INTERNATIONAL RADIO CONSULTATIVE COMMITTEE

C.C.I.R.

XIIth PLENARY ASSEMBLY

NEW DELHI, 1970

VOLUME VII

INFORMATION CONCERNING
THE XIIth PLENARY ASSEMBLY
STRUCTURE OF THE C.C.I.R.
LISTS OF TEXTS ADOPTED BY THE C.C.I.R.

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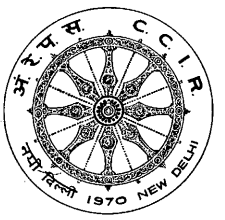

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PLAN OF VOLUMES I TO VII
XIIth PLENARY ASSEMBLY OF THE C.C.I.R.

(New Delhi, 1970)

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MINUTES OF THE FORMAL OPENING SESSION

(Wednesday, 21 January 1970 at 1100 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

The opening session of the XIIth Plenary Assembly of the International Radio Consultative Committee took place at 1100 hours in the Plenary Meeting Hall of the Vigyan Bhavan in New Delhi.

1. Opening of the meeting and introduction of the Chairman of the XIIth Plenary Assembly

The *Director of the C.C.I.R.* opened the meeting and recalled that, under the provisions of No. 663 of the General Regulations annexed to the International Telecommunication Convention (Montreux, 1965), the Chairman of the Plenary Assembly would be appointed by the inviting Government. He therefore requested Mr. N.C. Shrivastava, Head of the Delegation of India, to take the Chair.

2. Welcome by the Chairman of the XIIth Plenary Assembly, Secretary, Department of Communications

The *Chairman* said:

"It is my proud privilege to welcome you all for today's inaugural function. The presence of so many eminent scientists and experts in the field of radio and telecommunications is a source of great encouragement and will undoubtedly stimulate developments in these fields in India. The presence in our midst of our esteemed Minister for Information, Broadcasting and Communications has added special significance to this function, for it is due to his personal interest that India has been able to host this momentous Conference. The dates of the Conference have been specially fixed to give an opportunity to our distinguished visitors to enjoy Delhi weather at its best and to participate in our national festivities to celebrate the Republic Day. I do hope that the delegates will enjoy their stay in our country and take back happy memories of the Conference and of India.

It is not the first occasion that India has hosted an International Telecommunication Union Conference of this magnitude. During November-December 1960, the IInd Plenary Assembly of the International Telegraph and Telephone Consultative Committee was held in this very building. Since then, more facilities including additional accommodation have been added to this building and I do hope the participants will be satisfied with the arrangements we have been able to make.

Before I proceed further, I would like to express my grateful thanks to the Assembly for the confidence reposed in me by electing me as Chairman of this Plenary Assembly of the International Radio Consultative Committee. I am fully aware of the heavy responsibilities that I shall have to shoulder. With the valuable help and advice of the Vice-Chairman, the distinguished Delegates and the Director of the C.C.I.R., I shall do my best to do justice to this office.

A great tragedy not only to the International Telecommunication Union but also to our country befell since the last Plenary Assembly of the C.C.I.R., in the sudden demise of Dr. M.B. Sarwate, Secretary-General, International Telecommunication Union, in February 1967. An eminent engineer in the field of electronics and radio, Dr. Sarwate held important positions in the Government of India and in the International Telecommunication Union, as head of that organisation. Mrs. Sarwate is present in our midst today and I would take this opportunity to convey our heartfelt condolences to her and to other members of the bereaved family. I propose that we may honour Dr. Sarwate's memory by standing up and observing a minute's silence.

(The Assembly rose in homage to the memory of Dr. Sarwate.)

The place of Dr. Sarwate has been taken by Mr. Mohamed Mili, who was the Deputy Secretary-General of the Union earlier. We are indeed fortunate in having a person of the calibre of Mr. Mili in this key position. He has already amply displayed qualities of leadership, understanding and competence in performing the duties of Secretary-General. We, from the developing countries are particularly impressed by his active interest in the field of technical assistance particularly to the developing countries. I extend a hearty welcome to Mr. Mili.

Strides taken in the recent years in the field of telecommunication all over the world, have been significant and spectacular. In India, we have expanded our telecommunication services in a big way and we shall soon participate in the Global Telecommunication System through satellites. The first Indian Communications Satellite Ground Station to work in conjunction with the satellite over the Indian Ocean is nearing completion and this will be a landmark in the field of telecommunications in India. The conventional overhead trunk telephone lines have been, to a large extent, replaced by multichannel coaxial cables and microwave relay links. A subscriber trunk dialling system has been provided between many important cities and is being further extended. We have now a countrywide medium wave broadcasting service catering to the requirements of the regional population, besides high frequency broadcasting for interregional broadcasts and external services. The number of broadcast receivers in use in the country has increased to nearly 10 million. We have recently made a small beginning in the field of television and hope to expand this service. The presence of telecommunication experts from many countries where the science of telecommunications has reached a very advanced stage, gives an excellent opportunity to our technical experts to benefit from the discussions during the Conference and from informal exchange of views on many connected topics. The science of telecommunications knows no barriers and the very fact that the International Telecommunication Union has such a large number of Member countries is positive proof of the goodwill and cooperation prevailing between telecommunication experts all over the world.

In conclusion, I would like to assure that my colleagues and I shall do our best to help in the smooth running of this Conference and to make the stay of the participants here both pleasant and enjoyable.

Thank you."

3. Address by Professor Sher Singh, Minister of State for Communications

His Excellency, the Minister of State for Communications, said:

"It is a great honour and pleasure to be asked to address you at the inauguration of this very important international conference. This international body, I understand, is connected with the formulation of the technical characteristics of equipment and systems, for international radio communication. This work is based on the expert knowledge gathered through experiments and experience over several years in various parts of the world, including those countries where the techniques of radio have reached a very advanced stage. Sharing of technical knowledge that follows as a consequence is the most valuable and worthy contribution that this Conference will be making. This aspect is, indeed, of immense benefit to the developing nations such as ours.

Thinking of radio, its first and perhaps most significant impact is its utility as a powerful tool for communication with the masses. These include entertainment and, even more important, the education of the masses for which there is an unlimited scope. Keeping these aspects in mind, I understand that this Committee laid down the standards for a cheap broadcast receiver, so as to ensure its mass production and supply to the developing nations. The results of this effort have already been felt in our country, as evidenced by the fact that there has been a tenfold increase in the number of broadcast receivers in use, during the decade that has passed. Apart from entertainment, through the medium of radio broadcasts, education is imparted on various subjects of utmost importance, such as agriculture, family planning, animal husbandry, industrial techniques, etc. Using the means of television, we have been

able to arrange demonstrations and lectures by eminent teachers and scientists, available to schools and colleges in and around Delhi and in the near future we hope to extend this facility over the length and breadth of the country.

During the Conference, you will be dealing with many other aspects of the application of radio, by keeping pace with developments in other fields. A common example is perhaps air travel. Speeds of aircraft have increased with the ushering in of the jet age and with the general technological and industrial progress, the traffic has also increased enormously. These advances call for much quicker transmission of weather and traffic information, as well as more sophisticated aids for safe navigation of aircraft, using automatic guidance and landing devices, operated through the means of electronics and radio. It is gratifying to note that in all these practical aspects you have not merely been able to keep pace with the developments —in fact, you have always been ahead in your achievements and thinking. Otherwise, the facility of space travel, culminating in the landing of man on the moon, would not have been possible. With the rapid strides in technology, more challenging tasks will be forthcoming and I am quite sure the experts will solve them satisfactorily.

In the electronics industry, India has made good progress during the last two decades, both in the private and public sectors. We have also made a modest beginning in exporting broadcast receivers, telephone and telegraph equipment and also wireless communication apparatus.

In all this progress, we have drawn upon the guidance available from the studies made by this Committee and the reports and recommendations formulated by it. It is, therefore, a very great pleasure for us to have this opportunity of the C.C.I.R. meeting here.

I wish you all a very successful Session and an enjoyable stay in Delhi."

4. Inauguration of the Plenary Assembly by Mr. Satya Narayan Sinha, Minister for Information, Broadcasting and Communications

His Excellency, the Minister for Information, Broadcasting and Communications, said:

"It gives me great pleasure to welcome you all on behalf of the Government of India and on my own behalf to this XIIth Plenary Assembly of the International Radio Consultative Committee. I am grateful to the Organisers for having invited me to inaugurate this Plenary Assembly. This Committee, I understand, is an important organ of the International Telecommunication Union, which has to its credit outstanding achievements in the field of international cooperation and consequent rational development of telecommunications throughout the world for over a century.

The history of telecommunications, commencing with the sounding of drums, through the stages of the semaphore and manual telegraph to the present stage of rapid means of radio communications through the use of satellites, is one of the glorious chapters of man's latest achievements. Telecommunications, today, have entered every walk of life, from the normal exchange of greetings to a stage of highest sophistication in advanced industrial enterprises, navigation and guidance of space craft, including interplanetary vehicles. The result is that, today, telecommunication is as important a part of life as food and water.

The last two decades can truly be called the nuclear age followed by the space age and the inventions made therein are as important for man as inventions of fire and the wheel. The turn of the last decade saw men establishing an orbiting workshop around the earth in space and men walking on the moon. The live television pictures of the moon walks seen by millions of viewers clearly demonstrated the advance in radio technology and also gave them a sense of participation in this fantastic adventure. It is extremely gratifying that these strides in

technology have reached the common man in various countries due to the cooperative effort of the International Telecommunication Union.

As we know, more than half the members of the I.T.U. are from new or developing countries and the people from these countries are looking to the Union with great hope and aspiration that telecommunications, broadcasting and television would be made cheaper still, thus bringing them within easy reach of common man. I would, therefore, appeal to the experts gathered here to keep these sentiments of the several million people at the back of their mind while deliberating on the new developments.

The spectacular developments during the last few decades in the field of telecommunications are mainly due to the combined efforts of scientists and engineers from various nations. Irrespective of nationality, their basic education had been the same, imbibing the spirit of science which is international. You are experts who have acquired this knowledge over a period of time, individually and collectively. It, therefore, gives us great satisfaction to have you here for mutual exchange of views which will undoubtedly result in further improvements in technology and thereby serve humanity in raising their standard of living and provide them with greater comforts.

On this important day in the field of telecommunications in India, we have specially prepared a postage stamp depicting the present theme in this field. I have great pleasure in releasing the stamp and also presenting an album of Indian postage stamps to the Secretary-General of the International Telecommunication Union and to the Director of the International Radio Consultative Committee.

(Presentation)

I wish you all success and hope that you will enjoy your stay and carry with you happy memories of our country."

5. Response on behalf of the visiting delegations

Mr. Per Mortensen (Deputy Head of the Delegation of Norway) said:

"I regret to inform you that Mr. Øvregard, Head of the Norwegian Delegation, was unable to attend this Opening Session. In his place, I am happy to have the privilege of thanking the Host Country for the magnificent arrangements it has made for our Plenary, on behalf of all of us. It is in line with past tradition within the C.C.I.R., that a representative of the Host Country of the previous Plenary should have this responsibility.

The I.T.U. in general and the C.C.I.R. in particular, continue to play an important role for the world's telecommunications. Within the C.C.I.R., the emphasis of work varies somewhat as development proceeds. From our documentation, we can see that space radiocommunications will be an important subject also at this Plenary, because of the rapid development that is taking place.

Technical Cooperation is another important subject which this Plenary will have to deal with. Finally, this Plenary will have to consider the report of an International Working Party, set up by the previous Plenary, which proposes certain organizational changes of the structure of our Committee.

We have come here from all parts of the world. Many participants have done a lot of travelling, but I think I am right in presuming that not so many of us have visited this country and this magnificent capital before. We are therefore looking forward to our stay here in New Delhi with a great deal of expectation and even excitement. We all wish to learn more about this great nation which, since it achieved independence has played such a distinguished role in the world community.

Ladies and Gentlemen, the Indian Administration has invited us to their capital during the best season of the year. For many of us, this means that we shall enjoy a much better climate than we have at home at this time of the year. We are also grateful to our Host for

arranging sightseeing tours in this very interesting city and for the trips to Agra where we shall admire the world famous Taj Mahal.

Again, on behalf of all of us, I thank the Indian Administration wholeheartedly for the kind invitation and I wish our Chairman every luck in carrying through the C.C.I.R. XIIth Plenary Assembly, New Delhi, 1970."

6. Address by Mr. Mohamed Mili, Secretary-General of the International Telecommunication Union

The *Secretary-General of the I.T.U.* said:

"This is the second time that, on the kind invitation of the Government of India, New Delhi is acting as host to an important International Telecommunication Union Conference.

The first occasion was in 1960, when the C.C.I.T.T., on this very spot, in this beautiful Palace of Culture, held its IInd Plenary Assembly, which was without any doubt a historic landmark in the development of world telecommunications.

It was historic because it conferred on the C.C.I.T.T. once and for all a world mission which was further confirmed at its IIIrd and IVth Plenary Assemblies.

New Delhi marked the start of broader C.C.I.T.T. interest in the new or developing countries with their highly specific problems. This interest subsequently led to the creation of the autonomous Working Parties, whose work soon showed itself to be of vital importance.

Even more recently, the Administrative Council decided to establish a post of engineer economist, who will take up duty in Geneva early this year. Furthermore, the present organization of the World Plan Committee and its four Regional Committees is the logical outcome of the new ideas put forward in New Delhi at the time.

President Nehru, that great humanist who has made an indelible impression on the history not only of his country but of the entire post-war world, and who was the shrewdest of judges, honoured with his presence the formal opening meeting of the IInd Plenary Assembly of the C.C.I.T.T., thus giving it an entirely new impetus which has never faltered.

The honour has now fallen to the C.C.I.R. to ensure the continuity of a very fine tradition which finds concrete expression in a wider approach to world problems and in constant renewal.

The wide participation of a large number of delegates from the four corners of the earth is proof of the importance attached to it by the 137 Member countries of the I.T.U. and is an indication of the hopes they pin on it.

I am convinced that the XIIth Plenary Assembly of the C.C.I.R. will be the occasion for a wide exchange of views and, at least I hope, will result in very many ideas taking root during our discussions which will promise a rich harvest for the future.

Accordingly, in a spirit of both pride and humility, I express our most sincere thanks to His Excellency S.N. Sinha, Minister of Information, Broadcasting and Communications, on behalf of the I.T.U., for the great interest he has taken in this Conference. I should also like to thank the Indian Administration in general and in particular, its head, Mr. N.C. Shrivastava, Secretary for Communications, for the splendid way in which they have organized this Conference with a view to ensuring its complete success.

The words of welcome to which we have just listened touched us deeply and our feelings today are commensurate with the honour paid us.

We are all the more intensely moved since we are in a great country which was one of the cradles of human wisdom and which has so often given proof of that wisdom since the Second World War. This great country has made a most effective contribution both towards fostering the brotherhood of mankind and reinforcing world peace. It has also contributed to the development of science through outstanding scholars such as Dr. J.C. Bose, Sir C.V. Raman, Professor S.K. Mitra and Dr. H.J. Bhabha, who was lost to the international scientific community while still in the prime of life.

India's international vocation, so familiar to everyone, is one of the basic features of this great country's policy. This vocation is reflected in its very special interest in everything related to international cooperation, and particularly in those aspects that might contribute to the maintenance of peace and to closer friendship among peoples. India has not ceased to give positive evidence of its international vocation in the I.T.U. ever since 1868, the year in which this beautiful country became a Member of our Union. And its active participation at the various meetings held by the Union has continued to increase with time. For example, India has traditionally provided a President for the Study Group concerned with the problems of broadcasting in tropical countries. It has also provided the I.T.U. with a Secretary-General, Dr. M.B. Sarwate, who was suddenly taken from us at the height of his activities on behalf of the Union to which he was entirely devoted. His early death was deeply felt, not only by all the Members of the Union who appreciated his extreme competence, intellectual honesty and moral probity, but also by the numerous friends he had made, thanks to his marked personality and his friendly courtesy.

In addresses to an Assembly such as yours, it is a time-honoured custom to stress the special importance of the items on its agenda. However I do so not out of deference to custom but because I sincerely believe that they are of major importance and that this Assembly will have to shoulder great responsibilities about which I should like to say a few words.

Naturally, I have no intention of making a complete survey of the conclusions already prepared by your Study Groups and now before you for approval. These conclusions represent a comprehensive synthesis of all the studies made until now, which touch on every field of the very complex subject of radioelectricity and are part of that sustained effort towards increasing standardization of the characteristics of the various systems involved in radiocommunication.

Through lack of time, I shall touch only on a few aspects. The first and certainly the most important concerns space communication. You are certainly well aware that the I.T.U. Administrative Council, at its 24th Session last May, decided, after consultation with the Members of the Union, to convene a World Administrative Radio Conference for Space Telecommunications to be held in Geneva for a period of from six to seven weeks starting on 7 June 1971.

This decision of the Administrative Council is without any doubt of vital importance for the future development of telecommunications and consequently for that of the I.T.U. It follows that the prospect of this Conference gives a quite extraordinary significance to this XIIth Plenary Assembly, especially as it is the last to be held before that Conference meets.

Your Assembly, as the culminating point of the manifold and complex activities in which you have been engaged for the last ten years with regard to space communications, thus marks a vital stage in the preparation of that Conference.

In this connexion, I feel it might be of some value to recall the powers of Plenary Assemblies as defined in the International Telecommunication Convention.

Number 191 of the Convention states: "The Plenary Assemblies of the International Consultative Committees are authorized to submit to Administrative conferences proposals arising directly from their recommendations or from findings on questions under their study".

Furthermore, numbers 809 and 810 of the Convention state that these Consultative Committees may make proposals for modification of the Regulations and that such proposals

should be sent to the Secretary-General in good time for their appropriate assembly, coordination and communication.

It is therefore for your Assembly to decide which proposals, arising out of the recommendations it adopts or the conclusions of current studies, it wishes to transmit to the Space Conference in 1971.

It should be noted, moreover, that this Conference will be preceded by a meeting of experts early in 1971, to which the C.C.I.R. specialists will undoubtedly once more make a most valuable contribution.

It is for you to determine the terms of reference of this meeting of experts and to work out the most appropriate procedures to ensure that it will be fully successful.

But we would be underestimating the importance of the C.C.I.R. in space activities if we mentioned only the responsibilities, vital as they are, it has to discharge in preparing for the next Space Conference. The reason for the extensive role of the I.T.U. in space matters is not only the fact that satellites offer wonderful possibilities in the most diverse branches of telecommunications but also that any satellite, whatever its purpose, is first and foremost a radio station. The C.C.I.R. therefore bears heavy responsibility for all the applications of satellites.

It is of course, the prerogative of the United Nations to fix general policy governing the peaceful uses of outer space and this has been done by the General Assembly since its Session in 1959. We have only to remember the manifold activities of the United Nations Committee on the Peaceful Uses of Outer Space and the *Space Treaty* which was approved in 1966 and annexed to Resolution No. 2222 of the General Assembly. This Treaty enunciates very clearly the essential principles which must form the basis of international cooperation in space matters.

Several specialized agencies of the United Nations such as UNESCO, W.M.O. and I.C.A.O. as well as a large number of intergovernmental or even non-governmental organizations of a scientific or industrial nature also play an important part in space matters within their respective fields of competence. A basic characteristic of space, however, is that man cannot do anything in that element without the active assistance of telecommunications. The I.T.U. is thus very much concerned in the space activities of these numerous organizations since our Union is at the very centre of all of them.

Two extremely important applications are illustrative of this role, particularly that of the C.C.I.R.: I refer to the uses of satellites in the mobile services, on the one hand, and to direct satellite broadcasting, on the other.

With regard to the latter, in particular, you will recall that the United Nations set up a Working Party to study the various implications of this new means of disseminating information.

The technical part of this Working Party's report was derived mainly from the work of the C.C.I.R. and the Union's competence in this field is clearly recognized. But it is the United Nations and, so far as programmes are concerned, UNESCO which must establish the general framework within which this new broadcasting medium can develop.

Following these few comments on space questions, I should like to mention a second point which should claim your close attention: it was widely debated at the IVth Plenary Assembly of the C.C.I.T.T. in 1968 and is unquestionably of interest for the whole of the I.T.U. I am referring to the question of the setting up without delay at Union headquarters of a statistics service worthy of the name.

The IVth Plenary Assembly of the C.C.I.T.T. tackled this delicate problem with courage and realism and drew our attention to the utility of setting up in the I.T.U. a modern statistical service comparable to those which already exist in other specialized agencies of the United Nations.

You will agree with me that, as many delegations to the IVth Plenary Assembly of the C.C.I.T.T. pointed out in 1968, it is regrettable that our Union does not yet have a modern

statistical service covering telecommunications as a whole. You will wish to discuss this problem thoroughly and, like the IVth Plenary Assembly of the C.C.I.T.T., to give the Secretary-General of the Union the most appropriate directives to expedite the work required to prepare up-to-date statistics that can be of appreciable help to Administrations.

The third point I wish to bring up is important for the future of the C.C.I.R., in as much as it concerns the organization of its work.

In Resolution No. 633, adopted in May 1968, the I.T.U. Administrative Council decided that the XIIth Plenary Assembly of the C.C.I.R. should be held at New Delhi in January/February 1970 and that the C.C.I.R. Study Groups should meet beforehand in Geneva in the second half of 1969. This decision is a great innovation since, for the first time, the final meetings of Study Groups are not being held at the same time as the Plenary Assembly. But this experiment is worth a trial and it is up to you to weigh up the advantages and disadvantages objectively. May I be allowed, however, briefly to recall the main reasons which were at the basis of such an innovation: the desire to stagger the work devolving upon the different Secretariats of the I.T.U., is certainly a major reason, to say nothing of financial considerations.

Moreover, questions such as the following, should be asked: do the delegations of the new or developing countries gain from dissociating the Study Group meetings from the Plenary Assembly? Would not the new system enable some of them to be represented at the Plenary Assembly and to benefit from its rich discussions, which they would not be able to do if it were accompanied by the meetings of the Study Groups?

Lastly, is a period of four months necessary before ratification of the texts, which have already been prepared and approved by Study Groups that comprise the most outstanding specialists of the world in each of the fields concerned?

These are some of the questions which will claim your full attention and which will assist you in making a comprehensive review and drawing the necessary conclusions. I would therefore counsel you to have an unrestricted discussion and not to be afraid of making an extremely thorough analysis, for our technical world is now in a state of constant and rapid evolution which affects radiocommunications more than any other technique. The organizational methods adopted twenty years ago may no longer be suitable.

Furthermore, let us not forget that the next Plenipotentiary Conference will be held in 1972 and that one of its concerns will be to submit the structure of the Union to thorough scrutiny. The lessons to be drawn from this experiment will be extremely valuable to it.

It should be noted, moreover, with considerable satisfaction, that this continual adaptation of administrative structures to the demands of technical progress was already begun with the measures proposed by Working Party PLEN./1 of Mr. Bigi. These proposals clearly show a determination to attain maximum efficiency within the terms of the present Convention.

Likewise, and without wishing to judge the future attributions of the Study Groups, I imagine that these new duties will be part of a logical development whereby greater responsibility is left to the Study Groups and an increasing amount of technical work will be carried out by smaller Working Parties. This new division of tasks at least will have the advantage of partly mitigating the effects of the 3-year cycle to which the work of the C.C.I.R. is subject.

The fourth and last point relates to technical cooperation, which is singularly apt since it was in this Palace of Culture in 1960 that the I.T.U. decided to orientate its activities more broadly in favour of the new or developing countries. I do not intend to make a general report on what the I.T.U. has done in the technical cooperation sector; that would take too long. I shall simply mention two projects which are of special interest to our host country.

First of all, I would mention the space station at Ahmedabad, which was built in close cooperation with the U.N.D.P. and has already trained several classes of engineers and specialized technicians who operate and maintain earth stations. This station will become even more useful to the new or developing countries once the second phase of this important project has been completed.

Secondly, there is the Indian broadcasting satellite project. Work on this project, which is being undertaken and promoted by UNESCO with the active collaboration of the I.T.U., is making good progress, and our Union will certainly give its full attention to its further elaboration in its capacity as the United Nations specialized agency for telecommunications.

It is remarkable that both of these Indian projects are concerned with the use of space for the benefit of the new or developing countries. It was unquestionably a clear example of far-sightedness on the part of the leaders of this country that, at the start of the space era, they were able to grasp the benefits it could bring to the new or developing countries.

But what part can be played by the C.C.I.R. in the complex ensemble represented by all the means deployed by the I.T.U. in providing technical assistance?

The work of the C.C.I.s in the sphere of studies and standardization certainly constitutes a source of information that is unique in the world. The technically advanced countries pool their knowledge and experience in telecommunications from which many countries can profit immediately. This is both an effective and an original form of international cooperation which is peculiar to the I.T.U. and is of interest for all Member countries.

In this way the transfer of the scientific knowledge of the advanced countries to those which are still developing is automatically ensured.

Nevertheless, the C.C.I.R. texts, despite their great value, are not always a ready source of information for new or developing countries. Hence, the value of the handbooks which the C.C.I.s have prepared and will prepare in increasing numbers.

Another procedure followed by the C.C.I.T.T. is worthy of mention, first, because it was conceived here in this beautiful Palace of Culture in 1960 and, second, because it has already produced impressive results. I refer to certain problems affecting the new or developing countries which were entrusted to the Special Autonomous Working Parties.

Similar Working Parties exist in C.C.I.R., namely, the International Working Parties. One of these, for example, deals with the utilization of the geostationary satellite orbit.

Another valuable form of assistance is afforded by the studies undertaken by the C.C.I.s on questions raised by the Regional Plan Committees which especially concern the new or developing countries. These problems may have more direct economic implications than those normally entrusted to the C.C.I.s; I feel that these implications should be considered to be an inherent part of these studies. A significant example which illustrates the aid to be given by the C.C.I.R. in this respect are the studies it is conducting on low-price radio and television receivers.

In conclusion, may I again remind you that the Montreux Plenipotentiary Conference in 1965 stressed the importance of C.C.I. activities on behalf of the new or developing countries. Resolution No. 32 of that Conference requested that "the permanent organs of the Union, by the publication of appropriate documents, such as monographs and selected bibliographies, contribute to the greatest extent possible to expediting the transfer to, and assimilation in, the developing countries of the scientific knowledge and technological experience in telecommunications which are available in the more developed countries.

In short, an important task of this Assembly will be to approve the texts prepared by the Study Groups, but I am sure that, given the progress of technique and the fact that the Assembly is meeting at the start of the second United Nations development decade, you will wish to consider organizational questions most carefully and to direct future work towards more dynamic action on behalf of the new or developing countries.

Ladies and Gentlemen, I have no doubt that, under the wise and competent direction of its Chairman, this Assembly will prove equal to its task and I wish you every success in your efforts."

7. Address by Mr. Jack W. Herbstreit, Director of the C.C.I.R.

The *Director of the C.C.I.R.* said:

"It gives me great pleasure, as Director of the C.C.I.R., to be holding the XIIth Plenary Assembly in this great and wonderful city of New Delhi.

India has been a Member of the International Telecommunication Union for over one hundred years and was the first non-European country to participate in its work. India has long recognized the importance of the work of the C.C.I.R., for at the Washington Radiotelegraph Conference in 1927, it was one of the strongest supporters of the idea of having a C.C.I.R. to provide a technical basis for the important international Radio Regulations that had been brought into force through the various conventions and treaties initiated in the International Telecommunication Union.

India has been one of the outstanding contributors to this work through its very active participation in the Study Groups of the C.C.I.R. and many of the recommendations and conclusions of the C.C.I.R. are based upon the fundamental research and technical studies conducted in this country. As it was one of the first non-European countries to participate in the work of the International Telecommunication Union, the XIIth Plenary Assembly is the first Assembly of the C.C.I.R. to be held in the Asian region. These events demonstrate the leadership which India has shown in the very important field of radiocommunications.

Radiocommunication technology and operational procedures are developing at an ever-increasing rate and the period between the XIth and XIIth Plenary Assemblies has been the most active period in the history of the C.C.I.R. It is the C.C.I.R. that provides the participants with the opportunity to introduce internationally their latest technical and operational developments in the field of radiocommunications. It is through this active participation and cooperation on an international level that the rapidly-expanding requirements for various forms of telecommunications among the peoples of the world can be met.

The radio frequency spectrum is a limited natural resource and, as has been recognized in I.T.U. circles for many years, it is only through the application of sound technical and operational procedures such as are developed in the C.C.I.R. that this resource can most nearly meet international radiocommunication requirements with the maximum of efficiency and a minimum of interference between services.

Outstanding advances since the XIth Plenary Assembly have included the wide application of satellites to provide long-distance communications, adoption of single sideband and selective calling techniques for mobile communications, the expansion of broadcasting and television services and the introduction of colour television in many parts of the world. Initiation of atomic time transmissions on an international basis and the introduction of computer techniques to assist in solving the many and varied multiparameter problems is of importance to a more rational use of the radio frequency spectrum.

It is this Plenary Assembly which will consider the proposals concerning these many important fields of radiocommunications made by the Study Groups for the approval of the Assembly. It is this Plenary Assembly that will consider technical and operating questions of importance to the next World Administrative Radio Conference concerning Space

Communications. It is this Plenary Assembly which will consider a possible reorganization of the work of the C.C.I.R. to better serve the needs of the Members of the International Telecommunication Union; in particular as regards the technical material required by the administrative radio conferences in their preparation of the international rules and regulations regarding the operation in the various radiocommunication services. It is this Plenary Assembly which will consider the best means of assisting the new or developing countries in the application of sound technical principles in the conduct of their international radiocommunication services. Here the C.C.I.R. is providing a means of communicating the latest technical advances amongst the nations of the world through the detailed work of the Study Groups and the opportunity to meet and discuss these findings at this Plenary Assembly.

I believe that the results of this Plenary Assembly will have profound impact on the radiocommunications of the world and that the spirit of cooperation, which I have noticed to be most profound during the preparation of this Plenary, will lead to most fruitful conclusions from our work.

The long experience that India has had with the I.T.U. makes this an ideal location for the conduct of this Assembly and the great cooperative spirit, energy and enthusiasm in the preparation for this meeting leads me only to conclude that a great success will be obtained."

8. Vote of thanks by Mr. V.M. Gogte, Wireless Adviser to the Government of India

The *Wireless Adviser to the Government of India* said:

"It is now my pleasant duty to propose a vote of thanks to all who have contributed to the success of this Inaugural Meeting. We are grateful to the Honourable Minister for Information, Broadcasting and Communications, Shri Satya Narayan Sinha, for so gracefully agreeing to inaugurate this XIIth Plenary Assembly of the C.C.I.R. That you had found time, Sir, amidst your busy schedule of work is indeed a great honour and consideration you have shown to us. The presence of the Honourable Ministers of State, Prof. Sher Singh and Shri Gujral on this occasion is also a source of encouragement and inspiration, particularly because of their interest in the subjects of Communications, Broadcasting and Television. We are indeed most grateful to them.

India's gratitude also goes to the I.T.U. for accepting our invitation to hold this Plenary Assembly in New Delhi and thereby giving our radio engineers an opportunity to meet their counterparts from various other countries. In particular, our thanks are due to you, Mr. Mili, the Secretary-General of the I.T.U., for making it convenient to attend this Assembly.

We are also grateful to the Director, C.C.I.R., Mr. J.W. Herbstreit as well as the Senior Counsellors, Mr. Gadadhar, Mr. Joachim and the C.C.I.R. Staff for helping us to make the required arrangements for the Plenary Assembly. We are also thankful to Mr. Petit, Member of the I.F.R.B. and Mr. Lalou, Senior Counsellor of the C.C.I.T.T. for their presence on the dais today.

We owe an immense sense of gratitude to the distinguished delegates who have arrived here from near and far off countries.

We are also grateful to the Members of the Diplomatic Corps, who have so kindly responded to our invitation for this Inaugural Session. I would be failing in my duty if I do not include our lady guests who have gathered here today and have added a special grace to this occasion. Our hearty thanks are also due to the members of the Press for their presence here. Before I close, I would like to extend my thanks to the members of the Organizational Committee, the Chairmen of various Sub-Committees and their members as well as all those who are working for this Conference to make it a grand success.

Last but not the least, our thanks are due to the authorities in charge of the Vigyan Bhavan for the excellent arrangements they have made for the Conference.

Thank you again, Ladies and Gentlemen."

The meeting rose at 1200 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE FIRST PLENARY SESSION*

(Wednesday, 21 January 1970 at 1500 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized private operating agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.) :*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Opening by the Chairman

The *Chairman*, opening the meeting, said that he was deeply conscious of the honour that had been conferred upon him in asking him to take the chair, but that he was certain, with the aid of the Secretary-General, the Director of the C.C.I.R., and the Vice-Chairmen

* As approved at the eleventh Plenary Session.

to be appointed, together with the delegates, he would be able to carry out his duties to the satisfaction of all concerned. He regretted that governmental duties would occasionally necessitate his absence at certain sessions, when his task would be undertaken by a Vice-Chairman.

3. Approval of the draft agenda

The draft agenda was *approved* without comment.

4. Election of Vice-Chairmen of the Plenary Assembly

The following four Vice-Chairmen were *unanimously approved*, representing the four regions of the world, other than Asia and the Far East:

For Africa:	B. DESTA (Ethiopia)	proposed by Nigeria
For the Americas:	J. RODRÍGUEZ GALÁN (Argentine Republic)	proposed by Canada
For Eastern Europe:	A. BADALOV (U.S.S.R.)	proposed by the Czechoslovak S.R.
For Western Europe:	G. PEDERSEN (Denmark)	proposed by the United Kingdom

5. Survey of work before the Plenary Assembly

The *Director* recalled that the Plenary Assembly was being held differently than assemblies in the past, as the associated Study Group meetings had taken place in Geneva during September and October, 1969. The experts who had met at that time had studied in detail the technical and operating questions before them and the results of their extensive work had been distributed in the form of pink documents, and one of the main areas of work for the Assembly was the consideration of the results of the Study Group meetings, which represented sound technical conclusions.

At the Meeting of Heads of Delegations the previous day, the possibility of modifying the results obtained by the Study Groups had been discussed, but the concensus of opinion would seem to be that the Plenary Assembly could make minor amendments, because it naturally had the final word on the technical considerations before it, but that major changes, unless of an urgent nature, should be discouraged. The Drafting Committee would be in session to consider any points which might need clarification. That Committee would also consider the Reports of the Committees to be set up by the Plenary Assembly.

Some of the main conclusions reached by the Study Groups were in the field of space communications. He did not wish to give over-emphasis to this subject, but had to point out that this had been one of the most rapidly growing fields in the area of C.C.I.R. work, and the new developments had been the most spectacular. This subject had been thrown still more into the limelight, since the I.T.U. was to convene a World Administrative Conference on Space, and the work done in this field by the C.C.I.R. would be of the utmost importance to that Conference. Another task of the Assembly was to consider what work was actually needed to be done to prepare the technical bases for the Space Conference.

Another field of activity was that of Technical Cooperation. Since the Oslo Plenary Assembly, the I.T.U. had played an ever-increasing role in this field, and it was tradition for a Technical Cooperation Committee to be set up by the Assembly. A matter which had arisen during the Study Group meetings was the consideration of the costs of telecommunication systems, particularly with regard to space systems. It was the feeling of the Director that this was neither a technical nor an operational question on the agenda of the C.C.I.R., but that it should be handled through the Technical Cooperation programme. A working group set up by the Secretary-General had been studying this question, which could now also be considered by the Technical Cooperation Committee.

Many of the C.C.I.R. Study Groups had also made recommendations and suggestions concerning computer techniques, which might assist Administrations all over the world in solving their telecommunication problems. Here again, this was a matter for consideration by the Assembly.

All these problems had been summarized in the Director's Report (Doc. PLEN./1), which also gave a more detailed resumé of the activities of each of the fifteen Study Groups. He had great hopes that the documents, as presented by those Study Groups, would receive approval by the Assembly. Their findings would be considered in greater detail, according to the schedule of meetings proposed to the Heads of Delegations.

Mr. Barajas (Mexico) referred to the statement by the Director that the Plenary Assembly should be discouraged from making any major changes, as he believed such a practice might have rather serious repercussions on the work of the Assembly. The outcome of the Study Groups meetings was fundamental from a technical point of view, and it would not seem right that the Assembly should have nothing more to do than to give its blessing to the work. No. 776 of the Montreux Convention laid down very clearly that the Plenary Assembly "shall consider the reports of study groups and approve, modify or reject the draft recommendations contained in these reports". The Convention could only be amended by a Plenipotentiary Conference, and until such a time, the Assembly must abide by its rulings. He was not questioning the quality of the work done by the Study Groups, where the most eminent scientists and engineers had taken part, but would merely wish that the Organization Committee could specify the exact task, in this respect, to be carried out by the Plenary Assembly.

Mr. Stanesby (United Kingdom) said it was the view of his delegation that the responsibilities of the Plenary Assembly, in respect of the handling of Study Group documents, was the same as it had always been. He suggested that the Assembly might want to make a number of changes to that documentation. Most of them were likely to be small, but some might be of a major importance. In his experience, previous plenary meetings of the C.C.I.R. had always exercised good judgment and self-restraint and were not expected to indulge in over-elaborate examination of the highly technical texts placed before them. However, participants in the plenary meeting were not themselves without considerable technical knowledge and should the Assembly decide to make changes of a technical nature in any document, then, the United Kingdom would submit, they had the right to do so. He added that he hoped there would be an opportunity to comment on the Director's Report once all had received copies of it.

Mr. Badalov (U.S.S.R.) said that he had brought up the very point at the meeting of Heads of Delegations as had been raised by Mr. Barajas. He could not share the viewpoint that the Assembly was not entitled to make changes of substance to Study Group documents, should they be required, as such an interpretation would constitute a violation of the Convention, the Assembly being, as it was, the supreme organ of the C.C.I.R. Naturally, restraint would be exercised, but a decision of principle was involved.

Mr. Pedersen (Denmark) agreed with the previous speakers. From his experience the C.C.I.R. had worked extremely well in the past and should continue along the same lines. The progress of technology was so rapid that the Assembly must be very careful about the delay factor, as documents returned to the originating Study Group for reconsideration might well be held up for another three years, so that the Assembly should make such changes if thought really necessary.

The *Director* fully agreed that the Assembly was supreme and was bound by the Convention, which entitled it to make any changes in Study Group texts it desired. He also agreed with previous speakers that restraint should be exercised when making major modifications of a substantial nature.

It was *agreed* that the Assembly would proceed on this basis.

6. Formation of special Committees

The Plenary Assembly unanimously decided to set up four committees, with the Chairmen as follows:

Finance Committee: Chairman: L. BARAJAS (Mexico) (proposed by Spain)

Organization Committee: Chairman: A. BIGI (Italy) (proposed by the U.S.A.)

Technical Cooperation Committee: Chairman: V.M. GOGTE (India) (proposed by Canada)

Drafting Committee: Chairman: M. THUÉ (France) (traditionally chaired by France)

The *Chairman* requested those delegations wishing to take part in any of the special committees to hand in names to the respective Chairmen.

With regard to the composition of the *Drafting Committee*, the *United Kingdom* nominated *Mr. P. Parker* and *Spain* nominated *Mr. B.A. Duran* to take part in the work for the English and Spanish languages, respectively. The delegations of *Mexico, the Argentine* and *Cuba* expressed their desire to collaborate fully for the Spanish language.

The *Chairman of the Drafting Committee*, after having thanked the Assembly for the confidence placed in him, called for the collaboration of members of other French-speaking delegations.

The setting up of a new Working Group on Space

The *Chairman* recalled that it had been proposed in the meeting of Heads of Delegations that such a Working Group be set up, to draw up the agenda for the Special Meeting envisaged to prepare the bases for the World Administrative Conference on Space.

Mr. Huffcutt (United States) requested that Mr. Stanesby nominate a member of the United Kingdom delegation as Chairman of the Working Group.

Mr. Stanesby (United Kingdom) nominated *Mr. J.K.S. Jowett* and requested him to say a few words on the subject of the Working Group.

Mr. Jowett (United Kingdom) said that he was honoured by the invitation to chair the Working Group and would do his best to assist the Assembly in its work. In his view, the task of the Group would be to draft an agenda for the meeting of C.C.I.R. experts which was due to be held in about one year's time. It had to be done at the present meeting, and would be rather intricate, as large areas of work must be comprised, and care must be taken not do be too diffuse. It was important to all Administrations, whether present or not, as only by a published agenda could they prepare adequately for the meeting of experts. He therefore requested nominations for this working group of experts familiar with space communications work, and with all work involved with spectrum sharing or use of the frequency spectrum between terrestrial and space services. The Group would essentially be quite a small drafting group, which would quickly put a draft agenda before the Assembly for approval.

The *Director of the C.C.I.R.* said that he had already presented his views concerning the work to be done prior to the World Administrative Space Conference, in Doc. PLEN./5. He felt that Mr. Jowett had presented a very good summary concerning the agenda for the Meeting of Experts, but it was up to the Assembly to decide on the terms of reference of the Working Group, after full discussion.

Mr. Sathar (Pakistan) said that he had not yet received Doc. PLEN./5 and recalled that at the meeting of Heads of Delegations it had been proposed that a general discussion should take place on that important matter, which was of great interest to a number of countries. He would therefore prefer that such a discussion take place prior to making a decision on the formation of the Working Group.

Mr. Ranzi (Italy), Chairman of Study Group IV, said that the proposal to form this Working Group had been somewhat of a last-minute decision, and thought that discussion on Doc. PLEN./5 should first take place. It had to be first seen whether the setting up of such a Group was within the regulations or not. In his own opinion, any modification of existing texts could only be adopted by Study Group IV. He was afraid that the formation of any new committee might prove unnecessary and only produce conflicts and delays. He stressed that Study Group IV, together with experts from other Study Groups, would appear to be competent to prepare the bases for the World Administrative Conference on Space.

Following a suggestion by the *Chairman* and with the agreement of *Mr. Stanesby* (United Kingdom), it was *decided* that no decision would be taken on the formation or terms of the Working Group on Space, until Doc. PLEN./5 had been thoroughly discussed on the morning of Friday, 23 January.

7. Attribution of PLEN./documents

Upon the proposal of the *Chairman*, it was agreed that Docs. PLEN./1 and 5 would be discussed in plenary session on the morning of Friday, 23 January, and that Docs. PLEN./2, 3 and 4 would be referred to the Organization Committee.

8. Proposed schedule of meetings

Mr. Rose (New Zealand) did not think it would be prudent to reserve a final meeting for revised Study Group proposals, as it would be preferable for the Drafting Committee to deal with proposals coming from the Assembly, as and when they occurred.

The *Director of the C.C.I.R.* agreed that it had been proposed at the meeting of Heads of Delegations that amendments, in three languages, to be made to texts by the Drafting Committee, should be presented to the Assembly as soon as possible, so that they would be fresh in the minds of delegates. He therefore proposed that, when time allowed, any such modified documents could be presented at the end of a plenary session for review. This method could also take care of any late documentation which had previously not been considered.

The *Chairman of the Drafting Committee* proposed that this Committee meet immediately after each plenary session, so that any amendments might be effected rapidly.

The proposed schedule of meetings, as submitted to the Heads of Delegations, was *adopted* on this understanding.

9. Working hours

The following working hours were *adopted*:

0930–1230 and 1430–1730 hours.

Saturdays and Sundays to be provisionally open. It was to be borne in mind that slight adjustments to these times might have to be made to compensate for Monday, 26 January, being a holiday as it was Indian Republic Day.

10. Composition of Secretariat

The *Director of the C.C.I.R.* introduced the Senior Counsellors, Mr. Gadadhar and Mr. Joachim, and the Engineers who were to assist the Study Group Chairmen, the Administrative Secretary of the Assembly, Mr. Lindsey (Office 338) and the Document Officer, Mrs. Roesch (Office 210).

The meeting rose at 1720 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE SECOND PLENARY SESSION*

(Thursday, 22 January 1970 at 0945 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Federal Republic of Germany; Ukrainian Soviet Socialist Republic; United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized private operating agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Radiotelevisione Italiana (RAI); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International Organizations:*

International Radio and Television Organisation (O.I.R.T.); European Broadcasting Union (E.B.U.).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating from Study Group V*

The *Chairman* announced that Dr. Saxton (United Kingdom) who had been acting as Chairman of Study Group V until the Plenary Assembly, had been asked by the Director, C.C.I.R. to continue to serve in that capacity during the Assembly.

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* As approved at the eleventh Plenary Session.

Doc. V/1001: approved without comment.

Doc. V/1002: approved, with the deletion from the second paragraph on page 5 of the reference 25 in brackets.

Doc. V/1003: the *delegate of the U.S.S.R.* having remarked that the propagation curves in the document differed by 5 to 10 dB from those in Report 370–1, it was explained by the *Delegates of France and of the United States* that the discrepancy was mainly due to the need in the case of broadcasting, with normally low rising antennae, to deduct some 5 to 6 dB from the normal values to allow for areas with poor clearance. Naturally, no such adjustment was required in the case of aircraft.

Doc. V/1003 was *approved*, on the understanding that the attention of Study Group V would be drawn to the need to reconsider the curves at its next interim meeting.

Doc. V/1004: approved, with the addition of a sub-title "Sound broadcasting and television" and the deletion of the reference to "fixed link services" in considerandum *(a)*.

Doc. V/1005: approved, with the addition of "diffraction" to the list of mechanisms given in Definition 28, *Trans-horizon propagation.*

Doc. V/1006: approved, with the replacement of the words "below 10 MHz" in the title by "between 10 MHz and 10 kHz" and the substitution of "inverse-distance line" for the fraction 3.10^5 appearing above the curves in all the figures.

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Docs. V/1007, V/1008, V/1009, V/1010, V/1011, V/1012, V/1013, V/1014, V/1015 and *V/1016: approved*, without comment.

Doc. V/1017: approved, with the deletion of the word "employed" after "propagation process" in § 8.

Doc. V/1018: approved, with amendment of the title to read "Attenuation and Refraction due to the Troposphere in Space Telecommunication Systems".

Doc. V/1019: approved, with an instruction to the Drafting Committee to insert an appropriately worded reference in § 2 to "other regions where ducting modes are prevalent".

Doc. V/1020: approved, without comment.

Doc. V/1021: approved, subject to the following amendments:

— for "a number" in § 3 read "the number";

— replace the last sentence in the footnote by "The information given in Report ...(V/1040) provides a partial answer to this Study Programme".

Doc. V/1022: approved, with the inclusion of India in the list of Administrations participating in the International Working Party (§ 4).

Doc. V/1023: approved, with the inclusion of India in the list of Administrations participating in the International Working Group (§ 3).

Docs. V/1024, V/1025, V/1026, V/1027 and *V/1028: approved* without comment.

Doc. V/1029: approved on the understanding that in that and all other cases graphs from which values have to be read should be reproduced in as large a format as possible.

Docs. V/1030 and *V/1031: approved* without comment.

Doc. V/1032: approved on the understanding that it be made clear in the French and Spanish texts that the "median transmission loss" referred to in the second paragraph on page 2 was the "long term" loss.

Docs. V/1033 and *V/1034: approved* without comment.

Doc. V/1035: approved, subject to the inclusion of the missing Fig. 2 from Doc. V/178 (Rev. 1), the replacement of the term "Interference power" by "Transmission loss" alongside the ordinate line and in the title of Figs. 3 and 4 and corresponding adjustment of the ordinate scales.

Docs. V/1036 and *V/1037: approved* without comment.

Doc. V/1038: the *delegate of the U.S.S.R.* said that the curves in Fig. 1 were unusable in their existing form. The meaning of the lower graph was far from clear and the loss figures given in it were different from those in the upper graph.

The *delegate of the United States* said that the values in the lower graph were possibly taken from a different angle. He would have to refer the problem to Boulder.

After some discussion, during which the *Chairman of Study Group V* pointed out that Fig. 1 was not essential, it was *agreed* to delete it, renumbering the other figures accordingly, to delete all after "θ_0" in the second paragraph on page 124 and to replace it by the following text:

"taking into consideration the attenuation due to precipitation and atmospheric gases [1]. This matter is discussed further in Report ...(V/1029)".

Thus amended, *Doc. V/1038* was *approved*, on the understanding that Study Group V would reconsider the Report and submit an amended version to the next Plenary Assembly.

Doc. V/1039: approved, with the addition of the footnote: "This Report and Report ...(V/1040) replace Report 337".

Doc. V/1040: approved, with the addition below the title of "(Study Programme .../V*)" and of the footnote: "Report ...(V/1039) and this Report replace Report 337".

Doc. V/1041: referring to the proposed cancellation of Report 243, the *Chairman of Study Group V* said that it had served as a basis for the curves for determination of coordination distance given in Report 382. It was thus very relevant to the work of the Preparatory Meeting of the forthcoming World Administrative Radio Conference for Space Telecommunications. However, the members of International Working Party V/2, set up under Resolution 2, considered that much better propagation data could and should be provided for the Conference and, after discussing the matter with interested members of Study Group IV, had concluded that it was advisable for the Working Party to meet at the end of 1970 to produce fresh propagation data for the Preparatory Meeting. He was prepared to attend such a meeting.

Doc. V/1041 was *approved* without further comment.

The *Chairman of the Drafting Committee* read out the list of Study Group V texts which were to be amended by the Committee and in the light of the discussion submitted to a later Plenary Meeting as a single document. The list and proposed procedure were *approved.*

The *Chairman* thanked Dr. Saxton and the members of his Study Group for the excellent work they had done.

2.2 *Texts originating with Study Group VI*

The *Chairman of Study Group VI* introduced his Report.*

Rapporteur:	Secretary of the Assembly:	Acting Chairman:
R. REES	R.V. LINDSEY	G. PEDERSEN

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* See Summary Record of the third Plenary Session.

MINUTES OF THE THIRD PLENARY SESSION*

(Thursday, 22 January 1970 at 2.30 p.m.)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Radiotelevisione Italiana (RAI); British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International Organizations:*

European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating with Study Group VI*

Doc. VI/1001 (Chairman's Report): The *Chairman of Study Group VI,* Mr. D.K. Bailey, introduced his Report and referred to Table II and to the paragraph at the bottom of page 2, concerning the four texts which had been maintained and very slightly amended, for which there were no pink documents.

He wished to draw particular attention to International Working Party VI/4, to which reference was made on page 4, as its work would be of considerable importance, because of the various Broadcasting Conferences to be held no later than 1974. Mr. Millington of the

* As approved at the eleventh Plenary Session.

United Kingdom had most ably filled the role of Acting-Chairman of that International Working Party, but had stated that, due to his approaching retirement, he might no longer be able to continue in that function. The Chairman of the Study Group therefore wished to stress, verbally, that it would not be possible to find a more highly qualified and experienced person to carry out this work, and felt that the Assembly would associate itself with him in urging Mr. Millington to continue as Chairman of International Working Party VI/4.

He then thanked all the reporters who had helped in the editing of the Study Group documentation, and hoped to be able to call upon their valuable services at a future date.

With regard to the rest of the Study Group documentation, it was understood that amendments of a drafting nature only would not be raised in plenary session, but would be handed to the Drafting Committee.

Doc. VI/1001 was then *approved* without comment.

Docs. VI/1002 to *VI/1008 inclusive: approved* without comment.

Doc. VI/1009: approved, with a change in the references on pages 6 and 9, to be handed in by the *delegate of the U.S.S.R.*

Docs. VI/1010 and *VI/1011: approved* without comment.

Doc. VI/1012: approved, together with a corrigendum sheet containing a corrected figure.

Docs. VI/1013 and *VI/1014: approved* without comment.

Doc. VI/1015: approved with the addition of the word "computer" before "programmes" in the footnote, at the suggestion of *the delegate of New Zealand.*

Docs. VI/1016 to *VI/1020: approved* without comment.

Doc. VI/1021: approved, with the addition of the words "thunderstorm activity" to the list contained on page 2, proposed by *the delegate of India.*

Docs. VI/1022 to *VI/1025: approved* without comment.

Doc. VI/1026: approved, on the understanding that the choice of certain wording of no technical implication was to be discussed with the Drafting Committee.

Doc. VI/1027: approved without comment.

Doc. VI/1028: the *Director of the C.C.I.R.* proposed that, in view of the substance of the Study Programme, and in view of the excellent cooperation the C.C.I.R. had enjoyed with the U.R.S.I., the text should be referred to the U.R.S.I. for study, as had been done in the past with similar documents. It was so *agreed.*

The document was then *approved,* with the addition of the words "thunderstorm activity" at the end of the list on page 3, upon the proposal of the *delegate of India.*

Doc. VI/1029: approved, without comment.

Doc. VI/1030: an exchange of views took place on the wording of the title: "Fading of radio waves propagated by the ionosphere", the *Chairman of Study Group VI* wishing it to read "Fading of signals", whereas the *Chairman of the Drafting Committee* considered that signals could not be subject to fading, but modulated the waves, which faded. The *delegates of the Netherlands and Cuba* supported his view; the *delegate of the United States* preferred the wording proposed by the Study Group Chairman.

After discussion in a small group, the following wording was *adopted* based on a proposal by the *delegate of India*: "Fading of radio signals received via the ionosphere". (This title would be the same for Docs. VI/1031, 1046 and 1062.) With this amendment, *Doc. VI/1030* was *approved.*

Doc. VI/1031: approved, with the change of title as for Vl/1030.

Docs. VI/1032 to *VI/1041: approved* without comment.

Doc. VI/1042: note was taken of the request by the *delegate of the Federal Republic of Germany,* that his country be added to the list of participants in the work of the International Working Party referred to in the document. The document was thus *approved.*

Docs. VI/1043 and *VI/1044: approved* without comment.

Doc. VI/1045: as this document concerned certain studies by the C.C.I.R. Secretariat to be conducted by the Director, the *delegate of the United Kingdom* requested that its consideration be deferred, until such time as the Director's Report, contained in Doc. PLEN./1, had been reviewed. It was so *agreed.*

Doc. VI/1046: the *Chairman of Study Group VI* asked for it to be put on record, that Dr. J. Grosskopf (F.R. of Germany) had accepted the Chairmanship of the International Working Party, referred to in the document, and accordingly the F.R. of Germany was entered on page 2. India was added to the list of participants, at the request of the *delegate of India.* With these additions, *Doc. VI/1046* was *approved,* subject to the same change of title as for VI/1030, and with the deletion of the footnote.

Doc. VI/1047: the *Chairman of Study Group VI* announced that Mr. McCue (Australia) had accepted the Chairmanship of the International Working Party and the document was *approved* with the addition of India and Australia to the list of participants on page 2, and the deletion of the footnote.

Doc. VI/1048: approved, with the addition of India to the list of participants on page 2, and the deletion of the footnote.

Doc. VI/1049: approved, with a change of title to read: ". . . interim method for estimating sky-wave field strength and transmission loss between about 2 and 30 MHz".

Doc. VI/1050: approved without comment.

Doc. VI/1051: approved, with the understanding that the Drafting Committee would adopt slightly improved wording.

Doc. VI/1052: the *Chairman of Study Group VI* explained that the International Working Party mentioned in the document still continued to operate and would be putting out a series of addenda to supplement the existing Report. The document was *approved* with minor drafting changes.

Docs. VI/1053 to *VI/1056 inclusive: approved,* subject to minor drafting changes.

Doc. VI/1057: the *Chairman of Study Group VI* gave an explanation concerning the document, that contained the results obtained from International Working Party VI/1, which had worked for many years on the various aspects of the difficult problem of supplying a C.C.I.R. method for estimating sky-wave field strength and transmission loss between approximate limits of 2 and 30 MHz. Various methods in existence for many years had not agreed, and Administrations had decided to use their own. A method produced by Mr. Haydon's Working Party had been thought to be final, but had subsequently to be revised, so that the Appendix to Doc. VI/1057 had not been ready in time for circulation. The Report had been accepted by Study Group VI, on the understanding that the computer programme would be prepared for presentation to the Assembly. Therefore the French and Spanish versions of the Appendix had not been revised by the Study Group experts, and would have to be checked by the present Drafting Committee, together with some slight drafting changes, such as a reference to be given by the Indian Administration, at the top of page 6.

The *Chairman of Study Group VI* concluded by stressing that the report represented only a first draft of a C.C.I.R. method and should merely be used as a reference document, so that Administrations could compare it with their own operational data.

The *delegate of the United Kingdom* proposed that a considerable saving could be effected if only the first part of the document were to be published in printed form in the Conclusions of the Assembly, and the rest were only to be made avalaible upon request.

The *Chairman of Study Group VI* agreed with this view and thought it might be well to issue the Report separately, as had been done for Reports 322 and 340, whereas the computer

programme could be made available in mimeographed form, together with punched cards, as had been done for the MUF programmes.

After a discussion in which the *delegates of Canada, New Zealand, the United Kingdom, the United States,* the *Chairman of the Drafting Committee* and the *Director of the C.C.I.R.* took part, it was *decided* that a reference to the Report contained in Doc. VI/1057 would be printed in the volume of Conclusions of the Plenary Assembly, and that the Report itself, together with its Appendix, would be issued separately, the latter either in mimeographed or offset form, whichever was found to be the most expeditious. The *Director of the C.C.I.R.* pointed out that a mimeographed edition would be a departure from normal C.C.I.R. procedure, but it was the concensus of opinion that, if an economy could be achieved, it would be well to create a precedent in this case.

On the above understanding, *Doc. VI/1057*, together with its *Appendix*, was *approved.*

Docs. VI/1058 to *VI/1061 inclusive: approved* without comment.

Doc. VI/1062: approved, subject to the same change of title as Doc. VI/1030.

Docs. VI/1063 and *VI/1064: approved* without comment.

Doc. VI/1065: in introducing the document, the *Chairman of Study Group VI* explained that it contained a new Report, which was by way of being interim documentation only, as the Study Group anticipated receiving much more substantial information from the International Working Party which, it was hoped, would still be chaired by Mr. Millington. On this understanding the document was *approved.*

Doc. VI/1066, which was intended to be helpful to Study Group IV, was *approved* without comment.

Doc. VI/1067: the *Chairman of Study Group VI* requested Mr. Millington, Chairman of the International Working Party, to check whether the document was substantially accurate.

Mr. Millington (United Kingdom) said that there were no actual points of substance but that, in view of its complexity with regard to mathematics and the conditions under which it had to be prepared, so that it had only become available at the last moment, it would be preferable if a small group of experts in the field could check the formulae, as it was a highly scientific document. A small group, consisting of Mr. Millington, Dr. Bailey and Dr. Joachim, therefore checked the document carefully and reported its accuracy to the Assembly. On this understanding, *Doc. VI/1067* was *approved.*

Doc. VI/1068, showing the status of texts of Study Group VI, was *approved* without comment.

Pending consideration of *Doc. VI/1045*, in conjunction with the Director's Report, all the documentation of Study Group VI was thus *approved*, and the *Chairman of Study Group VI* expressed his thanks to the Chairman and to the delegates, and also to all the members of this Study Group who had so successfully collaborated in the work.

The *Chairman* warmly thanked Dr. Bailey and all the members of his Study Group for their excellent work, which was so vital to all radiocommunication services.

3. Participation in the work of the C.C.I.R.

The *delegate of Cuba* said "that for some years studies on ionospheric propagation, short- and long-term ionospheric predictions, terrestrial magnetism and other subjects had been in progress in his country.

The major tasks in which the Cuban people had been absorbed in its effort to free its country from its terrible state of underdevelopment had hitherto made it impossible to take

an active part in the work of the C.C.I.R. but Cuba planned to take part in the work of that Consultative Committee and of the C.C.I.T.T. as well.

His delegation accordingly wished that the C.C.I.R. should reckon with Cuba as a possible additional collaborator in the international working parties that had been mentioned during the meeting and in any that the Assembly might later agree to set up.

With that end in view, working parties, with their corresponding rapporteurs, in the speciality of each of the C.C.I.R. International Working Parties were being formed in his country to maintain direct contact with the C.C.I.R. and receive information on the work it was carrying out.

The Director, C.C.I.R. would be informed of the matter in writing so that the requisite coordination could be established as soon as the work of organizing the working parties was completed in Cuba. That was why they had not previously expressed at that Assembly Cuba's desire to join the International Working Parties already established."

The *Director of the C.C.I.R.* expressed his satisfaction and was happy to welcome Cuba as a future participant in the work of the C.C.I.R. He took the opportunity to request all those countries which had so far not played an active part to announce their participation. Upon the conclusion of the Assembly, the C.C.I.R. Secretariat would send out a circular requesting Administrations to state the number of volumes they required, and also in which Study Groups they wished to participate, and once a reply had been received, all new participants would be duly entered. He hoped for a large response, which would be one of the best results of the Plenary Assembly.

The meeting rose at 1730 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

MINUTES OF THE FOURTH PLENARY SESSION*

(Friday, 23 January 1970 at 0930 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States or America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Preparatory Meeting for the World Administrative Radio Conference for Space Telecommunications

The *Director of the C.C.I.R.*, introducing Doc. PLEN./5, drew attention to Administrative Council Resolution No. 653 on the convening of a World Administrative Radio Conference for Space Telecommunications, reproduced in the Annex to the document and to the Council's statement that the C.C.I.R. Study Groups concerned should meet in advance of the Conference.

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* As approved at the fifteenth Plenary Session.

The World Administrative (Aeronautical) Radio Conference of 1966 had been able to use the relevant documents of the XIth Plenary Assembly as they stood, because that Assembly had been deliberately held shortly before the Conference. However, the documents of the current Plenary Assembly would reflect the position in approximately July 1969, and there would thus be an interval of about two years between them and the World Administrative (Space) Radio Conference itself. Accordingly, in view of the rapid development of space technique, it seemed absolutely essential for the results of the Plenary Assembly to be brought up to date for the W.A.R.C. by a special meeting of experts very similar to that held prior to the European UHF Broadcasting Conference, Stockholm, 1961. Such a meeting to prepare the technical bases for the Conference would of necessity involve a majority of the participants in the work of the C.C.I.R.

The dates suggested in the document for the preparatory meeting were based on the need for its report to be ready well in advance of the Conference and on the need to allow the Secretary-General of the I.T.U. sufficient time to formulate his proposals for the organization of the Conference and submit them to the Administrative Council at least three months before the latter's 25th Session (1971).

The other suggestions made in Doc. PLEN./5 regarding the programme of the preparatory meeting and its committee structure could be referred to the Working Group which the 1st Plenary Meeting had decided to set up. That Working Group could then make recommendations in due course to the Plenary Assembly on those suggestions and on the composition of the preparatory meeting; it might also suggest who should be its chairman.

The *delegate of Pakistan* agreed that the results of the Plenary Assembly must be brought up to date if they were to serve as a technical basis for the Space Conference. However, he did not see how a special meeting of experts could validly revise the conclusions of the C.C.I.R. and pass them on to the Conference. He was therefore in favour of holding interim meetings of all the Study Groups concerned in time for their conclusions to be submitted to the W.A.R.C.-ST.

The *delegate of France* agreed that special meetings of the Study Groups concerned, analogous to those held before the Maritime W.A.R.C., should be convened, on the understanding that they would be considered as interim meetings and would deal only with those subjects in their field of competence that were relevant to the Space W.A.R.C.

The *delegate of Australia* urged that Doc. PLEN./9, which was very relevant to the matter in hand, be discussed in conjunction with Doc. PLEN./5.

The *delegate of Denmark* concurred with the three previous speakers. He was in agreement with most of PLEN./5, particularly the suggested timetable and committee structure. However, he could find no basis in the Convention for delegating the powers of the Plenary Assembly or of the Study Groups to a meeting which was neither of one nor of the other. Holding an Extraordinary Plenary Assembly seemed out of the question since plenary assemblies must consider all the conclusions of every Study Group. There therefore seemed to be two alternatives. Joint Study Group meetings could be held under a coordinator other than the Chairmen of the Study Groups concerned, but such meetings would be very large and not very effective. The other possibility of acting in accordance with the Convention was to create an *ad hoc* study group, with a suitable membership, purely for the purposes of the Conference. That study group might then issue provisional recommendations, by analogy with the procedure adopted by the IVth Plenary Assembly of the C.C.I.T.T.

The *delegate of Italy* did not think it necessary to discuss further the question of procedure; the Administrative Council had given a clear directive on the matter. The Study Group meetings it envisaged would not be ordinary meetings but would be devoted exclusively to subjects relevant to the Space W.A.R.C. He approved the suggestion of the Director, C.C.I.R.

but there remained the question of its interpretation i.e. of deciding on the composition of the preparatory meeting. In order to remain within the terms of reference given by the Council, that meeting should consist of the Chairmen and Vice-Chairmen of the Study Groups concerned as those best qualified to deal with the matters to be discussed.

The *delegate of the United Kingdom* was very much in agreement with the Delegate of Denmark. It would be quite in order under the Convention to set up a special study group to prepare the technical bases for the Conference (No. 790 clearly made provision for such an eventuality), and he could not think of a better way of doing it.

The joint meeting of Study Groups that had been suggested would have a very large number of participants and the coordination of six or more Study Groups meeting simultaneously would be a very difficult operation.

Without wishing to go into the details of the composition of the special study group at that stage, he certainly thought it should comprise more than the Chairmen and Vice-Chairmen of the Study Groups concerned.

The *delegate of Switzerland* recalled that, according to the Director's estimate, the attendance at a joint meeting of Study Groups would be between 400 and 500—which was too large. He, too, favoured setting up a special temporary study group.

The *delegate of Australia* considered that the creation of a study group to fulfil a specific purpose in a specific time, as proposed by the Delegates of Denmark and the United Kingdom, was the most expeditious and economical way of preparing for the Conference. No. 778 of the Convention provided the necessary authority and there was no specification in it or elsewhere as to the duration of the mandate of study groups.

The *delegate of the Federal Republic of Germany* thought that the proposal of the Delegate of Denmark offered a very effective means of doing what the Administrative Council had asked the C.C.I.R. to do.

The *delegate of Italy* saw two difficulties in connection with the very interesting proposal to form an *ad hoc* study group. The first was that it was at variance with the decision of the Council, taken on the strength of No. 73 of the Convention, that the technical bases for the Conference should be prepared by a meeting of C.C.I.R. Study Groups. The second was that the question of the reorganization of the C.C.I.R. was already on the Assembly's agenda. Any proposal to set up a new study group ought therefore to be discussed under that item.

No. 790 of the Convention, cited by the Delegate of the United Kingdom, related to the establishment of permanent study groups and there was no provision for setting up provisional study groups.

The *delegate of the United States* said that, although proposing various ways of achieving it, all speakers seemed to agree on a common objective, namely to assemble in the preparatory meeting all the expertise required to provide the technical bases for the Conference. He shared the view of the Delegate of Italy that the Assembly's point of departure must be the directives of the Administrative Council. Virtually all the documents of Study Group IV were relevant to the W.A.R.C.'s deliberations and all those documents of Study Group XIII relating to the use of space techniques for the purposes of the mobile services. Experts in the fields of those documents and the corresponding Study Programmes must therefore take part in the preparatory meeting. Other Study Groups were involved but to a lesser extent.

He agreed that the type of procedure to be adopted should not be debated at length in the Assembly but referred to a smaller group which would submit its recommendations. However, whatever form it took, the preparatory meeting must have an over-all chairman.

The *delegate of Canada* said that, although he could accept the Director's suggestions, and in particular the proposed date and committee structure, he had a certain sympathy with the point of view of the Chairman of Study Group IV and considered that the meeting should be organised within the framework of the existing study groups. There were two possibilities: to convene a special meeting of Study Group IV to which other Study Groups concerned with space matters would be invited, or to hold a joint meeting of Study Groups IV, VI, X, XI, XIII and the CMTT specifically oriented towards preparation for the W.A.R.C.

The *delegate of India* supported the proposal of the Delegates of Denmark and the United Kingdom to form an *ad hoc* study group. The question of preparing the technical bases for the Conference had not been discussed in such detail by the Administrative Council as in the Assembly and the Council had merely indicated in a general way that the Study Groups involved should meet.

The *delegate of the United Kingdom* noted that the Assembly appeared to be very near agreement on the essential points. The preparatory meeting must be within the framework of the C.C.I.R. Study Groups but it was not necessary to have full meetings of all the Study Groups directly or indirectly concerned with space communications. Among these, incidentally, he would include Study Group IX, since the terrestrial systems which were virtually its sole concern were greatly interested in the problem of sharing bands with space systems. He therefore proposed that a special study group be formed with a membership drawn from all the Study Groups directly or indirectly concerned with space matters and he visualized that it might be presided over by the normal Chairman of Study Group IV. That would avoid the difficulty of drafting other people into a meeting of Study Group IV and of not knowing whether or not such a body constituted an interim meeting of Study Group IV.

The *delegate of U.S.S.R.* thought that the Assembly could approve the Director's suggestions concerning dates and other matters of detail. As for the form of the preparatory meeting, he found the proposals made by the Delegation of Denmark and the United Kingdom and supported by the Delegate of India the most satisfactory. A special study group which comprised representatives of all the Study Groups concerned would practically amount to a Plenary Assembly and would be able to do a proper job.

The question of the exact form of the preparatory meeting should be referred to a Working Group which would examine all aspects in the light of the Assembly's discussion and submit its conclusions to a Plenary Meeting.

The *delegate of Italy* still thought that the creation of a special study group, whose terms of reference would in fact be the same as those of Study Group IV, would raise problems. The special study group would mainly consider the work done by Study Group IV and would have the power to amend its texts. What would then be the status of those revised texts? Would they rank as Study Group IV texts or would their lifetime be limited to that of the W.A.R.C.?

Mr. Jowett (United Kingdom), Chairman of the Working Group on the Preparatory Meeting, said that if the Assembly still wished him to preside over the Working Group, he would venture to summarise the terms of reference of that Group as they emerged from the debate. The Group should make recommendations concerning the title of the preparatory meeting and its agenda and clarify the status of the texts it would produce. The latter was a point on which the Assembly must make a firm recommendation. Without wishing to anticipate the conclusions of the Working Group, he felt that the material produced by the preparatory meeting should be valid simply for the needs of the W.A.R.C. and for no other purpose.

The *delegate of the Federal Republic of Germany* did not think that the difficulty raised by the Chairman of Study Group IV was a real one. After the W.A.R.C., all the C.C.I.R. Study

Groups would, in any case, have to review their texts in the light of its results. The question of the status of the preparatory meeting's texts could be dealt with by the Working Group.

The *delegate of Spain* said that in anticipation of so important a conference as the Space W.A.R.C., which would revise the Radio Regulations, many Administrations had already prepared contributions which covered much of the ground and would facilitate the preparatory work. Undoubtedly the most important item in Doc. PLEN./5 was the proposal to convene a meeting of experts to prepare the technical bases for the Conference. Another important item was the proposal in 3 *(c)* of that document that a committee be set up within the preparatory meeting to recommend criteria for sharing between satellites and terrestrial services. Those criteria could be deduced from C.C.I.R. Recommendations but the task of the meeting of experts would be to formulate these in concrete terms.

Doubts had been expressed whether the Assembly could set up a special study group with a limited lifetime (the title to be given to it was a secondary question) and whether the work of the Plenary Assembly should be subject to revision by such a body. However, he thought that the Assembly must adopt a realistic approach. He was therefore in favour of setting up a Working Group which, in its recommendations to the Assembly, would fix the general directives for, and the powers of, the preparatory meeting. Such a group could be presided by the Chairman of Study Group IV but since other services than space services would be affected, the chairman could be some other expert. The Working Group should comprise the Chairmen of the Study Groups most affected by space communications.

The *delegate of New Zealand* said his delegation was very interested in the proposal of the delegate of Denmark. A large number of variants on it had been put forward but they could all be considered by the Working Group when it had been set up. That Group should make detailed recommendations not only concerning the machinery for preparing the technical bases for the W.A.R.C. but also on the way in which the special study group should work.

The *delegate of Ethiopia* agreed with the delegate of New Zealand.

The *delegate of Cuba* pointed out that there was no reference in Council Resolution No. 653 to the meeting advocated in the second paragraph of Doc. PLEN./5. His delegation remembered with a certain bitterness the Aeronautical W.A.R.C. which had taken decisions affecting many other services and it was important to bear in mind that, as the delegate of Spain had pointed out, the Space W.A.R.C. would also be revising the Radio Regulations.

He could not see how a special study group with a limited membership could have the power to bring the documents of the Plenary Assembly up to date, though it could produce a digest of the information provided by the Study Groups concerned not only with space but with the other services affected. Nor could he find in the directives of the Administrative Council any mandate for setting up a special study group. He could however accept a joint meeting of Study Groups, even though that meeting would be very large.

The *delegate of Canada* said that of the two possibilities he had mentioned, he now preferred the second, namely a special joint meeting of all the Study Groups concerned.

The task of the Working Group should be to identify:

— those C.C.I.R. Recommendations on which Article 7 of the Radio Regulations were based;

— all aspects not covered by a specific Recommendation;

— all Recommendations that might be revised;

— technical questions to be examined by Administrations as an urgent matter.

The *delegate of France* agreed with the delegates of the United States and Canada. The preparatory meeting should be something half-way between a simple juxtaposition of interim meetings, which would not be sufficiently coordinated to present a coherent body of proposals, and a single special study group, the conclusions of which might not be fully acceptable to the permanent Study Groups concerned. In short, it should be a joint meeting of Study Groups specially oriented towards the Space W.A.R.C.

The *delegate of India* expressed support for the Canadian and French proposals and for the formation of a Working Group under the chairmanship of Mr. Jowett to lay down the main lines for the preparatory meeting.

The *delegate of Norway* agreed on the need to bring the results of the Plenary Assembly up to date for the W.A.R.C. He did not regard the form the preparatory meeting should take as the major question. If the Assembly were so disposed he could accept the creation of a special study group for the purpose. The main thing was to collect all the information required and to present it in a coordinated fashion. For that purpose, it was essential to have a single chairman responsible for its presentation.

The *delegate of Pakistan* supported the Canadian and French proposals.

The *Chairman* said that it appeared to be generally agreed that a special body (which might be called a special study group or given whatever other title the Assembly might choose) should meet in February or March 1971 to prepare the technical bases for the Space W.A.R.C. and that a Working Group should be set up immediately under the chairmanship of Mr. Jowett (United Kingdom) to work out the details for the preparatory meeting. The Working Group should make recommendations concerning the title of the meeting, the scope of its work (i.e. the terms of reference and agenda of the meeting), its composition, the status of its findings and those aspects of the work of other Study Groups than Study Group IV which were relevant to the tasks of the W.A.R.C. It might also suggest a chairman for the meeting. In its deliberations it should take into account the resolution of the Administrative Council, the discussion in Plenary Meeting and the difficulties pointed out by the delegate of Italy. Its conclusions would be considered at a later plenary meeting.

The Chairman of the Working Group on the Preparatory Meeting said that while all realized the need to keep the Working Group as small as possible, they also recognized that Study Groups IV, V, IX, X, XI, XIII and the CMTT had a special interest in space communications and that their Chairmen and Vice-Chairmen could make a very valuable contribution to the work of the Group. One or the other, or possibly both, should be nominated to sit on the Working Group. However its membership should not, in his opinion, be confined to the Chairmen and Vice-Chairmen of Study Groups and he would suggest that Administrations which had experts familiar with the problems to be dealt with by the W.A.R.C. let him have their nominations.

The *delegate of the U.S.S.R.* said that though he had the greatest respect for the Chairmen and Vice-Chairmen of the Study Groups, he thought that the membership of the Working Group was a matter for Administrations to decide, since they worked in the Study Groups. He proposed that there be two representatives of Administrations for each geographical area. The Director, C.C.I.R. should also be invited to participate.

The *delegate of Italy* said he would welcome some clarification concerning the terms of reference of the Working Group. As he understood it, the task of the preparatory meeting would be to extract from all the subjects dealt with by the Plenary Assembly those which were relevant to the W.A.R.C. and then bring the material up to date. It was not its job to draw up an agenda for the Conference; that was already set out in full in Council Resolution No. 653.

The *Chairman of the Working Group on the Preparatory Meeting* after recapitulating the terms of reference of the Working Group as he understood them, said that the Group was concerned with the programme of the preparatory meeting and not with the agenda of the W.A.R.C.

The *delegate of Canada* suggested a compromise. The Working Group might well consist of experts from Administrations who would elaborate a limited and specific programme of study for the preparatory meeting which the Group would discuss with the Chairmen and Vice-Chairmen of the Study Groups concerned to make sure that its proposals were feasible.

