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



by
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1. Introduction

At the opening of the Regional Administrative LF/MF Broadcasting Conference on 6 October 1975, the Secretary-General of the International Telecommunication Union, Mr. M. Mili, said:

"To begin with, we note that this is the first time the ITU has had to prepare a plan designed to meet the immediate and vital needs of so many human beings.

"The total population of Africa, Asia and Europe taken together is 3235 million. And when we consider that broadcasting is directed at the individual listener and

that long and medium waves have so wide a range, I wonder whether any international conference has ever before had the task of serving the basic needs of so many.

"You are however concerned with planning not only for more than six-sevenths of the population of the globe but also for a very large area—so large in fact that when at one extremity of it, it is time for people to go to bed, people at the other extremity have already started their working day."

That statement by Mr. Mili was to highlight the problems and challenges which faced the some 600 odd delegates from 108 nations attending the Conference

from 6 October through to 22 November. The task was completed at 1 a.m. in the morning of 22 November when the Final Acts were signed.

2. Background

2.1 Reason for the Conference

The primary reason for the Conference, arising from a resolution adopted at the African LF/MF Broadcasting Conference (1966) was to draw up an Agreement and an associated frequency Plan for the whole of Regions 1 and 3 taking into account such plans as then existed.

And we must recall two things: only two plans existed for the areas concerned: one, the old Copenhagen Convention of 1948 with 25 signatories covering part of the European Broadcasting Area, and the other the 1966 Africa Broadcasting Plan covering continental Africa; for Asia and the rest of Regions 1 and 3 no plan had existed at all.

It must also be recalled that the First Session of this Conference, held in October 1974, drew up the technical parameters to be used in establishing the Plan and, as it transpired, to be used in the implementation of the Agreement and the Plan. There were two important decisions which emanated from the First Session and which undoubtedly contributed to the success of this session of the Conference. The first of these was an agreement on the propagation methods to be used, and there were four of them used in Regions 1 and 3 in establishing the Plan (one ground wave, three sky wave). The second was the important decision not only to move from 10 kHz to 9 kHz channelling throughout the two regions but also that the carrier frequencies would be an even multiple of the channel spacing. Although this decision was undoubtedly in the best interests of the regions, it of course had an unfortunate consequence for Europe since it meant that the 8 kHz channels agreed upon under the 1948 Copenhagen Convention would disappear, and in effect Europe would lose one channel under the new Plan. It is believed that this has, at least to some extent, been offset by the unification of channel spacing throughout Regions 1 and 3.

2.2 Convening of the Conference

The Regional Administrative LF/MF Broadcasting Conference for Region 1 (Africa and Europe) and Region 3 (Asia and Oceania) was convened by the Administrative Council of the ITU to draw up an Agreement and a Plan for LF and MF broadcasting in Regions 1 and 3.

It was decided that the Conference should be in two sessions; one which was held in October 1974 to draw up the technical basis for the establishment of an Agreement and Plan, and the second (the present one) for a duration of seven



(Marconi)

How it all started ...

weeks between 6 October and 22 November 1975 to devise an Agreement and a frequency Plan for LF/MF broadcasting for Regions 1 and 3.

2.3 Previous international Agreements

A. The Copenhagen Convention (1948) made provision for broadcasting in Europe and involved just 25 European countries. The Plan was limited in nature and did not of course include the technical developments, particularly in propagation, which have taken place over the last 27 years.

B. The Africa Plan (1966), which was drawn up under the umbrella of the ITU, has proved to be mostly satisfactory for Africa (even though only approximately 10% of the Plan has been so far implemented) except for increasing interference problems from Europe.

For Asia and Oceania, containing approximately three-quarters of the transmitters in operation in Regions 1 and 3, no plan has existed. It was for this reason and because of the incompatibility between the 1948 Copenhagen Plan and the 1966 Africa Plan, and because the Africa Plan could not work satisfactorily with departures in Europe from the Copenhagen

Plan, that it was resolved in 1966 to request Members of the Union to convene a Conference of Regions 1 and 3 to draw up an Agreement and a Plan for the whole area.

3. The 1975 Conference (second Session)

The Conference was opened on 6 October by the Secretary-General with 108 delegations attending from the two regions, the total number of delegates being well over 600.

In its seven weeks' duration the Conference dealt with 10 000 frequency requirements, of which 4000 were for existing transmitters, and considered, in addition, 315 documents submitted by Members.

It produced a 14-article Agreement with two annexes: one the 274-page Frequency Plan, the other the technical data for implementing the Plan; nine resolutions; five recommendations; a final protocol and three additional protocols; in all totalling some 450 pages.

