Documents of the Extraordinary Administrative Radio Conference to allocate frequency bands for space radiocommunication purposes (EARC-63)

(Geneva, 1963)

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

- This PDF includes Document No. 101 - 200.
- The complete set of conference documents includes Document No. 1 - 243, DT No. 1 - 109.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 101-E
19 October, 1963
Original: French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

STATEMENT BY THE DELEGATIONS
OF THE PEOPLE'S REPUBLIC OF BULGARIA, THE HUNGARIAN PEOPLE'S REPUBLIC,
THE ROUMANIAN PEOPLE'S REPUBLIC, AND THE CZECHOSLOVAK SOCIALIST REPUBLIC

Geneva, 18 October, 1963

The Extraordinary Administrative Conference allocating frequency bands for space radio communications is called upon, by its terms of reference, to tackle the major problems of space communication. These problems are such that they cannot be solved without close co-operation by all the countries operating radio communications.

A very large country with a highly-developed system of radio communications - namely China - is not represented at this Conference. The representatives of Chiang Kai-Shek, who claim to defend the interests of China, cannot possibly do so, being unable to enter into obligations of any kind with regard to the radio communications of this country. The only government which can legitimately appoint persons to represent China at this Conference is the Government of the People's Republic of China.

Our delegations consider that the absence of a country as important in the field of radio as China is seriously detrimental to the activities of this Conference and jeopardizes its successful outcome.

	Head of the Delegation of the People's Republic of Bulgaria	Head of the Delegation of the Hungarian People's Republic
Signed :	M. VELKOV	L. HORVATH
	Head of the Delegation of the Roumanian People's Republic	Head of the Delegation of the Czechoslovak Socialist Republic
Signed :	M. GRIGORE	M. ZAHRADNÍČEK

SPACE
RADIOCOMMUNICATION
CONFERENCE

Corrigendum No.1 to
Document No. 102-E
21 October, 1963.

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6B
TO COMMITTEE 6

Page 4, end of second paragraph, add the following sentence:

"In this list, each class of station shall occupy a special section".

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 102-E
21 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

FIRST REPORT OF WORKING GROUP 6B TO COMMITTEE 6

1. The Working Group held two Meetings, on Thursday 10 October, 1963 and on Thursday 17 October, 1963 respectively.

2. At its first Meeting the Group welcomed Mr. F. Dellamulla and Mr. T. Wang, Members of the I.F.R.B. and Mr. J. Kunz of the General Secretariat. Mr. V. Henderickx (Belgium) was nominated to assist in the elaboration of draft texts.

3. The proposals referred to the Group were introduced by the delegations who had submitted them to the Conference, after which each of the proposals was discussed in detail.

4. It was agreed that discussion on the proposals contained in :

Document No. 7, page 54 (France) - Appendices 9 and 10

Document No. 34, page 5 (Australia) - No. 695

Document No. 36, page 3 (Mexico) - last paragraph

as well as the suggestions made by the I.F.R.B., contained in Document No. 24 (Rev), pages 8 - 20, Appendices 9 and 10, should be deferred until further information from Committee 4 would be available.

The proposal on pages 3 and 4 (No. 119) of Document No. 34 (Australia) was withdrawn.

No agreement could be reached on the proposal on page 39 (No. 711 Rev) of Document No. 7 (France). This proposal is therefore referred to Committee 6.

5. At its second meeting considered the draft texts for the remaining proposals.

It was agreed that the texts, annexed hereto, would be submitted to Committee 6.

P.E. WILLEMS
Chairman
Working Group 6B

Annex : 1

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A N N E X

116a ADD §4a. For the purpose of resolving cases of harmful interference, the /Radio Astronomy Service/ shall be treated as a radiocommunication service, /However, protection from services in other bands shall be afforded the Radio Astronomy Service only to the extent that such services are afforded protection from each other.*/

/711a/ ADD /§8a/ When cases of harmful interference occur as a result of emissions from /space stations/, the Administrations concerned shall, upon request from the Administration having jurisdiction over the station experiencing the interference, furnish current ephemeral data necessary to allow calculation of the positions of the /space station/.

735.1 MOD In the present state of the technique, it is recognized nevertheless that the transmission of identifying signals for certain radio systems (e.g. radiodetermination, radio relay systems and systems in the /space service/) is not always possible.

737a ADD 2a. /Space stations/ may also be identified by specifying the inclination and period of the orbit and the apogee and perigee distances is kilometres. In the case of /space stations/ located on /stationary satellites/, the geographical longitude of the projection of the satellites' position on the surface of the earth shall be specified. (See also No. 773a.)

Title ADD Stations in the /Space Service/

773a ADD §21a. It is recommended that, as far as the state of technique permits, the call signs of stations in the /space service/ consist of :

- two letters followed by two or three digits (other than the digits 0 and 1 in cases where they immediately follow a letter). (See also No. 737a.)

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*) Upon adoption of the second sentence of No. 116a a redundancy will be be created in certain footnotes relating to radio astronomy. Specifically, the last sentence of footnotes No. 204, No. 261 and No. 286 should be deleted inasmuch as the same provision is contained in No. 116a.

807a ADD /(VI bis)/ List /VI bis/. List of Stations in the /Space Service/ and in the Radio Astronomy Service.

This list shall contain particulars of /earth/ and /space stations/ and of stations in the Radio Astronomy Service.

808 MOD (VII) List VII. Alphabetical List of Call Signs Assigned from the International Series to Stations Included in Lists I to /VI bis/.

815 MOD S2. (1) The Secretary-General shall publish the amendments to be made in the documents listed in Nos. 790 to 814 inclusive. Once a month, administrations shall inform him, in the form shown for the lists themselves in Appendix 9, of the additions, modifications or deletions to be made in Lists IV, V, VI and (/VI bis/) using for this purpose the appropriate symbols shown in Appendix 10. Furthermore, in order to make the necessary additions, modifications and deletions to Lists I, II, III (/and VI bis/), he shall use the data provided by the International Frequency Registration Board, obtained from the information received in application of the provisions of Articles 9, /9 A/ and 10. He shall make the requisite amendments to List VII by using the data he has received for Lists I to /VI bis/.

826a ADD /S8 bis/. The list of Stations in the /Space Service/ and in the Radio Astronomy Service /(List VI bis)/ shall be republished at intervals to be determined by the Secretary-General. Recapitulative supplements shall be published every six months.

831 MOD S12. (1) The forms in which the List I to /VI bis/ inclusive, List VIII and the Radiocommunication Statistics are to be prepared are given in Appendix 9. Information concerning the use of these documents shall be given in the prefaces thereto. Each entry shall include the appropriate symbol, as shown in Appendix 10, to designate the category of station concerned. Additional symbols, where necessary, may be selected by the Secretary-General, any such new symbols being notified by the Secretary-General to administrations.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 103-E
21 October 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Memorandum by the Secretary-General

SITUATION OF CERTAIN COUNTRIES WITH RESPECT TO THE CONVENTION

Referring to Document No. 48, I take pleasure in informing the Conference that the Government of the Republic of the Sudan has today deposited an instrument of ratification of the Geneva Convention.

Gerald C. GROSS
Secretary-General

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 104-E
21 October, 1963
Original : English
French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SUMMARY RECORD

OF THE SECOND MEETING

Saturday 19 October 1963, 2.30 p.m.

Chairman : Mr. E. ESPING (Sweden)

Vice-Chairman : Mr. M. ZAHRADNIČEK (Czechoslovak S.R.)

1. Agenda

The agenda for the Meeting as set out in Document No. 94 was approved.

2. Summary Record of the First Meeting (Document No. 66)

This Document was approved.

3. Report of Working Group 4A (Document No. DT/28 and Document No. 99)

The report was introduced by Mr. P. Bouchier (Belgium) acting Chairman of Working Group 4A during the absence of the Chairman, Colonel J. Lochard (France). In his report Mr. Bouchier indicated that the Working Group could not agree on which of the two different philosophies presented therein should be adopted and requested the opinion of the Meeting on this question of principle. He requested also that the existing Annex to Document No. DT/28 should be numbered Annex I, and that Spain should be added to the countries sponsoring this Annex. An Annex 2 will list the delegations present at the work of the drafting Sub-Working Group 4A1.

After some discussion it was decided that Working Group 4A should prepare two lists of definitions to be as complete as possible and in accordance with the two philosophies discussed. The two lists of definitions should be available for discussion at the third Meeting of Committee IV on Tuesday 22 October.

4. Report of Working Group 4B (Document No. 91)

Mr. Bouchier intorduced Document No. 91 and this was accepted without further discussion. In addition to the material in Document No. 91, he indicated that in the opinion of Working Group 4B, the portion of Document No. 34, page 5, concerning cessation of emissions was more appropriate to Committee 6.

5. Report of Working Group 4C (Document No. DT/ 27 and Corrigendum I)

After introducing the above Document, Mr. Schultz outlined the progress made by the two sub-working groups and indicated that documents from these two groups will probably be available during next week.

There being no other business the Meeting was closed at 4 p.m.

Rapporteur :
E.F. SANDBACH

Chairman :
E.ESPING

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 105-E(Rev.)
22 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

AGENDA

THIRD MEETING OF COMMITTEE 4

Tuesday 22 October 1963 at 2.30 p.m.

1. Summary record of the second meeting (Document No. 104)
2. Report of Working Group 4A (Documents Nos. DT/28, DT/41, DT/43, DT/52 and DT/46)
3. Any other business.

E. ESPING
Chairman

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 105-E
21 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

AGENDA

THIRD MEETING OF COMMITTEE 4

Tuesday 22 October 1963 at 2.30 p.m.

1. Summary record of the second meeting, Document No. 104

2. Report of Working Group 4A,
   Document No. DT/28, Document No. DT/41, Document No. DT/43

3. Any other business.

E. ESPING
Chairman

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 106-E
21 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Delegation of the Republic of China

STATEMENT

Geneva, 21 October, 1963

With reference to the statement by the Bulgarian, Hungarian, Rumanian and Czechoslovak Delegations (Document No. 101-E dated 19 October, 1963), I wish to state that my statement appearing in Document No. 90-E dated 16 October, 1963 applies to these delegations also.

I request that this statement be issued as an official document of the E.A.R.C.

For the Head

(signed) Chen Shu-Jen
Delegate,
Delegation of the Republic of China

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 107-E (Rev.2)
29 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

International Amateur Radio Union

MEMORANDUM ON AMATEUR EXPERIMENTAL SPACE SATELLITE ACTIVITY

The International Amateur Radio Union, with 60 affiliated national societies, represents more than 500,000 radio amateurs throughout the world.

Radio amateurs have an interest in the furtherance of world peace, and form a world-wide brotherhood of friendship which is unique. Its activities are open to all who are qualified and desire to participate. It is a body of people concerned in the pursuit of scientific knowledge for their own and radio's sake.

The orbiting of Sputnik in October, 1957, and its radio reception and tracking by thousands of radio amateurs, created initial enthusiasm and interest in learning about the combined scientific fields of electronics and space.

On their own time and at their own expense, a group of amateurs in the U.S.A. designed, constructed, and obtained launch permission for the Oscar I and II satellites. Using 145 Mc/s in the exclusive amateur band 144-146 Mc/s, the Oscar beacon transmitters were heard and tracked by thousands of radio amateurs throughout the world, alerted through I.A.R.U. coordination. In most cases reception was accomplished with the very simplest equipment. Those with more advanced apparatus cooperated in Doppler measurements and charting of the Oscar orbit. Results of the experiments were published in many amateur magazines, and are being studied by many radio engineers throughout the world.

Discussions are now taking place between member societies of I.A.R.U. with the objective of building additional satellites as a cooperative effort. It would be their hope that all countries with launching facilities would directly assist the amateur satellite program.

The following points may be helpful:

1. Amateur satellites have been built without direct government or commercial assistance except for the launch. They are conceived, designed and constructed entirely by amateurs, according to environmental specifications, on a voluntary basis. In the two Oscar experiments, launch was obtained through installation as balance weight on a primary space vehicle. Once in orbit, the Oscar satellite unit was ejected by an explosive

mechanism which sent Oscar on a completely separate orbit of its own, entirely independent of the primary vehicle. The tracking and issuing of orbital predictions was, therefore, also exclusively a responsibility of amateurs.

2. No frequencies outside the amateur allocations have been used in the Oscar experiments nor are they contemplated for future amateur satellite activity. All transmissions to and from the satellite are planned within exclusive world-wide amateur bands, and within presently authorized power limits.

3. Mutual interference within the amateur bands is commonplace, and results simply from the large number of stations crowded into comparatively small bands. Amateurs have never sought regulatory help to solve this general problem. Amateurs have always had interference but such contributes to the technical developments of radio equipment and to the better use of the crowded state of the amateur bands through more selectivity in receivers and directivity of antennas.

4. Because amateur satellite experiments, like all amateur endeavours, are accomplished solely through voluntary personal time and effort, and are particularly limited by the amount of personal money which can be expended, as a practical matter amateur satellites are not contemplated with a power of more than a very few watts. Thus it is the satellite itself, rather than routine terrestrial amateur operation, which will need interference protection. This necessary coordination is accomplished through I.A.R.U. societies working under regulations of each national administration.

5. No increase in transmitter power is contemplated by or necessary for amateur ground stations which will transmit to the satellite. Normally permitted power inputs will be used, as authorized by the amateur regulations of each administration. The use of highly-directive antennas tracking the satellite position will accomplish the necessary additional transmitting and receiving gain.

6. Amateur satellite activity will continue as a series of experiments rather than become established as a satellite "service" in the normal sense of that term. Practical limitations on power sources, particularly from the economic standpoint, indicate that the most amateurs can hope to construct is a transmitter or repeater with a life of four or five weeks.

Document No. 84 described amateur satellite activity in the 144-146 Mc/s band. Working Group 5C has come to substantial agreement on the use of this band for further amateur space experimentation.

There are other exclusive amateur bands in which similar arrangements would seem appropriate to provide flexibility for amateur experimental satellite communication. In this connection, it is an extremely difficult technical problem to accomplish both reception and

retransmission by an active repeater satellite within the 2 Mc/s available to amateurs at 144 Mc/s.

A particular band which would give rewarding results at the present period of the sunspot cycle is that between 28 and 29.7 Mc/s, where currently ionospheric propagation is almost non-existent. A satellite built and operated by amateurs would form the basis of a number of valuable experiments using this band in conjunction with the 144 Mc/s band.

Thousands of individual citizens, licensed by their administrations as amateurs, are eager to learn more about and to participate in the combined scientific fields of electronics and space. They look forward to achievement of their aims!

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 107-E (Rev.)
24 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

A MEMORANDUM
ISSUED BY THE I.A.R.U. TEAM OF OBSERVERS
TO THE SPACE COMMUNICATIONS CONCERENCE

Experiments undertaken by radio amateurs using space satellites

The I.A.R.U. represents over 500,000 radio amateurs throughout the world including the very large number situated in the U.S.A. and the Soviet Union.

There is nothing secretive or sinister in amateur radio which is a body of people concerned in the pursuit of scientific knowledge for its own sake. Radio amateurs have a vested interest in the furtherance of world peace and form a great world-wide brotherhood of friendship which is quite unique.

So far, radio amateurs have taken part in the experiments known as the Oscar projects. OSCAR - Orbital Satellite carrying Amateur Radio. These were engineered by amateurs in the United States and the two Oscar satellites were put into orbit by the United States Space Administration who very kindly gave them a ride in one of their rockets. An Oscar III satellite is now being built and will again be an American project but with amateurs all over the world taking part.

Discussions are now taking place between other member societies in I.A.R.U. with the object of building a further satellite as a co-operative effort. If the United States does not happen to have a rocket going our way, when it is ready, then nothing could delight us more than that our friends in the Soviet Union or any other country should offer it a lift.

As in the other Oscar experiments, every detail of the project and its results will be published.

Radio amateurs have certain very small sections of the spectrum which are exclusive to the Amateur Service.

