.3
75	C.4	Note from the Chairman of Committee 4 to the Chairman of Committee 6	C.6
76	PL	Minutes of the first Plenary Meeting	PL
77	W.G. of C.2	Second report of the Working Group of Committee 2	C.2
78	W.G. 4B	Third report of Working Group 4B to Committee 4	C.4
79	W.G. 4B	Fourth report of Working Group 4B to Committee 4	C.4
80	W.G. 4B	Fifth report of Working Group 4B to Committee 4	C.4
81	W.G. 4B	Sixth report of Working Group 4B to Committee 4	C.4
82	C.5	Summary record of the first meeting of Committee 5	C.5

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83	Australia	Planning methods	C.4 & 5
84	W.G. 5A	First report of Working Group 5A to Committee 5	C.5
85	C.7	B.2	PL
86	France	Vertical antennae diagrams	PL
87	W.G. 5B	Report of Working Group 5B - Low-power channels	C.5
88	C.3	Summary record of the second meeting of Committee 3	C.3
89	C.5	Summary record of the second meeting of Committee 5	C.5
90	C.4	Summary record of the second meeting of Committee 4	C.4
91	W.G. 5A	Second report of Working Group 5A to Committee 5	C.5
92	C.6	Summary record of the first meeting of Committee 6	C.6
93	C.6	Summary record of the third meeting of Committee 4	C.4
94	C.4	Summary record of the fourth meeting of Committee 4	C.4
95	People's Republic of China	Statement	PL
96 + Corr.1	C.2	Final report of Committee 2 (Credentials) to the Plenary Meeting	PL
97	W.G. 6A	Final report of Working Group 6A to Committee 6	C.6
98 + Corr.	C.7	B.3	PL

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99	C.4	Note from the Chairman of Committee 4 to the Chairman of Committee 5	C.5
100	-	List of documents	-
101	C.4	Note from the Chairman of Committee 4 to the Chairman of Committee 5	C.5
102 + Corr.1	Norway, Yugoslavia	A method in planning	C.5
103	C.4	Note from the Chairman of Committee 4 to the Chairman of Committee 5	C.5
104	C.4	Changes to channel frequencies resulting from the adoption of various channelling arrangements	C.4 and C.5
105	WP-5A	Third report of Working Party 5A to Committee 5	C.5
106	C.6	First report of Committee 6	PL
107	C.5	Note from the Chairman of Committee 5 to the Chairman of Committee 6	C.6
108	C.7	B.4	PL
109 + Corr.1	Algeria, Burundi, Cameroon, Central African Rep. Chad, Congo, Dahomey Egypt, Ethiopia, Gabon, Ivory Coast, Jordan, Kenya, Kuwait, Lebanon, Lesotho, Libya, Madagascar, Malawi, Mauritania, Mauritius, Morocco, Nigeria, Saudi Arabia, Senegal, Syria, Tanzania, Togo, Zaire, Zambia	Draft resolution - channel spacing	C.4

No.	Origin	Title	Destination
110	F.R. of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Italy, Malta, Monaco, Norway, Netherlands, United Kingdom, Sweden, Switzerland, Turkey, Vatican City State, Yugoslavia	Channel spacing	C.4
111		(Not used)	
112	WG-5A	Fourth report of Working Group 5A to Committee 5	C. 5
113	Australia, Korea, India, Indonesia, Iran, Japan, Laos, Malaysia, New Zealand, Pakistan, Philippines, Singapore, Thailand, Papua New Guinea	Channel spacing	C. 4
114 + Corr.	Rep. of Korea	Statement	PL
115	C.6	Second and last report of Committee 6	PL
116	C.4	Summary record of the fifth meeting of Committee 4	C.4
117	Sub-Group PLEN-A	Draft resolution - Report of the First Session	PL
118	PL	Minutes of the second plenary meeting	PL
119	Drafting Group C.4	Report of drafting group to Committee 4	C.4

No.	Origin	Title	Destination
120	Albania	Declaration	PL
121	Norway	Text proposed for the amendment of Document No. 87	PL
122	C.3	Report of the budget control Committee to the Plenary meeting	PL
123	Chairman	Note by the Chairman of the Conference (Statement of the German Democratic Republic)	-
124	C.7	B.5	PL
125	Viet-Nam	Declaration	PL
126		Draft Resolution	
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128 (Rev.1)	C.4	Summary record of the sixth meeting of Committee 4	C.4
129	C.7	B.6	PL
130	C.7	B.7	PL
131	C.7	B.8	PL
132	C.5	Summary record of the third meeting of Committee 5	C.5
133 + Corr.1	C.4	Summary record of the seventh meeting of Committee 4	C.4
134	Rep. of Korea	Statement	PL
135	Chairman	Note by the Chairman of the Conference (Letter from the Fed.Rep. of Germany)	-
136	C.6	Summary record of the second meeting of Committee 6	C.6
137	C.5	Summary record of the fourth meeting of Committee 5	C.5
138	C.3	Summary record of the third and last meeting of Committee 3	C.3

No.	Origin	Title	Destination
139	Byelorussia, Ukraine and U.S.S.R.	Letter to the Chairman of the Conference	PL
140 + Add. 1	C.7	R.1	PL
141	C.7	B.9	PL
142	C.5	Summary record of the fifth meeting of Committee 5	C.5
143	PL	Minutes of the third plenary meeting	PL
144	Chairman	Note by the Chairman of the Conference (Letter from French Delegation)	-
145	C.7	B.10	PL
146	United Kingdom	Statement - Channel spacing	-
147	C.7	Summary record of the first meeting of Committee 7	C.7
148	PL	Minutes of the fourth plenary meeting	PL
149	PL	Minutes of the fifth plenary meeting	PL
150	PL	Minutes of the sixth plenary meeting	PL
151	PL	Minutes of the seventh plenary meeting	PL
152	PL	Minutes of the eighth plenary meeting	PL
153	PL	Minutes of the ninth plenary meeting	PL
154	PL	Minutes of the tenth plenary meeting	PL
155	C.4	Summary record of the eighth meeting of Committee 4	C.4
156	C.4	Summary record of the ninth and last meeting of Committee 4	C.4

No.	Origin	Title	Destination
157	C.5	Summary record of the sixth meeting of Committee 5	C.5
158	C.5	Summary record of the seventh and last meeting of Committee 5	C.5
159	C.6	Summary record of the third meeting of Committee 6	C.6
160	C.6	Summary record of the fourth and last meeting of Committee 6	C.6
161	-	List of participants	-
162	-	List of documents	-