The Agreement and Plan come into force at 00 h 01 GMT on 23 November 1978.

4. Committees

As is usual at administrative conferences, conventional committees were established for steering, credentials, budget control and editorial purposes.

In addition two special committees were established for the Agreement and for the Frequency Plan.

The full list of committees is:

- Committee 1—Steering
- Committee 2—Credentials
- Committee 3—Budget Control
- Committee 4—Planning
- Committee 5—Agreement
- Committee 6—Editorial

4.1 The task of Committee 5 (Agreement)

To establish a Regional Agreement concerning the use by the broadcasting service of frequencies in the LF and MF bands allocated to that service in Regions 1 and 3, giving due consideration to the provisions of No. 47 of the Convention and the relevant provisions of the Radio Regulations, and to determine which of the data relating to a frequency assignment are to be included in the Plans.

4.2 The task of Committee 4 (Planning)

To establish, on the basis of agreed technical criteria, Frequency Assignment Plans to be associated with the Regional Agreement for broadcasting stations in Regions 1 and 3 in the LF/MF bands allocated to the broadcasting service; the Frequency Assignment Plans in the bands 150-285 kHz and 525-535 kHz shall take into account the other radio services to which, according to the Table of Frequency Allocations, these bands are also allocated.

5. The work of Committee 5 (Agreement)

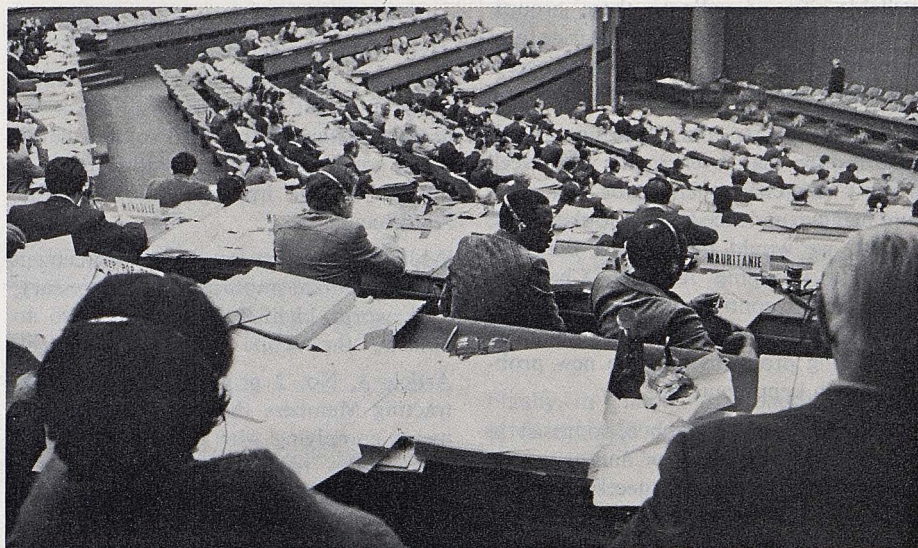
Committee 5, the Agreement Committee, had the difficult task of drawing up what was in effect a legal agreement between Members of the Union. In this, they were ably assisted by the Union's legal adviser and by Committee 6, the Editorial Committee, all working closely together to ensure that the articles of the Agreement, firstly, achieved what the Members desired, and secondly were in such a form as to be appropriate for an international treaty.

The Agreement itself is in fact quite brief, consisting of 14 articles. These range from procedures for modifications to the Plan, notification of frequency assignments and scope of application of the Agreement through to formal articles on approval, accession, termination, effective date and duration of the Agreement, and take into account the Abrogation of the European Broadcasting Convention (Copenhagen, 1948) and the Africa Plan (1966).

Of the important things that the Agreement provides for, is to take into account the frequency requirements of those few countries not represented at the

Conference and also to provide for inclusion in the Plan of the frequency requirements of any territories who may later become Members of the Union (Resolution B). In addition, the Conference took special heed of the needs of the developing countries and this is reflected both in the Agreement and the provisions made in the Plan (also Recommendation EE).

The Agreement has two annexes, one consisting of the Frequency Plan and the other containing the technical data to be used in implementing the Plan. It also includes nine resolutions and five recommendations.



A meeting in session



Signature of the Final Acts

6. The work of Committee 4 (Frequency Plan annexed to the Agreement)

Committee 4, which was charged with the drawing up of the Plan itself, had a mammoth task on its hands with the need to fit 10 000 frequency requirements into the available 120 MF channels and 15 LF channels. To do this, 11 groups were set up; one group for the low frequency band used in Europe only, and the other 10 groups for the medium frequency band used elsewhere in the two regions. Each of the 10 MF planning groups was made responsible for 12 of the 120 channels available. To co-ordinate these groups, three regional groups, Asia, Africa and Europe, were set up to monitor progress in each of the major geographical areas.