Traditionally, and wisely, the Radio Regulations have left to each administration questions of details of amateur operation within allocated bands, such as qualifications for license, permitted modes of emission, bandwidths, authorizations for portable and mobile operation, etc.

Thus we wish to express accord with the general principle that what amateurs do within their exclusive bands, where no problem of interference to other services can arise, need not require detailed permission in the basic Radio Regulations.

That our Administrations should concern themselves with trying to save amateurs from mutual interference is certainly something new !

We take interference as a matter of course and thrive on it. Many of the technical developments now commonplace in radio receivers owe their origin to the crowded state of the amateur bands and the need for more and more selectivity in receivers.

Nor have the Radio Regulations attempted to solve the problem of mutual interference between amateur stations. Freedom from individual station frequency assignments and the resultant flexibility of being able to move at will within the allocated bands, to meet changing propagation and mutual interference conditions, permits amateurs to make the maximum effective use of their frequency assignments.

Document No. 84 described amateur satellite activity in the 144-146 Mc/s amateur band. Working Group 5-C has come to substantial agreement on conditions for continuing amateur space experimentation in this band.

There are other exclusive amateur bands in which we hope similar arrangements can be made to provide flexibility for amateur experimental satellite communication.

A particular band which would give rewarding results at the present period of the sun cycle is that between 28 and 29.7 Mc/s where ionospheric propagation is almost impossible. A command satellite built and operated by radio amateurs would form the basis of a number of fascinating experiments in this band. When the ionosphere comes back into its own again, no one is going to bother to use a satellite. To some extent the same holds good for the amateur exclusive band 21 - 21.45 Mc/s.

Radio amateurs therefore ask that they be allowed to conduct their own experiments in their own exclusive bands and that they should not be hampered by unnecessary regulations.

A.O. MILNE

John HUNTOON

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 107-E
22 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

A MEMORANDUM
ISSUED BY THE I.A.R.U. TEAM OF OBSERVERS
TO THE SPACE COMMUNICATIONS CONFERENCE

Experiments undertaken by radio amateurs using space satellites

The I.A.R.U. represents over 500,000 radio amateurs throughout the world including the very large number situated in the U.S.A. and the Soviet Union.

There is nothing secretive or sinister in amateur radio which is a body of people concerned in the pursuit of scientific knowledge for its own sake. Radio amateurs have a vested interest in the furtherance of world peace and form a great world-wide brotherhood of friendship which is quite unique.

So far, radio amateurs have taken part in the experiments known as the Oscar projects. OSCAR - Orbital Satellite carrying Amateur Radio. These were engineered by amateurs in the United States and the two Oscar satellites were put into orbit by the United States Space Administration who very kindly gave them a ride in one of their rockets. An Oscar III satellite is now being built and will again be an American project but with amateurs all over the world taking part.

Discussions are now taking place between other member societies in I.A.R.U. with the object of building a further satellite as a cooperative effort. If the United States does not happen to have a rocket going our way, when it is ready, then nothing could delight us more than that our friends in the Soviet Union or any other country should offer it a lift.

As in the other Oscar experiments, every detail of the project and its results will be published.

Radio amateurs have certain very small sections of the spectrum which are exclusive to the Amateur Service.

Frankly, we feel that what we do within those bands is our own affair and that there is no need for any special permission from a purely radio standpoint.

That our Administrations should concern themselves with trying to save amateurs from mutual interference is certainly something new !

We take interference as a matter of course and thrive on it. Many of the technical developments now commonplace in radio receivers owe their origin to the crowded state of the amateur bands and the need for more and more selectivity in receivers.

A particular band which would give rewarding results at the present period of the sun cycle is that between 28 and 29.7 Mc/s where ionospheric propagation is almost impossible. A command satellite built and operated by radio amateurs would form the basis of a number of fascinating experiments in this band. When the ionosphere comes back into its own again, no one is going to bother to use a satellite. To some extent the same holds good for the amateur exclusive band 21 - 21.45 Mc/s.

Radio amateurs therefore ask that they be allowed to conduct their own experiments in their own exclusive bands and that they should not be hampered by unnecessary regulations.

A.O. MILNE

John HUNTOON

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 108-E
22 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FIRST REPORT BY WORKING GROUP 5A
TO COMMITTEE 5 (Allocations)

TELECOMMAND

1. Frequencies 148.25 Mc/s ± 15 kc/s and 154.2 Mc/s ± 15 kc/s

1.1 All proposals before the Conference concerning frequencies in the vicinity of 150 Mc/s for telecommand purposes were considered.

1.2 General agreement was reached on the draft new footnote appearing in Appendix 1 attached hereto.

2. Band 449.75 - 450.75 Mc/s

2.1 All proposals before the Conference concerning a frequency band around 450 Mc/s for telecommand purposes were considered.

2.2 General agreement was reached on the draft new footnote appearing in Appendix 2 attached hereto.

3. Band 1427 - 1429 Mc/s

3.1 All proposals before the Conference concerning this band have been considered.

3.2 General agreement was reached on the draft new Table given in Appendix 3 attached hereto.

Rapporteur
J.W. JEWERS

Chairman
P. MORTENSEN

Appendices : 3

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A P P E N D I X 1

ADD 285A The frequencies 148.25 Mc/s ± 15 kc/s and 154.2 Mc/s ± 15 kc/s may be used for space telecommand, subject to agreement among the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

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A P P E N D I X 2

ADD 319A The band 499.75 - 450-25 Mc/s may be used for space telecommand, subject to agreement among the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

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A P P E N D I X 3

Mc/s

Allocations to Services		
Region 1	Region 2	Region 3
ADD 1427-1429 SPACE TELECOMMAND FIXED MOBILE except aeronautical mobile		

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 109-E
23 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

United States of America

PROPOSED RESOLUTION TO THE ADMINISTRATIVE COUNCIL CONCERNING FUTURE MANAGEMENT OF FREQUENCY BANDS ALLOCATED FOR SPACE RADIOCOMMUNICATION PURPOSES

Considering,

that man is progressing rapidly in the conquest of outer space, that all nations will benefit and that this progress depends upon efficient and orderly space communication;

considering,

that this Space E.A.R.C. has allocated portions of the radio spectrum for space radiocommunication purposes, and has established technical criteria and frequency registration and notification procedures designed to facilitate the orderly introduction of space radiocommunication;

recognizing,

i) that the development of space technology has already reached a state which enables plans to be established with confidence for many types of global radiocommunications services;

ii) that in so doing, demands for these services, hitherto impracticable, may now be met, but

iii) that these developments, together with parallel developments in terrestrial telecommunication systems are progressing at a rapid rate, and that the decisions of this Conference may, as a result thereof, be subject to increasing refinement and improvement by future conferences of the Union;

believing,

that such refinement and improvement is in the best interest of all Members and Associate Members of the Union if the full benefits of new technology are to be realized;

resolves,

That the Administrative Council of the Union annually should review the progress in space radiocommunication made by Administrations, and available reports and recommendations of the permanent organs of the Union with respect thereto ;

and recommends,

that the Administrative Council should, in the light of its annual review, determine and recommend to Administrations what further steps the Union should take to ensure good frequency management in the bands allocated to space radiocommunication, including the convening of further Conferences where this is deemed to be desirable.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Corrigendum No. 1 to
Document No. 110-E
24 October, 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

C.C.I.T.T. and C.C.I.R. Secretariats

TERMS OF REFERENCE OF THE C.C.I.T.T./C.C.I.R. PLAN COMMITTEE

Does not concern the English text.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 110-E
23 October, 1963
Original : English/French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

C.C.I.T.T. and C.C.I.R. Secretariats

TERMS OF REFERENCE OF THE C.C.I.T.T./C.C.I.R. PLAN COMMITTEE

Document No. 42 has been circulated "for the information of all concerned".

This document contains, on page 7, a draft resolution referring to the preparation of frequency plans for space services. The draft resolution contains in paragraph 2 of "invites" and paragraph 3 of "requests the I.F.R.B." references to the C.C.I.T.T./C.C.I.R. Plan Committee.

These references imply a misunderstanding of the terms of reference of this committee which is a joint committee of the two C.C.I.s administered by the C.C.I.T.T. and accordingly the Director of the C.C.I.T.T. and the Acting Director of the C.C.I.R. would draw the attention of all concerned to the following :

1. By its Resolution No. 448 (issued in 1961) the Administrative Council set up the present organization of the Plan Committee and its sub-committees, with the two-fold task of :

   a) establishing the International Network Plan, and

   b) examining some technical, operational and rate questions to be studied by the C.C.I.s in accordance with their normal procedure.

2. Relations between the I.F.R.B. and the Plan Committee

2.1 Members of the I.F.R.B. attended some meetings of the Plan Sub-Committees, at which no question of frequency allocation was dealt with in session.

In 1962 the I.F.R.B. recommended that the Administrative Council should make a decision on the lines that the problems raised by the radiocommunication services and the co-ordination of frequencies at regional level are included in the terms of reference of the Plan Committee and its regional Sub-Committees.

2.2 A report to the Administrative Council by the Directors of the C.C.I.R. and the C.C.I.T.T. discussed in detail the arguments of the I.F.R.B. and concluded :

"The I.F.R.B.'s view that Resolution No. 448 enables the Plan Committee to consider frequency problems thus seems without any foundation".

In order, however, to meet what justification there appeared to be in the I.F.R.B. request, this report proposed the solution which was finally adopted by the Administrative Council in Decision No. D 310 (see below).

As the result of the discussion of this question the Administrative Council agreed :

a) that the terms of reference of the Plan Committee and regional Sub-Committees would not be extended, and

b) to request the I.F.R.B. to attend their meetings in a consultative capacity, at the expense of the Board.

2.3 The result of this discussion is reflected in Decision No. D 310 of the Council :

"No. D 310.- COMMITTEE FOR THE GENERAL PLAN FOR DEVELOPMENT OF TELE-COMMUNICATION NETWORKS

The Council decided that the I.F.R.B. may be represented in a consultative capacity when meetings of the Plan Committee and its regional Sub-Committees are held and can take advantage of the presence of a number of experts from many administrations to discuss with them questions of the co-ordination of regional frequency usage and related problems. Frequency matters not directly connected with the Plan must be dealt with outside formal meetings of the Committee".

3. The Plan Committee and space communications

3.1 In accordance with Resolution No. 3 of the C.C.I.R. Xth Plenary Assembly (Geneva, 1963), the Director of the C.C.I.T.T. has obtained the data provided by the Administrations on international traffic for 1962 and on the traffic envisaged for the following periods which might be accommodated via satellite telecommunication systems. This data was published unaltered in Document No. 38 of the E.A.R.C. This Conference therefore is already in possession of data enabling a preliminary estimate to be made of traffic requirements in the future and the corresponding over-all frequency bandwidth required. This data will be analysed by the Plan Committee, which is to meet in Rome in November and December 1963 and will be dealt with in the usual manner.

3.2 Lastly, the problems created by the introduction of satellite systems in the international network can be suitably dealt with by leaving to each organ of the Union its normal responsibilities.

The Plan Committee will estimate the capacity of the systems which will need to be established between certain points, and the technical characteristics of which will have been covered by the C.C.I.R. Recommendations. The I.F.R.B. will concern itself with the questions of frequencies within the terms established by the Radiocommunication Conference and may take advantage of the meetings of the Plan Committee to study particular problems with the Administrations, in accordance with Decision No. 310.

There is no need to modify the terms of reference of the Plan Committee and its Sub-Committees, which have been laid down by the competent authorities - the Plenary Assemblies of the two C.C.I.s and of the Administrative Council of the I.T.U.

J. LALOU
Counsellor
for Director C.C.I.T.T.
(on mission)

L.W. HAYES
Acting Director C.C.I.R.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 111-E
24 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FIRST REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

SPACE RESEARCH SERVICE

1. Bands 10.003 - 10.005 kc/s, 19.990 - 20.010 kc/s and 39.986 - 40.002 Mc/s

Agreement was reached on the amendments proposed to footnote 215 to the Table of Frequency Allocations. The agreed text of No. 215 of the Radio Regulations appears in Appendix 1 attached hereto.

2. Band 30.005 - 30.010 Mc/s

A new Table for the band 30.005 - 30.010 Mc/s appears in the Appendix 2 attached hereto.

3. Band 183.1 - 184.1 Mc/s

The agreed new text of foot-note No. 294 of the Radio Regulations appears in Appendix 3 attached hereto.

4. Band 2110 - 2120 Mc/s

It was agreed that the use of this band for the Space Research Service could be the subject of a new foot-note as shown in Appendix 4 attached hereto.

5. Band 2290 - 2300 Mc/s

5.1 The Delegation of Switzerland expressed the wish to return to this subject, if necessary, at a later stage.

5.2 A new Table for the band 2290 - 2300 Mc/s, reflecting the agreed viewpoint, appears in the Appendix 5 attached hereto.

6. Band 5250 - 5255 Mc/s

The new Table for this band appearing in Appendix 6 attached hereto was unanimously agreed by the Group.

7. Band 8400 - 8500 Mc/s

A new Table for the band 8400 - 8500 Mc/s appears in Appendix 7 attached hereto.

8. Band 31.5 - 31.8 Gc/s

A new Table for the band 31.5 - 31.8 Gc/s, reflecting the agreed viewpoint, appears in Appendix 8 attached hereto.

V.V. RAO
Chairman
Working Group 5B

Appendices: 8

A P P E N D I X 1

MOD 215 The bands 10,003 - 10,005 kc/s, 19,990 - 20,010 kc/s and 39.986 - 40.002 Mc/s are also allocated, on a secondary basis, to the space research service.

SUP 221 /concerns 19,990 - 20,010 kc/s/

SUP 235 /concerns 39.986 - 40.002 Mc/s/

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A P P E N D I X 2

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	30.005 - 30.010		
		FIXED 228 229 230· 231	
ADD		SATELLITE IDENTIFICATION	
		MOBILE	
ADD		SPACE RESEARCH	
		233	

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APPENDIX 3

MOD 294 The band 183.1 - 184.1 Mc/s is also allocated, on a secondary basis, to the space research service.

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APPENDIX 4

ADD 356A The band 2110 - 2120 Mc/s may be used for telecommand in conjunction with spacecraft engaged in deep space research, subject to agreement between the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

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A P P E N D I X 5

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2290 - 2300 FIXED SPACE RESEARCH (Telemetering and Tracking in deep space) Mobile	2290 - 2300 SPACE RESEARCH (Telemetering and Tracking in deep space) 356A	2290 - 2300 FIXED MOBILE SPACE RESEARCH (Telemetering and Tracking in deep space)

SUP 355

ADD 356A In Cuba, the band 2290 - 2300 Mc/s, is also allocated to the fixed and mobile services.

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A P P E N D I X 6

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
(MOD)	5250 - 5255 RADIOLOCATION Space Research 384		

NOC 384

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A P P E N D I X 7

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	8400 - 8500 SPACE RESEARCH FIXED MOBILE 394	8400 - 8500 SPACE RESEARCH 394B	8400 - 8500 SPACE RESEARCH FIXED MOBILE 394

MOD 394 In Australia and the United Kingdom, the band 8250 - 8500 Mc/s is allocated to the radiolocation service; the band 8400 - 8500 Mc/s is also allocated, on a secondary basis, to the space research service.

ADD 394A In Austria, Cuba, Cyprus, Spain, Ethiopia, France, Israel, Italy, Malaysia, New Zealand, Portugal, Federal Republic of Germany, Sweden and Switzerland, the space research service is a secondary service in the band 8400 - 8500 Mc/s.

ADD 394B In Cuba, the band 8400 - 8500 Mc/s is also allocated to the fixed and mobile services.