The *delegate of the United States* remarked that if the Working Group were too large it would have difficulty in accomplishing its task. The proposal of the delegate of the U.S.S.R. should therefore be given serious consideration.

The *Chairman of the Working Group on the Preparatory Meeting* said that he could accept the U.S.S.R. proposal provided that one or both of the officers of the Study Groups he had listed were included in the Working Group.

The *delegate of Mexico* said that he had no specific nomination to make but would urge that the Working Group include someone to take care of the financial aspects of the preparatory meeting, a matter which had not so far been mentioned in the Assembly's discussion. It was essential to consider the financial implications of the proposals the Assembly would make for the preparatory meeting since the Administrative Council would have to take them into account when preparing the budget of the Union for 1971. While the Plenary Assembly had a comparatively free hand in deciding on the arrangements for the preparatory meeting, the Council, in drawing up the I.T.U. budget was bound to strict observance of Additional Protocol I to the International Telecommunication Convention, Montreux 1965, and of Sections 8 and 9 of that Protocol in particular and had to see that the limit placed on expenditure on conferences and meetings was not exceeded. The Working Group should therefore make suitable budget estimates for the preparatory meeting, taking into account the question of its duration.

The *delegate of the U.S.S.R.*, elaborating on his previous proposal, said that the fairest solution would be that the Working Group should comprise experts from Administrations, nominated for instance on the basis of two from each area, the Director, C.C.I.R., and the Chairman and Vice-Chairman of Study Group IV. The Chairmen and Vice-Chairmen of the other Study Groups concerned would not participate but should be consulted by the Chairman of the Working Group.

The *delegate of Pakistan* thought Mr. Jowett's original suggestion more appropriate. Any administration wishing to participate should be able to nominate a representative; in that way he was sure that each area would be adequately represented. The Chairmen and Vice-Chairmen of the Study Groups concerned should also be included in the Working Group.

The following nominations were made: Mr. Hagen (United States), Mr. Timmers (Canada), Mr. Pedersen (Denmark—by the delegate of the Federal Republic of Germany), Mr. Boroditch (U.S.S.R.), Mr. Aritake (Japan) and Mr. Adebayo (Nigeria).

The following announced that they wished to participate and would give the name of their representative later: India, Pakistan, Argentina (in view of the participation of three representatives from Asia), Mali, France (if regional representation was not limited to two), Czechoslovakia and Australia.

The *Secretary-General of the I.T.U.* said that, since the organization of the W.A.R.C.-ST was his responsibility, he would gladly place a member of his staff at the Working Group's disposal should it require information on organizational questions.

The *Chairman of the Working Group on the Preparatory Meeting* gratefully accepted the Secretary-General's offer.

The *delegate of Denmark* considered that Denmark's views could be adequately represented by the United Kingdom expert.

The *delegate of the Federal Republic of Germany* suggested that if one Asian Administration were willing to forego representation, the other nominations in excess of two per area could then be withdrawn.

The *delegates of Canada and Argentina* each expressed willingness to withdraw their nominations in favour of the other Administration.

In reply to an inquiry from the *delegate of Thailand* concerning the exact terms of reference of the Working Group and the principles governing representation on it, the *Chairman* said that the terms of reference were those listed by him, recapitulated by Mr. Jowett and amplified by the delegate of Canada. He proposed that any Administration wishing to participate be free to nominate a representative, that the Chairman and Vice-Chairman of Study Group IV also participate, in the Working Group, while the officers of the other Study Groups concerned would be consulted by the Group.

It was so agreed.

The meeting rose at 1250 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. REES	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE FIFTH PLENARY SESSION*

(Tuesday, 27 January 1970 at 0930 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Independent Television Authority (I.T.A.); United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.).

1.4 *Permanent organs of the International Telecommunication (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Opening by the Acting Chairman

The *Acting-Chairman*, in opening the session, expressed warm thanks to the Indian Administration, on behalf of all present, for the arrangements made for their attendance at the Republic Day celebrations. It had been a magnificent and unique occasion that participants would not forget.

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* As approved at the fifteenth Plenary Session.

3. Consideration of draft conclusions of the Plenary Assembly

3.1 *Texts originating with Study Group IX*

Doc. IX/1001: Mr. Dietrich, Chairman of Study Group IX, introduced his Report and explained that some of the 68 draft documents of his Study Group were subject to editorial amendments, details of which were listed in Doc. PLEN./12, so that they would not be mentioned in plenary session.

The Chairman's Report contained in *Doc. IX/1001* was *approved* without comment.

Doc. IX/1002: on the proposal of the *delegate of Switzerland* it was *agreed* to delete the word "ideal" in "Recommends" § 2, and to align the formula in that paragraph with the French text; recommends 1 to read: "up to and including 2700 channels". With these amendments the document was *approved.*

Docs. IX/1003 to *IX/1005 inclusive: approved* without comment.

Doc. IX/1006: approved, with the understanding, as stressed by the *Chairman of the Drafting Committee*, that § 8 on page 2 would be replaced by a footnote.

Doc. IX/1007: approved without comment.

Doc. IX/1008: the *Chairman of Study Group IX* recalled that, after a long discussion in Oslo, the following delegations had expressed a reservation on Recommendation 404-1: Greece, Indonesia, Iran, Pakistan, Syria and Turkey. Such reservations could only be stated in plenary session, and not at a Study Group meeting, and therefore any Administration wishing to maintain or rescind its reservation should do so at the present time.

The delegates of Iran, Pakistan and Turkey wished to maintain their reservations on the Recommendation contained in the document.

With these reservations, *Doc. IX/1008* was *approved.*

Doc. IX/1009: approved without comment.

Doc. IX/1010: the *Chairman of Study Group IX* said that new information had been received from the C.C.I.T.T., so that Fig. 1 on page 5 had been accordingly redrawn and was given in a corrigendum.

The document and its corrigendum were *approved.*

Doc. IX/1011: approved, with the addition of the figure "300" after "120-channel" in § 5, proposed by the *delegate of Norway.*

Doc. IX/1012: approved, with the inversion of the + and — signs in Fig. 2, proposed by the *delegate of Switzerland.*

Doc. IX/1013: approved, with the addition of a footnote, following a suggestion by the *delegate of Japan*, to read: "For definition of systems of television, see Reports 308-1 and 407 (Vol. V).

Doc. IX/1014: approved without comment.

Doc. IX/1015: approved, with the same footnote as for Doc. IX/1013, and with the deletion of the word "substantial" in Notes 4 and 5, proposed by the *delegate of Switzerland.*

Docs. IX/1016 to *IX/1018: approved* without comment.

Doc. IX/1019: approved, on the understanding that the word "directives" in considering (a) should read: "objectives".

Doc. IX/1020: approved without comment.

Doc. IX/1021: the *delegate of Italy* considered that the sentence in § 1, on page 2 which read: "Theoretical design considerations indicate however that in future systems the value of 140 MHz is likely to be preferable", was, to say the least, somewhat unusual, since C.C.I.R. Recommendations were usually based upon practical experience and not merely upon theoretical considerations. Moreover, such a sentence would appear to be more appropriate in a Report than in a Recommendation. In Italy practical experience had proved 100 MHz to be preferable, and he therefore requested the deletion of that sentence.

The *Chairman of Study Group IX* said he would regret such a deletion, as in the Study Group meeting there had been general agreement that this phrase be mentioned, as, although the possibility of the use of 100 MHz was indicated, it was felt that 140 MHz would be more generally used, and it was desirable to have one figure only.

The *delegate of New Zealand* proposed that the sentence be included in a footnote, and was supported by the *delegates of the United Kingdom, Spain and the United States.*

The *delegate of Italy* said that as theoretical considerations only had led to this belief, despite the fact that practical use had proved 100 MHz to be satisfactory, such a note would be more suited to a Report than to a Recommendation.

The *delegate of Australia* proposed rewording the relevant paragraph.

The *delegate of Canada* recalled that the particular text had been the subject of very long discussions in Geneva, and was afraid that if the wording were to be substantially changed in plenary session much time would be lost. He was therefore in favour of the compromise suggestion proposed by the delegate of New Zealand.

The *delegate of Japan* said that his delegation would have preferred to see a unified Recommendation, and not to recommend two values. It was his understanding that, when there are two recommended values, the C.C.I.R. would try to indicate a preference between the two values taking into account all available data collected so far, so that a single value will be proposed in the future. He would therefore have been in favour of the sentence remaining in the body of the text, but, to avoid a long discussion, as urged by both the *Chairman*, and the *Chairman of Study Group IX*, he was prepared to accept the compromise proposed by the delegate of New Zealand.

As the *delegate of Italy* expressed his agreement with the proposed compromise, on the understanding that a record had been made of his delegation's standpoint, the Recommendation contained in Doc. IX/1021 was *approved*, with the transfer of the relevant sentence from page 2, to a footnote.

Doc. IX/1022: approved without comment.

Doc. IX/1023: approved, with the understanding, stressed by the *Chairman of the Drafting Committee*, that the amendment of relative substance contained in Doc. PLEN./12 with reference to Note 2, be incorporated.

Docs. IX/1024 to *IX/1035 inclusive: approved* without comment.

Doc. IX/1036: the *delegate of Ceylon* recalled that the question from which the Study Programme derived had been referred to the C.C.I.R. for study by the Regional Plan Committee for Asia, and had been intended to cover the requirements of single-channel radiotelephony equipment so as to extend telephone facilities not only between rural areas, but also to connect small rural exchanges to their respective toll centres. He wondered if the document could be suitably modified to cover such cases. He was supported by the *delegate of Pakistan.*

The *delegate of the United Kingdom* pointed out that Doc. IX/1037 dealt with small capacity links for traffic communications and felt it might be possible to adapt that document to cover the point raised by the *delegate of Ceylon. Doc. IX/1036* was thereupon *approved* with no further comment.

Doc. IX/1037: approved, with the addition of the words "up to" before "6 channels" in "Decides" § 1, and in the explanatory note on page 2, to meet the request of the *delegate of Ceylon.*

Doc. IX/1038: approved without comment.

Doc. IX/1039: approved with the addition of the words "up to" before "6" in § 1.2.1, proposed by the *delegate of the Argentine* and a new § 1.2.3, to read: "6 voice-frequency telegraph channels in the sub-baseband", proposed by the *delegate of Ceylon.*

Docs. IX/1040 to *IX/1042 inclusive: approved* without comment.

Doc. IX/1043: approved, with the deletion of the words: "that Recommendation 305 states" in considering *(a)*.

Doc. IX/1044: approved, with the deletion of the words "and the CMTT, each within its own terms of reference" after "decides", proposed by the *delegate of the Netherlands.*

Docs. IX/1045 to *IX/1048 inclusive: approved* without comment.

Doc. IX/1049: the *delegate of Switzerland* drew attention to the Radio Regulations, whereby the band 2690 to 2700 MHz was set aside for radioastronomy, although used in some cases by the fixed services, and proposed that the paragraph at the top of page 2 be completed by the addition of a sentence to read along the lines: "In certain countries the frequency band of 2690 to 2700 MHz might also, in certain conditions, be used for the fixed services."

It was *agreed* that the Drafting Committee would provide a text to this effect and on this understanding the document was *approved.*

Docs. IX/1050 to *IX/1052 inclusive: approved* without comment.

Doc. IX/1053: following a proposal by the *delegate of Switzerland* it was *agreed* that the Chairman of Study Group IX should draw the attention of the Chairman of Study Group IV to the Report contained in the document, and on this understanding, the document was *approved.*

Docs. IX/1054 to *IX/1062 inclusive: approved* without comment.

Doc. IX/1063: the *Chairman of Study Group IX* apologized for the voluminous document, which was somewhat unusual for Study Group IX, but believed that the information contained therein was highly important. He wished to express his thanks to the small Working Group which had been set up under the Chairmanship of Mr. Goldyear of Canada. The document was *approved* without further comment.

Doc. IX/1064: Approved without comment.

Doc. IX/1065: the *Chairman of the Drafting Committee* pointed out that the figure for K=orbit radius/earthradius, as given on page 4, should be 6·63. Subject to this figure being verified by the delegation of the United States, the document was *approved.*

Docs. IX/1066 and *IX/1067: approved* without comment.

Doc. IX/1068 (Status of texts): the *Chairman of Study Group IX* proposed that Recommendation 302 be maintained. This was *agreed.*

It was recalled that Recommendation 393-1 should comprise a note from the Secretariat, in line with the text contained in Doc. PLEN./12.

The *Chairman of the Drafting Committee* said that he had noticed, during revision that Recommendation 357-1, concerning interference caused between satellite systems and radio-relay systems prepared by Study Group IV, had been sent to Study Group IX. That Recommendation should be added to the list. It was *agreed* that it should be added under Section F.6. *Doc. IX/1068* was thereupon *approved.*

Study Group IX had thus completed its documentation, and the *Chairman* said that the work would be of primary importance to new or developing countries, and also the forthcoming Space Conference. He expressed his gratitude to Mr. Dietrich, and to the Vice-Chairman and the members of Study Group IX.

The *Chairman of Study Group IX* thanked the Vice-Chairman and members of his Study Group, and the members of the working parties, also MM. Krupin and Froom who had been of great help at the Study Group meetings. The work had been carried out in a good spirit of cooperation, which he hoped would continue in the future, for the benefit of radio-relay systems.

The meeting rose at 12.40 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

MINUTES OF THE SIXTH PLENARY SESSION*

(Tuesday, 27 January 1970 at 1430 hrs.)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of);Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Hosa Kyokai (N.H.K.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating with Study Group IV*

Doc. IV/1001: In introducing his Report, *Professor Ranzi,* Chairman of Study Group IV, stated that any minor editorial amendments to the 88 documents of the Study Group would

* As approved at the fifteenth Plenary Session.

be handled directly by the Drafting Committee and would not be discussed in plenary session. He recalled that, during the final meeting of the Study Group in Geneva, the Deputy Secretary-General, Mr. Butler, had taken part in the work and a proposal had been discussed for a new Study Programme on the relative cost of sound and broadcasting systems via satellite, and comparison of their acceptability. A statement had been presented by Mr. Butler and had been incorporated in Doc. IV/449. He requested the Director of the C.C.I.R. to give some further information on the action taken in this respect.

The *Director of the C.C.I.R.* said that, at the time Mr. Butler had made his statement concerning costs to the Study Group meeting, the Director had mentioned that the primary purpose of the C.C.I.R. was to study technical and operating questions. Naturally questions of cost always arose and in this respect, the Plenipotentiary Conference in Montreux had issued Resolution 29, on Technical Cooperation. The Director had held discussions with the Technical Cooperation Department of the General Secretariat and it was his feeling that many of the problems relative to the costs of telecommunication systems might well be solved by the staff of the General Secretariat engaged with the work of the Technical Cooperation programme. Thus, they should best be able to assist the new or developing nations in their programmes.

The Deputy Secretary-General had called a meeting in Geneva, just prior to the present Assembly, where a number of people concerned with the problem had met, and the Director understood that they had made a suggestion how this problem could best be solved, in connection with the question raised at the September/October meeting of Study Group IV. The method of handling this was laid down in C.C.I.R. Resolution 33 on Technical Cooperation, and also in Doc. PLEN/7, which contained a note by the Secretary-General on the subject. This was a matter for the Technical Cooperation Committee of the Assembly to consider.

The *Chairman of Study Group IV* then expressed his appreciation of the work of his many collaborators: Mr. Klein (Switzerland), Vice-Chairman of the Study Group and Chairman of Working Group A, Mr. Fine (U.S.A.), Chairman of Working Group B, Dr. Horner (United Kingdom), Chairman of Working Group C, and Mr. Schultz (Canada), Chairman of Working Group D; Mr. Jowett (United Kingdom), Chairman of the International Working Party which had been set up on the important problem of the efficient use of the geostationary satellite orbit, Dr. Hagen (U.S.A.) for problems concerning radioastronomy and radar astronomy, and Mr. Thué (France), Chairman of the Drafting Committee, for matters dealing with terminology.

The Report of the Chairman, contained in Doc. IV/1001 was thereupon *approved* without comment.

Docs. IV/1002 and *IV/1003: approved* without comment.

Doc. IV/1004: the *delegate of the U.S.S.R.* referred to §§ 1 and 2 on page 2, where references to CMTT texts were made. He considered that it would be more appropriate if the relevant extracts were quoted, as it was not always easy or practical for those concerned to have to consult different C.C.I.R. volumes. He felt that this remark would equally apply to other cases of reference to texts.

The *Chairman of the Drafting Committee* proposed that, as this was a general question, it should be referred to the Organization Committee. It was so *agreed* and *Doc. IV/1004* was *approved.*

Doc. IV/1005: approved, with the addition of the words "Note 6 of Recommendation (... IV/1035)" at the bottom of page 2, proposed by the *delegate of the U.S.S.R.,* and a correction of the indice of the right-hand ordinate of the figure in annex to be positive, as amended by the *delegate of Australia.*

Doc. IV/1006: approved without comment.

Doc. IV/1007: after a query by the *delegate of the U.S.S.R.* as to the utility of the wording of Considerings *(b)* and *(c)*, it was agreed to delete those two paragraphs, at the proposal of the *delegate of the U.S.A.* Thus amended the document was *approved.*

Doc. IV/1008: approved with the same reference to Note 6 and Doc. IV/1035 in Note 1 on page 3 as for Doc. IV/1005.

Docs. IV/1009 to *IV/1013 inclusive*: *approved* without comment.

Doc. IV/1014: approved with the addition of an "s" to the word "effect", occurring twice in Considering *(b)*, as proposed by the *delegate of the United Kingdom.*

Doc. IV/1015: approved, with the addition of the word "telegraphy" to the list given in "Decides" § 1.1, proposed by the *delegate of New Zealand.*

Docs. IV/1016 and *IV/1018 inclusive*: *approved* without comment.

Doc. IV/1019: after a short discussion, in which *Mr. Jowett* (United Kingdom), the Chairman of the I.W.P. on the effective use of the geostationary satellite orbit, said that he hoped it would be possible to hold a further meeting of his Working Group in the autumn of 1970, the document was modified, on page 2, following a proposal by the *delegate of the U.S.S.R.*, as follows:

"1.2 To hold a further meeting prior to the C.C.I.R. Preparatory Meeting on the W.A.R.C. (Space);"

"5. that reports of the meetings of the International Working Party referred to in § 1.2 should be made available to the Director, C.C.I.R., for submission to the proposed C.C.I.R. Preparatory Meeting for the 1971 W.A.R.C."

With these amendments, *Doc. IV/1019* was *approved.*

Docs. IV/1020 to *IV/1027 inclusive*: *approved* without comment.

Doc. IV/1028: the *delegate of France,* speaking as a participant in the work of Study Group V, said that Question 14/IV, in the form presented, was strictly a propagation question and its application was completely covered by four Study Programmes 5C/V, 5D/V, 5E/V and 5F/V, which were quite detailed. He felt that the present document duplicated the work. A difficult situation arose, as the curves were established on contributions which had been submitted to different Study Groups. He proposed two possible solutions—the first to keep Question 14/IV on the programme of Study Group IV and to add a footnote or to change Note 3, to read along the lines "Studies to be carried out in conjunction with this Question are laid down in Study Programmes 5C/V, 5D/V, 5E/V and 5F/V, so that contributions should therefore be sent to Study Group V", or to delete the text of Question 14/IV entirely, and to replace it by a note indicating the above, which would obviate the danger of certain Administrations sending their contributions to Study Group IV. A similar problem was also inherent to Doc. V/1036.

The *Chairman* enquired as to the mechanism for dealing with such problems, and the *Director of the C.C.I.R.* explained that this was implicit in Resolution 24-1, whereby a meeting of Chairmen of Study Groups was held before the official opening of the Assembly to discuss texts and documents; if necessary, another such meeting could be called. He agreed with the suggestion by the delegate of France that it would be most appropriate for Study Group IV to make a suitable addition to Note 3, indicating where contributions should be sent.

The *Chairman of Study Group IX* said that an analogous situation had arisen in his Study Group, where certain specifically propagation matters came only within the jurisdiction of Study Group V. However, he thought that Study Group IV was obliged to study items 2 and 3 of the "Decides", as this could not be done by another Study Group.

The *Chairman of Study Group V* agreed with the statement by the delegate of France. Contributions concerning propagation should be sent to Study Group V to provide the basic data required.

The *delegate of France* was of the opinion that Study Group IV had merely to collect interference and noise data on the basis of information furnished by Study Group V.

The *delegate of the United States* said that nobody doubted that propagation data be furnished by Study Group V, but it was important for Study Group IV to identify those

particular aspects of the question which it needed to study. Perhaps the document could be classified as a common question.

The *delegate of Canada* recalled that the problem had been discussed by Study Group IV at its final meeting in Geneva and it had been agreed that the Question should be maintained in that Study Group, but that detailed propagation studies should be carried out by Study Group V.

The *delegate of the United Kingdom* supported the statement by the delegate of the United States.

It was *agreed* that the Drafting Committee would draw up an exact text for Note 3 on page 2, along the lines proposed by the delegate of France, and on this understanding *Doc. IV/1028* was *approved.*

Docs. IV/1029 to *IV/1033 inclusive: approved* without comment.

Doc. IV/1034: the *Chairman of Study Group IV* recalled that it had been decided in the Study Group to draw the attention of Study Groups IX and III to this question, and requested that this be noted in the Minutes of the meeting.

After a discussion in which the *delegates of New Zealand, the United Kingdom, Switzerland, Australia, the United States* and the *Chairman of the Drafting Committee* took part, it was *agreed* to amend "Decides 2" to read: "what design precautions and technical operational procedures at transmitting stations...".

With this amendement, *Doc. IV/1034* was *approved.*

Doc. IV/1035: approved, with the amendment proposed by Mr. Lalou (C.C.I.T.T.), that the reference to "C.C.I.T.T. Blue Book, Vol. III, Geneva 1964" be replaced by "White Book, IVth Plenary Assembly, Mar del Plata, 1968".

Doc. IV/1036: the *delegate of Canada* recalled that certain deletions had been made in Report 205, and that the draft Report should be modified accordingly. It was therefore *agreed* to delete the words: "or for communication between spacecraft" at the end of the first paragraph of the Introduction, and to delete: "for communication with and between spacecraft respectively" in the third paragraph on page 1, changing "§§ 3 and 4 apply" to "§ 3 applies...".

With these amendments the document was *approved.*

Doc. IV/1037: approved without comment.

Doc. IV/1038: approved, with a correction on page 4, proposed by the *delegate of the U.S.S.R.:* the penultimate line in § 5.4 to read: "the number of receiving stations in 1969 exceeded 30...".

Docs. IV/1039 to *IV/1041 inclusive: approved* without comment.

Doc. IV/1042: approved, on the understanding that the Drafting Committee would review it to bring the English and French texts into line, following queries raised by the *delegates of Switzerland* and the *United Kingdom.*

Docs. IV/1043 and *IV/1044: approved* without comment.

Doc. IV/1045: approved with a correction to the English text only: *add:* "which is given in Draft Report L.2.w, but is subject to some reservations".

Docs. IV/1046 to IV/1048 inclusive: approved without comment.

Doc. IV/1049 and *corrigendum: approved,* with the addition of "2" in the title, before "—10 GHz", the deletion of the first paragraph of the Introduction, proposed by the *delegate of the United Kingdom,* the deletion of the words in parenthesis "(Present and Proposed)" in the caption under Fig. 1, proposed by the *delegate of the U.S.S.R.,* the addition of the words "the curve of" before "Fig. 1" in the penultimate line of page 6, proposed by the *delegate of the United States* and the addition of a reference, to be drawn up by the Drafting Committee, in § 6.2, on page 4, to show that the maximum power flux-density was still a part of the Radio Regulations, until such a time as the W.A.R.C. on Space might change it, also proposed by the *delegate of the U.S.S.R.*

Docs. IV/1050 to *IV/1053 inclusive: approved* without comment.

Doc. IV/1054: in Fig. 4, on the right-hand upper part of this figure, the definition of $\Delta\theta$ and of θ and all the explanatory diagram in the upper right-hand corner should be deleted and replaced by the following text to appear below the figure: "$\Delta\theta$=angle of diameter of the zone of interference." (Exact presentation of the figure would be arranged between the *delegate of Canada* and the Drafting Committee).

Doc. IV/1055: approved without comment.

Doc. IV/1056: approved with the remark by the *Chairman of Study Group IV* that the Report was of the greatest importance to the Space Conference.

Doc. IV/1057: approved with the deletion of the words "or better" after "50% Grade 1" on page 6, proposed by the *delegate of the United Kingdom.*

Doc. IV/1058: approved with the correction of the word "re-pointing" in the second paragraph of page 12 to read "repositioning", and the following amendments to *Fig. 1* proposed by the *delegate of the United States* and supported by the *delegate of the United Kingdom:* immediately under the Figure to add the words: "θ_0 is the maximum subspacing without the use of inversed frequencies" and in the caption under the Figure to delete the part beginning"... relative to orbit capacity..." and to replace the rest of the text by: "relative to the capacity without the use of reversed frequencies", so as to clarify the meaning of the subtitle.

Doc. IV/1059: approved without comment.

The meeting rose at 1700 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

MINUTES OF THE SEVENTH PLENARY SESSION*

(Wednesday, 28 January 1970 at 0930 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Yleisradio; Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Hoso Kyokai (N.H.K.); Nippon Minkan Hoso Remmei; Radiotelevisione Italiana (RAI); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating from Study Group XI*

Doc. XI/1001 (Chairman's Report): The *Chairman of Study Group XI* drew attention to Doc. PLEN./15 and Corrigendum 1 to Doc. XI/1031, which contained a list of errata relating to Docs. XI/1001–1050.

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* As approved at the fifteenth Plenary Session.

Doc. XI/1001 was *approved* without comment.

Doc. XI/1002: approved with the deletion of considerandum *(c)*.

Doc. XI/1003: approved with the addition of a paragraph reading "These values refer to the field strengths at a height of 10 m above ground level" after the table on page 1.

The *delegate of the United Kingdom* explained that the median minimum field strengths given in the table were higher than the minimum field strength values appearing in Note 1, because field strengths varied over small areas of ground and allowance had to be made for the variation factor.

Doc. XI/1004: approved without comment.

Doc. XI/1005: this document, which is the same as Report 409, was *approved.*

Docs. XI/1006 to *XI/1012 inclusive: approved* without comment.

Doc. XI/1013: the *delegate of India* said that the subject of subjective quality appraisals in television systems was of considerable importance to the new or developing countries, particularly from the point of view of community installations. He proposed that an International Working Party be set up to underscore the urgency of the problem.

The Indian proposal was accepted. The *delegates of Pakistan, France, U.S.S.R., Cuba, Italy, Switzerland, Japan, Mexico, the United Kingdom and Germany* said they would participate in the International Working Party and the *delegation of the U.S.A.* said that it would participate by correspondence.

It was decided to set up a drafting group presided over by the Chairman of Study Group XI to draw up the terms of reference of the International Working Party. This group would also examine whether the Study Programme could derive from the two Questions set forth in Docs. XI/1011 and XI/1012.

Docs. XI/1014 and *XI/1015: approved* without comment.

Doc. XI/1016: approved with the deletion of the footnote on page 1.

Doc. XI/1017: approved with considerandum *(d)* amended to *read:* "that the new or developing countries are particularly interested in the study of community reception" and the addition of the words "appropriées pour ces services" to operative paragraph 2 in the French text.

Doc. XI/1018: approved with § 2.7 amended to read: "Nominal difference between black level and blanking level (in percentage of luminance amplitude)". $0 \begin{cases} +5 \\ -0 \end{cases}$

Docs. XI/1019 and *XI/1020: approved* without comment.

Doc. XI/1021: approved with the addition of a footnote reading: "This Study Programme is to be studied jointly with the CMTT".

Docs. XI/1022 to *1028 inclusive: approved* without comment.

Doc. XI/1029: the *delegate of the United Kingdom* said that, however important the questions dealt with in Doc. XI/1029 might be, he did not think it advisable to study them via a C.C.I.R. Study Programme. The C.C.I.R. did not have the necessary expertise to conduct the economic studies involved and it would be difficult to work out general conclusions on a problem that was subject to so many variables as a function of national conditions.

The *delegate of Argentina* said that cost and operational factors were indissolubly linked and that the economic studies envisaged could be fully justified on statutory grounds (Article 14 of the Convention) as well as on grounds of precedent (Annex I to Report 259, Oslo). As regards the point made about individual countries, it was important to realise that the information requested in the Study Programme would often be needed by groups of countries.

The *delegate of India* drew attention to the difficulties of the new or developing countries in choosing from among the options available for television broadcasting satellite systems.

The economic stakes were high and the developing countries needed guidance. It was perfectly true that over-generalized studies would be worthless but it should nevertheless be possible for the C.C.I.R. to work out technical and economic guidelines that could be applied to individual situations. The C.C.I.R. had already carried out studies of an economic nature, e.g. on low-cost receivers, and there was ample statutory justification for the proposed Study Programme.

The *delegate of New Zealand* agreed that it might be possible to work out guidelines of use particularly to the developing countries. The difficulties were, however, considerable. In addition to those mentioned by the United Kingdom delegate, there was real danger that, because of the rapid development of satellite technology, the questions raised in the Study Programme would be out of date before they were answered.

The *delegate of the United Kingdom* said he fully recognized the significance of the questions raised but he doubted whether the proper procedure for studying them was to carry out a C.C.I.R. Study Programme. He agreed that general guidelines could be useful and pointed out that Doc. PLEN./7, which was to be dealt with by the Technical Cooperation Committee, was in fact a first attempt to draw up such guidelines.

The *delegate of Italy* said that, as systems had to be economically feasible, costs could not be ignored. Doc. XI/1029 was already a compromise text which took account of the main objections raised at the Study Group meetings. As such, it should be adopted and would certainly be extremely useful to the Technical Cooperation Committee.

The *delegate of Mexico* supported the adoption of Doc. XI/1029 and said that norms worked out for general guidance could be applied for the benefit of individual countries via the specialized engineers provided for in Resolution No. 29 (Montreux, 1965).

The *delegate of India* drew attention to Resolution No. 28 (Montreux, 1965), which recommended that the C.C.I.s "consider ways of improving their operation and procedures to enable them to respond more quickly to the questions raised by the new or developing countries".

The *delegate of Spain* supported the retention of the Study Programme.

The *Director of the C.C.I.R.* expressed concern about the possibility of a change in emphasis in the work of the C.C.I.R. In the past the primary emphasis had been on technical and operational problems and the C.C.I.R. did not have the specialized staff to embark on studies of cost effectiveness. The General Secretariat had primary responsibility for technical cooperation and, in connection with the cost problem under consideration, had convened a meeting in Geneva from 14–16 January 1970 with a view to drawing up guidelines of the type envisaged by various speakers. Information on the meeting was given in Doc. PLEN./7 and it might be advisable to wait until that document had been considered by the Technical Cooperation Committee before taking a final decision.

The *delegate of the United States* proposed that a footnote be added to the operative section of the Study Programme stating that the relevant studies would be undertaken in cooperation with the Technical Cooperation Department so that the C.C.I.R. could take into account the results obtained by it in the field of costs.

The *delegate of Cuba* supported the adoption of the Study Programme and pointed out that a precedent for the carrying out of cost studies was given in Doc. XI/1022, just approved.

The *delegate of India* underscored the importance of having cost information for the benefit of groups of countries. He proposed that an International Working Party be set up to consider the Study Programme. In reply to a question by the United Kingdom delegate, he agreed that the proposed International Working Party should conduct its study in cooperation with, and with the help of, the I.T.U. Technical Cooperation Department.

The *delegates of the Federal Republic of Germany and Syria* supported the proposal.

The *delegates of Canada, Nigeria, India, New Zealand, the United Kingdom, Pakistan, Italy, Japan, U.S.A., France and the U.S.S.R.* said they would like to take part in the work of the International Working Party; the *delegate of Ethiopia* wished to participate in drawing up the terms of reference of the International Working Party.

The *delegate of the U.S.A.* said that it was essential that the terms of reference of the International Working Party should clearly specify the relationship between its work and the related activities of the General Secretariat, particularly the cost studies carried out by the Technical Cooperation Department.

The *delegate of Mexico* said it was difficult to see how the Technical Cooperation Department could be of assistance in connection with a subject of such general application unless from the point of view of applying the results obtained for the requirements of individual countries.

Doc. XI/1029 was *approved* on the understanding that a footnote be added stating that the studies in question would be carried out with reference to the detailed cost studies undertaken by the I.T.U. Technical Cooperation Department and in cooperation with that Department, when necessary.

It was *decided* to ask the Technical Cooperation Committee to set up a Drafting Committee under the chairmanship of the delegate of Canada to prepare terms of reference for the International Working Party.

Doc. XI/1030: approved without comment.

Doc. XI/1031: approved on the understanding that, where possible, the information denoted by asterisks would be updated.

Docs. XI/1032 to *XI/1036* inclusive: *approved* without comment.

Doc. XI/1037: approved with the inclusion of a third introductory paragraph on page 1 reading "The Annex proposes a preferred method for the laboratory assessment of picture quality which, it is hoped, will be studied by the various laboratories and which could form the basis for a future recommendation."

Doc. XI/1038: approved with the addition of the words "applied to the modulator of the transmitter" after "E_M=total video picture signal voltage" in the Characteristics column of item 7 on page 7 and an "ω" in the first line of the Systems column of item 7 (... cos $\omega_{sc}t$).

The Drafting Committee was asked to examine whether the vector diagram on page 17 should be squared up or not.

Doc. XI/1039: approved with the addition of the words "in the neighbourhood of transmitting antennae" in the sub-title.

Doc. XI/1040: approved without comment.

Doc. XI/1041: approved with the fourth line of the third paragraph on page 2 to read: "(non-fading) signal level should exceed by an adequate margin. That is...".

Doc. XI/1042: approved without comment.

Doc. XI/1043: approved.

It was *decided* to inform the IEC of the adoption of this document.

Docs. XI/1044 and *XI/1045: approved* without comment.

Doc. XI/1046: approved with the addition of a new sentence at the end of § 2, page 4, reading: "This table is given as an example only, and for various types of terrain, the values of σ_1 may be higher or lower than those given."

Docs. XI/1047 and *XI/1048: approved* without comment.

Doc. XI/1049: approved with the deletion of the words "appended hereto" from the second line of the second paragraph on page 2.

Doc. XI/1050: approved with Recommendation 212 listed as "cancelled" and Doc. XI/1016 listed as "New".

It was *decided* that *Doc. X/1054* on space broadcasting terminology, which had been considered by a joint Study Group X/XI Working Party, should be examined together with Doc. IV/1064 during consideration of the documents of Study Group X with a view to ascertaining which document should be published and where.

The *Chairman of Study Group XI* thanked the delegates, the Working Group Chairmen and the C.C.I.R. Secretariat staff for their cooperation and assistance.

The meeting rose at 1300 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
T. JONES	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE EIGHTH PLENARY SESSION*

(Wednesday, 28 January 1970 at 1430 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; Communications Satellite Corporation; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Hoso Kyokai (N.H.K.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; Sveriges Radio.

1.3 *International Organizations:*

International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating from Study Group X*

Doc. X/1001: The *Chairman of Study Group X* drew particular attention to the passage in § 2 of the document urging Administrations to submit as many of their documents as possible for the Interim Meeting rather than await the Final Meeting. Owing to the submission of about 100 new documents between the two meetings, much of the work of the Study Group's Interim Meeting had had to be revised at its Final Meeting and the Drafting Group had not

* As approved at the fifteenth Plenary Session.

had enough time to do its work properly. As a result there were a large number of corrections to be made to the Study Group's texts. A full list of corrections would be published in a single editorial document and he suggested that the Study Group's texts, where appropriate, be approved on the understanding that minor drafting changes would be incorporated. He would accordingly only indicate changes of some importance.

It was so *agreed.*

Doc. X/1001 was *approved,* on the understanding that the Study Group's proposals concerning its terms of reference (pages 3-4) would be referred to the Organization Committee.

Docs. X/1002, X/1003, X/1004, X/1005, X/1006 and *X/1007: approved* without comment.

Doc. X/1008: approved, with the addition of India, Nigeria and Sweden to the list of intending participants in the International Working Party.

Docs. X/1009, X/1010, X/1011, X/1012, X/1013 and *X/1014: approved* without comment.

Doc. X/1015: approved, with the substitution of "multiples of the line frequency" for "of twice the line frequency" in considerandum 2.

Doc. X/1016: approved, with the substitution of "unintentional" for "spurious" in § 2.9.

Doc. X/1017: approved without comment.

Doc. X/1018: approved, with the substitution of the following text proposed by the delegate of the United Kingdom for the definition given in the Note:

"Orthogonal transmission refers to a system in which the transmitting antenna radiates waves that are polarized for maximum absorption in the ionosphere (cf. Report 264-1)."

Doc. X/1019: approved, without comment.

Doc. X/1020: approved, with the substitution of "Fig. 3 of draft Report (X/1034)" for "Fig. 1 of Report 293-1 and Fig. 3 of draft Report E.1.g.(X)" and of "compatible monophonic signals" for "monophonic stereophonic signals" in considerandum *(d).*

Doc. X/1021: pending clarification of the text, approval of *Doc. X/1021* was *deferred.*

Doc. X/1022: the *Chairman of Study Group X* drew attention to *Doc. XI/1028* on virtually the same subject. The scope of the draft Opinion in question had been broadened to include the exchange of sound broadcasts via satellites and the delegate of India had proposed that an international working party be set up to consider the question.

Doc. X/1022: was *approved.*

Doc. X/1023: approved, with the addition of the following footnote:
"These studies will be conducted with due regard to the more detailed economic studies made by the Technical Cooperation Department of the I.T.U. and in liaison with that Department."

Doc. X/1024: on the proposal of the *delegate of the U.S.S.R.,* approval of the draft Resolution was *deferred* pending receipt of the Organization Committee's comments on the interpretation of Study Group X's terms of reference.

Doc. X/1025: approved without comment.

Doc. X/1026: approved with the substitution of the following for the existing text of considerandum *(b):* "*(b)* that the new or developing countries are particularly interested in community reception;", and the replacement of "coexistence" by "frequency sharing" in § 3.

Docs. X/1027 and *X/1028: approved* without comment.

Doc. X/1029: the *Chairman of Study Group X* mentioned in connection with this Study Programme that a loudness measurement tape produced by the United Kingdom Post Office had already been distributed to some 250 administrations and other organizations, which

would submit their comments on it to the International Working Party set up to implement the programme.

Doc. X/1029: was *approved,* with the addition of "which it is" after "parameters" in § 1.1.

Doc. X/1030: approved without comment.

Doc. X/1031 (Rev. 1): approved, on the understanding that the attention of Study Group II would be drawn to § 4.

Docs. X/1032, X/1033, X/1034 and *X/1035: approved* without comment.

Doc. X/1036: approved, with the substitution of "extend from the coastline for a distance of at least 100 wavelengths..." for the existing text at the end of the sixth paragraph of § 2.1.

Docs. X/1037, X/1038, X/1039 and *X/1040: approved* without comment.

Doc. X/1041: approved, with the deletion of "in the United Kingdom [21]" from § 1 and the substitution of "an extrapolation law based on the theory postulated in [21]" for "linear extrapolation" in § 3.

Doc. X/1042: approved without comment.

Doc. X/1043: approved, with the substitution of the following for the existing text of the fourth paragraph of § 2:

"The field-strength values obtained with horizontal extrapolation exceeded those with vertical extrapolation by 5 dB, with a standard deviation of 5·2 dB."

Docs. X/1044, X/1045, X/1046, X/1047 and *X/1048: approved* without comment.

Doc. X/1049: approved with the addition of "16 mm" before "films" in the first sentence of § 6.

Docs. X/1050 and *Corr. 1, X/1051, X/1052* and *X/1053: approved* without comment.

Doc. X/1054: the *Vice-Chairman of Study Group X,* after indicating certain corrections to the French and Spanish texts, suggested that in the interests of simplicity and uniformity it would be preferable to replace the definition of "community reception" in § 1.3.2. by the more general but clearer definition advocated by Study Group IV in Doc. X/1064 (see also Annex I to Doc. X/1001). Note 3 in the French version of Doc. X/1054 was not required in the English and Spanish versions because in § 1.5 of both those texts the term "power flux-density", employed in the Radio Regulations, was used, whereas the French text employed a different term.

The *delegate of France* explained that the French Commission on Telecommunication Vocabulary had adopted the expression "*densité surfacique de puissance*" in preference to the term "*densité du flux de puissance*" employed in the Radio Regulations. The French delegation to the C.C.I.R. had therefore asked that the new term be used provisionally in French texts pending comprehensive revision of the Radio Regulations by an Administrative Conference. Note 3 had then been added to the French version of Doc. X/1054 to explain the discrepancy.

Approval of *Doc. X/1054* was deferred until a decision on Doc. IV/1064 had been taken by the Assembly.

Doc. X/1055: approved without comment.

Doc. X/1056: approved, with the amendment of the words after "by day" in the third sentence of the Introduction to read "ground-wave or sky-wave by night".

Docs. X/1057, X/1058, X/1059, X/1060 and *X/1062* and *Corr. 1: approved* without comment.

In view of the great importance for his Study Group of the system parameters for broadcasting from satellites contained in *Doc. IV/1063,* the Chairman of Study Group X asked that that Report, when adopted, be published in Volume V of the C.C.I.R. Book as well as in Volume IV (2), for convenience of consultation.

In conclusion, he warmly thanked the members of his Study Group for the excellent work they had done.

2.2 *Texts originating from Study Group XII*

Docs. XII/1001, XII/1002, XII/1003 and *XII/1004: approved* without comment.

Doc. XII/1005: approved, with the substitution of "their" for "item" in the last line on page 1 and on the understanding that the Drafting Committee would consider whether the titles of Figs. 1 and 2 should be interchanged.

Docs. XII/1006 and *XII/1007: approved* without comment.

Doc. XII/1008: the *Chairman of Study Group XII* explained that since the Manual of Tropical Broadcasting had been published, Resolution 32 on the subject could now be cancelled.

Doc. XII/1008 was *approved.*

The *Chairman of Study Group XII* thanked all those who had contributed to the work of the Study Group and in particular Mr. S.S. Aiyar (All India Radio) for his assistance in producing the Manual.

The meeting rose at 1710 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. REES	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE NINTH PLENARY SESSION*

(Thursday, 29 January 1970 at 0930 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations :*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Broadcasting Corporation (CBC); Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Hoso Kyokai (N.H.K.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Air Transport Association (I.A.T.A.); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating with Study Group IV* (contd.)

Docs. IV/1060 and *IV/1061: approved* without comment.

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* As approved at the fifteenth Plenary Session.

The *Chairman of Study Group IV* said that the last three Reports completed the remarkable work of the International Working Party on the important problem of the geostationary satellite orbit and wished to express his appreciation to Mr. Jowett (United Kingdom) and the members of his International Working Party for the results achieved.

Doc. IV/1062: approved without comment.

Doc. IV/1063: the *Chairman of Study Group IV* explained that although the Report was common to the work of Study Groups IV, X and XI, it had not proved possible to form a Joint Working Group between the three Study Groups. There had been a revision of the Report by Study Groups X and XI, followed by a second revision by Study Group IV, but when one working group proceeded to the revision of the work of another, the number of possible errors increased exponentially and therefore the document contained many points still subject to revision, so that results could not be considered as definitive. He had received many proposals for amendments from the delegations of the United Kingdom and Australia, mostly of an editorial nature; there was an amendment of substance on page 35: to delete the words "for 1975" in the caption of Fig. 1 *b)*. It was so *agreed.*

On page 24, it was *agreed* with the approval of *Mr. Phillips* (United Kingdom), who had been Chairman of the Sub-Group which discussed the document, to insert, after the reference to carrier-to-noise ratio, the words "Number of lines in the system: 525" and to place the number 525 in each column.

A corrigendum, proposed by the *delegate of the United States* was to be inserted on page 13, to clarify Figs. 2 *a)*, 2 *b)* and 2 *c)*. *Agreed.*

The *delegate of Canada* proposed that in the 3rd paragraph of the Corrigendum for Fig. 2 *a)*, the bandwidth should be 20 MHz instead of 17 MHz.

The *Chairman of the Working Group* preferred a decision on that point to await discussion of Annex II on page 33, where an amendment proposed by the *delegate of Canada* would introduce a difference of 3 dB in the signal/noise ratio—namely that F should equal "3" and not "3/2". Errors had occurred in Geneva in the effort to reconcile the figures, tables and formulae. The amendment would only really affect the amount of allowance made for pre-emphasis—the tables would basically remain unchanged. There would be only the following amendments: *Table III:* Note 2: *delete* the wording and *replace* by the following: "In the FM examples, only a small improvement in the s/n ratio from the use of pre-emphasis has been assumed, namely 0·6 dB." *Table IV: delete* the first sentence of Note 1 and make the following addition at the end of that Note: "Only a small advantage (0·6 dB) has been assumed from the use of pre-emphasis". These proposed changes, in conjunction with each other should serve to clarify the situation.

Finally, with regard to the bandwidth of approximately 17 MHz, this might prove to be correct when the figure on page 36 was redrawn, according to the corrigenda.

The *Chairman of the Drafting Committee* remarked that a considerable amount of corrigenda had been presented, and proposed that a Corrigendum 2 be presented by Mr. Phillips, to enable delegates to study these amendments more carefully.

The *Chairman of Study Group IV* pointed out that the document must at all events be considered as provisional, and suggested that a note be added at the end of the document, explaining that the parameters used in different calculations were not yet exactly known at the present time. He did not think that a complete revision of the document could be accomplished during the present session.

The *Chairman of the Drafting Committee* maintained that the main point under review was merely changing the figure of F=3/2 to "3", and did not consider that this rendered the document provisional.

The *Acting Chairman* urged, in view of the importance of the Report, that a 2nd Corrigendum could be drawn up for review in New Delhi by Mr. Phillips and all those concerned, to enable Fig. 2 *a)* to be redrawn.

It was so *agreed,* and subject to such a review,*Doc. IV/1063,* was *approved.* The Chairman of Study Group X added that he would repeat the request he had made in Study Group X, that, because of the interest to broadcasting of the system parameters contained in Doc. IV/1063, he would appreciate having it reproduced in the Volume of conclusions containing the results of Study Groups X, XI and XII. It was so *agreed.*

Doc. IV/1064: the *Chairman of Study Group X* pointed out that, with one exception, the document was identical to Doc. X/1054 and at the meeting of Study Group X, the previous afternoon, consideration of the latter document had been postponed subject to review of Doc. IV/1064. The discrepancy concerned § 1.3.2: definition of community reception. He proposed that there should only be one document bearing also a Study Group X number (possibly also a Study Group XI number) and that the text of § 1.3.2, as given in Doc. IV/1064, should be chosen.

The *delegate of Italy* supported the proposal and suggested some amendments to the Notes on page 3. It was *agreed* that Note 3 should be amended in the *French* text only and be *deleted* in English and Spanish. Note 1, was *deleted* at the proposal of the *delegate of the United Kingdom.* Note 2 : the reference was to "§ 1.4" and not "§ 1.3".

The *delegate of Spain* supported the proposal that there should only be one document, bearing the two Study Group numbers.

The *delegate of Cuba* did not feel that it was necessary to include in § 1.3.1 a definition of the type of installation or antenna used for individual reception of broadcasting from satellites; it could be left to the individual's choice whether simple or complicated equipment was to be used.

The *delegate of Italy* explained, that at the Geneva meeting, each word of the editing had been worked out in great detail, and the agreement of all present obtained. It was essential that the definition be worded so that the signals might be received by simple installations, so as to remain within the means of the great majority of users. The spirit of the definition was to enable prices to be very low compared to normal receivers.

In view of this explanation, the *delegate of Cuba* did not press his point, but wished note to be taken of his statement, as he felt the text was wrong, from a strictly technical point of view.

The *delegate of India* pointed out that the first paragraph of the document mentioned "provisional new terminology". If Note 3 were to be deleted in English and Spanish, it would perhaps be better to add a note to the effect that the above definitions reflected temporary findings and the terminology was still to be studied to bring it into line with the Radio Regulations.

The *Director of the C.C.I.R.* said that it was indicated that the findings were provisional and were proposed for possible consideration by a future Administrative Radio Conference. He did not believe that the definitions developed within the C.C.I.R. needed to conform to existing Radio Regulations, because the C.C.I.R.'s task in its present form was to study terminology and to make proposals for consideration by Administrative Radio Conferences. As the present Report was a provisional document at all events, it was up to such a Conference to consider the definitions before they were comprised in the Radio Regulations. He felt that the present document was a good one, and quite appropriate for the C.C.I.R. to present.

The *Acting Chairman* agreed with this view. It was the privilege of the C.C.I.R. specialists to give good advice for consideration by Administrative Radio Conferences.

The *delegate of the United Kingdom* said that it had been the intention of Study Group IV to follow the text of Doc. X/1054 in all respects, and suggested that the definition for community reception should be taken from that document. This was merely an editorial matter. It was so *agreed.*

It was further *agreed* that Doc. X/1054 would be *cancelled* and that Doc. IV/1064 would bear the Study Group X number also.

After a long discussion, in which the *Chairman of Study Group X,* the *Chairman of the Drafting Committee,* the *delegates of the United States and Italy,* and the *Chairman of Study Group IV* joined, it was *decided* that the text of the Report would be published in both the Volume devoted to space communications and the Volume on broadcasting.

With this understanding, and with the amendments mentioned above, *Doc. IV/1064* was *approved.*

Docs. IV/1065 to *IV/1067 inclusive: approved* without comment.

Doc. IV/1068: approved, with a correction to the figure for maximum tolerable unwanted signal, shown on page 5 as "—97 dBW/m²" to *read:* "—96 dBW/m²", and by the addition, proposed by the *delegate of the United Kingdom,* of the following wording at the end of the document: ", nor has this Report considered the operational difficulties of channel interleaving which might arise due to the operation of extended range VHF systems of air-to-air relay systems."

The *Observer from I.A.T.A.* stated that he would support the United Kingdom proposal, since civil aviation administrations and airline operators had, in some high density air traffic areas, already considerable implementation of extended range VHF (ERVHF) facilities which might suffer interference from satellite services unless account were to be taken of ERVHF implementation. I.A.T.A. therefore wished to support the study of such problems.

Doc. IV/1069: approved without comment.

Doc. IV/1070: the *delegate of Switzerland* said he was not convinced that the issue stated in the draft Report definitely applied, and suggested modifications to make the text less categorical: in the Introduction the sentence starting "Such system and spectrum sharing..." should *read* "*may* offer"; the last paragraph of page 3 should begin: "It may *hardly* be feasible..." with the deletion of the word "also" in the second sentence of the same paragraph; § 5.2, 2nd line, should read: "the effective system *may be...*" instead of "is". There was an error in the French text of § 5.3 ("ondes métriques" should read "ondes décimétriques").

The *delegate of the Federal Republic of Germany* supported the proposals by the delegate of Switzerland.

The *delegate of the United Kingdom* also supported the principle of the proposal made, but suggested that, on page 3, instead of saying "It may hardly be feasible" it would be preferable to change the beginning of the sentence to read: "It may be difficult to earmark a number of international maritime mobile channels".

The *delegate of Switzerland* said that he would have preferred a more clear and precise statement, because, as his delegation understood the situation at present, it was almost certain that it would not be feasible to identify a number of channels. However, as the general opinion seemed in favour of the proposal by the United Kingdom delegate, he was prepared to accept that amendment.

The *Observer from I.A.T.A.* made the following statement:

"This document has caused I.A.T.A. some serious concern insomuch as similarities between aeronautical and maritime uses of satellite communications may not be as strong as is implied in Doc. IV/1070.

There exists a well-defined and broadly implemented international civil aviation infrastructure of both services and facilities which are peculiar to and necessary for the support and conduct of aircraft operations. Applications of space technology to aviation must be regarded in the broadest sense as a further development of this basic infrastructure.

The International Civil Aviation Organisation (I.C.A.O.) has set up a specialist technical panel (ASTRA) to consider the applications of space technology to the requirements of aviation. This panel has not yet published its report, therefore it is perhaps premature for Doc. IV/1070 to make statements on the similarities between aeronautical and maritime uses of satellite technology. Reference [1] in § 1 of Doc. IV/1070 has been submitted to the I.C.A.O. ASTRA panel. This document contains proposals and statements on requirements which I.A.T.A. believes to be totally unjustified from legal, economic and operational points of view.

Doc. IV/1070 talks of "Operational" aspects, however, in order to consider these aspects, it is vitally necessary to take account, in detail, of the present and planned implementation of facilities for communication and radiodetermination. There is a vast implementation of worldwide facilities now serving aviation which Doc. IV/1070 has not considered and which will considerably influence the use of space technology for aeronautical purposes.

It is suggested that the aeronautical operational infrastructure and that of the maritime services are significantly dissimilar on the following counts:

— Routine aeromobile communications can only be received by a dedicated unique communications system responsive solely to the needs of the Air Traffic Services and of aviation in general.

— No sharing with maritime services of any channel on which air-ground communications are conducted is considered feasible.

— The aeronautical mobile VHF communications band 118 to 136 MHz is heavily committed to meet existing and planned requirements and there is no possibility feasible of its sharing with non-aviation services.

— No sharing with the maritime service of any part of the 1540 to 1660 MHz band, allocated to Aeronautical Radio Navigation is readily feasible from frequency management and electromagnetic compatibility viewpoints.

— No I.A.T.A. requirement exists for satellite derived position fixing information for aircraft navigation purposes.

— Aeronautical satellite systems providing communications and aircraft location/surveillance functions will have to be an integral part of the aeronautical infrastructure.

— The use of the same vehicle to launch aeronautical and maritime satellites would be of fundamental economic significance.

— A detailed system and cost benefit analysis is required to determine whether sharing of common space elements between aeronautical and maritime services would offer any significant benefits.

The Observer from I.A.T.A. therefore respectfully submits that the conclusions drawn in § 5.2 of Doc. IV/1070 are not, as yet, justified and that more and considerably deeper studies of a very complex subject are necessary before such a document as Doc. IV/1070 could be considered to be mature."

The *Chairman of Study Group IV* suggested that a few competent collaborators of the Working Group should look further into the matter, since the problems presented by the Observer from I.A.T.A. were very serious ones.

The *Acting Chairman* said there appeared to be some doubt as to whether the Report should be adopted, perhaps the Study Group should reconsider the subject in the future.

The *delegate of the United Kingdom* thought that a very valiant attempt had been made to achieve some progress on a subject upon which little headway had been made so far. The remarks of the Observer from I.A.T.A. were very pertinent and there were a number of operational factors which would have to be taken into account, which were very difficult ones; however, on reading through the Report carefully and with the changes already proposed, he considered it represented a valuable step forward, and it would be a pity were it not to be adopted.

The *delegate of the United States* agreed with the last speaker. The Report dealt with but one of many areas which must be considered in the development of aeronautical and/or maritime systems using satellites. He supported the United Kingdom proposal for modification of the last paragraph on page 3. With regard to the statement by the Observer from I.A.T.A., referring to the studies made by the ASTRA Panel of the I.C.A.O., the work developed within that Panel and the decisions by the Air-Navigational Commission, a review of their Report made it very clear that when both VHF and UHF frequencies were to be considered any conclusions with regard to one did not prejudice any results reached by the other, nor did the results of trials in any way prejudice decisions which might be submitted by the ASTRA Panel. He therefore suggested that the Report be adopted with the amendments proposed by Switzerland and modified by the United Kingdom.

The *delegate of Canada* recalled the mention by the Observer from I.A.T.A. of reference [1] appearing in Doc. IV/1070, which article was reproduced on page 17 of the Telecommunication Journal that had been distributed to all participants in New Delhi. Since then, that document had been presented to the 2nd Meeting of the ASTRA Panel, but no decision had been taken by that Committee, and it was on the agenda for discussion at the 3rd meeting at the end of February 1970. His delegation could not agree to eliminate the reference to that document in the Report.

The *delegate of Cuba* said that he agreed in part with the remarks made by the Observer from I.A.T.A. However, he felt that the Report made important points and therefore wished to support it with the amendments proposed by Switzerland and modified by the United Kingdom.

The *delegate of France* was also in favour of adoption, with the modifications proposed.

The *Acting Chairman* assumed that the Report would be of value for studies to be carried out in the future. As was indicated in the sub-title, it was preliminary and in no way binding, so it should be possible to accept it.

The Report contained in *Doc. IV/1070* was *approved* as amended, note being taken of the statements made.

Doc. IV/1071: approved, with the following amendments on page 3, proposed by the *delegate of the United Kingdom:* in § 3.1, 5th line, *delete* the words "first-order" and *change* "refraction error" to *read* "refraction *effect*". Similarly, in § 3.2, 4th line, the word "error" to *read* "*effect*".

Doc. IV/1072: approved without comment.

Doc. IV/1073: approved, with the following amendments on page 4, proposed by the *delegate of the United Kingdom:* 4th line from top of page: the words "mean signal" to read "*resultant* signal"; towards the end of the same paragraph, after "above about 10°" to *add* the words: "for horizontally polarized signals".

Docs. IV/1074 to *IV/1077 inclusive: approved* without comment.

Doc. IV/1078: approved, with an amendment by the *delegate of the United Kingdom* in § 1.1 of the Introduction: the end of the 2nd line to read: "adopted by the 7th Assembly of the I.M.C.O." instead of "the Maritime Safety Committee".

Docs. IV/1079 to *IV/1083 inclusive: approved* without comment.

Doc. IV/1084: the *Chairman of Study Group IV* said there had been some misunderstanding on the decision taken at the Geneva meeting. The only amendment to draft Report L.7.d(IV) should be to delete the words within brackets of reference 5 on page 440. With this understanding, *Doc. IV/1084* was *approved.*

Doc. IV/1085: approved without comment.

Doc. IV/1086: the *delegate of India* proposed modifying § 6.7.6 on page 448 of the Report to *read:* "...with any other services *including satellite services*".

The *delegate of the Federal Republic of Germany* said it was hoped that the W.A.R.C.-ST would delete the term "satellite services" in the future, as this term could lead to difficulties.

The *Acting Chairman* pointed out that the decisions of the Conference on the subject could not be foreseen.

The *Chairman of the Drafting Committee* agreed to the suggestion by India, but proposed to reword it: "including those using satellites".

The *delegate of the United States* preferred the expression: "active satellites".

The *delegate of the United Kingdom* suggested using "spacecraft" instead of "satellites".

It was *agreed* that the Drafting Committee would provide a suitable text for the proposed amendment, and on this understanding *Doc. IV/1086* was *approved.*

Docs. IV/1087 to *IV/1089 inclusive: approved* without comment.

Doc. IV/1090 (Status of texts): *approved* without comment.

Study Group IV had thus completed its task, and the *Chairman of the Study Group* expressed his appreciation of the cooperation of all delegates, and especially thanked the Vice-Chairman, the Acting Chairman of the Assembly and Dr. Mao, C.C.I.R. Engineer, who had devoted so much hard work to the preparation of the documents.

The *Acting Chairman* expressed his thanks to the Chairman and members of Study Group IV, whose work had played a prominent rôle in the field of space communications. Space activities had now entered into daily life, but it could be seen from the Chairman's Report that many questions were still outstanding, such as problems of multiple access, and higher frequencies. However, excellent results had already been achieved.

The meeting rose at 1220 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

MINUTES OF THE TENTH PLENARY SESSION*

(Thursday, 29 January 1970 at 1430 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized private operating agencies:*

Radio-Austria; Canadian Broadcasting Corporation (CBC); Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd., (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Hoso Kyokai (N.H.K.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Independent Television Authority (I.T.A.); United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating with the CMTT*

Doc. CMTT/1001: Professor Angel, Chairman of the CMTT, in introducing his report, said it contained a resumé of the work done at the interim and final meetings of the CMTT and also

* As approved at the fifteenth Plenary Session.

the status of texts. It should be noted that the period 1966–1969 was marked by a considerable effort to clarify the structure of the terms of reference of the CMTT and that was why he had made a few suggestions concerning the numbering of certain texts and would draw the attention of the Secretariat to these.

Only three texts had not been reproduced as pink documents, and these were: Study Programme 6A/CMTT, which was maintained, draft Study Programme 5.f(CMTT) which should be cancelled, following the issuing of a draft Recommendation and a draft Report, and Opinion 19-1, which it had been agreed should be cancelled following a proposal by the Director of the C.C.I.R. He pointed out that Study Programme 6A/CMTT should be numbered to agree with a related new Question.

It was further remarked that Doc. PLEN./23 contained corrigenda to a number of the documents, so that editorial changes would not be brought up in plenary session.

With this understanding the Chairman's Report contained in Doc. CMTT/1001 was *approved.*

Docs. CMTT/1002 to *1004 inclusive: approved* without comment.

Doc. CMTT/1005: no document existed with that number.

Docs. CMTT/1006 to *1008 inclusive: approved* without comment.

Doc. CMTT/1009: approved, with the reference to the C.C.I.T.T. Blue Book, in the footnote, changed to the "White Book".

Docs. CMTT/1010 to *1013 inclusive: approved* without comment.

Doc. CMTT/1014: approved, with an amendment to the title, proposed by the *delegate of the United Kingdom,* to bring it into line with the title of the following document: "circuits" to be changed to "chains" and the document number in the footnote to *read*: "Doc. CMTT/1025" instead of "1026".

Doc. CMTT/1015: approved with a corresponding amendment to the title to bring it into line with the preceding document: "Measuring" to read: "Measurement".

Doc. CMTT/1017: approved without comment.

Doc. CMTT/1018: approved with the reference to the C.C.I.T.T. Blue Book to read "White Book".

Docs. CMTT/1019 to *1023 inclusive: approved* without comment.

Doc. CMTT/1024: the *Chairman of the CMTT* suggested the addition of a footnote referring to the related Question, contained in Doc. CMTT/1039.

The *Chairman of the Drafting Committee* agreed that it would be well to add such a footnote, pending a decision by the Organization Committee, and the Secretariat could withdraw that note if necessary.

It was so *agreed* and the document was *approved.*

Docs. CMTT/1025 to *1036 inclusive: approved* without comment.

Doc. CMTT/1037: approved, with the correction in § 6*(b)* of "rejected" to read "*injected*".

Doc. CMTT/1038: approved with the addition of a footnote: "*This Report should be brought to the attention of C.C.I.R. Study Group IX and C.C.I.T.T. Study Groups IV and XV".

Doc. CMTT/1039: approved with a footnote referring to the related Recommendation contained in Doc. CMTT/1024, and with the same remark being implicit; following a query by the *delegate of New Zealand,* and at the proposal of the *Director of the C.C.I.R.* the word "is" in the first line of the Report was changed to "was".

Doc. CMTT/1040: the *delegate of Canada* referred to § 3.1 on page 14, and proposed that the word "black" level in the 2nd line should be changed to "blanking" level. Following an explanation by the *delegate of the United States* he did not press the point.

It was *agreed* to delete the legend of the figure shown on page 17, and with this amendment, *Doc. CMTT/1040* was *approved.*

Doc. CMTT/1041: approved, with the addition of Study Group XII to the footnote.

Docs. CMTT/1042 to *1044 inclusive: approved* without comment.

Doc. CMTT/1045 (Status of texts): *approved* without comment.

The CMTT had thus completed its task, and the *Chairman of the CMTT* thanked the Vice-Chairman and members of the Group, and also the Chairmen of the four CMTT Sub-Groups. He expressed particular appreciation of the help he had received from Mr. Witham (United Kingdom), Mr. Mazzaro (Argentine Republic) and Mr. Krupin of the C.C.I.R., also from the Secretariat. He felt that the CMTT had made a considerable step forward.

The *Chairman* thanked Professor Angel and the members of the CMTT for their efficient work.

The meeting rose at 1530 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE ELEVENTH PLENARY SESSION*

(Monday, 2 February 1970 at 0930 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Broadcasting Corporation (CBC); Canadian Overseas Telecommunication Corporation; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Italcable; Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International organizations:*

International Electrotechnical Commission (IEC); International Air Transport Association (I.A.T.A.); International Radio and Television Organization (O.I.R.T.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Approval of the Minutes of the First, Second and Third Plenary Sessions

Doc. PLEN./11 (First Plenary Session): *approved,* with the correction on page 7 of the name "Mr. Mohamed" (Pakistan) to read: "*Mr. Sathar*".

Doc. PLEN./16 (Second Plenary Session): *approved* with the following amendments: on page 4, 4th line (under Doc. V/1021): the word "Question" to *read "Study Programme";*

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* As approved at the eighteenth Plenary Session.

on page 5, 4th paragraph (under Doc. V/1038): the words "during which the delegate of the U.S.S.R. pointed out" should *read:* "during which the *Chairman of Study Group V* pointed out": page 6, at the end of the text *add*: § "2.2 *Texts originating with Study Group VI:* The *Chairman of Study Group VI* introduced his Report."*

Doc. PLEN./17 (Third Plenary Session): *approved,* with the addition of "the Ukrainian Soviet Socialist Republic" and "the Territories of the United States of America" under 1.1 on page 1; a correction on page 5, last paragraph (under Doc. VI/1057), the name "Mr. Hagen" in the 8th line to *read: "Mr. Haydon";* the statement on page 7 (§ 3. Participation in the work of the C.C.I.R.) attributed to the delegate of Cuba, should be replaced by that appearing in Corrigendum 1 to Doc. PLEN./17.

3. Consideration of the Report by the Director of the C.C.I.R. (Doc. PLEN./1 and Addendum)

Introducing his Report, the *Director of the C.C.I.R.* said that its volume reflected the amount of activity which had taken place since the Oslo Plenary Assembly. A review of the work of the Study Groups was given in some detail in Annex I. The first part of the Report comprised a brief review of what, in his opinion, were to be likely developments in C.C.I.R. work, particularly in the field of satellite communications, not only for point-to-point services, but also their expansion to mobile services and broadcasting. A fuller indication of the work that should be done in preparation for the W.A.R.C. on Space was given in Doc. PLEN./5.

A field of activity which had been of interest to the Administrative Council and many Administrations was that of sound broadcasting, and Study Group X had been making considerable progress in this respect, which might prove of importance to a future W.A.R.C. on broadcasting, particularly with regard to studies on interference caused by broadcasting stations at night over great distances to stations operating on the same or adjacent channels.

With regard to television, although it had unfortunately not proved possible to standardize one colour system, the C.C.I.R. had nevertheless recommended that Administrations should limit themselves to a choice of one of the preferred standards, as far as monochrome was concerned.

Another activity which had come to the forefront during the past period was the expanded employment of computers in studies directed towards improving the use of the radio-frequency spectrum, particularly in Study Group V, for calculation of coordination distances and in Study Group VI, where the application of computers to the determination of maximum usable frequencies in the HF field and to calculation of field strengths was proving very fruitful. There were many other applications of computer techniques which the Study Groups had considered and these were briefly mentioned in the Report, where it was also stated that I.T.U. Headquarters and especially the C.C.I.R. Secretariat, were studying the possible use of computers to be of assistance to various Administrations with regard to technical factors.

The Report further contained a review of meeting activities and of organizational problems concerning meetings of the Study Groups and the Plenary Assembly.

A brief report of finances was given and a proposed timetable of meetings between the XIIth and XIIIth Plenary Assemblies, from which it could be seen that, due to the Preparatory meeting for the W.A.R.C. on Space, it was probable that the interim Study Group meetings might be held later than the normal 18 months after the Plenary Assembly. It was suggested that the final Study Group meetings be held in the Autumn of 1972 and the XIIIth Plenary Assembly in the Spring of 1973.

There was a review of the activities of the C.C.I.R. in the field of Technical Cooperation and a draft Resolution (Annex IV) proposed to the Assembly concerning statistical information

* See Doc. PLEN./17.

on radiocommunications. A section gave information on the sale of volumes of the conclusions of the Plenary Assembly, which sale was constantly increasing.

A copy of the Agreement concluded with the Government of India was attached in Annex II; Annex III gave a brief outline of the budgets and actual expenditure at C.C.I.R. meetings and the Addendum 1 contained a Report on the organization of the Secretariat, together with an organigram.

The Director concluded by saying he would be glad to answer any question concerning points in his Report.

The *delegate of Pakistan* made the following statement:

"The Pakistan delegation would like to refer to Annex II to Doc. PLEN./1, § 4*(c)* on page 58. We regret to state that an important member of our delegation has not been granted entry permit to visit India for participation in this Plenary Assembly. This action is in contravention of this agreement, which provides for entry to India for delegates participating on behalf of Members without any reservation. We request that this statement be recorded in the minutes of this meeting."

The *delegate of Cuba,* referring to page 10, last line, wished to be assured that Reports would not merely be adopted by the Study Groups, but would also receive full consideration by the Plenary Assembly. With reference to page 49, he wished for clarification as to whether SSB or DSB systems were involved.

The *Chairman* explained, with reference to the first query that the subject was under discussion in the Organization Committee; as to the second, this was a matter that had been decided by the World Maritime Administrative Conference.

The *delegate of Denmark* welcomed a discussion on the Report, which was a very valuable and complete document, but deplored the fact that it had not been circulated prior to the opening of the Assembly. With regard to the text dealing with satellites on pages 2 to 4, this would seem more relevant to the W.A.R.C. on Space, than to the C.C.I.R. He did not think that an attempt should be made to define "outer space" in relation to a geocentric sphere to be determined by that of the geostationary orbit, as this was approximately 36,000 km from the earth and the United Nations Committee on the Peaceful Uses of Outer Space, when dealing with the peaceful uses of outer space had suggested much lower limits than this. He would therefore disagree with the last paragraph on page 3.

He then referred to the section dealing with computers, particularly to the middle of page 8, concerning computer programmes for ionospheric predictions, propagation data, etc. to be collated with data on spectrum occupancy through the I.F.R.B. and other sources, thus enabling Administrations to obtain such information rapidly by means of remote terminals. The Danish delegation was in some doubt as to whether there was really much demand for such up-to-date information, or if such data could be considered useful, as details on spectrum occupancy as contained in the I.F.R.B. Register did not give a realistic picture of the actual frequency usage at any given time. It was the experience of his Administration, when operating HF services, that up-to-date information on the propagation was not required, as the main problem was that of interference from other stations.

The *delegate of the United Kingdom* said that he had been somewhat concerned about the references by the Director in various parts of the Report and particularly on page 8, which suggested that he would like to see the Secretariat playing a larger rôle in wave propagation and ionospheric prediction work, and about the hint that present computer facilities in the I.T.U. Headquarters might prove to be inadequate. In the view of the United Kingdom, the rôle of the Secretariat was to provide administrative and secretarial support to Administrations in connection with meeting activities of the C.C.I.R. and he did not think it was appropriate for the C.C.I.R. Secretariat to indulge in scientific or technical research on its own account. It was for that reason that, when Doc. VI/1045 had come up for consideration at an earlier Plenary Session, he had asked for it to be held over, as it concerned the development within the C.C.I.R. Secretariat, of correlation work on the solar indices which he believed to be quite a wrong principle. It was said that the sum involved was small, approximately 5,000 Swiss

francs, but he felt that the cost of a single engineer to be engaged on such a task, plus the overheads, would be more of the order of 150,000 Swiss francs. He concluded by reiterating that he was concerned about the increasing activity of the Secretariat in matters such as these.

The *delegate of Mexico* considered that the Director's Report was an excellent document, but felt that the subject under discussion could better be dealt with in the Technical Cooperation Committee, where it could be considered at greater length. He did not agree with the viewpoints expressed by Denmark and the United Kingdom, because, in connection with technical cooperation to the developing countries, an important rôle could be played by the Secretariat which could help them to tackle certain complicated technical problems, especially with regard to requests for new frequencies from the I.F.R.B., which could perhaps assist in the programming.

Mr. Petit (Member of the I.F.R.B.), referring to the last paragraph on page 8 of Doc. PLEN./1, explained the method whereby a moderate capacity computer was used at the seat of the Union on an average of 10 hours per day, 70 to 75% of that time being devoted to the recurrent tasks of the Board, consisting of data processing and some hours a week of technical calculations. The fact that the I.T.U. computer was only of moderate capacity did not prevent the I.F.R.B. from using the most recent C.C.I.R. data, for example those contained in Report 340 on MUF.

An enquiry had been instigated, following a decision of the Administrative Council in 1959, and the I.F.R.B. had replied to the effect that its present tasks, as laid down by the Radio Regulations, did not require the use of a computer of more than moderate capacity. But the Board added that the question would be reconsidered if any future Administrative Conference, such as the Space Conference in 1971, were to introduce clauses to the Radio Regulations which would imply the repetitive use of a high capacity computer.

Mr. Petit was certain that this information would in no way influence the directives that the Plenary Assembly would give to the Director of the C.C.I.R. concerning the use of computers.

The *delegate of Pakistan* drew attention to No. 198, which provided that a consultative committee shall work through the medium of laboratories or technical installations set up by the Union. Had it been the intention of the Plenipotentiary Conference that the C.C.I.R. was to undertake no technical or scientific studies, it was unlikely that this clause would have a place in the Convention. In his view, therefore, it was perfectly appropriate for the Director to conduct technical work of the type mentioned in his Report. This should be subject to the limitations of the budget and availability of staff, which matters he was sure the Administrative Council looked into every year. He felt that any additional work which could be carried out towards a more efficient utilisation of the radio frequency spectrum would be very valuable, and he supported the proposal of the delegate of Mexico that the Technical Cooperation Committee consider the matter more fully.

The *delegate of Denmark* agreed with the reference to No. 198 of the Convention, and also thought it was useful for engineers in Geneva to have a certain technical climate in which to work, but the main question was to limit such activities to those which were actually requested by Administrations. It had been found, through many years' operational experience in the HF band in his country, that, in the case of ionospheric predictions, it had sufficed for their services to receive forecasts on optimum usable frequencies prepared three months in advance and that information was forwarded to operating stations. Naturally there were day-to-day and even hour-to-hour changes which could to some extent be predicted, but it had been the experience in his Administration that the value of such data was rather limited. As to information on frequency occupancy, the I.F.R.B. Register could keep Administrations aware of the situation, which was that every single frequency was occupied. Activity such as suggested in the Director's Report, he would repeat, should only be undertaken when there had been a direct request from Administrations. The study of correlation between existing

conditions and radiation from the sun was highly important from a scientific point of view, but such studies could best be left to experts, organizations and laboratories dealing with scientific research. It must not be forgotten that the ionosphere did not play the same rôle in communications today as it did 15 years ago.

The *Director of the C.C.I.R.* pointed out that the section of his Report dealing amongst others with computer techniques was entitled "Likely developments in C.C.I.R. work" and represented his thoughts on how the C.C.I.R.—and by this he meant the Administrations coordinated through the C.C.I.R. offices in the I.T.U. Headquarters in Geneva—could best assist other Administrations. The question raised was what was the rôle of the Secretariat? Was it to be understood that it was only to act as a secretary and to arrange for meetings? If the past history of the C.C.I.R. Secretariat was recalled, in the days when Professor van der Pol was Director, it would be seen that he had not restricted himself to acting merely as a secretary; he had tried to give expert assistance to Administrations by performing the main rôle of the C.C.I.R.—to provide technical bases for the sound use of the radio-frequency spectrum. The speaker had personally reviewed his own task as Director and had tried to model his activities on those of Professor van der Pol. If it was the desire of the Assembly that he should act only as secretary to arrange for meetings, he would state then and there that the position would completely lose any interest to him.

In the past, when all computations had been done by hand, it had proved almost impossible to take into account all the important factors peculiar to HF communications, such as determination of which frequency would be useful for a particular month, considering solar activity, geographical location, radio noise, mode of propagation (sporadic E or other), etc. Today, with the advent of computers, all the many parameters could be considered to solve such problems and computer techniques had been adopted by many Administrations. The I.W.P. which had been set up to consider the best use of the spectrum had issued a Report indicating that a more dynamic procedure could be developed by the use of computers. He was convinced that by their effective use in I.T.U. Headquarters the Secretariat could assist Administrations with their communication problems much better than was possible in the past, and he foresaw constant improvement in computer techniques in the future.

With regard to Doc. VI/1045, here again he felt that the delegate of Pakistan had foreseen some of the problems facing the Secretariat, which sometimes had workloads more than it could handle for certain periods between Plenary Assemblies—for example, following the present Assembly, when the engineers would have a tremendous amount of work in preparing the resultant documentation for publication. But there were periods between those peaks when the engineers could become better acquainted with what was going on in radiocommunications, particularly in fields of special interest to the C.C.I.R. and the aim of the Resolution contained in Doc. VI/1045 was to encourage the Director to look into some of the more important aspects and to assist the engineers in keeping in touch with reality. Observations of solar activity were developed in Canada and going on in Japan, but little information was available in Europe; the study involved not only ionospheric predictions but both microwave and space techniques and could provide engineers with a small but very useful amount of information of importance to many of the Study Groups.