It is a tribute to the Chairmen of all these groups that, even in the fifth week of the Conference when major difficulties were being experienced and it looked as if, at best, we would not have a Plan but merely a shopping list, the Chairmen were able to continue with negotiations between delegates to resolve the numerous outstanding problems and the new problems which kept recurring.

Throughout the Conference, to assist in the multitude of complex and recurring calculations that were necessary, two computers were used almost continuously. The ITU's computer was used to produce a daily update of the interference potential of numerous frequency changes. In addition a remote high-speed computer some 300 km away was hired to update the draft plan on a weekly basis taking into consideration the changes which had occurred during the week in the 10 000 requirements. It is true to say that without these two aids it would not have been possible to produce the 274-page Plan in the time allocated for the Conference. Nor of course would it have been possible, but for the willing co-operation and tireless work of all delegations both during the week and in weekends to arrive at a satisfactory conclusion.

One of the many proposals adopted to facilitate the implementation of the Plan was the introduction of three channels on which only transmitters of 1 kW and below would be allowed. Although it took some weeks to reach agreement on this,

in the event 2500 of the 10 000 transmitters were able to be transferred to these low power channels—indeed an achievement in itself.

7. The Agreement

Consisting of but 14 articles the conciseness and simplicity of the Agreement is a tribute to all those in Committee 5 and its Working Groups who worked hard and for long hours to achieve something which in the most straightforward way reflects in as few words as possible the desires of the Conference.

The preamble itself sets the scene for what follows in recognizing that all countries large and small have equal rights and that the needs of all countries, and in particular the needs of the developing countries, shall be fulfilled as far as possible in the implementation of (the) Agreement.

While all the articles of the Agreement are, of course, important and necessary, it is worth highlighting one or two to indicate the scope of the Agreement.

Article 3, No. 2 provides that the Contracting Members shall not bring assignments complying with the Plan into use, change the technical characteristics of stations specified in the Plan, or bring new stations into use, except under the conditions set out in Articles 4 and 5 of this Agreement (see also Resolution D).

Article 4 is a key article in that it provides in detail for the procedure for modifications to the Plan. It covers such items as proposed changes in the characteristics of an assignment or the bringing into use of a new assignment; channels other than low-power channels; low-power channels; additional provisions for channels in shared bands; provisions common to all channels and cancellation of assignments.

Article 5 ties the frequency assignments in the Agreement into the Master International Frequency Register.

Article 6 makes special provision for Members to conclude Special Arrangements in accordance with the Radio Regulations and the International Telecommunication Convention.

Articles 11 and 12 provide for abrogation of the European Broadcasting Convention

(Copenhagen, 1948) and the Regional Agreement for the African Broadcasting Area (Geneva, 1966).

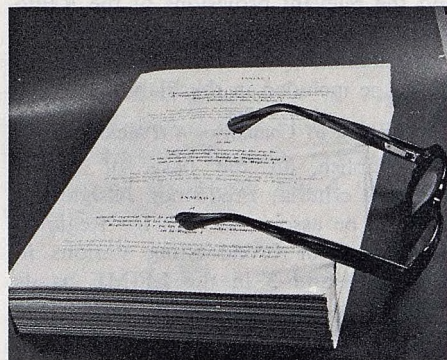
And finally Article 14 provides for the Agreement to meet the requirements of broadcasting services for a period of 11 years from entry into force (a total of 14 years from now).

8. The Plan

8.1 The Plan itself

The 274-page Plan forming Annex 1 to the Agreement is by far the largest and most complex plan ever produced by Members of the Union.

The 15 columns on each page of the Plan provide all the basic data necessary for the operation and planning of some 10 000 9 kHz spaced transmitters throughout Regions 1 and 3.



Annex 1—Final Acts

Apart from the basic characteristics necessary for appropriate processing either in bi-lateral or multi-lateral agreements or by the International Frequency Registration Board (IFRB), columns 8 to 13 inclusive specify, in detail, radiation characteristics; while column 15, the "Remarks" column, provides valuable information on co-ordination which has been effected or is still to be effected.

The Plan is in one way a triumph of modern technology since, but for the application of that remarkable machine, the high-speed computer, such a Plan could not have been produced in the time allotted.

In another way, the Plan is a triumph of human ingenuity. But for the dedication and co-operation of the whole Conference, both delegates and staff, operating with a single-minded determination to produce a workable system, again, such a plan could not have been produced.