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A P P E N D I X 8

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
(MOD)	31.5 - 31.8 SPACE RESEARCH Fixed Mobile	31.5 - 31.8 SPACE RESEARCH	31.5 - 31.8 SPACE RESEARCH Fixed Mobile
ADD		405C	

ADD 405C In Cuba, the band 31.5 - 31.8 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 112-E
25 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SECOND REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

RADIO ASTRONOMY SERVICE

1. Footnote 204

The proposal to amend footnote 204 to the Table of Frequency Allocations with regard to the standard frequency guard-bands at 2.5 Mc/s, 5 Mc/s, 10 Mc/s and 20 Mc/s was considered. The Group unanimously agreed to maintain the present paragraph No. 204 of the Radio Regulations without change.

2. Band 1400 - 1427 Mc/s

The proposal by several Administrations for exclusive allocation of this band to the Radio Astronomy Service met with the unanimous agreement of the Group. The resultant new Table of Frequency Allocations for this band is given in Appendix 1 attached hereto. The Delegations of Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R. agreed to give up the derogation from the table contained in footnote 350.

3. Band 4990 - 5000 Mc/s

A new Table for the band concerned, reflecting the viewpoint on the allocation, appears in Appendix 2 attached hereto.

V.V. RAO
Chairman
Working Group 5B

Appendices : 2

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A P P E N D I X 1

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1400 - 1427 RADIO ASTRONOMY 350		

MOD 350 In Bulgaria, the band 1 400 - 1 427 Mc/s is also allocated to the fixed and the mobile service, except the aeronautical mobile service.

SPACE RADIOCOMMUNICATION CONFERENCE

Addendum No. 1 to
Document No. 113-E
28 October, 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SECOND REPORT BY WORKING GROUP 5A

TELEMETERING

Kindly add the enclosed Appendix to Document No. 113-E

Appendix : 1

A P P E N D I X 3

DRAFT RESOLUTION No....

RELATING TO THE CATEGORY OF THE FIXED AND MOBILE SERVICES IN THE BAND 1525 - 1540 Mc/s

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the Table of Frequency Allocations, Geneva, 1959, made certain provisions for the Fixed and Mobile Services in the sub-bands 1525 - 1535 Mc/s and 1535 - 1540 Mc/s;

b) that a number of Administrations have Fixed and Mobile Services operating in accordance with these provisions;

c) that the Extraordinary Administrative Radio Conference, Geneva, 1963, has agreed that the Space (Telemetering) Service shall be allocated on a primary basis in the band 1525 - 1540 Mc/s, and that continuing provision shall be made for Fixed and Mobile Services now operating in this band;

d) the economic consequences of an early down-grading of the category of the Fixed and Mobile Services are not at present acceptable to the Administrations concerned;

resolves

that nevertheless, it is highly desirable that reception of the very week signals of the Space (Telemetering) Service shall be afforded protection against interference from stations in the Fixed and Mobile Services;

invites

those Administrations operating stations in the Fixed and Mobile Services allocated on a primary basis in the band 1525 - 1540 Mc/s, to consider the possibility of agreeing to modify the category of these services from "primary" to "secondary" service at the earliest possible date.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 113-E
25 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SECOND REPORT BY WORKING GROUP 5A
TO COMMITTEE 5 (Allocations)

TELEMETERING

1. Band 1525 - 1540 Mc/s

1.1 All proposals before the Conference concerning this band have been considered.

1.2 The largest measure of agreement is represented by the draft new Table with new and revised footnotes, given in the Appendix 1 attached hereto.

1.3 A different point of view was expressed by the Delegation of Cuba who favoured the retention in Region 2 of the existing primary category for the mobile service in the band 1525 - 1535 Mc/s. The Delegations of the U.S.A. and Canada objected to the inclusion of a footnote to this effect for Cuba.

1.4 The Delegations of the U.S.S.R., Poland, Czechoslovakia and Bulgaria reserved their positions and the right to return to this subject, if they still so desire, at a later stage.

2. Band 401 - 402 Mc/s

2.1 All proposals before the Conference concerning this band have been considered.

2.2 General agreement was obtained and is represented by the draft new Table with associated footnotes given in the Appendix 2 attached hereto.

Rapporteur
J.W. JEWERS

Chairman
Working Group 5A
P. MORTENSEN

Appendices: 2.

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A P P E N D I X 1

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	1525 - 1535 SPACE TELEMETERING 350A FIXED 350B Mobile except aeronautical Mobile 350C	1525 - 1535 SPACE TELEMETERING 350A Fixed Mobile	1525 - 1535 SPACE TELEMETERING 350A FIXED 350B Mobile 350D
ADD ADD MOD	1535 - 1540 SPACE TELEMETERING 350A **351** 352		

MOD 341 /Delete band from 1535 - 1540 Mc/s from this footnote, retain 1540 - 1660 Mc/s/

ADD 350A Space stations employing frequencies in the band 1525 - 1540 Mc/s may also transmit tracking signals in the band.

ADD 350B As regards the category of the fixed service, see Resolution No....

ADD 350C In Albania, Bulgaria, France, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the mobile service allocation is on a primary basis. As regards the category of this service, see Resolution No....

ADD 350D In Japan, the mobile service allocation is on a primary basis until 1 January 1969.

MOD 351 In Italy, the band 1535 - 1600 Mc/s is also allocated to the fixed service until 1 January 1970.

MOD 352 In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R. the band 1535 - 1660 Mc/s is also allocated to the fixed service. As regards the category of the fixed service in the band 1535 - 1540 Mc/s, see Resolution No.....

ADD 352A In Austria, Indonesia and the Federal Republic of Germany, the band 1540 - 1660 Mc/s is also allocated to the fixed service.

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A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
401 - 402	METEOROLOGICAL AIDS SPACE TELEMETERING 315A Fixed Mobile except aeronautical mobile 314 315 316	

MOD 314 In the United Kingdom, the band 400,05 - 420 Mc/s is also allocated to the radiolocation service; however, between 400,05 and 410 Mc /s the allocation to the radiolocation service is on a secondary basis.

ADD 315A Space stations employing frequencies in the band 401 - 402 Mc/s may also transmit tracking signals in the band.

NOC 315

NOC 316

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 114-E
24 October, 1963
Original : French/English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

THIRD REPORT BY WORKING GROUP 5C TO COMMITTEE 5 (ALLOCATIONS)

AERONAUTICAL SERVICES

1. Introduction

1.1 The Group unanimously acknowledged the necessity of facilitating the combined control of air traffic for conventional type aircraft, new types (supersonic, hypersonic) and air-space craft.

1.2 These latter terms should be interpreted to mean vehicles for the transport of passengers or goods between various points on the earth's surface, but with a flight altitude above the major part of the earth's atmosphere to the exclusion of any other vehicle, for example, probe, satellite or space platform.

2. Bands 117.975 - 132 Mc/s and 132 - 136 Mc/s

The Group unanimously agreed to the draft new Table appearing in Appendix 1.

3. Band 960 - 1215 Mc/s

The Group agreed unanimously to the changes to foot-note 341 appearing in Appendix 2 attached hereto.

4. Band 1540 - 1660 Mc/s

The Group agreed unanimously to the draft new Table and its associated new foot-notes appearing in Appendix 3 attached hereto.

5. Band 4200 - 4400 Mc/s

The Group agreed unanimously to the draft new Table appearing in Appendix 4 attached hereto.

6. Band 5000 - 5250 Mc/s

The Group agreed unanimously to the draft new Table appearing in Appendix 5 attached hereto.

7. Band 15.4 - 15.7 Gc/s

The Group agreed unanimously to the draft new Table appearing in Appendix 6 attached hereto.

8. Relating to frequency requirements in the HF bands exclusively allocated to the aeronautical mobile (R) service

8.1 To provide for the use of frequencies in the aeronautical mobile (R) exclusive bands in the part 2850 - 22,000 kc/s for communications between earth and the new types of aircraft or airspace vehicles, the Group agreed that this question should be the subject of a recommendation to the forthcoming Extraordinary Administrative Aeronautical Radio Conference which will have to revise Appendix 26.

8.2 It was thought preferable that such a study should be made at a conference where numerous aeronautical specialists will be present rather than to endeavour to amend No. 429 during the present Conference.

8.3 The Group accordingly unanimously agreed to the draft Recommendation appearing in Appendix 7 attached hereto.

9. Consequental changes in definitions

As a consequence to the new provisions described above and set out in the attached Appendices, the Group unanimously agreed on the desirability of amending certain of the definitions in Article 1 of the Radio Regulations. The definitions concerned are Nos. 34 and 35 for aeronautical station and aircraft station respectively. The Group recognized that this work is appropriate to Committee 4 and accordingly, in Appendix 8 suggestions are made for the consideration of that Committee.

J. PENWARDEN
Chairman
Working Group 5C

Appendices : 8

A P P E N D I X 1

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
117.975 - 132	AERONAUTICAL MOBILE (R) 273 - 273A	
132 - 136 AERONAUTICAL MOBILE (R) 273A 274 275	132 - 136 FIXED MOBILE 273A 276 277 278 279	

ADD 273A In the band 117.975 - 132 Mc/s and in the band 132 - 136 Mc/s where the Aeronautical Mobile (R) is authorized, the use and development, for this Service, of systems using space communication techniques may be authorized but limited initially to satellite relay stations of the Aeronautical Mobile (R) Service. Such use and development shall be subject to co-ordination between administrations concerned.

NOC 273

NOC 274

NOC 275

NOC 276

NOC 277

NOC 278

MOD 279 In Australia, the band 132 - 136 Mc/s is allocated to the aeronautical mobile service.

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A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
960 - 1215	AERONAUTICAL RADIONAVIGATION 341	

MOD 341 The band 960 - 1215 Mc/s is reserved on a world-wide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

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APPENDIX 3

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1540 - 1660	AERONAUTICAL RADIONAVIGATION 351 352 352A 352B	

SUP 341 /retain for 960 - 1215 Mc/s/

NOC 351

NOC 352

ADD 352A The bands 1540 - 1660 Mc/s, 4200 - 4400 Mc/s, 5000 - 5250 Mc/s and 15.4 - 15.7 Gc/s are reserved, on a world-wide basis, for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities.

ADD 352B The bands 1540 - 1660 Mc/s, 5000 - 5250 Mc/s and 15.4 - 15.7 Gc/s are also allocated to the Aeronautical Mobile (R) Service for the use and development of systems using space communication techniques. Such use and development is subject to agreement and co-ordination between administrations concerned.

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A P P E N D I X 4

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
4200 - 4400	AERONAUTICAL RADIONAVIGATION 352A 381 382 383	

SUP 341 [see 960 - 1215 Mc/s]

ADD 352A [see 1540 - 1660 Mc/s]

NOC 381

NOC 382

NOC 383

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A P P E N D I X 5

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5000 - 5250	AERONAUTICAL RADIONAVIGATION 352A 352B	

SUP 341 [see 960 - 1215 Mc/s]

NOC 352A [see 1540 - 1660 Mc/s]

NOC 352B [see 1540 - 1660 Mc/s]

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A P P E N D I X 6

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
15.4 - 15.7	AERONAUTICAL RADIONAVIGATION 352A 352B 407	

SUP 341 [see 960 - 1215 Mc/s]

ADD 352A [see 1540 - 1660 Mc/s]

ADD 352B [see 1540 - 1660 Mc/s]

NOC 407

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A P P E N D I X 7

DRAFT RECOMMENDATION

RELATING TO FREQUENCY REQUIREMENTS IN THE HF BANDS EXCLUSIVELY ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering,

a) that for the safety of all aircraft it is essential to provide communications for routine flight of transport aerospace vehicles intended to fly between points on the earth's surface both within and beyond the major part of the atmosphere,

b) that frequencies in the decametric bands (between 2850 and 22,000 kc/s) are technically suitable for such communications as well as those above 100 Mc/s now available to the Aeronautical Mobile (R) Service,

recommends

that at the Extraordinary Administrative Radio Conference to be called to revise Appendix 26 in accordance with Resolution No. 13 (Geneva, 1959), the necessary provisions be made to provide the high frequency channels required for this purpose.

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A P P E N D I X 8

SUGGESTIONS CONCERNING THE UNIFICATION OF CERTAIN AERONAUTICAL TERMS IN ARTICLE 1 AS A RESULT OF THE ADOPTION OF PROPOSALS CONCERNING THE FREQUENCY BANDS ALLOCATED TO AERONAUTICAL RADIONAVIGATION AND TO THE AERONAUTICAL MOBILE (R) SERVICE

1. Committee 5 has adopted changes to Article 5 of the Radio Regulations, for which consequential minor changes to existing definitions are needed.

The relevant paragraphs of Article 1 with suggested amendments are as follows :

MOD 34 Aeronautical Station : A land station in the aeronautical mobile service. In certain instances an aeronautical station may be placed on board a ship or on board a satellite.

MOD 35 Aircraft Station : A mobile station in the aeronautical mobile service on board an aircraft or on an air-space vehicle.

2. This addition should be interpreted to cover vehicles for the transport of passengers or goods between various points on the earth's surface, but with a flight altitude above the major part of the earth's atmosphere but not including any other space vehicle, e.g. probe, satellite or space platform.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 115-E
25 October, 1963
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English, Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

WORKING GROUP 4B

REPORT OF WORKING GROUP 4B

(Part 2)

3. Factors affecting the allocation of frequencies

3.1 The Working Group suggests that Committees 5 and 6 take as the basis of their work on the problem in question, the pertinent Recommendations and Reports of the C.C.I.R.*), notably those cited below :

Recommendation 259: Selection of Frequencies used in Telecommunication with and between Artificial Earth Satellites and other Spacecraft.

" 350: Identification of Radio Emissions from Spacecraft.

" 351: Cessation of Radio Emissions from Spacecraft.

" 361: Frequency Requirements of Radionavigation Satellite Systems.

" 362: Frequencies Technically Suitable for Meteorological Satellites.

" 363: Preferred Frequency Bands for use in Maintenance Telemetering, Tracking and Telecommand of Developmental and Operational Satellites.

" 364: Telecommunication Links for Near-earth Research Satellites.

" 365: Telecommunication Links for Deep Space Research.

*) The texts of the cited Recommendations and Reports are contained in Conference Document No. 1 and Annex.

Recommendation 366: Telecommunication Links for Manned Research Spacecraft.

" 367: Frequency Bands for Re-entry Communications.

" 314: Protection of Frequencies used for Radio-astronomical Measurements.

Report 205: Factors Affecting the Selection of Frequencies for Telecommunications with and between Spacecraft.

" 211: Active Communication-Satellite Systems.

" 214*): Communication-Satellite Systems.

" 215: Feasibility of Direct Sound and Television Broadcasting from Satellites.

" 216: Use of Satellites for Terrestrial Navigation.

" 217: Radiocommunications for Meteorological Satellite Systems.

" 218: Technical Characteristics of Telecommunication Links between Earth Stations and Spacecraft for Research Purposes.

" 221: Telecommunication Links for Manned Research Spacecraft.

" 222: Factors affecting the Selection of Frequencies for Telecommunications with Spacecraft Re-entering the Earth's Atmosphere.

---

*) Since the unanimous adoption of C.C.I.R. Report No. 214, Study Groups XII and XVI of the C.C.I.T.T. have prepared a draft Recommendation (No. G.114) which will be submitted to the forthcoming C.C.I.T.T. Plenary Assembly. The same text is included in the documents of C.C.I.R. Study Group IV (Document IV/1, Period 1963-66).

Committee 4 accordingly suggests that Committees 5 and 6, when they have to use C.C.I.R. Report No. 214 in their work, should take account, as regards paragraphs 2.2.1, 2.2.2 and 2.2.3, of the more recent information contained in C.C.I.T.T. Recommendation G.114, reproduced on pages 16 to 19 of Document No. 13.

Report	223: Line Frequencies or Bands, of Interest to Radioastronomy and Related Sciences, in the 30 to 300 Gc/s Range Arising from Natural Phenomena.
"	224: Radioastronomy.
"	243: Tropospheric Wave Propagation Curves for Application to Interference Problems in the Range from 1 to 10 Gc/s.
"	244: Estimation of Tropospheric Wave Transmission Loss.

3.2 The Working Group considers, as is suggested in Document No. 2, and if this notion is useful to Committees 5 and 6, that one should take into account a bandwidth per channel of 50 Mc/s for communication satellite systems.