The Director concluded by saying that he was at the disposal of the Assembly, but had been endeavouring to make the best use of the facilities provided to him, stressing once more that his rôle should be more than merely an administrative one.

The *delegate of Turkey* said that his delegation had as much respect for the present Director as it had had for Professor van der Pol, appreciated the technical and scientific work that had been carried out by the Secretariat in the past and hoped would be carried out in the future and would take the opportunity of thanking him for his efforts in this respect.

The *Chairman* considered that there had been a very detailed explanation on what should be the scope of work of the C.C.I.R. and that there seemed to be a general feeling that the Secretariat should not confine its work merely to administration but should take a more active part in the technical aspects. He hoped, in the light of the comments made by the delegates of Pakistan, Mexico and Turkey, and after the clarification by the Director and the Member of the I.F.R.B., that the delegates of Denmark and the United Kingdom would not object so seriously to the contents of § 2 on page 8 and to the scope of C.C.I.R. work to which they had referred and that other matters in the Director's Report could now be considered.

The *delegate of the Netherlands* did not think otherwise than the Director. He merely wished to strike out the word "forward" before "error-correction" on page 22 (Annex I/3) concerning the work of Study Group III. It was so *agreed.*

The *delegate of the United States* referred to computer programmes in C.C.I.R. Headquarters and felt that the full potential as well as the limitations of computer processing to aid the C.C.I.R. technical and administrative services to Administrations, might be known only after some time and some efforts to develop those capabilities. Computer processing might be quite important to the future effectiveness of C.C.I.R. Secretariat services and his delegation felt it would be premature and unwise for the Plenary Assembly to be too restrictive in this matter. He did not, incidentally, understand from the Director's Report that the C.C.I.R. proposed to attempt short-term propagation predictions.

The *delegate of Canada* noted that Canada had been actively working in the field of the development of ionospheric indices, and had been using computer programmes for propagation predictions for many years. It was his delegation's belief that the utilisation of the HF bands could be greatly improved by this and other means. Canada therefore supported the adoption of Doc. VI/1045 and also the use of computer techniques in technical studies by the C.C.I.R. Secretariat.

The *delegate of Ethiopia* raised a query as to whether, with regard to frequency problems, the matter be referred to the Technical Cooperation Committee to prepare a Resolution on the instruction to be given to the C.C.I.R. Secretariat.

The *Director* replied that his whole Report could be considered by all the committees and certain delegations might propose action. He suggested that with regard to the likely developments in the field of computers, the Technical Cooperation Committee might well consider this and, if so desired, could prepare a Resolution within its terms of reference.

The *delegate of Pakistan* required some clarification concerning the interim study group meetings mentioned in *(b)* on page 12. Would it not be possible to hold some of those meetings at the beginning of 1971, to facilitate the work of the W.A.R.C. on Space?

The *delegate of the United Kingdom* referred to Annex I/14, concerned with Study Group XIV, which he found somewhat obscure, particularly with respect to the Joint C.C.I.R.-C.C.I.T.T./IEC Working Party. Was there a Chairman of that Group and if so, how did he come to be appointed? He was also surprised to see on page 52 that members of Study Group XIV stressed the advisability of their being kept informed of the progress achieved by that Working Party, as he had been under the impression that the Joint Group was formed in order to dissolve C.C.I.R. Study Group XIV and C.C.I.T.T. Study Group VII. He would welcome an explanation by the Director with respect to the Joint Group, Study Group XIV and any other bodies concerned with Vocabulary.

The *Director of the C.C.I.R.* explained that the Working Group was initiated following discussions with the IEC and with the Director of the C.C.I.T.T. At the Geneva meeting of Study Group XIV, a Chairman of the Working Group had been chosen in the person of Mr. Villeneuve, and the membership consisted of 7 members from the two C.C.I.s and 7 members of the IEC. As to the continuation of Study Group XIV, that was a matter for the Assembly to decide and would be considered by the Organization Committee.

Mr. Lalou (C.C.I.T.T.) said that C.C.I.T.T. Study Group VII had discussed the relations of the two C.C.I.s with the IEC concerning Vocabulary, and referred to Recommendation 1–12 on page 215 of the C.C.I.T.T. White Book. It was clear that there must be collaboration to establish certain sections of the IEC International Electrotechnical Vocabulary. Within the C.C.I.T.T. each Study Group was authorized to present to the Plenary Assembly a list of definitions of which it had an urgent need and those definitions, once approved, could be published in the List of Definitions. C.C.I.T.T. Study Group VII had not been formally dissolved and still remained on the list of C.C.I.T.T. Study Groups, but instead of having a Chairman and Vice-Chairman, had only one designated person, as the C.C.I.T.T. Plenary Assembly had not wished to shut the door on a subsequent reorganization. However, it had no specific questions on its programme and it had been proposed to fuse it with C.C.I.R. Study Group XIV; there would be no procedural obstacles in such a case. The next Plenary Assembly of the C.C.I.T.T. would act according to the decision taken in New Delhi but nothing definite had yet been done.

The *delegate of Mexico* believed the matter called for special attention on the part of the present Assembly. Before 1953 the C.C.I.F. had established a list of technical terms and since then the Council had looked into the question and felt that that list should be supplemented with terms concerned with radiocommunications. It would seem that the list of telegraph and telephone terminology could be considered as up-to-date, but the situation was totally different with regard to radiocommunications. He felt obliged to make the criticism, since this matter had been neglected in the C.C.I.R., whereas the IEC had gone ahead. Progress in technology had been leaping ahead, with ever-increasing new terms and it was difficult to continue operational practices without the required terminology.

It could be seen from the Director's Report that Study Group XIV had not even held an interim meeting, when it would seem that it had particularly important work to do. He could only hope that the setting up of the Joint Group would create the necessary stimulus for the work to forge ahead. He proposed that the Group take as a basis the working document prepared by the IEC, which should be distributed to all Administrations, so that they could have at least some elements available to go forward in their own countries. In conclusion he invited the C.C.I.R. to take some action to overcome the anarchy which existed in so many countries, particularly those that were insufficiently developed, and had to use very vague terminology.

The *delegate of New Zealand* applauded the work going on in Study Group XIV and in the Joint Working Group. He believed that the Study Group was probably the most difficult one in which to achieve positive results, as not merely straightforward engineering was required, but international agreement on terminology. He felt that a step forward had been taken in the establishment of the Joint Group.

The *delegate of Spain* was in agreement with the praise that had been made of the work done by the C.C.I.T.T. Study Group, presided over by Spain up to the Plenary Assembly of Mar del Plata. Very little progress had been made in the C.C.I.R. and he was glad to see that a beginning had now been made, and it was absolutely essential that the Joint Working Party should go forward rapidly.

The *Chairman of Study Group XIV* said that he would refer to the questions raised by the United Kingdom, and also in the Organization Committee, when the documentation of the Study Group was to be reviewed, and the matter could perhaps be further developed. With reference to the remarks made by certain delegations, notably New Zealand, he referred to the Chairman's Report contained in Doc. XIV/1001, the last paragraph of which gave the first results obtained by the Joint Group. In a supplementary annex to the Report, the whole of the telecommunications vocabulary had been divided into about 20 chapters and each section could be developed at its own rate, which was an important innovation. He had not received the annex prior to his departure from Paris, as some amendments had been made at a meeting of the IEC held there, but had received it on 27 January and had given it to the document services, so that it should be distributed to all delegates the following day. The rôle of the C.C.I.R. in this new organization was described by the Chairman of Study Group XIV in

Doc. PLEN./24, which was to be distributed shortly, and therein the various Study Groups were requested to designate a sufficient number of experts, whose rôle would be multiple, to supervise the drafting relative to each Study Group. Doc. XIV/1004 was a draft Resolution concerning such special collaborators, who could form a pool of experts to whom application could be made for collaboration in the various mixed groups. Thus there would be efficient cooperation during the interval between Plenary Assemblies and the state of development of terminology at the next Plenary Assembly would be the proof of the possibilities offered by the Working Party. The delegate of Mexico had made a justified reproach, but now this regrettable situation would come to an end.

The *delegate of the Federal Republic of Germany* had some doubts whether a combination of C.C.I.R. Study Group XIV and C.C.I.T.T. Study Group VII would be the best solution. The work done by Study Group XIV in the past had not been fully satisfactory. In his opinion the best way to achieve good results would be to have a permanent working group depending on the Secretariat of the C.C.I.R., dealing only with terms and definitions. Thus Study Group XIV should continue to work by means of International Working Party XIV/1, together with the Joint Working Party. Details could be handled by the Organization Committee.

The *delegate of the U.S. Territories* referred to No. 804 (Chapter 17 of the General Regulations, Montreux 1965), which provides that the Director shall submit to the Plenary Assembly a report on the activities of the Consultative Committee since the last meeting of the Plenary Assembly. After approval, this report shall be sent to the Secretary-General for transmission to the Administrative Council. He would therefore suggest that the Assembly approve the historic facts contained in the Director's Report, and note the suggestions of the Director (these were, in fact, merely suggestions, since none of those ideas could be launched without prior approval of the Council if they were to cost money). Any points being brought up at the present session should come before the Organization Committee and the Technical Cooperation Committee, before account could be taken of them in Plenary Session. Even if there should be proposals for Resolutions on those subjects, in his opinion the Plenary should not take such Resolutions, because those points would have to be brought to the attention of the Council by the Director, it being the Council's prerogative to make decisions concerning expenditure. There were some twenty countries Members of the Council in the assembly room, and those Members would certainly report to their representative on the Council on the subjects raised.

The *Chairman* agreed that the present Assembly could take no definite conclusions at this stage, but hoped that the Organization Committee might present their considerations to the Plenary Session at a later date.

The *Secretary-General of the I.T.U.* referred to page 13, § 8, of the Report, where the Director mentioned statistics at present published by the I.T.U., and wished to thank Mr. Herbstreit for this reference, since it was of the greatest importance to the totality of Member countries, whether technically developed or developing. This importance had already been stressed by the IVth Plenary Assembly of the C.C.I.T.T. in 1968; thus in a relevant Report, Special Working Group GAS 5 on Economic Conditions and Development of Communications had drawn attention to the need for a statistical yearbook on telecommunications, on the lines of those published by other international organizations. Such a yearbook would be particularly helpful in drawing up national plans for the development of telecommunications.

The remarks and suggestions of GAS 5 were approved by the IVth Plenary Assembly at its Second Session (Minutes, Doc. AP IV/107). Following an exchange of views which took place before adopting that text, the opinion was expressed that the statistics of the Union were established on out-of-date bases.

The Secretary-General then cited textually from those Minutes:

"that it was important that many countries should supply a small but carefully chosen set of data and not that a few countries should submit a large amount of data. Moreover, the data should relate to several years, so as to give an idea of trends. The list given by GAS 5 in Doc. AP IV/39 should be taken as an indication. The definitive list would have to be drawn up in cooperation with the other C.C.I.T.T. Study Groups and even with other organs of the Union."

He believed that these remarks were equally pertinent to the C.C.I.R. Since these problems concerned all the organs of the Union, he had brought them up in the Coordination Committee, which had set up a working group composed of representatives of all the organs, with the terms of reference to prepare a report on the subject for submission to the Administrative Council. In the preparation of such a report it immediately became clear that, whereas details had been supplied by the C.C.I.T.T. with regard to telegraphy and telephony, none were available on radiocommunications, and he recalled that, in this respect, the statistics at present published by the I.T.U. were limited to public correspondence service by stations of the maritime mobile service, which was evidently insufficient.

Therefore the Secretary-General warmly supported the request of the Director of the C.C.I.R. as contained in the Resolution in Annex IV of his Report, for the C.C.I.R. Study Groups to supply a list of items in this respect, it being understood that the preparation of the statistics would not be carried out by the C.C.I.R. itself, but by the existing service in the General Secretariat. It went without saying that the drawing up of these statistics was a particularly urgent matter.

The *delegate of the United Kingdom* reverted to the subject of the Chairmanship of the Joint C.C.I.R.-C.C.I.T.T./IEC Working Group on Vocabulary, and expressed surprise that after some 3½ years of inactivity on the part of Study Group XIV, the future of the Working Group should not lie within its own hands.

The *Director of the C.C.I.R.* explained that the matter had been discussed with the Director of the C.C.I.T.T. and representatives of the IEC, and it was felt that the Chairmanship should remain with C.C.I.R. Study Group XIV. It had been so decided at the meeting of that Study Group in Geneva in September/October 1969, at which representatives of both the C.C.I.T.T. and IEC attended. However, it was for the Plenary Assembly to review the Chairmanship and Vice-Chairmanship of any study groups or working party, if it so desired.

The *delegate of the United Kingdom* then referred to the matter of statistics and recalled that at the C.C.I.T.T. Plenary Assembly in Mar del Plata, one of the problems discussed was that statistics were only useful provided that they were drawn up and available on a very wide basis. The I.T.U. had experienced difficulties in the past when preparing statistical data as the response from Administrations varied considerably from subject to subject. Bearing this in mind, he proposed some small changes to the Resolution in Annex IV, with the aim of leaving some discretion to the Secretariat as to precisely what information was to be published, depending on the scale of responses from Administrations. He therefore proposed the following amendments to page 79 of the Director's Report: considering *(a)* to *read*: "that, in pursuance of *No. 141 of the International Telecommunication Convention (Montreux 1965)* and Administrative Council Resolution No. 252 (amended)..."; resolves 1 to *read*: "... the statistics of which *it considers* should be included..." and resolves 2 to *read*: "... a list of the items *recommended for inclusion...*"

The *delegate of Denmark* supported this proposal, as the Secretary-General should be able to exercise judgment on what should be included in the Yearbook.

The *delegate of the Federal Republic of Germany* proposed that an indication be given on how each Study Group should present statistical information in a uniform manner.

The *delegates of Denmark and Pakistan* were both of the opinion that this would be a time-consuming method, and that it would be preferable for the Study Groups merely to submit a list of items they considered should be included in the Yearbook and to leave the compilation and statistical presentation to the relevant service of the General Secretariat.

The *delegate of Austria* suggested that Administrations should send in proposals concerning the items they would wish to see included in the Yearbook.

The *Chairman* proposed that a pink document be prepared on the Resolution in Annex IV, in line with the comments made and the suggested amendments by the delegate of the United Kingdom. It was so *agreed.*

The *delegate of Spain* referred to § *(b)* on page 2 of Addendum 1 to the Director's Report, and wished to congratulate the Director for the proposal he was going to make to the Administrative Council. However, to make the situation quite clear, he proposed an amendment to that section to read: "Since No. 788 of the General Regulations annexed to the Convention provides for the use of the Spanish language on an equal footing with English and French at interim and final Study Group meetings of the C.C.I.R....", since Spanish had been in use at the Plenary Assembly for a great many years. Despite the fact that No. 788 laid down that the preparatory documents of study groups should be issued in the working languages of the Union, of which Spanish was one, that language had been used for the first time only at the final Study Group meetings in Geneva in September/October 1969. He spoke at considerable length on the error existing in the past when Spanish had not been placed on an equal footing, and recalled the many countries in which that language was used, not only in Europe, but in Latin America, and even in Asia (the Philippines). An appreciable difference had been experienced at the Study Group meetings and he stressed that the decision made by the 1969 Session of the Administrative Council had been a correct and equitable one.

The meeting rose at 1245 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE TWELFTH PLENARY SESSION*

(Monday, 2 February 1970 at 1430 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Broadcasting Corporation (CBC); Canadian Overseas Telecommunication Corporation; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; France Câbles et Radio; Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd;. United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International organizations:*

International Electrotechnical Commission (IEC); International Air Transport Association (I.A.T.A.); International Radio and Television Organization (O.I.R.T.).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.R.

2. Consideration of the Report by the Director, C.C.I.R. (Doc. PLEN./1) (cont.)

The *delegate of the Argentine* agreed with the delegate of Spain, that, in accordance with the provisions of the Convention, it was correct that the Spanish language be used in all documentation and all activities of the I.T.U., and he made this statement on behalf of all Spanish-speaking delegates both present and absent. The *delegate of Cuba* also expressed his satisfaction at the decision taken, and stated that, according to the Convention, Spanish was one of the official languages of the Union and should be used.

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* As approved at the eighteenth Plenary Session.

The *delegate of Mexico* agreed with the principles governing the use of Spanish at all meetings. He referred to another aspect, contained in § *(a)* of Add. 1 to Doc. PLEN./1, namely with regard to the regrading of posts in P.5 instead of P.4. It must be remembered that a group of experts had made a study on reclassification of posts at I.T.U. Headquarters and if the proposed reclassification were not undertaken within the framework of that expert study the Administrative Council could raise objections.

The *Director of the C.C.I.R.* pointed out that on page 1 of the Addendum it was stated that he was proposing the reclassification to the Council, and it was for the latter to make the decisions. He felt it would be appropriate to mention No. 788 of the General Regulations in § *(b)*, as suggested by the delegate of Spain.

The *delegate of India* made the statement given in annex to the present Minutes.

With the above amendments and statements (see also Minutes of Eleventh Plenary Session), the Director's Report, contained in Doc. PLEN./1 and its Addendum, was *approved,* with the understanding that the relevant sections would still be subject to consideration by the respective Committees set up by the Assembly.

3. Modifications made by the Plenary Assembly to Documents of Study Group V

Doc. V/1042: the *Chairman of the Drafting Committee* explained that the modifications had been made with the assistance of the Acting Chairman of Study Group V and the C.C.I.R. Engineer attached to that Study Group. The document contained only changes of substance, as minor editorial corrections had been entered directly on the reference documents for publication. The document was *approved* without comment.

4. Consideration of draft conclusions of the Plenary Assembly

4.1 *Texts originating with Study Group XIII*

Doc. XIII/1001: Mr. Gleadle, Chairman of Study Group XIII, introduced his Report and quoted the terms of reference of his Group, giving a rapid survey of the work that had been done over the last three years by the Study Group, and which had recently started to take interest in the use of earth satellites for the mobile services.

He made the following corrections in the Report: page 4, the name of the Chairman of Working Group XIII-D should *read*: "Mr. *Simonds*"; page 5, under § 3.3, 2nd line: the draft Recommendation was "D.2.e(XIII)"; page 18, 9th column of the Table, under "Self-supporting antennae" *add*: "XIII/1020"; page 19, last column of the Table, under "L.M. propagation data" — *read* "Note to Study Group V". The Report contained in Doc. XIII/1001 was *approved,* with these corrections.

Doc. XIII/1002: the *Chairman of Study Group XIII* proposed an amendment to considering *(b)* to *read*: "8356 kHz" instead of 8354, and the *addition* of the word "approximately" between "is" and "the centre". *Agreed.*

The document was *approved* with the deletion of the second sentence of "Recommends", § 8 on page 3, at the proposal of the *delegate of New Zealand,* and the understanding, at the request of the *delegate of Cuba,* that the Spanish text on page 2 would be brought into line with the English and French.

Doc. XIII/1003: approved, noting that on page 2, penultimate line of "Recommends", § 3, the Recommendation referred to is now contained in Doc. XIII/1010.

Doc. XIII/1004: approved without comment.

Doc. XIII/1005: approved, with the addition to "Recommends", § 4, on page 2, of the words "*followed by the letter K*" after the words "which forbids "CQ" calls", proposed by the *delegate of India.*

Doc. XIII/1006: the *Observer from I.A.T.A.* made the following comments:

"I.A.T.A. welcomes this Study Programme but wishes to emphasize the urgency for a report on this subject as supersonic air transport aircraft are now undergoing development flight programmes.

In relation to the text of Doc. XIII/1006, "Considering" *(a)*, the only aeromobile service that employs single-sideband modulation is that of the HF band, therefore I.A.T.A. would suggest that line 4 should read: "... single-sideband modulation in the HF band taking Doppler ... ".

In relation to "Decides" § 1, on page 2 the intention was to embrace all aeromobile services in HF and VHF bands, etc. Airlines are already flying VHF AM/FM capability equipment within which Doppler effects have been catered for by improved frequency stability and I.F. passband design.

In relation to "Decides" § 1.3, it would perhaps be better to use the term "relative speed" as speed alone does not necessarily provide Doppler shift effects.

It was *agreed* to use the term "relative speed" in "Decides" § 1.3 but the *Chairman of Study Group XIII*, with reference to the preceding comments of the Observer from I.A.T.A., considered it preferable to leave the Question in quite general terms so as not to limit it to the HF band. It was so *agreed* and *Doc. XIII/1006* was *approved*, note being taken of the comments from I.A.T.A.

Doc. XIII/1007: approved without comment.

Doc. XIII/1008: the *Observer from I.A.T.A.* made the following comments:

"There would appear to be a possible source of confusion between C.C.I.R. and aviation interests. The main source of this confusion appears to be a semantic one relating to the use of the terms "Operational requirements", "Operating procedures", etc.

I.A.T.A. believes that there is no confusion within aviation circles on these terms and there may not be confusion within C.C.I.R. on these terms. However, I believe that I.T.U. and I.C.A.O. terminology differs considerably and this is the source of confusion.

Aviation interests are extremely grateful to C.C.I.R. for the technical studies carried out on behalf of aviation interests. Therefore, I suggest that a great service could be done if this confusion was resolved by direct liaison with I.C.A.O. and airline operational interests in order to arrive at acceptable definitions, understandings and areas of responsibility between I.T.U. and I.C.A.O."

The *Chairman of Study Group XIII* believed that the words "operational requirements" had a more limited sense in aeronautical circles than in the I.T.U., as the airlines defined such requirements as a definite operational need for certain facilities to be provided, which was not the case in the present terms of the document. With this understanding, *Doc. XIII/1008* was *approved.*

Doc. XIII/1009: approved, with an amendment to page 2, "Decides" § 2, 2nd line: to *read* "Resolution No. Mar 14 of the *Radio Regulations*" instead of "the Maritime Conference, Geneva 1967".

Doc. XIII/1010: approved, with the following corrections on page 2, § 1.3.4: *read* "see Nos. 445A, 1322A and Appendix 17A of the Radio Regulations"; *delete* the text in parentheses at the end of § 1.3.5.

Doc. XIII/1011: approved without comment.

Doc. XIII/1012: the *Chairman of Study Group XIII* pointed out that any action on the Recommendation would depend on that taken on the related Recommendation contained in Doc. XIII/1016(Rev. 1); in the case of adoption of the latter, considering *(b)* should be amended to *read* "(see Report ... (XIII/1027) and Recommendation... (XIII/1016 (Rev. 1)))". It was later so *agreed.* He proposed the deletion of considering *(d)*, which was *agreed.*

The *delegate of Denmark* submitted that the draft Recommendation as a whole was obsolete and contained no point of real substance which needed to be carried on, since from "Recommends" § 4 it could be seen that the substance was already contained in the Radio Regulations.

The *Chairman of Study Group XIII* agreed that the relevant Radio Regulations were drawn up on the strength of the draft Recommendation issued by the Special Meeting of Study Group XIII in 1967. The proposal by Denmark had, in fact, been discussed in the Study Group, but it had been felt that it was desirable to have the Recommendation brought up to date and printed in the "Green Book" since engineers using the latter volume were not always familiar with the Radio Regulations. It would be possible to delete the Recommendation in three years' time or to consolidate it with the system given in Doc. XIII/1016 (Rev. 1).

The *delegate of New Zealand* agreed with the Chairman of the Study Group that the Recommendation would be of use to engineers and should hence be retained.

The *delegate of Denmark* considered that it had served its purpose, but would not press the point. *Doc. XIII/1012* was then *approved.*

Doc. XIII/1013: approved without comment.

Doc. XIII/1014: approved, noting that on page 2, in three places ("Doc. XIII/196)" had become "(Doc. XIII/1035)".

Doc. XIII/1015: the *Chairman of Study Group XIII* explained that, in principle, the system outlined in the document was analogous with that coming into force for the fixed services, but it had been simplified as much as possible in its application to ships' equipment.

The *delegate of Japan* referred to § 3 on page 7, concerning "Equalization of time delay" which he felt might lead to some misunderstanding, and proposed the addition of a footnote to read: "*This delay includes an allowance for the time constants of the circuits preceding the expander in addition to that for the bandpass filter itself."; the title of § 3 should read: "Equalization of *overall* transmission time delay". It was so *agreed.*

The *delegate of the Federal Republic of Germany* recalled that at the final meeting of the Study Group his Administration had expressed its reservation on the draft Recommendation, because it felt that it still required further study with respect to the proposed new Study Programme contained in Doc. XIII/1023. The Administration of the F.R. of Germany was of the opinion that further studies of linked compressor and expander systems were necessary before a C.C.I.R. Recommendation should be made. His delegation therefore still *reserved its opinion* concerning draft Recommendation... (XIII/1015)

The *delegate of the* U.S.S.R. said that his delegation had also expressed reservations at the final meeting, as it considered that the adoption of such a responsible document as a Recommendation was premature. The system proposed had been tested very little so far, and experience in the Soviet Union was at present insufficient. Moreover, the system applicable to radiotelephone ships' channels had a very narrow band, which had been further reduced to 2400 Hz, which could give rise to difficulties. As his delegation had emphasized at previous meetings, the C.C.I.R. could not ignore economic factors, and the proposed system could cost approximately $ 3,000.

Doc. XIII/1023 contained a draft Study Programme on the subject, and if this were approved and carried out, data could perhaps be collected on the application of the proposed new system, which might then be adopted at the next Plenary Assembly. Meanwhile the *Soviet delegation maintained its reservation.*

The *delegate of Italy* said that, in Geneva, his delegation had expressed a reservation, as it had not possessed sufficient experience with regard to the use of the proposed system. Since then the system had been tried out and it had been found that the reduced bandwidth gave rise to very little loss of intelligibility and the quality of reception had improved considerably. He would therefore wish to *withdraw* Italy's reservation.

The *delegate of Cuba* said that in his country great efforts were being made to extend the mercantile and fishing fleets so as to overcome the blockade imposed upon them. In view of the difficulties envisaged by certain Administrations regarding insufficient experience and expense, the *Cuban delegation* also wished to *express a reservation* on the document.

The document was *approved,* with the reservations of the *F.R. of Germany,* the *U.S.S.R.* and *Cuba.*

Doc. XIII/1016(Rev. 1): the *Chairman of Study Group XIII* said that, since the final meeting in Geneva, the Netherlands Administration had checked the accuracy of the technical annex to the document. In addition, on page 7, the words "or space" should be added after "symbol" in § 3.2.2.1 and on page 8 a footnote should be added to explain that letter "B" indicates the higher frequency.

The *delegate of the United Kingdom* stated that, although his delegation had expressed a reservation on the document at the final Study Group meeting, it did not intend to do so at the Plenary Assembly. However he would propose an amendment to recommends 1 and 2, since he was doubtful about the value of the preference for a 7 ARQ-mode and would like to leave the question open as to whether such a mode or a broadcast mode should be used. He therefore proposed the deletion of recommends 1 and 2, and their replacement by a new recommends 1: "that when an error-detecting and correcting system is used for direct printing telegraphy in the maritime mobile service, a 7 ARQ-mode or a 7-unit forward-acting, error-correcting and indicating, time-diversity system, using the same code, should be employed."

The *Chairman of Study Group XIII accepted* this amendment.

The *delegate of Norway* (Vice-Chairman of Study Group XIII) said that the Norwegian delegation was very happy to learn that the United Kingdom would not maintain its reservation, and did not think that the amendment was substantial. According to the experience of his Administration, they were convinced that the ARQ-mode would be the preferred one when a return circuit was available. However, he could support the amendment proposed by the United Kingdom.

The *delegate of the U.S.S.R.* said that the coding system of Simplex Tor operated with ARQ was being used for transmitting information. That code had a history going back to 1950. Fuller codes were now being used, for example, for broadcasting channels in the maritime mobile service, codes from 50 to 200 symbols were possible, whereas the 7-unit system even if repeated three times, only comprised 21 symbols, and had proved vulnerable from tests conducted in the Soviet Union. He therefore proposed that the Recommendation submitted in Doc. XIII/1016 (Rev. 1) should not be adopted, as the meeting of the Study Group had not had sufficient time or possibility of selecting from among other systems, since only two proposals had been submitted. Therefore, a hasty decision at the present time would not be constructive, and Administrations would no longer have the possibility of continuing their research. He recalled that at the interim meeting the draft Recommendation had been adopted by expressions of opinions resulting in 9 in favour and 7 against.

The *Chairman of Study Group XIII* said that there were many systems in existence for direct printing, having various advantages and disadvantages, and they had been reviewed during the final meeting, together with the system proposed by the United Kingdom. There was not time to conduct research into more sophisticated systems; it was possible that in 9 or 10 years' time much better systems and equipment would be available, and that a better Recommendation would be adopted by the C.C.I.R., but the shipping industry had a dire need for direct printing telegraph equipment immediately and it was desirable to agree now to one system for international use.

The *delegate of Denmark* said that the draft Recommendation possibly represented one of the most important documents to be issued by Study Group XIII. As had been said, many different systems were in existence and others were in course of development, so that, were the Study Group to wait for a better system to emerge, it ran the risk of not being able to decide on any single system. He also stressed the great need for the shipping industry to have such a system, since the telex service had become very popular in many countries, and, by its very nature, required international standardization to be applicable to ships. It was, in fact, this essential need which started the Radio Regulations and it was better to have some form of standardization, even if not perfect, than none at all. His Administration would therefore

strongly support adoption of the Recommendation. In his opinion the amendment proposed by the United Kingdom somewhat weakened the Recommendation, but he was prepared to accept it as modified. He concluded by saying that his Administration had already carried out experiments with the proposed system for a period of some 2 years and had been very satisfied with it and were going to introduce it as a general public service, whatever the decision taken in New Delhi.

The *delegate of the Netherlands* expressed gratitude to the delegation of the United Kingdom for having changed their decision since the final Study Group meeting. He agreed with the delegate of Denmark that the proposed amendment weakened the text, but, as he understood it, it applied only to operational procedures, which still had to be studied under § 5 of Question 5/XIII, he would be prepared to accept it, provided agreement could be obtained on the technical equipment, even though he shared the opinion of Norway that the ARQ-mode would be the preferred one.

The *delegate of Japan* made the following statement:

"At the final meeting in Geneva, our delegation made a statement that the final view of the Japanese Administration will be expressed at the Plenary Assembly here in New Delhi. Therefore, I would like to take advantage of this opportunity to express our position on this document.

Our conclusion is that although we do not see that the Recommendation contained in this document is a perfect one, the Japanese Administration expresses its support to adopting the document.

However, I would like to add the following as a comment. The improved telegraph service cannot be established without having a selective calling system in addition to the direct printing system. The progress made in Study Group XIII with respect to a selective calling system for telegraph service is not satisfactory. The greatest trouble we are having in existing HF maritime telegraph service is the lack of a selective calling system rather than poor telegraph transmission quality, so far as our Administration is concerned, and we are afraid that even after the introduction of a direct printing telegraph system into operation, we might have some difficulties in setting up a circuit between the coast station and the desired ship, before commencing telegraph transmission with an improved technique.

Accordingly, I conclude my remarks by saying that it is most important that the work of improving this Recommendation be continued and also that the further study to establish a selective calling system associated with the maritime mobile telegraph service be encouraged."

The *delegate of New Zealand* recalled that his delegation had made some reservations at the final meeting about the practicability of the Recommendation. However, the proposed amendment by the United Kingdom had gone a long way towards meeting those objections, and he was prepared to support the adoption of the Recommendation as modified by the United Kingdom.

The *delegate of the U.S.S.R.* did not consider that the proposed amendment would meet all the requirements of the maritime mobile service, although it did allow Administrations to extend the possibilities of applying such a system. In particular it would not meet the requirements for accuracy of data transmission from vessels for processing by electronic computers, nor would it meet those referred to by the delegate of Japan on the application of selective calling for ships. As was known, selective calling devices for vessels were very much in demand for countries of I.M.C.O. for safety purposes, and it was his opinion that the amendment put forward by the United Kingdom would cause great difficulties in applying such devices to sea-going vessels. His delegation did not support the Recommendation, and, if adopted, would exercise the right to express a reservation.

The *delegate of the Netherlands* called attention to § 3.1.4.2, concerning the call-signal, which signal, in fact, phased ships not only automatically, but also on a selective basis. He had not elaborated upon that subject, since he felt that under § 5 of Question 5/XIII the operational procedures would have to be established for the use of selective calling equipment, but the possibilities were inherent in Annex I.

The *delegate of Sweden* supported the statement by Denmark and said that his own Administration was introducing direct-printing telegraphy at an increasing rate, and it was expected that it would increase still more rapidly in the future with the demand for such equipment. It was therefore necessary to take an immediate decision on standardization of an error-detecting/correcting system; hence Sweden strongly supported the adoption of the Recommendation, as amended by the United Kingdom.

The *delegate of the United Kingdom* referred to the remark by the delegate of the Netherlands, and, to draw attention to the possibility of the call-signal being selective in character, proposed that an asterisk be added after § 3.1.4.3, with a footnote to read as follows: "*The composition of these signals and their assignment to individual ships require international agreement (see § 5 of Question 5/XIII)". It was so *agreed.*

The *delegate of the Bielorussian S.R.* could not accept the Recommendation, because it proposed only one system and it could not be foreseen to what extent that system would justify itself once put into operation. Since various countries were already employing the systems they desired for direct printing telegraphy, they should continue to do so until such time as further contributions to the C.C.I.R. could be reviewed and some system preferred on the basis of operational experience. The matter required further study.

The *delegates of Italy and France* approved the adoption of the Recommendation with the amendments proposed by the United Kingdom and the *delegate of Canada* also supported it, as amended, since he considered it was a major step forward in the introduction of direct-printing telegraphy for the maritime mobile service, and a substantial degree of uniformity would appear to have been reached.

The *delegates of Bulgaria, the U.S.S.R., the Bielorussian S.R. and the Ukrainian S.R.* expressed their *reservations* on the Recommendation.

With the above reservations, *Doc. XIII/1016 (Rev. 1)* was *approved,* as amended.

Docs. XIII/1017 and *1018: approved* without comment.

Doc. XIII/1019: the *Chairman of Study Group XIII* recalled the remark by the delegate of the Netherlands that it was desirable to keep the Question open, even though the Recommendation on the type of system to be applied had been approved, so as to study more carefully the operational procedures contained in § 5 of the Question. *Doc. XIII/1019* was *approved* on that understanding, and noting that the footnote on page 2 should now refer to "Recommendation ... (XIII/1012)".

Docs. XIII/1020 and 1021: approved without comment.

Doc. XIII/1022: the *Chairman of Study Group XIII* pointed out that the attribution of the new Question to whichever Study Group might be decided, depended on future decisions of the Assembly in connection with Study Group IV.

The *Observer of I.A.T.A.* made the following comments:

"This document causes some concern both in its context and in its relation to Study Group IV activities.

The 3rd paragraph of page 1 "Considering" *(c),* speaks of I.C.A.O. activity culminating in a specialist Technical Panel called ASTRA (Applications of Space Technology to the Requirements of Aviation) being formed.

The terms of reference of this panel specifically refer to:

— Identification of those aviation requirements which can be best met by the use of satellite technology and their respective order of importance.

— Consideration of prediction of traffic density and distribution patterns over the period to 1980 in relation to the specification of possible aircraft separation standards and hence, Air Traffic Safety.

— To complete cost/benefit studies embracing all aspects of communications and radio-telecommunication used in an aeronautical service that could be offered by a satellite system.

The concern I.A.T.A. has over this document relates to the "Decides" paragraph on page 2. It would appear a complete duplication of effort could occur unless the consultation outlined in the note is fully effective.

It is I.A.T.A.'s understanding that I.C.A.O. is in the process of preparing a draft "Aviation Position" for approval by States prior to its submission to the W.A.R.C."

The *Chairman of Study Group XIII* agreed on the necessity of close cooperation between the C.C.I.R., I.C.A.O. and I.M.C.O., and such cooperation could be assured by the attendance of representatives of the aeronautical services at meetings of Study Group XIII, bearing in mind that it was the Administrations which decided upon policy matters.

The *Observer of I.A.T.A.* said he could accept that principle but would point out that the operation of aircraft was the function of the airlines and not of the Administrations, and airlines should also be consulted on such matters.

Doc. XIII/1022 was *approved* with that understanding.

Doc. XIII/1023: the *Chairman of Study Group XIII* recalled that it was on the initiative of the delegation of the U.S.S.R. that the Study Programme had been adopted by the Study Group. It was *approved* without further comment.

Docs. XIII/1024 and 1025: approved without comment.

Doc. XIII/1026: approved with the addition of a sentence which had been omitted in error on page 2, in § 3: "The attention of Administrations is drawn to the methods of measurement currently being standardized by the IEC (see Opinion ... (Doc. XIII/1024)".

Doc. XIII/1027: approved without comment.

Doc. XIII/1028: the *Chairman of Study Group XIII* referred to § 13.5 on page 2, and said that the question concerned was Question 3. He wondered whether the Assembly wished to keep that Question open for the purpose of continuing the tests. If not, the Recommendation approved earlier would close its study. It was *agreed* that Question 3 should be *closed*, and with that understanding *Doc. XIII/1028* was *approved*, with a minor amendment in § 14.

Docs. XIII/1029 and *1030: approved* without comment.

Doc. XIII/1031: approved with a correction in the penultimate paragraph, 4th line, on page 1, to read: "... in accordance with Appendix 17A...".

Docs. XIII/1032 and *1033: approved* without comment.

Doc. XIII/1034: approved with the observation that it was of great interest to I.M.C.O.

Doc. XIII/1035: approved, with the understanding that, in view of its size, the data included therein would be subject to a careful check by Administrations.

Doc. XIII/1036 (Status of texts): *approved* with the addition of three references in the column giving the number of pink documents, and with the cancellation, as previously agreed, of Question 3/XIII on page 2.

Study Group XIII had thus concluded its task and its *Chairman* expressed appreciation of the help he had received over the years from the Chairmen of the Sub Groups.

The meeting rose at 1740 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

ANNEX

STATEMENT BY THE DELEGATE OF INDIA

"Mr. Chairman, my delegation was surprised at the statement made by the distinguished delegate of Pakistan early this morning. The Pakistani delegate alleged that a visa has been refused to an important member of his delegation. As far as we know, no such event has occurred and we should indeed be grateful if the Pakistani delegation substantiated their statement. In any event, we are surprised that the point should have been raised at this rather late juncture. If some difficulty had, in fact, arisen, the matter could have been amicably sorted out if the Pakistani authorities had taken it up with the appropriate Indian authorities. After all, a Pakistani delegation is here and visas have been granted to its members."

MINUTES OF THE THIRTEENTH PLENARY SESSION*

(Tuesday, 3 February 1970 at 1430 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; France Câbles & Radio; Italcable; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating from Study Group III*

Doc. III/1001 and *Corrigendum 1:* The *Chairman of Study Group III,* introducing his Report, drew attention to the proposal to discontinue Working Party III/1 to make way for a group having broader responsibilities. If such a group were not set up, it would always be possible to reconstitute Working Party III/1.

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* As approved at the eighteenth Plenary Session.

Doc. III/1001 was *approved.*

Doc. III/1002: The *delegate of Switzerland* said that the symbol used in § 1.1 for "directive gain", G_d, was employed in the Radio Regulations to denote the relative gain of an antenna and as such had been taken over by the IEC. He proposed that the symbol G_o be used instead. It was *decided* to refer the matter to the Drafting Group and also to draw the attention of Study Group XIV and the Joint Coordination Group to the definitions contained in § 1. *Doc. III/1002* was then *approved.*

Doc. III/1003: approved without comment.

Doc. III/1004: approved with amendment of "usually" to "often" in considerandum *(a).*

Docs. III/1005 and *III/1006: approved* without comment.

Doc. III/1007: approved with the words "or possibly polarization diversity" added before "should" in § 2 of the operative section.

Docs. III/1008 and *III/1009: approved* without comment.

Doc. III/1010: approved subject to the inclusion of a footnote, to be prepared by the Drafting Committee, referring to the use of 170 Hz by the maritime mobile service and the relevant article in the Radio Regulations.

Doc. III/1011: approved without comment.

Doc. III/1012 with Corrigendum 1: approved without comment.

Docs. III/1013 to *III/1017 inclusive: approved* without comment.

Doc. III/1018: The *delegate of Japan,* recalling that his delegation had been one of the three delegations that had reserved their positions on this draft Recommendation at the final meetings of the Study Group, said that, after conducting careful experiments, the Japanese Administration had now found a pilot carrier level of –20 dB to be acceptable as a maximum tolerable level. A level of –16 dB was unacceptable as it gave rise to an increase in distortion and crosstalk in the transmitter.

The *delegate of Pakistan* said that, as his Administration made exclusive use of a level of –26 dB and it would be difficult to change over to –20 dB, his delegation wished to reserve its position.

Doc. III/1018 was *approved* with the reservation made by the Pakistan delegation.

Doc. III/1019: approved without comment.

Doc. III/1020: approved with the end of the Note to § 2.2.6 ("month, until ... No. 462") amended to read: "month; Report ... (VI/1057) gives a method for computation".

Docs. III/1021 to *III/1040 inclusive: approved* without comment.

Doc. III/1041: approved on the understanding that the Table would be brought into line with Table I in Doc. XIII/1016(Rev. 1).

Docs. III/1042 and *III/1043: approved* without comment.

The *Chairman of Study Group III* expressed his thanks to the delegates, the Chairmen of the Sub-Groups and the staff of the C.C.I.R. Secretariat for their assistance and cooperation.

2.2 *Texts originating from Study Group VII*

The *Chairman of Study Group VII* drew attention to Doc. PLEN./31, which contained proposed amendments to some of the texts submitted by the Study Group.

Docs. VII/1001 to *VII/1007 inclusive: approved* without comment.

Doc. VII/1008: approved with deletion of the words "or integral multiples thereof" in § 2 of the operative section.

Docs. VII/1009 to *VII/1020 inclusive: approved* without comment.

Doc. VII/1021: The *delegate of Switzerland* said that, because of his commitments in his home Administration, he would be unable to act as Chairman of International Working Party VII/2 as provided for in § 2. He proposed that the Chairman should be Professor Egidi of Italy.

The *delegate of France* supported the proposal and the *delegate of Italy* said that Professor Egidi would be glad to accept.

With this amendment, *Doc. VII/1021* was *approved.*

Docs. VII/1022 to *VII/1025: approved* without comment.

Doc. VII/1026: The *Chairman of Study Group VII* said that any Administration wishing to correct the figures appearing in this document should do so within the next four weeks.

Doc. VII/1026 was then *approved.*

Docs. VII/1027 to *VII/1034: approved* without comment.

The *Chairman of Study Group VII* paid tribute to Mr. Decaux and Prof. Boella, who resigned as Chairman and Vice-Chairman of Study Group VII in November 1969 and September 1969, respectively. Everyone knew how much Study Group VII owed to their wisdom, leadership and personal contributions and he proposed that a message be sent to Mr. Decaux and Prof. Boella thanking them for their long years of valuable service.

It was so *decided.*

2.3 *Texts originating from Study Group VIII*

The *Director of the C.C.I.R.* announced that, as both Mr. Vieira and Mr. Bouchier had been unable to come to the Plenary Assembly, the documents of Study Group VIII would be presented by the Acting Chairman, Mr. Wickenkamp.

The *Acting Chairman of Study Group VIII* drew attention to Doc. PLEN./18, which contained proposals for changes to Docs. VIII/1020 and VIII/1028.

Doc. VIII/1001: approved with "amend Question 7/VIII" replaced by "cancel Question 7/VIII" in § 8.

Docs. VIII/1002 to *VIII/1010 inclusive: approved* without comment.

Doc. VIII/1011: approved with the addition to considerandum *(a)* of "with the exception of certain systems in which the transmission of identifying signals presents certain difficulties at the present time".

Docs. VIII/1012 to *VIII/1015 inclusive: approved* without comment.

Doc. VIII/1016: approved with the deletion of "about" in Note 4, page 2.

Docs. VIII/1017 to *VIII/1026 inclusive: approved* without comment.

Doc. VIII/1027: approved with deletion of footnote on the first page.

Docs. VIII/1028 to *VIII/1029 inclusive: approved* without comment.

Doc. VIII/1030: the *delegate of India* recalled that Question 12/VIII dealt with the subject of monitoring services in the new or developing countries. A reply to that Question was contained in Report 371, which gave information on the multiplicity of problems involved in the establishment and organization of a monitoring service. It was obvious, however, that developing countries could not set up monitoring services overnight. Their resources were limited and they had to build up their services gradually. What was needed was guidance on priorities. He proposed therefore that a footnote be added to Question 12/VIII requesting information on what order of priority should be given for the provision of the recommended facilities in the establishment and organization of a radio monitoring service.

The proposal was *adopted.*

Doc. VIII/1030 was *approved* with this amendment to Question 12/VIII.

The *Acting Chairman* thanked the delegates of Study Group VIII and the staff of the C.C.I.R. Secretariat for their cooperation and assistance.

3. Statement by the delegate of Pakistan

The *delegate of Pakistan* made a statement, reproduced in the Annex, giving details on the question of an entry permit for a delegate from Pakistan referred to in Docs. PLEN./29 and PLEN./32 (Minutes of the eleventh and twelfth plenary sessions).

The meeting rose at 1745 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
T. JONES	R.V. LINDSEY	N.C. SHRIVASTAVA

ANNEX

STATEMENT BY THE DELEGATE OF PAKISTAN AT THE THIRTEENTH PLENARY SESSION

"Yesterday afternoon in the Plenary the Deputy leader of the Indian delegation referred to an earlier statement of the Pakistan delegation concerning the entry permit for one of the delegates of Pakistan to the Plenary Assembly. Whilst we have no desire to enter into a controversy, the delegation of India has asked for substantiation of our statement and we have no alternative but to respond. The Pakistan delegate, whose name is Kamal Masud Hasan, was not granted a visa by the Indian High Commission office in Karachi. After the commencement of the Plenary Assembly, the Pakistan High Commission in New Delhi, on receipt of a telegram from our Government, approached the Indian Ministry of External Affairs and was told that the visa could not be granted. The matter is therefore known to the competent authorities of the Government of India and a reference by the Indian delegation to their Ministry of External Affairs will substantiate the accuracy of our statement.

We agree that such matters should be handled bilaterally. This is exactly what was in fact done by the competent Pakistan Authorities with the Indian Authorities concerned as regards this matter of the issue of a visa.

The question was also posed as to why this matter was raised so late. As a matter of fact, Mr. Chairman, we were rather reluctant to raise this issue at the Plenary but when we finally realised that there was no prospect of a change in the decision by the competent authorities, we raised the matter yesterday when Doc. PLEN./1, the Director's Report containing the agreement with India, was tabled rather belatedly, as is well known, before the Plenary yesterday.

In conclusion, we wish to state again that we ourselves regret that an occasion should have arisen to make it necessary to raise this issue at all and we do not wish to prolong the debate and take up the valuable time of the Plenary. If the Indian delegation wishes to take up this matter with the authorities concerned, we would be happy to give any particulars required concerning the delegate who has not been able to join us here.

Finally, the Pakistan delegation would like to state, that it is very grateful to the Indian Administration for its cordial hospitality and the fine arrangements it has made for our work and leisure here.

Thank you Mr. Chairman."

MINUTES OF THE FOURTEENTH PLENARY SESSION*

(Wednesday, 4 February 1970 at 1430 hours.)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; Hungarian People's Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; Canadian Overseas Telecommunication Corporation; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; France Câbles & Radio; Italcable; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Cable and Wireless Ltd.; Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of draft conclusions of the Plenary Assembly

2.1 *Texts originating with Study Group I*

The *Director of the C.C.I.R.* said that he had received word from Mr. Lochard, Chairman of Study Group I, that he would not be able to attend the meeting in New Delhi, and had recently also learned that Prof. Ryzko, the Vice-Chairman, had been suddenly taken ill.

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* As approved at the eighteenth Plenary Session.

Their absence was much regretted, but Mr. Place (France), the Chairman of Study Group II, who was also familiar with the work carried out in Study Group I, had kindly undertaken to present the documentation of that Study Group.

The *Acting Chairman of Study Group I* said he did not have the competence of the absent Chairman and Vice-Chairman, but would do his best and craved the indulgence of the Assembly. Before presenting the documentation, he recalled the present terms of reference of Study Group I and gave a brief resumé of the work that had been accomplished during the period 1966–1970, notably in the following fields: definition of bandwidths of emissions; measurements of spectra and bandwidths of emissions; examples of bandwidth calculation; frequency stabilization and frequency tolerance of transmitters; spurious radiation; classification and designation of emissions.

Doc. I/1001: the Chairman's Report contained in the document was *approved* without comment.

Doc. I/1002: the delegate of Cuba drew attention to an omission in the Spanish text in considering 1 *(a)*, which the Drafting Committee would take care of. He then proposed combining decides 8 and 9 on page 2, as the former was more or less covered by the latter.

The *delegate of the Netherlands* explained that § 8 concerned the study of improvement of future transmitters, whereas § 9 considered what could be done with regard to existing transmitters.

The *Chairman of the Drafting Committee* agreed that there was an implicit difference and would prefer to see the present text retained.

The *delegate of Cuba* did not press the point and *Doc. I/1002* was *approved* without change.

Docs. I/1003 to *I/1006 inclusive: approved* without comment.

Doc. I/1007: a correction was to be made to page 11, where part of the original Recommendation 328-1 had been omitted: after § 2.5.1.3, *add* "2.6 *Class of emission F1.* For class of emission F1, frequency-shift telegraphy, with or without fluctuations due to propagation:" and *renumber* the following paragraphs accordingly.

The *delegate of Cuba* proposed some rewording to avoid ambiguity, for the Spanish text only, of § *(g.b)* on page 2, which would be dealt with by the Drafting Committee.

The *delegate of Japan* had an observation concerned with the definitions on page 3 (1.1 Necessary bandwidth). The question of necessary bandwidth and occupied bandwidth had long been studied in the Study Group and now agreement had been reached on the definitions in the document, but it seemed to his delegation that these still held difficulties from a practical point of view. He could therefore agree to the definitions for the time being, but strongly hoped that a further study of the matter would be carried out. He was glad to see that several amendments proposed by Japan had been incorporated in the present document.

Doc. I/1007 was thereupon *approved.*

Doc. I/1008: the *delegate of Japan* drew attention to the title "Spurious radiation" and recalled that the term had been adopted by the Plenary Assembly in Warsaw in 1956. However the term "Spurious emission" still existed in the Radio Regulations and should be amended at a forthcoming Administrative Radio Conference.

Doc. I/1009: no document existed bearing that number.

Docs. I/1010 and *I/1011: approved* without comment.

Doc. I/1012: approved with a correction in the title: "Radiotelegraph" to *read* "Radiotelephone", and the addition of the words "and 66" after "page 65" in the 3rd paragraph.

Docs. I/1013 to *I/1017 inclusive: approved* without comment.

Doc. I/1018: approved, with a correction to the 3rd line of § 2: *read* "Doc. I/1005" instead of "I/1009".

Doc. I/1019: approved with a change in the sub-title to *read*: "Spurious radiation" instead of "parasitic radiation", proposed by the *delegate of Japan,* since spurious radiation included harmonics, parasitic radiation and intermodulation products.

Doc. I/1020: the *delegate of the United Kingdom* pointed out that in the 2nd paragraph, 4th line, the Recommendation previously referred to had been 328-1. Now that the Assembly had approved Recommendation (I/1007), which was quite in accordance with the methods of calculation, the statement was no longer correct. He therefore proposed that reference to I/1007 be *deleted.* The document was *approved* with that deletion.

Doc. I/1021: approved with a correction to the French text only, in § 3, "D_p"; on page 5 the addition of the sign $>$ in the legend below the top (Fig. 3) "$(A: D_p/M > 2{\cdot}5)$".

Doc. I/1022: approved with an amendment proposed by the *delegate of the Ukrainian Socialist Republic:* at bottom of page 2, *delete* all the sentence following the words "Zero level was..." and *add* the words "equivalent to the level of the unmodulated carrier".

Doc. I/1023 (Status of texts): *approved* without comment.

Study Group I had thus completed its task, and *Mr. Place,* Acting Chairman, on behalf of Mr. Lochard and Prof. Ryzko, thanked all the participants in the work and especially the Chairmen of the Working Groups: Messrs. Dellamula (I.F.R.B.), Eckhardt (P.T.I.), Gröschel (F.R. of Germany), Guiart (France), Veatch (U.S.A.) and also Mr. Krupin, C.C.I.R. Engineer, and the Secretariat for their cooperation.

2.2 *Texts originating with Study Group II*

Doc. II/1001: The *Chairman of Study Group II* recalled the terms of reference of the Study Group and gave a brief review of the work accomplished since the last Plenary Assembly, notably in the fields of characteristics of receivers, measurement methods, diversity reception, remote controlled receiving stations, susceptibility of television broadcasting receivers to ambient fields, and the radio frequency dynamic range of a receiver.

Prior to approval of his Report, he referred to International Working Party II/1, mentioned in § 2.1.1, under the Chairmanship of Mr. Chistiakov (U.S.S.R.), Vice-Chairman of Study Group II, which Working Party was concerned with the study of typical receivers. He considered it was desirable to continue the work of this group and asked for the agreement of the Assembly on its maintenance.

The *delegate of the United Kingdom* said that his Administration had never seen a great value in that work and to their knowledge, no use had ever been made of the results of those studies. The United Kingdom would neither propose the continuation of that work, nor its discontinuation, should any other Administration wish for it to be maintained.

The *delegate of the Netherlands* supported the opinion of the last speaker.

Mr. Petit (Member of the I.F.R.B.) stressed that the results of the Working Group had considerably helped the Board in establishing technical standards for receivers serving in the technical examination required to be carried out by the Radio Regulations.

The *delegate of France* remarked that up to the present the characteristics of typical receivers under study were very numerous. At the last interim meeting of Study Group II a draft new Question had been adopted to simplify the table of typical receivers in the corresponding Study Programme, and he felt the Study Programme should be continued as it would bring interesting results.

The *Chairman of Study Group II* pointed out that in October 1969 the Study Group had adopted a draft Question ...(II/1009) and had stressed its importance relative to the work on typical receivers.

The *delegate of the Federal Republic of Germany* agreed with what had been said by the delegates of the United Kingdom and the Netherlands. However, as pointed out by the delegate of France, an attempt was being made to reorganize and reform the work on typical receivers and he hoped that by means of the new Question the results would prove of value both to the I.F.R.B. and to a forthcoming Administrative Radio Conference.

The *Director of the C.C.I.R.* mentioned the need for specific terms of reference of International Working Party II/1 in relation to § 2 of Resolution 24-1, which defined the establishment of International Working Parties.

The *Chairman of Study Group II* pointed out that the terms of reference were given on page 199 of Oslo, Volume VI.

The *delegate of Denmark* had also had some doubts as to the usefulness of the study, but thought the remark made by the Member of the I.F.R.B. was quite relevant since it was certainly true that the information from Study Group II served the I.F.R.B. in establishing its standards. Apart from that need, were there any further reasons for maintaining the study? If not, he proposed that there should be a little more precision in the aim and purposes of the particular study and that it should be directed towards assisting the I.F.R.B. in establishing standards to help the radio services.

The *Chairman of Study Group II* said that it was along those very lines that the Study Group had adopted a new Question on the subject in October 1969, which would be considered in Doc. II/1009.

The *Director of the C.C.I.R.* suggested that the terms of reference of the International Working Party might be slightly amended to refer to the new Question on the essential characteristics of receivers.

The *Chairman of Study Group II* proposed that a Resolution be prepared along those lines for presentation to the Assembly, and it was so *agreed.*

The *Chairman of Study Group II* then referred to § 3 of his Report, concerning documents of interest, for the study of which there had been insufficient time at the final meeting in Geneva, and it would therefore be well to record a request to those Administrations which had prepared such documents to present them again to the next Plenary Assembly. *Note was taken of this request.*

He then referred to Doc. PLEN./36 which contained certain amendments to documents of an editorial nature, or the addition of data in the tables, at the request of certain Administrations. It should be noted that the Administration which had proposed an amendment to Doc. II/1008 in that document had since withdrawn its proposal.

The *delegate of Japan* drew attention to the fact that, throughout the documentation, the term "spurious emission" still occurred and should be replaced by the agreed term "spurious radiation".

With this understanding, and pending approval of the proposed Resolution concerning International Working Party II/1, the Chairman's Report contained in Doc. II/1001 was *approved.*

Docs. II/1002 to *II/1006 inclusive: approved* without comment.

Doc. II/1007: the *delegate of Denmark* said that his was a small delegation and it had been unable to take an active part in the work of the Study Group at the final meeting. Upon reading Doc. II/1007, he asked what was the real purpose of trying to classify broadcast receivers into a number of classes according to their performance.

The *delegate of Italy* said that specifications for low-cost television receivers had been considered within Study Group XI, who had examined draft Question B.q(II) at the interim meeting in Geneva, and had thereupon issued a document(XI/206 (Geneva)) from which he quoted:

"At the Interim Meeting, 1968, held in Palma, Study Group XI prepared draft Report E.4.v(XI) "Specifications for low-cost television receivers" as a reply to Question 13/XI and in § 1.1 of this draft Report, two categories of television receivers are described. This categorization meets the requirements of Study Group XI for television receivers and no future projects are foreseen by this Study Group which would justify the work involved in dealing with part 1 of draft Question B.q(II). Consequently, the tabulation of characteristics mentioned in part 2 of this draft Question would also be unnecessary." In the light of the opinion expressed in that document, he considered that Doc. II/1007 should be amended on page 2 by the deletion of the words "and television" in § 1, to avoid duplication of work.

The *Chairman of Study Group II* considered that Study Group XI established characteristics especially with a view to the establishment of television plans, but did not consider it from the viewpoint of broadcasting, whereas Study Group II had the task of broadcasting services, and other services so as to avoid harmful interference between services. He did not believe, therefore, that there was any duplication of work involved.

The *delegate of the United Kingdom* said it did not seem a very logical argument in justification of that aspect of the work of Study Group II. It would seem that Study Group XI would also be concerned with interference to television receivers from other services. He was supported by the *delegate of Italy.*

The *delegate of the U.S.S.R.* drew attention to the terms of reference of Study Group II. He felt that the present discussion was unnecessary, since the examination of all types of broadcasting receivers, as well as receivers of other services, directly complied with those terms of reference. He spoke at some length on the importance to international telecommunications of determining the characteristics of typical receivers. The matter must obviously be considered sufficiently widely, and in the opinion of his delegation, the Opinion in Doc. II/1007 was logical, and well based and should be approved.

The *Chairman of Study Group II* said there were two types of Study Group: service groups and non-service, but the work of Study Group II was to study the characteristics of receivers impartially, and not merely to be concerned with one specific service.

The *delegate of Denmark* said there was general agreement on the need for establishment of characteristics of typical receivers for the various services so as to assist the I.F.R.B. and also Radio Conferences, in drawing up frequency plans, but felt that the discussion had clearly demonstrated the real need for a revision of the structure of the Study Groups. Doc. II/1007 was an invitation to the IEC to undertake work on appropriate classification and his point was that, prior to asking another international body to do such work, the C.C.I.R. should be quite clear as to the purpose of the work and how the results were to be used.

The *delegate of the United Kingdom* thought that once the Assembly had adopted the Report of the Organization Committee, there might be a different Study Group structure and different terms of reference, and therefore proposed holding the document in abeyance until such time as that Report would be available.

The *Chairman of Study Group II* said that the same thing would apply to all the Study Groups, which would entail holding every document in abeyance.

The *delegate of Austria* informed the Assembly that the IEC had set up a special working group which, in cooperation with the Top World Consumer Organization, was judging the quality of broadcast and television receivers.

The *delegate of Pakistan* considered the document to be of particular importance, since at present television and broadcast receivers were being manufactured with various specifications and categories, and were being assembled in the countries of the importers, and the lack of classification often caused confusion. He would therefore propose that the Opinion be maintained and approved.

The *delegate of Italy* insisted on the fact that such a classification of television receivers had already been made by Study Group XI, and therefore proposed a compromise solution,

namely that § 1 on page 2 remain unchanged, but that at the end of that clause an asterisk be added, with a footnote to read "* (See Doc. XI/...) Specifications for low-cost television receivers where two categories of television receivers are described: this categorization meets the requirements of Study Group XI for television receivers." Thus, duplication could be avoided, and all available information on the subject could be collected.

The *delegate of Australia* supported the proposal, but pointed out that if there were to be a new Study Group structure, all the Study Groups would have to review their work programmes during the coming interim period.

The *delegate of India* said that Doc. II/1007 should be reviewed in connection with Doc. II/1013. In his country the greatest importance was attached to such a classification of receivers. As the delegate of Pakistan had correctly said, this was necessary and advantageous for the developing countries, but many had already adopted certain characteristics depending upon a solution to the case cited in considering *(a)* of Doc. II/1013. With the coming into use of colour receivers yet another classification might prove necessary. He therefore supported the Opinion in Doc. II/1007.

The *delegate of Austria* felt nobody was opposing the principle of classification, but the problem was how to coordinate between Study Groups II and XI.

The *delegate of the Federal Republic of Germany* fully agreed with the views of the delegate of Pakistan, but felt that the reference to Study Group XI in the Bibliography might suffice, together with the footnote proposed by Italy.

The *delegate of the United States* recalled that the Opinion was directed particularly towards cooperation between IEC and C.C.I.R. and not between Study Groups II and XI.

The *Director of the C.C.I.R.* pointed out that the Opinion referred to both sound and television receivers, and that there was a Study Group X Recommendation concerning low-cost sound broadcasting receivers, which could likewise be mentioned in the proposed footnote.

Doc. II/1007 was thereupon *approved,* with the footnote proposed by Italy and extended by the Director of the C.C.I.R.

Doc. II/1008: approved without comment.

Doc. II/1009: approved, the Chairman of Study Group II stressing that it was extremely important to the Administrations of new or developing countries and also to an Administrative Radio Conference and the I.F.R.B.

Doc. II/1010: approved, as amended by Doc. PLEN./36.

Doc. II/1011: approved without comment.

Doc. II/1012: the *delegate of Italy* said that the Question had also been studied by the interim meeting of Study Group XI in Geneva, and cited the comments that had been made, as printed in Doc. XI/207 (Geneva): "The dynamic range of a receiver as defined in this draft Question is not involved in any of the television studies planned within Study Group XI and therefore Study Group XI would not support the work involved in dealing with draft Question B.p(II) for the case of television receivers." Study Group XI had unanimously requested that under considering *(d)* of the Question, the words "and television" be deleted.

The *Chairman of Study Group II* said that there was a reference to Study Group XI amongst the Study Groups listed in the footnote.

The *delegate of the United States* supported the maintenance of the text as proposed in the document. He considered that the dynamic range of a receiver was very important, not only in its performance as a television or other type of receiver, but also in its susceptibility to overload, and as an important factor of allocation standards. It should be of interest to the I.F.R.B.

The *Chairman of the Drafting Committee* proposed that reference to the Study Group XI document be made at the end of the Question.

With this understanding *Doc. II/1012* was *approved,* note being taken of the remark by the delegate of Italy.

Doc. II/1013: approved in conjunction with Doc. II/1007, and with the addition of the same footnote.

Doc. II/1014: approved, with the addition of the words "and other publications which would complete these" after "Publications 29 and 91" in considering *(d).*

Docs. II/1015 to II/1025 inclusive: approved without comment.

The documentation of Study Group II was thus completed, but prior to closing, the *Chairman of Study Group II* read out the proposed new terms of reference for Working Group II/1, following the suggestion by the Director of the C.C.I.R.: to take the original terms of reference appearing on page 199 of Oslo Volume VI and *add* "taking account of Question ... (II/1009) and Study Programme ... (II/1021)". (It was understood that the correct number of each item would be added by the Drafting Committee.)

The *Chairman of Study Group II* then thanked the Vice-Chairman, Mr. Chistiakov, and also the Chairmen of the Working Groups, Messrs. Dixon (U.S.A.) and Frommer (F.R. of Germany), who had devoted so much time to the work. He also expressed appreciation to the Director, and to Mr. Guillot, C.C.I.R. Engineer.

2.3 *Texts originating with Study Group XIV*

Doc. XIV/1001: Mr. Villeneuve, Chairman of Study Group XIV, briefly introduced his Report, cited the terms of reference of his Study Group, and recalled the work done recently, particularly in conjunction with the new C.C.I./IEC Joint Group.

The meeting rose at 1740 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE FIFTEENTH PLENARY SESSION*

(Friday, 6 February 1970 at 0930 hours)

CHAIRMAN: N.C. SHRIVASTAVA (Republic of India)

1. Present

1.1 *Administrations:*

Algeria (Algerian Democratic and Popular Republic); Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics; Yugoslavia (Socialist Federal Republic of).

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.).

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Consideration of the Minutes of the Fourth, Fifth, Sixth, Seventh, Eighth, Ninth and Tenth Plenary Sessions

Doc. PLEN./19 (Minutes of the Fourth Plenary Session): *approved,* with the following amendments: page 6: Statement by the *delegate of the United Kingdom:* after "concerned with space matters" *add:* "and he visualized that it might" and *delete* the words: "and that it"; page 7: 2nd paragraph: *read* "The *delegate of the Federal Republic of Germany*"; page 11: *Statement by the delegate of the U.S.S.R.,* 3rd line, after "nominated" *add* "for instance".

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* As approved at the eighteenth Plenary Session.

Doc. PLEN./20 (Minutes of the Fifth Plenary Session): *approved,* with the following amendments: page 1, under § 1.2: *add* "New Zealand Broadcasting Corporation", "A.T. & T." and "Communications Satellite Corp."; page 3, bottom of page, statement by the *delegate of Italy:* after "somewhat unusual" *add* "since C.C.I.R. Recommendations were usually based upon practical experience and not merely upon theoretical considerations. Moreover, such a sentence would appear to be more appropriate in a Report than in a Recommendation" (rest of line unchanged).

Page 4, 4th paragraph: *read* "*delegate of Australia*" instead of "Austria"; *amend* the 3rd line of the statement by the *delegate of Japan* to read as follows: "It was his understanding that when there were two recommended values the C.C.I.R. would try to indicate a preference between two values, taking into account all data collected so far, so that a single value would be available in the future", and *continue*: "He would therefore have been in favour ...".

Page 5: *delete* the words "up to" in the *3rd* line, under Doc. IX/1039.

Doc. PLEN./21 (Minutes of the Sixth Plenary Session): *approved,* with the following amendments: page 1, under § 1.1: *add:* "Ceylon" and "Saudi Arabia"; on page 8, top of page, under Doc. IV/1054: text should *read*: "In Fig. 4, on the right-hand upper part of figure, the definition of $\Delta\theta$ and of 0 and all the explanatory diagram in the upper right-hand corner should be deleted and replaced by the following text to appear below the figure: "$\Delta\theta$ = angle of diameter of the zone of interference." (Exact presentation of the figure would be arranged between the *delegate of Canada* and the Drafting Committee).

Doc. PLEN./22 (Minutes of the Seventh Plenary Session): *approved,* with the following amendments: page 1, under § 1.2, *add:* "New Zealand Broadcasting Corp."; page 4: the statement by the *delegate of Mexico* should begin: "supported the adoption of Doc. XI/1029 and said ..." (the rest of statement to remain unchanged); page 5: penultimate paragraph: *add* India to the list of proposed participants in the work of the International Working Party, *delete* Ethiopia, and *add* a new sentence to the effect that: "the *delegate of Ethiopia* wished to participate in drawing up the terms of reference of the International Working Party."; page 6, 2nd paragraph, at the end, after "that Department" *add* ", when necessary.".

Doc. PLEN./26 (Minutes of the Eighth Plenary Session): *approved,* with the addition under § 1.1 on 1st page of "Saudi Arabia", "Korea (Republic of)" and "Kuwait (State of)"; under § 1.2, *add:* "New Zealand Broadcasting Corp." and under § 1.4, *add:* "General Secretariat".

Doc. PLEN./27 (Minutes of the Ninth Plenary Session): *approved,* with the following amendments: under § 1.4 on page 1: *add* "General Secretariat"; on page 2, last line, after the words "where an amendment" *add* "proposed by the *delegate of Canada*", and page 4, last line of the statement by the *delegate of Cuba,* after "felt the text was wrong" *add* the words: "from a strictly technical point of view".

Doc. PLEN./28 (Minutes of the Tenth Plenary Session): *approved,* with the addition under § 1.1 on page 1 of "Saudi Arabia" and under § 1.2 the addition of "New Zealand Broadcasting Corporation".

3. Amendments to and deferred Study Group proposals

(a) Study Group IV

Corr. 2 and *Corr. 3* to *Doc. IV/1063:* The *delegate of Australia* found some discrepancy on page 2 of Corr. 3, between Fig. 2*c,* of the original document 1063 and the correction. The *delegate of the United Kingdom* explained that there had been a small drafting error when drawing in the dashed example of the curves of the flux-density ordinate, and that the figure of (–111 dBW/m^2) was, in fact, the correct one.

With this understanding, Corr. 2 and 3 to Doc. IV/1063 were *approved* and thus *Doc. IV/1063* was also finally *approved* as corrected.

Doc. IV/1091: approved, with the following amendments: under Doc. IV/1049—the French and Spanish texts of B were to be brought into line with the English; under Doc. IV/1054: the text was to be in line with the correction as given in the amendments to Doc. PLEN./22 (see page 2 of these Minutes), with a mention of the definition of "O"; under Doc. IV/1064, A, the French text was to be brought into line.

(b) Study Group VI

Doc. VI/1045: the *delegate of Denmark* recalled that there had been considerable discussion with regard to the value of the Secretariat in Geneva carrying out certain scientific studies and it was his understanding that the document had not been approved at that time. His delegation would reserve its opinion on the Resolution on page 2.

The *delegate of the United Kingdom* made the following statement:

"You will recall that I asked for this document to be held over until the discussion of the Director's Report Doc. PLEN./1.

During this discussion I intimated my disquiet at the Secretariat's doing research work. I will not go over the same ground again, but I would like to place on record my Administration's feelings that it is undesirable for the Director of the C.C.I.R. to be asked to conduct such studies. There are two reasons for this. First—the Director is in a special, semi-judicial position which makes it incumbent on him to refrain from any activities which might lead to controversy. His high post should be above the scientific and technical discussions which take place in the C.C.I.R. From time to time they can become very controversial and troublesome. We had an unfortunate example of this at Oslo when the question of television standards was discussed. Had the Director been deeply involved in this discussion it would have done great harm. This could arise if the Director concerned himself in the scientific or technical field. My second point is that we do not have details of the Budget. These are discussed in the Administrative Council. If the C.C.I.R. charges the Director with work that costs money, the Administrative Council would be embarrassed in challenging this work."

Doc. VI/1045 was thereupon *approved* with the above *reservations* by the *delegations of Denmark and the United Kingdom.*

Doc. VI/1069 and corrigendum: approved, a minor correction having been handed in to the Secretariat.

(c) Study Group IX

Doc. IX/1069: the *delegate of the United Kingdom* referred to the change proposed by the delegate of Ceylon to *Doc. IX/1039.* As shown at present it would seem that three capacities would have to be studied, which did not appear to have been the desire expressed.

The *Chairman of Study Group IX* proposed the addition at the end of the new § "1.2.3" to read: "for both systems under §§ 1.2.1 and 1.2.2". It was so *agreed.*

Doc. IX/1069 was then *approved,* with an amendment on page 2 in the Spanish text only, to be checked by the Drafting Committee.

(d) Study Group X

Doc. X/1063: page 3, under Doc. X/1049 (page 3, line 3,) *read:* "*first* para." instead of "third".

The *Chairman of Study Group X* recalled that he had drawn attention to Doc. PLEN./34 which contained minor editorial amendments to the documentation of the Study Group; these were not incorporated in Doc. X/1063, which gave only changes of substance.

The *delegate of Cuba* referred to the Note under Doc. X/1018 concerning orthogonal transmission, and asked what was the advantage for reception of a signal in waves being polarized for maximum absorption.

The *Chairman of the Drafting Committee* explained that in Report 264-1 (Study Group VI) which was cited in reference, the procedure of emission was given, intended to avoid interference when ionospheric conditions were favourable to emissions which normally only used ground-wave propagation.

In reply to a query by the *delegate of Canada,* he further explained that references to documents were merely to aid the technical editors to trace texts, and expressed the hope that

the Organization Committee might decide on a less complicated manner of numbering certain texts, so that the work might be simplified.

Doc. X/1063 was then *approved.*

(e) Study Group XI

Doc. XI/1051: page 2: the *delegate of Australia* drew attention to Doc. XI/1038, where the correction to page 7 was still not accurate, and should be as reported on page 6 of the Minutes contained in Doc. PLEN./22.

Under *Doc. XI/1046:* the end of the sentence should be corrected to read: "the values of σ may be lower or higher than those given."

Under *Doc. XI/1050,* "Recommendation 212" should be listed as "*Cancelled*". *Doc. XI/1051* was *approved* with the above corrections.

(f) CMTT

Doc. CMTT/1046: at the proposal of the *Chairman of the CMTT* study of this document was *postponed,* since there had been too little time for its thorough examination.

4. Other draft conclusions

Doc. PLEN./1001: the *Chairman of Study Group XIII* requested some information on the type of statistics to be obtained from the Study Groups. He had heard it said that these concerned traffic statistics, and did not see how the C.C.I.R. Study Groups could be concerned with those.

The *Secretary-General of the I.T.U.* said that not merely traffic statistics were required, but any information concerning telecommunication services which could be useful to new or developing countries. The purpose behind the Resolution was to receive suggestions from Study Group Chairmen and participants as to what type of data they would wish to see figure in the I.T.U. Yearbook, in the widest sense possible, and they should advise the Secretary-General as to what would be the most appropriate. He could not be more precise, or there would have been no need for such a Resolution. The General Secretariat was asking for the opinion of telecommunication specialists to give them guidance in making the Yearbook as complete as possible.

The *delegate of Austria* felt that to be realistic it would be appropriate to start with statistics already available within Administrations, many of such data being in the form of punch cards. He suggested that the invitation be worded to all Administrations, to put forward information concerning radio-stations, number of transmitters of various services, traffic data, etc. The Director of the C.C.I.R. could then collect all such information, which could be summed up by the Secretariat and then the Study Groups would have a realistic basis to work on and could find a common ground for presenting the statistics to the Union.

The *Director of the C.C.I.R.* pointed out that the Resolution merely asked the Study Groups to prepare at their next meetings, a list of items in the field of radiocommunications which could be included as statistics in the Yearbook, and this should be put on the agenda for each individual Study Group meeting.

The *delegate of Denmark* also had some difficulty in ascertaining the purpose of asking the Study Groups to deal with the matter, which would seem more appropriate to Administrations. As far as the Study Groups were concerned, only a few items could be included in statistics, such as the number of transmitters of various categories, amount of traffic to be included, etc. Only a few of the C.C.I.R. Study Groups could really be involved, for the propagation Study Groups could hardly contribute in this respect.

The *delegate of the Netherlands* thought it would be difficult, as in his Administration no persons generally experienced with statistics were occupied with C.C.I.R. work. This had been combined with people attending the C.C.I.T.T. Study Groups, and it would seem that the latter were also involved, in which case the need for an International Working Party would appear to arise, on a higher level than had been suggested in the Resolution.

The *representative of the C.C.I.T.T.* affirmed that the C.C.I.T.T. was certainly occupied at the present time with assembling statistics on traffic operation, without going into details on transmission practices. He did not know the actual state of the work, but the question was that the C.C.I.T.T. risked missing out certain aspects of special interest to radiocommunications.

The *Secretary-General of the I.T.U.* said that at present the statistics of the Union were serving no purpose, although they had been useful in the past. The service employed a certain number of officials, and Administrations supplied some data, but these were not in accordance with the present developments in telecommunications. Therefore a different approach must be made, and that was the sense of the Resolution, to ask, in particular, the Chairmen of the Study Groups to consecrate a few moments reflection as to which elements of their work should be published in the I.T.U. Yearbook. They were merely to give advice, and the next stage would be to see how such ideas could be put into effect. The C.C.I.R. Study Groups were not being asked to supply the statistics, only to suggest items to be included. If certain Study Groups believed that no item on their programme was for inclusion, then they could state that fact.