The Plan is not, of course, perfect. No plan designed to operate in the real world could ever be that. There are more assignments in the Plan than many of us would wish to see. Some of us would like to have seen multiple lower power transmitters in place of single higher power ones. More directional antennas could perhaps have been specified.

But, nevertheless, in a practical international conference seeking practical solutions there is little doubt that the Plan represents a remarkable compromise to the problems that faced the Conference when it commenced on 6 October.

8.2 Appendices to the Plan

There are two important appendices attached to the Plan, both of which are novel in the annals of the ITU. The first deals with low power channels while the second concerns antenna gains for directional antennas.

8.2.1 Appendix 1 — Low power channels

The fundamental importance of this appendix is that of the total requirements of 10 000 transmitters, 2500 of them are contained in this appendix which basically limits the transmitter power to 1 kW (e.m.r.p.). Because of the low power, the characteristics are simplified and problems of sharing are considerably reduced.

8.2.2 Appendix 2 — Directional antennas

This appendix provides for information to be recorded on directional antennas used with transmitters in the Plan. The gain is specified for every 10° both in azimuth and elevation while three columns give the country or geographical area symbol, the channel frequency and the name of the transmitting station.

A significant reduction in interference has been effected in the Plan by the fairly extensive use of directional antennas where characteristics are specified in this appendix.

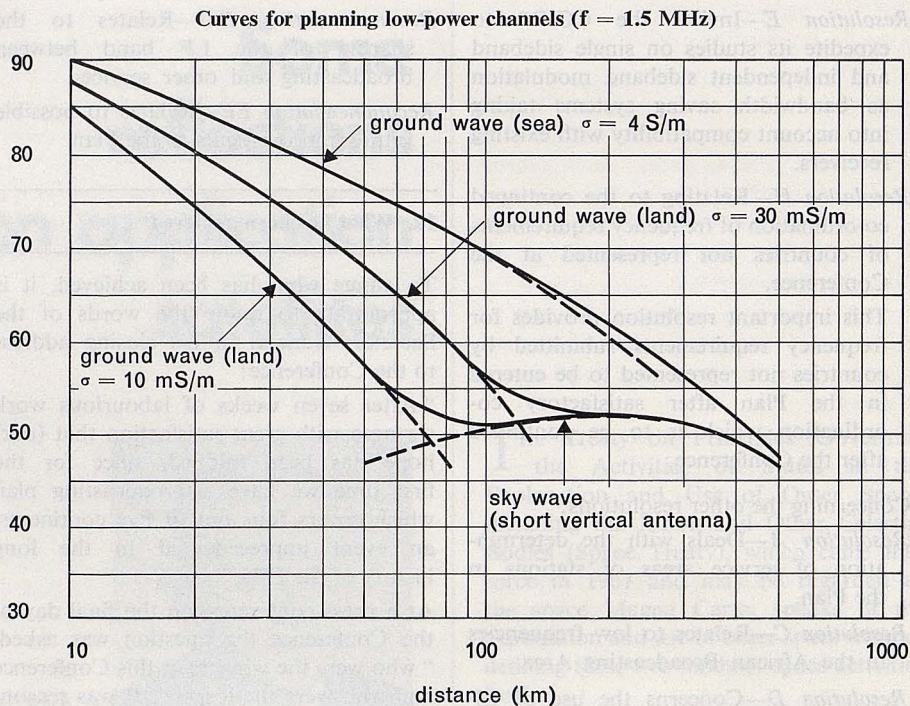


Figure 25 (Annex 2—Final Acts)—Field strength dB (μ V) for an e.m.r.p. of 1 kW or a c.m.f. of 300 V, in the horizontal plane

... one of the important technical standards used

9. Technical data

Neither the Agreement nor the Plan could have been successful without the technical basis agreed at the First Session of the Conference in 1974.

Annex 2 to the Agreement specifies the "Technical data used in the preparation of the Plan and to be used in the application of the Agreement".

It consists of four chapters and is derived from the technical basis agreed at the First Session.

Fundamentally the technical data provides for the operation of 120 channels in the MF band and 15 channels in the LF band spaced at 9 kHz with the carrier frequencies an even multiple of the channel spacing.

Ground wave and sky wave methods of propagation are specified including three different methods of sky wave propagation depending on geographical area. Chapter 1 introduces some important definitions including the concepts of usable field strength (E_u) and nominal usable field strength (E_{nom}).

Finally, in Chapter 4, broadcasting standards are laid down, two more unusual ones being: 4.8 "Low power channels" and 4.9 "Transmitter siting tolerances".