3.3 The Working Group suggests also that the draft Recommendations contained in Annexes 1 and 2 be adopted.

3.4 Working Group 4B has studied Document No. 34, page 7, and has stated that this matter is also within the terms of reference of Working Group 4C, and it understands that this Group will make a proposal along these lines.

P. BOUCHIER
Chairman

Annexes: 2

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A N N E X 1

RECOMMENDATION No. ...

TO THE C.C.I.R. RELATING TO STUDIES OF THE TECHNICAL CHARACTERISTICS OF EQUIPMENT USED IN THE COMMUNICATION-SATELLITE SERVICE

The E.A.R.C., Geneva, 1963

recognizing

a) that the technically suitable portion of the radio frequency spectrum available for the Communication-Satellite Service is not unlimited;

b) that the art of telecommunications via satellites is still in the early stages of development;

and

considering

a) the requirements of Article 12 of the Regulations especially Nos. 668 and 674

b) the terms of Recommendation No. 6 of the Administrative Radio-Communications Conference, Geneva, 1959

c) Question 235 (IV) and Study Programme 235D (IV) of the C.C.I.R.;

invites the C.C.I.R.

to give special attention to the study of optimum forms and methods of modulation and technical characteristics of equipment for use in the Communication-Satellite Service.

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ANNEX 2

RECOMMENDATION No. ...

TO THE C.C.I.R. RELATING TO STUDIES OF INTERFERENCE WITHIN AND BETWEEN COMMUNICATION-SATELLITE SYSTEMS

The E.A.R.C., Geneva, 1963

recognising

the need to use to the best advantage that portion of the radio frequency spectrum available to the communication-satellite service

invites the C.C.I.R.

to continue the study of frequency sharing within and between communication-satellite systems, for example, systems employing satellites in:

1) random orbit,

2) controlled non-stationary orbit,

3) stationary orbit.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 116-E
25 October, 1963
Original: French/English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SUMMARY RECORD
OF THE THIRD MEETING

Tuesday, 22 October 1963, 2.30 p.m.

Chairman: Mr. E. ESPING (Sweden)

Vice-Chairman: Mr. M. ZAHRADNIČEK (Czechoslovak S.R.)

1. Agenda

The Agenda for the meeting as set out in Document No. 105 was approved.

2. Summary Record of the Second Meeting (Document No. 104)

This document was approved.

3. Report of Working Group 4A

Mr. Bouchier, Acting Chairman of Working Group 4A, reported that as instructed by the Second Meeting of Committee 4, Working Group 4A had produced two alternative sets of definitions. One set was contained in Documents Nos. DT/28, DT/41, DT/43 and DT/52 and the other set in Document No. DT/46. In introducing the documents, Mr. Bouchier indicated that Working Group 4A was unable to decide which of the two sets of definitions was preferable, and asked for the decision of Committee 4 in this regard.

The Chairman then proposed that there should be a general discussion followed by a vote if necessary. This proposal was agreed to by the meeting.

Mr. Vieira (Portugal) introduced Document No. DT/46, and described its general aims. Mr. Myers (U.S.A.) introduced Documents Nos. DT/28, DT/41, DT/43 and mentioned that Document No. DT/52 containing only one definition would be available later in the meeting. He stated that the definitions in the above documents were delivered with little alteration of substance from those set out in Report 204 of the C.C.I.R.

After an expression of views by a number of delegations, some of whom indicated that further consideration was needed before they were prepared to vote, the Chairman announced a break to permit informal discussions with a view to reconciling the differring views.

On resumption from the break and after further discussion during which the delegate of Yugoslavia made the declaration in the attached annex, it became obvious that no alignment of the differring views expressed was likely, so a vote was taken to resolve the issue.

The result of the vote is tabulated below :

In favour of Documents Nos. DT/28, DT/41, DT/43 and DT/52	31
In favour of Document No. DT/46	16
Abstaining	6

A small number of delegations who voted in favour of Document No. DT/28 etc. expressed reservations in respect of Definition B4 contained in Document No. DT/28.

Mr. Bouchier dictated some editorial amendments to Documents Nos. DT/28, DT/41 and DT/43. Document No. DT/52 which had not been previously approved by Working Group 4A was accepted by Committee 4.

There was then some further discussion concerning amendments to definition B4, as a result of which Messrs. Gracie (I.F.R.B.) and Myers (U.S.A.) were to constitute an informal drafting group to arrive at improved wording of this definition.

There being no other business the meeting was adjourned at 6 p.m.

CONTINUATION OF THIRD MEETING

Wednesday, 23 October, 2.30 p.m.

Before detailed examination of the documents from Working Group 4A, it was agreed that the adoption of definitions by Committee 4 was subject to confirmation by other Committees of the Conference.

The meeting proceeded to a detailed examination of the definitions contained in the documents produced by Working Group 4A.

The following definitions were adopted with minor drafting amendments in some cases :

Document No. DT/28

Definition numbers A1, A2 and A3

Cancellation of existing definitions numbers 70, 71, 72 and 73.

Definition numbers B1, B2 (after discussion about the possibility of having a station on a spacecraft which would not be classified as a space station, and the meaning of the words "major portion of the earth's atmosphere"), B3, B5 and B6.

Document No. DT/41

Definition numbers B7, B8, B9 (with a note asking other Committees to determine whether or not the word in the bracket should be retained), B10, B11, B12.

Document No. DT/43

Definition numbers B13, B14, B14 bis, B15, B17, B18, C1, C1bis, C2, C3.

Document No. DT/52

Definition D1.

With regard to definition B4, Mr. Gracie, I.F.R.B., reported on the work of the informal drafting group and introduced Document No. DT/56 which expressed the views of this small group. A general discussion ensued and there being no general agreement the subject was postponed until the meeting of Committee 4 scheduled for 24 October.

Definition B16 in Document No. DT/43 was discussed and referred back to Working Group 4A to produce an amended definition to be presented at the meeting of Committee 4 on 24 October, 1963.

Definitions B19, B20 and B21 were also referred back to Working Group 4A for amendment in the light of the discussion, the resulting amended definitions to be presented at a later stage of the third Meeting of Committee 4.

There being no other business the meeting was adjourned at 5.50 p.m.

CONTINUATION OF THE THIRD MEETING OF COMMITTEE 4

Thursday, 24 October 2.30 p.m.

Mr. Gracie, I.F.R.B., reported that the informal Working Group had agreed on definition of the Communication-Satellite Service which is given in Annex 2, and was adopted by the meeting after a short discussion. In agreeing to this definition the U.S.S.R. requested that the statement appearing in Annex 3 should be included in the record of the meeting.

Col. Lochard presented the revised definition of the Radionavigation-Satellite Service which was approved by Working Group 4A and is given in Annex 4. This definition was then adopted by the meeting.

Working Group 4A has still to examine possible amendments to Definitions B19, B20 and B21, and will include these with a complete list of definitions in the form of a white document to be presented at the next meeting of Committee 4.

Col. Lochard said that in view of the timetable decided by a meeting of Committee 1, Working Group 4A would not be able to consider any further suggested definitions or amendments submitted to him after midday on 31 October, 1963.

There being no other business, the meeting was closed at 3.20 p.m.

E.F. SANDBACH
Rapporteur

Erik ESPING
Chairman

Annexes: 4

ANNEX 1

A STATEMENT BY THE DELEGATION OF YUGOSLAVIA AT THE MEETING OF COMMITTEE 4 ON 22 OCTOBER 1963

"The development of technique doubtless entails a change in the drafting of the various definitions. The intervention by the delegations which have proposed Document No. DT/46 is very interesting and useful in the sense that it could be said to represent a recommendation that the problem be considered in greater detail, so that all the definitions in the Radio Regulations may be drafted in accordance with a single, coherent idea. However, although in the Radio Regulations (Geneva, 1959) all the definitions are not given in accordance with a single conception, we think that it is not possible, at this Conference, to draw up a system of definitions in accordance with a coherent conception. Hence we consider that we ought now to accept the definitions, based in general on the proposals of the International Radio Consultative Committee and to some extent on those of the I.F.R.B., which have been prepared by Working Party 4A and appear in Documents Nos. DT/28, DT/41, DT/43, and DT/52. We think that these definitions could not give rise to difficulties in the work of Committees 5 or 6, or in the future activities of the I.F.R.B.

" Our delegation is convinced that a vote does not represent a very suitable solution in the problem under discussion."

V. POPOVIĆ

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A N N E X 2

COMMUNICATION-SATELLITE SERVICE

A space service :

- between earth stations, when using active or passive satellites for the exchange of communications of the Fixed or Mobile Service, or

- between an earth station and stations on active satellites, for the exchange of communications of the Mobile Service, with a view to retransmission to or from stations in the Mobile Service.

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ANNEX 3

In adopting the definition of the Communication Satellite Service given in Annex 2, the Committee recognised that the restriction of this definition to the Fixed and Mobile Services means the exclusion of all other terrestrial services defined in the present Regulations, that is, broadcasting, port operations, radiodetermination, radionavigation, aeronautical radionavigation, maritime radionavigation, radiolocation, safety, amateur, standard frequency, time signal and special services.

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A N N E X 4

RADIONAVIGATION-SATELLITE SERVICE

A service using space stations on earth satellites, for the purposes of radionavigation, including, in certain cases, transmission or retransmission of supplementary information necessary for the operation of the navigational system.

SPACE RADIOCOMMUNICATION CONFERENCE

Document N° 117-F/E/S
25 octobre 1963
Original : français, anglais, espagnol

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

GROUPE DE TRAVAIL 4A
WORKING GROUP 4A
GRUPO DE TRABAJO 4A

PROPOSITIONS PROVISOIRES POUR LES TERMES ET DEFINITIONS

TENTATIVE PROPOSALS FOR TERMS AND DEFINITIONS

PROPOSICIONES PROVISIONALES DE TÉRMINOS Y DEFINICIONES

Introduction

Les définitions qui suivent, établies à titre provisoire par le Groupe de travail 4A, n'ont pas encore été soumises à l'approbation définitive de la Commission 4. Elles sont publiées pour l'information des délégués siégeant dans les diverses commissions, en vue de susciter des observations basées sur les besoins propres de ces commissions. Ces observations devraient être transmises au Groupe de travail 4A de préférence par la voie des présidents de commissions.

Foreword

The following definitions, tentatively drafted by Working Group 4A, have not yet been submitted to Committee 4 for final approval. They are published for the information of delegates in the various committees, with a view to inviting observations based on the requirements of these committees. These observations should preferably be transmitted to Working Group 4A through the Committee chairmen channels.

Introducción

Las definiciones que siguen, establecidas con carácter provisional, por el Grupo de trabajo 4A, no se han conetido todavía a la aprobación definitiva de la Comisión 4. Se publican para conocimiento de los delegados que asisten a las diversas comisiones y con el fin de que éstos puedan formular observaciones basadas en las necesidades peculiares de cada comisión. Convendría que estas observaciones se transmitieran al Grupo de trabajo 4A, de preferencia por conducto de los Presidentes de comisión.

A. Modifications et adjonctions aux termes non spatiaux du Règlement
Modifications and additions to non space terms of the Regulations
Modificaciones y adiciones a los términos no espaciales del R.R.

A1 Service de Terre

Tout service radioélectrique défini dans le présent Règlement, autre qu'un service spatial ou que le service de radioastronomie.

Terrestrial service

Any radio service defined in these Regulations, other than a space service or the radio astronomy service.

Servicio terrenal

Cualquier servicio radioeléctrico definido en el presente Reglamento distinto a un servicio espacial o de radioastronomía.

A2 Station de Terre

Station d'un service de Terre.

Terrestrial station

A station in a terrestrial service.

Estación terrenal

Estación de un servicio terrenal.

A3 Station de radioastronomie

Station du service de radioastronomie.

Radio Astronomy station

A station in the radio astronomy service.

Estación de radioastronomía

Estación del servicio de radioastronomía.

B. Services et stations spatiales, et termes associés
Space services and stations, and related terms
Servicios y estaciones espaciales, y términos conexos

N^{os} 70, 71, 72, 73 du Règlement - Supprimés.

Nos. 70, 71, 72, 73 of the Regulations - Cancelled.

N.^{os} 70, 71, 72, 73 del R.R. (Suprimidos).

B1 Service spatial

Service de radiocommunication :

- entre stations terriennes et stations spatiales,
- ou entre stations spatiales,
- ou entre stations terriennes lorsque les signaux sont retransmis par des stations spatiales, ou transmis par réflexion ou diffusion sur des objets situés dans l'space en excluant la réflexion ou la diffusion par l'ionosphère ou dans l'atmosphère terrestre.

Space service

A radiocommunication service:

- between earth stations and space stations,
- or between space stations,
- or between earth stations when the signals are re-transmitted by space stations, or transmitted by reflection or by scattering from objects in space excluding reflection or scattering by the ionosphere or within the earth's atmosphere.

Servicio espacial

Servicio de radiocomunicación:

- entre estaciones terrenas y estaciones espaciales,
- o entre estaciones espaciales,
- o entre estaciones terrenas cuando las señales son retransmitidas por estaciones espaciales o transmitidas por reflexión o dispersión en objetos situados en el espacio, excluyendo la reflexión o dispersión en la ionosfera o dentro de la atmósfera terrestre.

B2 Station spatiale

Station du service spatial située sur un objet se trouvant, ou destiné à aller, ou étant allé au-delà de la partie principale de l'atmosphère terrestre.

Space station

A station in the space service located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the earth's atmosphere.

Estación espacial

Estación del servicio espacial situada en un objeto que se encuentra, o que está destinado a ir o que ya estuvo fuera de la parte principal de la atmósfera terrestre.

B3 Station terrienne

Station du service spatial située soit sur la surface de la Terre, y compris à bord d'un navire, soit à bord d'un aéronef.

Earth station

A station in the space service located either on the earth's surface, including on board a ship, or on board an aircraft.

Estación terrena

Estación del servicio espacial situada en la superficie de la Tierra, a bordo de un barco inclusive, o a bordo de una aeronave.

B4 Service de radiocommunication par satellites

Service spatial :

- entre stations terriennes, lorsqu'il est fait usage de satellites actifs ou passifs pour l'échange de communications du service fixe ou du service mobile,
- ou entre une station terrienne et des stations situées sur des satellites actifs, pour l'échange des communications du service mobile, en vue de leur retransmission vers ou à partir de stations du service mobile.

Communication-satellite service

A space service:

- between earth stations, when using active or passive satellites for the exchange of communications of the fixed or mobile service, or
- between an earth station and stations on active satellites for the exchange of communications of the mobile service, with a view to their retransmission to or from stations in the mobile service.

Servicio de radiocomunicación por satélite

Servicio espacial:

- entre estaciones terrenas, cuando se utilizan satélites activos o pasivos para el intercambio de comunicaciones en los servicios fijo o móvil,
- o, entre una estación terrena y estaciones situadas en satélites activos, para el intercambio de comunicaciones del servicio móvil, con vista a retransmitir desde o hacia estaciones del servicio móvil.

B5 Station (spatiale) de satellite (de radiocommunication)*)

Station spatiale du service de radiocommunication par satellites, située sur un satellite de la Terre.

(Communication) satellite (space) station*)

A space station in the communication-satellite service, on an earth satellite.

Estación (espacial) de satélites (de radiocomunicación)*)

Estación espacial del servicio de radiocomunicación por satélite situada en un satélite de la Tierra.

B6 Satellite actif

Satellite de la Terre portant une station destinée à émettre ou retransmettre des signaux de radiocommunication.

Active satellite

An earth satellite carrying a station intended to transmit or re-transmit radiocommunication signals.

Satélite activo

Satélite de la Tierra provisto de una estación destinada a emitir o retransmitir señales de radiocomunicación.

B7 Satellite passif

Satellite de la Terre destiné à transmettre des signaux de radiocommunication par réflexion ou diffusion.

Passive Satellite

An earth satellite intended to transmit radiocommunication signals by reflection or by scattering.