The Resolution should be seen from the angle of a general philosophy in an attempt to produce something useful to assist Administrations. It had been stressed by the C.C.I.T.T. Plenary Assembly that the present statistics were a waste of time, money and effort, in view of evolution in the past ten years, so that the subject must be reviewed. He repeated—the General Secretariat were asking for guidance.

The *delegate of India,* speaking as a broadcaster, had had the opportunity of attending an ABU Conference on the very subject. The NHK had prepared a valuable paper there concerning exchange of information and statistical data on available circuits between countries in the Asian region, to handle programme exchanges between countries using satellites. Programmes could be transmitted through satellites in a very short time, but information on available circuits took a long time to line up for prior use. The Asian countries had been requested to give information to the ABU Secretariat for compilation, and such statistics would be kept up to date, so that countries intending to prepare topical programmes would be able to have such information rapidly.

The Resolution contained in Doc. PLEN./1001 was then *adopted.*

5. Consideration of the proposals of Study Group XIV

The *Chairman* recalled that the Chairman's Report had been presented the previous day, on which occasion the Chairman of the Study Group had made his comments on the state of the work.

In answer to a query by the *delegate of Pakistan* concerning the classification of telecommunication terminology, abstracts and alphabetical lists of terms, the *Chairman of Study Group XIV* gave the following replies:

— in Resolution 22, which had been maintained, § 3 enabled Administrations to deal with problems concerning classification, within the framework of Study Group XIV;

— abstracts were at present published in several countries, but in the future documentation (traceable by means of a certain number of key-words) would be classified by the use of computers, which would enable articles on a certain subject to be obtained very rapidly;

— finally, with regard to definitions of terms actually contained in the IEC publication which had just come out, alphabetical indices, in a certain number of languages, followed the numbered definitions, and this practice would be carried out in the revision of the existing chapters and in subsequent new chapters of the Telecommunication Vocabulary. Moreover, by means of the numbered definitions, it would be easy for any Administration to establish an index for its own use, in the national language.

The *delegate of Pakistan* expressed his gratitude to Mr. Villeneuve for a very clear exposé of the three points he had raised. However, it might be necessary for Study Group XIV, or whatever new organization was envisaged, to assure that the work of classification should be within the purview of the C.C.I.R., because that item had been omitted in the new proposed terms of reference contained in Doc. PLEN./2.

The *delegate of the Federal Republic of Germany* recalled that Resolution 283 of the Administrative Council stated that a list of Definitions of essential telecommunication terms should be compiled. In annex to the Chairman's Report (Doc. XIV/1001) a draft text concerning the distribution into chapters could be found, which was a result of the work done by the Joint Coordinating Group. His delegation welcomed such a draft, but did not believe, however, that it could be fully satisfying as chapters were missing dealing with planning and operational terms, which were of great importance for the future. Chapters were also missing on administrative terms such as frequency allocation, distribution, etc. and also on definitions of Recommendations, Reports, etc. which, according to Annex I of PLEN./2, it was proposed to include in the Vocabulary. Such terms were of no interest to the IEC but were basic in the field of the I.T.U. and telecommunication Administrations. Special terms for different radio services needed special chapters, in his opinion, at least for the fixed services, and for space techniques used in different services. It was not satisfactory to have a combined Chapter 13 for Broadcasting and Mobile Services. Nor should item 8 combine Switching and Measuring—these were very different subjects, covering wide fields. He wanted to raise this point in the plenary session as his delegation was anxious in case the Joint Working Group produced a Vocabulary that would only be a third edition of the IEC Vocabulary, which might be very satisfactory to IEC Members but would not meet the requirements of the I.T.U. Summing up, he would propose that the Joint Coordinating Group should take account of the ideas he had expressed in any new draft, and should establish a distribution of chapters of a telecommunication Vocabulary which would be of more practical value to the I.T.U.

The *Chairman of Study Group XIV* agreed that a certain number of terms which were not of real technical significance had not been envisaged in the work to be carried out in the Joint Group. The separation between administrative and technical terms was not always very clear, and it would appear of interest to collect such terms for the needs of the I.T.U. He further agreed that it would be very desirable that definitions of related terms, instead of being scattered throughout different volumes should be gathered in one volume easy to consult. This could also be done for the technical administrative terms.

He agreed that the proposals in Annex to his Report were lacking in many aspects, but it represented only an approximative attempt, drawn up by Mr. Algodsen of Sweden and Mr. Reading of the United Kingdom, on the basis of data furnished to them. It would seem appropriate to issue several booklets of approximately the same length and size dealing with various aspects, grouped according to subject. Mr. Lalou of the C.C.I.T.T. had made the same comments as the delegate of the Federal Republic of Germany, and he would request that all interested persons hand in their suggestions and remarks either to himself or to the Director of the C.C.I.R., so that a new draft annex could be drawn up, which might still contain errors, but might mitigate some of the more flagrant ones.

Mr. Lalou (representative of the C.C.I.T.T.) referred to Recommendation A. 12 of the C.C.I.T.T. on Collaboration with the IEC on the subject of Definitions, which clearly stated that the reason for collaboration was to enable the IEC to prepare certain sections of the International Electrotechnical Vocabulary on Telecommunications. The response of the IEC was the text contained in Annex to Doc. XIV/1001, and it was not surprising that certain categories of terms of the greatest interest to the C.C.I.s and the I.T.U. in general were missing therein. Moreover the C.C.I.T.T. Secretariat had not yet had the opportunity to study that Annex. At all events, according to Resolution 283 of the Council, it was a question of preparing Section II of the Vocabulary by the C.C.I.R., the latter being free to use any data provided

by the Joint Group it wished. The C.C.I.s should at all times have the possibility of choosing the terms that best suited the purposes of the I.T.U.

The *delegate of the Federal Republic of Germany* expressed his thanks for the explanations he had received, but asked, since it was apparent that the Joint Group was not dealing with any but the strictly technical terms, who was dealing with the other terms within C.C.I.R. Study Group XIV.

The *delegate of Mexico* was of the opinion that the work and terminology of the IEC principally concerned industry, which did not correspond to the needs of the I.T.U. Prudence should be exercised, and he therefore proposed two stages of work: on the one hand Study Group XIV should coordinate terms between the IEC and the C.C.I.s and on the other hand, should establish a list of terms of specific interest to the I.T.U. With such a structure it should be possible to insert the terms arising from both sources in a satisfactory manner.

The *Chairman of Study Group XIV* replied that the concern expressed in the recent statements could be allayed by the terms of Resolution (Doc. XIV/1004), which was in no way restrictive. § 1, which mentioned "using" the work of the Expert Groups, did not by any means imply a limitation to that work alone. The C.C.I.R. could use any working methods it saw fit, in addition to that undertaken in common with the IEC, in particular by means of the appropriate International Working Parties, as was already being done, for example, on the reliability of recording.

He added that the result of the work carried out in common with the IEC would be the property of each of the parties, not only in its final state—that is, in the form considered to be satisfactory by the Joint Group—but at each stage of the work: the presence of C.C.I. representatives on the Joint Coordinating Group and in the joint expert groups offered every possibility in that respect.

The *delegate of the U.S.S.R.* proposed that the various statements concerning Doc. XIV/1001 be recorded in the Minutes, so that Study Group XIV might take them into account in its future work, and that the document be approved with that understanding, which was *agreed* by the Assembly.

The Chairman's Report contained in Doc. XIV/1001 was thus *approved.*

Doc. XIV/1002: approved without comment.

Doc. XIV/1003: the *Chairman of the Drafting Committee* explained that the Annex concerning Symbols, to Doc. XIV/24, referred to at the beginning of the document, had been detached from the draft Recommendation, in view of its length, and had become the Annex to the Report contained in Doc. XIV/1006.

The *delegate of the United Kingdom* suggested that the Assembly should decide on whether the Report should be printed in the New Delhi Volume, or as a separate document, following past practice with other lengthy reports.

The *Director of the C.C.I.R.* agreed that it would make for easy consultation to have the Report as a separate pamphlet, and proposed that it be issued in photo offset, to avoid the possibility of error in its reproduction.

The *Chairman of the Drafting Committee* drew attention to the fact that the list of symbols only could be reproduced by offset, but the text of the Report would have to be printed in the Spanish language also.

The *delegate of Norway* supported publication as a separate booklet and it was so *agreed.*

Doc. XIV/1003 was then *approved,* with a correction at the bottom of the page to read "(Annex to Doc. XIV/1006)".

Doc. XIV/1004: approved with the deletion of the words "in English and French" in considering *(b)*, at the proposal of the *delegate of Spain,* as the List of definitions should also be compiled in Spanish.

The *delegate of the United Kingdom* sought guidance with respect to the documentation of Study Group XIV, and asked if he was right in assuming that acceptance of the documents did not prejudge the question of whether Study Group XIV should continue in existence, since the Organization Committee was considering the future Study Group structure.

The *Director of the C.C.I.R.* pointed out that all the documentation adopted by the Plenary Assembly was based on the past organization of the Study Groups, and once the Organization Committee had completed its work all items on the programmes of the various Study Groups would have to be approved in accordance with any new organizational structure. The same query could apply to any other Study Group. Approval of the documentation did not prejudge decisions of the Organization Committee.

With that understanding *Doc. XIV/1004* was *approved.*

Doc. XIV/1005: approved, with the addition of the *Federal Republic of Germany* to the list of countries intending to participate in the work of the International Working Party.

Doc. XIV/1006: approved, in conjunction with the decisions taken during the discussion of Doc. XIV/1003.

Docs. XIV/1007 and *XIV/1008: approved* without comment.

Study Group XIV had thus completed the study of its documentation.

6. Announcement by the Chairman of the Plenary Assembly

Mr. Shrivastava, Chairman of the Assembly, announced that he would shortly be leaving for Washington, to attend a Space Conference there, and very much regretted that he would be unable to preside over future plenary sessions. He would request one of the Vice-Chairmen to take over his functions in his absence.

He expressed the pleasure he had experienced in carrying out his task as Chairman, and thanked the Vice-Chairmen and all the delegates for their full cooperation. He further thanked the Director and technical staff of the C.C.I.R. and the Secretariat and interpreters for their help. In conclusion he hoped that all participants would enjoy the remainder of their stay in New Delhi and wished them a safe return to their countries.

(Applause)

The meeting rose at 1310 hours.

Rapporteur:	Secretary of the Assembly:	Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	N.C. SHRIVASTAVA

MINUTES OF THE SIXTEENTH PLENARY SESSION*

(Tuesday, 10 February 1970 at 0930 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Brazil; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Ivory Coast (Republic of the); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Poland (People's Republic of); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

The *Acting Chairman,* on behalf of all participants, expressed warm thanks to the Administration of India for the party given the night before by the Minister of Information, Broadcasting and Communications, at which occasion strange and beautiful dancing had been greatly enjoyed. (Applause)

The *delegate of India* expressed his pleasure that the hospitality had been appreciated.

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* Approved by the Acting Chairman.

2. Modifications to Study Group proposals

(a) Study Group I

Doc. I/1024: the *delegate of Japan* stated that he had submitted a note to the Drafting Committee containing four minor corrections to errors in the document.

It was *agreed* that the Drafting Committee would incorporate these corrections and, should there be any changes of substance, these would be brought to the attention of the Assembly. On this understanding *Doc. I/1024* was *approved.*

(b) Study Group II

Doc. II/1026: the *Chairman of the Drafting Committee* proposed the addition, in the Resolution given in Annex to the document, of a sub-title reading: "Essential characteristics of receivers". *Agreed.*

The *delegate of Japan* recalled that, during discussions of the documents of Study Group II, he had proposed the amendment of "spurious radiation" to replace "spurious emission" throughout the documentation, and pointed out that this change had not been incorporated.

The *Chairman of the Drafting Committee* explained that the amendment had been made on each reference document, but that an addendum to Doc. II/1026 would be circulated. *Doc. II/1026* was then *approved.*

(c) Study Group III

Doc. III/1044: following a proposal by the *Chairman of Study Group XIII,* the proposed new footnote to be added to Doc. III/1010 was extended to read "... of the Radio Regulations *and* Recommendation ... (XIII/1012)". The document was then *approved.*

(d) Study Group VII

Doc. VII/1035: approved without comment.

(e) Study Group VIII

Doc. VIII/1031: approved, with the deletion of the amendments to Doc. VIII/1001, as it was pointed out that the Chairmen's Reports would, in principle, not be published in their original form, since a different text would be requested from the Chairmen to introduce their texts.

(f) Study Group XI

Doc. PLEN./51: approved with a) the addition of *Switzerland* as a participant in the International Working Party set up by the Resolution, and b) with the following amendments: *delete* the word "the" before "various types" in the penultimate line of *(b)* on page 3; *delete* the bracket before the word "to" in the second line of *(c)* on page 4, and *delete* the end of that paragraph starting from the words "taking into account ...".

(g) Study Group XII

Doc. XII/1009: approved without comment.

(h) Study Group XIII

Doc. XIII/1037: the *delegate of the U.S.S.R.* recalled that, with reference to Doc. XIII/1015, his delegation had expressed the opinion that it was premature to adopt a Recommendation at the present time, and it would have been preferable to issue merely a Report. However, since the majority had considered that a Recommendation could be adopted, the U.S.S.R. did not wish to express a reservation, and therefore asked that the words "and the U.S.S.R." be *deleted* from the Note to be added to Doc. XIII/1015.

With this understanding, *Doc. XIII/1037* was *approved,* with a correction on page 1, under Doc. XIII/1002, A: the sentence to begin "*In the band* 8356 kHz to 8374 kHz ...".

(i) Study Group XIV

Doc. XIV/1009: approved without comment.

(j) CMTT

Doc. CMTT/1046: approved, with the following corrections: on page 2, under *Doc. CMTT/1039,* B. *read* "§ 2, line 6, *add* ** after "data transmission" and ..."; D. *read* "At the bottom of the page replace the note by the following Note" and in the quotation *correct* "page 392 1" to read: "page 382 m"; certain modifications were to be made to Figs. 3 and 4, which would be effected by the Drafting Committee. Corresponding changes were to be made to the Spanish text.

3. Report by Working Group S

Doc. PLEN./39 and *Corr. 1* and *PLEN./47:* the *Acting Chairman* expressed regret at the absence, due to illness, of Mr. Jowett, Chairman of Working Group S, who had been unable to take part in the last meeting of the Group. He therefore requested Mr. Marchand (Canada) to present the Report, as he had carried out the final task of drawing it up.

Mr. Marchand said that it was thanks to Mr. Jowett that the Group had been able to complete its work with success. It had met four times and the results were contained in the document. The Resolution specified the objective of the special meeting, the envisaged programme, the role of the Director of the C.C.I.R. and of the Study Groups, and invited Administrations, etc., to undertake the preparatory work urgently.

Annex I contained a draft programme of items for study, which was neither complete nor exhaustive, and he had already received many proposals for additions, notably from the Chairmen of Study Group VI and the CMTT, the U.S.S.R. and France. Annex II gave the proposed working structure and the corrigendum sheet proposed a few editorial changes to that text.

He concluded by remarking that Working Group S had thought it desirable to leave to the Plenary Assembly the task of choosing the Chairman and Vice-Chairman of the Special Meeting.

The *Acting Chairman* felt that it would be preferable if the Assembly were to consider the Chairmanship and Vice-Chairmanship of the Special Meeting at the same time as it reviewed those of the Study Groups and Working Groups.

It was so *agreed.*

The *delegate of the United States* raised the question of the status of the Report that would come from the Special Meeting and be presented to the Space Conference, vis-à-vis other approved C.C.I.R. texts. If modifications were to be made by that Meeting to adopted Study Groups' findings, would the latter conclusions represent agreed modifications to C.C.I.R. texts or not, since they would not have been approved by a Plenary Assembly?

The *Director of the C.C.I.R.* said that he had considered the problem in terms of what had happened at previous meetings of a similar nature, such as the special meeting of Study Group XIII which prepared an interim booklet for presentation to the Maritime Conference. It would seem that the Report of the Special Meeting would be also printed in such a way, in the form of draft Recommendations and draft conclusions, and the fact that more than one Study Group would be concerned should not modify the presentation of the Report. The findings should not be considered as finally approved, but would be examined at the next interim meetings of the Study Groups concerned.

The *delegate of the United States* thanked the Director for the explanation. He wanted to be sure that no difficulty would be encountered at the Special Meeting, and understood that the Report of that meeting would contain Recommendations which would subsequently be treated at interim Study Group meetings or by the Plenary Assembly. In supplementing up-to-date information with regard to existing C.C.I.R. texts, or perhaps in proposing new texts, would the relevant Study Group Chairman not have some problems in endorsing such texts, whilst knowing that his Group was going to treat them after the Space Conference?

He wanted to be assured that the Space Conference would reap the most benefit from the Special Meeting and did not wish there to be any doubts in the minds of participants in the Special Meeting.

The *delegate of the United Kingdom* said it was evident that the preparatory meeting could in no way supersede or override the Plenary Assembly, but the reason for its creation was that it would not be possible to wait for another Assembly. Therefore the products of that meeting should be considered as intended for the W.A.R.C.-ST alone, and they would be presented to that Conference with the authority of the preparatory meeting and nothing more. The Study Groups could take or reject the data they deemed fit, in the light of future knowledge, since time would have passed since the Plenary Assembly. They could then submit documents to the next Plenary Assembly, which would deal with them as the present Assembly was dealing that day with Study Group documentation.

The *Acting Chairman* agreed that the Preparatory Meeting would be authorized to present draft Recommendations to the W.A.R.C.-ST and nothing more; subsequently the Study Groups would consider all information received, whether presented to the W.A.R.C.-ST or new.

The *Acting Chairman of Working Group S* said that the difficulty raised by the delegate of the United States was a real one and certain Administrations participating in the Group had wondered whether the Special Meeting could validly propose to the Space Conference values that might be different from those contained in present Recommendations, and if it could modify basic texts, and that was one of the reasons that proposals had been made that the meeting be termed an "Extraordinary Plenary Assembly" to give it the necessary authority and for its findings to represent the latest opinion of the C.C.I.R.

The *delegate of Pakistan* said that his delegation had participated in the Working Group and considered that the Resolution, which had resulted from very extensive consideration, represented the best compromise to be achieved at the present time. The main task of the preparatory meeting was to make available information in its updated form essential to the W.A.R.C.-ST. This information would consist of two essential parts—the first, the existing texts which bore the stamp of the Plenary Assembly; the second, further updated information which, as the delegate of the United Kingdom had pointed out, would be used primarily for the W.A.R.C.-ST and could not have the status of Reports and Recommendations considered by full Study Groups, let alone by the Plenary Assembly. He did not at all agree that the meeting should be considered as an Extraordinary Plenary Assembly, but merely a special preparatory meeting specifically meant for the preparation of the W.A.R.C.-ST.

The *delegate of New Zealand* agreed with the delegates of the United Kingdom and Pakistan, and believed that the procedure followed in relation to the meeting of Study Group XIII, as mentioned by the Director, had worked eminently well.

The *delegate of the United States* appreciated the discussion, and did not wish to prolong it, but welcomed the various comments, so that the Assembly could know what was taking place. It was recognized that the special meeting would produce a report, the contents of which would not exactly represent official C.C.I.R. texts, but would be in the nature of an expertise so that the W.A.R.C.-ST could benefit from the latest data on up-to-date techniques.

The *delegate of the Federal Republic of Germany* had understood from discussions in the Working Group that the Reports and Recommendations contained in the C.C.I.R. volumes would not be subject to modification, but would merely be taken as a basis for the work of the special meeting, which would submit quite a different report in preparation for the W.A.R.C.-ST, and that Report would in turn be taken as a basis by the Study Groups at their interim meetings, for revision and ultimate modification of their existing texts.

The *Director of the C.C.I.R.* thought it would be well if the preparatory meeting were to prepare new findings in the form of draft Recommendations and Reports for consideration by the W.A.R.C.-ST and also by the next interim Study Group meetings. Even if the

W.A.R.C.-ST were to adopt some of those findings and subsequently the C.C.I.R. were to consider that they were not the most appropriate technically, he personally saw no reason why the C.C.I.R. should be bound by the Radio Regulations. The C.C.I.R. had the task of studying technical factors and should be in a position to make findings in advance of the provisions of the Radio Regulations.

The *Secretary-General of the I.T.U.* referred to § 7 on page 6 of Doc. PLEN./39 which laid down that the preparatory meeting should finish its work by the beginning of March, which was exactly three months before the scheduled opening of the W.A.R.C.-ST on 7 June 1971. According to the terms of the Convention, proposals must reach Members three months before the opening of a Conference, but this would not be possible in those circumstances. In his mind three months were necessary for a conscientious study to be made. This was a very important question for the General Secretariat, whose task it was to arrange for the reproduction and circulation of the Report, taking the time-limits into account; this question might also be raised by the Administrative Council, so he proposed that it be considered by the Assembly.

The *Acting Chairman* pointed out that in No. 627 of the General Regulations it was indicated that proposals to be presented to a conference should be communicated to Members at least three months before the opening of that conference. However, it would seem that the preparatory meeting would establish a basic technical background for the coming Space Conference, but not make proposals as such, so it would seem that the terms of the Convention were not binding in such a case.

The *delegate of Italy* agreed that the Report would not constitute a proposal in the sense envisaged by the Convention, but it would still have to be taken into due account by Administrations, or there would be little point in holding a preparatory meeting.

The *delegate of France* remarked that if the provisions of the Convention were to be applied, proposals to the preparatory meeting should also be submitted four months before the opening of the preparatory meeting, which would mean that they would be submitted in September. This would make the technical data nearly a year old. He therefore considered that the C.C.I.R. should be a little more flexible and envisage slightly shorter time limits. This would not have very serious effects, as the majority of participants in the preparatory meeting would also be taking part in the W.A.R.C.-ST.

It was so *agreed.*

The *delegate of the United Kingdom* said that sometimes restrictions arose when deciding upon certain courses of action, due to the risk of not conforming to the terms of reference. For that reason he wished to see a certain flexibility introduced here also and therefore suggested a modification in the last line of decides 4, on page 6 of Doc. PLEN./39 to read: "... meeting, broadly as outlined in Annex II". It was so *agreed.*

The question then arose as to what should be the exact title of the preparatory meeting, and the *Acting Chairman of Working Group S* said that the question had been discussed at length and the appellation "Special Joint Study Group meeting" had been agreed.

The *delegate of the United Kingdom* thought that such a term might lead to more discussion at the preparatory meeting and would prefer the title to be "the C.C.I.R. Preparatory Meeting for the W.A.R.C.-ST".

The *delegate of France* recalled that a considerable majority of participants in the Working Group had favoured the appellation as shown in decides 1 of the Resolution on page 5 of Doc. PLEN./39. As far as the French delegation was concerned, that had been a compromise solution, as the most satisfactory juridical formula would have been "Extraordinary Plenary Assembly", which many delegations wished to avoid; since assurances had been given as to the structure of work and terms of reference of this meeting, France had agreed to the compromise.

The *delegate of the Argentine* felt that, since the report of the preparatory meeting would later lead to modifications of the Radio Regulations, it should be clearly indicated, both in the name of the meeting and in its terms of reference, that it was the opinion of the C.C.I.R. which was being submitted to the Space Conference, and he therefore agreed with the statement of the delegate of France.

It was *agreed* that the title of the preparatory meeting should be "Special Joint Study Group Meeting", and with that understanding, the Resolution contained in Doc. PLEN./39 was *approved.*

The *Acting Chairman* then called for comments on Annex I to Doc. PLEN./39, which should be taken in conjunction with Doc. PLEN./47, submitted by the Chairman of the CMTT.

The *Chairman of the CMTT,* presenting the latter document, said that, since Annex I did not contain any item relative to the standard of quality of transmitted signals, he had considered it well to draft the document to remedy the situation with regard to television and programme transmissions.

The *delegate of New Zealand* requested clarification as to whether in Annex I the CMTT should not be added under § 3, and, in Annex II (Proposed Working Structure), whether it should not be added under Committee B instead of A.

The *Chairman of the CMTT* said that, according to its terms of reference the CMTT was concerned with point-to-point transmission, whether sound or vision, but that it was left to Study Groups X and XI to deal with matters concerning broadcasting; he therefore considered that the CMTT should be added under Communication satellite service in § 2 rather than Broadcasting satellite service in § 3. It was so *agreed.*

The *Chairman of Study Group IX* proposed the deletion of the second introductory paragraph of Annex I on page 7. *Agreed.*

The *Chairman of Study Group XI* requested the addition of the Report of International Working Party XI/1 contained in Doc. PLEN./5 under § 3.3.1 on page 9. *Agreed.*

The *delegate of France* said that the Assembly seemed to be in agreement to add the proposals contained in Doc. PLEN./47 under § 2.2.6, but thought that the reference should be given a more general form, to show that the importance of these texts was different from the texts of Study Groups II and IV, for example, which defined the standards of quality which took account of interference between different systems, whereas the CMTT texts represented standards for sound and video transmissions. The latter documentation should therefore not be put on the same plane as the other documentation mentioned in Annex I, which enumerated a series of technical problems to which new or modified replies should be given to give rise to new provisions in the Radio Regulations. The references suggested by the CMTT should only serve as a guide to recall that standards were defined in certain parts of the documentation, which were not known by those who discussed satellite problems. He therefore proposed a footnote, to be indicated by an asterisk at the end of the first line on page 8 and to read:

"In these studies, the following texts should not be lost to view, which relate to systems and characteristics of quality, including possible interference, for various types of transmission:

1. Telephony transmissions

1.1 *Radio-relay systems*

Recommendation 393-1 (Note 10)
Recommendation 357-1
IX/1052 (Report)

1.2 *Telecommunications by satellites*

IV/1035 (Note 6) (Recommendation)
IV/1005 (Recommendation)

2. Sound and vision transmissions

2.1 *Reference chains*

CMTT/1006 (Question)
CMTT/1008 (Study Programme)
CMTT/1042 (Report)

2.2 *Characteristics of quality*

CMTT/1020 (Recommendation)
CMTT/1022 (Recommendation)
CMTT/1040 (Report)
CMTT/1016 (Study Programme)
CMTT/1044 (Report)
CMTT/1019 (Opinion).

Thus there would be available complete references on the quality of all transmission systems.

The *representative of the C.C.I.T.T.* pointed out that in analogy with the proposal by the Chairman of the CMTT, mention of the C.C.I.T.T. could also be introduced in questions of telephony. The last speaker had fully developed the point within the framework of C.C.I.R. procedure. He considered that there would be no need to modify Annex II of Doc. PLEN./39 to take account of the fact, but wished to remark that Special Group C would be holding a meeting at the beginning of 1971, and the Special Preparatory Meeting might wish to refer to certain documents of that meeting.

The *Acting Chairman* said that there seemed to be general agreement in making reference to the work of the CMTT in Annex I; the only difficulty was the manner of presentation, which would appear to be a drafting question that could be left to the Drafting Committee. It was so *agreed.*

Annex I was then *approved* on that understanding, with the following modifications, proposed by the *Member of the I.F.R.B.,* the addition of 470 Q, 470 D, 470 J and 470 M respectively in §§ 2.2.1, 2.2.2, 2.2.3 and 2.2.4.

The *Acting Chairman of Working Group S* said that the agreed terminology was to refer to "Working Groups" and not "Committees" and page 19 of Doc. PLEN./39 was *modified* accordingly. The title was also changed to read "Special Joint Study Group Meeting" instead of "Extraordinary Plenary Assembly".

The *delegate of the United States* failed to see any good reason for Study Groups IV and IX to be combined in Working Group D and felt that Study Group IV alone would be adequate.

The *Acting Chairman* reminded him that such a change could give rise to difficulties of a fundamental nature, since it was not known what decisions were to be taken on the future structure of the Study Groups; it might, therefore, be wiser to leave both Study Groups under D.

The *delegate of France* pointed out that there were at present bands allocated to space research on a secondary basis and to the fixed services—radio-relay systems—on a primary basis. This entailed cooperation between Study Groups IV and IX.

The *Chairman of Study Group IX* hoped that his Study Group could remain under Working Group D, since space research services in the future might use other parts of the frequency spectrum which would have to be coordinated with that Study Group. It was so *agreed.*

The *Acting Chairman* proposed that the Director of the C.C.I.R. be requested to arrange for modifications to be made to fit into any new Study Group structure. It was so *agreed,* and Annex II was *approved.*

The *Chairman of Study Group XIII* referred to page 2 of the Report, concerning §§ 3 (Participants) and 4 (Comments and observations) and explained that neither he, nor the Vice-Chairman of Study Group XIII had been able to be present at the meeting of Working Group S, due to presentation of the Study Group documentation in plenary session. He would, however, appreciate some reference to his Study Group being included for publication. It was *agreed* to make this addition, as also mention of the CMTT under § 3.

The *Chairman of the Drafting Committee* raised a question of formality, whether, from a juridical point of view, the C.C.I.R. could ask the W.A.R.C. to consider the results of the Preparatory Meeting.

It was generally felt that the C.C.I.R. was in a position to invite whom it wished to consider its findings, and that the key wording of the action to be taken was contained in decides 6 of the Resolution, on page 6.

Doc. PLEN./39 was then *approved.*

4. Programme of C.C.I.R. meetings 1971 to 1973 (pages 11 and 12 of Doc. PLEN./1)

The *delegate of the Federal Republic of Germany* felt that the period between April 1972 and Autumn of that year was too short to hold both interim and final Study Group meetings. He would therefore propose the final meetings of the Study Groups in Spring 1973 and the Plenary Assembly to be held in Autumn 1973. It seemed unlikely that any new contributions would be received within six months, since they had to be submitted four months before a meeting, which would leave no time for their preparation. The proposal was *adopted.*

The *Chairman of Study Group VII* said that a meeting of his Study Group at the end of 1971 would be too late to implement provisions which were to take effect on 1 January 1972 and therefore requested a date early in 1971 for his interim meeting.

The *Director of the C.C.I.R.* proposed that, to accomodate the meeting of Study Group VII it should take place at the time of the preparatory meeting for the Space Conference, which would facilitate arrangements for interpretation, translation and document facilities.

The *Chairman of Study Group VII* expressed satisfaction at this proposal and it was thus *agreed.*

5. Report by the Budget Control Committee (Doc. PLEN./54)

Mr. Barajas, Chairman of the Budget Control Committee, informed the Assembly that a working document would be circulated which contained estimates of credits required for the C.C.I.R. meetings, taking as a basis the programme envisaged by the Director in PLEN./1. The proposal by the delegate of the Federal Republic of Germany to hold the final Study Group meetings in 1973 would have an impact upon the final figures as given in the yellow working document.

It was *decided* that the working document would be examined in conjunction with Doc. PLEN./54 at the afternoon session.

The meeting rose at 1245 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

MINUTES OF THE SEVENTEENTH PLENARY SESSION*

(Tuesday, 10 February 1970 at 1430 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Saudi Arabia (Kingdom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Brazil; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Ivory Coast (Republic of the); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Poland (People's Republic of); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territories of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); Nippon Minkan Hoso Remmei; New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.); Union of National Broadcasting and Television Organizations of Africa (URTNA).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.T.T.; C.C.I.R.

2. Schedule of C.C.I.R. meetings (contd.)

The *Chairman of the CMTT* supported the statement made that morning by the delegate of the Federal Republic of Germany that it was unreasonable to have a period of less than one year between the interim and the final Study Group meetings, as this would leave insufficient time for the thorough study of contributions submitted. He would therefore also propose

* Approved by the Acting Chairman.

that the final Study Groups meet in the Spring of 1973 and the Plenary Assembly be held towards the end of that year. Despite the scheduled joint preparatory meeting, the contributions to which would be devoted only to space matters, it would be necessary for the Study Groups involved to hold at least one other meeting, particularly as far as the CMTT was concerned.

The *Director of the C.C.I.R.* said it was his understanding from the morning's discussions and from several suggestions in line with that of the last speaker, that the proposed schedule of meetings was now roughly as follows:

February 1971:	Special Joint Study Group meeting on Space, plus the interim meeting of Study Group VII
June 1971:	W.A.R.C.-ST
Autumn 1971–Spring 1972:	Normal interim Study Group meetings
Early part of 1973:	Final Study Group meetings
Autumn 1973:	XIIIth Plenary Assembly

The *delegate of the United States* reminded the Assembly that, before any programme could be finally established, account would have to be taken of the W.A.R.C.-ST for the Maritime Mobile Services, scheduled to take place some time in 1973.

The *Acting Chairman* suggested that the proposed programme could be revised once the Administrative Council had fixed the dates for the latter Conference, and it was so *decided.*

3. Consideration of the Report by the Budget Control Committee (contd.) (Doc. PLEN./54)

The *Chairman of the Budget Control Committee* said that, in line with the procedure laid down by the Administrative Council at its session the preceding year, the Committee had not reviewed the accounts and expenditures of the past year. The Committee had met only once and had produced the Report contained in Doc. PLEN./54. The final paragraph (4.3) was to be replaced by the information contained in temporary document, subsequently amended, in relation to the decision just taken with regard to the schedule of meetings, and the fact that the final Study Group meetings were now to be held at the beginning of 1973 instead of in 1972. The figures for estimated expenditure should thus read:

1971: 1,600,000.— Swiss francs
1972: 800,000.— Swiss francs
1973: 3,000,000.— Swiss francs

The *Acting Chairman* recalled that, according to Chapter 12 of the Convention, the Assembly must approve the estimated C.C.I.R. requirements up to the next Plenary Assembly.

The *delegate of the U.S.S.R.* said that, at the meeting of the Budget Control Committee, he had proposed that the Report contain a note stating that the general expenses for the XIIth Plenary Assembly, including those of the final Study Group meetings, were considerably higher than was the case in Oslo. However, such a statement was missing from Doc. PLEN./54.

The *delegate of the U.S. Territories* said it was his recollection that it had been decided at the meeting of the Budget Control Committee that no such note was necessary, but if it were to be included he would point out that, between 1966 and 1970 salaries had increased by 20% and the amount of the contributory unit had increased by 22% for Administrations and by over 50% for private operating agencies.

The *delegate of the United Kingdom* said that, if the statement by the U.S.S.R. delegate were to be included in the Report, attention should also be drawn to the increase in the number of documents handled by the Plenary Assembly, and to the fact that Spanish had been used for the first time at the final Study Group meetings. Moreover, it was evident that New Delhi was further from I.T.U. Headquarters than Oslo.

The Report contained in Doc. PLEN./54 was then *approved,* note being taken of the comments made.

4. Texts prepared by the Organization Committee

Doc. PLEN./1002: Mr. Bigi, Chairman of the Organization Committee, said that participation in the Committee had been so large that practically everyone must be aware of the work carried out, and he had been very glad to see the great interest in the matters discussed, which had helped to reach a solution. The Resolution had been examined by the Drafting Committee.

The *delegate of France,* speaking both as head of his delegation and as Chairman of the Drafting Committee, wished his following statement either to be comprised in the text of the Resolution or to be fully noted in the Minutes for future reference; namely, he called the attention of everyone, and particularly of the Chairmen of Study Groups, to the fact that texts must be comprehensible to all engineers, not only to those who had participated in the work of the C.C.I.R. but also to those who received the documentation after a meeting. As Chairman of the Drafting Committee he had noted that, for the most part, it was in that sense that documents were drafted, but sometimes specialists tended to forget that they were writing for non-specialists and were inclined to use a somewhat closed language. He made this remark also with the endorsement of the Technical Cooperation Committee.

Doc. PLEN./1002 was then *approved,* note being taken of the above comment.

Doc. PLEN./1003(Rev.): approved without comment.

5. Texts prepared by the Technical Cooperation Committee

Doc. PLEN./1004: Mr. Gogte, Chairman of the Technical Cooperation Committee, introduced the document, which had been discussed at great length in the Committee.

It was *approved,* with the addition of *Malaysia* to the list of countries participating in the International Working Party mentioned in resolves 3, and the addition of an "s" to the words "Study Group" in the last line of that section. It was understood that the title in Spanish would be brought into line with the English and French.

Doc. PLEN./1005: as the document had no title it was *agreed* to accept the one proposed by the *Director of the C.C.I.R.:* "Participation of C.C.I.R. Staff in Technical Cooperation Work".

The *Secretary-General of the I.T.U.* referred to resolves 2 and pointed out that the Technical Cooperation Department was also making a compilation of certain documentation and felt that there should be close coordination between what that Department was doing and what was being done by the C.C.I.R. He therefore proposed that resolves 2 begin: "After consultation with the Secretary-General, the compiling of certain material on specific C.C.I.R. problems ...".

With regard to resolves 3, and as he had indicated at the previous session of the Administrative Council, there was a Division of Professional Formation within the General Secretariat which had introduced the use of films and audio-visual means to this end. He therefore suggested the addition, after "the Technical Cooperation Department" of the words "to assist the Secretary-General".

The *delegate of Pakistan* supported the proposal of the Secretary-General.

The *Director of the C.C.I.R.* said that he preferred the text as written, which he felt described the wishes of the meeting and would be more in line with the way the C.C.I.R. operated.

The amendments proposed by the Secretary-General were *adopted.*

Following a point raised by the *delegate of Mexico,* a long discussion ensued as to whether the term "new *and* developing", "new *or* developing" or "new *and/or* developing" countries should be used. It was *decided* to use the expression adopted by the Plenipotentiary Conference, namely, "new *or* developing".

The *delegate of the United Kingdom* proposed the addition of the word "other" before "suitable experts" in the last line of resolves 1. *Agreed.*

The *delegate of Japan* said that discussions in the Committee had shown that some useful results had been obtained, but he was afraid that requirements of new or developing countries might increase more rapidly than would the ability to offer technical assistance during the forthcoming period. He therefore suggested the setting up of an International Working Party, with the following terms of reference: 1) to collect questions and requirements of concern to the respective Study Groups; 2) to study these points at an interim meeting, with the close collaboration of the Study Groups and the Technical Cooperation Department; 3) to make a report and inform the developing countries of the result.

By means of such an International Working Party, on the one hand, those countries that could not attend the interim meeting would be satisfied and, on the other hand, the results would also be available to the more developed countries, so that they might know the essential requirements of the developing countries.

There had not been an opportunity to make that suggestion at the plenary meeting, due to lack of time, but he hoped that it might be considered during the coming interim period and might be discussed at the following Plenary Assembly.

The *Acting Chairman* thanked the delegate of Japan for his most interesting suggestion, which he regretted had not been taken up at the meetings of the Organization Committee, where it might have been possible to discuss it in more detail. It would be difficult at the present time to make a formal resolution on the subject, but the statement would be included in the Minutes, and thus there would be the possibility of studying the idea during the interim period.

The *delegate of Pakistan* asked how the matter was to be dealt with between plenary assemblies. Was IWP PLEN./1 to be continued? If so, that group could study the matter. Or would it be left to Administrations to formulate proposals, which would come up at the next Plenary Assembly?

The *Acting Chairman* believed there had been no indication that IWP PLEN./1 should be continued, and felt the only solution would be for Administrations to study the problem in the interval and to present proposals, even if this would give no immediate result. He was supported in this by the *delegate of the United Kingdom* and it was so *agreed.*

6. C.C.I.R. Study Group structure

Doc. PLEN./1006: the Chairman of the Organization Committee, in presenting the document, which contained proposals on the new Study Group structure, said that, to reach those proposals there had been many approaches, the first in Oslo in the Working Group of the Organization Committee, and there had been the possibility of hearing the opinions of nearly all the Chairmen and Vice-Chairmen of the Study Groups at the meeting of IWP PLEN./1 in Geneva. The proposals were based mainly on the evolution of technique, and he pointed out that the proposed structure was not a fixed stage, as such an evolution constantly occurred, and the studies evolved accordingly, so that the structure could, and should, be periodically modified.

He reviewed the new Study Group structure and that of the proposed Joint C.C.I.R./C.C.I.T.T. Group on Vocabulary. He believed it would be necessary to have a certain lapse of time to put it into operation, and said it would have to be left to the Director of the C.C.I.R., together with the Study Group Chairmen, to allot items on the programmes of the various

Groups. He warned that, where possible, the work of the W.A.R.C.-ST should not be compromised by the change.

The *Chairman of the Drafting Committee* explained that the proposed terms of reference had been very carefully considered within IWP PLEN./1 and in the presence of the relevant Study Group Chairmen, so it had not been thought necessary to have them examined by the Drafting Committee.

The *delegate of the United States* did not wish to make an issue, but requested clarification on the following point. When the functions of the proposed new Study Group X were being discussed with regard to tropical broadcasting and it had been decided to form a small working group under Mr. Terzani, with the cooperation of the Director, his notes indicated that that group was also charged with studying other relevant matters with regard to the terms of reference of Study Groups X and XI, and included was the matter of the proposed split of recording functions between those two Study Groups. The conclusions of that Working Party were contained in Doc. PLEN./58 and were now incorporated in Doc. PLEN./1006, but no mention was made in either document as to whether or not that working party had, or had not, considered the matter of recording functions. Mr. Prose Walker, Chairman of Study Group X, had given a rather long briefing on details concerning decisions on this matter taken in Geneva, and he felt that the Assembly owed Mr. Walker the satisfaction of hearing what decision had been taken or whether the working party had considered the subject at all.

The *Acting Chairman* requested Mr. Terzani, the Coordinator of the working group, to explain the situation.

Mr. Terzani said that the Organization Committee had only given his group the task of discussing the possibility of having a single Study Group for both broadcasting and tropical broadcasting and to examine Doc. X/1024. Problems of recording had not been entrusted to it, but were to be reviewed by the Plenary Assembly.

The *delegate of Cuba* pointed out that the French and Spanish texts of *(b)* in the terms of reference of Study Group X should be brought into line with the English text.

The *delegate of the Argentine* recalled that at the meeting of the Organization Committee there had been very lengthy discussions on the best way to cope with problems relating to tropical broadcasting in the terms of reference of new Study Group X. These were supposed to cover those of old Study Groups X and XII. The conclusions were not entirely clear, and that was why the small working group had been set up, to inform the Director of the C.C.I.R. about the final methods to be adopted to enable the combination of those two Study Groups to be made. He therefore requested some clarification as to decisions adopted by the working group.

Mr. Terzani pointed out that the conclusions of the working group were contained in Doc. PLEN./58. The majority of the group had considered it acceptable to have a single Study Group for tropical and other aspects of broadcasting and thought that the special needs of tropical broadcasting could be catered for by setting up an interim ad hoc working group, within the Study Group, to consider those specific aspects.

Dr. van Duuren, Chairman of Study Group III, proposed an amendment to the terms of reference of new Study Group I, which he had already brought up in the Organization Committee when comparing the old and new terms of reference. In the present text the indication of Communication Theory had been lost, and he felt this was too important a subject not to be incorporated. He therefore would like to see the first part of the terms of reference read as follows:

"To study questions relating to the efficient use of the radio-frequency spectrum and, in particular, general problems of frequency sharing, by the application of Communication Theory."

The *Chairman of the Organization Committee* recalled that the proposal had been made in the Committee, but if it had not been incorporated, it was because it had received no support. Personally, he felt that the terms of reference should not be so specific, but if everyone could accept Dr. van Duuren's proposal and considered it covered all the field, he would not oppose it.

The *delegate of the United Kingdom* supported the remarks of the last speaker, and did not think that the proposed amendment was a good one. Everything concerning the efficient use of the frequency spectrum and problems of frequency sharing could be conducted by using Information Theory and this use was implicit in the text as it now stood.

The *delegate of Switzerland* supported Dr. van Duuren's proposal, though perhaps not in quite the same form and saw no objection to the addition of studies with respect to the application of Communication Theory, which was, in fact, a very important item that had been included in the programme of Study Group III.

The *delegate of France* said that Dr. van Duuren's proposal had been made when Doc. PLEN./4 was drawn up and it had not received approval. Time had been short, and to reach a conclusion the texts had been adopted as they were, it being understood that the respective Chairmen would take account of what had taken place in discussions within the Organization Committee. There did not seem to be a need for such specific mention in the terms of reference, otherwise one should also take account of the desires of Study Group VIII concerning international monitoring.

The *delegate of the U.S.S.R.* said that the structure of Study Groups had been discussed for a very long time in the meeting of the Organization Committee and it could hardly be said that the present structure had been adopted because there was insufficient time. The Committee had been unanimous on the adoption, with the exception of the specific terms of reference of Study Group X, to which end a small working group had been set up. Nobody had been pressed for time, and the working group had solved the problem of Study Group X. Objections concerning the terms of reference of Study Groups III and VIII had been expressed in the Committee, and if discussions were to be re-opened in plenary session regarding any of the Study Groups it might be said that what was agreed in Committee was not the best possible solution and numerous other possibilities could be debated once more.

The *Acting Chairman* agreed that it would not be wise to re-open discussion, and requested Dr. van Duuren not to press the point.

Dr. van Duuren said that he did not think that was the correct expression. He had made a proposal for an amendment and it had received the support of the delegation of Switzerland.

The *delegate of the United States* said that the amendment referred to one specific aspect of the efficient use of the radio frequency spectrum and believed that the proposed terms of reference were sufficiently broad to include not only this aspect but many other studies that would deserve special reference. This would be unnecessary and he would associate himself with the United Kingdom delegation in objecting to the proposed amendment.

The terms of reference of Study Group I were *approved* with the reservation of the *delegate of the Netherlands.*

Mr. Rouvière, Director of the C.C.I.T.T. referred to the C.C.I.R. decision to abolish Study Group XIV as such and combine it with C.C.I.T.T. Study Group VII. That decision could only come into force once it had been approved by the next Plenary Assembly of the C.C.I.T.T., which would take place in 1972.

The *delegate of France* recalled that the question had been discussed in IWP PLEN./1 in Geneva in May 1969, and there had been an agreement of principle on the part of the C.C.I.T.T. that there could be a joint meeting of the two Study Groups prior to the C.C.I.T.T. Plenary Assembly, at some time and place yet to be decided.

The *Director of the C.C.I.T.T.* said that the question did not arise since the last C.C.I.T.T. Plenary Assembly had not placed any question on the programme of Study Group VII. Therefore no meeting of that Study Group could be envisaged.

Mr. Prose Walker, Chairman of Study Group X, reverted to the matter of the separation of recording functions, to which he had alluded in a rather lengthy manner in the meeting of the Organization Committee. He would not go into details, as most of the delegates had

been present at that time. However, he had been unable sufficiently to explain the fundamental aspect, namely, that the separation of the recording functions of sound and video would further complicate the work in the future with respect to both. In case there were any apprehensions, the last thing in the mind of Study Group X was to undertake anything proper to other Study Groups, and he was confident that this was reciprocal. The only reason that Study Group X was engaged in the study of video on film was that the Plenary Assembly had made such a request, since that Group was the best equipped to handle the problem. He felt that if sound and television recording functions were to be separated into two Groups, the delegates would find that certain things would take place at the next interim meetings of Study Groups X and XI, at the final meetings and even at the next Plenary Assembly. He then listed these consequences, as given in the statement, annexed to the present Minutes.

To avoid these consequences he would therefore propose the following two amendments in the terms of reference of Study Groups X and XI: *(c)* of X to read as follows: "standards for sound and television recording to facilitate the international exchange of programmes will be studied by a Joint 10/11 Working Group."; *(b)* of XI to read as follows: "standards for television and sound recordings to facilitate the international exchange of programmes will be studied by a Joint 10/11 Working Group."

It was his single recommendation that these two amendments might be acceptable to the Plenary Assembly.

The *delegate of India* said he would wish to retain sound and video recording standards in Study Group X for the reasons that had been explained and would support the proposal.

Mr. Esping, Chairman of Study Group XI, speaking on behalf of his Study Group, said that the proposal represented the procedure that had been used at all meetings of the two Study Groups, not merely for matters concerning recording. A mixed group had usually been set up for all questions and problems common to both Study Groups, and these had been jointly solved.

The *Acting Chairman* suggested that, if the proposed wording would seem to make the procedure compulsory, the Assembly should perhaps be hesitant to make such a change.

The *delegate of New Zealand* had listened with interest to Mr. Walker's compromise solution, but wondered if it were really necessary. As he understood it, working groups were normally set up at meetings of Study Groups, and did not usually exist on a continuing basis. Basing himself on Mr. Esping's point of view, he did not see why something which had been a normal procedure in the past should now be incorporated into the terms of reference of both Groups and he would like assurance that this would not mean that a Joint International Working Party should be set up as a continuing device.

The *Director of the C.C.I.R.* said that, in the past, the two recording problems had been treated by Study Group X, which had studied both film and sound. At the working party meeting, and in plenary session of the Study Group, the possibility of separating sound and video had been discussed, and Mr. Walker had not then presented his views when it had been thought well to have such a separation. Study Groups X and XI always met at the same time and place, and as Mr. Esping had pointed out, this could facilitate the kind of cooperation that Mr. Walker was suggesting.

There was also the possibility, if the problem was of an urgent nature, that an International Working Party could be set up. In the present case, there were perhaps special problems, but there was no sense of urgency. This would be up to Study Groups X and XI to decide, and it should be possible to settle such questions within the terms of reference contained in Doc. PLEN./1006. It would appear that those terms of reference would meet the requirements of Mr. Walker and of both Study Groups X and XI in their future work.

The *delegate of the United Kingdom* recalled that when the terms of reference were discussed in the Organization Committee, the delegate of Japan had made a proposal that

they be accepted as prepared by IWP PLEN./1 and any proposed changes be reserved until the next Plenary Assembly. That proposal had been readily accepted by the Committee and he suggested that the procedure be followed by the Assembly. It was so *agreed.*

The *delegate of Pakistan* said that the statement made by the Director of the C.C.I.T.T. had caused him some anxiety with regard to the progress of the new Joint C.C.I.R./C.C.I.T.T. Study Group on Vocabulary, which would seem to encounter problems from its very inception. The C.C.I.T.T. Plenary Assembly would meet only in about 2½ years' time and he wondered what progress could be made as far as the C.C.I.R. was concerned, which, as had been pointed out, was already lagging behind the C.C.I.T.T. He could only suggest that the designated Chairman of the Joint Group continue in accordance with the terms of reference to the best of his ability, so that some progress might be seen at the next C.C.I.R. Plenary Assembly.

The *delegate of the Argentine* suggested that, in the circumstances, the old title should be retained and the Group be referred to as C.C.I.R. Study Group XIV, removing from the terms of reference everything related to the C.C.I.T.T. That Group should then have a C.C.I.R. Chairman and Vice-Chairman, and if it was still thought necessary to set up a joint Group, that desire should be expressed at the next Plenary Assembly of the C.C.I.T.T.

The *Director of the C.C.I.R.* said that a similar difficulty had been encountered when the CMTT was set up. Someone had to initiate a Joint Study Group, and he suggested that it should be noted in the Minutes that the particular terms of reference of the proposed Joint Group were approved as far as the C.C.I.R. was concerned and would be referred to the C.C.I.T.T. at its next Plenary Assembly. The C.C.I.R. Chairman could then continue to work in accordance with those terms of reference. The cooperation of the C.C.I.T.T. would be required, but he recalled that activity was continuing within the C.C.I./IEC Working Party.

The *Director of the C.C.I.T.T.* said it had never been his intention to underestimate the importance of C.C.I.R. Study Group XIV nor of C.C.I.T.T. Study Group VII, nor to foster doubts as to the necessity of forming a Joint Group. He had merely raised a question of procedure, since no question had been allotted to Study Group VII. It was true that there was common C.C.I. activity in conjunction with the IEC, and it went without saying that such activity would continue. He was sure that the delegates of the C.C.I.T.T. would be pleased to collaborate actively with C.C.I.R. Study Group XIV, pending the formation of the Joint Group.

The *delegate of Canada* proposed that the title of the Group be changed to read "Interim Study Group on Vocabulary" and that a footnote be added to read: "* Although the C.C.I.R. recommends the setting up of a Joint C.C.I.R./C.C.I.T.T. Study Group on Vocabulary, such a Joint Group can only be formally established with the agreement of the C.C.I.T.T. at its next Plenary Assembly." It was thus *agreed* with an addition in the third line of the terms of reference: after ". . . other means of expression" *read* "systematic classification", and run on "units of measurement, etc.)".

The *Chairman of the Organization Committee* returned to the point raised by Mr. Walker concerning Study Group X and to allay his anxiety with regard to the separation of recording standards proposed that *(c)* of the terms of reference of that Study Group should read: "standards of sound recording *in coordination with video recording* to facilitate the international exchange of programmes". This would offer the possibility of setting up a joint Working Group without altering the terms of reference of both Groups.

The *Chairman of the Drafting Committee* recalled that there were other shared problems between Study Groups X and XI, such as the use of satellites and other common aspects, so there should be no particular difficulty in dealing with recording standards. Doc. X/1024, concerning educational broadcasting, would also entail shared problems, where no difficulties were envisaged.

Mr. Terzani, Chairman of the Working Group which had examined that document, said the result of that study was contained in Doc. PLEN./58. It had been considered that the

present proposed terms of reference of both Study Groups X and XI were sufficiently broad to handle all such common problems.

Mr. Prose Walker, Chairman of Study Group X, said he had no further comments on Doc. PLEN./1006, in view of the action which had taken place at that session. He would hand in a statement to the Rapporteur and would request that it be included in extenso in the Minutes of the meeting. (That statement is attached as Annex I to the present Minutes.)

The new structure of Study Groups and their terms of reference, as contained in Doc. PLEN./1006, were then *approved*, the only change being that concerning the Interim Study Group on Vocabulary.

The meeting rose at 1735 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

ANNEX I

REMARKS BY THE CHAIRMAN OF STUDY GROUP X
ON THE SUBJECT OF DOC. PLEN./1006
AT THE SEVENTEENTH PLENARY SESSION, ON TUESDAY, 10 FEBRUARY 1970 AT 1430 HOURS

"During the discussion in the Organization Committee on 9 February, I presented, on behalf of Study Group X, a detailed explanation of the technical reasons for maintaining *all* recording and reproducing studies (sound, film and video-tape) within a single Study Group. I did so because it was the nearly unanimous (one delegation excepted) opinion of the Study Group, *especially* the experts responsible for the conduct of this work.

The Organization Committee took no action responsive to that opinion. Quite the contrary, Doc. PLEN./58, incorporated in Doc. PLEN./1006, ignores the *technical* reasons and justification put forward, and accepts ANNEX III of Doc. PLEN./2 as the terms of reference of Study Group X respecting the matter of recording. This action *separates* the recording functions into SOUND and VIDEO and places their future study in two Study Groups instead of one. As I previously pointed out before the Organization Committee, such a separation will:

— further complicate the necessary liaison and coordination between sound and video recording techniques;

— make it more difficult for small delegations to follow the recording/reproducing studies of the C.C.I.R. which will in the future be conducted in two Study Groups rather than one;

— rather than *improve* and *facilitate* the conduct of this phase of the work of the C.C.I.R., quite the contrary will be the result. In fact, the action taken represents only a change and not an improvement.

On behalf of Study Group X, I wish to state my regret at this action of the Plenary Assembly."

A. Prose WALKER
Chairman, Study Group X

MINUTES OF THE EIGHTEENTH AND LAST PLENARY SESSION*

(Wednesday, 11 February 1970 at 1000 hours)

ACTING CHAIRMAN: G. PEDERSEN (Denmark), Vice-Chairman of the Plenary Assembly

1. Present

1.1 *Administrations:*

Saudi Arabia (Kindgom of); Argentine Republic; Australia (Commonwealth of); Austria; Bielorussian Soviet Socialist Republic; Brazil; Bulgaria (People's Republic of); Cameroon (Federal Republic of); Canada; Ceylon; China; Congo (People's Republic of the); Korea (Republic of); Cuba; Denmark; Spain; United States of America; Ethiopia; Finland; France; Gabon Republic; India (Republic of); Indonesia (Republic of); Iran; Ireland; Italy; Japan; Kuwait (State of); Malaysia; Mali (Republic of); Mexico; Monaco (represented by France); Nepal; Nigeria (Federal Republic of); Norway; New Zealand; Pakistan; Netherlands (Kingdom of the); Peru; Poland (People's Republic of); Syrian Arab Republic; Federal Republic of Germany; Ukrainian Soviet Socialist Republic; Roumania (Socialist Republic of); United Kingdom of Great Britain and Northern Ireland, the Channel Islands and the Isle of Man; South Africa (Republic of); Sweden; Switzerland (Confederation of); Czechoslovak Socialist Republic; Territorities of the United States of America; Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible; Thailand; Togolese Republic; Turkey; Union of Soviet Socialist Republics.

1.2 *Recognized Private Operating Agencies:*

Radio-Austria; The Telephone Association of Canada; American Telephone and Telegraph Company (A.T. & T.); Communications Satellite Corporation; Radio Corporation of America (RCA); Yleisradio; Radiotelevisione Italiana (RAI); Kokusai Denshin Denwa Co. Ltd. (K.D.D.); Nippon Denshin Denwa Kosha (N.T.T.); New Zealand Broadcasting Corporation; British Broadcasting Corporation (B.B.C.); Independent Television Authority (I.T.A.); The Marconi International Marine Company Ltd.; United Kingdom Post Office; South African Broadcasting Corporation (S.A.B.C.); Sveriges Radio.

1.3 *International Organizations:*

International Electrotechnical Commission (IEC); International Radio and Television Organization (O.I.R.T.); European Broadcasting Union (E.B.U.).

1.4 *Permanent organs of the International Telecommunication Union (I.T.U.):*

The General Secretariat; I.F.R.B.; C.C.I.R.

2. Proposals concerning the Chairmen and Vice-Chairmen (Doc. PLEN./1007 in conjunction with Docs. PLEN./43 and PLEN./50)

The *delegate of Canada* drew attention to the fact that Docs. PLEN./43 (United Kingdom) and PLEN./50 (Australia) had been distributed since 5 February, and felt that they should be considered in conjunction with Doc. PLEN./1007.

The *Acting Chairman* agreed that it would be an equitable procedure to consider the two documents prior to examination of the proposed list of Chairmen and Vice-Chairmen,

* Approved by the Acting Chairman.

as they dealt with a procedure whereby the latter could be elected, the second document containing, moreover, a proposal with regard to tenure of the posts.

The *delegate of New Zealand* strongly supported the proposal to consider Docs. PLEN./43 and PLEN./50 first.

The *delegate of the United Kingdom* said that, in presenting Doc. PLEN./43, he would propose that the procedure laid down therein be applied at the next Plenary Assembly, but not at the present one.

The *delegate of the Argentine* stressed that he was speaking as a member of the Argentine delegation and not as one of the Vice-Chairmen of the Plenary Assembly. He wished to reserve the right to support any other proposed nomination of candidates, and even to propose a new candidacy himself.

The *delegate of the United States* said it had never been the view of his delegation that the procedures laid down in the two documents would be applied during the present Assembly. He would support discussion of the proposed procedures, but not their application at the present time. With regard to Doc. PLEN./1007, the United States delegation had given careful consideration to the proposals therein, and there might be some points to be made concerning Chairmen and Vice-Chairmen who could most effectively guide the Study Groups in the interim period, but he felt that to alter the list at that time would not be to the interests of the Assembly. He therefore proposed that Doc. PLEN./1007 be accepted in its entirety.

The *delegate of Canada* failed to understand the interventions of the delegates of the United Kingdom and the United States, concerning the application of the procedures proposed. These were not so complicated and if they had been proposed with a view to improving the C.C.I.R. he saw no reason why their application should be deferred.

The *delegate of Australia* wished to clarify the position of his delegation, particularly in view of the United Kingdom statement that they did not wish their secret ballot proposals to be applied at the present time. The Australian proposal had been submitted in 1967 to International Working Party PLEN./1 and the full text of the proposal submitted then could be found starting on page 3 of Doc. PLEN./49, the summary record of the 4th meeting of the Organization Committee. It was intended, if the Assembly agreed it would be applied, to add some further points to this matter. It had been for the first time, the afternoon of the previous day, that he had seen the name of an Australian as a Vice-Chairman in the list contained in Doc. PLEN./1007, and he would appreciate, before any election was completed, knowing the basis of post-holding upon which Chairmen and Vice-Chairmen should be elected, with particular regard to page 4 of Doc. PLEN./50. He suggested that the whole of resolves 1 be deleted from that document and hoped that the decision of the Assembly would be flexible with regard to the proposal contained in resolves 2.

The *Acting Chairman* said that the delegate of Canada had raised a very relevant point and in his view it was indispensable to have a full discussion on procedures at the present time.

The *United Kingdom delegate* emphasized considering *(f)* of Doc. PLEN./43 "that to propose in open meeting that a Chairman be displaced is embarrassing both to the proposer and to the Chairman himself and therefore rarely occurs", and the same thing would apply if someone else were proposed to occupy the chair. A ballot should first be taken to establish whether or not an election was needed, and only once that matter had been disposed of could candidacies be put forward for election to the chair which would become vacant. It was a two-stage process. In reply to a question by the *Acting Chairman*, he repeated that he would not propose an application of the proposed procedure at the present time, as it would be

somewhat time-consuming, but he felt it would be of great value for the future efficiency of the C.C.I.R.

The *delegate of Canada* supported the proposals by the United Kingdom and Australia, but not the part of the latter's suggestion concerning deletion of considering 1.

The *delegate of the United States* felt that the Study Groups were the appropriate bodies to select their own Chairmen and Vice-Chairmen, as they were in the best position to evaluate candidacies. Past tradition did not necessarily have to be adhered to. He agreed with the delegate of the United Kingdom that it was embarrassing to propose a change in an open meeting, but this handicapped a good working arrangement. Therefore some type of ballot arrangement would appear to be called for, which should not however be applied at Plenary level, but possibly at Study Group level.

The *delegate of the United Kingdom* said he would be happy to accept the proposal that the procedure be applied normally in a Study Group.

The *Director of the C.C.I.R.* said he had been very closely associated with the problem since he had been in office, and it had caused him some concern. The matter arose at the final meetings of the Study Groups in Geneva, and he had been uncertain as to how to handle it, particularly in view of the Report of International Working Party PLEN./1 on the proposed reorganization of the Study Groups. The procedure he had suggested to the existing Study Groups was that they propose to the Plenary Assembly the name of the person they considered to be most qualified to hold the Chairmanship of their Study Group, as it was also his feeling that they were in the most favourable position to evaluate those who could best lead their work. Ever since Stockholm 1948 that system had worked extremely well, and he pointed out that No. 792 of the Convention laid down that the Assembly should *appoint*, not elect, Chairmen and Vice-Chairmen.

With regard to the tenure of the posts, he commented that the Plenary Assembly met only every three years, and sometimes it took a Chairman three plenary assemblies to complete the work which he had started on a particular question or subject. The Chairmen worked extremely hard, and if their tenure was to be limited to two plenary periods, it might make their task very difficult. Should a Study Group feel that a Chairman was not performing his duties satisfactorily, it could suggest a change in Chairmanship. However, he would not like to see an arbitrary limitation of their term of office.

The *delegate of Canada* could not completely agree with the Director. Proposals emanating from a Study Group might not always be quite objective, for human reasons. He felt that the selection of a Chairman was a management function and management of the C.C.I.R. rested with the Plenary Assembly.

As far as the continuity and efficiency of the work of the Chairmen were concerned, he did not think these would suffer if another participant in the work took over. There should be no lack of qualified experts within the C.C.I.R. and for an international organization changes would represent a good exercise in international cooperation. Another aspect that must not be forgotten was that technology was moving rapidly, and without wishing to suggest that Chairmen and Vice-Chairmen could not keep abreast of progress, there was a need to bring in new blood every six or nine years.

The *Acting Chairman*, reviewing the situation, said that there appeared to be no wish to adopt the draft Resolution contained in Doc. PLEN./43 at the present time, but that there were various points of view concerning the proposal on tenure in Doc. PLEN./50. There were no limiting conditions of the term of office contained in Chapter 16 of the General Regulations annexed to the Convention. The Plenary Assembly was quite free to re-elect those in office.

The *delegate of Australia* pointed out that the Director of a Consultative Committee was elected for six years, and his responsibilities were no less than those of a Chairman. The need to keep abreast with the fast rate of development in technologies was mentioned under considering *(d)* of the Australian Resolution. He further pointed out that resolves 2 stated "that in normal circumstances", since it was difficult to see what would happen in the future, or if the application of the proposal might create difficulties. It was the intention of the proposal that after the six-year period the Chairman would retire and would be succeeded by the Vice-Chairman, which arrangement would minimize any discontinuity, since the Vice-Chairman would himself have been in office for at least six years. Australia was a small Administration, suffering from brain-drain and they would be much happier to be able to provide a Chairman or Vice-Chairman for a definitely limited period. He felt this would apply to many other smaller Administrations.

The *Acting Chairman* remarked that Article 14 of the Convention laid down a minimum period of six years for the Director of a C.C.I., which was at variance with the Australian proposal for a maximum period of six years.

The *delegate of Turkey* supported the views expressed by Canada and elaborated by Australia. He considered that a six-year period was sufficient to fulfil the work of a Chairman, since in most countries a President or Government was elected only for that period.

The *delegate of Canada* did not think that the Australian proposal was in conflict with the Convention. While the latter did not implicitly bind to a set period, neither did it implicitly prevent it, and No. 200 stated that the Assembly could adopt additional procedures. To save time and further discussion, he proposed that interest in the proposal be indicated by a show of hands.

The *delegate of the United States* agreed to a large extent with the comments made by the delegate of Canada, and thought the Convention could be interpreted with some flexibility. Certainly the principle of limiting a tour of office had some merit; it afforded an opportunity to bring in new blood and new ideas, and to displace an unsatisfactory person. However it also had the definite disadvantage of removing from office highly capable persons.

Since considering 2 of Doc. PLEN./50, indicated that the proposal was not to be applied too rigidly, in view of the words "in normal circumstances", the delegate of the United States would be agreeable to the application of a fixed tenure, provided: (1) that it be subject to the condition that an individual could be reappointed; (2) that it be applied to start as from the present Plenary Assembly, and not retroactively.

The *Acting Chairman* then called for a show of hands to see who would prefer to see the introduction of the principle contained in resolves 2 of Doc. PLEN./50.

Result: In favour of the introduction	23
Opposed	5
Abstentions	20

The *delegate of the United States* explained that he had not indicated "Yes" or "No", neither had he abstained; he had stated that he could support such a Resolution subject to certain qualifications. The Acting Chairman had worded his question as to who would "prefer" to see its introduction, and he had no such preference.

The *Secretary-General of the I.T.U.* referred to No. 723 of the General Regulations, which laid down that when the number of abstentions exceeded half the number of votes cast, consideration of the matter under discussion should be postponed to a later meeting. In the present case, the abstentions had not exceeded half the number of votes cast, but the situation had been close, and might be an indication that the time was not fully ripe for taking a final decision.

The *delegate of New Zealand* pointed out that it was not a formal vote, but merely a show of hands and it was in those circumstances that he had raised his hand.

The *Acting Chairman* said that, although the majority seemed to be in favour of introducing in the future a time limit for the term of office of Chairmen and Vice-Chairmen, there had also been contrary views and a considerable number of abstentions. He therefore proposed that the purpose would best be served if all comments were to be included in the Minutes, to be available as a guidance for further consideration by Administrations, rather than for a formal Resolution to be made, based on voting results that were not very clearly expressed.

The *delegate of Turkey* said that, as there was a great majority in favour of having a Resolution in this respect, he would propose that the Drafting Committee be given the task of drafting a text based on resolves 2 of Doc. PLEN./50; he was supported by the *delegate of Canada.*

The *Chairman of the Drafting Committee* pointed out that as it was the last plenary session, the Drafting Committee could not submit its conclusions for approval, so this would have to be done in Assembly.

The *delegate of the United States* supported the proposal of the Acting Chairman, but not that of Turkey, seconded by Canada.

The *delegates of the Federal Republic of Germany, the Netherlands and Italy* supported the proposal by the Acting Chairman. The *delegates of Syria and New Zealand* supported Turkey.

At the proposal of the *delegate of Australia,* the *Acting Chairman* called for a second show of hands.

The results were as follows:

In favour of the proposal by the Acting Chairman:	31
In favour of the proposal by the delegate of Turkey:	10

It was therefore the wish of the Assembly that the debate be recorded in the Minutes, but that no formal Resolution be made at the present time.

Discussion was then opened on the proposals contained in *Doc. PLEN./1007* and the *delegate of Brazil* asked upon what basic principle the proposals had been formulated. Had the Heads of Delegations or Chairmen been consulted? The procedure would appear somewhat unusual. On page 3 of the document there appeared a proposal for the Chairmanship of the International Working Party on Technical Economic Factors, and he recalled that when Doc. PLEN./35 had been discussed, two candidates for that Chair had been presented, one from India, proposed by the delegation of Japan, the other being Mr. Terzani. Discussion of the choice had been postponed, following a proposal by the U.S.S.R. and he had no recollection of the Japanese proposal being rejected.

The *Acting Chairman* explained that Doc. PLEN./1007 had been prepared on the basis of consultation with the four Vice-Chairmen of the Assembly and the Director of the C.C.I.R. With regard to the specific point raised by the delegate of Brazil, he recalled that when the Report of International Working Party PLEN./1 had been considered in plenary session, it had been decided that the Chairmanship of the International Working Party on Technical Economic Factors would be taken up at the same time as all the other chairmanships, as it was not possible, from a practical point of view, to deal with each one by one. The list in the document was therefore proposed as a package deal. He suggested that an attempt to make changes in the document might have consequential effects that would not be in the interests of the C.C.I.R.

The *delegate of Canada* said that it had been made quite clear by a number of Administrations that the document had not benefitted from a wide-ranging consultation, and he would like to see some thought given to the procedure in the future. There were, as he saw it, two possible improved procedures: (1) that the Study Groups respectively proposed not

just one but alternative candidates for Chairmanship; (2) that such a "package deal" be prepared by a special meeting of Heads of Delegations, as had been done in Mar del Plata.

He fully realized the psychological difficulty in making any new nominations in contradiction to those listed in the document, but he would urge the Administrations present not to hesitate to propose nominations in competition with that of Canada (Mr. Petrie as Vice-Chairman of Study Group 6).

The *Acting Chairman* said the wise statement of the last speaker should be taken into account, and the proposed procedures considered in the future. He was endorsed by the *delegate of the United States.*

The *delegate of Cuba* found the situation somewhat confusing, particularly in view of the remark by one of the Vice-Chairmen, from the Argentinian delegation, that he felt free to make new proposals. This would seem to run counter to the introductory paragraph of the document.

The *delegate of the Argentine* said there was obviously no time to follow either of the proposals by Canada, but they might be applicable in the future. He wondered whether any Administration had a better candidate to put forward as a substitute for anyone listed in the document.

The *delegate of Mexico* agreed with the views expressed by Cuba and the Argentine. The proposals in the document seemed to be the result of a very private consultation, and although these had obviously been made primarily with the aim of having the most qualified persons, they were still no more than proposals. Other countries or groups of countries might have presented similar proposals. Once the Assembly had adopted a decision this would have to hold good until the next Assembly. There would not appear to be sufficient time to put forward names of alternative candidates for all the Groups, but maybe this could be done for some of them, in which case the Mexican delegation would make a proposal with regard to the International Working Party on Technical Economic Factors. He had the greatest esteem for Mr. Terzani and recognized his many qualifications, but since the International Working Party had been set up following a proposal by the delegation of the Argentine in Geneva, and since it would deal for the most part with the requirements of new or developing countries, it would seem logical to propose a Chairman from one of those countries. He would therefore suggest that the Chairman come from either the Argentine or from India.

The *delegate of Cuba* recalled that a small Working Group had decided to study the possibility of having two Chairmen for Study Group 10, one to deal with general broadcasting matters, the other with specific problems concerning tropical broadcasting. He would suggest that there be two Vice-Chairmen of that Study Group in view of its new composition.

After a very lengthy discussion, in which the *delegate of the Argentine* proposed that the second Vice-Chairman be Mr. Terzani and the *delegate of the U.S.S.R.* proposed that he be a member of the Cuban delegation, the Convention was consulted and it was ascertained that no provision was contained therein for the possibility of a Study Group having two Chairmen or two Vice-Chairmen. The proposals could therefore not be followed up.

The *delegate of Canada* understood the preoccupation of the new or developing countries that it might be preferable for the Chairman of the International Working Party on Technical Economic Factors to be a member of one of those countries, but he also felt the Assembly should recognize the great contributions made to the work by Mr. Terzani. There had been no time to consult with the Italian Administration on the matter, but he proposed the following course of action—he withdrew the candidature of Mr. Petrie as Vice-Chairman of Study Group 6, which would create a vacancy, and this in turn might liberate the situation with respect to the International Working Party.

Following a proposal of the *delegate of New Zealand* and supported by the *delegates of the Argentine, Australia, the United States and France,* it was *decided* that the Chairman of Study Group 6, in view of his great responsibilities, should not also be the Chairman of the Joint Study Group meeting to prepare the WARC-ST. With the entire agreement of *Mr. Klein* (Switzerland), who expressed his relief at the proposal, and the acceptance of *Mr. Marchand* (Canada), it was *decided* to invert the proposals for Chairman and Vice-Chairman of that Joint Meeting.

Following a proposal by the *delegate of the Argentine,* and supported by the *delegates of Cuba, Canada, India, France and Mexico, Mr. Duran* (Spain) was appointed interim Vice-Chairman of the Interim Study Group for Vocabulary, until such time as the C.C.I.T.T. Plenary Assembly had reviewed the situation. The *Chairman of the Drafting Committee* added that Mr. Duran's competent work on the Drafting Committee in matters concerning the Spanish language had been much appreciated.

Following a proposal by the *delegate of Japan* and supported by the *delegates of the United Kingdom and Canada,* it was *decided* to appoint a member of the Indian delegation as Chairman of the International Working Party on Technical Economic Factors. The *delegate of India* announced that his delegation would nominate *Mr. Nerurkar* to that post. It was so *approved.*

At the request of the *Acting Chairman, Mr. Bailey* (U.S.A.), Chairman of Study Group VI, said that, if he were still to retain the Chair of Study Group VI, he would welcome Mr. Terzani, for whom he had the greatest regard, as Vice-Chairman. However, he would add that he believed the Head of the Canadian delegation had inadvertently done Canada a disservice by withdrawing the candidature of Mr. Petrie, who had played a very active part in the past in Study Group VI and who had accomplished most distinguished work with the Alouette satellite; he would have liked to have seen Mr. Petrie succeed to the Vice-Chairmanship of the Study Group, to maintain the work at the highest possible level.

The *delegate of Turkey,* having heard this explanation, requested the Head of the Canadian delegation to reconsider the nomination of Mr. Petrie, as did the *delegate of the Argentine.*

The *delegate of Canada* very much appreciated the remarks made by Mr. Bailey and supported by the delegation of Turkey, and wished to assure them that Mr. Petrie would continue actively to participate in the work of Study Group 6 and to make contributions to its meetings. However, his delegation would prefer to see someone else take over the Vice-Chairmanship.

On this understanding, *Mr. Terzani* (Italy) was appointed to the post of Vice-Chairman of Study Group 6.

The appointment of the Chairmen and Vice-Chairmen, as listed in Doc. PLEN./1007, for the remaining C.C.I.R. Study Groups and the CMTT were *approved* without comment.

The *delegate of Brazil* stated that he wished to support the views expressed by Canada at the beginning of the session concerning the future work of the C.C.I.R. and the manner of choosing the Chairmen and Vice-Chairmen.

The *delegate of Syria* expressed the regret of his delegation, and possibly on behalf of others present, that the course suggested by the delegate of Canada had not been adopted by the Assembly.

Dr. van Duuren (Netherlands), past Chairman of Study Group III, concluded discussion of the future C.C.I.R. Study Groups by thanking all the participants in the work of Study Group III for their indulgence in supporting him as Chairman for 22 years. According to the discussions he had heard, this would appear to be much too long. He took the opportunity

of congratulating Mr. Aritake (Japan) who had succeeded him to the Chair. (Hearty applause)

The *Acting Chairman* believed that Dr. van Duuren could gather from the applause how much his services had been appreciated.

3. Approval of the Minutes of the Eleventh, Twelfth, Thirteenth, Fourteenth and Fifteenth Plenary Sessions

Doc. PLEN./29 (Minutes of the Eleventh Plenary Session):

The *delegate of Cuba* handed in a correction to the Spanish text of his declaration in paragraph 4 on page 4.