10. Resolutions

There are nine resolutions appended to the Final Acts of the Conference.

While, clearly, all of these are important to the operation of the Agreement, one or two are perhaps unusual and deserve special mention.

Resolution B—Relating to the accession to the Agreement of countries not represented at the Conference and which did not send their frequency requirements.

This provides for such countries to accede to the Agreement and resolves that administrations shall endeavour to make satisfactory provision for them by, for example, agreeing to an increase in the usable field strength.

Resolution E—Invites the CCIR* to expedite its studies on single sideband and independent sideband modulation as bandwidth saving systems taking into account compatibility with existing receivers.

Resolution H—Relating to the continued co-ordination of frequency requirements of countries not represented at the Conference.

This important resolution provides for frequency requirements submitted by countries not represented to be entered in the Plan after satisfactory co-ordination which is to be continued after the Conference.

Concerning the other resolutions:

Resolution A—Deals with the determination of service areas of stations in the Plan.

Resolution C—Relates to low frequencies in the African Broadcasting Area.

Resolution D—Concerns the use of LF bands shared with other radiocommunication services.

Resolution F—Deals with updating of the Master International Frequency Register when the Agreement enters into force.

Resolution G—Relates to frequency assignments in low power channels.

Resolution I—Deals with Member countries not represented at the Conference and non-Member countries.

11. Recommendations

Five recommendations form part of the Final Acts.

Recommendation AA—Requests administrations to send to the Director, CCIR, the results of measurements on directional antennas for inclusion in a handbook on the subject.

Recommendation BB—Provides for administrations to use the most up-to-date CCIR propagation methods in their bilateral negotiations.

Recommendation CC—Deals with the convening of a conference competent to revise the Agreement in 1989.

* International Radio Consultative Committee.

Recommendation DD—Relates to the sharing of the LF band between broadcasting and other services.

Recommendation EE—Relates to possible future improvements to the Plan.

12. What has been achieved

To gauge what has been achieved, it is appropriate to quote the words of the Secretary-General in his closing address to the Conference:

“After seven weeks of labourious work we note with great satisfaction that (our) hope has been fulfilled, since for the first time we have a broadcasting plan which covers four out of five continents, an event unprecedented in the long history of the ITU.”

At a press conference on the final day of the Conference the question was asked, “who were the winners at this Conference and who were the losers”. It was reasonable to reply that there were no losers because everyone who had been to the Conference gained something out of it, admittedly some more than others.

Clearly the result for Asia and Oceania had been a success story. For the first time in the history of the ITU there was a medium frequency broadcasting plan for such an area in which nearly half the world's MF transmitters are located.

For Europe, without doubt the most seriously congested area in MF broadcasting, the result is rationalization of needs and a clear plan of what Europe must do for the next 14 years to bring order out of chaos and to achieve a satisfactory broadcasting service for the area.

For Africa, the rationalization in Europe and the Plan for Asia and Oceania means that the 1966 Africa Plan now updated and incorporated in the new Agreement can be regarded by the developing nations of Africa as a sound basis for their future broadcasting development.

Perhaps most important of all, the Agreement makes adequate provision for the emerging broadcasting services of the developing nations in relation to those services in the developed nations and provides equal opportunity for all nations both large and small.

The Agreement with its two annexes, nine resolutions, five recommendations, final protocol and three additional protocols consists of some 450 pages, and it would be fair to say that most of those pages are crammed full of data on which MF and LF broadcasting in Regions 1 and 3 will be based for the next 14 years.

13. The Final Acts

The Final Acts of the Conference were signed at 1 a.m. on the morning of Saturday the 22 of November 1975, and may be regarded as a triumph of co-ordination and co-operation at international level and a significant milestone in the history of the ITU.

14. Transitional needs

The Agreement comes into force at 00h01 GMT on 23 November 1978.

It is clearly necessary for all countries to begin planning now for the change to the requirements of the Agreement to ensure that in three years' time there will be an orderly and smooth transition to the new Agreement with the change to 9 kHz spacing and the consequent change in carrier frequencies.

It is also desirable that in all countries, the general public, who will ultimately benefit from the Agreement, be made aware of the proposed changes in good time.

15. Conclusion

No one would deny the challenge that a Conference of this magnitude presented. Nor could it be said during the Conference that the way ahead was always clear or that ready solutions were always at hand.

The seven-week span, full of intense activity, yielded at its end success. This is attributable, not only to the co-ordination and co-operation of all, but to the clear-sighted objective that was always before us—the betterment of broadcasting in the world.

Without doubt that objective was achieved.

(Original language: English)