Satélite pasivo

Satélite de la Tierra destinado a transmitir señales de radiocomunicación por reflexión o dispersión.

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*) Les mots entre parenthèses peuvent être omis quand aucune ambiguïté n'en résulte.

The words between brackets can be omitted, when no ambiguity results.

Las palabras entre paréntesis pueden omitirse cuando de ello no resulte ninguna ambigüedad.

B8 Station terrienne de radiocommunications par satellites

Station terrienne du service de radiocommunication par satellites.

Communication-satellite earth station

An earth station in the communication-satellite service.

Estación terrena de radiocomunicación por satélite

Estación terrena del servicio de radiocomunicación por satélite.

B9 Système à satellites (Note 1)

Tout ensemble de stations, coopérant entre elles, assurant un service spatial /donné/, et comprenant un ou plusieurs satellites actifs ou passifs.

Satellite System (Note 1)

Any group of co-operating stations providing a /given/ space service and including one or more active or passive satellites.

Sistema de satélites (Nota 1)

Cualquier conjunto coordinado de estaciones, que proporcionan /determinado/ servicio espacial e incluyen uno o más satélites activos o pasivos.

B10 Service de recherche spatiale

Service spatial dans lequel on utilise des engins spatiaux pour la recherche scientifique ou technique.

Space research service

A space service in which spacecraft are used for scientific or technological research purposes.

Servicio de investigación espacial

Servicio espacial en el cual se utilizan vehículos espaciales para fines de investigación, científica y tecnológica.

B11 Station spatiale de recherche spatiale

Station spatiale du service de recherche spatiale.

Space research space station

A space station in the space research service.

Estación espacial para la investigación del espacio

Estación espacial del servicio de investigación espacial.

B12 Station terrienne de recherche spatiale

Station terrienne du service de recherche spatiale.

Space research earth station

An earth station in the space research service.

Estación terrena para la investigación del espacio

Estación terrena del servicio de investigación espacial.

B13 Service de radiodiffusion par satellites (Note 2)

Service spatial dans lequel des signaux émis ou retransmis par des stations spatiales ou transmis par réflexion ou diffusion par des objets en orbite autour de la Terre, sont destinés à être reçus directement par le public en général.

Broadcasting-satellite Service (Note 2)

A space service in which signals transmitted or re-transmitted by space stations, or transmitted by reflection or by scattering from objects in orbit around the earth, are intended for direct reception by the general public.

Servicio de radiodifusión por satélites (Nota 2)

Servicio espacial en el cual las señales emitidas o retransmitidas por estaciones espaciales o transmitidas por reflexión o dispersión en objetos situados en órbita alrededor de la Tierra, están destinadas a la recepción directa por el público en general.

B14 Station spatiale de satellite de radiodiffusion (Note 2)

Station spatiale du service de radiodiffusion par satellite située sur un satellite de la Terre.

Broadcasting-satellite Space Station (Note 2)

A space station in the broadcasting-satellite service, on an earth satellite.

Estación espacial de satélite de radiodifusión (Nota 2)

Estación espacial del servicio de radiodifusión por satélites, situada en un satélite de la Tierra.

B14 bis Station de satellite de radiodiffusion (Note 3)

Station de radiodiffusion située sur un satellite de la Terre.

Broadcasting Satellite Station (Note 3)

A broadcasting station on an earth satellite.

Estación de satélite de radiodifusión (Nota 3)

Estación de radiodifusión situada en un satélite de la Tierra.

B15 Station terrienne de radiodiffusion par satellites (Note 2)

Station terrienne du service de radiodiffusion par satellites.

Broadcasting-satellite Earth Station (Note 2)

An earth station in the broadcasting-satellite service.

Estación terrena de radiodifusión por satélites (Nota 2)

Estación terrena del servicio de radiodifusión por satélites.

B16 Service de radionavigation par satellites

Service faisant usage de stations spatiales situées sur des satellites de la Terre pour assurer une radionavigation, et comprenant, dans certains cas, l'émission ou la retransmission de renseignements complémentaires nécessaires au fonctionnement de cette radionavigation.

Radionavigation-satellite Service

A service using space stations on earth satellites for the purposes of radionavigation, including, in certain cases, transmission or retransmission of supplementary information necessary for the operation of the navigational system.

Servicio de radionavegación por satélites

Servicio que utiliza estaciones espaciales instaladas en satélites de la Tierra para fines de radionavegación, incluyendo en ciertos casos la transmisión o retransmisión de información complementaria, necesaria para el funcionamiento de la misma.

B17 Station spatiale de satellite de radionavigation

Station spatiale du service de radionavigation par satellites située sur un satellite de la Terre.

Radionavigation-satellite Space Station

A space station in the radionavigation-satellite service, on an earth satellite.

Estación espacial de satélite de radionavegación

Estación espacial del servicio de radionavegación por satélites situada en un satélite de la Tierra.

B18 Station terrienne de radionavigation par satellites

Station terrienne du service de radionavigation par satellites.

Radionavigation-satellite Earth Station

An earth station in the radionavigation-satellite service.

Estación terrena de radionavegación por satélites

Estación terrena del servicio de radionavegación por satélites.

B19 Service (des auxiliaires) de la météorologie par satellites*)

Service spatial dans lequel les résultats d'observations météorologiques faites à l'aide d'appareils situés sur des satellites de la Terre sont transmis à des stations terriennes à partir de stations spatiales situées sur ces satellites.

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*) Les mots entre parenthèses peuvent être omis quand aucune ambiguïté n'en résulte.

Meteorological (aids) - satellite service*)

A space service in which the results of meteorological observations, made by instruments on earth satellites, are transmitted to earth stations by space stations on these satellites.

Servicio de (ayudas a) la meteorología por satélites*)

Servicio espacial en el cual los resultados de las observaciones meteorológicas obtenidas por instrumentos situados en satélites terrestres se transmiten a estaciones terrenas desde estaciones espaciales situadas en dichos satélites.

B20 Station spatiale de météorologie par satellites*)

Station spatiale du service (des auxiliaires) de la météorologie par satellites située sur un satellite de la Terre.

Meteorological (aids) - satellite Space Station*)

A space station in the meteorological (aids) - satellite service on an earth satellite.

Estación espacial de meteorología por satélites*)

Estación espacial del servicio (de ayudas) de la meteorología por satélites situada en un satélite de la Tierra.

B21 Station terrienne de météorologie par satellites*)

Station terrienne du service (des auxiliaires) de la météorologie par satellites.

Meteorological (aids) - satellite Earth Station*)

An earth station in the meteorological (aids) - satellite service.

Estación terrena de meteorología por satélites*)

Estación terrena del servicio (de ayudas) de la meteorología por satélites.

*) Les mots entre parenthèses peuvent être omis quand aucune ambiguïté n'en résulte.

The words between brackets can be omitted when no ambiguity results.

Las palabras entre paréntesis pueden omitirse cuando de ello no resulte ninguna ambigüedad.

C. Télémesure, télécommande et poursuite spatiales
Space Telemetering, Telecommand and tracking
Telemedida, telemando, seguimiento espaciales

C1 Télémesure spatiale (Note 4)

Télémesure utilisée pour la transmission à partir d'une station spatiale des résultats des mesures effectuées dans un engin spatial, y compris celles qui concernent le fonctionnement de l'engin.

Space Telemetering (Note 4)

The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

Telemedida espacial (Nota 4)

Telemedida para la transmisión desde una estación espacial, de mediciones efectuadas en un vehículo espacial, con inclusión de las relativas a su funcionamiento.

C1 bis Télémesure spatiale (Note 4)

Télémesure à partir d'une station spatiale.

Space Telemetering (Note 4)

Telemetering from a spacecraft.

Telemedida espacial (Nota 4)

Telemedida desde una estación espacial.

C2 Télécommando spatiale

Utilisation de signaux radioélectriques transmis à une station spatiale pour mettre en fonctionnement cette station ou des appareils installés à bord de l'engin spatial associé, ou pour en modifier ou arrêter le fonctionnement.

Space Telecommand

The use of radiocommunication to a space station to initiate, modify or terminate functions of the space station or of the associated spacecraft.

Telemando espacial

Empleo de señales radioeléctricas transmitidas a una estación espacial para iniciar, modificar o interrumpir funciones de la estación espacial o de un vehículo espacial asociado.

C3 Poursuite spatiale (Note 1)

Détermination de l'orbite, de la vitesse ou de la position instantanée d'un objet situé dans l'espace, par l'utilisation du radiorepérage /à l'exclusion de la radiodétection primaire/.

Space tracking (Note 1)

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination /excluding primary radar/.

Seguimiento espacial (Nota 1)

Determinación de la órbita, velocidad o posición instantánea, de un objeto en el espacio, por medio de la radiodeterminación /con exclusión del radar primario/.

D. Espace, orbites et types d'objets spatiaux
Space, orbits and types of objects in space
Espacio, órbitas y tipos de objetos espaciales

D1 Espace lointain

Région de l'espace située à des distances de la Terre égales ou supérieures à la distance entre la Terre et la Lune.

Deep space

Space at distances from the Earth equal to or greater than the distance between the Earth and the Moon.

Espacio lejano

Región del espacio situada a una distancia de la Tierra igual o superior a la existente entre la Tierra y la Luna.

NOTES PROVISOIRES

TEMPORARY NOTES

NOTAS PROVISIONALES

1) L'adoption ou l'omission des mots entre crochets ne peut être décidée qu'en fonction des besoins des autres commissions.

The adoption or omission of the words in square brackets must be decided in the light of the requirements of the other Committees.

La adopción u omisión de las palabras que figuran entre corchetes sólo puede decidirse en función de los resultados que obtengan las demás comisiones.

2) En établissant ces définitions, le Groupe de travail 4A ne s'est pas occupé des questions de principe qui s'y rapportent et qui sont discutées dans d'autres Commissions ou Groupes de travail.

In establishing these definitions, Working Group 4A did not consider the question of principle in connection with this subject, in as much as it will be discussed in other committees or working groups.

Al elaborar estas definiciones el Grupo de trabajo 4A no consideró los problemas de principio relacionados con este tema y que serán discutidos por otras comisiones o grupos de trabajo.

3) Cette définition n'est suggérée que dans l'hypothèse où la Conférence estimerait inutile d'insérer dans le Règlement des radiocommunications une définition pour le service de radiodiffusion par satellites.

This definition would only be useful if the Conference decides not to include in Article 1 a definition of broadcasting satellite service.

Se sugiere esta definición únicamente en la hipótesis de que la Conferencia estime superfluo incluir en el Reglamento de Radiocomunicaciones una definición relativa al servicio de radiodifusión por satélites.

4) La définition C1 est plus limitative que la définition C1 bis. Le choix entre ces deux définitions ne peut être basé que sur les besoins des autres Commissions.

Definition C1 is more specific than C1 bis. The choice between the two must be taken in light of the requirements of the other Committees.

La definición C1 es más limitativa que la definición C1 bis. La elección entre estas dos definiciones sólo puede basarse en los resultados que obtengan las demás comisiones.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 118-E
29 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

A G E N D A

FIFTH MEETING OF COMMITTEE 4

Wednesday, 30 October, 1963, at 2.30 p.m.

1. Summary record of fourth meeting (Document No. 129-E)
2. Report of Working Group 4B (Document No. 128-E (Rev.))
3. Report of Working Group 4C (Document Nos. 122-E and 126-E)
4. Any other business.

Erik ESPING
Chairman

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 119-E
25 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

AGENDA

FOURTH MEETING OF COMMITTEE 4

Saturday, 26 October 1963, at 9.30 a.m.

1. Summary record of third Meeting (Document No. 116).
2. Report of Working Group 4A (Document No. 117).
3. Report of Working Group 4B (Document No. 115).
4. Report of Working Group 4C (Document No. 118).
5. Any other business.

Erik ESPING
Chairman

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 120-E
25 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

United Kingdom of Great Britain and Northern Ireland

CO-ORDINATION PROCEDURE

EXPLANATORY MEMORANDUM

1. A method of calculating co-ordination distance between earth stations of space services and terrestrial stations sharing frequency bands has been worked out at Working Group level in Committee 4 and the purpose of this document is to set out, for the information of Committee 6, what in the view of the U.K. are the procedures which should be adopted to co-ordinate frequency assignments to stations of the two services.

2. Basic concepts of co-ordination

Co-ordination is unnecessary until an Administration decides to establish an earth station. Hence, the problem of co-ordination does not arise until there are firm plans for an earth station but, as soon as this stage is reached, the Administration establishing the earth station will co-ordinate with other Administrations liable to be affected. This co-ordination will be two-fold, firstly in respect of transmission from the earth station and secondly for reception by the earth station.

3. Co-ordination of Earth Station Transmissions

The co-ordination of an earth station transmitter commences with the calculation of the co-ordination distance in a number of azimuthal directions from the earth station. This establishes an area within which co-ordination is required. The Administration establishing the earth station must then co-ordinate with each Administration whose border comes within the co-ordination area. This process of co-ordination consists in the first place of sending to each Administration concerned all relevant details of the earth station transmission and a copy of the contour map for the area of co-ordination concerned. By this action the co-ordination procedure is set in motion. The next step is a detailed examination by both Administrations of the possibility of interference to those terrestrial stations, having the same or an adjacent frequency assignment within the contour, to that of the earth station.

SPACE RADIOCOMMUNICATION CONFERENCE

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E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

United Kingdom

DRAFT RESOLUTION

THE INTERCONNECTION OF COMMUNICATION-SATELLITE SYSTEMS AND OTHER TRANSMISSION SYSTEMS

The Extraordinary Administrative Radiocommunication Conference, Geneva, 1963,

considering

a) that communication-satellite systems are likely in the future to form an important part of the world communication network;

b) that these systems will be capable of carrying various types of traffic such as telephone, telegraph, television, facsimile and data;

c) that it will be necessary to interconnect communication-satellite systems with other transmission systems such as submarine cables, radio-relay systems and land line systems in the international and national networks;

d) that communication-satellite systems may give rise to particular problems of transmission such as Doppler frequency shifts, time-delay and time discontinuities;

e) that interconnection would be greatly facilitated by the adoption of preferred characteristics and overall standards of performance at points of interconnection;

f) that these characteristics and standards of performance are needed before the design of operational communication-satellite systems can be completed and may have a major effect on the form and cost of such systems;

resolves to invite the C.C.I.R. in collaboration with the C.C.I.T.T. urgently

1. to study the technical problems that would be associated with interconnection of communication-satellite systems and other transmission systems in the international and national networks;

2. to recommend preferred characteristics and overall standards of performance at points of interconnection.

(Signed) J.H.H. MERRIMAN

SPACE
RADIOCOMMUNICATION
CONFERENCE

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E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

PROCEDURE FOR CALCULATING COORDINATION DISTANCE BETWEEN EARTH STATIONS OF SPACE SERVICES AND TERRESTRIAL STATIONS SHARING THE SAME FREQUENCY BAND IN THE RANGE 1 - 10 Gc/s

1. Objectives

Coordination is required when earth stations and terrestrial stations operate in shared frequency bands with equal rights. In specific circumstances, coordination may involve two or more Administrations depending upon the siting of the stations and the coordination distances involved. The coordination area around an earth station is arrived at by ascertaining the coordination distance measured in the various azimuths from that station.

For the calculation of coordination distance three separate cases must be considered:

a) interference from an earth station transmitter to terrestrial station receivers;

b) interference from terrestrial station transmitters to a communication-satellite or meteorological-satellite earth station receiver;

c) interference from terrestrial station transmitters to a space research earth station receiver.

In the case of a) it has been assumed that the terrestrial receiving station is a line-of-sight radio relay station designed according to C.C.I.R. standards. In the case of b) it has been assumed that the earth station forms a part of a communication-satellite system. Further, in order to ensure that a safe value of coordination distance shall be obtained, it has been assumed that in all cases the receiving station antenna is of typically high gain. For the same reason, in all cases, appropriately low-noise sensitive receivers are assumed.