The *delegate of Denmark* made a correction to page 5, lines 8 and 9, of his statement, which should *read:* ". . . as details on spectrum occupancy as contained in the I.F.R.B. Register did not give a realistic picture of the actual frequency usage at any given time. It was . . .".

The *representative of the I.F.R.B.* amended his intervention on page 6 to read "Mr. Petit . . . referring to the last paragraph on page 8 of Doc. PLEN./1, explained. . .".

With the above amendments, Doc. PLEN./29 was *approved.*

Doc. PLEN./32 (Minutes of the Twelfth Plenary Session)

The *delegate of Cuba* amended the reference to the delegate of Cuba in the first paragraph of page 2 to read ". . . at the decision taken, and stated that, according to the Convention, Spanish was one of the official languages of the Union and should be used". He further handed in the text of corrections to the Spanish text on page 7.

The *Chairman of Study Group XIII* amended the text under Doc. XIII/1003 on page 3, to read: "The Recommendation referred to was now "XIII/1010."

With the above amendments, Doc. PLEN./32 was *approved.*

Doc. PLEN./40 (Minutes of the Thirteenth Plenary Session)

Approved, with the addition of "Saudi Arabia" to the list of those present, and with the deletion of the word "radar" in the second line under Doc. VIII/1011 at the bottom of page 5.

Doc. PLEN/41 (Minutes of the Fourteenth Plenary Session)

Approved, with the addition of "Saudi Arabia" to the list of those present.

Doc. PLEN./56 (Minutes of the Fifteenth Plenary Session)

Approved, without comment.

The *Acting Chairman* pointed out that it had been the accepted procedure in the past that the Assembly authorize the Chair to approve all Minutes that had not been reviewed in plenary session. It was so *agreed.*

4. Texts presented by the Technical Cooperation Committee (Doc. PLEN./1008)

Mr. Gogte, Chairman of the Technical Cooperation Committee, introduced *Doc. PLEN./1008,* which was to be taken in conjunction with Doc. PLEN./63. He would draw particular attention of the Assembly to paragraph 1 on page 3 of the latter document, which read: "In order to commence work of these International Working Parties, it is necessary to establish them during the present Plenary Meeting." Doc. PLEN./1008 contained a revision of Resolution 33, adopted at Oslo; it had been discussed at great length and several modifications had been made which, it was hoped, would be implemented in the near future.

Docs. PLEN./1008 and PLEN./63 were *approved* without comment.

5. Report by the Budget Control Committee (Doc. PLEN./61)

Doc. PLEN./61 was *approved* without comment.

6. Study Group documents

Add. 1 to Doc. IV/1091: approved without comment.

Add. 1 to Doc. XI/1051: approved with the addition of "Japan" to the list of Administrations which would be represented in the International Working Party, as given on page 4.

7. C.C.I.R. Special Joint Study Group Meeting (Doc. PLEN./1009)

Approved with the understanding that the footnote, listing the Study Groups concerned with the preparatory meeting, would be amended to take account of the new Study Group numbering and structure just approved, and with the addition of the names of Mr. Marchand and Mr. Klein as Chairman and Vice-Chairman respectively, in § 5 on page 2.

8. Status of Resolutions of a general nature (Doc. PLEN./1010)

The status of texts contained in Doc. PLEN./1010 was *approved* without comment.

9. Closing Speeches

Mr. Gunnar Pedersen (Denmark), Acting Chairman, and Vice-Chairman of the Plenary Assembly, made the following speech:

"The work of the XIIth Plenary Assembly of the C.C.I.R. in New Delhi has come to an end. It is for me, as your Acting Chairman, on behalf of the Chairman, Mr. Shrivastava, to thank all who have helped in the work of this Assembly.

I must address these thanks to my three fellow Vice-Chairmen and to all the delegates who have acted in an atmosphere of friendly cooperation.

I thank warmly the Chairmen and Vice-Chairmen of the Study Groups and of the four Committees for their most valuable work.

We have been grateful to the high officials of the I.T.U. who have been present here and have given their valuable assistance to our work. May I just mention the names of the Secretary-General, Mr. Mili, Mr. Rouvière, Director of the C.C.I.T.T., and Mr. Petit, Member of the I.F.R.B., not to forget our Director, Mr. Herbstreit, and the members of his staff who have been carrying out such fine work.

The Secretariat has given us a very effective service, for which I must thank Mr. Lindsey and his staff. We have had a very efficient translation service, for which I thank all the interpreters and translators.

In three and a half weeks we have been examining a great number of important problems in the field of radiocommunication and have given special consideration to the broadcasting problem and to the effect of space communications. The special problems of new or developing countries have played a far greater role at this Assembly than ever before, and valuable results are now being achieved in this field.

We have no doubt produced results of considerable importance for the progress of mankind in the coming years. These results have been obtained by following the fine traditions of C.C.I.R. work and, at the same time, we have adapted the working methods to the needs created by the present-day dynamic progress in the field of technology.

The fundamental philosophy for C.C.I.R. work has been fully respected at this Plenary Assembly. This philosophy has clearly been laid down from the beginning of C.C.I.R. work in the late twenties: the C.C.I.R. shall make Recommendations to the telecommunication Administrations, and these Recommendations should solely be based on technical considerations. They should be formulated by the best specialists from countries all over the world, and should represent the most valuable and correct advice given by technical experts. They should not be coloured by secondary considerations of a non-technical nature.

The Administrations are free to accept and use these Recommendations, but they are not compelled to do so. It will, of course, be necessary for them to take other factors into consideration, such as economy and also political considerations. That is necessary for the Administrations and it is *their* responsibility—it is not the responsibility of the C.C.I.R.

This fact has effect in two different fields: it gives the C.C.I.R. a very sound and satisfactory working climate. The specialists are able freely to give their best assistance and cooperate in a friendly way. All who have taken part in the constructive work in the working groups will know this.

But it also means that the Recommendations of the C.C.I.R. are respected by Administrations all over the world—simply because they represent the best possible advice in the field of radiocommunications. For this reason they meet such a wide acceptance in all quarters.

It is my hope that the general philosophy for the work of the C.C.I.R. will be respected for the coming periods—that will be in the interest of all."

(Applause)

Mr. G.L. Huffcutt, Head of the Delegation of the United States of America, said:

"Three weeks ago we gathered for the ceremony inaugurating the C.C.I.R. XIIth Plenary Assembly. That day was a milestone in the history of the C.C.I.R., because it marked the first time that a Plenary Assembly would be held apart from the final meetings of the Study Groups. On that day, most, if not all of us, viewed the forthcoming three weeks with feelings of mixed emotion—emotions that were mixed between feelings that 'it won't work' and 'it might be successful'. But now we are reassured on this subject.

Three weeks ago there was also another kind of milestone, for most of us had just begun a great experience—our first visit to India. It did not take long for us to know that we were in the hands of a gracious host. No one among us will forget the many arrangements that were made to cater to our touristic wants. We shall return to our homes bearing many souvenirs, the greatest of which will be our memories— memories of Agra and the splendour of the Taj Mahal, the opportunities we had to see the culture of Old Delhi and to live with the culture of the new, that beautiful evening of the festival of light and music, Republic Day and the magnificence of the Beating of the Retreat. We now have so many wonderful memories, thanks to our gracious host.

As we look back, we recognize, too, the excellence of the arrangements made for accommodation of the XIIth Plenary Assembly. Your many months of preparatory planning and scheduling, resulted in a most significant contribution to the success of our meeting. The Vigyan Bhavan and Conference Room 'H', and all the people who have worked so diligently behind the scenes, have been party to a very successful Assembly.

It all began with your kind invitation for the C.C.I.R. to meet in New Delhi. It now ends with a few simple words of thanks. To the Government of India, we extend our appreciation for a hostship that has been wonderful. In all respects, personal and business, our visit has been concluded successfully. Today is another milestone."

(Applause)

Mr. A. Motamedi, Head of the Delegation of Iran, said:

"On behalf of our delegation I must thank the Government of India, and particularly the Minister of Information, Broadcasting and Telecommunication, for their friendly welcome and also for the excellent arrangements they have made for this Assembly and its delegates.

The splendid monuments we have visited, the magnificent things we have seen, the gardens, parks and flowers that we have admired, including the famous Mogul Gardens and the President's Palace, and, especially, the visit to the President of the Republic, are memories that I believe all the delegates to this meeting will cherish all their lives: never-to-be-forgotten beautiful memories.

I feel that for us Persians, with such great historical and cultural relations with India, this contact and these memories are perhaps even more poignant than for the other countries.

Thanking India once again, we wish you prosperity, happiness and peace.

As you all, Delegation and Nation of India, understand our language, I take the liberty of closing, on behalf of my delegation, in the Persian language: 'Hindustan Zindabad!' 'Vive l'Inde!'

(Applause)

Mr. Jack W. Herbstreit, Director of the C.C.I.R., said:

"I wish to say a few words on behalf of the C.C.I.R. Secretariat and myself. I do not believe I can express my desires any better than Mr. Pedersen has already expressed them, in terms of forwarding the work of the C.C.I.R. to assist the Administrations and the Administrative Radio Conferences of the I.T.U. I feel very deeply that telecommunications and the application of techniques developed here in the C.C.I.R. are of the utmost importance to all the nations of the world.

We have been very happy with the arrangements made for us here, which have been excellent; cooperation with the Indian Government has been of the best, and we have had a very satisfactory conference site and facilities for our Plenary Assembly.

On behalf of my wife and myself, I would also like to say that the entertainment has been outstanding, and in any Plenary Assembly the entertainment is part of the working arrangements, because it gives the delegates the opportunity to meet and understand each other and to resolve their common problems. I think the organization which has been developed at the Plenary Assembly will lead to better working arrangements in the future and the men you have chosen to lead the Study Groups, Working Groups and Working Parties are all of first-class calibre and we will have perfect cooperation with them in the future. I hope that I will be able to provide all the information you have asked of me, and that we will be able to work efficiently to provide these facilities. We are looking forward to a very fruitful three years until the next Plenary Assembly.

I will end by expressing once more, our appreciation for a very successful Plenary Assembly of the C.C.I.R."

(Applause)

Mr. S.S. Aiyar, Head of the Delegation of India, made the following speech:

"It is now my pleasant duty to say a few words at the successful termination of this XIIth Plenary Assembly of the C.C.I.R. in New Delhi. I speak now, not only on behalf of my delegation, but on behalf of the Government of India, to whom it is gratifying that this Assembly has been able to meet here and to achieve the success of its task.

Mr. Chairman, we are very touched—beyond what I may be able to say in words—at the expression of kind sentiments and appreciation of the distinguished delegates who have participated in this New Delhi meeting. I must express our deeply felt gratitude for these sentiments. None other than ourselves are aware and conscious of the inadequacies and deficiencies in whatever we have been able to do to make it possible for this Plenary to carry

out its task. We sincerely appreciate the tolerance and generosity of delegations and the Secretariat of the C.C.I.R.—individual and collective—to have overlooked these inadequacies.

In these last few days, we have felt that this Plenary Assembly, held for the first time in India and in this part of the world, has been significant in a great many ways. We are happy that many important decisions have been taken, backed up by a well-considered consensus of the distinguished participants, achieved in a spirit of goodwill, sincerity and cooperation.

Secondly, we are also happy that, during the meeting we found that the needs of new or developing countries were the object of considerable interest and concern on the part of the entire Assembly. This is of great significance to those concerned and contains an element of assurance for the future and encouragement at the same time to participants in the cooperative forum of the C.C.I.R.

Lastly, I must observe that this Plenary has been more than satisfying for us, because it has been possible for us to establish valuable friendships and strengthen the bonds of professional fraternity that the C.C.I.R. stands for in the pursuit of its objectives for the common good of all. We have all felt as if we have functioned here in the Vigyan Bhavan as a family. And this family has had the good fortune of being headed and guided by very distinguished persons. While we are grateful to the Plenary Assembly for electing the Leader of the Indian Delegation as Chairman of the Assembly, we are quite conscious that the success of this Plenary is due to the able advice of the four Vice-Chairmen and particularly the Acting Chairman, Mr. Pedersen, the Director of the C.C.I.R. and last, but not least, the Secretary-General of the I.T.U. himself. We must also express our gratitude to the distinguished representatives of the I.F.R.B. and the C.C.I.T.T., the Senior Counsellors of the C.C.I.R., and the Secretary of this Assembly. We are also grateful to the distinguished delegates who continued to identify themselves not only with their own points of view, but who aided and guided the deliberations which made the task easier and smoother.

We notice many veterans of the C.C.I.R. present here, whose valuable assistance as 'Elder Statesmen'—if I may say so—to this Assembly has got us out of many a difficult situation.

Mr. Chairman, may I also take this opportunity to express our appreciation of the competent, efficient members of the Secretariat of the C.C.I.R., the corps of patient and able interpreters and all the others whom we consider to be the backbone of the Assembly and we owe a debt of gratitude to them all, individually and collectively.

Parting is always a matter of some pain. But we draw consolation from the fact that the bonds that have been forged between our delegation and the Government of India with the distinguished representatives of the world brotherhood of Administrations in a common pursuit, are a gain that is lasting, and is something we value very much.

May I wish all the visitors 'Bon Voyage' and a safe journey back to their homes!"

(Prolonged applause)

The *Acting Chairman* declared the XIIth Plenary Assembly of the C.C.I.R. closed.

The meeting rose at 1315 hours.

Rapporteur:	Secretary of the Assembly:	Acting Chairman of the Assembly:
R. UMBERG	R.V. LINDSEY	G. PEDERSEN

REPORTS SUBMITTED TO THE PLENARY ASSEMBLY

REPORT BY THE DIRECTOR, C.C.I.R.* TO THE XIIth PLENARY ASSEMBLY

(COVERING THE PERIOD BETWEEN THE XITH AND THE XIITH PLENARY ASSEMBLIES)

CONTENTS

* See also addendum, page 209 of the present volume.

1. INTRODUCTION

Radiocommunications technology and operational procedures are developing at an ever increasing rate and the period between the XIth and XIIth Plenary Assemblies has been the most active period in the history of the C.C.I.R. It is the C.C.I.R. that provides the participants with the opportunity to introduce internationally their latest technical and operational developments in the field of radiocommunications and hence to meet the rapidly expanding requirements for various forms of telecommunications among the peoples of the world. The radio frequency spectrum is a limited natural resource and, as has been recognized in I.T.U. circles for many years, it is only through the application of sound technical and operational procedures such as are developed in the C.C.I.R. that this resource can most nearly meet international radiocommunication requirements with a maximum efficiency and a minimum of interference between services.

Outstanding advances since the XIth Plenary Assembly have included the wide application of satellites to provide reliable long distance communications, adoption of single sideband and selective calling techniques for mobile communications, the expansion of broadcasting and television services and introduction of colour television in many parts of the world, initiation of atomic time transmissions on an international basis and the introduction of computer techniques to assist in solving the many and varied multi-parameter problems of importance to a more rational use of the radio frequency spectrum.

A brief description of the work of the C.C.I.R. Study Groups during 1966–1969 period is given in Annexes I/1 to I/15 to this Report.

2. LIKELY DEVELOPMENTS IN C.C.I.R. WORK

The reports on the work of the C.C.I.R. Study Groups demonstrate the large and expanding volume of activity within the C.C.I.R. in its many fields of interest. This activity results from the ever increasing importance of telecommunications to the people of the world, the rapid development of modern technology, and the desire of participants to benefit from this technology. The C.C.I.R., through its wide participation by both developed and developing nations acts as a bridge between technological development and the application of these developments to international telecommunications.

The most important developments in the field of telecommunications which are likely to have great impact on the work of the C.C.I.R. are the following:

2.1 Satellites

The use of the region surrounding the earth to provide worldwide telecommunications is not new since it is in this region where nature has provided us with the atmosphere and the ionosphere which have been used to refract or reflect radio signals around the earth since almost the beginning of this century. However, it has only been during the past few years that it has been possible to put man-made radio-relay stations in this region to provide a

reliable means of telecommunications over earth enveloping distances, on radio frequencies heretofore thought useless for such purposes, and with very large bandwidths permitting almost unlimited transmission of television, data and voice communications throughout the world. Thus, it may be seen that satellites may be considered to provide a more reliable relay facility than those provided by nature and used for so many years in the past.

It initially seemed most appropriate that satellite telecommunications should be considered a new and distinct type of telecommunication service and C.C.I.R. Study Group IV was especially established to study all questions concerning it. However, today satellites are being considered for telecommunication applications in connection with nearly all existing services, mainly stemming from the considerations given above.

The Plenipotentiary Conference (Montreux, 1965) decided that future Administrative Radio Conferences would normally concern themselves with specific services and include both terrestrial and spatial circuits. Therefore, it is believed, on the basis of the evolution of C.C.I.R. work, that the majority of satellite communications should be considered within the framework of existing services, allowance being made for propagation characteristics, etc. This approach would open at least the possibility of avoiding a major change in existing service concepts including equipment already operating in the various services. Furthermore, even if additional frequency bands would be allotted to various services—either to take account of the particular characteristics referred to above, or to provide agreed worldwide channels—this principle would have the advantage of making it possible to take into account, on a rational basis, parameters which differ according to the service, such as bandwidth requirements, modulation systems, etc.

Nevertheless, in the long run and in specific fields, a certain tendency towards a common use may be expected. For example, navigation requirements in the maritime and aeronautical services differ only in the degree of accuracy required, so that a satellite suitable for the aeronautical service might also be used by the maritime service. Looking still further ahead, it seems not unlikely that, to avoid the problems caused by the vagaries of the ionosphere, the standard-frequency and time services might introduce satellites which could then also be used for navigational purposes by the mobile services.

There remain the satellite functions which cannot be considered as belonging to the various services at present defined in the Radio Regulations. These satellite functions are those not generally concerned with transferring information from one point on earth to another point or area, but those which transmit original information to the earth. As examples, we might cite meteorological satellites (already mentioned in the Radio Regulations), those for ionospheric research ("Top-side sounding"), geodetic measurements, solar radiation, astronomical observations, etc. It is suggested that these satellites, which in many cases transmit only intermittently and/or to specially designed receiving stations on the earth, might well be redefined as forming the "Space Service" and have their own frequency bands assigned to them. Within these bands, certain channels could be assigned to specific types of satellites.

In addition, these frequency bands would accommodate any type of communication between the earth and satellites, whether manned or not, operating beyond what might be defined as the "terrestrial telecommunication sphere".

The latter would be identified as a geocentric sphere, the radius of which would be determined by that of the geostationary orbit, as it may be assumed that satellites for telecommunication purposes are unlikely to be much outside this sphere for a significant part of their operational time. From the point of view of the I.T.U., all space beyond this sphere can be considered as "outer space", with the exception of corresponding "telecommunication spheres" for celestial bodies such as the moon, the planets, etc.

Although there will be certain applications where mobile satellites will be preferred, or indeed required, for instance for research satellites sampling the outer atmosphere, or for

navigational satellites making use of the Doppler effect, the main requirement is likely to be for geostationary satellites.

This demand will probably lead to a concentration of satellites in certain portions of the geostationary orbit which, in turn, due to the limitation of the resolving power of the antennae, may lead to an overcrowding of such sections when common frequencies are used.

In view of this difficulty, C.C.I.R. Study Group IV has set up an International Working Party to consider the optimum use of the geostationary orbit. It can be said that considering satellites functioning for the various established services as being an integral part of such services will, to some extent, alleviate the problem of over-crowding, as the various services operate in different frequency bands.

Furthermore, Study Group IV is also studying extension of the use of the frequency bands above 10 GHz for satellite communications which would add a portion of the spectrum to that already used by satellites.

It should be recalled that due to their mobility and/or altitude, satellites are a potential source of harmful interference over large areas of the earth's surface. These problems are being considered by the C.C.I.R., in particular by Study Group IV in their studies relating to coordination distance, power flux density limitations and directivity of antennae for example. It is evident that the forthcoming Space Conference will have to consider means of avoiding harmful international interference which are similar to those related to the HF services.

2.2 Sound broadcasting

LF/MF broadcasting in many regions of the world provides a non-satisfactory service today. Many countries have expressed a desire to improve this situation and they have asked the C.C.I.R. to expedite its studies with a view to finding a solution from the technical standpoint. The C.C.I.R. has been working in the field of LF/MF broadcasting for many years since the use of radio for broadcasting information and entertainment to the public was pioneered on these frequencies some 50 years ago.

The popularity of broadcasting has been so great that it has expanded very rapidly and continuously. Today there is an extremely large number of broadcasting stations and receivers operating within a frequency band essentially no larger than was made available to broadcasting when it began. This tremendous expansion of broadcasting operations, to a certain extent uncontrolled, has led to a situation in the use of frequencies allocated for LF/MF broadcasting, wherein interference between the various broadcasting stations seriously limits the effectiveness of any one of these stations. This interference situation is particularly serious at night since interference signals in the LF/MF region of the spectrum are then propagated with low attenuation by the ionosphere to great distances. Thus, broadcasting stations, some hundreds and even thousands of kilometers away from a desired service area served by a local broadcasting station, may cause harmful interference within this area.

An attempt was made to alleviate the situation in Europe through the application of the results of the technical studies of the C.C.I.R. to planning these services which resulted in the adoption of the European Broadcasting Convention, Copenhagen, 1948. Similar attempts have been made in other regions of the world, the most recent of which resulted in the LF/MF African Broadcasting Agreement, 1966.

One of the basic considerations in LF/MF broadcasting is the fact that the Radio Regulations provide that these frequencies are in principle only to be used to provide a national broadcasting service and that Administrations should not employ power exceeding that necessary to obtain such a service. However, because of the long distance night-time propagation properties of these frequencies, they are in fact useful for providing a large area coverage. The large number of stations being operated in these bands and the interference resulting have led broadcasters to increase the power of their transmitters or to install even more of them. Today there are over twice as many stations with an average power level twice as great as was provided in the Copenhagen Plan. If the different propagation

properties during the day and at night are taken into account, it appears that if broadcasting coverage at night were to be considered as international coverage, a more efficient use of the radio-frequency spectrum in Europe could be obtained with approximately one-seventh of the number of transmitters now in operation.

As regards the provision of a national service, the development of techniques in the VHF portion of the radio-frequency spectrum can provide interference-free high-quality broadcasting over distances comparable to those covered by the LF/MF ground-wave and considerable progress is being made to implement national broadcasting services on these frequencies.

The C.C.I.R. has been studying the many factors which determine the coverage of all types of telecommunication systems from the standpoint of obtaining improved efficiency in the use of the radio-frequency spectrum and at its XIth Plenary Assembly in Oslo, C.C.I.R. issued a report on this subject. As far as broadcasting is concerned, these factors include radio-frequency protection ratios, the study of different modulation systems including possible introduction of single sideband transmission, the use of high-efficiency transmitting antennae, necessary bandwidth of emission, radio propagation by way of the ground-wave and the sky-wave taking into account the geographical distribution of the properties of the earth's ionosphere, the effects of fading of the sky-wave signal and ionospheric cross-modulation effects.

At the most recent meetings of the C.C.I.R. Study Group on broadcasting, the technical and operational factors affecting broadcasting were approached from a systems standpoint and it is believed that considerable progress will be made on this basis at the XIIth Plenary Assembly of the C.C.I.R. towards obtaining improved efficiency in the use of LF/MF frequencies for sound broadcasting.

2.3 Television

Without a common standard, the successful development of television is particularly hampered by costly receiver construction, while the international exchange of programmes is possible only with the aid of "transcoders" with resultant loss of quality. In the border areas between two systems, reception of all available programmes is only possible with multi-standard receivers which are considerably more costly than receivers designed for a single standard.

In the matter of international standardization, it is often said that a start must be made which comes neither too early nor too late. The C.C.I.R. has attempted to take advantage of this, for as long ago as 1948, the Vth Plenary Assembly adopted Recommendation 29 which stressed the importance of adopting a single standard for worldwide use.

In the following period, a multiplicity of standards were proposed and included in the reports of the C.C.I.R. However, the XIIth Plenary Assembly has before it a draft Recommendation proposing that preference should be given to only a certain few 525 and 625 line systems by countries wishing to initiate a television service. It is hoped that the advantages of a single set of international standards, which are outlined above be fully recognized in order to further reduce the number of standards being presently employed.

2.4 Computers

Since the XIth Plenary Assembly of the C.C.I.R., those Study Groups concerned with radio-wave propagation—i.e. Study Groups V and VI—have laid stress on the use of electronic computers for solving various problems with which they are concerned. It is natural that particular interest should be shown by those Study Groups, as the phenomena which they study involve large numbers of inter-related parameters, so that these problems are eminently suitable for processing by this means.

Thus, Study Group V felt that the C.C.I.R. Secretariat should continue to supplement its collection of Antenna Diagrams, initiated in 1953 and to which a number of addenda have been published.

Study Group V, on the basis of preliminary studies undertaken in the Secretariat, also considered that the publication of an Atlas of Fresnel Reflection Coefficients would be useful, particularly as an electronic computer would allow the calculation of the reflection properties of many more types of surfaces than has hereto been possible.

Finally, Study Group V recommends that the present C.C.I.R. ground-wave propagation curves should be prepared to take into account the average refractive index of the atmosphere and additional values of ground conductivity and dielectric constants and that they should be extended with respect to existing curves to include the frequency range between 10 and 30 MHz, which is at present not covered by existing C.C.I.R. curves.

Study Group VI confirmed C.C.I.R. Resolution 30, on the basis of which predictions of ionospheric indices have been established. At present, methods are being developed to determine the correlation between the various ionospheric indices.

Particular attention has been paid to C.C.I.R. Report 340 (Atlas of Ionospheric Characteristics). This report has been made available in the form of punched cards, of which 74 sets have been delivered. This quantity is rather larger than anticipated and is, in the opinion of the Director, a significant indication of the interest Members of the I.T.U. have in solving certain technical telecommunication problems with the aid of computers.

The programme corresponding to Report 340 is stored in the IBM 360/40 computer, located at the Headquarters of the W.H.O. and can be used through a remote terminal, installed at I.T.U. Headquarters and connected to the computer by a normal telephone line.

A far more extensive programme is presented to the XIIth Plenary Assembly by International Working Party VI/1, which gives predicted fieldstrengths. The Secretariat is now preparing to store this programme in the computer. Here again, it is anticipated that it will be possible to supply data to the computer through the remote terminal and to obtain, in return, the resulting information.

Thus it can be said that the installation of a remote terminal at I.T.U. Headquarters is proving very useful. It should, however, be noted that, due to the time-sharing involved and the limited transmission capacity of the lines between the I.T.U. and W.H.O. buildings, this terminal is essentially useful for the solution of problems of limited scope. This is reflected in the low costs for this terminal equipment, which gives only limited access to the capabilities of a large computer facility, and which would be higher for unlimited access to such a computer.

However, the tests carried out to date indicate that current operational usage of a computer for frequency utilization problems is worth serious consideration. In fact, it does not appear excluded that information on the required parameters including propagation data and spectrum occupancy as mentioned in C.C.I.R. Report 414 could, in the future, be stored in the I.T.U. in a suitable computer and that Administrations, through remote terminals, could have direct access to these data, thus facilitating the formulation of their requests for radio frequency spectrum utilization information. It is obvious that, if such a facility were to be installed at I.T.U. Headquarters, it should be available on a full-time basis, as enquiries from Administrations might arrive at any time of the day or night. Appropriate safeguards can be taken to assure that interrogation by Administrations would in no way modify the programme content stored at I.T.U. Headquarters.

This suggestion comes from the study by the C.C.I.R. of technical and operating questions (I.T.U. Convention, Article 14) relating to the efficient use of the radio frequency spectrum (C.C.I.R. Resolution 1-1, and Reports 413, 414 and 415, Oslo 1966) and the experience gained by the C.C.I.R. Secretariat in the use of remote terminal to the W.H.O. computer.

It is also pointed out that the implementation of such a suggestion would be of great importance to the I.F.R.B. which records the frequency assignments made by the different countries and furnishes advice to them on frequency utilization problems.

3. C.C.I.R. MEETING ACTIVITIES DURING THE PERIOD 1966–1969

3.1 Special study group meeting

As proposed by the XIth Plenary Assembly (Oslo, 1966), C.C.I.R. Study Group XIII (Mobile Services) met in April 1967 to prepare technical bases for the W.A.R.C. (Maritime), which was held in the autumn of that year.

3.2 Interim study group meetings

During 1968, all the C.C.I.R. Study Groups and the CMTT, with the exception of Study Group XIV (Vocabulary), met according to the following schedule:

Study Groups, X, XI & XII	Palma de Mallorca	29 April-10 May
Study Groups V, VI, VII & VIII	Boulder (Colorado)	9 July-7 August
Study Groups IV, IX, XIII & CMTT	Geneva	4 Sept.-8 October
Study Groups I, II, III	Geneva	9-25 October

3.3 Final study group meetings

All the C.C.I.R. Study Groups and the CMTT held final meetings in Geneva, during the period 3 September-15 October 1969, to prepare proposals for the XIIth Plenary Assembly.

The results of the meetings referred to under §§ 3.1, 3.2 and 3.3 above are described in the corresponding Study Group annexes to this report.

3.4 Other activities

3.4.1 As mentioned under § 4.2 of this Report, International Working Party PLEN./1 met in Geneva from 27 May-5 June 1969.

3.4.2 Within the framework of the seminars of the I.T.U., and in accordance with 2.3.2 of C.C.I.R. Resolution 33 (Technical Cooperation), the C.C.I.R. Secretariat organized in Geneva a Seminar on Radiocommunications during the period 6-17 November 1967. While attendance (37 participants from 21 Administrations) was rather limited in comparison with that at other C.C.I.R. meetings, the hand-book containing the papers presented, together with a summary of the resultant discussions, proved to be of considerable interest to Members of the Union and to date some 250 copies have been sold.

4. ORGANIZATIONAL MATTERS

4.1 XIIth Plenary Assembly

Following preliminary discussions, an Agreement (cf. Annex II) was signed between the Government of India and the I.T.U., relative to the organization of the XIIth Plenary Assembly, in conformity with Administrative Council Resolution 83 (amended).

As the Study Groups held their final meetings in Geneva prior to the Assembly, the preparatory documentation for that Assembly essentially consists of the proposals of the various Study Groups, under cover of a Report by the Chairman concerned. In addition, there are a limited number of documents for consideration by the Plenary Assembly and any committees it may create in New Delhi, such as the Technical Cooperation Committee, the Organization Committee, etc.

It should be mentioned here that there are 598 proposals (compared to 442 at Oslo) from the Study Groups and the CMTT so that, taking into account the conclusions of the

committees set up in New Delhi, the Plenary Assembly will have over 600 new or modified C.C.I.R. texts to consider. There is little doubt that the preparation of the approximately 3,500 pages of text and figures of the proposals from the Study Groups could not have been prepared, in English, French and Spanish, in time, had the Study Groups met at the same time and place as the Assembly itself. The Director therefore recommends that the practice of separating the final Study Group meetings from the Plenary Assembly proper be continued in future.

As it is, the preparatory documentation could be despatched between the middle of November and the early part of December, thus assuring that it would reach participants approximately one month before the opening of the Assembly, allowing consideration of the material prior to the departure of the delegations for New Delhi.

Nevertheless, it is still felt that improvements in the present system could be made. In particular, it should be noted that Reports produced by the various Study Groups constitute approximately 73% of the volume of work to be done, and it is therefore suggested that serious consideration be given to the proposal made by several Administrations that Reports, as they are not referred to in the Convention and hence, to a certain extent, may be considered as unofficial texts, be finally approved by the Study Groups which propose them. Such a procedure would materially spread the work load for all concerned and it is felt that, should this principle be adopted, Administrations could take such a procedure into account when composing their delegations to Study Group meetings. Of course, even when so adopted, Reports would still be presented to the Assembly for information.

4.2 International Working Party PLEN./1

Following an exchange of proposals by correspondence, International Working Party PLEN./1, constituted by C.C.I.R. Resolution 34, met in Geneva from 27 May to 5 June 1969, with its Coordinator, Mr. A. Bigi (Italy) in the Chair.

In addition to seven Administrations, ten Study Groups were also represented by their Chairmen. The Report of the International Working Party to the Plenary Assembly is contained in Doc. PLEN./2, and in particular comprises revisions of Resolutions 24-1 (Organization of C.C.I.R. Work) and 27-1 (References annexed to C.C.I.R. Texts), as well as a proposal for a modified structure of the C.C.I.R. Study Groups. It should be noted that, with respect to the latter subject, C.C.I.R. Study Group VIII, at its meeting in Geneva in October 1969, proposed alternate terms of reference of the new Study Group I (cf. Doc. PLEN./4).

The approach to the change of the C.C.I.R. Study Group structure is essentially evolutionary in nature and seeks clearly to distinguish between Study Groups concerned with specific services, on the one hand, and those concerned with equipment or systems in general, on the other hand. It was also felt that, with the advances in the construction of satellites, which permit a diversification of their characteristics, the time was appropriate to consign studies on satellites for specific services to the Study Groups considering those services. Moreover, modern data handling equipment makes it possible to consider problems having a large number of variables, thus permitting studies on complete radio systems.

5. FINANCES

Since the adoption by the Administrative Council of a consolidated budget for current staff and similar expenses, it is no longer possible to prepare a separate statement of these expenses of the C.C.I.R. over the past period, nor to prepare an estimate of C.C.I.R. expenditure of this nature for the period until the XIIIth Plenary Assembly. However, the meetings and similar activities of the C.C.I.R. still appear in a separate chapter of the I.T.U. Budget and, in consequence, these expenditures are shown against the budgets approved by the Council in Annex III.

6. PROPOSED TIMETABLE OF C.C.I.R. MEETINGS BETWEEN THE XIITH AND XIIITH PLENARY ASSEMBLIES

6.1 Preparatory meeting for the W.A.R.C.-ST

By its Resolution No. 653, the Administrative Council decided to convene a World Administrative Radio Conference to review the Radio Regulations concerned with space communications, and scheduled its opening for 7 June 1971, for a duration of six or seven weeks. During the discussions on this Conference, the Council also decided that it would be desirable for the C.C.I.R. Study Groups concerned to meet before the Conference, to prepare technical bases, in analogy with the European Broadcasting Conferences in Stockholm in 1952 and 1961, as well as the Maritime Conference in 1967. Such a preparatory meeting would, of course, in the first place concern present Study Group IV, but also certain aspects on the programme of nearly all the other C.C.I.R. Study Groups. This subject is elaborated in more detail in Doc. PLEN./5.

6.2 Interim study group meetings

In view of the preparatory meeting for the Space Conference referred to above, which is likely to take place in the early part of 1971, and the Space Conference itself, which will close during the second half of July 1971, it is felt that the normal interim Study Group meetings could at the earliest start in the latter part of that year and, depending on the grouping of Study Groups and the place where the meetings are to be held, would probably continue until March or April 1972.

6.3 Final study group meetings

It is assumed that the procedure of separating the final Study Group meetings from the Plenary itself will be continued, in which case the former, which would last some six or seven weeks, would take place in the Autumn of 1972.

6.4 XIIIth Plenary Assembly

In view of the foregoing and taking into account the time required for the preparation of the conclusions of the final Study Group meetings, it follows that the XIIIth Plenary Assembly could not take place before the Spring of 1973, the exact period depending on where it would be held.

7. TECHNICAL COOPERATION

The Technical Cooperation activities of the C.C.I.R. Secretariat, within the overall framework of the I.T.U. in this field, followed the general pattern as in the past. Over the period under consideration, there was more activity in the field of space technology, which holds promise for rapidly upgrading domestic telecommunication systems, as well as providing educational television via satellites in new or developing countries.

The C.C.I.R. Secretariat represented the I.T.U. on the UNESCO Missions which visited India (1967) and Brazil (1968) for carrying out preparatory studies in this field. On the basis of these studies, the Governments concerned are proceeding with further planning. In India, an experimental satellite TV bilateral project, in association with NASA's ATS/F or G satellite for the evaluation of educational TV is being scheduled for 1972–1973. In the field of direct TV broadcasting from satellites, which is being studied by a Working Group set up by the U.N. Outer Space Committee, considerable useful information has been compiled in a

recent report. The C.C.I.R. Secretariat actively participated in the meetings of this Working Group.

A representative of the Director also attended the meeting of the World Plan Committee, as well as the meetings of the Regional Plan Committees, which are concerned with the development of telecommunication networks in the corresponding areas.

The Seminar on Radiocommunications referred to in § 3.4.2 should also be mentioned in this connection.

Further cooperation is provided by the various manuals prepared by the C.C.I.R. at the request of the Plenary Assembly and/or certain Study Groups—such as the Manual on Tropical Broadcasting and the Monitoring Handbook.

8. STATISTICAL INFORMATION ON RADIOCOMMUNICATIONS

During the recent sessions of the Administrative Council and in the Coordination Committee, discussions have been held on a possible revision of the Telecommunications Statistics at present published by the General Secretariat. It was generally felt that these statistics were too limited and were based on requirements which are out-of-date. As an example, statistics on radiocommunications mainly concern traffic of maritime-mobile and coast stations.

A Working Party was therefore formed within the I.T.U., with representatives of the various organs, to consider the conditions for publishing a Telecommunications Yearbook which, it was felt, would be of particular interest with a view to improving telecommunications in areas of the world where such services are at present inadequate. During these discussions, with respect to radiocommunications, the Working Party expressed the opinion that it would be of great help if the C.C.I.R., and especially its individual Study Groups, could give indications as to what data on radiocommunications would be of interest to be included in the proposed Yearbook.

A draft Resolution to this effect is therefore attached in Annex IV, for consideration by the Plenary Assembly. It should be stressed that it is not the intention that the C.C.I.R. or its Study Groups collect the actual data, but rather that they indicate the type of information which would be useful.

9. C.C.I.R. OSLO VOLUMES

As of 1 December 1969, the following numbers of the Oslo C.C.I.R. Volumes were distributed:

	E	F	S
Vol. I	2711	1000	532
II	2794	993	526
III	2822	987	536
IV	3054	1026	545
V	3068	1044	557
VI	1752	650	425

These figures compare to 2785, 981 and 385 sets of Vols. I–V in English, French and Spanish respectively and 1517 and 625 copies of Vol. VI in English and French of the Geneva 1963 volumes as of June 1966, i.e., a month before the opening of the XIth Plenary Assembly. When effecting this comparison it should be borne in mind that the Geneva Vols. I–V, containing the technical texts, were not made available individually, so that users interested in a single subject were nevertheless obliged to acquire all five volumes, so that the figures relative to the Geneva volumes should be considered as somewhat inflated.

ANNEX I/1

STUDY GROUP I

Chairman: Mr. J. LOCHARD (France)

Vice-Chairman: Prof. S. RYZKO (P.R. of Poland)

Interim Meeting: Geneva, 9–25 October 1968
63 participants
25 preparatory documents
Output: Interim booklet (72 pages)

Final Meeting: Geneva, 2–15 October 1969
91 participants
Interim booklet plus 21 preparatory documents
Output: 20 new, or modified, texts for consideration by the XIIth Plenary Assembly (New Delhi, 1970)

General review of the work of Study Group I during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

After the XIth Plenary Assembly, Study Group I (Transmitters) met twice under the Vice-Chairman of the Study Group, Professor S. Ryzko (People's Republic of Poland). The Chairman, Mr. J. Lochard (France) was unable to attend.

The main topics dealt with at the meetings were:

Definition of occupied and necessary bandwidths

During the period 1966–1970 this subject aroused quite important discussions, as the present definitions of necessary and occupied bandwidths are less suited to practical use by Administrations and the I.F.R.B. and could not, in all cases, be accepted by other Study Groups. All proposals met with the objection that they might undermine the work done by the Study Group on spectra and bandwidths of emission since 1948. At the Interim Meeting, it was decided to maintain, at least for the time being, the present definitions and to request Administrations to provide further information on this subject.

At the final meeting, several new definitions were adopted as modifications to Recommendation 328-1. The particular attention of Administrations is drawn to the definition of "Permissible out-of-band radiation".

This topic is perhaps the most important one that Study Group I will have to settle during the next period.

Methods of measuring spectra and bandwidths of emissions

Having examined certain new methods of measurement, the Study Group agreed to include a summary of them in its Report and to modify Recommendation 327-1.

Important new paragraphs in Recommendation 328-1 and Report 325 on measurement of amplitude modulated emissions for sound broadcasting were adopted.

A new draft Report was adopted on the results of measurements of the spectrum of a signal modulated in frequency by white noise.

Examples of bandwidth calculations

New formulae for the calculation of the bandwidth of composite AM, FM and PM emissions were included in a new Report, with a view to a future extension in one form or another, of the Table contained in Appendix 5 of the Radio Regulations.

Frequency stabilization and frequency tolerances of transmitters

As regards frequency stabilization of transmitters, Study Group I's activities were mainly devoted to a better presentation of the problems in a revised Study Programme and Report.

It was suggested that Administrations should continue to furnish information on the accuracy, stability, weight and cost of current equipment for generating and measuring frequencies.

Spurious radiation

Studies are continuing on the measurement of transmitters in all frequency ranges. The Study Group indicated that it is too early to specify any fixed bandwidth for measuring devices appropriate for spurious radiation in the frequency range 1·5 to 30 MHz. Due to the absence of complete compatibility between the terminologies of spurious radiation as used in Study Groups I and XIII, and to avoid confusion and to achieve uniformity in all relevant texts, it was suggested that Administrations in general and Study Group XIII in particular, should study the problem of terminology and definitions for spurious radiation of different types as described in C.C.I.R. documents and IEC. Publications.

Classification and designation of emissions

International Working Party I/1 met in Geneva in October 1968 and 1969 under the Chairmanship of Mr. Dellamula (I.F.R.B.).

In carrying out the work outlined in Recommendation No. 8 of the Administrative Radio Conference, Geneva 1959, International Working Party I/1 has studied various methods of classifying and designating emissions and proposed that Recommendation 432 should be amended. Opinion I-1 was cancelled and a new Resolution proposed to replace it.

ANNEX I/2

STUDY GROUP II

Chairman: Mr. Y. PLACE (France)

Vice-Chairman: Prof. N. CHISTIAKOV (U.S.S.R.)

Interim Meeting: Geneva, 9–25 October 1968
59 participants
36 preparatory documents
Output: Interim booklet (137 pages)

Final Meeting: Geneva, 6–15 October 1969
92 participants
Interim booklet plus 27 preparatory documents
Output: 23 new, or modified, texts for consideration by the XIIth Plenary Assembly (New Delhi, 1970).

General survey of the work of Study Group II during the period between the XIth Plenary Assembly (Oslo, 1966) and the XIIth Plenary Assembly (New Delhi, 1970)

Thanks to the way in which it organized its work, Study Group II got through its tasks extremely well, both at its interim and final meetings.

— At its interim meeting it made quite considerable amendments and additions to the texts which concern it, and it drew up a number of new texts;

— at its final meeting, it confirmed a large number of texts prepared in 1968, making only slight amendments to some of them while adding, where necessary, to others drafted in 1968. It drew up new texts only when the submission of new data made the need for clarification evident.

Characteristics of receivers

In 1968 and 1969, following the practice already adopted several years ago of tabulating the characteristics of receivers classified according to service, Study Group II completed the texts and tables relating to typical receivers. The receivers in question are mainly those of the fixed service, mobile service (values for the maritime mobile service, ship station main receivers) and broadcasting receivers (for domestic use, including portables). However, the size to which these tables are growing is rendering it more difficult to make use of the very useful information they contain. The question has therefore arisen whether a few characteristic values relevant to such matters as the planning of radio networks, administrative radio conferences and I.F.R.B. work should not be tabulated separately. A new draft question was therefore formulated in order to clear up this point. This question refers to the characteristics of receivers for the different services and the various frequency bands which may on the one band be regarded as essential for administrative radio conferences and the I.F.R.B. and, on the other, for administrations and other interested organizations wishing to set up or standardize transmitting and receiving equipment. With regard to receivers for the various services, the question arose as to how they could be classified to enable the values for the characteristics of receivers to be treated statistically. This item links up with the new draft Question adopted in 1968, dealing with a similar subject but restricted to radio and television receivers, namely the possibility of classifying receivers into a number of categories, as already done in several countries.

After the approval of the draft Question was confirmed, a new draft Opinion was adopted in 1969 requesting the International Electrotechnical Commission to propose a suitable classification, taking the criteria indicated into account. Moreover, in 1968, Study Group II adopted a new draft Question, confirmed in 1969, on how the dynamic range of receivers should be specified for each service.

Methods of measurement

As regards methods of measurement, the texts on noise, sensitivity and selectivity were revised mainly in 1968; this consisted in particular in introducing the concept of noise temperature in the texts dealing with the noise factor and the concept of the passband corresponding to the maximum permissible frequency deviation for frequency-modulated or phased signals in the texts relating to selectivity. The question concerned more particularly with selectivity of receivers is designed to discover the extent to which selectivity is affected by fifth-order intermodulation products. A study of the sensitivity and noise factor of radiotelephone receivers for class of emission F3 was the subject of a new report. The Study Group further drew up a new draft Opinion indicating how its activities should be coordinated with those of the I.E.C. (procedure for adopting the methods of measurement recommended by the I.E.C. and the information to be supplied to the I.E.C. by the C.C.I.R. on the characteristics for which the methods of measurement need to be specified). The Recommendation on methods of measurement was amended in 1969 to bring it into line with this Opinion.

Other Questions

In 1968, other questions studied included subjects such as diversity reception, remotely controlled receiving stations (additions being made to the relevant Reports), usable sensitivity in the presence of quasi-impulsive interference, choice of intermediate frequency and protection against unwanted responses of superheterodyne receivers (the relevant Reports were amended). A new Question was introduced on the susceptibility of television broadcast receivers to ambient fields and a new Study Programme was drafted on the radio-frequency intermodulation characteristics of receivers.

These new or amended 1968 texts were confirmed in 1969. The Report on the choice of intermediate-frequency and protection against unwanted responses of superheterodyne receivers was amplified thanks to contributions from several countries in 1969. The issue of new C.I.S.P.R. publications this year made it possible to complete the Recommendation on the response of broadcast and television receivers to impulsive and quasi-impulsive interference.

ANNEX I/3

STUDY GROUP III

Chairman: Dr. H.C.A. VAN DUUREN (Netherlands)

Vice-Chairman: Dr. S. ARITAKE (Japan)

Interim Meeting: Geneva, 9–25 October 1968
68 participants
38 preparatory documents
Output: Interim booklet (173 pages)

Final Meeting: Geneva, 1–15 October 1969
109 participants
Interim booklet plus 19 preparatory documents
Output: 41 new, or modified, texts for consideration by the XIIth Plenary Assembly (New Delhi, 1970)

General review of the work of Study Group III during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

Radio-frequency spectrum utilization

During the period 1966–1969, the results of the work of International Working Party III/1 were published as Reports 413, 414 and 415. These Reports deal with definitions and procedures required to obtain an improved efficiency in the use of the radio-frequency spectrum and the task was undertaken within the framework of C.C.I.R. Resolution 1/1. The excellent work of the Working Party was very much appreciated and it is now felt that, to achieve a broader and more dynamic approach, the problem of improved efficiency in the use of the radio-frequency spectrum should be studied by a specific Study Group to deal with this problem.

Error correction

Study Group III has concerned itself to a great extent with the study of automatic error-correcting systems for telegraph signals transmitted over radio circuits. Three Reports dealing with this subject were amended: one on factors concerning the quality of performance of complete systems in the Fixed Service, one on efficiency factor and one concerning the relationship between error-rate and telegraph distortion. A new draft Report on the operational use of the efficiency factor was also prepared.

An example of a more advanced use of error-correcting techniques can be found in a new draft Report on the efficient application of HF radio-telegraph channels to the telex network, by the application of automatic procedures for selection and allocation.

The Study Group also prepared a draft Recommendation on data transmission at 1200/600 bits/s over HF circuits.

Consideration was also given to forward error-correction, with specific application to simple single-channel systems for use in the new or developing countries.

Other questions

On the basis of recently acquired information, documentation was also brought up-to-date on antennae, telephony, phototelegraphy, telegraphy and communication theory, and a draft Recommendation on an improved transmission system for HF radiotelephone circuits employing the technique of linked compressors and expanders merits special attention.

Finally, the Study Group approved a draft new Question on HF ionospheric channel simulators and a draft Report on factors governing the choice of pilot-carrier levels in independent-sideband HF radio emissions.

ANNEX I/4

STUDY GROUP IV

Chairman: Prof. I. RANZI (Italy)

Vice-Chairman: Mr. W. KLEIN (Switzerland)

Interim Meeting: Geneva, 18 September–8 October, 1968
158 participants
117 preparatory documents
Output: Interim booklet (536 pages in 2 volumes)

Final Meeting: Geneva, 15 September–3 October, 1969
277 participants
Interim booklet plus 136 preparatory documents
Output: 88 new, or modified, texts for consideration by the XIIth Plenary Assembly (New Delhi, 1970)

General review of the work of Study Group IV during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

The pace of development of space communication and radioastronomy is reflected in the work of this Study Group, which continued to occupy a prominent position amongst C.C.I.R. Study Groups.

During the period between the XIth and XIIth Plenary Assemblies, communication satellites are being used in commercial operation, meteorological satellites are operational, and successful experiments of radiocommunication and radiodetermination have been carried out in the aeronautical and maritime mobile services.

In keeping with these developments Study Group IV, while continuing its studies to refine and improve on the results already obtained, has, at its Interim Meeting held in Geneva in 1968, initiated new fields of studies, of which the most important can be summarized as follows:

Communication satellites

In anticipation of the increase in demand of the communication satellite service, it may well be that the frequency bands already allocated to this service will prove insufficient. Thus the use of frequencies higher than 10 GHz is being considered. While the feasibility of frequency sharing between communication satellite systems and terrestrial systems is still under study, it is possible from the information now available to provide some general guidance on the way in which the choice of frequencies would affect potential mutual interference between earth stations and terrestrial stations sharing such frequency bands. The use of space diversity techniques to minimize the effects of high attenuation due to localized rain is suggested.

Use of geostationary orbit

The advantages of geostationary satellites having been demonstrated, their concentration in the geostational satellite orbit may become a problem in the future as more and more satellites are launched. A Study Programme was adopted by the Interim Meeting in 1968 to investigate how this orbit could be utilized to maximum efficiency. An International Working Party was organized which held its first meeting in Ottawa in June 1969, under the chairmanship of Mr. J.K.S. Jowett of United Kingdom. On the basis of the report of this International Working Party, the final meeting of Study Group IV prepared two new Reports, one on the method of calculating the interference levels between geostationary satellites, and the other on the procedure for determining the coordination angle between geostationary satellites which share frequency bands between 1 and 10 GHz.

Satellite applications to mobile services

Use of satellites and space communication techniques in radiocommunication and radiodetermination services for aircraft and ships is of increasing importance. Since the Interim Meeting which adopted a Question and associated Study Programme, no less than 14 Reports on the subject have been prepared for consideration by the XIIth Plenary Assembly. They are on the subjects of propagation and noise; choice of frequencies; choice of performance objectives in the maritime mobile service; radio-frequency channel selection and the influence of the carrier-to-intermodulation ratio upon satellite transponder design; signal quality and modulation techniques; coordination in frequency matters for aeronautical mobile service between satellite and terrestrial systems; orbits; use of satellite jointly for communication and radiodetermination; planning and designing of a satellite system to be used in the maritime mobile service in accordance with the list of requirements adopted by the Maritime Safety Committee of the Intergovernmental Maritime Consultative Committee, etc.

Broadcasting from satellites

On the subject of broadcasting from satellites, important contributions have been made in this field which holds great public interest. The need of continued collaboration between C.C.I.R. Study Groups X and XI is demonstrated. A proposal was discussed for a new Study Programme on the relative costs of possible sound and television broadcasting systems and on the comparison of their acceptability; on this subject, Mr. R.E. Butler, the Deputy Secretary-General of the I.T.U., made a statement, informing the Study Group on the activity of the Technical Cooperation of the I.T.U. This statement was later included in a circular to all Members of the I.T.U., requesting support in the studies.

ANNEX I/5

STUDY GROUP V

Chairman: Dr. R.L. SMITH-ROSE (United Kingdom)

Vice-Chairman: Dr. A. KALININ (U.S.S.R.)

Interim Meeting: Boulder (Colorado) U.S.A., 9–23 July 1968
55 participants
54 preparatory documents
Output: Interim booklet (256 pages)

Final Meeting: Geneva, 17–30 September 1969
107 participants
Interim booklet plus 43 preparatory documents
Output: 39 new, or modified, texts for consideration by the XIIth Plenary Assembly (New Delhi, 1970)

General review of the work of Study Group V during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

Since the XIth Plenary Assembly in Oslo, 1966, the activities of Study Group V have consisted of the continuous refining and up-dating of the information contained in Volume II, together with an increasing emphasis on new or evolving topics. These new directions of study or elaborations of existing ones are described below.

Propagation above 10 GHz

These propagation data are necessary for the widespread use of the radio-frequency spectrum above 10 GHz, in response to the upward expansion of the usable radio-frequency spectrum. Some information on this topic has been available for a few years, but now, in view of the increasing demand and the probable need for international planning of use of the spectrum above 10 GHz, intensive study is going on in order that parameter divergencies, as compared with those prevailing on lower frequencies, may be identified.

Propagation data for sharing

Revision has been made of the propagation data available for the frequencies 1–10 GHz. This is the part of the spectrum in which the space and terrestrial service at present share frequencies and for which there is therefore an urgent need for a means of calculation of interference probability that is both accurate and reasonably simple. The urgency of this topic is highlighted by the fact that the World Administrative Radio Conference scheduled for mid-1971 will require a means of calculation of coordination distances between earth stations and terrestrial stations so that orderly planning may be possible. At present the formula for calculating coordination distances is based upon that given in Recommendation No. 1A of the Final Acts of the E.A.R.C. Space Conference, Geneva, 1963, as amended in Report 382, Oslo 1966. However, some propagation aspects of this procedure are now considered to be inadequate from several points of view and are the subject of intensive investigation in Study Group V.

Computer applications

The need for wider use of computer techniques for the solution of propagation problems has been raised in Study Group V, where now the tendency is for transmission loss data to be presented both in the classical form of curves for manual use and in the form of either a complete computer programme or a set of punched cards so that the user may choose the presentation that is most suited to these resources. The Study Group is also considering the validity of computer processing of statistical data obtained over actual propagation paths from the point of view of direct application of this data to the planning of new services. The publication of an Atlas of Fresnel coefficients and Brewster angles, calculated by means of the computer at I.T.U. headquarters is also proposed in a draft Resolution to be put before the XIIth Plenary Assembly at New Delhi in January/February 1970.

Meteorological parameters

Data will be assembled on the radio meteorological parameters of transmission loss in order that this field of research may be more widely explored. Information concerning tropical regions of the world is particularly sought as these are most important from this point of view and in addition data concerning them are seriously inadequate. This field of activity is not new as far as the subject matter of Study Group V is concerned but is receiving serious and urgent emphasis. The problems associated with the sharing of frequencies between the space and terrestrial services above 1 GHz are complicated by the radio meteorological factors that promote the transmission of interference.

Statistical studies

Investigation will be undertaken of those propagation mechanisms that, while too fleeting to be significant for the transmission of useful information, are nevertheless sufficiently persistent for interference propagated by these means to be a serious matter. Research into this topic is also specially directed toward frequencies above 1 GHz, that is, towards that part of the radio frequency spectrum which is of the greatest importance to the space and terrestrial service and in which the problems of frequency sharing at present occur. The short-lived signals due to these propagation mechanisms are exceedingly difficult to measure, as they occur for very short periods of time.

Since time percentages as small as 0·0002 are now significant in interference calculations, investigations in this field are of fundamental importance both to the users of the spectrum below 10 GHz and to the users of the frequencies higher than this.

ANNEX I/6

STUDY GROUP VI

Chairman: Dr. D.K. BAILEY (U.S.A.)

Vice-Chairman: Dr. E.K. SMITH (U.S.A.)

Interim Meeting: Boulder (Colorado) U.S.A., 22 July–7 August 1968
56 participants
86 preparatory documents
Output: Interim booklet (346 pages)

Final Meeting: Geneva, 17 September–1 October 1969
110 participants
Interim booklet plus 42 preparatory documents
Output: 66 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group VI during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

The work of the Study Group was devoted, on the one hand, to the improvement of existing texts and methods, especially to increasing the accuracy of different prediction methods with the use of computers, and, on the other hand, to studies of new techniques in connection with the development of space communications.

An important achievement during the period succeeding the XIth Plenary Assembly (Oslo, 1966) was the introduction of the computerized form of the C.C.I.R. Atlas of Ionospheric Characteristics (Report 340) and amendments to the computation methods, as well as modifications to numerical values of coefficients of the numerical ionospheric maps.

Towards the end of the interim period, a C.C.I.R. interim method for estimating sky-wave field strengths and transmission loss at frequencies between the approximate limits of 2·0 and 30·0 MHz was devised and a draft Report in this respect is presented to the XIIth Plenary Assembly. The Secretariat is now working on the preparation of an operational form of the computer programme already available.

Much consideration was given to the improvement of prediction methods of existing and newly developed ionospheric indices. A computerized method of the Boulder ITS/ESSA Laboratories now enables the prediction to be made of a whole cycle of the classical sunspot index R_{12} and the C.C.I.R. Secretariat has proposed an ionospheric index based on correlation between ionospheric data and the monthly median solar radio flux Φ. This index, Φ_{F2}, is now calculated every month by computer.

Within the framework of the preparation of the envisaged LF-MF broadcasting Conference in Region 1, several amendments have been introduced to C.C.I.R. Report 264 on sky-wave propagation curves between 150 kHz and 1600 kHz.

A well-documented revision of C.C.I.R. Report 263 on ionospheric effects upon earth-space radio propagation represents a substantial contribution to this field.

ANNEX I/7

STUDY GROUP VII

Chairman: Until November 1969, Mr. B. DECAUX (France);
as from November 1969, Mr. J.T. HENDERSON (Canada)

Vice-Chairman: Until September 1969, Professor M. BOELLA (Italy);
from September 1969 to November 1969, Mr. J.T.HENDERSON (Canada).
As from November 1969, office unfilled.

Interim Meeting: Boulder, (Colorado) U.S.A., 9 to 19 July 1968
37 participants
53 preparatory documents
Output: Interim booklet (99 pages)

Final Meetings: Geneva, 22 September to 1 October 1969
59 participants
Interim booklet plus 14 preparatory documents
Output: 32 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group VII during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

At the Interim Meeting an International Working Party was set up to study the improvement of the U.T.C. (Universal Coordinated Time) system. On the basis of the work done by this Working Party, Study Group VII proposes that a recommendation be adopted to regulate standard frequency and time signal emissions as from 1 January 1972. The main points in the Recommendation are the following:

— carrier frequencies and time intervals should be maintained constant without any offset from the nominal value corresponding to the adopted definition of the second;
— the transmitted time scale should be adjusted when necessary in steps of one second or integral multiples thereof in order to maintain approximate agreement with Universal Time (U.T.);
— a simple code should be included in the emissions to indicate the difference between the transmitted time and Universal Time (U.T.).

A draft Resolution proposes that International Working Party VII/1 continue its studies in order to settle all details which could not be covered by the above-mentioned Recommendation.

ANNEX I/8

STUDY GROUP VIII

Chairman: Mr. M. AMARO VIEIRA (Portugal)

Vice-Chairman: Mr. P. BOUCHIER (Belgium)

Interim Meeting: Boulder, (Colorado) U.S.A., 24 July to 7 August 1968
29 participants
14 preparatory documents
Output: Interim booklet (124 pages)

Final Meeting: Geneva, 2 to 15 October 1969
86 participants
Interim booklet plus 26 preparatory documents
Output: 28 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group VIII during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

One of the main questions examined by Study Group VIII concerned frequency measurements and channel identification of single sideband, and independent sideband, complex and multichannel frequency-division emissions.

The conversion from double sideband to single sideband emissions and the rapid increase in the other types of emission mentioned above render the work of monitoring stations extremely difficult and there are many problems which cannot be solved at present.

A special identification procedure is proposed. A draft Resolution requests Administrations to make a rapid study of this method or any similar method so that the Study Group may draw up a recommendation at its next meeting.

In a draft Opinion, the I.F.R.B. is invited to examine the present procedure for the notification of frequency assignments to determine whether this needs to be amended in view of the conversion from double sideband emissions and the rapid increase in other emissions, as mentioned above.

As all these problems are also of interest to transmitting stations, a joint discussion was held with representatives of Study Group I.

Instructions to Administrations and the C.C.I.R. Secretariat were prepared with a view to amplifying and amending the Handbook for Monitoring Stations.

ANNEX I/9

STUDY GROUP IX

Chairman: Mr. E. DIETRICH (F.R. of Germany)

Vice-Chairman: Mr. T. KILVINGTON (United Kingdom)

Interim Meeting: Geneva, 4–23 Septembre 1968
121 participants
81 preparatory documents
Output: Interim booklet (193 pages)

Final Meeting: Geneva, 15 September–1 October 1969
172 participants
Interim booklet plus 85 preparatory documents
Output: 66 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group IX during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

During its final meeting, Study Group IX reviewed its texts in the Volumes of the XIth Plenary Assembly, together with the propositions for their modification made at the Interim Meeting, Geneva, 1969. The main aspects of these discussions, classified according to the Working Groups that discussed them are given below.

Interconnection and characteristics (including transhorizon and digital systems)

After discussion of the problems involved, new Reports were drafted on the following topics:

— preferred characteristics, permissible noise and distortion for the transmission of monochrome television signals over transhorizon links;

— the transmission of pulse-code modulation signals and other types of digital signals over radio-relay systems;

— determination of the optimum value of frequency deviation in frequency-modulation systems using frequency division multiplex.

In addition, the existing Report 285-1 on transhorizon radio-relay systems was enlarged and brought up-to-date.

A new draft Study Programme was adopted on methods of measuring the performance of transhorizon radio-relay systems for telephony using frequency-division multiplex.

Radio-frequency channel arrangements

The growing tendency to use frequencies between 12 and 15 GHz for terrestrial radio-relay systems and the possible implications of the use of these frequencies for the forthcoming World Administrative Radio Conference for Space Communications has led to the adoption of a new draft Report on this subject.

Recommendation 283-1 was revised to include a proposed new radio-frequency channel arrangement for 60-, 120- and 300-channel systems operating in the 2 GHz band.

Maintenance, hypothetical reference circuits and noise

A new topic for discussion in the Study Group is that of system reliability. Since this is a new departure, it was felt important to establish, from the beginning, a list of terms and expressions dealing with this problem and a new Study Programme was drafted to this effect. In addition, a new Report was drafted giving details of practical experience acquired in this field of activity and setting forth certain fundamental theoretical calculations. More studies will be required before definite recommendations can be made as to reliability objectives for use in system planning.

A new Report was drafted on the provision of service channels as a function of service requirements, operation and maintenance of radio-relay systems.

System characteristics

The introduction of radio-relay systems with a capacity of 2700 telephone channels led to detailed discussion on the desirable characteristics of such systems. A Recommendation was drafted on the use of either 100 MHz or 140 MHz as the intermediate frequency in these systems.

The problem of transmitting up to six sound channels over radio-relay systems was discussed and Administrations were asked to supply information on the characteristics of such systems for the transmission of both monophonic and stereophonic sound channels.

The re-evaluation of the pre-emphasis characteristics for television signals on 525, 625 and 819 line systems led to a proposed new Recommendation.

The avoidance of overloading and interference on interconnected systems was made the subject of a draft Recommendation on the permissible levels of signal residues outside the baseband.

The desirability of transmitting simultaneously a television channel and up to four sound channels has given rise to the determination of two new sets of sub-carrier frequencies for the sound channels.

Frequency sharing with communication-satellite systems

To assist in establishing satisfactory criteria for frequency sharing between terrestrial radio-relay systems and communication satellite systems, a Study Programme was drafted on the determination of radiation diagrams for the antennae of terrestrial radio-relay systems for use in interference studies.

Radio-relay systems in the new or developing countries

To assist in specifying the characteristics of radio-relay systems for use in the new or developing countries, a new Question and two new Study Programmes were drafted on the characteristics and permissible noise levels for simple radio-relay systems operating in bands 8 and 9 for the provision of telephone trunk connections in the new or developing countries.

International Working Party IX/1 on the determination and division of the mean hourly noise power, as set forth in Recommendation 393-1, § 1, has prepared a draft new Report on the division of the hourly mean noise power among the homogeneous sections of the hypothetical reference circuit.

ANNEX I/10

STUDY GROUP X

Chairman: Mr. A. Prose WALKER (U.S.A.)

Vice-Chairman: Dr. H. RINDFLEISCH (F.R. of Germany) until September 1969
Mr. C. TERZANI (Italy) from September 1969

Interim Meeting: Palma de Mallorca, 29 April–10 May 1968
150 participants
65 preparatory documents
Output: Interim booklet (178 pages)

Final Meeting: Geneva, 3–16 September 1969
175 participants
Interim booklet plus 48 preparatory documents
Output: 59 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group X during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

Recording

With regard to low frequency and recording problems, the texts on standards of magnetic tape sound recording for the international exchange of programmes were consolidated by condensing two Recommendations in a single concise Recommendation covering both monophonic and stereophonic recording.

A similar consolidation was effected in the case of the standards for the international exchange of monochrome and colour television programmes on film, on which a draft Recommendation was prepared listing the types of film to be used and the pertinent standards. This draft Recommendation is more comprehensive and more precise than the former Recommendations and covers colour television. There is a draft Report, however, dealing with some points on which further work is to be done in reply to existing Questions or Questions submitted at the Interim Meeting at Palma in 1968.

The problem of standards for the international exchange of television programmes on magnetic tape was dealt with in a draft Recommendation drawn up at Palma de Mallorca (1968), which was revised and amplified at the Final Meeting in Geneva, 1969. We now have a detailed draft Recommendation which is most important for the international exchange of monochrome and colour television programmes.

Subjective loudness

The determination of the subjective loudness of a broadcasting programme was the subject of a draft Report in 1968 which was amplified in 1969. The magnetic tape recording made by the B.B.C., in particular, aroused great interest among Administrations. The C.C.I.R. Secretariat produced about 150 copies of this tape, which was ordered by Administrations and recognized private operating agencies, for study purposes and with a view to producing, if necessary, a C.C.I.R. reference loudness tape. The fact that a draft Resolution on the establishment of an International Working Party to deal with the problem was adopted indicates the interest shown in this difficult question.

Studies of LF and MF systems

With regard to radio frequencies, the regrouping of Questions and Study Programmes carried out in 1968 was aimed mainly at better presentation of the LF, MF and HF sound broadcasting problems requiring solution. A new draft Report on the possibility of standardizing one or more sound broadcasting systems was prepared in order to assemble the available information and to enable Administrations to undertake their own studies of this complex problem.

New draft Reports were drawn up on a number of subjects relating to Study Programmes based on the above-mentioned Question:

— the report on the important question of the necessary bandwith of emissions, the study of which was begun in 1968, was amplified in 1969 and it is desirable that Administrations should continue to furnish data on this point;

— results of detailed experiments carried out by Administrations on the effects of ionospheric cross-modulation in the LF and MF bands were submitted; such effects are becoming increasingly serious with the steady increase in transmitter powers. The attention of Study Group VI is drawn to the subject and it is asked to furnish all possible assistance to Study Group X;

— the examination of protection ratios at radio frequencies for synchronized transmitters incorporating two or three transmitters was begun by considering both frequency and phase synchronizing methods;

— the study of the composition of several fields at one and the same point, which is useful in determining the area served by a transmitter, was the subject of a new draft Report prepared in 1968 and confirmed in 1969.

In reply to the question on reduction of the sky wave, a new draft Report was drawn up on tests using orthogonal transmission.

Frequency modulation broadcasting

In the field of VHF frequency modulation broadcasting, the question of stereophonic broadcasting and the possibilities of transmitting additional programmes in these bands are still under study.

Mention should be made of a new draft Recommendation listing the technical characteristics to be checked for stereophonic frequency modulation broadcasting in pilot tone systems. A new draft Report, prepared in 1968, containing information on the standards for VHF stereophonic frequency modulation (pilot tone system) was confirmed.

The texts on the simultaneous transmission of two or more television or sound programmes in frequency modulation broadcasting, which had been prepared at Palma de Mallorca in 1968, were confirmed in 1969. These include the draft Reports indicating the systems that may be used for television and sound FM broadcasting.

In reply to the Question on the polarization of VHF FM transmissions, in 1969 it was only possible to establish a draft Report on tests and measurements carried out by various Administrations, but it is hoped that a draft Recommendation may be prepared for the plenary meeting following the meeting in New Delhi.

Satellite broadcasting

The use of satellites for broadcasting, which aroused great interest at Palma de Mallorca in 1968, was examined more extensively in Geneva in 1969. The draft texts adopted in 1969, unlike those of previous meetings, deal separately with the problems specific to sound broadcasting and television broadcasting instead of treating them together. When the same point relates to both techniques, there are two texts, one on sound broadcasting and the other on television, except in the case of the text on terminology.

Existing texts were reviewed and supplemented. This is true of the general Question on the conditions to be satisfied by a satellite broadcasting service, which was supplemented moreover by two new draft Study Programmes—one on the systems to be used (in which the cost factor has to be considered) and another on services for community reception. The same action was taken on the texts which existed in draft form in 1968: the new draft Report on frequency sharing which constitutes a partial reply to the above-mentionned Question and which necessitated bringing up-to-date

the Opinion on the use of the 26 MHz band, and the new draft Report on terminology which doubtless will require revision after it has been examined by Administrations and the Study Groups concerned.

The comments of Study Group X on the sound broadcasting part of the draft Report of Study Group IV entitled "Feasibility of direct sound and television broadcasting from satellites" constitute a most useful document by reason of the many specifications of characteristics given for the systems proposed.

ANNEX I/11

STUDY GROUP XI

Chairman: Mr. E.B. ESPING (Sweden)

Vice-Chairman: Mr. G. HANSEN (Belgium)

Interim Meeting: Palma de Mallorca, 29 April–10 May 1968
147 participants
57 preparatory documents
Output: Interim booklet (110 pages)

Final Meeting: Geneva, 3–16 September 1969
179 participants
Interim booklet plus 101 preparatory documents
Output: 48 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group XI during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

C.C.I.R. Study Group XI (Television) convened for the purpose of studying all technical aspects of transmission and reception of the "vision" part of television broadcasting, after the XIth Plenary Assembly, where it had the crucial problem of colour television systems on its agenda, was able to focus its interest on the following topics:

— standards,
— elements for planning,
— transmission—exchange of programmes,
— picture quality,
— equipement,
— broadcasting from satellites.

Standards

Important work was carried out on the problems of unification of standards for television systems.

A new draft Recommendation on television systems proposes that countries wishing to initiate monochrome or colour television services should give preference, for monochrome television services, systems using 525 or 625 lines and for colour television services, to one of the systems, defined by C.C.I.R. Report 407 on the characteristics of colour systems, or suitable adaptation of them.

A new draft Recommendation on video-frequency characteristics of television systems to be used for the international exchange of programmes between countries using a 625-line monochrome system was adopted.

Many detailed changes have been made in the draft Reports on characteristics of monochrome and colour television systems.

A new draft Recommendation was adopted on the nomenclature of colour-bar signals used for the international exchange of colour television programmes.

A new draft Report, which referred to a corresponding new draft Study Programme on the ratio of picture signal-to-synchronizing signal was proposed.

The attention of Administrations was drawn to the possibility of adopting a single figure for expressing the ratio of picture signal-to-synchronizing signal, both for video and radiated signals, independently of the system employed.

After considerable discussion possible changes in colorimetric standards were accepted in a new draft Report, but a number of delegations expressed the opinion that, at this moment, no changes in the colorimetric standards adopted by their Administrations would be acceptable and it was therefore suggested that further consideration should be given to this subject.

A new draft Report was adopted on distortion of television signals due to the use of vestigial-sideband transmission providing a synthesis of all the information in the documents enumerated in Report 404 supplemented by new data based on studies carried out by the O.I.R.T.

Elements for planning

On this subject the Study Group prepared several new texts and amendments to existing C.C.I.R. texts.

A new draft Report draws attention to the fact that defining only the non-varying propagation ratio for broadcasting services is not sufficient to define the quality of service nor to define the protection requirements for such a service. The Report included some of the statistics of this variability in the description of the service and for the protection of this service.

Study Group XI, in a new draft Report, invited Administrations to undertake further studies on protection ratios for non-precision offsets between television signals that are multiples of one-twelfth of the line-frequency.

Transmission—International exchange of programmes

The problem of standards conversion and reduction of bandwidth were discussed and new draft Reports on the present position of standards conversion and reduction of channel capacity required for television signals were proposed. A new draft Study Programme and a Report on transcoding of colour television from one system to another were adopted.

This can be seen as a first step towards a future reduction in the number of television systems for broadcasting used in the world, which should be welcome, especially in view of future broadcasting from satellites.

An important new draft Study Programme was adopted on automatic monitoring of television stations.

The Study Group was asked to reply to the CMTT on measurement signals inserted in the field-blanking internal and automatic remote monitoring, and to decide as to action to be taken on texts concerning these subjects which are now within the terms of reference of the CMTT.

Picture quality

The Study Group felt strongly that it is most important to have, as soon as possible, a Recommendation on the preferred method of subjective assessment of picture quality. Such a Recommendation can be drafted during the forthcoming working period.

A new draft Question and a Study Programme on subjective quality targets of overall television systems and a new draft Report on ghost images in monochrome television from re-radiated signals were adopted.

To coordinate the work of the C.C.I.R. on the assessment of picture quality with that being done on the same subject by the IEC, a new draft Opinion was adopted requesting the Director, C.C.I.R., to approach the IEC on that matter.

Equipment

The important subjects of the characteristics of low-cost television receivers and of television antennae for domestic use were discussed during the interim and final meetings.

These questions had been raised in the C.C.I.R. in response to a request from UNESCO aimed at making the advantages of television available to the populations of countries where at present, for economic, geographical or technical reasons, the density of receivers is particularly low. Two new draft Reports were adopted on these subjects.

The Study Group also expressed the view that it is desirable that Study Group XI include in its studies on television receivers, receivers and auxiliary apparatus required to permit reception from television broadcasting satellites. Such studies should include not only frequency aspects but also cost, productivity, compatibility with existing picture and transmission standards and all other relevant factors.

Following a proposal by the delegate of India, the Study Group, after discussion, unanimously decided to consider the usefulness of collecting in a single booklet, in view of the 1971 World Administrative Radio Conference on Space Telecommunications, all the C.C.I.R. texts dealing with the various aspects of broadcasting from satellites. Such texts, now assigned to a number of Study Groups, could be of some use also to the Working Group on Direct Broadcasting Satellites of the Committee on the Peaceful Uses of Outer Space of the U.N. as well as for other interested bodies.

Broadcasting from satellites

This problem aroused very great interest of Joint Working Group of Study Groups X and XI, as it is of very great importance in connection with the 1971 Administrative Radio Conference on Space Telecommunications.

To facilitate the work of the C.C.I.R., a new draft Report was adopted on the provisional definitions for terms relating to broadcasting from satellites (principal service, methods of reception, reception quality, power-flux densities) and to the communication-satellite service for distribution of broadcasting programmes to terrestrial broadcasting stations (direct and indirect distribution).

Three new draft Study Programmes were adopted on:

— broadcasting satellite service for community reception;

— possible television broadcasting satellite systems and their relative acceptability;

— television receiving system characteristics for direct transmission from satellites.

The conclusion on sharing problems was that sharing between the broadcasting satellite service and non-broadcasting terrestrial services, particularly in bands 9 and 10, and the use of existing broadcast bands for the broadcasting satellite service, require further study by the C.C.I.R.

The importance of facilitating the exchange of television programmes via satellites was stressed in a new draft Opinion. The attention of the organizations responsible for the transmission of international television programmes should be drawn to the desirability of facilitating the transmission over their networks of the original television standard and system, to provide a better quality of service.

It was also proposed to revise the Question dealing with broadcasting satellite service and a new "decides" was added for studies of optimum transmission characteristics.

ANNEX I/12

STUDY GROUP XII

Chairman: Mr. CHAMAN LAL (India)

Vice-Chairman: Mr. C. NOGBOU (Ivory Coast)

Interim Meeting: Palma de Mallorca, 29 April–10 May 1968
76 participants
7 preparatory documents
Output: Interim booklet (91 pages)

Final Meeting: Geneva, 3–12 September 1969
68 participants
Interim booklet plus 3 preparatory documents
Output: 6 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group XII during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

Study Group XII deals with tropical broadcasting. It may be useful to recall that in the Radio Regulations the expression "broadcasting in the Tropical Zone" denotes a particular type of broadcasting for national use in countries where it may be shown that, because of high atmospheric noise levels, it is not possible to provide economically a satisfactory broadcasting service on medium frequencies.