2. Minimum Permissible Basic Transmission Loss (L_b)

The general formula for calculating the required minimum permissible basic transmission loss is:

$$L_b = (P_t + G_t) - F_s - (P_r - G_r) \qquad (1)$$

where P_t :- Power in dbW supplied by the interfering transmitter to the transmission line input.

G_t :- Isotropic gain in db of the transmitting antenna of the interfering station effective in the direction of the receiving station liable to interference, including the effect of all feeder losses, and losses due to any artificial screens.

F_s :- The earth station site-shielding factor in db, discussed later.

P_r :- The maximum permissible interference level in dbW at the receiver input of the receiving station.

G_r :- Isotropic gain in db of the antenna of the receiving station effective in the direction of the interfering transmitter, less feeder loss and polarization discrimination if applicable.

When considering interference to telephone transmission systems, particularly in the case of systems using frequency modulation, it is convenient to operate in terms of the power densities in any 4 kc/s bandwidth. Therefore, in the case of interference from an earth station transmitter to terrestrial radio relay systems, P_t is taken as the maximum power density in any 4 kc/s bandwidth supplied by the earth station transmitter to its antenna, and similarly P_r is the maximum permissible power density for any 4 kc/s bandwidth at the receiver input.

When considering interference from a terrestrial transmitter to an earth station receiver, it is more convenient to consider P_t and P_r of (1) as total powers rather than power densities.

It is assumed in computing coordination distances that the communication satellite system is employing carrier energy dispersal techniques when lightly loaded.

3. Computations for Minimum Permissible Basic Transmission Loss

In any direction from the transmitting station, the required minimum value of permissible basic transmission loss (L_b) is obtained from Tables 1, 2 and 3 below.

TABLE 1

INTERFERENCE FROM AN EARTH STATION TRANSMITTER TO A TERRESTRIAL LINE OF SIGHT RADIO-RELAY SYSTEM

	Percentage of time	Values to be assumed for coordination
Permissible total interference in any telephone channel	0.01%	-40 dbm0
Permissible interference from one earth station to one radio-relay system receiver, assuming 4 such non simultaneous interference entries	0.0025%	-40 dbm0
Receiver Transfer Characteristic assuming carrier energy dispersion to distribute interference uniformly over at least 300 kc/s bandwidth	-	1 db *) (light loading worst case)
Hence maximum value of unwanted-to wanted signal ratio at the receiver	0.0025%	-39 db
Minimum level of wanted signal at receiver input	-	-74 dbW *)
Hence, permissible level of unwanted signal at receiver input, assuming carrier energy dispersion, as above	0.0025%	-113 dbW
Factor for conversion of interference bandwidth to 4 kc/s from 300 kc/s	-	-19 db *)
Hence, permissible level of unwanted signal at receiver input in any 4 kc/s bandwidth	0.0025%	-132 dbW (per 4 kc/s)
Radio-relay station antenna gain less feeder losses (See Note 1)	-	42 db
Earth station antenna gain effective in the horizontal plane less feeder and polarization losses (Note 2)	2.5 %	G_{earth} db
Power supplied by earth station transmitter to the antenna per 4 kc/s bandwidth	-	P_{earth} dbW
Earth Station Site-Shielding Factor if applicable	-	F_s db
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{earth} + G_{earth} - F_s + 174$

*) The figures are taken from an example of a 960 ch. line-of-sight radio-relay system but the maximum permissible unwanted signal level of -113 dbw is almost independent of the number of channels carried.

Note 1 The maximum value of 42 db for G_{terr}, as given in Table 1, should be used unless it is known that the terrestrial station receiving antenna gain is greater than 42 db, in which case the larger value may be used.

Note 2 For simplicity, the appropriate value of G_{earth} to be used shall be the maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 2.5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

TABLE 2

INTERFERENCE FROM A TERRESTRIAL LINE-OF-SIGHT RADIO-RELAY TRANSMITTER TO A COMMUNICATION-SATELLITE EARTH STATION RECEIVER

	Percentage of Time	Values to be assumed for coordination
Permissible total interference in any telephone channel	0.02%	- 38 dbm0
Permissible interference from one terrestrial station to one earth station, assuming 4 such non-simultaneous interference entries	0.005%	- 38 dbm0
Receiver Transfer Characteristic assuming carrier energy dispersion of the wanted signal	-	10 db *)
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.005%	- 28 db
Minimum level of wanted signal at receiver input	-	- 117 dbW *)
Hence, permissible level of unwanted signal at receiver input	0.005%	- 145 dbW
Isotropic earth station antenna gain effective in the horizontal plane (Note 1)	5%	G_{earth} db
Radio-relay station antenna gain less feeder loss	-	$G_{terr.}$ db
Earth Station Site-Shielding Factor where applicable	-	F_s db
Power supplied by terrestrial station transmitter to its antenna	-	P_{terr} dbW
Minimum permissible basic transmission loss, L_b, in decibels. (Note 2)	0.1%	$P_{terr} + G_{terr} - F_s + G_{earth} + 145$

*) These figures are taken from an example of a 1200 ch. communication-satellite system but the maximum permissible unwanted signal level of -117 dbW is almost independent of the number of channels carried.

Note 1 For simplicity, the appropriate value of G_{earth} to be used shall be that maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the obstacle.

Note 2 The application of coordination distance procedures for frequency sharing of this type involves the administration desiring to set up an earth station preparing equal-power contours of coordination distance in the various azimuthal directions for several discrete levels of radiated power from the terrestrial station.

TABLE 3

INTERFERENCE FROM A TERRESTRIAL TRANSMITTER TO A SPACE RESEARCH EARTH STATION RECEIVER

	Percentage of Time	Values to be Assumed for Coordination
Permissible interference in any 1 cycle per second band at receiver input (See Note 1)	0.1%	-220 dbW
Permissible interference in any 10 kc/s band at receiver input (See Note 2)	0.1%	-180 dbW
Isotropic earth station antenna gain effective in the horizontal plane in the pertinent direction (See Note 3)	10%	G_{earth} db.
Radio-relay station antenna gain less feeder losses	-	G_{terr} db.
Earth station site-shielding factor where applicable	-	Fs db.
Power supplied by terrestrial station transmitter to its antenna	-	P_{terr} dbW
Minimum permissible basic transmission loss, L_b, in decibels	1.0%	$P_{terr} + G_{terr} - Fs + G_{earth} + 180$
Factor to convert from use of 1.0% to 0.1% transmission loss curves (See Note 4)	-	15 db.
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{terr} + G_{terr} - Fs + G_{earth} + 165$

Note 1 — A comparison of the C.C.I.R. criteria for near earth, deep space and manned space research indicates that the permissible levels of interference at the receiver input are substantially the same.

Note 2 — Measurements on terrestrial station emissions indicate that the minimum occupied bandwidth under no load conditions is of the order of at least 10 kc/s.

Note 3 — In order to meet the 0.1% time criteria for which the -220 dbW per cycle per second is permitted, the combination of earth station antenna gain, G_{earth}, in the horizontal plane and pertinent azimuthal direction, exceeded for 10% of the time and the basic transmission loss, L_b, exceeded for 1.0% of the time, is taken as an appropriate combination.

Note 4 — From available propagation curves it is noted that $L_b(1\%)-L_b(0.1\%)$ over a range of typical coordination distances is about 10db overland (Zone A) and 15 db oversea (Zones B and C). The conversion ratio of 15 db was selected to permit the use of the same 0.1% transmission loss curves as are used in connection with Tables 1 and 2.

---

4. Summary

The formulae giving the required basic transmission loss in dbs (L_b) not to be exceeded for 0.1% of the time are summarised below :

(1) For co-ordination between an earth transmitting station and terrestrial receiving stations :

$$L_b = P_{earth} + G_{earth}{}^{*} - F_s + 174$$

(2) For co-ordination between terrestrial transmitting stations and a communication-satellite or meteorological-satellite earth receiving station :

$$L_b = P_{terr} + G_{terr} - F_s + G_{earth}{}^{*} + 145$$

(3) For co-ordination between terrestrial transmitting stations and a space research earth receiving station :

$$L_b = P_{terr} + G_{terr} - F_s + G_{earth}{}^{\phi} + 165$$

* See Note 2 of Table 1 (page 4)

ϕ See Note 3 of Table 3 (above)

5. Site Shielding Factor

In cases where earth stations are sited below the level of surrounding or nearby terrain it is necessary to adopt the following procedure. Thus, if, in a given azimuthal direction, an obstacle provides an angle of elevation, θ, to the earth station then - for that azimuthal direction - it is necessary, in calculating coordination distance, to employ the maximum earth station antenna gain at the angle of elevation, θ, rather than the maximum gain along the horizontal.

As previously discussed, where site-shielding applies, the value of required basic transmission loss, L_b, may be reduced by a site-shielding factor, F_S, expressed in decibels. The following values of site-shielding factor shall apply when the obstacle limiting the angle of elevation is situated more than 5 kilometres away from the earth station.

Minimum angle of elevation, θ, of obstacle as seen from earth station	Allowable value of site-shielding factor, F_S, in decibels
below 1°	0
between 1° and 2°	5
between 2° and 3°	8
between 3° and 4°	11
between 4° and 5°	13
More than 5°	15

In the case of nearer obstacles the values of site shielding factor which apply may be obtained by multiplying the tabulated values by the fraction $d/5$, where d is the distance from the earth station to the obstacle in kilometres.

6. Equivalent basic transmission loss at 4 Gc/s (L_b')

The propagation data considered in the next paragraph relates to a frequency of 4 Gc/s and it is therefore in general necessary to convert the minimum permissible basic transmission loss (L_b) into an equivalent loss at 4 Gc/s (L_b') before using these data to find the coordination distance.

The equivalent loss in decibels at 4 Gc/s is given by:

$$L_b' = L_b + 13 - 21.6 \log_{10} f$$

where f is the assigned frequency in Gc/s. This relationship is shown in Fig. 1

7. World Radio Climatic Conditions and Propagation Data.

The propagation curves of Figure 2 are labelled A, B, and C, and correspond to the various basic radio-climatic regions of the world as follows:-

Zone A: Land

Zone B: Sea, at latitudes greater than 23.5° N and 23.5° S

Zone C: Sea, at latitudes between 23.5° N and 23.5° S inclusive.

In any direction from the earth station the required coordination distance is found as follows:

(i) if the equivalent basic transmission loss L_b' is such that the coordination distance in the given direction lies wholly within one of the zones, the coerdination distance may be obtained directly from Figure 2 using the appropriate curve;

(ii) if the coordination distance lies partly in one zone and partly in another, the curves for mixed paths, Figures 3, 4 and 5 should be used. These curves show the loss L_b' as a function of the path length in each of the two zones separately. Thus, if the path length in one zone and the required loss are known, the path length in the other zone can be determined. The path length in the first zone is the known distance from the earth station to the zone boundary in the direction concerned, hence the further length in the second zone can be found. The total path length, or coordination distance, is the sum of these two paths lengths. Figures 3, 4 and 5 cover all cases of mixed paths in two zones as follows:

Fig. 3: Zones A and B,

Fig. 4: Zones A and C,

Fig. 5: Zones B and C.

An example of the coordination distance calculation for a mixed path is worked out in the Appendix.

(iii) In certain geographical areas where propagation losses are known to be less than the values given by the pertinent zonal propagation curves, coordination distances should be computed on the basis of the known propagation data.

Appendix: 1

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APPENDIX

EXAMPLE OF CO-ORDINATION DISTANCE CALCULATION FOR A MIXED PATH

The procedure to be followed in the case of a mixed path is illustrated by the following example, in which it is assumed that a basic transmission loss of 190 db is required to avoid interference from an earth station to terrestrial services in a given direction.

As shown in Fig. 6A, the earth station is situated 50 km from the coast and there is an oversea path of 150 km before the coastline of a neighbouring country is reached. It is required to find the co-ordination distance from the earth station in the given direction using the mixed-paths propagation chart represented by Fig. 6B. The procedure is as follows:

1) Starting from the origin, the distance of 50 km from the earth station to the coastline is set off along the A axis of the chart as indicated by the point A_1.

2) The oversea path length of 150 km is then set off parallel to the B axis of the chart as indicated by the point B_1.

3) The further overland distance required is then measured parallel to the A axis from the point B_1 to the point of intersection with the 190 db curve, as indicated by X. This distance is found to be 75 km.

4) The co-ordination distance is the sum of the A and B co-ordinates of the point X and is equal to 50 + 150 + 75 = 275 km.

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FIG. 1

FACTEUR DE CORRECTION A AJOUTER A L'AFFAIBLISSEMENT DE TRANSMISSION REQUIS L_b A LA FREQUENCE F POUR OBTENIR L'AFFAIBLISSEMENT EQUIVALENT L'_b A LA FREQUENCE 4 GHz

CORRECTION FACTOR TO BE ADDED TO THE REQUIRED LOSS L_b AT FREQUENCY F TO OBTAIN THE EQUIVALENT LOSS L'_b AT 4 Gc/s

FACTOR DE CORRECCIÓN QUE HA DE AÑADIRSE A LA PÉRDIDA REQUERIDA L_b EN LA FRECUENCIA F PARA OBTENER LA PÉRDIDA EQUIVALENTE L'_b EN 4 Gc/s

$L'_b = L_b$ + facteur de correction – $L'_b = L_b$ + correction factor – $L'_b = L_b$ + factor de corrección

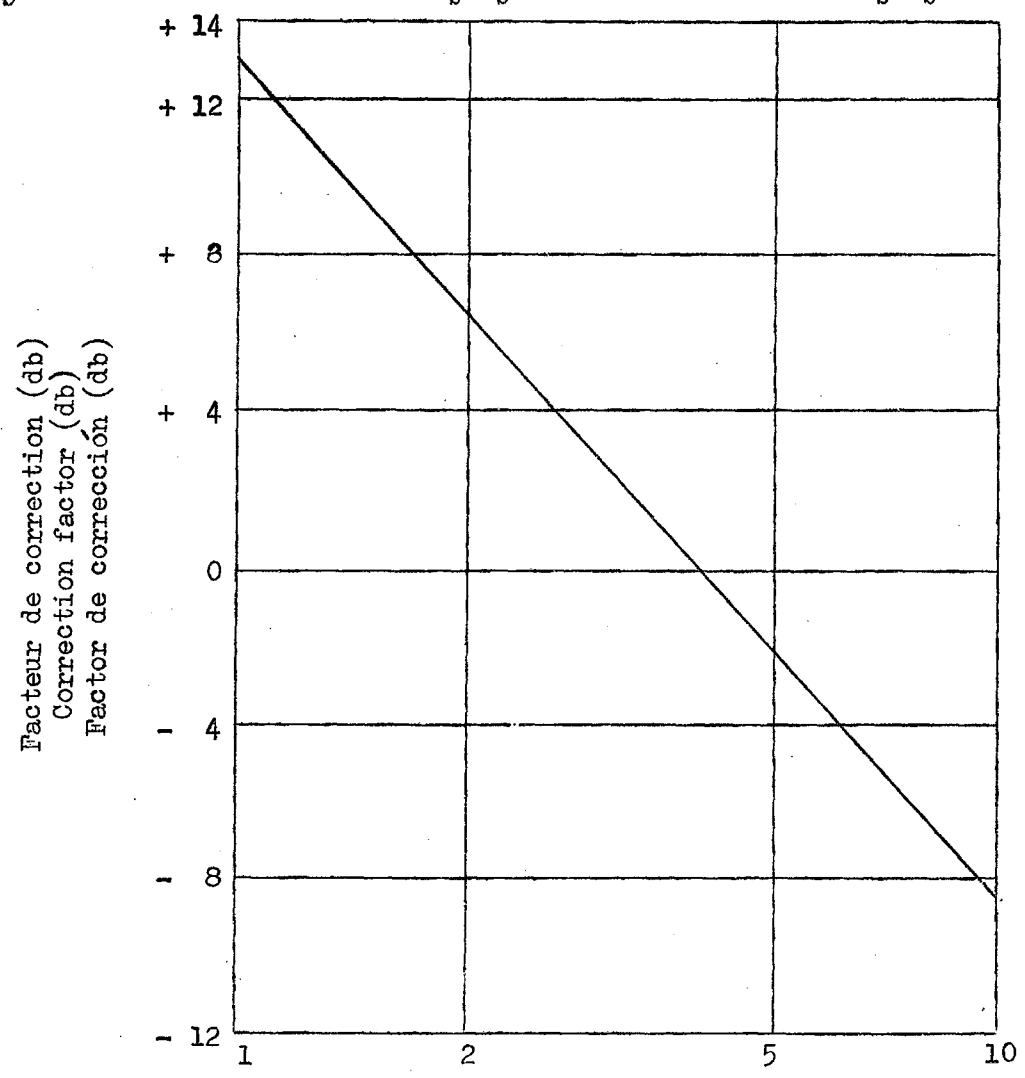

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FIG. 2

COURBES DE PROPAGATION TROPOSPHERIQUE SIMPLIFIEES POUR LE CALCUL DE LA DISTANCE DE COORDINATION. AFFAIBLISSEMENT DE TRANSMISSION DE REFERENCE NON DEPASSE PENDANT 0,1 % DU TEMPS, A LA FREQUENCE 4 GHz