In the Interim Meeting held in April–May 1968 at Palma de Mallorca, Study Group XII gave particular attention to the following subjects.

The use was proposed of antennae covering part of the service area by one hop, the rest being by two-hop propagation. New antennae diagrams have been supplied and will be published in an addendum to the C.C.I.R. antenna diagrams. The participants were also interested in a computer programme prepared by the Secretariat of the C.C.I.R. for the calculation of certain types of tropical broadcasting antennae.

New factors were incorporated in the Report on methods of calculating field strength.

The subject of single sideband reception (of a double sideband transmission) aroused considerable interest. Arrangements were made for the participants to listen to tape recordings showing the improvements that could be expected with this method.

A draft new Question was adopted relating to the advantages and disadvantages of using the VHF band for broadcasting in the Tropical Zone.

The findings of the Interim Meeting were confirmed at the Final Meeting held in September 1969. These are submitted to the Plenary Assembly for approval.

During the Plenary Assembly held in Oslo in 1966, an International Working Party was organized for the purpose of preparing a handbook on tropical broadcasting, in accordance with Resolution 32. The draft is now completed and it will be published in the near future by the Secretariat.

ANNEX I/13

STUDY GROUP XIII

Chairman: Mr. G.H.M. GLEADLE (United Kingdom)

Vice-Chairman: Mr. N.J. SØBERG (Norway) until October 1968
Mr. P. MORTENSEN (Norway) from October 1968

Special Meeting: Geneva, 17–28 April 1967
65 participants
20 preparatory documents
Output: first interim booklet (62 pages)

Interim Meeting: Geneva, 25 September–8 October 1968
90 participants
First interim booklet, plus 38 preparatory documents
Output: second interim booklet (174 pages)

Final Meeting: Geneva, 2–15 October 1969
151 participants
Second interim booklet plus 60 preparatory documents
Output: 34 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group XIII during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

Following a decision by the XIth Plenary Assembly of the C.C.I.R. (Oslo, 1966) Study Group XIII held a special meeting in April 1967 to prepare technical bases for the World Maritime Administrative Conference held in the latter part of 1967. The major decisions of the Conference, on the completion of conversion of all double sideband to single sideband systems by 1 January 1982 were taken using the technical parameters developed by the C.C.I.R. Another important decision of the Conference, on a Selective Calling System for use in the international maritime mobile service and based on sequential single frequency codes, was also derived from the studies carried out by Study Group XIII.

The studies on various operational aspects for radiocommunication in the maritime mobile service continued after the Conference. Thus, following the success of employing linked compressors and expanders (Lincompex system) in the fixed service, Study Group XIII began to study the feasibility of its use in the maritime mobile service. A Question was drafted on the subject during the Interim Meeting of Study Group XIII in October 1968. Only one year afterwards, during which experimental trials were conducted with the liner "Queen Elizabeth II", and the superiority of the system, in improving both the quality of the circuit and in the economical utilization of the frequency spectrum being clearly confirmed, Study Group XIII adopted a draft Recommendation specifying characteristics of equipment for both ship and coast stations. Another important result of the Final Meeting of Study Group XIII was the adoption of a draft Recommendation on error correcting systems for both direct printing telegraph with return circuit and for broadcast type operation, where only forward correcting codes can be used.

Since the Interim Meeting of 1968, attention was also devoted to the land mobile service. Discussions were centred on the general principle of planning and on methods of measurement of equipment characteristics, with particular emphasis on the control of interference. Cooperation with the International Electrotechnical Organization was stressed.

The use of satellite and space communication technique for the maritime and aeronautical mobile services is at present in the terms of reference of C.C.I.R. Study Group IV. However, since Study Group XIII has a special interest in the operational aspects of radiocommunication in the mobile services and experimental tests have confirmed the value of satellite and space communication technique to such services, Study Group XIII took note of all the documentation

of Study Group IV in this domain. In this context, Study Group XIII has adopted a draft Question to study "systems providing radiocommunication and/or radiodetermination using satellite techniques for aircraft and/or ships".

It is to be recalled that the International Working Party on the reorganization of the C.C.I.R. Study Group structure, under the Chairmanship of Mr. Bigi (Italy), has made a proposal to include in the terms of reference of the Study Group dealing with mobile services the use of satellites for radiocommunication and radiodetermination.

ANNEX I/14

STUDY GROUP XIV

Chairman: Mr. R. VILLENEUVE (France)

Vice-Chairman: Mr. A. FERRARI-TONIOLO (Italy)

Interim Meeting: None

Final Meeting: Geneva, 3–12 September 1969
48 participants
20 preparatory documents
Output: 6 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of Study Group XIV during the period between the XIth (Oslo, 1966) and XIIth (New Delhi, 1970) Plenary Assemblies

With regard to the list of radiocommunication symbols compiled by the IEC/C.C.I. Working Party, Study Group XIV adopted a new draft Recommendation, as well as a new draft Report, advocating the use of symbols published in final form by the IEC. It also brought the Report up-to-date, taking into account the symbols adopted by the IEC. but not yet published in final form.

The major part of the work of Study Group XIV dealt with the problems connected with the preparation of the vocabulary.

The main point was the final establishment of the IEC/C.C.I.R.-C.C.I.T.T. Joint Working Party to prepare the radio-telecommunication vocabulary.

This Joint Working Party, the creation of which was first envisaged in 1967, was instituted in 1969 and was able to hold its first meeting while the Final Meetings were proceeding in Geneva.

The conditions for adapting C.C.I.R. activities to the new organization of the work had to be established. This meant amending the Resolution on International Working Party XIV/1, which deals with these matters:

— changes in the organization of the C.C.I.R. The draft Resolution confirms that contributions to the work should be made by specialized collaborators belonging to the different Study Groups and emphasizes the need, which emerged at the Plenary Assembly at Oslo in 1966, to take into consideration the work of Administrations which take an active part in terminology questions through their national collaborators. Some participants have given the Study Group the benefit of their long experience on vocabulary problems (for example, different degrees in the classification of new definitions, the need to define the "concept" rather than working on the basis of the "terms" used in a particular language); it should thus be possible to arrive at agreement more quickly in compiling a vocabulary and the correspondence between terms in the different languages;

— changes concerning the relations between International Working Party XIV/1 and the IEC/C.C.I.T.T.-C.C.I.R. Joint Working Party responsible for the vocabulary.

The main points mentioned in the draft Resolution are the following:

— plan for the division of the work into chapters and sub-divisions of chapters;

— the need for an unequivocal numbering system;

— the possibility for International Working Party XIV/1 to intervene in the work carried out under the aegis of the IEC/C.C.I.T.T.-C.C.I.R. Joint Working Party.

The members of Study Group XIV stressed the advisability of their being kept informed of the progress achieved. The draft Resolution mentioned above was supplemented by a draft Report giving the necessary information on the functioning of the IEC Technical Committee on Terminology, on the cooperation on an equal footing established between the IEC and the CCIs and on the role of C.C.I.R. Study Group XIV.

Thanks to the preliminary work carried out by the C.C.I.R., the first meeting on 14 and 15 October 1969 of the Joint Working Party to prepare the telecommunication vocabulary, which was held to lay the foundation for effective collaboration between the IEC and the CCIs, performed its task successfully.

The delegates pointed out (in the draft Resolution referred to above) that the final aim included publication of the terms with their definitions in the I.T.U. working languages; the corresponding terms (without definitions) could be given in other languages which were important for international work in the field of telecommunications.

In conclusion, with regard to specific sections of the terminology, the International Working Party responsible for the vocabulary on reliability has prepared an initial list of terms and definitions, while an International Working Party on recording terms was set up under a draft Resolution prepared for this purpose.

ANNEX I/15

CMTT

Chairman: Prof. Y. ANGEL (France)

Vice-Chairman: Mr. R.F. FRANKLIN (United Kingdom) until December 1966
Vacant from December 1966 until September 1968
Mr. W.G. SIMPSON (United Kingdom) from September 1968

Interim Meeting: Geneva, 4–17 September 1968
93 participants
76 preparatory documents
Output: interim booklet (144 pages)

Final Meeting: Geneva, 3–19 September 1969
163 participants
Interim booklet plus 42 preparatory documents
Output: 43 new, or modified, texts for consideration by the XIIth Plenary Assembly

General review of the work of the CMTT during the period between the XIth (Oslo, 1966) and the XIIth (New Delhi, 1970) Plenary Assemblies

Four Working Groups were organized during these Meetings to deal with the following main subjects:

— television transmission standards;
— equipment, signals and maintenance;
— coordination of vision and sound transmissions;
— sound programme transmission.

Television transmission standards

A relatively new and important subject, standards for circuits other than the 2500 km hypothetical reference circuit, was thoroughly discussed.

This involves problems of the circuits that have a structure similar to that of the hypothetical reference circuit, but contain a different number of sections, including satellite links.

A new draft Question, a Study Programme and a Report were adopted in the light of suggestions made for television reference chains.

Another matter discussed was the problem which occurs when television signals of various standards (including colour television) are transmitted over long distances. As a result of this discussion, it was decided that a unified Recommendation should be drafted for use where circuits will be required at various times to transmit television signals of the 525-line and 625-line standards.

A new draft Report providing a basis for the future unified Recommendation was adopted.

Question 1/CMTT and Study Programme 1B/CMTT were modified and simplified in the preamble to recognize the progress which has been made in the definition of colour television signals.

A new draft Study Programme on the evaluation of permissible limits of very low frequency oscillations was adopted.

Equipment, signals and maintenance

The CMTT, after a detailed study of measurements of the signals inserted in the field-blanking interval, and taking into account the proposals of Study Groups X and XI to standardize these test signals, suggested new insertion signals which would provide a satisfactory compromise for test purposes in both monochrome or colour television.

New amendments were proposed to Recommendation 420-1.

A new and very important draft Recommendation on the insertion of special signals in the field-blanking interval of television signals for the measurement of performance and monitoring, control and correction of parameters of international transmission circuits and for international transmission of colour television signals was adopted.

Studies of automatic remote monitoring were summarized in a well-documented Report. This Report supplemented digital methods for television measurements. These methods are necessary for optimization of measurement procedures and the transfer and processing of television monitoring/measurement information by digital computers. It is reasonable to combine independent monitoring facilities to form comprehensive television measurement information systems.

A new draft Question and Study Programme on automatic measurement and monitoring of television circuits were adopted.

Coordination of vision and sound transmission

The increasing lengths of ground circuits and above all the use of satellite transmission have given fresh topicality to these problems.

A new Question on the differences in transmission time between the sound and vision components of a television signal was adopted by correspondence.

A new draft Study Programme and a Report were also prepared on the transmission of sound programme signals over communication satellite links.

Special attention was given to the techniques which can be used to enable a sound signal to be transmitted by time-division multiplex with the vision signal.

Sound programme transmissions

At the request of the XIth Plenary Assembly, Oslo, 1966, the terms of reference of the CMTT were extended to include sound-broadcasting transmissions (stereophonic and monophonic). In view of this change, and in accordance with the six new Study Programmes adopted by correspondence, the CMTT carried out studies on this project and proposed a number of new draft Reports.

This problem gave rise to a new draft Recommendation, an Opinion and two Study Programmes.

It seems that a great deal of supplementary work will be necessary in the future on this subject.

ANNEX II

AGREEMENT BETWEEN THE GOVERNMENT OF INDIA AND THE INTERNATIONAL TELECOMMUNICATION UNION

Introduction

This Agreement, concluded in accordance with Administrative Council Resolution No. 83 (amended) between the Government of India (hereinafter referred to as "the Government") and the International Telecommunication Union, represented by the Director of the International Radio Consultative Committee (hereinafter referred to as the "I.T.U." and the "C.C.I.R.") is designed to facilitate the organization of the XIIth Plenary Assembly of the C.C.I.R. (hereinafter referred to as "the Assembly"). It is based on the relevant provisions of the International Telecommunication Convention (Montreux, 1965) and its annexes, on the relevant provisions of the Convention on the Privileges and Immunities of the Specialized Agencies and on the experience gained during previous C.C.I.R. meetings.

The Agreement has been signed in two copies by the contracting parties. One copy has been kept by the Government and the other by the I.T.U.

A. General provisions

1. *Official designation of the Assembly*

The Assembly shall be known officially as the "XIIth Plenary Assembly of the International Radio Consultative Committee".

2. *Place and date of the Assembly*

At the invitation of the Government of India, the Assembly shall meet in the Vigyan Bhavan, New Delhi.

The official opening will take place on Wednesday, 21 January 1970 and the closing meeting on Wednesday, 11 February 1970

Extension of the duration of the Assembly shall be subject to the availability of the Vigyan Bhavan for the period of extension.

3. *Invitations*

The Director shall invite the following to attend the Assembly:

(a) the Administrations of all Members and Associate Members of the Union;

(b) recognized private operating agencies, Members of the C.C.I.R.;

(c) the United Nations, its Specialized Agencies and other international organizations which take part in the work of the C.C.I.R.

4. *Privileges and immunities*

(a) The Convention on the Privileges and Immunities of the Specialized Agencies, to which India is a party, shall be applicable with respect to the Assembly. The Assembly premises shall be deemed to constitute premises of the I.T.U. and the access thereto shall be subject to the authority of the I.T.U.

(b) Representatives of Member States and other bodies invited attending the Assembly and all officials of the I.T.U. connected with the Assembly, shall be accorded privileges and immunities set forth in Articles V and VI of the Convention on the Privileges and Immunities of the Specialized Agencies.

(c) The relevant Articles of the Convention on the Privileges and Immunities of the Specialized Agencies, and of Decision No. 304 of the Administrative Council of the I.T.U. shall be applicable to persons attending the Assembly on behalf of Members and Associate Members of the Union, and other bodies invited, to officials of the Union, as well as to members of their families accompanying them. The

Government shall apply without reservation the provisions of the International Telecommunication Convention (Montreux, 1965) to such persons and shall permit them to enter India and sojourn there throughout the duration of their function or mission in connection with the Assembly.

(d) Local personnel provided by the Government shall only enjoy immunity from legal process in respect of words spoken or written and any act performed by them *within* the Assembly premises in their official capacity in connection with the Assembly.

5. *Languages*

Provisions will be made for the use of languages in accordance with numbers 787 and 788 of the General Regulations annexed to the International Telecommunication Convention (Montreux, 1965).

B. Financial arrangements

1. *Expenses for which the Government is responsible*

The Government shall be responsible for:

(a) providing appropriate premises and the necessary furniture and equipment, as well as the upkeep, heating, cleaning, caretaker service;

(b) the installation, maintenance and operation of the simultaneous interpretation equipment;

(c) the installation, maintenance and operation of the internal telephone system on the Assembly premises, as well as of the external telecommunications facilities available to participants in the Assembly;

(d) the staff exclusively at the service of the Chairman and/or of his representative(s);

(e) the official (and his staff) responsible for maintaining liaison between the Government and the C.C.I.R.;

(f) the Reception Committee;

(g) certain supplies, as set forth in Annex D.

2. *Expenses to be borne by the I.T.U.*

The I.T.U. shall bear the cost of:

(a) salaries and, where appropriate, allowances and travel expenses for all staff of, or recruited by, the I.T.U.;

(b) salaries and, where appropriate, allowances and travel expenses of staff provided by the Government, in accordance with Annex A. The amounts to be refunded for this purpose by the I.T.U. will be fixed in the light of B.4 and will be paid in Swiss francs;

(c) supplies requested by the C.C.I.R. which do not come under the responsibility of the Government, in accordance with B.1 *(g)*;

(d) rental of machines which the Government is unable to provide free of charge;

(e) any other expenses which are clearly related to the cost of the Assembly.

3. *Cancellation or change in the place and/or dates of the Assembly*

Should the Assembly be cancelled at the request of the Government the latter shall bear all the expenses incurred by it for the preparation of the Assembly. Should the place and/or date be changed at the request of the Government, it shall bear the expenses due to such change or changes.

Should the Assembly be cancelled, or the place and/or dates be changed as a result of a decision taken by the I.T.U., the responsibility of the Union towards the Government shall be limited to the financial commitments of the latter, or to the expenses it has actually incurred in preparing the Assembly, to the extent that such expenses are indispensable and cannot be reduced or annulled.

4. *Advances*

The Government will advance to the I.T.U. sufficient funds, in local currency, to meet the expenditure of the Secretariat of the Assembly in India.

The I.T.U. will refund the Government, in Swiss francs, the amounts advanced. The Government will not charge the I.T.U. interest on this advance during the 30 days following the receipt of the final accounts of the Assembly by the Secretary-General of the I.T.U. If the amount has not been refunded when this period expires, the Government shall be paid interest at the rate of 4% per annum. The Secretary-General of the I.T.U. shall give the necessary instructions that the amount be entirely refunded by 30 June 1970 at the latest, provided that the final accounts have been forwarded to him at least one month before that date.

C. Staffing

1. *Staff requirements*

Annex A gives a list of staff required for the Assembly. The periods for which the staff supplied by the Government shall be engaged shall be decided on by agreement between the C.C.I.R. and the Government. All staff listed in Annex A shall be under the authority of the Director, who may delegate this authority to the extent he deems necessary.

2. *Recruitment of staff*

The staff indicated by an asterisk in Annex A shall be supplied by the C.C.I.R. and the remainder shall be supplied by the Government. Nevertheless, if the Government is unable to supply all or part of such staff, it shall inform the C.C.I.R. to that effect in good time, and in no case later than 1 October 1969, so that the C.C.I.R. may make arrangements for its recruitment.

3. *Salaries, allowances, insurance and working hours*

The I.T.U. regulations on salaries, allowances, working hours and overtime shall apply to the staff recruited directly by the I.T.U.

Subject to the provisions of § A.4.*(d)*, the relevant provisions of Indian legislation shall be applicable to staff supplied by the Government, allowance being made for local practice, it being understood that all amounts due to this staff will be paid by the Government in local currency. These amounts shall be refunded to the Government in Swiss francs, in accordance with § B.4, it being understood that the amount of salaries and allowances which the Government may ask to be refunded shall not exceed the sum which would result from application of the salary scale in force in the I.T.U. for the corresponding categories of staff.

D. Premises and furniture

1. The premises which are to be placed entirely at the disposal of the Assembly are described in Annex B.

2. The premises to be occupied by the Assembly, except those designed for general use, shall be exclusively available to it as from *Wednesday, 21 January* to *Wednesday, 11 February 1970*, it being understood that the plenary meeting room can also be used for other purposes when the Assembly is not holding plenary meetings. The office premises for the Secretariat shall be available to it from *Monday, 12 January* to *Monday, 16 February, 1970.*

Persons officially connected with the Assembly will have access to the premises at any time of the day or night; this access may also be extended to other persons, in the interests of the Assembly.

3. The furniture and equipment required for each room or office are also given in Annex B.

4. The Government will be responsible for the upkeep and cleaning of the premises and should make any simple installations which may be found necessary.

5. The Government shall be responsible for general security measures in regard to the premises reserved for the Assembly.

6. The Government shall install an internal telephone network with a set in each of the offices or rooms used for the Assembly (except for a few cases approved by the Director, C.C.I.R. and the Government). Outside the switchboard operators' working hours, an adequate number of lines will be required, connected directly to the general network, for use in offices to be designated by agreement between the Government and the Director of the C.C.I.R.

E. Office machines and technical equipment

1. A list of the office machinery and technical equipment for the Assembly is given in Annex C. The items marked with an asterisk will be supplied by the C.C.I.R., the remainder by the Government, preferably on a rental basis. Should the Government not be able to supply any of the latter items, it will so advise the C.C.I.R., not later than *1 October 1969,* so that the C.C.I.R. may make arrangements to supply these items.

2. The Government will furnish the Director, C.C.I.R., also by 1 October 1969, with a list showing the cost, on a rental or other basis, of each item it is able to supply. The Director, C.C.I.R., may, on the basis of this list, decide to supply any item which can be more economically furnished by the C.C.I.R.

3. The cost of office machinery and technical equipment furnished by the Government shall be chargeable to the budget of the Assembly and the sums advanced for this purpose shall be refunded in Swiss francs, in accordance with § B.4.

F. Office and other supplies

1. A list of the office and other supplies to be procured by the Government for the Assembly is given in Annex D. Should the Government be unable to procure any of the items on this list, it will so inform the C.C.I.R., no later than *1 October 1969,* so that the C.C.I.R. may make arrangements to supply these items.

2. The Government shall furnish the Director of the C.C.I.R., also by *1 October 1969,* with a list estimating the cost of each item it is able to supply. The Director may, on the basis of that list, decide to arrange to supply any item which can be more economically furnished by the C.C.I.R.

3. The cost of office and other supplies furnished by the Government shall, with the exception of items in Annex D marked with an asterisk, which costs will be borne by the Government, be charged to the budget of the Assembly and the sums advanced for this purpose shall be refunded in Swiss francs, in accordance with § B.4.

G. Various facilities made available to the Assembly and its participants

1. *Telegraph and telephone privileges*

The Government will take the necessary steps to allow participants to enjoy, to the extent possible, the telegraph and telephone franking privileges mentioned in Opinion No. 1 of the Ordinary Administrative Telegraph and Telephone Conference (Geneva, 1958) (Annex E).

The scope of these privileges will be notified to participants, if possible, before the opening of the Assembly.

2. *Accommodation*

The Government will provide the Director of the C.C.I.R. in due course with information on accommodation for participants (list of hotels, prices, distance from the meeting-place, etc.). Bills relating to room bookings and other services provided by hotels will be the responsibility of participants and should be settled by them.

3. *Visa and customs formalities*

The Government shall take the necessary steps, within the limits set by the law and customs regulations of the country and in accordance with the relevant provisions of the Convention on the Privileges and Immunities of the Specialized Agencies, to facilitate as far as possible for participants in the Assembly (including the Secretariat) and for the members of their families accompanying them, delivery of visas and customs formalities in connection with their personal effects, on both entering and leaving India.

H. Miscellaneous

1. *Taxation*

The salaries and allowances paid to persons directly recruited outside India by the I.T.U. are not subject to income tax in India, in conformity with the terms of the Convention on the Privileges and Immunities of the Specialized Agencies.

2. *Insurance*

The Government will provide all the necessary information on a suitable insurance system, covering persons working for the Assembly (and their personal effects) in the premises where the Assembly is to be held. The I.T.U. shall insure staff (and their personal effects) recruited outside India for the whole duration of the Assembly.

3. *Liaison*

The Government shall designate a liaison officer, competent to settle, together with an official nominated by the Director, the necessary detailed arrangements concerning the application of this Agreement.

4. *Amendments to this Agreement*

Any amendments to this Agreement or its annexes shall be signed in the same way as the Agreement itself and will appear in an annex. However, as the figures given for staff numbers, categories of staff, furniture and equipment may be subject to slight changes, those alterations may be made by mutual agreement, without being considered as "amendments" in the sense intended above.

Done in { New Delhi, this twenty-fifth day of August, 1969
Geneva, this eighth day of September, 1969

For the Government of India:

L.O. JAIN

Department of Communications
Government of India

For the Secretary-General of the
International Telecommunication Union:

JACK W. HERBSTREIT

Director, C.C.I.R.

ANNEX A

STAFFING OF THE XIIth PLENARY ASSEMBLY OF THE C.C.I.R.

Directorate of the C.C.I.R.		
Director, C.C.I.R.	1*	
Senior Counsellor, C.C.I.R.	1*	
Assistant to Director	1*	
Assistant to Senior Counsellor	1*	4
Technical and Editorial Staff		
Counsellor	1*	
Engineers	7*	
Assistant to Counsellor	1*	
Editing Assistants	4*	13
Office of the Secretary		
Secretary of the Plenary Assembly	1*	
Assistants	2*	3
Messenger Service		
Chief Messenger	1*	
Messengers	6	7
Interpretation Services		
Chief Interpreter	1*	
Assistant	1*	
Interpreters	24*	26
Technicians, simultaneous interpretation		
Chief Technician	1	
Operators	2	3
Documents Services		
Chief of Services	1*	
Assistants	2*	
Typist	1*	
Draughtsman	1*	5
Translation and Reporting		
English Section		
Reviser	1*	
Translator	1*	
Shorthand-Typist	1*	
French Section		
Revisers	2*	
Translators	4*	
Shorthand-Typists	2*	
Spanish Section		
Revisers	2*	
Translators	6*	
Shorthand-Typists	4*	23

* Officials of the C.C.I.R. Secretariat or staff provided by the I.T.U. (cf. § C.2).

Typing Pool		
Chief of Pool	1*	
Assistants	2*	
Typists English	4*	
Typists English	8	
Typists French	8*	
Typists Spanish	8*	31
Document Reproduction Services		
Chief of Services	1*	
Operators	6*	
Operators	6	
Assembly clerks	6*	
Assembly clerks	6	25
Document Distribution Service		
Chief	1*	
Assistants	2*	
Clerks	8	11
Finance and Personnel Services		
Chief of Services	1*	
Assistant	1*	
Supply clerk	1*	
Assistant	1	4
TOTAL:		155 persons

* Officials of the C.C.I.R. Secretariat or staff provided by the I.T.U. (cf. § C.2).

ANNEX B

SPACE AND FURNITURE REQUIREMENTS FOR THE XIIth PLENARY ASSEMBLY, C.C.I.R.

Room No.	Designation	Utilization	Equipment
Ground floor			
—	Foyer	Document distribution	500 numbered pigeon-holes, counter, shelving for storage current documents
102	Press room	Registration (19–23 January only)	2 desks, 4 typing tables, 2 armchairs, 15 chairs, 4 tables
107	Overseas communications services	As designated	As required
107A	Office	Document storage	Maximum shelving possible, 1 table, 2 chairs
112	Office	Tourist, Postal, Banking Services	As required
A	Main Assembly Hall	Opening and Closing Plenary Sessions	Existing equipment

Room No.	Designation	Utilization	Equipment
First floor			
E	Committee Room	Meetings of Special Committees	Existing equipment plus blackboard
F	Committee Room	Meetings of Special Committees	Existing equipment plus blackboard
201, 203 205, 207 231, 233 241, 243	Offices	Sec.Gen. I.T.U., Representatives of I.F.R.B. and C.C.I.T.T.	Allocation and consequent furniture to be determined after representatives have been designated
210A	Office	Document registration	3 desks, 3 typing tables, 3 tables, 6 chairs
210	Office	Typist	1 typing table, 1 table, 2 chairs
211	Office	2 Revisers, Spanish	2 desks, 2 chairs, 1 table
212	Office	1 draughtsman	1 fully equipped draughtsman's table (approx. 5 × 3 feet), 2 chairs, 2 tables
213	Office	2 translators, Spanish	As office 211
214	Office	1 reviser, 1 translator, English	As office 211
215	Office	2 shorthand-typists, Spanish	2 typing tables, 2 chairs, 2 tables
216	Office	1 shorthand-typist, English	1 typing table, 2 chairs, 1 table
217	Office	2 translators, Spanish	As office 211
218	Office	2 revisers, French	As office 211
219	Office	2 shorthand-typists, Spanish	As office 215
220	Office	2 translators, French	As office 211
221	Office	2 translators, Spanish	As office 211
222	Office	2 shorthand-typists, French	As office 215
223	Office	Archives (storage)	1 table, 2 chairs
224	Office	2 translators, French	As office 211
225	Office	Finance & Personnel Officer with Assistant	2 desks, 1 typing table, 1 table, 2 armchairs
227	Office	Supply Clerk and Assistant	1 desk, 2 chairs, 1 table
228	Office	Chief, document reproduction services	1 desk, 1 typing table, 2 chairs, 1 table
229	Office	Supply room	1 table, 1 chair
230	Office	Roneo room	8 Gestetner machines, 8 tables, 8 chairs
232	Office	2 senior typists, English	As office 215
234	Office	2 typists, English	As office 215
236	Office	2 typists, English	As office 215
238	Office	6 typists, English	As office 240
240	Office	6 typists, French	8 typing tables, 4 chairs, 4 tables
240A	Office	2 senior typists, French	As office 215
245	Office	2 Assistant Chiefs Typing Pool	2 desks, 2 typing tables, 2 chairs, 2 tables
247	Office	Chief, Typing Pool	1 desk, 2 chairs, 1 table
255	Lounge	Interpreters Common Room	1 desk, 5 typing tables, tables and chairs for 25 persons

Room No.	Designation	Utilization	Equipment
First floor			
260	Office	6 typists, Spanish	As office 240
260A	Office	2 senior typists, Spanish	As office 215
Second Floor			
—	Commission Room	Plenary Sessions (except opening and closing)	existing equipment
—	Commission Room	Special Commissions	existing equipment plus blackboard
305, 307, 310, 310A, 311, 313, 315, 317, 319, 321, 323, 325, 327, 329, 330, 331, 333	Offices	Indian Government	As required
312	Office	(provisionally unassigned)	
314	Office	1 engineer, C.C.I.R.	1 desk, 2 armchairs, 1 table
316	Office	2 office assistants	2 small desks, 2 typing tables, 2 chairs
318	Office	2 engineers, C.C.I.R.	2 desks, 2 armchairs, 2 tables
320	Office	2 engineers, C.C.I.R.	As office 318
322	Office	2 office assistants	As office 316
324	Office	2 engineers, C.C.I.R.	As office 318
328	Office	Messengers	1 small desk, 1 table, 6 chairs
332	Office	Chief Technician and 2 operators (simult. interpret.)	1 small desk, 1 table, 4 chairs
334	Office	Counsellor, C.C.I.R.	1 desk, 2 visitors' armchairs, carpet, 1 table, bookcase
336	Office	Assistant to Counsellor, C.C.I.R.	1 desk, 1 typing table, 1 table, 2 chairs
338(outer)	Office	2 assistants to Secretary, Plenary Assembly	2 desks, 2 typing tables, 2 chairs, 1 table
338(inner)	Office	Secretary, Plenary Assembly	1 desk, carpet, bookcase, small table, 2 visitors' armchairs
340	Meeting Room	Small groups (consecutive interpretation)	Tables and chairs for 10–15 persons, blackboard
341	Office	Director, C.C.I.R.	1 desk, carpet, bookcase, small meeting table, 6 chairs, 2 visitors' armchairs
343	Office	Assistant to Director, C.C.I.R.	1 desk, 1 typing table, 2 armchairs
345	Office	Senior Counsellor, C.C.I.R.	As office 341
347	Office	Assistant to Senior Counsellor, C.C.I.R.	As office 343
362	Meeting Room	As room 340	As room 340

Note 1.— Wherever a *desk* is mentioned, this is considered to comprise an appropriate chair, desk-lamp, ashtray and wastepaper basket.

Note 2.— Wherever a *typing table* is mentioned, this is considered to comprise an appropriate chair and attached desk-lamp.

Note 3.— In all offices where it is not mentioned, approximately 12 feet of shelving (which would be in the form of bookcases in certain offices) per occupant should be available for documents, dictionaries, reference books, minor quantities of supplies, etc.

Note 4.— An additional 25 wastepaper baskets should be available, for use according to circumstances.

Note 5.— A supply of fresh water in carafes and glasses should be available each morning and afternoon in the interpreters' booths and on the Chairman's table in meeting rooms, when in use.

ANNEX C

OFFICE MACHINERY AND TECHNICAL EQUIPMENT REQUIRED FOR THE XIIth PLENARY ASSEMBLY OF THE C.C.I.R.

Item No.	Description	Quantity	Assignment
1	Typewriter (13″ carriage)	10	Typing Pool (English)
2	Typewriters (20″ carriage)	2	Typing Pool (English)
3*	Typewriters (various)		Geneva staff
4	Stencil machines (electric)	8	Stencil Room
5	Adding machine (electric, with recording tape)	1	Finance and Personnel Office
6	Photocopying machines (preferably SCM Coronastat 55)	2	One each in Offices 210 and 338

Note 1. — All typewriters to have *elite* characters.

Note 2. — The stencil machines should preferably be Gestetner (Model 360 or later), with vacuum ink feed and automatic inking.

* To be supplied by the C.C.I.R. (cf. § E.1).

ANNEX D

OFFICE AND OTHER SUPPLIES FOR THE XIIth PLENARY ASSEMBLY OF THE C.C.I.R.

Item No.	Description	Quantity
1*	Badges	500
2*	Identity cards	500
3*	Telegraph and telephone franchise cards	500
4*	Writing paper (airmail) with Plenary Assembly letter-head	3,000 sheets
5*	Envelopes for item 4	3,000
6	Stencils (Gestetner No. 62)	3,000
7	Stencils (Gestetner No. 6)	300
8	Stencil paper (white)	500,000 sheets

* To be furnished by inviting Administration free of charge (cf. § F.3)

Item No.	Description	Quantity
9	Stencil paper (pink)	250,000 sheets
10	Stencil paper (green)	80,000 sheets
11	Stencil paper (yellow)	50,000 sheets
12	Stencil paper (blue)	20,000 sheets
13	Stencil ink	As required for total amount of paper listed under items 8–12
14	Writing pads, white paper, approx. 50 sheets per pad, size approx. 8″ × 12″	500
15	Pencils, black, eraser-tipped	1,000
16	Typewriter paper, white, heavy, approx. 8″ × 12″	5,000 sheets
17	Typewriter paper, copy, approx. 8″ × 12″	10,000 sheets
18	Wrappers for used stencils	500
19	Envelopes for manuscripts of documents, approx. 9″ × 13″	500
20	Paper for photocopy machines	5,000 sheets

ANNEX E

OPINION No. 1*

TELEGRAPH AND TELEPHONE FRANKING PRIVILEGES FOR DELEGATES AND REPRESENTATIVES AT CONFERENCES AND MEETINGS OF THE I.T.U.

The Ordinary Administrative Telegraph and Telephone Conference, Geneva, 1958,

HAVING EXAMINED

the question of telegraph and telephone franking privileges for Delegates and Representatives at conferences and meetings of the I.T.U.,

DECLARES THE VIEW

that at conferences and meetings of the I.T.U. the following rules should be observed by Administrations and, as far as possible, by recognized private operating agencies, for the application of the franking privileges mentioned in Rule 26 of Chapter 9 of the General Regulations annexed to the Convention (Buenos Aires, 1952).

1. *Telegraph Franking Privileges*

(a) Private "Conference" telegrams shall, in principle, be exchanged between beneficiaries of franking privileges and their families;

(b) Delegates and representatives, the Secretary-General, the Director of the C.C.I.T.T., the Director and Vice-Director of the C.C.I.R., Members of the I.F.R.B., the Assistant Secretaries-General and Members of the Administrative Council may exchange free telegrams either with their Administrations or with the seat of the Union;

* Page 195 of the Telegraph Regulations (Geneva revision, 1958).
Page 70 of the Telephone Regulations (Geneva revision, 1958).

(c) Urgent and/or secret language "Conference" telegrams shall not be admitted. However, heads of delegations or their deputies and Members of the Administrative Council may exchange urgent and/or secret language telegrams with their Administrations.

2. *Telephone Franking Privileges*

§ 1. Telephone franking privileges shall be limited to the Administrations or recognized private operating agencies, of the countries which agree to apply them on a reciprocal basis. They shall consist of free telephone calls ("Conference calls") granted in the circumstances listed below.

§ 2. All delegates and representatives may exchange ordinary calls with their Administrations or recognized private operating agencies. Only heads of delegations or their official deputies are authorized to request urgent calls in relations where such calls are admitted.

§ 3. Members of the Administrative Council taking part as such in an I.T.U. meeting are authorized to request ordinary or urgent calls either with their Administrations or with the seat of the Union.

§ 4. The Secretary-General, the Members of the I.F.R.B., the Directors of the C.C.I.s, the Vice-Director of the C.C.I.R. and the Assistant Secretaries-General taking part in I.T.U. meetings away from Geneva are authorized to request ordinary calls with the seat of the Union on matters concerning the business of the Union.

§ 5. At I.T.U. conferences and meetings, delegates and representatives, members of the Administrative Council and I.T.U. officials (if the meetings are held away from Geneva) are authorized to request once a week an ordinary private call of a duration of six minutes or twice a week an ordinary private call of three minutes when their families live in the area where the caller normally works or in the immediate proximity.

§ 6. Apart from the calls mentioned in § 5 above, of which the duration is always limited, Administrations or recognized private operating agencies may, if there is congestion, limit the duration of other free calls to six minutes.

ANNEX III

BUDGETS AND ACTUAL EXPENDITURE C.C.I.R. MEETINGS

(1966–1969)

Year	Budget Sw. frs.	Expenditure Sw. frs.	Principal activities
1966	1 375 200.—	1 329 133.—	XIth Plenary Assembly (Oslo)
1967	180 000.—	93 000.—	Special Meeting of Study Group XIII, Seminar
1968	1 208 000.—	1 246 758.—	Interim Study Group Meetings
1969	800 000.— 400 000.—(1)	1 439 859.—(2)	Final Study Group Meetings

(1) Additional credits voted by the 24th Session of the Administrative Council (1969) for the use of Spanish.
(2) Provisional figure.

ANNEX IV

DRAFT RESOLUTION

RADIO STATISTICS

The C.C.I.R.,

CONSIDERING

(a) that, in pursuance of Administrative Council Resolution No. 252 (amended), a Yearbook of Telecommunication Statistics is now being prepared by the General Secretariat of the I.T.U.,

(b) that it is desirable that the radio statistics contained in the Yearbook should reflect the technical progress achieved in the field of radio and should be based on the most recent results of the studies undertaken by the C.C.I.R.,

(c) that these data should be assembled by the General Secretariat,

RESOLVES

1. that, during the next meetings of the C.C.I.R. Study Groups, each Study Group shall prepare a list of items in the field of radiocommunication, the statistics of which should be included in the I.T.U. Yearbook of Telecommunication Statistics;

2. that, at the end of these meetings, the Director of the C.C.I.R. shall send to the Secretary-General of the I.T.U. a list of the items to be included in the I.T.U. Yearbook of Telecommunication Statistics.

ADDENDUM TO REPORT BY THE DIRECTOR, C.C.I.R.

ORGANIZATION OF THE C.C.I.R. SECRETARIAT

During its 24th Session, the Administrative Council of the I.T.U. adopted certain features of a proposal by the Director of the C.C.I.R. relative to the organization of the Specialized Secretariat, subject to the establishment of job descriptions, to be approved in accordance with the normal procedure. As this procedure was not concluded until the middle of December 1969, it was not possible to include references to this subject in the main body of the Director's Report.

For the information of the Plenary Assembly, an organigram is attached, showing the structure of the Specialized Secretariat, as of 1 January 1970. The main features of this new structure are the separation of duties of the technical staff by service, a separate Department being established for overall systems studies.

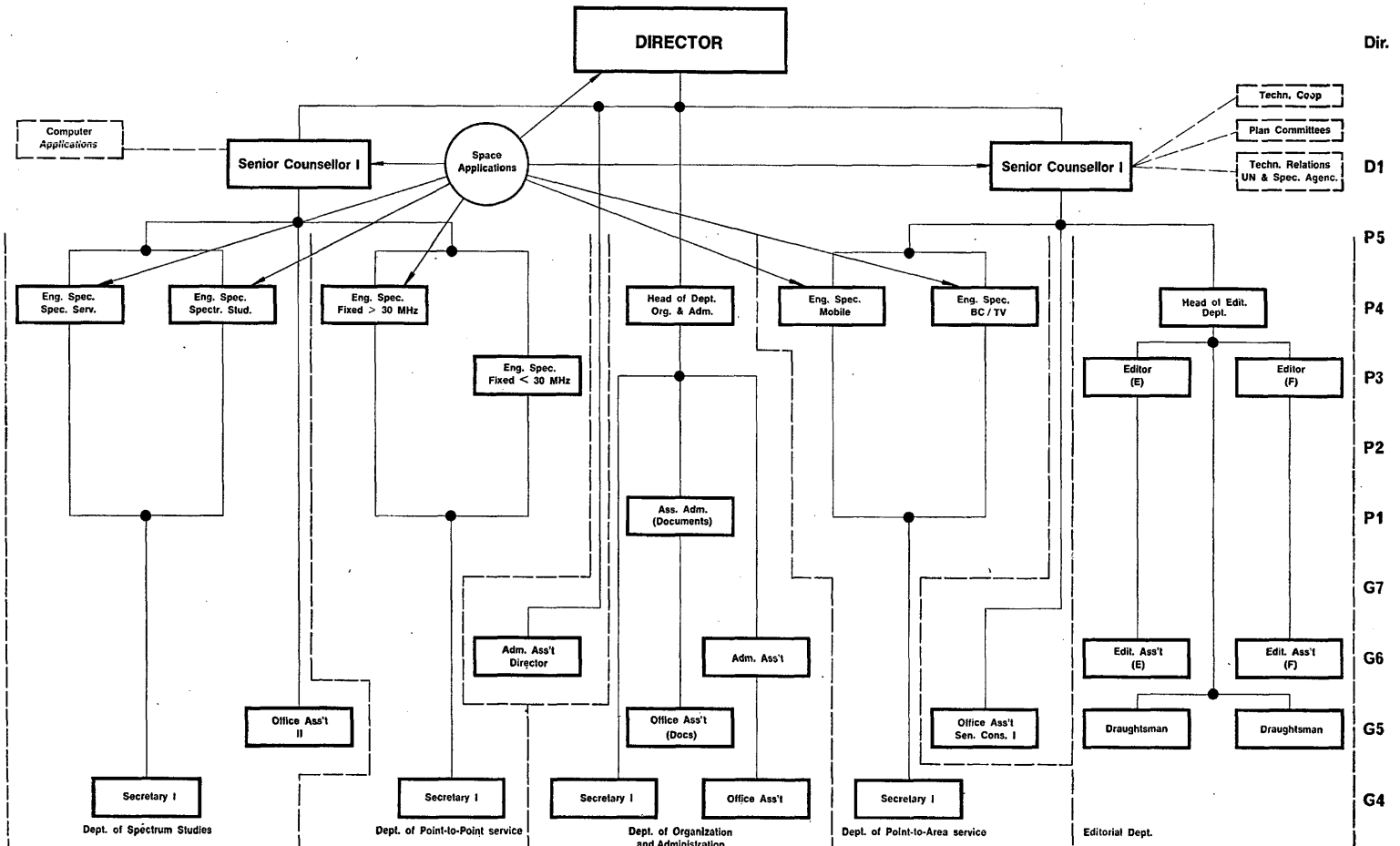
Another major change is the grouping of all editorial work in a separate Department, rather than, as up to the present, assigning editorial duties to the various engineers. This separation has become necessary due to the increasing amount of work resulting from C.C.I.R. Study Group meetings and the Plenary Assembly, as well as the work connected with the preparation of the various manuals to be published by the Secretariat, mainly in connection with Technical Cooperation work.

It should also be noted that work connected with space applications has been assigned to various posts, in conformity with the proposal expressed in the Report of International Working Party PLEN./1 (cf. Doc. PLEN./2).

The Director is of the opinion that, while this new structure of the Secretariat is an improvement on the previous arrangements, nevertheless certain further modifications are required to make it entirely satisfactory. He has therefore proposed to the forthcoming Session of the Administrative Council that:

(a) to emphasize the particular importance to the work of the C.C.I.R. of broadcasting and television (particularly in connection with space applications) and of the fixed services operating above 30 MHz, the holders of the posts responsible for these services be graded in P.5 rather than P.4;

(b) in view of the use of Spanish on an equal footing with English and French at C.C.I.R. meetings, the posts be established in the Editorial Department of a Spanish Editor (P.3) and an Editorial Assistant (G.6), in analogy with the staffing arrangements for English and French.


DIRECTOR
Dir.
Computer Applications
Senior Counsellor I
Space Applications
Senior Counsellor I
Techn. Coop
Plan Committees
Techn. Relations UN & Spec. Agenc.
D1
P5
P4
P3
P2
P1
G7
G6
G5
G4
Eng. Spec. Spec. Serv.
Eng. Spec. Spectr. Stud.
Eng. Spec. Fixed > 30 MHz
Eng. Spec. Fixed < 30 MHz
Head of Dept. Org. & Adm.
Eng. Spec. Mobile
Eng. Spec. BC / TV
Head of Edit. Dept.
Editor (E)
Editor (F)
Ass. Adm. (Documents)
Adm. Ass't Director
Adm. Ass't
Edit. Ass't (E)
Edit. Ass't (F)
Office Ass't II
Office Ass't (Docs)
Office Ass't Sen. Cons. I
Draughtsman
Draughtsman
Secretary I
Secretary I
Secretary I
Office Ass't
Secretary I
Dept. of Spectrum Studies
Dept. of Point-to-Point service
Dept. of Organization and Administration
Dept. of Point-to-Area service
Editorial Dept.

REPORT BY THE BUDGET CONTROL COMMITTEE OF THE XIITH PLENARY ASSEMBLY OF THE C.C.I.R. (NEW DELHI, 1970)

1. The Budget Control Committee following the procedure established by the Administrative Council during its 24th Session decided not to constitute a Working Group to examine the accounts and held only one meeting during the XIIth Plenary Assembly of the C.C.I.R. at New Delhi. The Committee considered the following points:

1.1 Agreement between the Government of India and the International Telecommunication Union concerning the organization of the XIIth Plenary Assembly of the C.C.I.R., New Delhi, 1970. (The text of this Agreement is given in Annex II to Doc. PLEN./1.)

1.2 Budget and estimated expenditure of the XIIth Plenary Assembly of the C.C.I.R., New Delhi, 1970 (Appendix I). Background: budgets, accounts and estimated expenditure of the C.C.I.R. meetings for the period 1966–1969 (Doc. PLEN./1, § 5, page 11 and Annex III, page 77 of the same).

2. Agreement with the Government of India

2.1 Under its terms of reference in the General Regulations annexed to the International Telecommunication Convention, Chapter 9, Rule 5, the Budget Control Committee has to determine the organization and the facilities available to the delegates at a Plenary Assembly. The Committee accordingly studied the Agreement (see terms in Annex II to Doc. PLEN./1) concluded between the Government of India and the International Telecommunication Union to facilitate organization of the XIIth Plenary Assembly at New Delhi.

2.2 The Budget Control Committee considers that the premises and other facilities which the Indian Government made available to participants, in accordance with Resolution No. 19 of the Plenipotentiary Conference (Montreux, 1965), have been satisfactory in all respects. It is therefore recommended that the Plenary Assembly thank the Government of India for all the facilities it made available and which greatly contributed to ensuring the efficient working of the XIIth Plenary Assembly.

3. Budget and estimated expenditure of the XIIth Plenary Assembly of the C.C.I.R., New Delhi, 1970

3.1 At its 24th Session in May 1969, the Administrative Council of the I.T.U. passed Resolution No. 641 approving the budgets of the Union for the financial year 1970, which included the budget of expenditure for the C.C.I.R. XIIth Plenary Assembly. The credits authorized by the Council for 1970, under Additional Protocol I to the International Telecommunication Convention (Montreux, 1965), amount to 980,000 Swiss francs for expenditure on the XIIth Plenary Assembly of the C.C.I.R.

3.2 Table I annexed to this Report relates to the expenditure of the XIIth Plenary Assembly of the C.C.I.R. The Finance Committee noted the position of the accounts as on 31 January 1970, which covered actual expenditure including commitments and estimated expenditure for the remainder of the period. The estimated total expenditure was 956,497.75 Swiss francs, which leaves a saving of 23,502.25 Swiss francs.

3.3 The Budget Control Committee considered that the provisional estimate of a total expenditure of 956,497.75 Swiss francs could be approved, on the understanding that every attempt would continue to be made to ensure all possible economies.

3.4 A preliminary account of the expenditure of the XIIth Plenary Assembly of the C.C.I.R. will be submitted to the 25th Session of the Administrative Council in 1970. The final accounts of the XIIth Plenary Assembly of the C.C.I.R. after audit by the external auditors will be submitted for approval of the Administrative Council at its 26th Session in 1971, following the normal procedure for I.T.U. accounts.

4. Budgets, accounts and estimated expenditure of C.C.I.R. meetings during the period 1966-1969. Financial statement

4.1 The accounts for 1966, 1967 and 1968 were submitted to the Administrative Council for consideration at its meetings in 1967, 1968 and 1969 respectively and were approved (see its Resolutions Nos. 605, 623 and 642). The accounts for 1969 will be considered by the Administrative Council at its 25th Session in 1970. The Committee noted that expenditures for 1969 had exceeded the credits entered in the budgets; it was pointed out that this excess was essentially due to increases in personnel expenditure.

4.2 The Committee noted that at its 24th Session the Administrative Council approved additional credits of 400,000 Swiss francs to cover the cost of Spanish being used as a working language at the final Study Group meetings in 1969.

4.3 The following estimates of expenditure for C.C.I.R. meetings were approved for submission to the Administrative Council in accordance with Chapter 12, Number 781 of the General Regulations annexed to the International Telecommunication Convention, Montreux 1965:

1971	1,600,000.— Swiss francs
1972	800,000.— Swiss francs
1973	3,000,000.— Swiss francs

Chairman :

L. BARAJAS

APPENDIX I

Budget and estimated expenditure of the XIIth Plenary Assembly of the C.C.I.R., New Delhi, 1970

Items	Budget approved by the Administrative Council	Actual expenditure and commitments	Estimated expenditure	Total
Staff				
8.101 — Salaries and connected expenditure	346,000.—(1)	282,166.75	66,600.—	348,766.75
8.102 — Travel costs	444,000.—	457,820.—	5,000.—	462,820.—
8.103 — Insurance	10,000.—	—	6,000.—	6,000.—
Premises and Equipment				
8.104 — Premises, machines, furniture	75,000.—	16,603.80	30,000.—	46,603.80
8.105 — Document production	50,000.—	11,800.—	35,000.—	46,800.—
8.106 — Office supplies and expenses	50,000.—	15,835.—	25,000.—	40,835.—
8.107 — Simul. interpr. and other tech. installations	—	—	—	—
8.108 — Unforeseen	5,000.—	672.20	4,000.—	4,672.20
Total (Swiss francs)	980,000.—	784,897.75	171,600.—	956,497.75

(1) As a result of an increase of salary scales and overtime rates from 1 January 1970 the budget provision under this heading will be increased by about 20,000.— Swiss francs. Formal approval of the Administrative Council for this additional credit will be sought at its 25th Session in 1970.

APPENDIX II

Total expenditure of the XIth Plenary Assembly of the C.C.I.R., Oslo, 1966

	Preparatory work	Plenary Assembly	Total
Administrative Services	31,080.70	205,455.40	236,536.10
Language Services	130,183.75	756,983.35	887,167.10
Reproduction Services	22,888.30	95,970.60	118,858.90
Insurance	1,377.85	8,714.05	10,091.90
Premises, furniture, machines	4,360.—	114,609.35	118,969.35
Document production	31,380.90	82,054.05	113,434.95
Office supplies and expenses	51,865.90	64,996.69	116,862.59
Simultaneous interpr. and other technical equipment	—	—	—
Unforeseen	—	349.85	349.85
Total (Swiss francs)	273,137.40	1,329,133.34	1,602,270.74

APPENDIX III

Total estimated expenditure of the XIIth Plenary Assembly of the C.C.I.R., New Delhi, 1970 and expenditure of the Final Study Group Meetings in 1969

	Final Study Group meetings 1969	XIIth Plenary Assembly (estimated costs)	Total
Salaries and connected expenditure	1 203,620.—	348,766.75	2,015,206.75
Travel costs		462,820.—	
Insurance	24,064.15	6,000.—	30,064.15
Premises, furniture, machines	70,253.90	46,603.80	116,857.70
Document production	207,875.65	46,800.—	254,675.65
Office supplies and expenses	193,750.95	40,835.—	234,585.95
Simultaneous interpr. and other technical equipment	—	—	—
Unforeseen	2,234.70	4,672.20	6,906.90
Total (Swiss francs)	1,701,799.35	956,497.75	2,658.297.10

TECHNICAL COOPERATION COMMITTEE

REPORT BY THE CHAIRMAN: Mr. V.M. GOGTE (INDIA)

The First Plenary Meeting held on 21 January 1970 designated Mr. V.M. Gogte (India) as Chairman of the Technical Cooperation Committee of the XIIth Plenary Assembly of the C.C.I.R. The Technical Cooperation Committee held five meetings on the following dates: 30.1.1970, 4.2.1970, 5.2.1970, 6.2.1970, and 9.2.1970.

The Committee took note of Document PLEN./7 issued by the General Secretariat and considered the following documents: PLEN./8, PLEN./35, PLEN./44, PLEN./45, PLEN./46 and PLEN./48, along with Resolution 33 adopted by the XIth Plenary Assembly of the C.C.I.R. at Oslo.

During the discussions that followed in the meetings of the Committee, Mr. Mili, Secretary-General of the I.T.U., gave a résumé of the work done by the Union in the field of technical cooperation and outlined the tasks before the Technical Cooperation Department of the I.T.U. for the new decade which is called the Second Development Decade. Mr. Mili indicated that the I.T.U. has plans to double its activity of the technical cooperation during the next 10 years and urged the Members of the Assembly to make available more competent experts for working in the new or developing countries. Mr. Mili's statement on this subject was very warmly welcomed by the various delegates, who had made queries on certain points to which Mr. Mili replied.

While considering the participation of developing countries in the work of the C.C.I.R., it was felt that it would be useful to the developing countries to have information from developed countries on their organizational structure for coordinating C.C.I.R. studies at national level. It was also thought that it would be helpful if this information were accompanied by information on organizational structure of telecommunications in the various countries.

After a considerable discussion, it was decided that the Director, C.C.I.R., should obtain from the Members of the Union the above information, assemble, edit and transmit it expeditiously to the Members of the Union. Since the time element was important, the Director, C.C.I.R., was further requested to distribute the information in two or three parts as ready.

In order to enable the new or developing countries to participate in the interim and final meetings of the Study Groups, it was decided that the Director, C.C.I.R., should bring the view of the Plenary Assembly to the notice of the Administrative Council so that the Council would make every effort to afford economic aid to the new or developing countries to facilitate their participation by means of:

— credits in the yearly budget of the Union;

— asking the U.N.D.P. for such credits; or

— a combination of both sources.

Establishment of an International Working Party

In order to study the technical and economic factors influencing the selection of broadcasting satellite systems, it was decided to set up an International Working Party for which Resolution 38 contained in Doc. PLEN./1004 was drawn up by the Committee. The following countries have expressed a desire to participate in the working of the International Working Party, the Chairman of which is to be elected by the Plenary Assembly: Argentina, Australia, Brazil, Canada, U.S.A., France, India, Italy, Japan, Malaysia, New Zealand, Pakistan, Federal Republic of Germany, United Kingdom, Sweden and the Union of Soviet Socialist Republics.

In order to make the best possible use of the staff of the C.C.I.R. Secretariat during the slack period of their work, it was decided that the services of appropriately qualified engineers of the C.C.I.R. Specialized Secretariat may be used on short-term basis for technical

assistance missions, etc. The Committee drafted the Resolution on this subject which appears in Doc. PLEN./1005.

Resolution 33 on Technical Cooperation, adopted by the XIth Plenary Assembly of the C.C.I.R. at Oslo, was further revised and a new Resolution, appearing in Doc. PLEN./1008, was proposed to the Plenary Assembly. While adopting the Resolution, the Committee particularly felt that the work of preparation of handbooks should be taken in hand by the International Working Parties of the various Study Groups on an urgent basis and that the Chairman of the Study Groups concerned should indicate the progress of the work done during the next interim and final Study Group Meetings.

In order to commence the work of these International Working Parties, it is necessary to establish them during the present Plenary Assembly Meeting. As such, it is desirable that the Chairmen of the concerned Study Groups, in consultation with the Director, C.C.I.R., may take suitable steps in the matter.

I would now like to request the Plenary Assembly to adopt the three Resolutions appearing in Docs. PLEN./1004, PLEN./1005 and PLEN./1008. I would also request the Director, C.C.I.R., to take suitable action on the various points which are brought out in the above Report so that the developing countries would be reassured by the actions taken by the C.C.I.R.

I am very grateful to Mr. Mili for his guidance in the working of the Committee as well as to all the participants for making very constructive suggestions and for cooperating in the work of the Committee.

V.M. GOGTE

REPORT BY THE DRAFTING COMMITTEE

1. Introduction

At its 1st meeting, the Plenary Assembly decided to set up a Drafting Committee and asked the French delegation to take charge of it (see Doc. PLEN./11, § 6). In the light of the agenda of the XIIth Plenary Assembly (which did not provide for Study Group meetings) and of the work done in September–October 1969 by the provisional Drafting Committee appointed during the final meetings of the Study Groups, the work of the Drafting Committee comprised:

1.1 Consideration of amendments to be made to the texts in the pink documents prepared by the Study Groups, taking into account the amendments approved when those pink documents were examined by the Plenary Assembly.

1.2 Consideration of documents prepared by the Organization and Technical Cooperation Committees, prior to their examination by the Plenary Assembly.

2. Composition

The Drafting Committee was composed of the following members:

2.1 *For the French language*

Mr. M. THUE (France), Chairman, and Mr. A. CHASSIGNOL (France), Deputy,
Mr. G. COURTEMANCHE (Canada),
Mr. P. GUILLOT, assisted by Miss P. MERLET (C.C.I.R.).

2.2 *For the English language*

Mr. G. MILLINGTON (United Kingdom) or Mr. P.N. PARKER (United Kingdom),
Mr. M. CHANDRA* (India), Mr. P.C. JAUHARI* (India),
Mr. M.N. KEKRE* (India),
Mr. A.W. BOYLE, assisted by Miss J. RICKINSON or
Miss L. PARSLEY (C.C.I.R.).

2.3 *For the Spanish language*

Mr. B.A. DURAN (Spain),
Mr. J. RODRIGUEZ GALAN* (Argentina),
Mr. E. LURASCHI (I.T.U.).

2.4 *For the Study Group concerned*

— one or two experts from the Study Group, often including the Chairman,
— the engineer of the C.C.I.R. Secretariat concerned with the work of the Study Group.

3. Working principles

The meetings were held as soon as possible after the consideration of the relevant documents by the Plenary Assembly.

With regard to changes of Study Group texts (§ 1.1), a document was prepared for each Study Group, giving a list of the substantive amendments introduced by the Plenary Assembly; detailed drafting changes were entered in the master copy which will be used for editing the documents.

Generally speaking, documents were examined in accordance with the same criteria as those set out in Doc. PLEN./6, § 4.

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* On a part-time basis.

4. Number of meetings and documents issued

The table below gives the dates of meetings of the Drafting Committee and shows the documents prepared for each meeting.

Date	Time	Documents
22.01	12.30	V/1042
	17.30	VI/1069
26.01	08.45	IX/1069
30.01	09.30	XI/1051
	11.15	X/1063
	14.30	IV/1091
	17.00	CMTT/1046
03.02	09.30	XIII/1037
		PLEN./1001
04.02	09.30	III/1044
	10.30	VII/1035
	11.30	VIII/1031
	16.30	PLEN./1002–1003
05.02	09.30	I/1024
	10.30	II/1026
09.02	14.30	XII/1009
		XIV/1009
		Add.1 to IV/1091
	17.30	PLEN./1004–1005
10.02	09.30	PLEN./1008
		Add.1 to XI/1051
	14.30	PLEN./1009–1010

5. Lessons learned

In working in this way for the first time, the Drafting Committee ran into some operational difficulties which can be avoided at a future Plenary Assembly, if the following considerations are taken into account.

5.1 With regard to changes in Study Group texts (§ 1.1), the members of the Drafting Committee must attend the meetings of the Plenary Assembly where these amendments are decided on; the programme should therefore provide for periods without Plenary Assembly meetings. It would be desirable never to provide for more than two consecutive half-days for the consideration of Study Group documents and for these meetings to be followed by at least one half-day without a Plenary Assembly meeting, during which the Drafting Committee and other Committees can meet.

5.2 With regard to texts emanating from Plenary Assembly Committees (§ 1.2), each text must be submitted to the Drafting Committee by the Chairman or Rapporteur of the Committee which prepared it, in the form in which it was adopted by the Committee, i.e., with all the amendments made to the original draft.

5.3 In the premises made available to the Plenary Assembly, provision should be made for a well-lighted room for the Drafting Committee, accommodating about fifteen people and situated as near as possible to the rooms where reference documents are filed. It is essential to have at hand all the documents of a Study Group (and sometimes those of other Study Groups) to be able to insert properly the amendments made to some of these documents.

6. Conclusions

Most of the meetings of the Drafting Committee were devoted to new emergency tasks (§ 1.1), owing to the new organization of the Plenary Assembly.

These tasks were so organized as to:

— make available to everyone, especially delegates, the documents showing the substantive changes made in texts prepared by the Study Groups,

— prepare, with the C.C.I.R. Secretariat, a set of reference documents containing the minimum of drafting errors, with a view to the subsequent editing of documents approved by the Plenary Assembly.

This work was performed successfully thanks to:

— the constant collaboration of a small group of competent and dedicated people (see §§ 2.1, 2.2 and 2.3),

— the effective participation of the Chairmen of the Study Groups, who made a point of either attending the relevant meetings themselves or of being represented by a competent expert,

— the equally efficient participation of the engineers of the C.C.I.R. Secretariat concerned with the work of the various Study Groups.

This team work seems to be an essential condition of the effective operation of the Drafting Committee.

RESOLUTIONS OF A GENERAL NATURE

RESOLUTION 24-2

ORGANIZATION OF C.C.I.R. WORK

(1959 – 1963 – 1966 – 1970)

The C.C.I.R.,

CONSIDERING

(a) the importance of using the period of the Plenary Assembly as efficiently as possible;

(b) the provisions of Chapters 10 to 19 of the General Regulations annexed to the International Telecommunication Convention, particularly No. 793 advocating work by correspondence;

(c) the experience acquired at meetings of Study Groups and Plenary Assemblies;

(d) the need to have a number of Study Group* meetings, consistent with effective and economical working;

(e) the need for uniform final texts, having precisely the same meaning in the different working languages of the I.T.U. and easily comprehensible to all users;

(f) the desirability of continuing the efforts to spread the workload of participants and the Secretariat as evenly as possible over the interval between Plenary Assemblies;

UNANIMOUSLY DECIDES

1. Contributions to the work of the C.C.I.R.

To secure economy of both time and money in the reproduction of contributions for C.C.I.R. meetings, contributions should be prepared and presented in accordance with the following points:

1.1 *General instructions*

1.1.1 each contribution shall be dated and shall clearly indicate the Study Group for which it is intended and the C.C.I.R. text or texts to which it refers;

1.1.2 each contribution shall deal, as far as possible, with only one C.C.I.R. text (Question, Study Programme, etc.) or group of related texts (e.g. Question and related Report);

1.1.3 when it is possible to refer simply to the number or paragraph of an existing text or to a key phrase, lengthy quotations should be avoided; however the clarity of the text should not be affected and every contribution should be comprehensible in itself;

1.1.4 as a general rule, no contribution reproducing articles published in the technical press, or of purely theoretical interest or having no direct bearing on C.C.I.R. texts should be submitted except in the form of a very short abstract with bibliographical reference;

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* The term "Study Group" in this Resolution is considered to apply also to those Joint Study Groups which are set up in conformity with the General Regulations annexed to the International Telecommunication Convention and which are administered by the C.C.I.R.

1.1.5 contributions should be sent to the Chairman and Vice-Chairman of each Study Group concerned, and at the same time, in five copies, to the Director of the C.C.I.R. for numbering, translation, reproduction and distribution. The Director should send a numbered copy of each contribution to the Chairman and Vice-Chairman of each Study Group concerned as soon as possible;

1.1.6 contributions must be submitted by participants at least four months before the opening of the meeting at which they will be considered. Participants* should, whenever possible, endeavour to send in their contributions well before the last date for submission to enable the maximum amount of work to be done by correspondence and to spread the work of translation and reproduction;

1.1.7 the Director of the C.C.I.R. shall distribute the contributions received to participants in the work of the relevant Study Group as soon as possible after receipt, allowing for translation and reproduction so as to be delivered to them not later than one month before the opening of the meeting to which they are directed. Without making any firm commitment, the Director of the C.C.I.R. will endeavour to ensure, by the same date, the distribution of contributions which have been delayed exceptionally, provided they are received not later than thirty days after the time limit mentioned in § 1.1.6;

1.1.8 exceptionally, participants may submit contributions which they consider essential, and which cannot be submitted by the above-mentioned time limit, up to the opening date of the meeting at which they are to be examined. Notice of these contributions, which must be short, must be given at least four months prior to the opening of the meeting; those which can be published and distributed by the C.C.I.R. Secretariat before the meeting will be placed on the agenda of the first session of the meeting and will be considered only if the Study Group or Assembly concerned so decides;

1.1.9 the Director of the C.C.I.R. will distribute to the participants in the work of any Study Group, not represented at a meeting of that Study Group, all white documents published during that meeting.

1.2 *Texts*

1.2.1 texts, which should not exceed 2500 words (five pages) in length, shall be presented in one of the official languages of the Union, typewritten, preferably in double-spacing and on one side of paper only;

1.2.2 the restrictions on the length of the texts shall not apply to Reports of the Director of the C.C.I.R., of the Chairmen of the Study Groups or Interim Working Parties;

1.2.3 mathematical formulae shall be included only when they are necessary for explanation of the textual matter; a brief indication may be given of how they were obtained, but their detailed derivation should be avoided;

1.2.4 whenever possible, contributions should be presented as C.C.I.R. new texts or modifications to existing texts; in this case contributions should set forth clearly those portions of the text which should be modified. The above-mentioned texts should be clearly separated from those parts of the contributions justifying the proposals;

1.2.5 in any case, contributions, especially draft Reports, should as far as possible be of a summary nature, setting forth essential information on methods directly relating to Questions and Study Programmes.

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* According to Chapter 11 of the General Regulations annexed to the International Telecommunication Convention Administrations of all Members and Associate Members are entitled to participate, as well as recognized private operating agencies, international organizations and scientific or industrial organizations.

1.3 *Figures*

1.3.1 a contribution should only exceptionally include more than three pages of figures. In the interest of economy, the reproduction of photographs or other half-tone or colour illustrations should be avoided;

1.3.2 since C.C.I.R. documents are reproduced in several languages, no textual matter should appear on the figures, with the exception of standard abbreviations which are clearly understandable in all three working languages. Should an explanatory text or reference to individual curves or portion of a figure be necessary, it should be given separately;

1.3.3 the overall dimensions of a figure should not exceed 17 × 25 cm, so that it may be reproduced on paper of the standard size used by the C.C.I.R.

1.4 *Non-standard documents*

The Director of the C.C.I.R. may refuse to accept a document which does not comply with the instructions in §§ 1.1, 1.2 and 1.3 of this Resolution, after having consulted and obtained the approval of the Chairmen of the Study Groups to which the document is directed.

2. Work of the Study Groups

2.1 *Work by correspondence*

2.1.1 the attention of participants, Chairmen and the Director of the C.C.I.R. is especially drawn to No. 793 of the General Regulations annexed to the International Telecommunication Convention, stipulating that, so far as possible, the Questions entrusted to the Study Groups should be dealt with by correspondence;

2.1.2 bearing in mind §§ 1.1.6, 1.1.7 and 1.1.8 above, participants shall examine the contributions received as promptly as possible and shall forward their comments to the Chairmen and Vice-Chairmen concerned and to the Director of the C.C.I.R.;

2.1.3 following this exchange of views, à document on the subject taking into account the received comments, may be prepared by the Chairman, the Vice-Chairman or an Interim Working Party;

2.1.4 the Director of the C.C.I.R., Chairmen and participants shall take appropriate action to expedite the circulation of documents, bearing in mind that a draft must be ready four months before the meeting at which it is to be examined.

2.2 *Interim Working Parties*

2.2.1 to expedite the work of the Study Groups, it is recommended that, where appropriate, Interim Working Parties should be set up, either by the Study Groups during their meeting or, in the interval between meetings, by the Chairmen in consultation with the Director of the C.C.I.R. Each of these Working Parties shall have clearly defined terms of reference forming part of the terms of reference of the relevant Study Group, which shall be brought to the notice of participants in the work of the Study Groups concerned together with the names and addresses of the Chairman and members of the Interim Working Party;

2.2.2 such Working Parties, which may be set up by one or, exceptionally, more Study Groups, shall in principle function until the next meeting of the Study Groups concerned. Their existence may, however, be extended by the competent Study Group at the request of the Chairman and in consultation with the Director of the C.C.I.R.;

2.2.3 should an Interim Working Party be set up by several Study Groups, it should be clearly stated which is the Study Group entrusted with the coordination of its work

and the consideration of its report, taking into account the comments of the other Study Groups concerned;

2.2.4 the Interim Working Parties shall normally work by correspondence; in consequence, the principles set forth in § 2.1 above, particularly with regard to the time limits for the preparation of texts, should be borne in mind;

2.2.5 however, an Interim Working Party may, exceptionally, meet if this is considered necessary by its Chairman, by the Chairmen of the Study Groups concerned and by the Director of the C.C.I.R.;

2.2.6 contributions for an Interim Working Party shall be sent to the Working Party Chairman, with copies to the Chairmen and Vice-Chairmen of the Study Groups concerned and to the Director of the C.C.I.R. for translation and distribution to the members of the Interim Working Party;

2.2.7 the report of an Interim Working Party will be transmitted by its Chairman, as normal contributions, as indicated in § 1.1.5 above;

2.2.8 Interim Working Parties shall be designated as in the following examples: Interim Working Party 1/1 (Interim Working Party 1 of Study Group 1); Interim Working Party 4-9/1 (Interim Working Party 1 of Study Groups 4 and 9).

2.3 *Interim meetings of Study Groups*

2.3.1 the Plenary Assembly shall issue directives concerning the Study Group meetings it considers necessary;

2.3.2 in addition, should a Chairman, after the Plenary Assembly, consider that one or more meetings of his Study Group are required, for which no provision was made by the Plenary Assembly, he may propose that his Study Group meet in accordance with No. 795 of the General Regulations annexed to the International Telecommunication Convention;

2.3.3 the subjects to be discussed at these meetings are those which could not be dealt with by correspondence;

2.3.4 the interim meetings of Study Groups shall normally take place during the period which begins twelve months after the close of one Plenary Assembly and terminates twelve months prior to the opening of the next Plenary Assembly;

2.3.5 to reduce the amount of travel and to facilitate consecutive or concurrent meetings of Study Groups, the Director of the C.C.I.R., in agreement with the Chairmen, taking into account considering *(f)* above, shall draw up the general programme of meetings, showing which Study Groups shall meet in the same place during the same period.

2.4 *Final meetings of Study Groups*

2.4.1 in order to submit to the Plenary Assembly texts that are as up-to-date as possible, each Study Group shall hold a final meeting from five to two months prior to the opening of the Plenary Assembly, unless its Chairman, after carrying out the consultations specified in No. 795 of the General Regulations annexed to the International Telecommunication Convention, considers such a meeting to be unnecessary*.

2.4.2 final meetings shall be organized in blocks of Study Groups; these blocks shall meet consecutively in the same place;

2.4.3 this grouping of Study Groups and the duration of their meetings, shall be determined by the Director of the C.C.I.R. in agreement with the Chairmen concerned, bearing in mind the workload to be borne by the Secretariat and the need for the most efficient and economical organization;

* This procedure is introduced on a provisional and trial basis until the XIIIth Plenary Assembly.

2.4.4 at the final meetings, the Editorial Committee, of which the Chairman and Vice-Chairman remain in office in accordance with § 3.2.7 hereafter, shall ensure that the final proposals of all Study Groups meet the conditions laid down in considering *(e)* above, for presentation for approval to the Plenary Assembly.

2.5 *Preparatory documentation for the meetings of Study Groups*

The preparatory documentation for a Study Group meeting shall comprise, in addition to the official texts of the C.C.I.R.:

2.5.1 any directives issued by the Plenary Assembly with respect to the Study Group;

2.5.2 the contributions to be considered at the meeting;

2.5.3 the Chairman's Report, summarizing the conclusions of any work carried out by correspondence and preparing the work to be accomplished at the meeting; this report must reach the Director of the C.C.I.R. at least two months before the opening of the meeting;

2.5.4 the conclusions of the preceding meeting, unless none has been held since the Plenary Assembly.

2.6 *Organization of the meetings of Study Groups*

2.6.1 the work of each Study Group shall be organized by the Study Group itself on the basis of proposals by its Chairman;

2.6.2 in principle, the work of a Study Group may, if necessary, be divided among a number of Working Groups, which may themselves set up Sub-Groups;

2.6.3 in order to expedite the organization of the Study Group work, its Chairman should endeavour, by correspondence, to prepare a draft of this organization, comprising the division into Working Groups and Sub-Groups;

2.6.4 Working Groups need not keep formal summary records, but shall make a final report; Sub-Groups shall make a final report only if the nature of their work so demands;

2.6.5 these Working Groups and Sub-Groups shall be designated as in the following example: Working Group 9-A (Working Group A of Study Group 9); Sub-Group 9-A-1 (Sub-Group 1 of Working Group A of Study Group 9);

2.6.6 each Study Group shall set up a small editorial group to ensure that the technical vocabulary used is correct; in addition, it also ensures that the form of the texts to be approved by the Study Group (see § 2.7.2) meets the conditions laid down in considering *(e)* above. This editorial group may assist the Editorial Committee mentioned in § 2.4.4.

2.7 *Conclusions of the meetings of Study Groups*

2.7.1 during its meetings the Study Group shall prepare the draft texts in one or more of the categories mentioned in § 5.1;

2.7.2 each Study Group shall approve draft Study Programmes derived from existing Questions as well as draft Reports derived from these Questions or Study Programmes; these texts shall however be submitted to the Plenary Assembly for information and possible revision.

2.7.3 The conclusions of the Study Group meetings should comprise the following:

2.7.3.1 the Chairman's Report of the meeting, specifying the major problems under study, the status of all texts for which the Study Group is responsible (whether they have been cancelled, maintained, amended, etc.) and a section mentioning the problems which are of special interest to the new or developinng coutries;

2.7.3.2 a list of the Study Programmes and of the Reports approved by the Study Group in accordance with § 2.7.2;

2.7.3.3 the draft Recommendations, Opinions, Resolutions, the draft Questions and the draft Study Programmes derived from these Questions prepared or amended during the meeting;

2.7.3.4 other texts retained by the express decision of the Study Group because of their relevance for subsequent meetings;

2.7.3.5 a list of all persons participating in the meeting;

2.7.3.6 a list of documents of the meeting;

2.7.4 the conclusions of interim meetings must be published in a booklet within 3 months following the meeting and shall be submitted to the next meeting of the Study Group;

2.7.5 the conclusions of final meetings will form the basis for the preparatory documentation to be submitted to the Plenary Assembly;

2.7.6 in the event that a final meeting is not held, the conclusions of the interim meeting will form the basis for the preparatory documentation to be submitted to the Plenary Assembly;

2.7.7 texts indicated in § 2.7.2 shall be reviewed by the Editorial Group of the Study Group and shall be published in the C.C.I.R. books following the Plenary Assembly as indicated in § 3.3 in the case of final meetings, or as soon as possible as supplements to these books in the case of interim meetings.

3. Plenary Assembly

3.1 *Preparatory documentation*

3.1.1 The preparatory documentation for the Plenary Assembly shall comprise:

3.1.1.1 the draft Recommendations, Opinions, Resolutions, Questions and Study Programmes derived from these Questions* adopted or amended at the last Study Group meeting after consideration by the Editorial Committee;

3.1.1.2 the final reports by the Chairmen of all Study Groups (see § 2.7.3.1) issued after the last meeting of their respective Study Groups;

3.1.1.3 Reports and Study Programmes approved by the Study Groups (see § 2.7.2) should be annexed to the Chairmen's final reports;

3.1.1.4 the Report by the Director of the C.C.I.R. (see Nos. 780 and 804 of the General Regulations, annexed to the International Telecommunication Convention, Montreux, 1965);

3.1.1.5 contributions of direct interest to the Plenary Assembly and dealing with such questions as organization, technical cooperation, etc.

3.2 *Organization of the work of the Plenary Assembly*

3.2.1 the Plenary Assembly shall carry out the duties assigned to it by the International Telecommunication Convention (Chapter 12 of the General Regulations, Montreux 1965);

3.2.2 in particular, it shall consider and approve, after amendment if necessary, or reject all draft Recommendations, Opinions, Resolutions, Questions and Study Programmes derived from them*;

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* Any draft Study Programme derived from a draft Question is approved *ipso facto* if the Question (or part of the Question) from which it derives, is approved by the Plenary Assembly, otherwise it falls.