SIMPLIFIED TROPOSPHERIC PROPAGATION CURVES FOR CALCULATION OF CO-ORDINATION DISTANCE. BASIC TRANSMISSION LOSS NOT EXCEEDED FOR 0,1 % OF THE TIME AT 4 Gc/s

CURVAS SIMPLIFICADAS DE PROPAGACIÓN TROPOSFÉRICA PARA EL CÁLCULO DE LA DISTANCIA DE COORDINACIÓN. PÉRDIDA BÁSICA DE TRANSMISIÓN NO EXCEDIDA DURANTE EL 0,1 % DEL TIEMPO EN 4 Gc/s

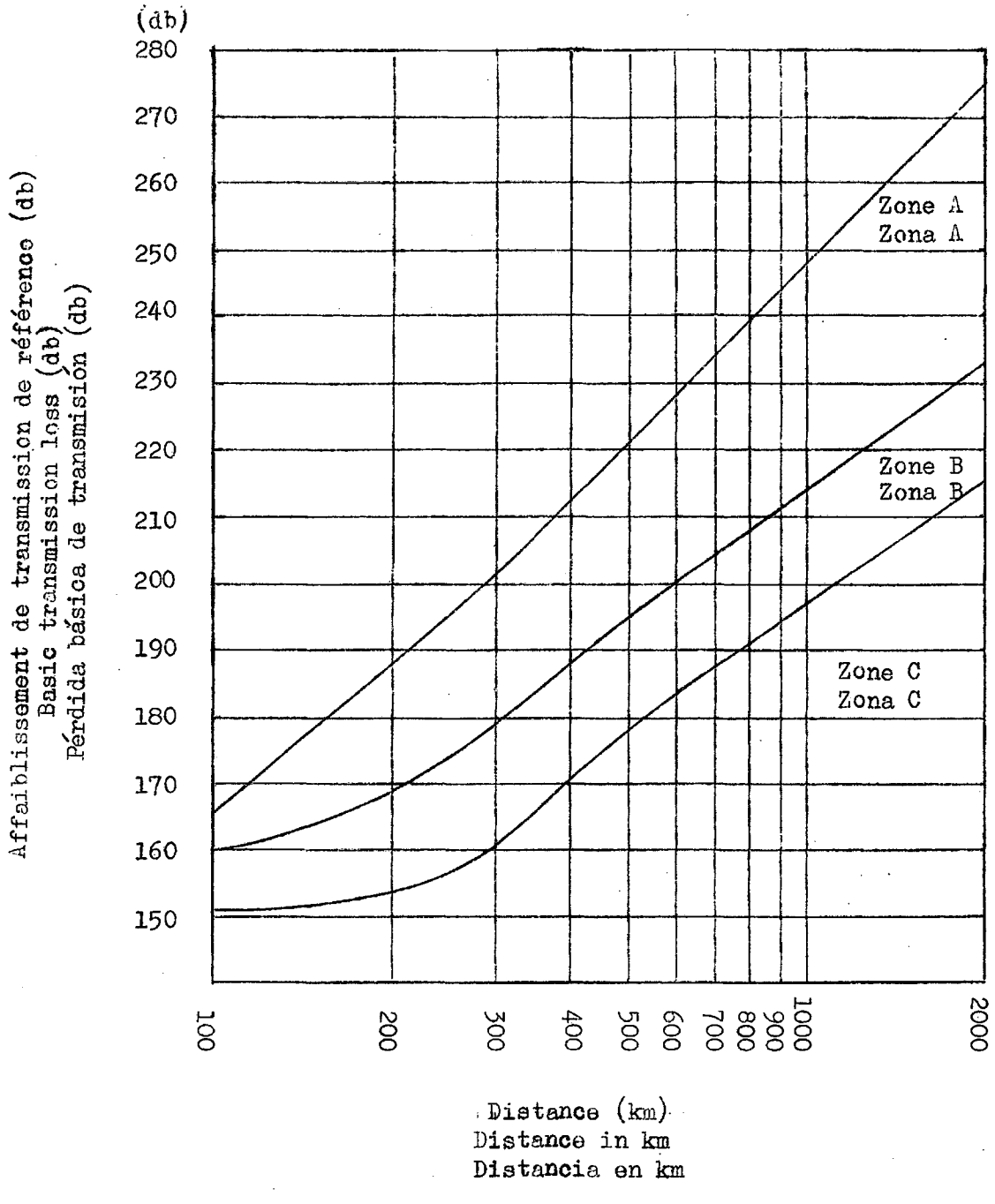

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FIG. 3

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION - TRAJETS MIXTES (ZONES A ET B)

CHART FOR CO-ORDINATION DISTANCE CALCULATIONS - MIXED PATHS IN ZONES A & B

GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN - TRAYECTOS MIXTOS EN LAS ZONAS A Y B

Affaiblissement de transmission de référence à 4 GHz, L_b' (db)

Basic transmission loss in decibels at 4 Gc/s L_b'

Pérdida básica de transmisión (db) en 4 Gc/s, L_b'

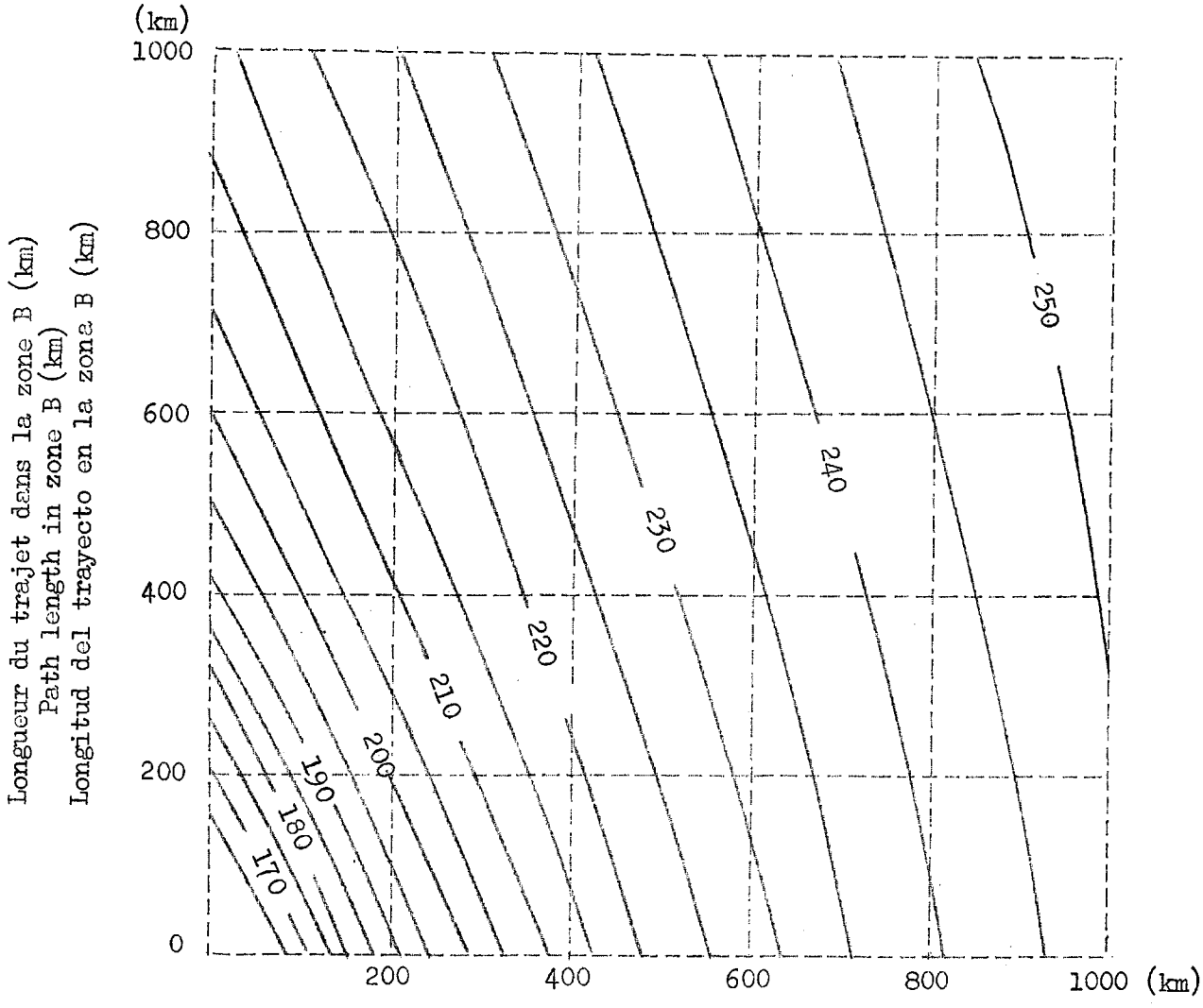

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FIG. 4

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES A ET C)
CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES A & C
GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN
TRAYECTOS MIXTOS EN LAS ZONAS A Y C

Affaiblissement de transmission de référence à 4 GHz, L_b' (db)
Basic transmission loss in decibels at 4 Gc/s L_b'
Pérdida básica de transmisión (db) en 4 Gc/s, L_b'

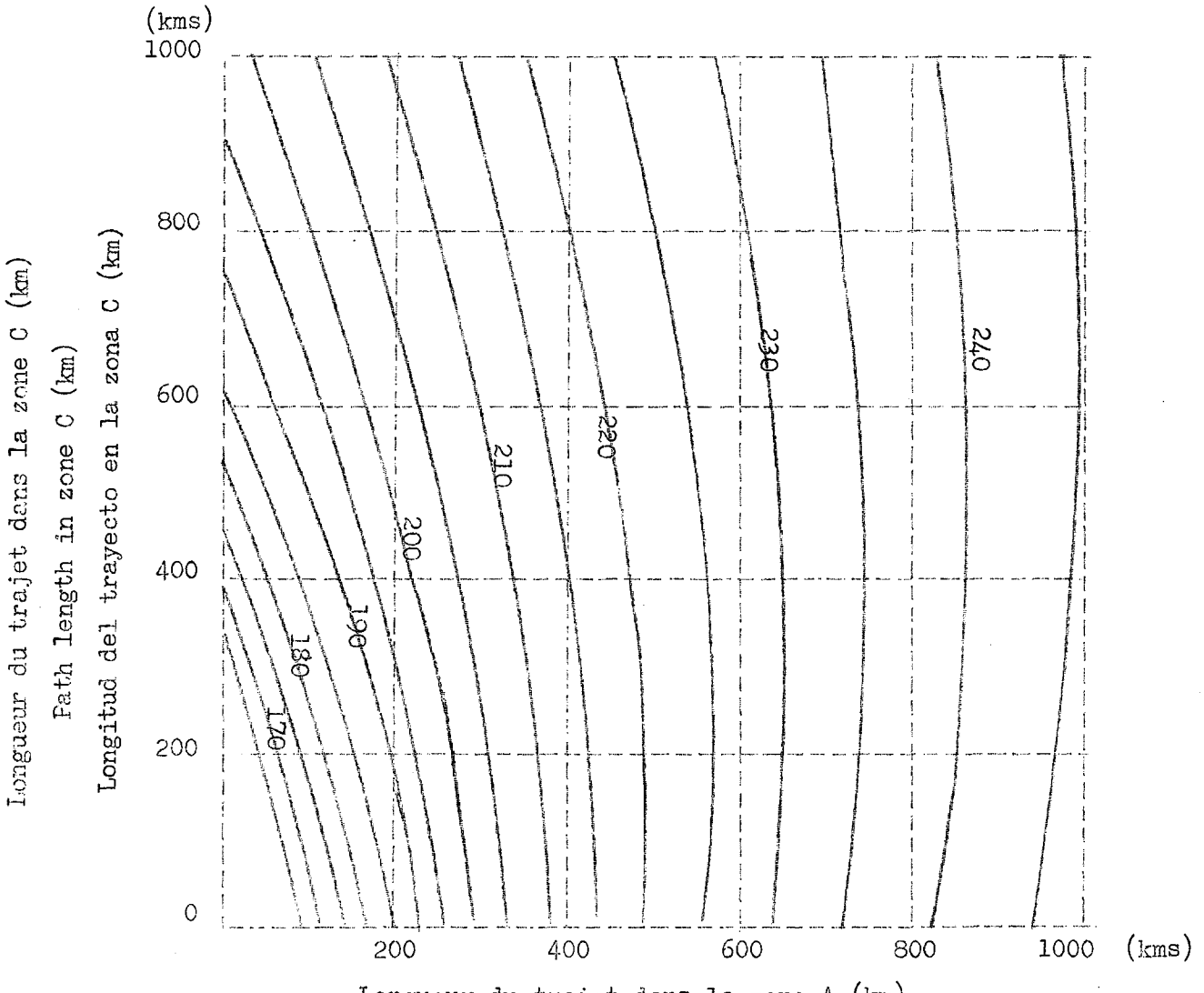

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FIG. 5

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES B ET C)

CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES B & C

GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN
TRAYECTOS MIXTOS EN LAS ZONAS B Y C

Affaiblissement de transmission de référence à 4 GHz, L_b'(db)

Basic transmission loss in decibels at 4 Gc/s L_b'

Pérdida basica de transmisión (db) en 4 Gc/s, L_b'