3.2.3 the Plenary Assembly shall give special attention to the final Reports of the Chairmen and shall, where necessary, give directives on the terms of reference and on the assignment of Questions to the Study Groups, with due regard to the status of the work (see § 2.3.1);

3.2.4 the Plenary Assembly shall also give special attention to problems of particular interest to new or developing countries. (See C.C.I.R. Resolution 33-1);

3.2.5 the work of the Plenary Assembly shall be organized by the Assembly itself, on the basis of its Chairman's proposals, in agreement with the Director of the C.C.I.R. and in accordance with the Rules of Procedure contained in Chapter 9 of the General Regulations annexed to the International Telecommunication Convention;

3.2.6 the special committees set up by the Plenary Assembly, such as the Organization Committee, the Technical Cooperation Committee, the Budget Control Committee, and the Editorial Committee, shall meet during the Plenary Assembly;

3.2.7 the Editorial Committee shall be responsible for the form of any texts prepared during the meeting and of any amendments made by the Plenary Assembly to texts. This Committee shall also be responsible between Plenary Assemblies for considering texts prepared for adoption by the next Plenary Assembly. For this purpose, the Chairman and the Vice-Chairman of the Editorial Committee shall remain in office until the next Plenary Assembly;

3.2.8 the Plenary Assembly may set up any Interim Working Party which is considered necessary.

3.3 *Texts published after the close of a Plenary Assembly*

The conclusions of the Plenary Assembly and the valid Study Programmes and Reports shall be published if possible within six months and in any case within one year from the close of the Plenary Assembly. The printed texts shall be divided into sections and each section shall contain the introduction by the Chairman or Chairmen (see C.C.I.R. Resolution 33-1), the Recommendations, Reports, Resolutions and Opinions prepared by the appropriate Study Group(s) together with the Questions and Study Programmes assigned to each Study Group. Other pertinent matters of general interest, such as Resolutions on organizational matters, the lists of participants with their postal addresses, the minutes of plenary meetings, etc., shall be published in a separate volume.

4. Meetings of Study Group Chairmen

At the beginning and if necessary before the close of each Plenary Assembly and each block of Study Group meetings, the Director of the C.C.I.R., shall call a meeting of the Chairmen and Vice-Chairmen present. The Director shall serve as Chairman of this meeting which shall ensure the most effective coordination of inter-Study Group work.

5. C.C.I.R. texts

5.1 *Definitions*

The C.C.I.R. texts are defined as follows:

5.1.1 *Recommendation*
an answer to a Question or Study Programme which the C.C.I.R. considers to be sufficiently complete to serve as a basis for international cooperation;

5.1.2 *Report*
a provisional answer to a Question or a Study Programme, or a statement, for information, on studies carried out by a Study Group on a given subject; a Report may also be issued to provide information in support of a Recommendation;

5.1.3 *Question*
a statement of a technical or operational problem, to which an answer is required;

5.1.4 *Study Programme*
text describing the work to be carried out on a technical or operational problem constituting the subject of a Question (a Study Programme is not required if the text of the Question is sufficiently explicit or simple);

5.1.5 *Opinion*
a text containing a proposal or a request destined for another organization (such as organs of the I.T.U., international organizations, etc.) and not necessarily relating to a technical subject;

5.1.6 *Resolution*
a text giving instructions on the organization, methods or programmes of C.C.I.R. work.

5.2 *Presentation*

5.2.1 texts, with the exception of Reports, may be preceded by "considerings" or a short introduction;

5.2.2 the number of "considerings" or the length of the introduction should be limited to the very minimum necessary to justify the relevant text;

5.2.3 "considerings" shall be indicated by *(a)*, *(b)*, *(c)*, etc.;

5.2.4 different sections in the texts shall be indicated by decimal numbers;

5.2.5 references shall be included in each text to the other texts dealing with the same subject;

5.2.6 C.C.I.R. texts shall be presented showing their number, their title and an indication of the year of their adoption, and where appropriate, of any revisions;

5.2.7 when a Question or a Study Programme is cancelled, its title is however maintained in its correct numerical order, but the corresponding text is replaced by a Note from the Secretariat briefly indicating the date and reason for, the cancellation, together with any derived texts.

5.3 *Numbering*

C.C.I.R. texts shall be numbered as follows:

5.3.1 Recommendations shall continue to be numbered in the present series in force since the Xth Plenary Assembly. When revised, a Recommendation shall retain its number, with the addition of a hyphen and a digit indicating the number of successive revisions.

Example: Recommendation 253 (Original version of the Rec.)
Recommendation 253-1 (First revision of the Rec.)
Recommendation 253-2 (Second revision of the Rec.)

5.3.2 Reports, Opinions and Resolutions shall be numbered in the same way as Recommendations.

5.3.3 Questions shall be numbered in a separate series for each Study Group. Where appropriate, the serial number shall be followed by a hyphen and by a digit indicating the number of successive revisions of the text. The number of a Question is followed by the figure indicating the Study Group.

Example: Question 1/10; Question 1-1/10; Question 1-2/10; Question 2/10.

5.3.4 Study Programmes shall bear the same numbers as the Questions from which they are derived, with the addition of a capital letter.

Example: Study Programme 1A/10; Study Programme 1A-1/10.

RESOLUTION 26

TECHNICAL APPARATUS

The C.C.I.R., (1959)

CONSIDERING

(a) § 6.3 of the Report by the Finance Committee of the VIIIth Plenary Assembly of the C.C.I.R. approving the inclusion of a sum for technical apparatus in the C.C.I.R. annual budgets for 1957, 1958 and 1959;

(b) the section of the Director's Report to the IXth Plenary Assembly of the C.C.I.R. headed "C.C.I.R. Technical Apparatus", in particular the paragraph in which he reports on the review he has made as a result of § 6.3 as mentioned in § *(a)*;

(c) that at its 13th session in 1958, the Administrative Council of the I.T.U. expressed a wish to have the opinion of the IXth Plenary Assembly of the C.C.I.R. before providing a credit for technical apparatus in the ordinary budget of the C.C.I.R.;

Reaffirming that the C.C.I.R. should not establish a laboratory, but, on the other hand, *recognizing* the utility of maintaining the small amount of technical apparatus existing in the Secretariat;

UNANIMOUSLY DECIDES

1. to include annually, in the estimates of ordinary expenditure of the C.C.I.R., the sum of Sw. frs. 6 000 to provide for the upkeep of the existing technical apparatus and for its gradual replacement, and to request the Administrative Council to provide this sum in the annual budgets;

2. that the Director should arrange for this apparatus to be used by the technical staff of the C.C.I.R. Secretariat;

2.1 so as to keep them in touch as closely as possible with modern technical radio developments and propagation phenomena in particular;

2.2 so as to contribute, where possible, to C.C.I.R. studies on wave propagation.

RESOLUTION 27-1

BIBLIOGRAPHIES ANNEXED TO C.C.I.R. TEXTS

The C.C.I.R., (1963—1970)

CONSIDERING

(a) that the bibliographies to be annexed to C.C.I.R. texts should be as brief as possible;

(b) that the bibliographical references should relate to texts of current interest;

(c) that it is necessary to be able to modify the list of references without having to renumber them;

UNANIMOUSLY DECIDES

1. that the references should be inserted at the end of the related text in alphabetical order of the name of their authors or of the originating organizations;

2. that the references in the text should be made by the author's last name or the name of the originating organization and the year of publication;

3. that the Chairmen of Study Groups and Administrations submitting contributions should ensure that any bibliographical reference annexed to a C.C.I.R. text contains only references which have direct relation to the contents of that text;

4. that during consideration of texts resulting from earlier meetings, any list of references should be examined with a view to deleting all out-of-date references or those irrelevant to the text.

RESOLUTION 33-1

TECHNICAL COOPERATION

The C.C.I.R., (1963 – 1966 – 1970)

CONSIDERING

(a) that one of the purposes of the Union is to "foster the creation, development and improvement of telecommunication equipment and networks in new or developing countries by every means at its disposal, especially its participation in the appropriate programme of the United Nations" (clause 23 of the International Telecommunication Convention, Montreux, 1965);

(b) that a further purpose of the Union is also to "undertake studies, make regulations, adopt resolutions, formulate recommendations and opinions and collect and publish information concerning telecommunication matters for the benefit of all Members and Associate Members" (clause 25 of the Convention, Montreux, 1965);

(c) that clauses 188 and 189 of the Convention, Montreux, 1965, provide that:
"in the performance of its duties, each Consultative Committee shall pay due attention to the study of questions and to the formulation of recommendations directly connected with the establishment, development and improvement of telecommunication in new or developing countries in both the regional and international fields;"
and:
"at the request of the countries concerned each Consultative Committee may also study and offer advice concerning their national telecommunication problems. The study of such problems should be in accordance with 190."

(d) that the Plenipotentiary Conference, Montreux, 1965:

— in its Resolution No. 28, has recommended that the C.C.I.s consider ways of improving their operation, and procedures to enable them to respond more quickly to questions raised by the new or developing countries;

— in its Resolution No. 29, has accepted the fact that existing Union facilities do not meet fully the present needs for information and advice of the new or developing countries and should be improved;

— in its Resolution No. 32, has instructed the Administrative Council to take the necessary measures within the limit of available resources to ensure that "the permanent organs of the Union by the publication of appropriate documents, such as monographs and selected bibliographies contribute to the greatest extent possible to expediting the transfer to, and assimilation in the developing countries of the scientific knowledge and technological experience in telecommunications which are available in the more developed countries" (see Resolution No. 597 of the Administrative Council, 1966);

ALSO CONSIDERING

(e) the studies undertaken by the General Secretariat in association with experts of the C.C.I.R. in conformity with Resolution No. 29 of the Plenipotentiary Conference, Montreux, 1965;

(f) the report by the Director of the C.C.I.R. to the XIIth Plenary Assembly (Doc. PLEN./1, New Delhi, 1970);

(g) the work already carried out and planned in the field of technical cooperation by various Administrations;

(h) the work already carried out and planned in the field of Technical Cooperation by the other organs of the Union including the C.C.I.T.T. and the Special Autonomous Working Parties and the I.F.R.B.,

AND REALISING

(j) that much more work is required to give the necessary guidance to Administrations of the new or developing countries in improved planning execution and operation of their radiocommunication services in the national, regional and international field;

(k) that the information on technical progress in the radio field is too often available only in a scattered form;

(l) that due to various reasons, many of the Administrations of new or developing countries are either unable to send delegations or send very few members to the C.C.I. meetings due to which they are unable in many respects to take full benefit from the discussions in these meetings;

UNANIMOUSLY DECIDES

1. that as far as the new or developing countries themselves are concerned, these countries should:

1.1 collaborate to the greatest possible extent in putting into execution Resolution No. 448 of the Administrative Council relating to the Joint Committees C.C.I.T.T./C.C.I.R. for the plan of development of the telecommunication networks;

1.2 participate in an active manner in the work of the C.C.I.R. Study Groups;

1.3 submit as early as possible the questions they would like to be studied by the different Study Groups of the C.C.I.R. to the Director, C.C.I.R., in accordance with the provisions of No. 190 of the Montreux Convention;

2. that as far as the technically advanced countries are concerned: the Administrations of these countries are invited to accept staff members from other Administrations for training (see in particular Opinion 35 as regards monitoring);

3. that as far as the C.C.I.R. is concerned:

3.1 it is desirable that ways and means should be found by which the new or developing countries can take a more active part in the general work of the C.C.I.R.;

3.2 for that purpose the C.C.I.R. should apply within its terms of reference the appropriate provisions of Resolutions Nos. 28, 29 and 32 of the Plenipotentiary Conference (Montreux, 1965);

3.2.1 by taking up actively the study of questions posed by new or developing countries; if necessary by setting up Sub-Groups or special working parties in the existing Study Groups;

3.2.2 by asking the Chairmen of Study Groups to include in their Reports appearing in the booklets published after each interim meeting and in the volumes of the C.C.I.R. published after each Plenary Assembly a section, as comprehensive as possible, specially devoted to problems of interest to new or developing countries (see in particular § 2.7.3 of Resolution 24-2 of the C.C.I.R.);

3.2.3 by preparing the texts in the volumes of the C.C.I.R. in as clear a manner as possible with analytical tables and adequate references to make it easier to trace texts dealing with specific subjects, particularly subjects of interest to the new or developing countries;

3.2.4 by speeding up the handling of certain simple questions. To this end, the Chairman of the relevant Study Group or Working Party should be asked to arrange for the provision of immediate provisional answers, pending more thorough investigation. The C.C.I.R. should in appropriate cases also seek the assistance of the group of specialist engineers in the Technical Cooperation Department of the I.T.U.;

3.3 that, as far as possible, especially in conformity with Resolution No. 29, of the Plenipotentiary Conference (Montreux, 1965), Administrations should provide the Secretary General, I.T.U., with information to assist him in meeting any requests for advice from the new or developing countries as to the estimated system application costs of radiocommunication systems, within the framework of the Union's Technical Cooperation activities;

3.4 the C.C.I.R., its Director and specialized Secretariat in cooperation with other organs of the I.T.U. should:

3.4.1 counsel and assist Administrations of new or developing countries in the field of radiocommunications to the greatest extent possible;

3.4.2 take an active part in organizing and publicizing seminars on subjects of interest to new or developing countries;

3.4.3 organize lectures on the practical use and implications of C.C.I.R. Recommendations;

3.5 the specialized Secretariat of the C.C.I.R. should take up, if possible with existing staff, the work relating to technical cooperation, if absolutely necessary, the Director, C.C.I.R., should initiate appropriate steps to obtain additional staff required;

3.6 the preparation of special handbooks and audio visual means or similar means on subjects of practical interest to new or developing countries should be undertaken by the appropriate Study Groups, specifically:

— planning, maintenance and operation of HF fixed services;

— planning, maintenance and operation of radio-relay systems (line-of-sight on transhorizon, VHF, UHF or SHF);

— planning, maintenance and operation of fixed services by satellite communication and application to new or developing countries;

— planning, maintenance and operation of VHF broadcasting, and television systems;

taking into account the work already carried out, being undertaken or planned by:

— the existing C.C.I.R. Study Groups or the Special Autonomous Groups C.C.I.T.T./C.C.I.R.,

— the specialized Secretariat of the C.C.I.R.,

— the I.F.R.B. and other organs of the I.T.U. or other organizations.

If necessary, interim working parties should be formed for the preparation of such handbooks and audio visual means or similar means.

RESOLUTION 36

INFORMATION RETRIEVAL SERVICE

The C.C.I.R., (1966)

CONSIDERING

(a) that a large amount of technical information is furnished to the C.C.I.R. in the form of contributions to meetings of Study Groups and other meetings;

(b) that such information has now been contributed since 1948;

(c) that, in consequence, this information is distributed among many different series of documents;

(d) that many of the documents containing this information are not in the files of Administrations and particularly of Administrations of new or developing countries which have only relatively recently become Members of the I.T.U.;

(e) that, nevertheless, much of this information may be of interest to Administrations, either when making new contributions to the work of the C.C.I.R., or when considering the construction of new, or the replacement of existing, telecommunication networks;

(f) that the preceding considerations probably also apply to other organs of the Union;

(g) that systems now exist for the convenient retrieval of information at reasonable cost;

UNANIMOUSLY DECIDES

that the Director, C.C.I.R., should draw the attention of the Secretary-General, as soon as possible, to the need for the establishment of an information retrieval service suited to the needs of the Union as a whole, on the understanding that this service should essentially provide the following basic facilities:

— the possibility of storing, in a relatively small space, reduced copies (e.g. on microfilm) of all documents which may be useful at a later date;

— an index, preferably requiring a minimum of personnel for its establishment, maintenance and use, which would permit a rapid identification of all documentation relative to a given subject;

— a method of rapidly reproducing this identified documentation at reasonable cost, in a form suitable for consultation without special apparatus, thus enabling this information to be used, for instance, in the field by Technical Cooperation experts.

RESOLUTION 37

STATISTICAL DATA ON RADIOCOMMUNICATIONS

The C.C.I.R., (1970)

CONSIDERING

(a) that, in pursuance of No. 141 of the Convention and of Administrative Council Resolution No. 252 (amended), a Yearbook of Telecommunication Statistics is now being prepared by the General Secretariat of the I.T.U.;

(b) that it is desirable that the statistical data on radiocommunications contained in the Yearbook should reflect the technical progress achieved in the field of radio and should be based on the most recent results of the studies undertaken by the C.C.I.R.;

(c) that these data should be assembled by the General Secretariat;

UNANIMOUSLY DECIDES

1. that, during the next meetings of the C.C.I.R. Study Groups, each Study Group shall prepare a list of items in the field of radiocommunications, the statistics of which it considers should be included in the I.T.U. Yearbook of Telecommunication Statistics;

2. that, at the end of these meetings, the Director of the C.C.I.R. shall send to the Secretary-General of the I.T.U. a list of the items recommended for inclusion in the I.T.U. Yearbook of Telecommunication Statistics.

RESOLUTION 38*

POSSIBLE BROADCASTING SATELLITE SYSTEMS AND THEIR RELATIVE ACCEPTABILITY

(Study Programmes 20B/10 and 5C/11)

The C.C.I.R., (1970)

CONSIDERING

(a) that studies of the technical characteristics of broadcasting satellite systems are now being undertaken;

(b) that, to supplement these technical characteristics, the comparative costs of such systems (covering both capital investment in and the operation of the major sub-systems) should be taken into account;

(c) that these technical and economic factors may influence the choice of systems;

(d) that these considerations are of particular importance and urgency for new and developing nations;

(e) that studies undertaken by the C.C.I.R. on possible broadcasting satellite systems and their relative acceptability should provide useful information to the Technical Cooperation Department of the I.T.U.;

UNANIMOUSLY DECIDES

1. that an Interim Working Party be established to carry out the following studies:

1.1 comparison of different broadcasting satellite systems or sub-systems intended for either individual or community reception, taking the technical aspects and relative capital and running costs into account;

1.2 evaluation of the feasibility and possible uses of each system in the light of the technical and economic factors involved, taking into consideration especially the operational requirements of new and developing countries;

2. that the countries concerned are urged to make known to the Chairman of the Interim Working Party their particular requirements at the earliest date possible;

3. that the Interim Working Party should be composed of representatives appointed by the Administrations of Argentina, Australia, Brazil, Canada, the Federal Republic of Germany, France, India, Italy, Japan, Malaysia, New Zealand, Pakistan, Sweden, the Union of Soviet Socialist Republics, the United Kingdom and the United States of America, together with the Chairmen and Vice-Chairmen of the Study Groups concerned;

4. that the Chairman of the Interim Working Party shall be a representative of the Administration of India;

5. that the Interim Working Party shall conduct its work expeditiously and as far as possible by correspondence, and shall only hold such meetings as are deemed absolutely necessary for the execution of its work;

6. that reports of the proceedings of the Interim Working Party will be available to the C.C.I.R. Preparatory Meeting for the World Administrative Radio Conference for Space Telecommunications and a final report to the Director, C.C.I.R., for consideration at the next Plenary Assembly;

7. that this Resolution be brought to the attention of interested organizations in the United Nations.

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* This Resolution has been adopted by the XIIth Plenary Assembly, following a proposal by its Technical Cooperation Committee, so that it has been included amongst the Resolutions of a general nature. However, as it concerns Study Groups 10 (Broadcasting) and 11 (Television) it is also to be found in Volume V.

RESOLUTION 39

PARTICIPATION OF C.C.I.R. STAFF IN TECHNICAL COOPERATION WORK

The C.C.I.R., (1970)

CONSIDERING

(a) the statement made by the Secretary-General at the XIIth Plenary Assembly concerning difficulties currently being encountered by the I.T.U. in recruiting experts required for short-term technical assistance missions of an urgent nature under the United Nations Development Programme;

(b) the desirability of affording the engineers of the C.C.I.R. specialized Secretariat the opportunity from time to time of working in association with national administrations in order to keep up to date with the practical application of current telecommunications development;

(c) the provisions of No. 808 of the General Regulations annexed to the International Telecommunication Convention (Montreux, 1965) and of Resolution 33-1 of the C.C.I.R.;

(d) that the variation of the work-load of the C.C.I.R. specialized Secretariat affords the possibility, between the peak loading which occurs at the times of interim and final Study Group meetings and of the Plenary Assembly, for the services of technically qualified members of the C.C.I.R. specialized Secretariat to be utilised for the benefit of new or developing countries under the United Nations Development Programme while at the same time widening and updating the practical experience of the secretariat staff;

UNANIMOUSLY DECIDES

that, in the intervals between periods of peak pressure, the Director, C.C.I.R., should:

1. invite the Secretary-General to consider the possibility of calling upon the services of appropriately qualified engineers of the C.C.I.R. specialized Secretariat for the purpose of short-term technical assistance missions undertaken by the I.T.U. under the aegis of the United Nations Development Programme in cases when other suitable experts are not readily available;

2. after consultation with the Secretary-General, the compiling of certain material on specific C.C.I.R. problems posed by new or developing countries;

3. cooperate with the Technical Cooperation Department to assist the Secretary-General in the preparation of films and audio-visual means to assist training of technical personnel in new or developing countries.

RESOLUTION 40

C.C.I.R. PREPARATORY WORK FOR THE W.A.R.C.-ST

The C.C.I.R., (1970)

CONSIDERING

(a) that a World Administrative Radio Conference for Space Telecommunications (W.A.R.C.-ST) is scheduled to open in Geneva on 7 June 1971;

(b) that it is desirable that the Conference have the latest information available from the C.C.I.R.;

(c) the discussions on the preparation of the Conference which took place at the 24th Session of the Administrative Council of the I.T.U. in 1969;

(d) that a special meeting prior to the W.A.R.C.-ST is needed to provide the necessary up-to-date information and that such a special meeting should desirably take place within the framework of the C.C.I.R.;

UNANIMOUSLY DECIDES

1. that, in order to provide the necessary information within the competence of the C.C.I.R. to assist the W.A.R.C.-ST in its work, the Director of the C.C.I.R. shall convene a special joint meeting of the Study Groups concerned to consider only those elements of their work which relate to the agenda of the W.A.R.C.-ST;

2. that, for reasons of efficiency, the Director, C.C.I.R., shall invite Administrations and other Organizations associated with the work of the C.C.I.R. to send to this meeting their specialists in the relevant parts of the work of the Study Groups concerned*;

3. that the programme of work for the meeting should be broadly in accordance with Annex I appended, but shall also include any other C.C.I.R. work pertinent to the preparations for the W.A.R.C.-ST;

4. that the working structure of the meeting shall be based upon joint meetings of the various Study Groups acting as Working Groups of the meeting as broadly outlined in Annex II;

5. that the meeting shall have a single chairman, supported by a vice-chairman who will be assisted in their task by the Chairmen of the Study Groups concerned. The Chairman shall be Mr. J. MARCHAND (Canada); the Vice-Chairman shall be Mr. W. KLEIN (Switzerland);

6. that the meeting shall produce a unified report covering all its work which shall be sent to the Director, C.C.I.R., for transmission to Administrations and the W.A.R.C.-ST;

7. that the meeting should be convened in Geneva in the early part of February 1971 and should continue for a duration of four weeks;

8. to request the Director, C.C.I.R., to bring this Resolution to the attention of the 25th Session of the Administrative Council of the I.T.U.;

9. to request the Administrative Council, at its 25th Session, to provide the necessary funds for holding this meeting;

AND INVITES ADMINISTRATIONS AND OTHER ORGANIZATIONS ASSOCIATED WITH THE WORK OF THE C.C.I.R.

to carry out as a matter of urgency the necessary studies, particularly on the specific topics listed in Annex I, and to submit contributions in accordance with the regular procedures** and also to the Chairman and Vice-Chairman of the Special Meeting not later than three months before the opening date of the meeting.

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* The Study Groups concerned are 1, 2, 4, 5, 6, 8, 9, 10, 11 and the CMTT.

** i.e. five copies to the Director, C.C.I.R., and one copy to the Chairman and Vice-Chairman of each of the Study Groups mentioned above.

ANNEX I

SPECIAL JOINT STUDY GROUP MEETING PRECEDING THE SPACE CONFERENCE, 1971

Draft programme of items for study

A detailed list of technical subjects on which the W.A.R.C.-ST may require technical information is offered in this document. References are also given to relevant Radio Regulations (RR) and C.C.I.R. texts.

Service	References	Study Groups primarily concerned	Proposed action
1. General definitions	Rep.204-2 Rec.445		
2. Communication-satellite service		1, 4, 9 and CMTT	
2.1 Frequency bands technically suitable (including bands above 10 GHz).	Rep.205-2 Rep.452		Study and recommend the most suitable bands. (Input from Study Group 5 is required)
2.2 Feasibility of, and conditions for, frequency sharing with terrestrial fixed and mobile services; particularly for frequencies of the order of: 1–10 GHz 10–15 GHz 20 GHz 30 GHz 40 GHz	Rec.355-1 Rec.446 Rec.356-2 Rep.385-1 Rep.388-1 Rep.449 Rep.209-2 Rep.450 Rep.206-2 Rep.391-1 Rep.452		
The studies should include*:			
2.2.1 Limitation of power flux-density set up by satellites at the earth's surface.	RR 470O, P, Q Rec.358-1 Rec.357-1 Rep.387-1 Rep.450 Rep.393-1		Review and revise as required

* In these studies sight should not be lost of the following texts which refer to systems and quality characteristics including possible interference for the various types of transmission:
1. Telephony transmissions
1.1 Microwave systems: Rec. 393-1 (Note 10), Rec. 357-1, Rep. 288-2
1.2 Telecommunication by satellite: Rec. 353-2 (Note 6), Rec. 356-2
2. Sound and television transmissions
2.1 Reference chains: Q.2-1/CMTT, S.P.2-1A/CMTT, Rep. 487
2.2 Quality characteristics: Rec. 421-2, Rec. 451-1, Rep. 486, S.P.5-1G/CMTT, Rep. 498, Op. 41.

Service	References	Study Groups primarily concerned	Proposed action
2.2.2 Limitation of powers of terrestrial transmitters and avoidance of illumination of the geostationary orbit by terrestrial fixed services, taking into account refraction effects.	RR 470B, C, D, Rec.406-2 Rep.450 Rep.393-1		Review and revise as required
2.2.3 Limitation of horizontally-directed e.i.r.p. of earth stations.	RR 470G, H, I, J Rep.386-1		Review and revise as required
2.2.4 Minimum angle of elevation of transmitting earth station antenna.	RR 470L, M		Review and revise as required
2.2.5 Minimum technical obligations which earth stations must adhere to (frequency stability, duration of interruptions, etc.).	Q.20/4		Study and make recommendations
2.3 The technical criteria necessary to ensure maximum efficiency of use of the geostationary satellite orbit, including the minimum directivity of earth station antennae.	Rec.465 Rec.466 Res.56 Rep.210-2 Rep.391-1 Rep.453 Rep.454 Rep.455		Study and provide basic data
2.4 Technical procedures for determining the minimum angular separation between communication satellites sharing the same frequency bands.	Rep.454 Rep.455		Study and provide basic data
2.5 General questions of frequency sharing within and between communication-satellite systems.	Rep.210-2		Study and provide basic data
3. Broadcasting satellite service		1, 4, 10 and 11	
3.1 Definitions.	Rep.471		Study and make recommendations
3.2 Frequency bands technically suitable.	S.P.5-1A/11 Rep.215-2 S.P.20-1A/10 Op.15-2 Q.20-1/10 Rep.474 Q.5-1/11 Rep.475 Rec.418-2 Rep.306-1		Study and recommend the most suitable bands. (Input from Study Group 5 required)

Service	References	Study Groups primarily concerned	Proposed action
3.3 Feasibility of, and conditions for, frequency sharing with the terrestrial broadcasting service.	Rep.308-2 S.P.5-1D/11 S.P.5-1E/11 S.P.5-1F/11		
The studies should include:			
3.3.1 Standards of service for satellite broadcasting.	Rep.215-2 S.P.5-1E/11 Report by I.W.P. 11/1		Study and provide basic data
3.3.2 Tolerable value of field strength which broadcasting satellites may set up within a terrestrial broadcasting service area;	Rep.474		Study and recommend values
3.3.3 Tolerable values of field strength which terrestrial broadcasting transmitters may set up within a satellite broadcasting service area;			Study and recommend values
3.3.4 The geographical separation that may be necessary between the service areas of terrestrial and satellite broadcasting systems.			Study and recommend values
3.4 Feasibility of, and conditions for, frequency sharing with the terrestrial fixed and mobile services; particularly at frequencies of the order of 12 GHz.	Rep.474 Rep.475		Input from Study Group 9 required
The studies should include:			
3.4.1 Tolerable values of field strengths which broadcasting satellites may set up at receiving stations of the terrestrial services;			Study and recommend values
3.4.2 Tolerable values of field strength which transmitting stations of the terrestrial services may set up within the broadcasting satellite service area;			Study and recommend values
3.4.3 The geographical separation that may be necessary between stations of the terrestrial services and a broadcast satellite service area.			Study and recommend values
3.5 Technical procedures for determining the minimum angular spacing between broadcasting satellites sharing the same frequency band.			Study and provide basic data

Service	References	Study Groups primarily concerned	Proposed action
4. Use of satellites in the aeronautical and maritime mobile services and for associated radiodetermination		1, 4 and 8	
4.1 Frequency bands technically suitable for links between: — satellites and aircraft stations; — satellites and ship stations; — satellites and earth stations.	Rec.361-2 Rep.216-2 Rep.510 Rep.505 Rep.507 Q.17/8 S.P.17A/8		Study and recommend the most suitable frequency bands. (Input from Study Group 5 required)
Suitability of sharing the same frequency bands by both aeronautical and maritime services.	Rep.504 Rep.513 Q.16/8		Study and recommend. (Advice from ICAO and IMCO required)
4.2 Feasibility of, and conditions for, frequency sharing between:			
4.2.1 Satellite/aircraft links and the aeronautical mobile service, particularly at frequencies in band 8.	Rep.394-1 Rep.512 Rep.515 Rep.508 Rep.514 Rep.509		
4.2.2 Satellite/ship links and the maritime mobile service, particularly at frequencies in band 8.	Rep.511		
4.2.3 Satellite/aircraft links and satellite/ship links, particularly at frequencies in band 9.			
4.2.4 Satellite/earth station links and the mobile service, and satellite/earth station links and other terrestrial services.			
The studies should include, where appropriate:			
— the tolerable value of field strength which satellite transmitters may set up in areas served by the terrestrial services;			Study and recommend values
— the tolerable values of field strength which terrestrial transmitters may set up in areas served by the satellite service;			Study and recommend values
— the tolerable values of field strength which aircraft or ship transmitters (in the satellite service) may set up in areas served by the terrestrial service.			Study and recommend values

Service	References	Study Groups primarily concerned	Proposed action
— the tolerable values of field strength which aircraft or ship transmitters (in the terrestrial service) may set up in areas served by the satellite service.			Study and recommend values
4.3 Types of orbits suitable.	Rep.506		
4.4 The technical feasibility of providing, by satellite, radiodetermination facilities—either separately or integrated with the communication facilities—and any necessary additional conditions required for frequency sharing.	Q.17/8 S.P.17A/8 Rec.361-2 Rep.507		Study and make recommendations
5. Space research service	Q.1/2 S.P.1A/2 Rec.364-2 Rep.218-1 Rec.365-1 Q.10/2 Rep.456 Rec.367 Rec.366-1 Rec.363	1, 2 and 9	
5.1 Frequency bands technically suitable for links between earth stations and: — near earth research satellites; — deep space probes; — manned spacecraft.			Study and recommend the most suitable frequency bands. (Input from Study Group 5 required)
5.2 Feasibility of, and conditions for, frequency sharing with terrestrial fixed and mobile services, particularly at frequencies of the order of 140 MHz, 2 GHz and 8 GHz, and between 10 and 40 GHz. The studies should include, where appropriate:	S.P.3A/2 Q.2/2 S.P.1A/2 Rep.219-2 Rep.396-1 Q.11/2		
5.2.1 Limiting values of power flux-density at the earth's surface that may be set up by satellites.			Study and recommend values
5.2.2 Limitation of e.i.r.p. of terrestrial transmitters.			Study and recommend values
5.2.3 Frequency bands/or communication between spacecraft.	Rep.451		Study and make recommendations

Service	References	Study Groups primarily concerned	Proposed action
6. Meteorological-satellite service		1, 2 and 9	
6.1 Frequency bands technically suitable for links	Q.4/2		
— between earth stations and satellites; — between sensing platforms and satellites; — between one satellite and another.	Q.4/2 S.P.4A/2 Rec.362-1 Rep.395-1		Study and recommend the most suitable frequency bands. (Input from Study Group 5 required)
6.2 Feasibility of, and conditions for, frequency sharing between the types of radio link specified in 6.1 and the terrestrial fixed and mobile services, particularly at frequencies of the order of 2 GHz and 8 GHz.	Q.4/2 S.P.4A/2		
The studies should include, where appropriate			
6.2.1 Limitation of power flux-density at the earth's surface that may be set up by satellites.	RR 470S, T		Study and recommend values
6.2.2 Limitation if necessary of the e.i.r.p. of terrestrial transmitters.			Study and recommend values
7. Radioastronomy service		1 and 2	
7.1 Frequency bands technically suitable	Q.5/2 Rep.223-2 Rep.397-1 Q.6/2		Study and recommend the most suitable frequency bands. (Input from Study Group 5 required)
7.2 Feasibility of, and conditions for, frequency sharing with terrestrial services.	Rec.314-2 Rep.224-2 Rep.226-2		(Input from other Study Groups concerned is required)

Service	References	Study Groups primarily concerned	Proposed action
8. Coordination distance calculations		1, 4, 5 and 9	
8.1 The technical procedures for calculating coordination distance, particularly a review of existing procedure of Rep. 382-1 with a view to improvements in the method, bearing in mind the need for a simple and unambiguous procedure, not necessarily of high accuracy. The study should include: 8.1.1 Use of site-shielding factors or other methods of allowing for terrain obstacles. 8.1.2 Definition of radioclimatic zones used. 8.1.3 Treatment of mixed paths. 8.1.4 Methods to be applied at any frequency in the range 1-40 GHz. 8.1.5 The effects of precipitation scatter.	Rec. Spa 1, Annex I Rec.359-2 Rec.465 Rep.382-1 Rep.389-1 Rep.391-1		Study and develop procedures. (Input from Study Group 5 required)
8.2 Technical procedures for determining interference probabilities in the various specific cases of sharing.	Rep.448		Study and develop procedures. (Input from Study Group 5 required)
9. Propagation The following propagation items are relevant to the W.A.R.C.-ST and should receive priority treatment.		5 and 6	
9.1 Prediction for slant paths through the atmosphere of — statistics of attenuation due to all causes (e.g. rainfall, troposphere, ionosphere, etc.), — atmospheric noise, — refraction, — Faraday rotation effects. Priority should be given to frequencies below 40 GHz.	Q.5-1/5 Res.46 Q.2-1/5 S.P.5-1C-1/5 Rep.234-2 Rep.426 Res.2-1 Res.3-1 Rep.342-1 Rep.262-2 Rep.263-2		Study and provide basic data

Service	References	Study Groups primarily concerned	Proposed action
9.2 Information on tropospheric wave transmission losses taking account of attenuation due to atmospheric gases at frequencies up to at least 40 GHz, and preferably higher (relevant to calculation of interference between earth and terrestrial stations).	Q.14-1/4 Q.5-1/5 Q.2-1/5 S.P.5-1D-1/5 S.P.5-1E-1/5 S.P.5-1F-1/5 Rec.452 Rep.339-1 Rep.244-2 Rep.337-1 Rep.427 Res.2-1 Res.3-1		Study and provide basic data
9.3 Information required for calculating interference effects due to scattering from atmospheric precipitation.			Study and provide basic data
9.4 Concerning the first point of § 9.1, more precise information is required on the total slant path attenuation in the absorption bands around 60, 120 and 180 GHz (relevant to the calculation of interference between Space/Space link and terrestrial services).			

ANNEX II

PROPOSED WORKING STRUCTURE FOR THE SPECIAL JOINT MEETING OF C.C.I.R. STUDY GROUPS

Working Group A

A joint meeting of Study Groups 1, 4, 9 and CMTT to develop the technical basis for regulations concerning the Communication Satellite service.

Working Group B

A joint meeting of Study Groups 1, 4, 10 and 11 to develop the technical basis for regulations concerning the Broadcasting Satellite service.

Working Group C

A joint meeting of Study Groups 1, 4 and 8 to develop the technical basis for regulations concerning satellites in the aeronautical and maritime mobile services and for associated radiodeterminations.

Working Group D

A joint meeting of Study Groups 1, 2 and 9 to develop the technical basis for regulations concerning the Space Research service.

Working Group E

A joint meeting of Study Groups 1, 2 and 9 to develop the technical basis for regulations concerning the Meteorological Satellite service.

Working Group F

A joint meeting of Study Groups 1 and 2 to develop the technical basis for regulations concerning the Radioastronomy service.

Working Group G

A joint meeting of Study Groups 1, 4, 5 and 9 to develop technical procedures for the calculation of coordination distance and interference probabilities.

Working Group H

A joint meeting of Study Groups 5 and 6 to develop the basic propagation data required by the space services, in the selection of suitable frequency bands, in establishing coordination procedures and in developing the statistics of interference probabilities.

LIST OF PROPOSALS SUBMITTED BY THE STUDY GROUPS TO THE PLENARY ASSEMBLY

(PINK DOCUMENTS)

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Rec. : Recommendation
Rep. : Report
Res. : Resolution
Op. : Opinion
Q. : Question
S.P. : Study Programme

STUDY GROUP I

Doc.	Title	Final text
I/1001	Chairman's Report to the XIIth Plenary Assembly – Results of the work in the period 1966–1969	—
I/1002	Spectra and bandwidths of emissions	S.P. 36A/1
I/1003	Measurement of spectra and bandwidths of emissions	Rec. 327-2
I/1004	Classification and designation of emissions	Res. 41
I/1005	Classification and designation of emissions	Rec. 432-1
I/1006	Frequency stabilization of transmitters	S.P. 39A/1
I/1007	Spectra and bandwidths of emissions	Rec. 328-2
I/1008	Spurious radiation (of a radio emission)	Rec. 329-2
I/1009	Note by Secretariat, C.C.I.R. – No document bearing the reference I/1009 has been published	—
I/1010	Examination of results obtained by the C.I.S.P.R.	S.P. 4B-1/1
I/1011	Methods for the measurement of radio interference and the determination of tolerable levels of interference	Rec. 433-1
I/1012	Compression of the radiotelegraph signal spectrum in the HF bands	Rep. 176-2
I/1013	Possibilities of reducing interference and of measuring actual traffic spectra	Rep. 178-2
I/1014	Frequency stabilization of transmitters	Rep. 180-2
I/1015	Approximate methods for the determination of bandwidth	Rep. 324-1
I/1016	Spectra and bandwidth of emissions – Results of measurements and the shape of the spectrum of amplitude-modulated radiotelephone emissions and multi-channel voice-frequency radiotelegraph emissions in frequency-division multiplex systems	Rep. 325-1
I/1017	Design of transmitters and their output coupling networks to reduce spurious radiations	Rep. 326-1
I/1018	Decimal classification plan for classification and designation of emissions	Rep. 416
I/1019	Spurious radiation (of a radio emission) – Parasitic radiation in the VHF and UHF bands	Rep. 417
I/1020	Examples of bandwidth calculations	Rep. 418
I/1021	Spectra and bandwidth of frequency-modulated emissions – Results of measurements and the shape of the spectrum of emissions frequency-modulated with white noise	Rep. 419
I/1022	Comparative measurements of the occupied bandwidth using different methods	Rep. 420
I/1023	Status of texts	—
I/1024	Modifications to the documents of Study Group I made by the Plenary Assembly	—

STUDY GROUP II

Doc.	Title	Final text
II/1001	Report by the Chairman of Study Group II	—
II/1002	Sensitivity, selectivity and stability of amplitude-modulation and frequency-modulation sound broadcast receivers	Rec. 237-1
II/1003	Sensitivity and noise of receivers	Q. 5/1
II/1004	Selectivity of receivers	Q. 7/1
II/1005	Radio-frequency intermodulation characteristics of receivers	S.P. 7A/1
II/1006	Diversity reception under conditions of multipath propagation	Q. 11/1
II/1007	Classification by categories of receivers for sound and television broadcasting	Op. 33
II/1008	Noise and sensitivity of receivers	Rec. 331-2
II/1009	Essential characteristics of receivers	Q. 14/1
II/1010	Selectivity of receivers	Rec. 332-2
II/1011	Susceptibility of television broadcasting receivers to ambient fields	Q. 15/1
II/1012	Radio frequency dynamic range of a receiver	Q. 16/1
II/1013	Typical receivers for television and sound broadcasting	Q. 17/1
II/1014	Noise, sensitivity, selectivity and stability amplitude-modulation and frequency-modulation receivers	Op. 32
II/1015	Sensitivity and noise factor of radiotelephone receivers for class of emission F3	Rep. 421
II/1016	Remotely controlled HF receiving stations	Rep. 329-1
II/1017	Diversity reception	Rep. 327-1
II/1018	Choice of intermediate-frequency and protection against unwanted responses of superheterodyne receivers	Rep. 184-1
II/1019	Usable sensitivity in the presence of quasi-impulsive interference	Rep. 183-2
II/1020	Response of broadcast and television receivers to impulsive and quasi-impulsive interference	Rec. 334-1
II/1021	Typical receivers	S.P. 42A/1
II/1022	Values for the characteristics of typical receivers for the mobile service	Rep. 332-1
II/1023	Values for the characteristics of typical receivers for sound and monochrome television broadcasting	Rep. 333-1
II/1024	Values for the characteristics of typical receivers for the fixed service	Rep. 331-1
II/1025	Status of texts	—
II/1026	Modifications to the documents of Study Group II made by the Plenary Assembly	Res. 42

STUDY GROUP III

III/1001 + Corr. 1	Report by the Chairman, Study Group III, on the final conclusions of the period 1966–1969	—
III/1002	Use of directional antennae in the bands 4 to 28 MHz	Rec. 162-2
III/1003	Signal-to-interference protection ratios	Rec. 240-1
III/1004	Use of radio links in international telephone circuits	Rec. 335-2
III/1005	Principles of the devices used to achieve privacy in radiotelephone conversations	Rec. 336-2

Doc.	Title	Final text
III/1006	Reduction of occupied bandwidth	Rec. 100-1
III/1007	Voice-frequency telegraphy on radio circuits	Rec. 106-1
III/1008	Bandwidth required at the output of a telegraph or telephone receiver	Rec. 338-2
III/1009	Arrangement of voice-frequency telegraph channels working at a modulation rate of about 100 bauds over HF radio circuits	Rec. 436-1
III/1010	Frequency-shift keying	Rec. 246-2
III/1011	Channel separation	Rec. 337-1
III/1012 + Corr. 1	Bandwidths and signal-to-noise ratios in complete systems	Rec. 339-2
III/1013	Automatic error correcting system for telegraph signals transmitted over radio circuits	Rec. 342-2
III/1014	Standardization of phototelegraph systems for use on combined radio and metallic circuits	Rec. 344-2
III/1015	Four-frequency diplex systems	Rec. 346-1
III/1016	Data transmission at 1200/600 bits/s over HF circuits when using multi-channel voice-frequency frequency-shift systems	Rec. 456
III/1017	Improved transmission system for HF radiotelephone circuits	Rec. 455
III/1018	Pilot-carrier level for HF single-sideband and independent-sideband reduced-carrier systems	Rec. 454
III/1019	HF ionospheric channel simulators	Q. 21/3
III/1020	Factors affecting the quality of performance of complete systems of the fixed service	S.P. 1A-1/3
III/1021	Improvement obtainable from the use of directional antennae	S.P. 3A-1/3
III/1022	Communication theory	S.P. 18A/1
III/1023	Use of pilot carrier in single- and independent-sideband systems	S.P. 1B/3
III/1024	Voice-frequency (carrier) telegraphy on radio circuits	S.P. 17A-1/3
III/1025 + Corr. 1	Efficiency factor and telegraph distortion on ARQ-circuits	S.P. 1C/3
III/1026	Improvement obtainable from the use of directional antennae	Rep. 106-1
III/1027	Remote control signals for facsimile transmissions	Rep. 201-2
III/1028	Use of radio circuits in association with 50-baud 5-unit start-stop telegraph systems	Rep. 42-2
III/1029	Some aspects of the application of communication theory	Rep. 196-2
III/1030 + Corr. 1	Factors affecting the quality of performance of complete systems in the fixed services	Rep. 197-2
III/1031 + Corr. 1	Performance of telegraph systems on HF radio circuits	Rep. 345-1
III/1032	Single-channel radiotelegraph systems employing forward error correction	Rep. 349-1
III/1033	Quality of performance of radiotelegraph systems	Rep. 351-1
III/1034	An improved transmission system for use over HF radiotelephone circuits	Rep. 354-1
III/1035	Use of diversity on international HF radiotelephone circuits	Rep. 355-1
III/1036	Use of directional antennae in the band 4 to 28 MHz	Rep. 356-1
III/1037	Factors governing the choice of pilot carrier level in single-sideband and independent-sideband HF radio emissions	Rep. 433

Doc.	Title	Final text
III/1038	Error statistics and error control in digital transmission over operating radio circuits	Rep. 435
III/1039	Operational use of the efficiency factor	Rep. 437
III/1040	Transmission characteristics of HF radiotelephone circuits	Rep. 434
III/1041	Single-channel simplex ARQ telegraph system	Rep. 348-1
III/1042	Efficient use of radiotelegraph channels in the telex network by means of automatic selection and allocation procedures	Rep. 436
III/1043 + Rev. 1	Status of texts	—
III/1044	Modifications made by the Plenary Assembly to documents of Study Group III	—

STUDY GROUP IV

IV/1001	Report by the Chairman, Study Group IV	—
IV/1002	Communication-satellite systems for telephony and/or television – Hypothetical reference circuit	Rec. 352-1
IV/1003	Terms and definitions relating to space radiocommunications	Rep. 204-2
IV/1004	Active communication-satellite systems for television – Video bandwidth and permissible noise in the hypothetical reference circuit	Rec. 354-1
IV/1005	Communication-satellite systems and line-of-sight radio-relay systems sharing the same frequency bands – Maximum allowable values of interference from terrestrial radiolinks in a telephone channel of a communication-satellite system employing frequency modulation	Rec. 356-2
IV/1006	Communication-satellite systems and terrestrial radio systems sharing the same frequency bands – Determination of the coordination distance	Rec. 359-2
IV/1007	Generalized earth station antenna radiation pattern for use in interference calculations, including coordination procedures, in the frequency range 2–10 GHz	Rec. 465
IV/1008	Communication-satellite systems for telephony using frequency division multiplex – Maximum allowable values of interference in a telephone channel of a geostationary communication-satellite system employing frequency modulation, caused by other geostationary communication-satellite systems	Rec. 466
IV/1009	Active communication-satellite systems for multiplex telephony – Pre-emphasis characteristic for frequency-modulation systems	Rec. 464
IV/1010	Frequency requirements of radiodetermination-satellite systems	Rec. 361-2
IV/1011	Frequencies technically suitable for meteorological satellites	Rec. 362-1
IV/1012	Telecommunication links for near-earth research satellites – Frequencies, bandwidths and protection criteria from interference	Rec. 364-2
IV/1013	Protection of frequencies used for radioastronomical measurements	Rec. 314-2
IV/1014	Antennae for space systems	Q. 1-1/4

Doc.	Title	Final text
IV/1015	Technical characteristics of communication-satellite systems for fixed and mobile, excluding aeronautical and maritime mobile services	Q. 2-1/4
IV/1016	Feasibility of frequency sharing between communication-satellite systems and terrestrial services	S.P. 2-1A-1/4
IV/1017	Energy dispersal in communication-satellite systems	S.P. 2-1F-1/4
IV/1018	Use of frequency bands above 10 GHz for communication-satellite systems	S.P. 2-1H-1/4
IV/1019	Frequency sharing between communication-satellites – Technical considerations affecting the efficient use of the geostationary satellite orbit	Res. 56
IV/1020	Space research, maintenance telemetering tracking and telecommand systems – Possibilities of sharing and protection criteria	S.P. 1A/2
IV/1021	Technical characteristics of links between earth stations and spacecraft	Q. 2/2
IV/1022	Active communication-satellite systems for frequency-division multiplex telephony – Transmission characteristics of audio-frequency channels	Q. 5-1/4
IV/1023	Effects of plasma on communications with spacecraft	Q. 3/2
IV/1024	Frequency bands for re-entry communications	S.P. 3A/2
IV/1025	Radiocommunication for meteorological-satellite systems	Q. 4/2
IV/1026	Radioastronomy	Q. 5/2
IV/1027	Feasibility of direct sound and television broadcasting from satellites	Q. 9/CMTT
IV/1028	Propagation factors affecting sharing of the radio-frequency spectrum and coordination between space and terrestrial radio-relay systems	Q. 14-1/4
IV/1029	Preferred frequency bands for spacecraft transmitters used as beacons	Q. 10/2
IV/1030	Technical characteristics of systems providing communication and/or radiodetermination using satellite techniques for aircraft and/or ships	Q. 17/8
IV/1031	Technical characteristics of systems providing communication and/or radiodetermination using satellite techniques for aircraft and/or ships	S.P. 17A/8
IV/1032	Operation and maintenance of earth stations	Q. 20/4
IV/1033	Radio links between earth stations and spacecraft by means of space stations	Q. 11/2
IV/1034	Safety aspects of radio-frequency radiation from earth stations and terrestrial stations	Q. 21/4
IV/1035	Active communication-satellite systems for frequency-division multiplex telephony – Allowable noise power in the hypothetical reference circuit	Rec. 353-2
IV/1036	Factors affecting the selection of frequencies for telecommunications with spacecraft	Rep. 205-2
IV/1037	Technical characteristics of communication-satellite systems – General considerations relating to the choice of orbit, satellite and type of system	Rep. 206-2

Doc.	Title	Final text
IV/1038	Active communication-satellite systems – Characteristics of experimental and operational systems	Rep. 207-2
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PLEN./48	Denmark, India, United Kingdom	Proposed amendments to Resolution 33	–
PLEN./49	Organization Committee	Summary record of the fourth meeting	–
PLEN./50	Australia	Comments on Doc. PLEN./43	–
PLEN./51	Chairman of the Drafting Group	Report to the Plenary Assembly by the Chairman of the Drafting Group to draw up the terms of reference for an International Working Party on assessment of the quality of pictures in television systems	Doc.PLEN./22
PLEN./52	Technical Cooperation Committee	Summary record of the first meeting	–
PLEN./53	Chairman XIIth P.A.	Declaration of the delegation of the U.S.S.R.	–
PLEN./54 +Rev. 1	Finance Committee	Scheme for the report by the Finance Committee of the XIIth Plenary Assembly of the C.C.I.R. (New Delhi, 1970)	–
PLEN./55 +Add. 1	Technical Cooperation Committee	Summary record of the second meeting	–
PLEN./56	C.C.I.R. Secretariat	Minutes of the fifteenth plenary session	–
PLEN./57	Technical Cooperation Committee	Summary record of the third meeting	–
PLEN./58	Organization Committee	Report of Working Party to propose the terms of reference for Study Group X	–
PLEN./59 +Corr. 1	Organization Committee	Summary record of the fifth meeting	–
PLEN./60	C.C.I.R. Secretariat	List of participants	–
PLEN./61	Finance Committee	Summary record of the first and only meeting	–
PLEN./62	Chairman XIIth P.A.	Declaration of the Indian delegation	–
PLEN./63	Technical Cooperation Committee	Report by the Chairman: Mr. V.M. Gogte (India)	–
PLEN./64	Drafting Group	Report	–
PLEN./65	Technical Cooperation Committee	Summary record of the fourth meeting	–
PLEN./66	Technical Cooperation Committee	Summary record of the fifth meeting	–
PLEN./67	C.C.I.R. Secretariat	Minutes of the sixteenth plenary session	–
PLEN./68	C.C.I.R. Secretariat	Minutes of the seventeenth plenary session	–
PLEN./69	C.C.I.R. Secretariat	Minutes of the eighteenth and last plenary session	–
PLEN./70	C.C.I.R. Secretariat	List of documents issued (PLEN./1 to PLEN./70)	–

LIST OF DOCUMENTS

(PLEN./1001-1010)

Doc.	Title	Final Text
PLEN./1001	Draft Resolution: Statistical data on radiocommunications	Res. 37
PLEN./1002	Draft Resolution: Organization of C.C.I.R. work	Res. 24-2
PLEN./1003 (Rev. 1)	Draft Resolution: Bibliographies annexed to C.C.I.R. texts	Res. 27-1
PLEN./1004	Draft Resolution: Possible broadcasting satellite systems and their relative acceptability	Res. 38
PLEN./1005	Draft Resolution: Participation of C.C.I.R. staff in Technical Cooperation work	Res. 39
PLEN./1006	Proposed new structure of the C.C.I.R. Study Groups together with their terms of reference	–
PLEN./1007	List of Chairmen and Vice-Chairmen of Study Groups and Committees	–
PLEN./1008	Draft Resolution: Technical Cooperation	Res. 33-1
PLEN./1009	Draft Resolution: C.C.I.R. preparatory work for the World Administrative Radio Conference for Space Telecommunications	Res. 40
PLEN./1010	Resolutions of a general nature: Status of texts	–

STRUCTURE OF THE C.C.I.R.

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PARTICIPATION IN THE WORK OF THE C.C.I.R.

General

The following information is based on the provisions of the International Telecommunication Convention, Montreux, 1965, and is given for information. It should, of course, be understood that it is in no way intended to replace the provisions of the Convention, which should be referred to for official purposes.

1. Categories of participants

The C.C.I.R. has as *Members:*

— as of right, *Administrations* of Members and Associate Members of the I.T.U.;

— upon request, *Recognized Private Operating Agencies.*

Furthermore, *International Organizations,* which coordinate their work with the I.T.U. and which have related interests, may be admitted to participate in the work of the C.C.I.R. in an advisory capacity.

Finally, *Scientific or Industrial Organizations,* which are engaged in the study of telecommunication problems or in the design or manufacture of equipment intended for telecommunication services, may be admitted to participate in the work of the Study Groups of the C.C.I.R.

2. Financial conditions for participation

As Administrations, by virtue of their membership in the I.T.U. contribute to the budget of the Union, they are exempt from specific financial contributions to the work of the C.C.I.R.

All other participants shall make a financial contribution according to the contributory class which they have chosen, the scale of which is as follows:

30, 25, 20, 18, 15, 13, 10, 8, 5, 4, 3, 2, 1 and $^1/_2$ units.

The contributory unit is fixed by the Administrative Council of the I.T.U., and was established by the 25th Session of the Council (1969) at *7500 Swiss francs per annum,* subject to review at future sessions.

International Organizations may, however, be exempted by the Administrative Council on condition of reciprocity.

3. Procedure

3.1 *Formal requirements*

No formal requirements are to be met for the participation of *Administrations.*

The first request from a *Recognized Private Operating Agency* to take part in the work of the C.C.I.R. shall be addressed to the Secretary-General of the I.T.U., who shall inform all Members and Associate Members and the Director, C.C.I.R. Such a request must be approved by the Member or Associate Member recognizing the agency.

The first request from an *International Organization* to take part in the work of the C.C.I.R. shall be addressed to the Secretary-General, who shall inform, by telegram, all Members and Associate Members and invite the former to say whether the request shall be granted, which shall be the case if the majority of replies received within a period of one month are favourable. The Secretary-General shall then inform all the Members and Associate Members and the Director, C.C.I.R. of the result of the consultation.

The first request from a *Scientific or Industrial Organization* to participate in the work of the C.C.I.R. Study Groups should be addressed to the Director, C.C.I.R. Such a request must be approved by the Administration of the country concerned.

With the exception of Administrations, all other participants should also indicate the contributory class in which they wish to be placed, although International Organizations may request exemption on a reciprocal basis, as indicated above.

3.2 *Other information requested*

To permit the Secretariat of the C.C.I.R. to serve participants in the work of the C.C.I.R. and its Study Groups as efficiently as possible, it is requested that, when indicating the desire to take part in the work of the C.C.I.R. and its Study Groups, mention should also be made of the specific Study Groups—including the CMTT (see pages 286-294)—in which it is desired to participate. At the same time, it should also be indicated how many copies of Study Group documents should be sent, to which address(es) and the preferred language(s).

THE STUDY GROUPS

A. THE C.C.I.R. STUDY GROUPS AND INTERIM WORKING PARTIES

STUDY GROUP 1

(SPECTRUM UTILIZATION – MONITORING)

Terms of reference:

1. To study, in collaboration with the other Study Groups, questions relating to the efficient use of the radio frequency spectrum and, in particular, problems of frequency sharing, bearing in mind the attainable characteristics of radio equipment (transmitters, receivers, antennae, etc.) and systems.
2. To study principles for classifying emissions.
3. To develop means of specifying and measuring the characteristics of emissions and other forms of radiation likely to give rise to harmful interference.
4. To study techniques for measuring at a distance the parameters of emissions and spectrum occupancy; to devise means for identifying emissions and for locating sources of harmful interference; and to improve, in collaboration with the I.F.R.B. procedures for presenting the corresponding reports.

Chairman: Y. PLACE (France)

Vice-Chairman: S. RYŹKO (P.R. of Poland)

INTERIM WORKING PARTY 1/1

(Classification and designation of emissions)

(see Resolution 41, Volume I)

Terms of reference:

To continue the study required by Question 1/1 and Resolution 41

Chairman: F. DELLAMULA (I.F.R.B.)

INTERIM WORKING PARTY 1/2

(Typical receivers)

(see Resolution 42, Volume 1)

Terms of reference:

Assessment of the minimum and mean (or median) performance of typical receivers for purposes of standard comparison taking into account Question 14/1 "Essential characteristics of receivers" and Study Programme 42A/1 "Typical receivers".

Chairman: N. CHISTIAKOV (U.S.S.R.)

STUDY GROUP 2

(SPACE RESEARCH AND RADIOASTRONOMY SERVICES)

Terms of reference:

1. To study questions relating to the communications for scientific satellites, space probes, spacecraft, and exploration satellites (e.g. meteorological and geodetic).
2. To study questions relating to interference problems concerning the radioastronomy and radar astronomy services.

Chairman: I. RANZI (Italy)

Vice-Chairman: J. HAGEN (U.S.A.)

STUDY GROUP 3

(FIXED SERVICE AT FREQUENCIES BELOW ABOUT 30 MHZ)

Terms of reference:

To study questions relating to complete systems for the fixed service and terminal equipment associated therewith (excluding radio-relay systems). Systems using the so-called ionospheric-scatter mode of propagation, even when working at frequencies above 30 MHz, are included.

Chairman: S. ARITAKE (Japan)

Vice-Chairman: N. CHISTIAKOV (U.S.S.R.)

STUDY GROUP 4

(FIXED SERVICE USING SATELLITES)

Terms of reference:

To study questions relating to systems of radiocommunication for the fixed service using satellites (including the associated tracking, telemetry, and telecommand functions).

Chairman: W. KLEIN (Switzerland)

Vice-Chairman: E.R. CRAIG (Australia)

INTERIM WORKING PARTY 4/1

(Technical considerations affecting the efficient use of the geostationary satellite orbit)

(see Resolution 56, Volume IV(2))

Terms of reference:

1. To facilitate and expedite the collection of data and the expression of views on the subject of Study Programme 2-1J/4.
2. To hold a further meeting prior to the C.C.I.R. Joint Study Group meeting preparatory to the W.A.R.C.-ST.
3. To review and consider such contributions as have been received at the times of meetings of the International Working Party and to present reports on these contributions in a form which will best facilitate the work of Study Group 4 on this problem.

Chairman: J.K.S. JOWETT (United Kingdom)

STUDY GROUP 5

(PROPAGATION IN NON-IONIZED MEDIA)

Terms of reference:

To study the propagation of radio waves (including radio noise):

— at the surface of the Earth;

— through the non-ionized regions of the Earth's atmosphere;

— in space where the effect of ionization is negligible,

with the object of improving radiocommunication.

Chairman: J.A. SAXTON (United Kingdom)

Vice-Chairman: A. KALININ (U.S.S.R.)

INTERIM WORKING PARTY 5/1

(Prediction of phase and amplitude of ground waves)

(see Resolution 45, Volume II(1))

Terms of reference:

To examine the practical application of meteorological, topographical and geological data to the prediction of the phase and amplitude of radio waves especially at frequencies below 30 MHz propagated over the surface of the earth and through the non-ionized regions of the atmosphere.

Chairman: G. MILLINGTON (United Kingdom)

INTERIM WORKING PARTY 5/2

(Tropospheric propagation data for broadcasting, space and point-to-point communications)

(see Resolution 2-1, Volume II(1))

Terms of reference:

Proposed revision of Recommendation 370-1 and Report 244-2.

To study methods of determining, as accurately and concisely as possible, the transmission loss for point-to-point communication systems, which will be readily usable by radiocommunication engineers.

Chairman: J.A. SAXTON (United Kingdom)

INTERIM WORKING PARTY 5/3

(Influence of the non-ionized regions of the atmosphere on wave propagation)

(see Resolution 3-1, Volume II(1))

Terms of reference:

To continue the examination of all meteorological data relevant to the propagation of radio waves through the non-ionized regions of the atmosphere.

Chairman: P. MISME (France)

STUDY GROUP 6

(IONOSPHERIC PROPAGATION)

Terms of reference:

To study the propagation of radio waves (including noise) through the ionosphere, with the object of improving radiocommunication.

Chairman: D.K. BAILEY (U.S.A.)

Vice-Chairman: C. TERZANI (Italy)

INTERIM WORKING PARTY 6/1

(Sky-wave field strength and transmission loss at frequencies between the approximate limits of 1·5 and 40 MHz)

(see Resolution 7-2, Volume II(2))

Terms of reference:

The establishment of a single method of estimating the field strength and propagation loss of the sky-wave on frequencies between the approximate limits of 1·5 and 40 MHz.

Chairman: G.W. HAYDON (U.S.A.)

INTERIM WORKING PARTY 6/2

(Revision of atmospheric radio noise data)

(see Resolution 8-2, Volume II(2))

Terms of reference:

To study the question of atmospheric radio noise and similar data as well as of man-made radio noise.

Chairman: W.Q. CRICHLOW (U.S.A.)

INTERIM WORKING PARTY 6/3

(Basic long-term ionospheric predictions)

(see Resolution 10-2, Volume II(2))

Terms of reference:

The establishment of specifications and the organization of the production and presentation of the provisional C.C.I.R. World Atlas of ionospheric characteristics, with a view to assisting radiocommunications.

Chairman: M. LEFTIN (Mrs.) (U.S.A.)

INTERIM WORKING PARTY 6/4

(Sky-wave propagation at frequencies between approximately 150 and 1500 kHz)

(see Resolution 12-2, Volume II(2))

Terms of reference:

To study the field strength due to long-distance propagation of the sky-wave on frequencies between the approximate limits of 150 and 1500 kHz.

Chairman: G. MILLINGTON (United Kingdom)

INTERIM WORKING PARTY 6/5

(Propagation at frequencies below approximately 150 kHz with particular emphasis on ionospheric effects)

(see Resolution 13-2, Volume II(2))

Terms of reference:

To study the long-distance propagation of the sky-wave on frequencies below 150 kHz.

Chairman: J. BELROSE (Canada)

INTERIM WORKING PARTY 6/6

(Fading of radio signals received via the ionosphere)

(see Resolution 51, Volume II(2))

Terms of reference:

To collect information in accordance with Study Programme 16A-1/6 and apply it to the revision of Report 266-2.

Chairman: J. GROSSKOPF (F.R. of Germany)

INTERIM WORKING PARTY 6/7

(Short-term predictions of operational characteristics for ionospheric radiocommunications)
(see Resolution 47, Volume II(2))

Terms of reference:

To initiate and coordinate the study of the Question 22/6 concerning short-term predictions of operational characteristics for ionospheric radiocommunications.

Chairman: C.G. McCUE (Australia)

INTERIM WORKING PARTY 6/8

(VHF propagation by sporadic-E)
(see Resolution 50, Volume II(2))

Terms of reference:

To study VHF propagation by sporadic-E.

Chairman: E.K. SMITH (U.S.A.)

STUDY GROUP 7

(STANDARD FREQUENCY AND TIME-SIGNAL SERVICES)

Terms of reference:

1. To coordinate a worldwide service of standard frequency and time-signal emissions;
2. To study the technical aspects of emission and reception in this service, and to improve the accuracy of measurement.

Chairman: J.T. HENDERSON (Canada)

Vice-Chairman: G. BECKER (F.R. of Germany)

INTERIM WORKING PARTY 7/1

(Standard-frequency and time-signal emissions)
(see Resolution 53, Volume III)

Terms of reference:

To study and to propose to the next interim meeting of Study Group 7 the detailed procedures to be recommended in consequence of the adoption of Recommendation 460.

Chairman: H. SMITH (United Kingdom)

INTERIM WORKING PARTY 7/2

(Forms of expression for use in the standard-frequency and time-signal service)
(see Resolution 52, Volume III)

Terms of reference:

1. To study the forms of expression of all kinds (such as terms, symbols and their definitions) and the condition of their use in the standard-frequency and time-signal service.
2. To report the conclusions of its work as soon as possible to Study Group 7.

Chairman: C. EGIDI (Italy)

STUDY GROUP 8

(MOBILE SERVICES)

Terms of reference:

To study the technical and operating aspects of the aeronautical mobile, maritime mobile, land mobile and radiodetermination services, including the use of satellites.

Chairman: G.H.M. GLEADLE (United Kingdom)

Vice-Chairman: P. MORTENSEN (Norway)

STUDY GROUP 9

(FIXED SERVICE USING RADIO-RELAY SYSTEMS)

Terms of reference:

To study questions relating to line-of-sight and trans-horizon radio-relay systems operating via terrestrial stations at frequencies above about 30 MHz.

Chairman: E.O. DIETRICH (F.R. of Germany)

Vice-Chairman: T. KILVINGTON (United Kingdom)

INTERIM WORKING PARTY 9/1

(Radio-relay systems for telephony using frequency-division multiplex — Allowable noise power in the hypothetical reference circuit)

(see Resolution 55, Volume IV(1))

Terms of reference:

1. To find a satisfactory way in which the noise objective given in § 1.1 of Recommendation 393-1 can be adapted for use in the design of radio-relay systems.
2. To determine the way in which the hourly mean noise objective can be subdivided between the sections of the hypothetical reference circuit.

Chairman: B.B. JACOBSEN (United Kingdom)

STUDY GROUP 10

(BROADCASTING SERVICE (SOUND))

Terms of reference:

To study:

1. technical aspects of the broadcasting service (sound) including the use of satellites;
2. special problems of sound broadcasting in the Tropical Zone, taking into account standards required for good quality service; interference in the shared bands; power required for an acceptable service; design of suitable transmitting antennae; receiving equipment; optimum conditions for utilization of the frequency bands and other associated questions;
3. standards for sound recording to facilitate the international exchange of programmes.

Chairman: A. Prose WALKER (U.S.A.)

Vice-Chairman: S.S. AIYAR (India)

INTERIM WORKING PARTY 10/1

(Determination of the subjective loudness of a broadcasting programme)

(see Resolution 57, Volume V(1))

Terms of reference:

1. To determine the subjective loudness of broadcast programmes (Question 4/10).
2. To carry out measurements on the provisional loudness test tape and to amend and comment on this with a view to the provision of a C.C.I.R. reference loudness tape.

Chairman: P.H. WERNER (Switzerland)

STUDY GROUP 11

(BROADCASTING SERVICE (TELEVISION))

Terms of reference:

To study:

1. the technical aspects of the broadcasting service (television), including the use of satellites;
2. standards for television recording to facilitate the international exchange of programmes.

Chairman: E. ESPING (Sweden)

Vice-Chairman: M. KRIVOSHEEV (U.S.S.R.)

INTERIM WORKING PARTY 11/1

(Assessment of the quality of pictures in television systems)

(see Resolution 58, Volume V(2))

Terms of reference:

1. To determine the methods of subjective testing of the quality of television pictures (Study Programme 3-1A/11) appropriate in the first place to the needs of community reception of monochrome pictures in the 525- and 625-line television systems.
2. To suggest the quality targets that might be considered appropriate in the first place for community viewing and the corresponding objective parameters that should be achieved (Questions 3-1/11, 14/11 and Study Programme 14A/11), taking into account to the extent possible any special characteristics of the signals from broadcasting satellites.

Chairman: T. KILVINGTON (United Kingdom)

CIV

(INTERIM STUDY GROUP ON VOCABULARY)

Terms of reference:

To study, in collaboration with the other Study Groups and, if necessary, with the C.C.I.T.T., the radio aspect of the following: vocabulary of terms and lists of definitions, lists of letter and graphical symbols and other means of expression, systematic classification, measurement units, etc.

Chairman: R. VILLENEUVE (France)

Interim Vice-Chairman: B.A. DURÁN (Spain)

Note. — It should be noted that the XIIth Plenary Assembly has drawn up for consideration by the next Plenary Assembly of the C.C.I.T.T. a proposal to combine C.C.I.R. Study

Group XIV and C.C.I.T.T. Study Group VII in a single Joint C.C.I.R./C.C.I.T.T. Study Group, in conformity with the provisions of Chapter 19 of the General Regulations annexed to the International Telecommunication Convention (Montreux, 1965). Pending the C.C.I.T.T.'s decision on the matter, the XIIth Plenary Assembly of the C.C.I.R. set up an Interim Study Group (designated by its French initials CIV) whose terms of reference are given above.

INTERIM WORKING PARTY CIV/1

(Terms and definitions)

(see Resolution 21-2, Volume III)

Terms of reference:

To continue the preparation of Part II (Radio terms and definitions) of the "List of Definitions of Essential Telecommunication Terms", using the work of the expert working groups and with the assistance of the Joint Coordination Group set up by the C.C.I.'s and the IEC.

Chairman: R. VILLENEUVE (France)

INTERIM WORKING PARTY CIV/2

(Terms relative to reliability)

Terms of reference:

To study terms and definitions relative to reliability and to submit its conclusions and recommendations to Interim Study Group on Vocabulary (CIV).

Chairman: R.B.O. KAISER (F.R. of Germany)

INTERIM WORKING PARTY CIV/3

(Terms and definitions relating to sound and video recording)

(see Resolution 54, Volume III)

Terms of reference:

To contribute to the establishment and keeping up to date of terms and definitions relating to sound and video recording.

Chairman: N. CHISTIAKOV (U.S.S.R.)

Interim Working Party PLEN/2

(Possible broadcasting satellite systems and their relative acceptability)

(see Resolution 38, Volumes V and VII)

Terms of reference:

1. Comparison of different broadcasting satellite systems or subsystems intended for either individual or community reception, taking the technical aspects and relative capital and running costs into account.
2. Evaluation of the feasibility and possible uses of each system in the light of the technical and economic factors involved, taking into consideration especially the operational requirements of new or developing countries.

Chairman: B.Y. NERURKAR (India)

B. JOINT C.C.I.R./C.C.I.T.T. STUDY GROUPS

As these Joint Groups are administered by the C.C.I.R., the Chairmen are elected by this Committee, and the Vice-Chairmen by the C.C.I.T.T. In consequence, requests for participation in the work of these Joint Groups should be addressed to the Director, C.C.I.R.

CMTT

(C.C.I.R./C.C.I.T.T. Joint Study Group for television and sound transmission)

Terms of reference:

To study, in cooperation with the Study Groups of the C.C.I.R. and C.C.I.T.T., the specifications to be satisfied by telecommunication systems to permit the transmission of sound and television broadcasting programmes over long distances.

Chairman: Y. ANGEL (France)

Vice-Chairman: W.G. SIMPSON (United Kingdom)

CMV

(C.C.I.R./C.C.I.T.T. Joint Study Group for Vocabulary)

Terms of reference:

To study, in collaboration with the Study Groups of the C.C.I.R. and C.C.I.T.T., technical terminology and related subjects (graphical and letter symbols and other means of expression, systematic classification, units of measurements, etc.) to meet the needs of these Study Groups, making the best possible use of the joint cooperation groups established between the C.C.I.'s and the corresponding Technical Committees of the International Electrotechnical Commission (e.g. Technical Committee No. 1 for vocabulary and Technical Committee No. 3 for graphical symbols).

Chairman: R. VILLENEUVE (France)

Vice-Chairmen: M. DUCOMMUN (Switzerland)
B.A. DURÁN (Spain)

C. JOINT C.C.I.T.T./C.C.I.R. STUDY GROUPS AND WORKING PARTIES *

SPECIAL JOINT STUDY GROUP C

(CIRCUIT NOISE)

Terms of reference:

Coordination of Recommendations issued by the C.C.I.T.T. and by the C.C.I.R. on the subject of various types of transmission system, with an aim to limiting circuit noise to values acceptable for both telephony and telegraphy.

Chairman: R. KAISER (F.R. of Germany)

Vice-Chairman: T. MATSUMOTO (Japan)

PLAN COMMITTEES

(JOINT C.C.I.T.T./C.C.I.R. COMMITTEES FOR THE PLAN)

Terms of reference:

There shall be a World Plan Committee, and such Regional Plan Committees as may be jointly approved by the Plenary Assemblies of the International Consultative Committees. These Plan Committees shall develop a General Plan for the international telecommunication network to help in planning international telecommunication services. They shall refer to the International Consultative Committees questions, the study of which is of particular interest to new or developing countries, and which are within the terms of reference of those Consultative Committees. (No. 199 of the Montreux Convention, 1965).

These Committees are responsable:

1. for establishing a General Plan for development of the international network to help Administrations and recognized private operating agencies, when they conclude mutual agreements, to organize and improve the international services between their respective countries;
2. for examining the technical, operating and tariff questions raised either directly or indirectly in the various regions of the world by the application of the different stages of this Plan, to make an inventory of questions of interest to new or developing countries, and to set such questions for study by the competent C.C.I., or in cooperation with the two C.C.I.'s, if necessary, in accordance with No. 190 of the Montreux Convention, 1965.

WORLD PLAN COMMITTEE

Chairman: A. BIGI (Italy)

Vice-Chairman: O.H. MOHAMED (Pakistan)

* Requests for participation in the work of these Committees and Groups should be addressed to the Director, C.C.I.T.T.

It should be noted that the World Plan Committee has four regional Committees, which have, for the regions concerned, the same terms of reference as the World Plan Committee itself :

PLAN COMMITTEE FOR AFRICA

Chairman: L. DIA (Senegal)
Vice-Chairman: I. GIRMAW (Ethiopia)

PLAN COMMITTEE FOR ASIA AND OCEANIA

Chairman: A. ZAIDAN (Saudi Arabia)
Vice-Chairman: S. FUJIKI (Japan)

PLAN COMMITTEE FOR EUROPE AND THE MEDITERRANEAN BASIN

Chairman: T. NOAT (France)
Vice-Chairman: H. DIETRICH (P.R. of Poland)

PLAN COMMITTEE FOR LATIN AMERICA

Chairman: C. NÚÑEZ ARELLANO (Mexico)
Vice-Chairman: R. SEVERINI (Argentina)

As the above Joint Groups are administered by the C.C.I.T.T., the Chairman is elected by the C.C.I.T.T. and the Vice-Chairman by the C.C.I.R.

Joint special autonomous Working Party No. 3 (GAS 3)

Terms of reference:

Economic and technical comparison of transmission systems.

Chairman: M. AOUD (Morocco)
Vice-Chairman: G. WALLENSTEIN (U.S.A.)

Joint special autonomous Working Party No. 4 (GAS 4)

Terms of reference:

Primary power sources.

Chairman: F. BENTLEY (Canada)
Vice-Chairman: M. LINDEN (Sweden)

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TEXTS OF THE C.C.I.R.

TEXTS OF THE C.C.I.R.

Definitions

As the XIIth Plenary Assembly of the C.C.I.R.—like the XIth Plenary Assembly—maintained the decisions taken by the Xth Plenary Assembly in Geneva, 1963, the texts issued by the C.C.I.R. are defined as follows:

Recommendation: (French: Avis, Spanish: Recomendación) A statement issued in response to a Question or Study Programme which the C.C.I.R. considers to be sufficiently complete to serve as a basis for international cooperation.

Report: (French: Rapport, Spanish: Informe) An interim or provisional reply to a Question, or part of a Question. or a statement for information, on studies carried out by a Study Group on a given subject. A Report may also be issued to provide information in support of a Recommendation.

Resolution: (French: Résolution, Spanish: Resolución) Text giving instructions on the organization, methods or programmes of C.C.I.R. work.

Opinion: (French: Vœu, Spanish: Ruego) A text containing a proposal or a request destined for another organization (such as the organs of the I.T.U., International Organizations, etc.) and not necessarily relating to a subject of a technical nature.

Question: (French: Question, Spanish: Cuestión) A statement of a technical or operational problem, to which an answer is required.

Study Programme: (French: Programme d'études, Spanish: Programa de estudios) Text describing the work to be carried out on a technical or operational problem usually constituting the subject of a Question.

Adoption

The procedure for adopting C.C.I.R. texts is defined in Article 14 of the International Telecommunication Convention (Montreux, 1965). In addition, in adopting Resolution 24-2, the XIIth Plenary Assembly authorised the Study Groups, without prejudice to its own rights in the matter, to approve Study Programmes derived from existing Questions, as well as Reports.

Numbering

Recommendations:

Since the Vth Plenary Assembly of the C.C.I.R., Stockholm, 1948, Recommendations are numbered in a continuous series. Up to the Xth Plenary Assembly of the C.C.I.R., Geneva 1963, both modified and new texts were given new numbers in the series. Since the XIth Plenary Assembly, Oslo 1966, modified Recommendations keep their original number and the successive modifications are indicated by a digit following the number of the Recommendation, e.g. Recommendation 338 is the original text, Recommendation 338-1 the first modified version etc. New texts continue to be given successive numbers in the series.

Reports:

This category of texts, which was instituted by the VIth Plenary Assembly of the C.C.I.R., Geneva 1951, is numbered in the same way as the Recommendations.

Resolutions:

Resolutions were introduced by the Vth Plenary Assembly, Stockholm 1948, and included both the texts still defined as Resolutions and those now defined as Opinions. At the Xth Plenary Assembly, Geneva 1963, this category was limited to Resolutions as defined above. The numbering system is the same as that of the Recommendations.

Opinions:

This category of texts as defined on page 298 was separated from the Resolutions by the Xth Plenary Assembly and now forms a separate series. Opinions are numbered in the same way as the Recommendations.

Questions:

The numbering system of this category of texts has undergone various changes since the Vth Plenary Assembly, Stockholm 1948. Until the VIIth Plenary Assembly (London, 1953) questions were numbered in a single series, both new Questions and modified texts being given new serial numbers. At the VIIth Plenary Assembly it was decided, as far as Questions under study were concerned, that, for reference purposes, the number of the Question should be followed by the number of the Study Group to which it was assigned. At the XIth Plenary Assembly, Oslo, 1966, the numbering system of Questions was changed basically, a separate series of Questions being introduced for each Study Group, so that it is now essential to indicate the relevant Study Group number, since each Study Group may have a Question 1, 2, etc. At the same time it was decided that the modifying digit should also be used, where appropriate, for this category of texts.

Study Programmes:

Study Programmes were introduced by the VIth Plenary Assembly, Geneva, 1951, and the texts were numbered in a separate series until the Xth Plenary Assembly, Geneva, 1963, the indication of the Study Group having been added, as for Questions, by the VIIth Plenary Assembly. At the Xth Plenary Assembly it was decided that Study Programmes should bear the same number as the existing Question from which they were derived, followed by a capital letter to distinguish the various Study Programmes associated with the same Question. This numbering system was confirmed with the adoption by the XIth C.C.I.R. Plenary Assembly, Oslo, 1966, of the numbering of Questions by Study Group, a modifying digit being added after the letter if appropriate. Study programmes which do not derive from an existing Question are nevertheless numbered as if they did.

Reference to documents of meetings of the C.C.I.R.

In several texts, reference may be found to documents of the following meetings of the C.C.I.R.:

Vth Plenary Assembly	Stockholm (July, 1948)
Study Group XI	Zurich (July, 1949)
Study Groups VI and X	Washington (March, 1950)
Study Group XI	London (May, 1950)
Sub-Group Gerber of Study Group XI	Geneva (July, 1950)
VIth Plenary Assembly	Geneva (June–July, 1951)
Study Groups I and III	The Hague (April, 1952)
Study Groups V, VI and XI	Stockholm (May, 1952)
Study Group X	Geneva (August, 1952)
VIIth Plenary Assembly	London (September–October, 1953)
Study Group IX	Geneva (September, 1954)
Study Groups I and XI	Brussels (March–April, 1955)
VIIIth Plenary Assembly	Warsaw (August–September, 1956)
CMAT (Joint Study Group for Technical Assistance)	Geneva (April, 1957)
CMTT (Joint Study Group for Television Transmission)	Paris (July, 1957)
Sub-Group Lépéchinsky of Study Group VI	Geneva (December, 1957)
Study Group XI	Moscow (May–June, 1958)
Study Groups I, II, III, IV, V, VI, VII and IX	Geneva (July–August, 1958)
CMTT	Monte-Carlo (October, 1958)

IXth PLENARY ASSEMBLY	Los Angeles (April, 1959)
Sub-Group Esping of Study Group XI	Geneva (October, 1959)
Sub-Group Lépéchinsky of Study Group VI	Geneva (December, 1960)
Meeting of Experts (Study Groups V, X and XI)	Cannes (February, 1961)
Study Group IX and the CMTT	Paris (February, 1962)
Study Groups IV and VIII	Washington (March, 1962)
Study Groups I, II, III, V, VI and VII	Geneva (April–May, 1962)
Study Groups X, XI and XII	Bad Kreuznach (June, 1962)
Xth PLENARY ASSEMBLY	Geneva (January–February, 1963)
Colour Television Meeting	London (February, 1964)
Study Groups IV, VII, VIII and IX	Monte-Carlo (February–March, 1965)
Study Groups X and XI	Vienna (March–April, 1965)
Study Groups I, II, III, V, VI and CMTT	Geneva (June–July, 1965)
Study Group XIII	Geneva (September, 1965)
XIth PLENARY ASSEMBLY	Oslo (June–July, 1966)
Study Group XIII	Geneva (April, 1967)
Study Groups X, XI and XII	Palma (April–May, 1968)
Study Groups V, VI, VII and VIII	Boulder (July–August, 1968)
Study Groups I, II, III, IV, IX, XIII and CMTT	Geneva (September–October, 1968)
International Working Party PLEN.1	Geneva (May–June, 1969)
Study Groups I to XIV and CMTT	Geneva (September–October, 1969)
XIIth PLENARY ASSEMBLY	New Delhi (January–February, 1970)

TEXTS PUBLISHED BY THE C.C.I.R.

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NUMERICAL LIST, AND STATUS, OF ALL C.C.I.R. TEXTS FROM THE Vth PLENARY ASSEMBLY, STOCKHOLM, 1948, ONWARDS

NOTE

The texts are listed in numerical order for each category. If the text is valid, the indication of the volume in which it appears is given in the column to the right.

If it has been replaced, the new number of the text is given, while if it has been deleted, an « 0 » appears in the column on the right.

In the column on the left appears the previous number of the text in question. If there is a dash on the left, there is no previous version of the text concerned.

The abbreviations preceding the numbers, in either column, have the following meaning:

Rec.: Recommendation	Res.: Resolution
Rep.: Report	Q. : Question
Op. : Opinion	S.P. : Study programme

RECOMMENDATIONS

Previous status	Number	Present status	Previous status	Number	Present status
–	1	Rec.97	–	76	0
–	2	Rec.41	–	77	Rec.77-1
–	3	Rec.36	Rec.77	77-1	Rec.77-2
–	4	Rec.42	Rec.77-1	77-2	Vol. VI
–	5-16	0	–	78	Rec.218
–	17	Q.48	–	79	0
–	18	Q.54	–	80	Vol. V(1)
–	19	0	–	81	Rec.133-135
–	20	Rec.180	–	82	Rec.212
–	21	0	–	83	0
–	22	0	–	84	Rec.215
–	23	Rec.250	–	85	Rec.141
–	24	Q.56	–	86	Rec.133-135
–	25	Q.58	Rec.36	87	Rec.145
–	26	0	Rec.37	88	Rec.229
–	27	Op.2	Rec.38	89	Rec.147
–	28	Rep.174	–	90	Rec.148
–	29	Q.64	–	91	Rec.149
–	30-32	0	Rec.39	92	Rec.150
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–	34	0	Rec.41	94	Rec.154
–	35	0	–	95	Rec.155
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–	37	Rec.88	Rec.1, 43	97	Rec.337
–	38	Rec.89	–	98	0
–	39	Rec.92	Rec.44	99	Rec.161
–	40	Rec.335	–	100	Rec.100-1
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–	43	Rec.97	Rec.46	102	0
–	44	Rec.99	–	103	Rec.162
–	45	Vol. VI	–	104	Rec.163
–	46	Rec.102	Rec.68	105	Rec.164
–	47	Rec.214	–	106	Rec.106-1
–	48	Vol. V(1)	Rec.106	106-1	Vol. III
–	49	Vol. V(1)	–	107	Rec.165
–	50	Rec.138	–	108	Rec.168
–	51	Rec.109	Rec.51	109	Rec.169
–	52	Rec.307	–	110	Rec.170
–	53	Rec.116	Rec.55	111	Rec.312
–	54	Rec.310	Rec.62	112	Rep.138
–	55	Rec.111	Rec.64	113	Rep.138
–	56-58	0	Rec.66	114	Rec.171
–	59	Rec.313	–	115	S.P.99
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–	69	Rec.117	Rec.71	125	Rec.219
–	70	Rec.122	–	126	Rec.422
–	71	Rec.125	–	127	Rec.227
–	72	Rec.217	–	128	Rec.291
–	73	Rec.228	–	129	0
–	74	Rec.336	–	130	0
–	75	0	–	131	0

* Resolution of the old series.

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–	136	0	–	193	Rec.279
–	137	Rec.205	–	194	Rec.278
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* Resolution of the old series.

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–	341	Rep.341-1	–	379	Rep.379-1
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–	342	Rep.342-1	–	380	Vol. IV(1)
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–	343	Rep.343-1	–	382	Rep.382-1
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–	383	Rep.383-1	–	418	Vol. I
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–	384	Rep.384-1	–	420	Vol. I
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–	385	Rep.385-1	–	422	Vol. I
Rep.385	385-1	Vol. IV(2)	–	423	Vol. I
–	386	Rep.386-1	–	424	Vol. II(1)
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–	387	Rep.387-1	–	426	Vol. II(1)
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–	388	Rep.388-1	–	428	Vol. II(1)
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–	389	Rep.389-1	–	430	Vol. II(2)
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–	390	Rep.390-1	–	432	Vol. II(2)
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–	391	Rep.391-1	–	434	Vol. III
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–	392	Rep.392-1	–	436	Vol. III
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–	393	Rep.393-1	–	438	Vol. III
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–	394	Rep.394-1	–	440	*
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–	396	Rep.396-1	–	444	Vol. IV(1)
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–	397	Rep.397-1	–	446	Vol. IV(1)
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–	398	Rep.398-1	–	448	Vol. IV(1)
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–	399	Rep.399-1	–	450	Vol. IV(1)
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–	400	Rep.400-1	–	452	Vol. IV(2)
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–	401	Rep.401-1	–	454	Vol. IV(2)
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–	402	0	–	456	Vol. IV(2)
–	403	Rep.403-1	–	457	Vol. V(1)
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–	404	Rep.404-1	–	459	Vol. V(1)
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–	405	Rep.405-1	–	461	Vol. V(1)
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–	407	Rep.407-1	–	464	Vol. V(1)
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–	408	0	–	466	Vol. V(1)
–	409	Rep.409-1	–	467	Vol. V(1)
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–	410	Rep.410-1	–	469	Vol. V(1)
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–	411	Rep.411-1	–	471	Vol. V(1)
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–	412	Rep.412-1	–	473	Vol. V(1)
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–	413	*	–	475	Vol. V(1)
–	414	*	–	476	Vol. V(2)
–	415	*	–	477	Vol. V(2)
–	416	Vol. I	–	478	Vol. V(2)
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–	479	Vol. V(2)	–	498	Vol. V(2)
–	480	Vol. V(2)	–	499	Vol. VI
–	481	Vol. V(2)	–	500	Vol. VI
–	482	Vol. V(2)	–	501	Vol. VI
–	483	Vol. V(2)	–	502	Vol. VI
–	484	Vol. V(2)	–	503	Vol. VI
–	485	Vol. V(2)	–	504	Vol. VI
–	486	Vol. V(2)	–	505	Vol. VI
–	487	Vol. V(2)	–	506	Vol. VI
–	488	Vol. V(2)	–	507	Vol. VI
–	489	Vol. V(2)	–	508	Vol. VI
–	490	Vol. V(2)	–	509	Vol. VI
–	491	Vol. V(2)	–	510	Vol. VI
–	492	Vol. V(2)	–	511	Vol. VI
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–	495	Vol. V(2)	–	514	Vol. VI
–	496	Vol. V(2)	–	515	Vol. VI
–	497	Vol. V(2)	–	516	Vol. V(1)

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–	1	0	–	61	(Rec.126)
–	2	(Rec.41, 42)	–	62	(Rec.136)
–	3	Q.1/III	–	63	(Rec.133, 134, 135)
–	4	Q.102	–	64	Q.118
–	5	0	–	65	Q.152
–	6	Q.134	–	66	0
–	7	(Rec.55, Rep.2, 7)	–	67	Q.119
–	8	(Rec.60, 65 Rep.4, 6)	–	68	Q.153
			–	69	Q.154
–	9	(Rec.56)	–	70	(Rec.139, 140,
–	10	(Rec.57, Rep.8)			Rep.36)
–	11	0	–	71	Q.155
–	12	0	–	72	0
–	13	0	–	73	(Rec.142)
–	14	0	Q.46	74	Q.2/III
–	15	Q.52	–	75	Q.227
–	16	(Rec.37)	Q.47	76	Q.123
–	17	Q.104	–	77	Q.124
–	18	(Rec.245)	–	78	Q.171
–	19	Q.83	–	79	Q.125
–	20	Q.183	–	80	Q.126
–	21	(Rec.72)	Q.48	81	Q.3/III
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–	23	Q.14/X	Q.19	83	Q.129, S.P.128
–	24	Q.62	–	84	0
–	25	0	–	85	Q.136
–	26	(Rec.83)	–	86	Q.137
–	27	(Rec.84)	–	87	Q.140
–	28	(Rec.85)	–	88	Q.143
–	29	(Rec.40)	–	89	(Rep.67)
–	30	(Rec.74)	–	90	(Rec.183)
–	31	(Rec.75)	–	91	Q.146
–	32	(Rec.76)	–	92	(Rec.298, 299, 301)
–	33	(Rec.77)	–	93	Q.192
–	34	(Rec.78)	–	94	Q.232
–	35	(Rec.45)	–	95	0
–	36	0	–	96	(Rec.290)
–	37	(Rep.118)	–	97	Q.193
–	38	0	–	98	Q.149
–	39	0	–	99	Q.150
–	40	0	–	100	(Rec.211, Rep.81)
–	41	(Rec.40)	–	101	(Rep.122)
–	42	(Rec.81)	Q.4	102	Q.1/XII
–	43	0	–	103	Q.156
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–	45	(Rec.69)	–	105	Q.158
–	46	Q.74	–	106	Q.159
–	47	Q.76	–	107	(Rec.223)
–	48	Q.81	–	108	(Rec.224)
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–	50	(Rep.23)	–	110	0
–	51	(Rep.27)	–	111	0
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–	53	(Rep.25)	–	113	(Rec.204)
–	54	Q.87	–	114	(Rec.148)
–	55	(Rec.123)	–	115	(Rep.74)
–	56	(Rec.124, 125)	–	116	Op.29
–	57	(Rec.124)	–	117	Q.166
–	58	(Rec.127, Rep.11)	Q.64, S.P.37	118	Q.1/XI
–	59	(Rec.130)	Q.67	119	Q.267
–	60	(Rec.129)	–	120	Q.307

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–	121	Q.1/CMTT	Q.20	183	Q.8/VIII
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–	127	Q.177	–	189	0
S.P.42	128	Q.178	–	190	Q.257
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–	130	0	Q.93	192	Q.1/IX
–	131	S.P.3A	Q.97	193	Q.2/IX
–	132	Q.4/III	Q.146	194	Q.3/IX
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–	135	Q.246	Q.165	197	Q.5/IX
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–	138	0	–	200	0
–	139	Q.181	–	201	Q.262
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–	141	Q.186	Q.149	203	Q.262
–	142	Q.249	–	204	Q.262
Q.88	143	Q.255	–	205	Q.12/X
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–	165	Q.197	Q.75	227	Q.4/I
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–	167	Q.182	Q.178	229	Q.3/II
–	168	0	Q.173	230	Q.4/II
–	169	0	Q.174	231	Q.5/II
–	170	Q.199	–	232	0
Q.78	171	0	–	233	Q.9/III
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Q.124	173	Q.230	Q.209	235	Q.2/IV
–	174	Q.231	Q.210	236	Q.3/IV
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–	179	0	Q.215	241	Q.283
–	180	Q.6/III	Q.209	242	Q.8/IV
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–	245	Q.11/IV	Q.241	283	Q.12/IV
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–	247	Q.1/VI	–	285	Q.14/IV
–	248	Q.6/VI	–	286	Q.14/IV
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Q.186	250	Q.3/VII	–	288	Q.15/IV
–	251	0	–	289	Q.4/VII
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–	253	Q.291	Q.253	291	Q.4/VIII
–	254	Q.8/VIII	Q.258	292	Q.11/VIII
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Q.187	256	Q.14/VIII	S.P.207	294	Q.5/VIII
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–	259	Q.13/VIII	–	297	Q.12/IX
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–	264	Q.13/X	–	302	Q.16/X
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–	266	Q.7/X	–	304	Q.3/X
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–	269	Q.2/CMTT	Q.120	307	Q.2/XI
–	270	Q.4/CMTT	–	308	Q.8/XI
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–	272	Q.1/XIII	S.P.246B	310	Q.1/V
–	273	0	Q.185	311	Q.5/V
–	274	(Op.24)	S.P.205	312	Q.7/VI
–	275	Q.12/VIII	–	313	Q.2/VI
–	276	Q.9/IX	–	314	Q.3/VI
–	277	Q.10/IX	–	315	Q.4/VI
–	278	0	–	316	Q.5/VI
–	279	Q.11/IX	–	317	Q.16/III
–	280	Q.10/III	–	318	(Op.25, Rec.439)
–	281	Q.11/III	–	319	Q.4/XIII
–	282	0	–	320	Q.5/XIII

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Q.3	1/III	Q.1/3	Q.304	3/X	0
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Q.1/IV	1-1/4	Vol. IV(2)	Q.156	3/XII	Q.29/10
Q.310	1/V	Q.1-1/5	Q.271	3/XIII	0
Q.1/V	1-1/5	Vol. II(1)	Q.222	3/CMTT	Q.2-1/CMTT
Q.247	1/VI	Q.1-1/6	Q.227	4/I	Q.4/1
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Q.252	1/VIII	Q.22/1	Q.132	4/III	Q.4/3
Q.1/XIII	1/8	Vol. VI	Q.4/III	4/3	Vol. III
Q.192	1/IX	Q.1/9	Q.237	4/IV	Q.2/2
Q.1/IX	1/9	Vol. IV(1)	S.P.57, 176	4/V	0
Q.118	1/XI	Q.1/11	Q.315	4/VI	Q.4/6
Q.1/XI	1/11	Vol. V(2)	Q.4/VI	4/6	Vol. II(2)
Q.102	1/XII	Q.27/10	Q.289	4/VII	Q.4-1/7
Q.272	1/XIII	Q.1/8	Q.4/VII	4-1/7	Vol. III
Q.121	1/CMTT	Q.1-1/CMTT	Q.291	4/VIII	Q.25/1
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Q.175	2/II	Q.6/1	Q.4/X	4/10	Vol. V(1)
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–	6/XI	Q.6/11	Q.245	11/IV	Q.6/2
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–	6/XIII	Q.6/8	Q.292	11/VIII	Q.31/1
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Q.7/XIII	7/8	Vol. VI	Q.283	12/IV	Q.23/11, 34/10
Q.226	7/VIII	0	Q.275	12/VIII	Q.32/1
Q.7/XIII	7-1/8	Vol. VI	Q.12/XIII	12/8	Vol. VI
Q.260	7/IX	Q.7-1/9	Q.297	12/IX	Q.12-1/9
Q.7/IX	7-1/9	Vol. IV(1)	Q.12/IX	12-1/9	Vol. IV(1)
Q.266	7/X	Q.18/11	Q.205	12/X	Q.25/X
Q.309	7/XI	Q.7-1/11	–	12/XIII	Q.12/8
Q.7/XI	7-1/11	Vol. V(2)	Q.9/II	13/1	Vol. I
Q.163	7/XIII	Q.7-1/8	–	13/III	Q.13/3
–	7/CMTT	Vol. V(2)	Q.13/III	13/3	Vol. III
Q.4/II	8/1	Vol. I	Q.284	13/IV	Q.13/4
–	8/II	Q.12/1	Q.13/IV	13/4	Vol. IV(2)
Q.16/IV	8/2	Vol. IV(2)	Q.259	13/VIII	Q.33/1
Q.183	8/III	Q.8/3	–	13/8	Vol. VI
Q.8/III	8/3	Vol. III	Q.298	13/IX	Q.13-1/9
Q.242	8/IV	0	Q.13/IX	13-1/9	Vol. IV(1)
–	8/5	Vol. II(1)	Q.264	13/X	Q.13/10
Q.254	8/VIII	Q.28/1	Q.13/X	13/10	Vol. V(1)
Q.8/XIII	8-1/8	Vol. VI	–	13/XI	Q.13/11
Q.296	8/IX	S.P.3-1C/9	Q.13/XI	13/11	Vol. V(2)
Q.262	8/X	Q.25/X	–	14/1	Vol. I
–	8/XI	0	–	14/III	Q.14/3
–	8/XIII	Q.8-1/8	Q.14/III	14/3	Vol. III
–	8/CMTT	Vol. V(2)	Q.285, 286, 287	14/IV	Q.14-1/4
Q.5/II	9/1	Vol. I	Q.14/IV	14-1/4	Vol. IV(2)
Q.177	9/II	Q.13/1	Q.256	14/VIII	Q.34/1
Q.17/IV	9/2	Vol. IV(2)	–	14/8	Vol. VI
Q.233	9/III	Q.19/1	Q.299	14/IX	Q.14/9
Q.243	9/IV	Q.4/2	Q.14/IX	14/9	Vol. IV(1)
–	9/5	Vol. II(1)	Q.23	14/X	Q.14/10
Q.255	9/VIII	Q.29/1	Q.14/X	14/10	Vol. V(1)
Q.9/XIII	9/8	Vol. VI	–	14/11	Vol. V(2)
Q.276	9/IX	Q.9-1/9	–	15/1	Vol. I
Q.9/IX, 15/IX	9-1/9	Vol. IV(1)	–	15/III	0
Q.305	9/X	Q.25/X	Q.288	15/IV	Q.7/2
–	9/XIII	Q.9/8	Q.257	15/VIII	Q.35/1
–	9/CMTT	Vol. V(2)	–	15/8	Vol. VI
Q.6/II	10/1	Vol. I	–	15/IX	Q.9-1/9
Q.18/IV	10/2	Vol. IV(2)	Q.199	15/X	Q.15/10
Q.280	10/III	Q.20/1	Q.15/X	15/10	Vol. V(1)
Q.244	10/IV	Q.5/2	–	15/11	Vol. V(2)

Previous status	Number	Present status	Previous status	Number	Present status
–	16/1	Vol. I	–	21/3	Vol. III
Q.317	16/III	Q.16/3	–	21/4	Vol. IV(2)
Q.16/III	16/3	Vol. III	–	21/X	Q.19/11
–	16/IV	Q.8/2	Q.23/X	21/11	Vol. V(2)
–	16/6	Vol. II(2)	Q.1/VIII	22/1	Vol. I
–	16/8	Vol. VI	–	22/6	Vol. II(2)
–	16/IX	Q.16/9	–	22/X	Q.20/11
Q.16/IX	16-9	Vol. IV(1)	Q.24/X	22/11	Vol. V(2)
Q.302	16/X	Q.16/10	–	24/11	9/CMTT
Q.16/X	16/10	Vol. V(1)	Q.2-1/VIII	23/1	Vol. I
Q.5/X	16/11	Vol. V(2)	–	23/6	Vol. II(2)
–	17-1	Vol. I	–	23/X	Q.21/11
–	17/IV	Q.9/2	Q.12/IV	23/11	Vol. V(2)
–	17/6	Vol. II(2)	Q.3/VIII	24/1	Vol. I
Q.19/IV	17/8	Vol. VI	–	24/X	Q.22/11
–	17/IX	Q.17/9	Q.4/VIII	25/1	Vol. I
Q.17/IX	17/9	Vol. IV(1)	Q.8, 9, 10, 12/X	25/X	Q.25/10
–	17/X	Q.17-1/10	Q.25/X	25/10	Vol. V(1)
Q.17/X	17-1/10	Vol. V(1)	Q.5/VIII	26/1	Vol. I
Q.6/X	17/11	Vol. V(2)	–	26/10	Vol. V(1)
Q.5/III	18/1	Vol. I	Q.6/VIII	27/1	Vol. I
–	18/IV	Q.10/2	Q.1/XII	27/10	Vol. V(1)
–	18/6	Vol. II(2)	Q.8/VIII	28/1	Vol. I
Q.265	18/X	Q.18-1/10	Q.2/XII	28/10	Vol. V(1)
Q.18/X	18-1/10	Vol. V(1)	Q.9/VIII	29/1	Vol. I
Q.7/X	18/11	Vol. V(2)	Q.3/XII	29/10	Vol. V(1)
Q.9/III	19/1	Vol. I	Q.10/VIII	30/1	Vol. I
–	19/IV	Q.17/8	Q.4/XII	30/10	Vol. V(1)
Q.301	19/X	Q.19/10	Q.11/VIII	31/1	Vol. I
Q.19/X	19/10	Vol. V(1)	Q.5/XII	31/10	Vol. V(1)
Q.21/X	19/11	Vol. V(2)	Q.12/VIII	32/1	Vol. I
Q.10/III	20/1	Vol. I	–	32/10	Vol. V(1)
–	20/4	Vol. IV(2)	Q.13/VIII	33/1	Vol. I
Q.306	20/X	Q.20-1/10	Q.14/VIII	34/1	Vol. I
Q.20/X	20-1/10	Vol. V(1)	Q.12/IV	34/10	Vol. V(1)
Q.22/X	20/11	Vol. V(2)	Q.15/VIII	35/1	Vol. I
Q.11/III	21/1	Vol. I	–	35/10	9/CMTT

STUDY PROGRAMMES OF THE OLD SERIES (UP TO 1966)

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–	1	S.P.39	–	57	Q.4/V
–	2	S.P.124	–	58	S.P.92
–	3	S.P.125	–	59	S.P.93
S.P.128	3A	S.P.1A/III	–	60	S.P.149
S.P.132	3B	0	S.P.20	61	Res.27*
–	4	S.P.41	–	62	S.P.94
–	5	(Rec.156)	S.P.21	63	S.P.142
–	6	S.P.42	–	64	S.P.95
–	7	S.P.43	S.P.23	65	S.P.96
–	8	S.P.45	–	66	S.P.148
–	9	S.P.46	–	67	S.P.97, 98
–	10	S.P.47	S.P.25	68	S.P.101
–	11	S.P.51	–	69	S.P.102
–	12	S.P.52	–	70	S.P.103
–	13	S.P.53	–	71	0
–	14	S.P.54	–	72	S.P.108
–	15	0	–	73	0
–	16	0	S.P.31	74	S.P.161
–	17	S.P.55	–	75	Q.152
–	18	S.P.56	–	76	Q.153
–	19	0	–	77	S.P.113
–	20	S.P.61	–	78	S.P.115
–	21	S.P.63	–	79	S.P.136
–	22	S.P.64	–	80	S.P.118A
–	23	S.P.65	–	81	S.P.118B
S.P.106	23A	S.P.14A/X	S.P.130	81A	S.P.3A/III
–	24	(Rep.23)	S.P.131	81B	S.P.3B/III
–	25	S.P.68	S.P.39	82	S.P.126
–	26	S.P.78	–	83	S.P.134
–	27	S.P.50	–	84	S.P.227A
–	28	Res.56*	S.P.48	85	S.P.130
–	29	(Rec.125)	S.P.47	86	S.P.133A
–	30	(Rec.137)	S.P.51	87	S.P.246A
–	31	S.P.74	S.P.53	88	S.P.135
–	32	(Rec.267)	S.P.54	89	S.P.188
–	33	0	S.P.56	90	S.P.138
–	34	0	–	91	S.P.139
–	35	S.P.119	–	92	S.P.150
–	36	S.P.10A/XI	S.P.59	93	S.P.194
–	37	Q.118	S.P.62	94	0
–	38	S.P.112	S.P.64	95	S.P.147
–	39	S.P.82	S.P.65	96	S.P.154
–	40	S.P.180	S.P.67	97	S.P.151
S.P.4	41	S.P.133	S.P.67	98	S.P.152
–	42	Q.128	Rec.115	99	S.P.144, 145
S.P.7	43	S.P.127	–	100	S.P.193
S.P.129	43A	S.P.17A/III	S.P.68	101	S.P.155
–	44	S.P.128	S.P.69	102	Q.293
S.P.8	45	S.P.128	S.P.112	102A	S.P.1A/XII
S.P.9	46	S.P.129	S.P.114	102B	S.P.1B/XII
S.P.10	47	S.P.86	S.P.167	102C	S.P.1C/XII
–	48	S.P.85	S.P.70	103	S.P.207
–	49	S.P.128	–	104	(Rec.283)
S.P.27	50	S.P.128	–	105	S.P.158
S.P.11	51	S.P.87	–	106	S.P.23A
–	52	(Rep.46)	–	107	(Rep.118, 166)
S.P.13	53	S.P.88	S.P.72	108	(Rep.118)
S.P.14	54	S.P.89	–	109	(Rep.292)
S.P.17	55	S.P.137	–	110	S.P.9A/XI
S.P.18	56	S.P.90	–	111	S.P.118

* Resolution of the old series.

Previous status	Number	Present status	Previous status	Number	Present status
S.P.38	112	S.P.102A	–	162	S.P.2A/X
S.P.77	113	S.P.167	–	163	S.P.199A
–	114	S.P.102B	–	164	Q.263
S.P.78	115	0	–	165	S.P.205A
–	116	S.P.166A	S.P.118	166	S.P.267A
–	117	S.P.118C	S.P.116	166A	0
S.P.111	118	S.P.166	S.P.113	167	S.P.102C
S.P.80	118A	S.P.118D	–	168	S.P.271A
S.P.81	118B	S.P.1B/XI	–	169	S.P.184
S.P.117	118C	S.P.1C/XI	–	170	S.P.6A/XII
S.P.118A	118D	S.P.1A/XI	–	171	(Rec.420)
S.P.35	119	S.P.11A/XI	–	172	S.P.185B,
–	120	(Rec.284)			190, 191, 204
–	121	(Rec.278, 280)	–	173	Q.239
–	121A	S.P.1A/CMTT	–	174	S.P.235A
–	122	S.P.260A	–	175	S.P.235D
–	123	(Rec.418)	–	176	Q.4/V
S.P.2	124	S.P.182	–	177	S.P.12A/XI-
S.P.3	125	S.P.183			6A/CMTT
S.P.82	126	S.P.181	–	178	S.P.235E
S.P.43	127	S.P.10A/II	–	179	S.P.235B
*	128	S.P.3A	S.P.40	180	S.P.6A/I
S.P.46	129	S.P.43A	S.P.126	181	S.P.5A/I
S.P.85	130	S.P.81A	S.P.124	182	S.P.7A/I
–	131	S.P.81B	S.P.125	183	S.P.8A/I
–	132	S.P.186, 3B	S.P.133	183A	0
S.P.41	133	S.P.183A	S.P.134	183B	S.P.8A/III
S.P.86	133A	S.P.5A/III	S.P.169	184	S.P.9A/I
S.P.83	134	S.P.183B	–	185	S.P.11A/II
S.P.88	135	S.P.246B	–	185A	S.P.311A
S.P.79	136	S.P.188	S.P.172	185B	S.P.311B
S.P.55	137	S.P.189	S.P.132	186	S.P.18A/III
S.P.90	138	S.P.192	–	187	S.P.19A/III
S.P.91	139	0	S.P.89, 136	188	S.P.6A/V
–	140	S.P.189	S.P.137, 140	189	S.P.7A/V
S.P.155	140A	S.P.140C	S.P.172	190	S.P.311E
–	140B	S.P.140D	S.P.172	191	S.P.311C
S.P.140A	140C	S.P.1A/VII	S.P.138	192	Q.2/V
S.P.140B	140D	S.P.1B/VII	S.P.157	192A	S.P.1A/IX
–	140E	S.P.1C/VII	–	192B	0
–	141	S.P.201	S.P.100	193	S.P.8A/VI
S.P.63	142	S.P.206	S.P.158	193A	S.P.2A/IX
–	143	S.P.195	–	193B	S.P.2B/IX
S.P.99	144	S.P.198	–	193C	S.P.2C/IX
S.P.99	145	S.P.198	S.P.93	194	S.P.10A/VI
–	146	S.P.196	S.P.159	194A	S.P.3A/IX
S.P.95	147	S.P.202	S.P.143	195	S.P.4B/VI
S.P.66	148	S.P.16A/VI	S.P.160	195A	S.P.4A/IX
S.P.60	149	S.P.200	–	196	S.P.15A/VI
S.P.92	150	0	S.P.151	197	S.P.209
S.P.97	151	S.P.197	–	197A	S.P.5A/IX
S.P.98	152	S.P.203	S.P.144, 145	198	S.P.11A/VI
–	152A	S.P.3A/XI	S.P.154	199	S.P.20A/VI
–	153	S.P.21A/VI	S.P.163	199A	S.P.15A/X
S.P.96	154	S.P.199	S.P.149	200	S.P.9A/VI
S.P.101	155	S.P.140A	S.P.141	201	S.P.18A/VI
–	156	S.P.250A	S.P.147	202	S.P.13A/VI
–	157	S.P.192A	S.P.152	203	S.P.14A/VI
S.P.105	158	S.P.193A	S.P.172	204	S.P.208
–	159	S.P.194A	S.P.172	205	Q.312
–	160	S.P.195A	S.P.165	205A	S.P.12A/X
S.P.74	161	S.P.1A/X	S.P.142	206	S.P.17A/VI

* S.P. 44, 45, 49, 50 and Q. 82, 129, 131.

Previous status	Number	Present status	Previous status	Number	Present status
S.P.103	207	Q.294	–	250A	S.P.3A/VII
–	208	S.P.19A/VI	–	250B	S.P.250C
–	209	S.P.12A/VI	S.P.250B	250C	S.P.3B/VII
S.P.84	227A	S.P.4A/I	–	250D	S.P.3C/VII
–	227B	S.P.4B/I	–	252A	S.P.1A/VIII
–	227C	S.P.4C/I	–	259A	S.P.13A/VIII
S.P.174	235A	S.P.235F	S.P.122	260A	S.P.7A/IX
S.P.179	235B	S.P.235G	–	260B	S.P.7B/IX
Q.214	235C	S.P.2C/IV	–	262A	S.P.8A/X
S.P.175	235D	S.P.2D/IV	–	266A	S.P.266B
S.P.178	235E	S.P.235H	S.P.266A	266B	S.P.7A/X
S.P.235A	235F	S.P.2A/IV	S.P.166	267A	S.P.4A/XI
S.P.235B	235G	S.P.2B/IV	S.P.168	271A	S.P.3A/XIII
S.P.235E	235H	S.P.2E/IV	–	311A	S.P.5A/V
–	235J	S.P.2F/IV	–	311B	S.P.5B/V
–	236A	S.P.3A/IV	–	311C	S.P.5C/V
–	239A	S.P.6A/IV	–	311D	S.P.5E/V
–	243A	S.P.9A/IV	S.P.190	311E	S.P.5D/V
S.P.87	246A	Q.3/V	–	311F	S.P.5F/V
S.P.135	246B	Q.310	–	313A	S.P.2A/VI
–	249A	S.P.2A/VII	–	315A	S.P.4A/VI

STUDY PROGRAMMES OF THE NEW SERIES (AS FROM OSLO, 1966)

Previous status	Number	Present status	Previous status	Number	Present status
S.P.3A/IV	1A/2	Vol. IV(2)	S.P.2D/IV	2-1D/4	Vol. IV(2)
S.P.3A(III)	1A/III	S.P.1A-1/3	S.P.235H(IV)	2E/IV	S.P.2-1E/4
S.P.1A/III	1A-1/3	Vol. III	S.P.2E/IV	2-1E/4	Vol. IV(2)
S.P.6A/V	1-1A/5	Vol. II(1)	S.P.235J(IV)	2F/IV	S.P.2-1F-1/4
S.P.140C(VII)	1A/VII	S.P.1A-1/7	S.P.2F/IV	2-1F-1/4	Vol. IV(2)
S.P.1A/VII	1A-1/7	Vol. III	–	2G/IV	0
S.P.252A(VIII)	1A/VIII	S.P.22A/1	–	2H/IV	S.P.2-1H-1/4
S.P.192A(IX)	1A/IX	S.P.1A/9	S.P.2H/IV	2-1H-1/4	Vol. IV(2)
S.P.1A/IX	1A/9	Vol. IV(I)	–	2J/IV	S.P.2-1J/4
S.P.161(X)	1A/X	S.P.1A-1/10	S.P.2J/IV	2-1J/4	Vol. IV(2)
S.P.1A/X	1A-1/10	Vol. V(1)	S.P.6A/IV	3A/2	Vol. IV(2)
S.P.118A(XI)	1A/XI	S.P.1A/11	S.P.81A(III)	3A/III	S.P.3A-1/3
S.P.1A/XI	1A/11	Vol. V(2)	S.P.3A/III	3A-1/3	Vol. III
S.P.102A(XII)	1A/XII	S.P.27A/10	S.P.236A(IV)	3A/IV	S.P.1A/2
S.P.121A(CMTT)	1A/CMTT	S.P.7A/CMTT	S.P.250A(VII)	3A/VII	S.P.3A-1/7
–	1B/3	Vol. III	S.P.3A/VII	3A-1/7	Vol. III
S.P.140D(VII)	1B/VII	S.P.1B-1/7	S.P.3A/XIII	3A/8	Vol. VI
S.P.1B/VII	1B-1/7	Vol. III	S.P.194A(IX)	3A/IX	S.P.3-1A-1/9
S.P.118B(XI)	1B/XI	S.P.1B/11	S.P.3A/IX	3-1A-1/9	Vol. IV(1)
S.P.1B/XI	1B/11	Vol. V(2)	S.P.152A(XI)	3A/XI	S.P.3-1A/11
S.P.102B(XII)	1B/XII	S.P.27B/10	S.P.3A/XI	3-1A/11	Vol. V(2)
–	1B/CMTT	S.P.1-1B-1/CMTT	S.P.271A(XIII)	3A/XIII	S.P.3A/8
S.P.18A/III	1C/3	Vol. III	S.P.81B(III)	3B/III	S.P.3B/3
S.P.140E(VII)	1C/VII	S.P.1C-1/7	S.P.3B/III	3B/3	Vol. III
S.P.1C/VII	1C-1/7	Vol. III	S.P.250C(VII)	3B/VII	S.P.3B/7
S.P.118C(XI)	1C/XI	S.P.1C/11	S.P.3B/VII	3B/7	Vol. III
S.P.1C/XI	1C/11	Vol. V(2)	–	3B/IX	0
S.P.102C(XII)	1C/XII	S.P.27C/10	S.P.250D(VII)	3C/VII	S.P.3C-1/7
S.P.6A/CMTT	1-1C/ CMTT	Vol. V(2)	S.P.3C/VII	3C-1/7	Vol. III
–	1D/7	Vol. III	Q.8/IX	3-1C/9	Vol. IV(1)
–	1D/11	Vol. V(2)	S.P.227A(I)	4A/I	S.P.4A/1
–	1-1D/ CMTT	Vol. V(2)	S.P.4A/I	4A/1	Vol. I
–	1E/11	Vol. V(2)	S.P.9A/IV	4A/2	Vol. IV(2)
–	1-1E/ CMTT	Vol. V(2)	S.P.315A(VI)	4A/VI	S.P.4A-1/6
–	1F/11	Vol. V(2)	S.P.4A/VI	4A-1/6	Vol. II(2)
S.P.235F(IV)	2A/IV	S.P.2-1A-1/4	–	4A/VII	S.P.4-1A/7
S.P.2A/IV	2-1A-1/4	Vol. IV(2)	S.P.4A/VII	4-1A/7	Vol. III
S.P.313A(VI)	2A/VI	S.P.2-1A-1/6	S.P.195A(IX)	4A/IX	S.P.4A-1/9
S.P.2A/VI	2-1A-1/6	Vol. II(2)	S.P.4A/IX	4A-1/9	Vol. IV(1)
S.P.249A(VII)	2A/VII	S.P.2A-1/7	–	4A/10	Vol. V(1)
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–	2-1A/VIII	S.P.23A/1	–	4A/CMTT	S.P.4-1A-1/CMTT
S.P.193A/IX	2A/IX	S.P.2-1A-1/9	–	4-1A/ CMTT	S.P.4-1B/CMTT
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–	2-1A/ CMTT	Vol. V(2)	S.P.4B/VI	4B-1/6	Vol. II(2)
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–	5A/XI	S.P.5-1A/11	–	7-1D/8	Vol. VI
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–	5A/CMTT	S.P.5-1A-1/CMTT	S.P.183(I)	8A/I	S.P.39A/1
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–	5-1B/9	Vol. IV(1)	–	8A/XI	0
–	5B/XI	S.P.5-1B/11	–	8B/XI	0
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–	5B/CMTT	S.P.5-1B-1/CMTT	S.P.243A(IV)	9A/IV	S.P.4A/2
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–	7A/XIII	S.P.7-1A/8	S.P.16A/VI	16A-1/6	Vol. II(2)
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–	18A/IV	S.P.10A/2	S.P.25B/X	25B/10	Vol. V(1)
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–	18A/X	S.P.18-1A/10	–	25D/X	S.P.25D/10
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–	1	0	–	35	0
–	2	0	Rec.33	36	Res.67(1)
–	3	0	–	37	Res.67(1)
–	4	0	–	38	0
–	5	Res.62(1)	Res.20	39	Op.2
–	6	(Rec.143)	–	40	Op.5
–	7	0	–	41	Res.2(2)
–	8	0	–	42	0
–	9	0	–	43	0
–	10	(Rep.61)	–	44	0
–	11	0	–	45	Op.6
–	12	0	–	46	0
–	13	0	–	47	Op.9
–	14	(Rep.62)	Rec.177, 178	48	Res.7(2)
–	15	0	–	49	0
–	16	0	–	50	0
–	17	0	Rec.121, Res.25	51	0
–	18	Res.33(1)	Res.28	52	0
–	19	0	–	53	0
–	20	Res.39(1)	–	54	Op.12
–	21	0	–	55	Op.14
–	22	0	S.P.28	56	Op.13
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–	24	Op.4	–	58	Op.17
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–	26	0	–	60	Res.20(2)
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–	28	Res.52(1)	Res.5, Rec.144, Rep.94	62	Res.21(2), 22(2)
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–	30	(Rec.261)	–	63	Res.25(2)
–	31	Op.16	–	64	0
–	32	Op.19	–	65	0
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–	34	0	Res.36, 37	67	Res.24(2)

(1) Resolutions of the old series.
(2) Resolutions of the new series.

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–	1	1-1	Res.21-1	21-2	Vol. III
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–	3	Res.3-1	Res.24	24-1	Res.24-2
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–	4	Res.4-1	Res.63*	25	0
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–	6	0	Res.27	27-1	Vol. VII
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–	9	0	Res.33	33-1	Vol. VII
–	10	Res.10-1	–	34	0
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–	12	Res.12-1	–	38	Vol. V(1)(2),
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–	13	Res.13-1	–	40	Vol. VII
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–	14	Res.14-1	–	43	Vol. I
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–	16	Res.16-1	–	48	Vol. II(2)
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–	17	0	–	50	Vol. II(2)
–	18	0	–	51	Vol. II(2)
–	19	Res.19-1	–	52	Vol. III
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* Resolutions of the old series.

OPINIONS

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–	1	Op.1-1	Res.33	20	0
Op.1	1-1	0	–	21	0
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–	3	0	Op.22	22-1	Vol. II(2)
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–	7	0	Q.318	25	0
–	8	0	–	26	Op.26-1
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–	10	0	–	27	Vol. III
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LIST, WITH TITLES, OF ALL C.C.I.R. TEXTS IN FORCE AT THE END OF THE XIIth PLENARY ASSEMBLY, NEW DELHI, 1970

NOTE

The following lists include all texts adopted or maintained by the XIIth Plenary Assembly of the C.C.I.R. and therefore represent all C.C.I.R. texts at present valid. The missing numbers refer to texts which have been deleted or replaced. However, these numbers appear in the lists on pages 305 to 332.

In each case, the title of the text is preceded by its number, with the modifying digit where appropriate, and is followed by the volume in which it appears. It should be noted that Recommendations, Reports, Resolutions and Opinions are listed in numerical order, while Questions and Study Programmes are listed by Study Group.

COMPLEMENT TO THE LIST, WITH TITLES, OF THE C.C.I.R. TEXTS IN FORCE (1973)

Page 346

Replace:

271-2	Stability and accuracy of standard frequency and time signals as received	III

by:

271-3	Stability and accuracy of standard frequency and time signals as received	Add. 1 to Vol. III

Page 349

Replace:

335-1	General graphical symbols for telecommunications	III

by:

335-2	General graphical symbols for telecommunications	Add. 2 to Vol. III

Page 350

Replace:

363-1	Intercomparisons of time scales by various methods	III

by:

363-2	Intercomparisons of time scales by various methods	Add. 1 to Vol. III

Page 353

Replace: 440 by 440-1

Page 356

Add after Report 516:

517	Standard-frequency and time-signal emissions	Add. 1 to Vol. III
518	Standard-frequency and time-signal emissions from satellites	Add. 1 to Vol. III

Page 360

Replace:

Question 18/1	Communication theory

by:

Question 18-1/1	System design for maximizing the efficiency and utility of spectrum use (See Add. 1 to Vol. I)

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Add after Study Programme 43A/1:

Question 44/1	System models for the evaluation of compatibility in spectrum use	(See Add. 1 to Vol. I)
Question 45/1	Technical criteria for frequency sharing	(See Add. 1 to Vol. I)
Question 46/1	Radio noise	(See Add. 1 to Vol. I)

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Add after Study Programme 12A/2:

Question 13/2	Technical feasibility of frequency sharing in the amateur satellite service	(See Add. 1 to Vol. IV)
Question 14/2	Feasibility of frequency sharing within and among space networks using earth satellites in the space research service	(See Add. 1 to Vol. IV)

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Add after Question 21/3:

Question 22/3 Transportable fixed service radiocommunication equipment for relief operations (See Add. 3 to Vol. III)

Add after Question 1-1/4:

Study Programme 1-1A/4 Radiation diagrams of antennae at earth stations in the fixed-satellite service (See Add. 1 to Vol. IV)

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Add after Study Programme 2-1J/4:

Study Programme 2-1K/4 Characteristics of an Earth-to-space path of the fixed-satellite service used for the connection of a satellite in the broadcasting service (See Add. 1 to Vol. IV)

Study Programme 2-1L/4 Frequency sharing between the radionavigation service and the radionavigation satellite service on the one hand and the fixed-satellite service on the other hand, operating at frequencies of the order of 14 GHz (See Add. 1 to Vol. IV)

Add after Question 21/4:

Question 22/4 Use of systems in the fixed-satellite service in the event of natural disasters, epidemics, famines and similar emergencies (See Add. 1 to Vol. IV)

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Replace:

Study Programme 6A-1/8 Self-supporting antennae for use on board ships. Performance at 500 kHz

by:

Study Programme 6A-2/8 Self-supporting antennae for use on board ships. Performance at 500 kHz (See Add. 2 to Vol. VI)

Add after Question 9-1/8:

Study Programme 9-1A/8 Selective-calling systems for use in the international maritime mobile services in the ship to shore direction (See Add. 2 to Vol. VI)

Replace:

Question 13/8 Influence of the Doppler effect on radiocommunication in the aeronautical mobile service

by:

Question 13-1/8 Influence of the Doppler effect on radiocommunication in the aeronautical mobile service (See Add. 2 to Vol. VI)

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Add after Study Programme 17A/8:

Study Programme 17B/8 Technical and economic characteristics of systems providing radiocommunication and/or radiodetermination for ships using satellite techniques in different frequency bands (See Add. 2 to Vol. VI)

Study Programme 17C/8 Technical characteristics of systems providing radiocommunication and/or radiodetermination for ships using satellite techniques in the VHF band (See Add. 2 to Vol. VI)

Study Programme 17D/8 Frequency sharing between the radionavigation service and the radionavigation satellite service on the one hand and the fixed-satellite service on the other hand (See Add. 2 to Vol. VI)

Question 18-1/8* Internal communications on board ships by means of portable radiotelephone equipment (See Add. 2 to Vol. VI)

Question 19/8 Equivalent powers of double sideband and single sideband radiotelephone emissions (See Add. 2 to Vol. VI)

Question 20/8 Black-and-white facsimile transmissions over combined telephone and radio circuits in the maritime mobile service (See Add. 2 to Vol. VI)

Study Programme 21A/8 Definition of interference and units of measurement (See Add. 2 to Vol. VI)

Question 22/8 Mobile radiocommunication equipment for relief operations (See Add. 2 to Vol. VI)

Add the footnote:

* Question 18/8, adopted by correspondence, appeared in Addendum 1 to Volume VI, October 1971. At the interim meeting of Study Group 8, Geneva, 1972, it was replaced by draft Question 18-1/8; a Question which was also adopted by correspondence, in 1972.

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Add after Study Programme 17A/9:

Question 18/9 Interference criteria for radio-relay systems (See Add. 1 to Vol. IV)

Question 19/9 Limitation of spurious emissions and frequency tolerances of radio-relay systems (See Add. 1 to Vol. IV)

Question 20/9 Transportable fixed service radiocommunication equipment for relief operations (See Add. 1 to Vol. IV)

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Add after Study Programme 20-1B/10:

Study Programme 20-1C/10* Broadcasting-satellite service in the 12 GHz band (See Add. 1 to Vol. V)

Add the footnote:

* Identical with Study Programme 5-1G/11.

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Add after Question 34/10:

* Study Programme 36A/10 Characteristics of sound broadcasting receivers and receiving antennae (See Add. 1 to Vol. V)

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Add after Study Programme 5-1F/11:

Study Programme 5-1G/11** Broadcasting-satellite service in the 12 GHz band (See Add. 1 to Vol. V)

Add the footnote:

** Identical with Study Programme 20-1B/10.

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Add after Question 9/CMTT:

Question 10/CMTT Standards for television systems using digital modulation (See Add. 2 to Vol. V)

Study Programme 10A/CMTT Digital transmission of television and sound programme signals (See Add. 1 to Vol. V)

Question 11/CMTT Performance characteristics of 5 kHz-type sound programme circuits (See Add. 2 to Vol. V)

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Question 6/2 Radar astronomy

Question 7/2 Frequency utilization above the ionosphere and on the far side of the Moon

Question 8/2 Shielding effects due to the ionosphere

Question 9/2 Shielding effects due to the Moon

Question 10/2 Preferred frequency bands for spacecraft transmitters used as beacons

Study Programme 10A/2 Protection of frequency bands for spacecraft transmitters used as beacons

Question 11/2 Radio links between earth stations and spacecraft by means of space stations

Question 12/2* Radiocommunication systems for Earth-resources satellites

Study Programme 12A/2* Radiocommunication systems for Earth-resources satellites

Question 13/2 Technical feasibility of frequency sharing in the amateur satellite service (See Add. 1 to Vol. IV)

Question 14/2 Feasibility of frequency sharing within and among space networks using earth satellites in the space research service (See Add. 1 to Vol. IV)

STUDY GROUP 3

(Volume III)

Question 1/3 Factors affecting the quality of performance of complete systems of the fixed service

Study Programme 1A-1/3 Factors affecting the quality of performance of complete systems of the fixed service. Signal-to-noise and signal-to-interference protection ratios for fading signals, bandwidth and adjacent channel spacing

Study Programme 1B/3 Use of pilot carrier in single- and independent-sideband systems

Study Programme 1C/3 Efficiency factor and telegraph distortion on ARQ-circuits

* Adopted by correspondence after closing of the XIIth Plenary Assembly.

No. Title

Question 2/3 Arrangement of channels in multi-channel telegraph systems for long-range radio circuits operating on frequencies below about 30 MHz

Question 3/3 Directivity of antennae at great distances

Study Programme 3A-1/3 Improvement obtainable from the use of directional antennae

Study Programme 3B/3 Directivity of antennae for the fixed service using ionospheric-scatter propagation

Question 4/3 Radio-relay systems employing ionospheric-scatter propagation

Question 7/3 Influence of frequency deviations associated with passage through the ionosphere on HF radiocommunications

Question 8/3 Frequency-shift keying

Question 12/3 Distortion characteristics required for single-sideband and independent-sideband systems used for high-speed data transmission over HF radio circuits

Question 13/3 Improvements in the performance of HF radiotelephone circuits

Question 14/3 Automatically controlled radio systems in the HF fixed service

Question 16/3 Transmission characteristics of HF radiotelephone circuits

* Study Programme 17A-1/3 Voice-frequency (carrier) telegraphy on radio circuits

* Study Programme 20A/3 Operational ionospheric sounding at oblique incidence

Question 21/3 HF ionospheric channel simulators

Question 22/3 Transportable fixed service radiocommunication equipment for relief operations (See Add. 3 to Vol. III)

STUDY GROUP 4

(Volume IV (2))

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Question 1-1/4 Antennae for space systems

Question 2-1/4 Technical characteristics of communication-satellite systems for fixed and mobile, excluding aeronautical and maritime mobile, services

Study Programme 2-1A-1/4 Feasibility of frequency sharing between communication-satellite systems and terrestrial services

Study Programme 2-1B/4 Frequency sharing between communication-satellite systems and terrestrial radio services. Wanted-to-unwanted signal ratios

Study Programme 2-1C/4 Communication-satellite systems. Feasibility of frequency sharing among communication-satellite systems

Study Programme 2-1D/4 Study of preferred modulation characteristics for communication satellite systems

Study Programme 2-1E/4 Factors affecting freedom of access in communication-satellite systems

Study Programme 2-1F-1/4 Energy dispersal in communication-satellite systems

* This Study Programme does not arise from any Question under study.

No. Title

Study Programme 2-1H-1/4 Use of frequency bands above 10 GHz for communication-satellite systems

Study Programme 2-1J/4 Communication-satellite systems. Technical factors influencing

Study Programme 2-1K/4 Characteristics of an Earth-to-space path of the fixed-satellite service used for the connection of a satellite in the broadcasting service (See Add. 1 to Vol. IV)

Study Programme 2-1L/4 Frequency sharing between the radionavigation service and the radionavigation satellite service on the one hand and the fixed-satellite service on the other hand, operating at frequencies of the order of 14 GHz (See Add. 1 to Vol. IV)

satellite systems

Question 13/4 Contributions to the noise temperature of an earth-station receiving antenna

Question 14-1/4 Propagation factors affecting sharing of the radio-frequency spectrum and coordination between space and terrestrial radio-relay systems

Question 20/4 Operation and maintenance of earth stations

Question 21/4 Safety aspects of radio-frequency radiation from earth stations and terrestrial stations

Question 22/4 Use of systems in the fixed-satellite service in the event of natural disasters, epidemics, famines and similar emergencies (See Add. 1 to Vol. IV)

STUDY GROUP 5

(Volume II (1))

Question 1-1/5 Propagation over inhomogeneous and rough earth

Study Programme 1-1A/5 Influence of irregular terrain on tropospheric propagation

Question 2-1/5 Influence of the non-ionized regions of the atmosphere on wave propagation. Radio meteorology for telecommunications

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Study Programme 5-1B-1/5 Propagation data required for trans-horizon radio-relay systems

Study Programme 5-1C-1/5 Attenuation and refraction due to the troposphere in space radiocommunication systems

Study Programme 5-1D-1/5 Propagation factors affecting the sharing of the radio-frequency spectrum between space and terrestrial radio-relay systems

Study Programme 5-1E-1/5 Influence of scattering from precipitation on the siting of earth stations

Study Programme 5-1F-1/5 Site-shielding factor to be used in calculating coordination distances

* Study Programme 7A/5 VHF and UHF propagation curves in the frequency range 30 MHz to 1 GHz. Broadcasting and mobile services

* This Study Programme does not arise from any Question under study.

No. Title

Question 8/5 Propagation data required for sound and television broadcasting in the frequency bands above 10 GHz

Question 9/5 Propagation considerations important to mobile services using communication or radiodetermination satellite systems

STUDY GROUP 6

(Volume II (2))

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Question 2-1/6 Geographic distribution and programme of regular ionospheric observations

Study Programme 2-1A-1/6 Improvement in the world-wide ionospheric observing programme for numerical mapping purposes

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Study Programme 4A-1/6 Prediction of sporadic E

Study Programme 4B-1/6 Propagation by way of sporadic E and other anomalous ionization

Question 5-1/6 Propagation between stations below the ionosphere by ducting above the ionization maximum of the F region

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Question 7/6 Radio noise within and above the ionosphere

* Study Programme 8A/6 Prediction of solar index

* Study Programme 9A/6 Basic prediction information for ionospheric propagation

* Study Programme 10A/6 Identification of precursors indicative of short-term variations of ionospheric propagation conditions and methods for describing ionospheric disturbances and the performance of radio circuits

Question 11/6 Sky-wave field strength and transmission loss at frequencies above approximately 1·5 MHz

Study Programme 11A-1/6 Estimation of sky-wave field strength and transmission loss for frequencies between the approximate limits of 1·5 and 40 MHz

* Study Programme 12A/6 Ionospheric sounding at oblique incidence

* Study Programme 13A-1/6 Ionospheric-scatter propagation

* Study Programme 14A/6 Back-scattering

* Study Programme 15A/6 Intermittent communication by meteor-burst propagation

Question 16/6 Fading of radio signals received via the ionosphere

Study Programme 16A-1/6 Fading of radio signals received via the ionosphere

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* This Study Programme does not arise form any Question under study.

No. Title

Question 17/6 Propagation at frequencies below about 1500 kHz with particular emphasis on ionospheric effects

Study Programme 17A-1/6 Sky-wave propagation at frequencies between approximately 150 and 1500 kHz

Study Programme 17B/6 Propagation at frequencies below about 150 kHz with particular emphasis on ionospheric effects

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* Study Programme 20A-1/6 Measurement of atmospheric radio noise

* Study Programme 21A-1/6 Measurement of man-made radio noise

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Question 23/6 Ionospheric cross-modulation

STUDY GROUP 7

(Volume III)

Question 1/7 Standard-frequency and time-signal emissions

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Study Programme 1C-1/7 Time-signal emissions

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Question 3/7 Stability of standard-frequency and time-signal emissions as received

Study Programme 3A-1/7 Frequency-spectrum conservation for high precision time-signals

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Study Programme 3D/7 Methods for reliable very low frequency-phase comparisons

Question 4-1/7 Dissemination of standard-frequencies and time-signals

Study Programme 4-1A/7 Dissemination of standard-frequencies by carrier-frequency stabilization of broadcasting emissions

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* This Study Programme does not arise from any Question under study.

No. Title

Question 5/7 High precision standard-frequency and time-signal emissions

Question 6/7 Systems of coordinate time

Study Programme 6A/7 Systems of coordinate time

STUDY GROUP 8

(Volume VI)

Question 1/8 Signal-to-interference protection ratios and minimum field strengths required in the mobile services

* Study Programme 3A/8 Selective calling systems for use in the international maritime mobile services

Question 5-1/8 The introduction of direct-printing telegraph equipment in the maritime mobile service

Question 6/8 Self-supporting antennae for use on board ships

Study Programme 6A-2/8 Self-supporting antennae for use on board ships. Performance at 500 kHz (See Add. 2 to Vol. VI)

Question 7-1/8 Characteristics of equipment and principles governing the allocation of frequency channels in the land mobile services between 25 and 500 MHz

Study Programme 7-1A/8 Technical characteristics of land mobile equipment between 25 and 500 MHz

Study Programme 7-1B/8 Minimum channel separation and optimum systems of modulation for land mobile services between 25 and 500 MHz

Study Programme 7-1C/8 Interference due to intermodulation products in the land mobile services between 25 and 500 MHz

Study Programme 7-1D/8 Systems for radiotelephone networks for the land mobile service with extremely economical frequency utilisation

Question 8-1/8 MF and HF land mobile services. Preferred technical characteristics of single-sideband equipment

Question 9-1/8 Selective-calling system for future operational requirements of the maritime

Study Programme 9-1A/8 Selective-calling systems for use in the international maritime mobile services in the ship to shore direction (See Add. 2 to Vol. VI)

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Question 11/8 Improvements in the performance of radiotelephone circuits in the MF and HF maritime bands

Study Programme 11A/8 Improvements in the performance of radiotelephone circuits in the MF and HF maritime bands. Linked compressor and expander systems

Question 12/8 Radio-paging systems

Question 13-1/8 Influence of the Doppler effect on radiocommunication in the aeronautical mobile service (See Add. 2 to Vol. VI)

Question 14/8 Direct-printing and other data signals using voice-frequency techniques on VHF radiotelephony channels in the maritime mobile service

* This Study Programme does not arise from any Question under study.

No. Title

Question 15/8 Use of radiobeacon stations for communications

Question 16/8 Systems providing radiocommunication and/or radiodetermination using satellite techniques for aircraft and/or ships

Question 17/8 Technical characteristics of systems providing communication and/or radiodetermination using satellite techniques for aircraft and/or ships

Study Programme 17A/8 Technical characteristics of systems providing communication and/or radiodetermination using satellite techniques for aircraft and/or ships

Study Programme 17B/8 Technical and economic characteristics of systems providing radiocommunication and/or radiodetermination for ships using satellite techniques in different frequency bands (See Add. 2 to Vol. VI)

Study Programme 17C/8 Technical characteristics of systems providing radiocommunication and/or radiodetermination for ships using satellite techniques in the VHF band (See Add. 2 to Vol. VI)

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Question 18-1/8* Internal communications on board ships by means of portable radiotelephone equipment (See Add. 2 to Vol. VI)

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Study Programme 21A/8 Definition of interference and units of measurement (See Add. 2 to Vol. VI)

Question 22/8 Mobile radiocommunication equipment for relief operations (See Add. 2 to Vol. VI)

Question 3-1/9 Radio-relay systems for television. Preferred characteristics for the transmission of signals for sound and television broadcasting

Study Programme 3-1A-1/9 Radio-relay systems for television and telephony. Preferred characteristics for the transmission of more than one sound programme channel

Study Programme 3-1C/9 Radio-relay systems for television. Preferred characteristics for the transmission of colour television and the simultaneous transmission of colour television and other signals

Question 4/9 Radio-relay systems for television and telephony. Service channels

Study Programme 4A-1/9 Radio-relay systems for television and telephony. Preferred characteristics for auxiliary radio-relay systems for the provision of service channels

Question 5-1/9 Radio-relay systems for television and telephony. System reliability

Study Programme 5-1A-1/9 Radio-relay systems for television and telephony. Preferred characteristics for multiline switching arrangements

Study Programme 5-1B/9 Radio-relay systems for telephony. Interruptions to traffic on line-of-sight systems

Study Programme 5-1C/9 Radio-relay systems for telephony and television. System reliability terminology

Question 6/9 Protection ratios for the operation of communication services within the channels of a broadcasting service

Question 7-1/9 Trans-horizon radio-relay systems

Study Programme 7-1B/9 Trans-horizon radio-relay systems. Reduction in path antenna gain

* Question 18/8, adopted by correspondence, appeared in Addendum 1 to Volume VI, October 1971. At the interim meeting of Study Group 8, Geneva, 1972, it was replaced by draft Question 18-1/8; a Question which was also adopted by correspondence, in 1972.

No. Title

Study Programme 7-1C/9 Trans-horizon radio-relay systems. Optimum frequency deviation in frequency-modulation systems using frequency-division multiplex

Study Programme 7-1D/9 Trans-horizon radio-relay systems. Methods of measuring the performance of systems for telephony using frequency-division multiplex

Question 9-1/9 Radio-relay systems operating in bands 8 and 9 for the provision of telephone trunk connections in the new or developing countries

Study Programme 9-1A/9 Technical characteristics of simple radio-relay equipment operating in bands 8 and 9 for the provision of telephone trunk connections in the new or developing countries

Study Programme 9-1B/9 Radio-relay systems operating in bands 8 and 9 for the provision of telephone trunk connections in the new or developing countries. Permissible noise

Question 10-1/9 Telephone link with single-channel radio equipment operating in bands above 30 MHz

Question 11/9 Transmission planning for radio-relay systems in the new or developing countries

Question 12-1/9 Radio-relay systems for the transmission of pulse-code modulation and other types of digital signal

Study Programme 12-1A/9 Radio-relay systems for the transmission of pulse-code modulation and other types of digital signal. Calculations and measurement of the effects of propagation and interferecne

Question 13-1/9 Radio-relay systems. Diversity techniques

Question 14/9 Trans-horizon radio-relay systems. Preferred characteristics, permissible noise and signal distortion for the transmissions of monochrome television signals

Question 16/9 Radio-relay systems for television and telephony. Use of frequencies above about 12 GHz

Question 17/9 Criteria for frequency sharing between radio-relay systems and communication-satellite systems

Study Programme 17A/9 Antenna radiation diagrams of radio-relay stations for use in interference studies

Question 18/9 Interference criteria for radio-relay systems (See Add. 1 to Vol. IV)

Question 19/9 Limitation of spurious emissions and frequency tolerances of radio-relay systems (See Add. 1 to Vol. IV)

Question 20/9 Transportable fixed service radiocommunication equipment for relief operations (See Add. 1 to Vol. IV)

* Study Programme 1A-1/10 Standards of sound recording for the international exchange of programmes

* Study Programme 2A/10 Measurement of audio-frequency noise for broadcasting and in sound recording systems

Question 4/10 Determination of the subjective loudness of a broadcasting programme

Study Programme 4A/10 Measurement, indication and control of the subjective loudness of a broadcast programme

Question 11-1/10 Broadcasting in band 6 (MF). Reduction of sky-wave field strength

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* This Study Programme does not arise from any Question under study.

No.	Title
Question 13/10	Broadcasting in bands 5 (LF) and 6 (MF). High-efficiency transmitting antennae
Question 14/10	Broadcasting in band 7 (HF). Directional antenna systems
Study Programme 14A/10	Broadcasting in band 7 (HF). Directional antenna systems
Question 15/10	Stereophonic broadcasting
Study Programme 15A/10	Stereophonic broadcasting. Standards for compatible systems in sound and television broadcasting
Study Programme 15B/10	Tolerances for the audio-frequency parameters of the stereophonic transmission chain
Study Programme 15C/10	Compatibility of a monophonic signal obtained from a stereophonic source
Question 16/10	Techniques for checking the essential characteristics of frequency-modulation stereophonic broadcasting
Study Programme 16A/10	Checking stereophonic modulation characteristics. Parameters and methods
Question 17-1/10	Simultaneous transmission of two or more sound programmes in frequency-modulation broadcasting
Study Programme 17-1A/10	Simultaneous transmission of two or more sound programmes in frequency-modulation broadcasting. Choice of parameters
Question 18-1/10	Simultaneous transmission of two or more sound channels in television
Study Programme 18-1A/10	Simultaneous transmission of two sound channels in television. Objective method of measurement of crosstalk
Study Programme 18-1B/10	Simultaneous transmission of two or more sound channels in television
Question 19/10	Frequency-modulation broadcasting in band 8 (VHF). Polarization of emissions
Question 20-1/10	Broadcasting-satellite service. Sound broadcasting
Study Programme 20-1A/10	Broadcasting-satellite service for community reception. Sound broadcasting
Study Programme 20-1B/10	Possible sound broadcasting satellite systems and their relative
Study Programme 20-1C/10*	Broadcasting-satellite service in the 12 GHz band
	(See Add. 1 to Vol. V)
Question 25/10	Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF)
Study Programme 25A/10	Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF). Radio-frequency protection ratios
Study Programme 25B/10	Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF). Objective two-signal methods of measurement of radio-frequency protection ratios
Study Programme 25C/10	Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF). Minimum field-strength to be protected
Study Programme 25D/10	Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF). Reception of the sky-wave signal

No. Title

Study Programme 25E/10 Sound broadcasting systems in bands 5 (LF) and 6 (MF). Limitation of radiated power taking account of ionospheric cross-modulation

Study Programme 25F/10 Sound broadcasting systems in bands 5 (LF), 6 (MF) and 7 (HF). Broadcasting coverage

Question 26/10 Transmission of additional programmes in frequency-modulation sound broadcasting in band 8 (VHF)

Question 27/10 Interference in the bands shared with broadcasting

Study Programme 27A/10 Short-distance broadcasting in band 7 (HF) in the Tropical Zone

Study Programme 27B/10 Interference in the frequency bands used for broadcasting in the Tropical Zone

Study Programme 27C/10 Interference in the bands shared with broadcasting

Question 28/10 Best method for calculating the field strength produced by a broadcasting transmitter in the Tropical Zone

Question 29/10 Design of transmitting antennae for broadcasting in the Tropical Zone

Question 30/10 Fading allowances for broadcasting in the Tropical Zone

Question 31/10 Determination of the effects of atmospheric noise on the grade of reception in the Tropical Zone

Question 32/10 Broadcasting in band 8 (VHF) in the Tropical Zone

* Study Programme 33A/10 Use of single-sideband reception for minimizing fading effects for re-broadcast applications within the Tropical Zone

Question 34/10** Feasibility of direct sound and television broadcasting from satellites

* Study Programme 36A/10 Characteristics of sound broadcasting receivers and receiving antennae (See Add. 1 to Vol. V)

STUDY GROUP 11

(Volume V (2))

Question 1/11 Colour television standards

Study Programme 1A/11 Standards for video colour-television signals

Study Programme 1B/11 Standards for radiated colour-television signals

Study Programme 1C/11 Constitution of a system of stereoscopic television

Study Programme 1D/11 Ratio of picture signal-to-synchronizing signal

Study Programme 1E/11 Simplification of synchronizing signals in television

Study Programme 1F/11*** Allocation of tolerances for colour television

Question 2-1/11 Exchange of television programmes

Study Programme 2-1A/11 Transcoding of colour television signals from one system to another

* This Study Programme does not derive from any Question under study.
** This Question is identical with Question 23/11.
*** Identical with Study Programme 1-1E/CMTT.

No. Title

Question 3-1/11 Assessment of the quality of television pictures

Study Programme 3-1A/11 Subjective assessment of the quality of television pictures

Question 4-1/11 Ratio of the wanted-to-unwanted signal in television

Study Programme 4-1A/11 Ratio of the wanted-to-unwanted signal in television. Use of the offset method, when there are great differences between the carrier-frequencies of the interfering stations

Question 5-1/11 Broadcasting satellite service. Television

Study Programme 5-1A/11 World-wide standard for television broadcasting from satellites

Study Programme 5-1B/11 Composite 625-line signal for television broadcasting from satellites

Study Programme 5-1C/11 Possible broadcasting-satellite systems for television and their relative acceptability

Study Programme 5-1D/11 Broadcasting-satellite service (television) for community reception

Study Programme 5-1E/11 Broadcasting satellite service (television). Types of modulation for bands 9 and 10

Study Programme 5-1F/11 Characteristics of a television receiving system for direct trans-
Study Programme 5-1G/11** Broadcasting-satell

Question 6/11 Ghost images in television

Study Programme 6A/11 Ghost images in television

Question 7-1/11 Recommended characteristics for individual or collective television antenna systems for domestic reception of signals from terrestrial transmitters

* Study Programme 9A/11 Distortion of television signals due to the use of vestigial-sideband transmission

* Study Programme 10A/11 Conversion of a television signal from one standard to another

* Study Programme 11A/11 Reduction of the channel capacity required for a television signal

* Study Programme 12A/11 Insertion of special signals in the field-blanking interval of a television signal

Question 13/11 Specifications for low-cost television receivers

Question 14/11 Subjective quality targets of overall television systems

Study Programme 14A/11 Subjective quality targets of overall television systems

Question 15/11 Automatic monitoring of television stations

Question 16/11 Standards for the international exchange of monochrome television programmes. Film recording and reproducing

Question 17/11 Optical sound recording and reproducing standards for the international exchange of television programmes

Question 18/11 Recording of television signals on magnetic tape

* This Study Programme does not arise from any Question under study.

** Identical with Study Programme 20-1B/10.

No. Title

Study Programme 18A/11 Recording of television signals on magnetic tape

Study Programme 18B/11 Standards for the international exchange of television programmes on magnetic tape. Helical-scan recording

Study Programme 18C/11 Measuring methods for television tape recording

Question 19/11 Magnetic sound recording and reproducing standards for the international exchange of television programmes on film. Recording and reproducing characteristics for 16 SEPMAG and 16 COMMAG

Question 20/11 Recording of colour television signals on film

Question 21/11 Standards for the international exchange of colour television programmes. Film recording and reproducing

Question 22/11 Methods of synchronizing various recording and reproducing systems

Study Programme 22A/11 Recording of coded information on the cue track of television magnetic tapes

Question 23/11* Feasibility of direct sound and television broadcasting from satellites

CMTT

(Volume V (2))

Question 1-1/CMTT Transmission of television signals over long distances

Study Programme 1-1B-1/CMTT Performance requirements for international television circuits

Study Programme 1-1C/CMTT Insertion of special signals in the field-blanking interval of a television signal

Study Programme 1-1D/CMTT Damped very-low frequency oscillations in long television circuits

** Study Programme 1-1E/CMTT Allocation of tolerances for colour television

Question 2-1/CMTT Reference chains for television. Application to real terrestrial chains longer than 2500 km and to chains including communication-satellite links

Study Programme 2-1A/CMTT Television reference chains for terrestrial and communication-satellite links

Question 4-1/CMTT Differences in transmission time between the sound and picture components of a television signal

Study Programme 4-1A-1/CMTT Coordination of the transmission of sound and picture signals

Study Programme 4-1B/CMTT Transmission of sound and picture signals by time-division multiplex

Question 5-1/CMTT Transmission of sound-programme signals over long distances

Study Programme 5-1A-1/CMTT Circuits for high quality monophonic programme transmissions

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* This Question is identical with Question 34/10.

**Identical with Study Programme 1F/11.

No.	Title
Study Programme 5-1B-1/CMTT	Circuits for stereophonic programme transmissions
Study Programme 5-1C-1/CMTT	Revision of C.C.I.T.T. Recommendation J.21
Study Programme 5-1D-1/CMTT	Characteristics of signals sent over monophonic and stereophonic programme circuits
Study Programme 5-1E-1/CMTT	Compandors for programme circuits
Study Programme 5-1G/CMTT	Transmission of sound programme signals over communication-satellite links
Question 7/CMTT	Automatic measurement and monitoring of television chains
Study Programme 7A/CMTT	Automatic remote monitoring of test signals in television
Study Programme 7B/CMTT	Automatic measurement and monitoring on television chains
Question 8/CMTT	Standard test signal for conventional loading of a television channel
Question 9/CMTT*	Study of a domestic or regional satellite system for telecommunications and sound and television broadcast transmission
Question 10/CMTT	Standards for television systems using digital modulation (See Add. 2 to Vol. V)
Study Programme 10A/CMTT	Digital transmission of television and sound programme signals (See Add. 1 to Vol. V)
Question 11/CMTT	Performance characteristics of 5 kHz-type sound programme circuits (See Add. 2 to Vol. V)

* This Question was put to the C.C.I.R. by the Meeting of the Plan Committee for Asia and Oceania, Tehran, 1970.

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