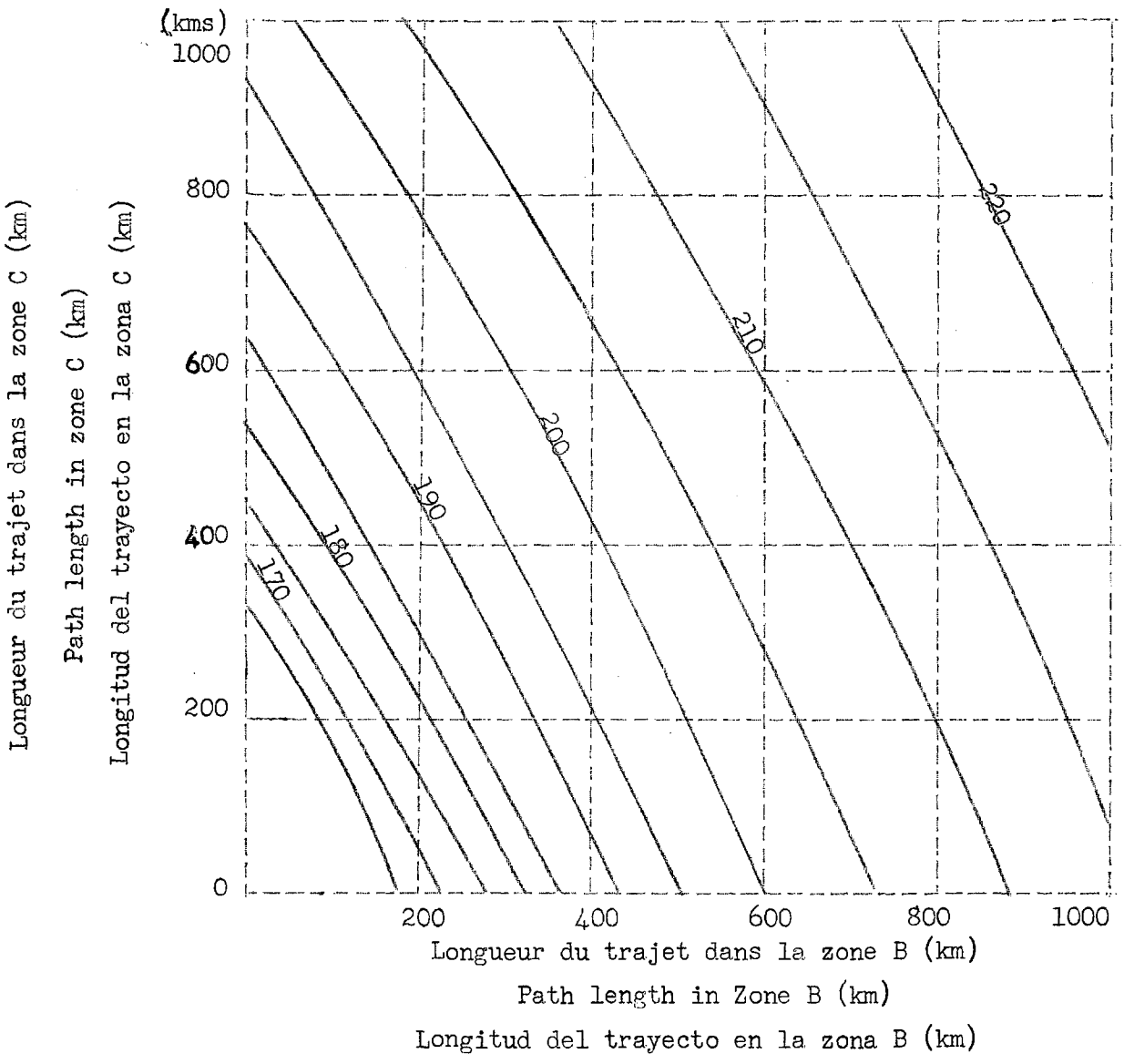

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FIG. 6

EXEMPLE DE CALCUL DE LA DISTANCE DE COORDINATION DANS LE CAS D'UN TRAJET MIXTE

EXAMPLE OF COORDINATION DISTANCE. CALCULATION FOR MIXED PATHS

EJEMPLO DE CÁLCULO DE LA DISTANCIA DE COORDINACIÓN PARA TRAYECTOS MIXTOS

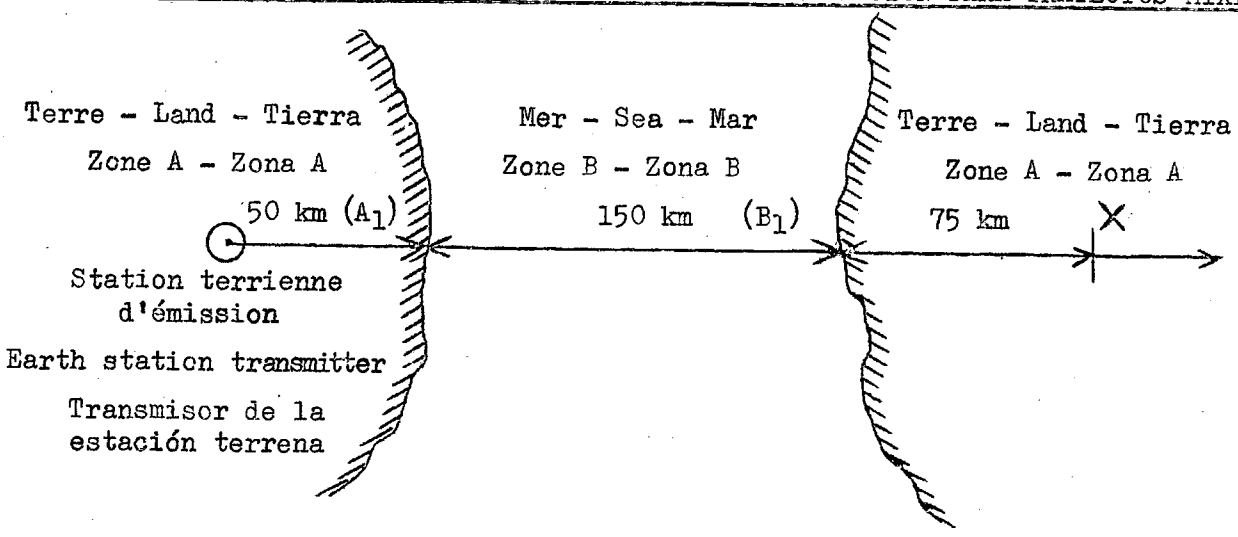

Fig. 6A

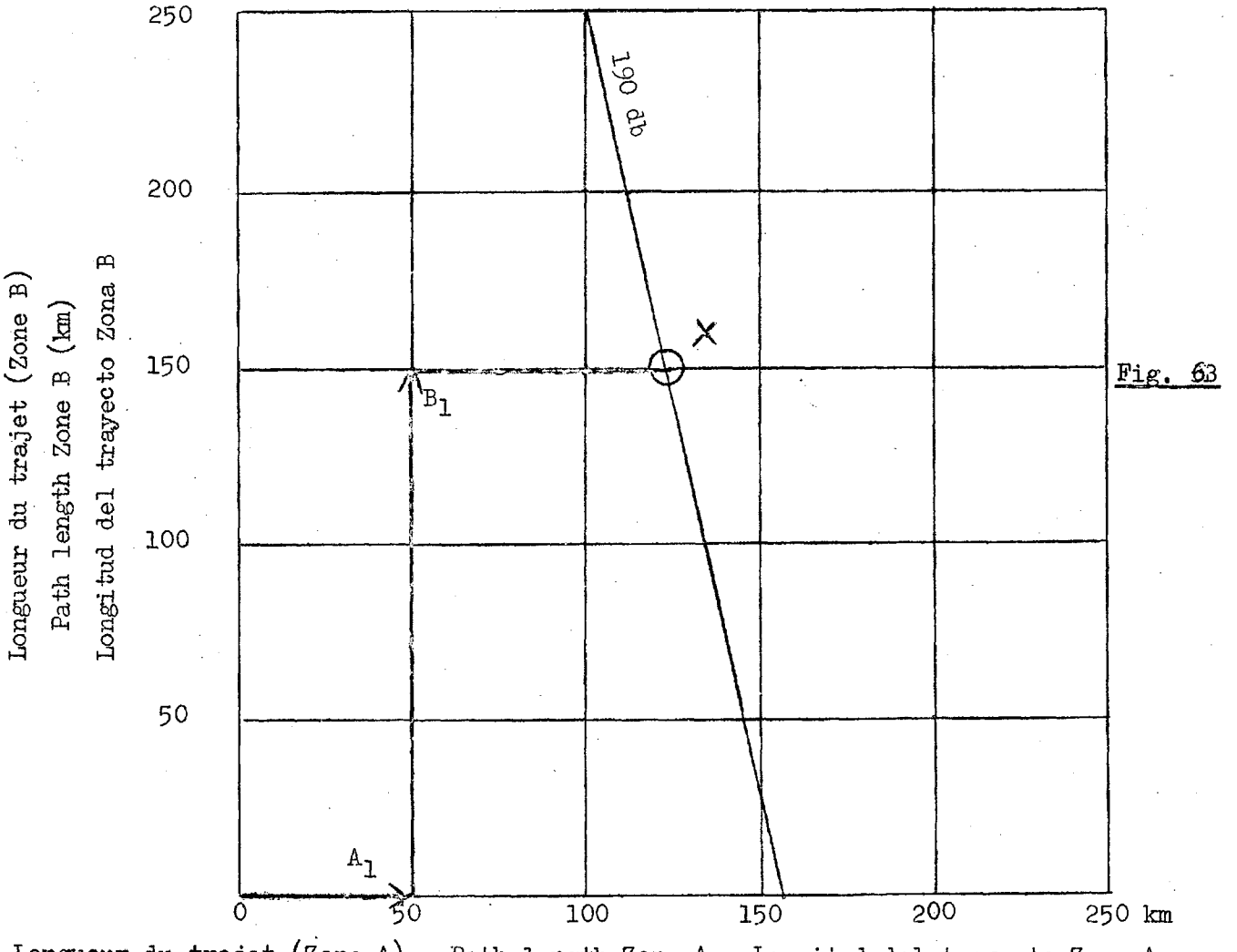

Fig. 6B

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E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

FIRST REPORT OF WORKING GROUP 4C

CO-ORDINATION DISTANCE PROCEDURE IN THE 1-10 Gc/s BAND

The text of a proposed attachment to the Regulations, dealing with the procedure for calculating the co-ordination distance between earth stations and terrestrial stations sharing the same frequency band, is given in this document. The calculation of co-ordination distance, as shown in Tables 1 and 2, is based on the worst possible sharing conditions i.e. co-channel operation of the two services, and the situation when the receiving station antenna has the maximum horizontal antenna gain in the direction of the transmitting station. These are the assumptions that are made in computing the co-ordination distance.

If the calculation of co-ordination distance is uniquely carried out by the Administration planning an earth station, as in C.C.I.R. Recommendation 359, then a few minor changes in the text of this document will be necessary. However, this depends upon the precise procedures which Committee 6 will decide to adopt and the calculation procedures outlined herein are therefore more general than may be necessary for the proposed attachment.

At a later time, the separation distances between the earth stations and terrestrial stations would be calculated in required instances, taking account of the precise frequency spacings, effective antenna directivities and other known parameters of both the terrestrial and earth stations. Under these conditions, the required separation distances will usually be much less than the corresponding co-ordination distances. In this connection, it is thought that Committee 6 may be interested to note the reduction of permissible basic transmission loss which could arise when "offset" or "inter-leaved" operation of an earth station and a terrestrial station takes place. A specific example of offset operation is computed in Tables A and B, using the system parameters and frequency offset described in C.C.I.R. Report 209, Annex 1. The reduction in permissible basic transmission loss due to a nominal frequency offset of about 10 Mc/s in this case may be noted by comparing the attached Tables A and B with Tables 1 and 2, respectively, of the text. It should be noted in comparing Tables 1

and A that the former uses the power per 4 kc/s as a parameter whereas the latter employs the total power as a parameter. In order to compare the results on a proper basis the transmission loss formula of Table 1 must be converted for a total power parameter by subtracting 19 db from the constant term - i.e. change 174 to 155. And for this example the improvement because of frequency offset is some 16 db for both pairs of tables.

This covering Memorandum, including Tables A and B, is provided for the information of the Members of Committees 4 and 6 and is not intended to be a necessary part of the Regulations.

Committee 4 has not prepared a formal draft of a proposed attachment to the Regulations, but seeks guidance from Committee 6 as to the appropriate form this should take.

TABLE A

INTERFERENCE FROM AN EARTH STATION TRANSMITTER TO A TERRESTRIAL LINE-OF-SIGHT RADIO-RELAY SYSTEM

OFFSET CHANNEL CASE

	Percentage of time not exceeded	Values for offset channel case
Permissible total interference in any telephone channel	0.01%	-40 dbm0
Permissible interference from one earth station to one radio-relay system receiver, assuming 4 such non-simultaneous interference entries may occur	0.0025%	-40 dbm0
Receiver Transfer Characteristic assuming heavy loading of interfering transmission.	-	17 db
Hence maximum value of unwanted-to wanted signal ratio at the receiver	0.0025%	-23 db
Minimum level of wanted signal at receiver input	-	-74 db W
Hence, permissible level of unwanted signal at receiver input	0.0025%	-97 db W
Radio-relay station antenna gain less feeder losses	-	42 db
Effective earth station antenna gain in the horizontal plane less feeder and polarization losses	2.5 %	G_{earth} db
Power supplied by earth station transmitter to the antenna	-	P^{*}_{earth} db W
Earth Station Site-Shielding factor if applicable	-	F_s db
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{earth} + G_{earth} - F_s + 139$ dB

*) Note. P_{earth} is total power supplied by earth station transmitter to the antenna.

TABLE B

INTERFERENCE FROM A TERRESTRIAL LINE-OF-SIGHT RADIO-RELAY TRANSMITTER TO A COMMUNICATION-SATELLITE EARTH STATION RECEIVER

(OFFSET CHANNEL CASE)

	Percentage of Time not exceeded	Values for offset Channel Case
Permissible total interference in any telephone channel	0.02%	- 38 dbm0
Permissible interference from one terrestrial station to one earth station, assuming 4 such non-simultaneous interference entries may occur	0.005%	- 38 dbm0
Receiver Transfer Characteristic assuming heavy loading of the wanted signal	-	26 db
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.005%	- 12 db
Minimum level of wanted signal at receiver input	-	- 117 db W
Hence, permissible level of unwanted signal at receiver input	0.005%	- 129 db W
Effective earth station antenna gain in the horizontal plane	5%	G_{earth} db
Radio-relay station antenna gain less feeder loss	-	$G_{terr.}$ db
Earth Station Site-Shielding Factor where applicable	-	F_s db
Power supplied by terrestrial station transmitter to its antenna	-	P_{terr} db W
Minimum basic transmission loss, L_b, in decibels	0.1%	$P_{terr} + G_{terr} - F_s + G_{earth} + 129$ dB

PROCEDURE FOR CALCULATING COORDINATION DISTANCE
BETWEEN EARTH STATIONS OF SPACE SERVICES AND TERRESTRIAL
STATIONS SHARING THE SAME FREQUENCY BAND IN THE RANGE 1 - 10 Gc/s

1. Objectives

Coordination is required when earth stations and terrestrial stations operate in shared frequency bands on an equal basis. In specific circumstances, coordination may involve two or more Administrations depending upon the siting of the stations and the coordination distances*) involved. The coordination area around a station is arrived at by ascertaining the coordination distance measured in the various azimuths from that station.

For the calculation of coordination distance two separate cases must be considered:

a) interference from an earth station transmitter to terrestrial station receivers;

b) interference from terrestrial station transmitters to an earth station receiver.

In the case of a) it has been assumed that the terrestrial receiving station is a line-of-sight radio relay station designed according to C.C.I.R. standards. In the case of b) it has been assumed that the earth station forms a part of a communication satellite system. Further, in order to ensure that a safe value of coordination distance shall be obtained, it has been assumed that in both cases the receiving station antenna is of typically high gain. For the same reason, in both cases, appropriately low-noise sensitive receivers are assumed.

While the characteristics thus assumed for the receiving stations apply particularly to frequency sharing between communication satellite systems and line-of-sight radio-relay systems they are sufficiently conservative to cover coordination with other forms of frequency sharing that may be necessary between space services and terrestrial services in the 1-10 Gc/s range, e.g., between meteorological satellite services and terrestrial services.

---

*) Coordination distance is defined in R.R. .....

2. Minimum Permissible Basic Transmission Loss (L_b)

The general formula for calculating the required minimum permissible basic transmission loss is :

(1) $$L_b = (P_t + G_t) - F_s - (P_r - G_r)$$

where P_t:- Power in dbW supplied by the interfering transmitter to the transmission line input.

G_t:- Effective gain in dB of transmitting antenna of the interfering station in direction of the receiver liable to interference, including the effect of all feeder losses, and losses due to any artificial screens.

F_s:- The earth station site-shielding factor in dB, discussed later.

P_r:- The maximum permissible interference level in dbW at the receiver input of the affected station.

G_r:- The effective gain in dB of the receiving antenna of the affected station in the direction of the interfering transmitter, less feeder loss and polarization discrimination if applicable.

When considering interference to telephone transmission systems, particularly in the case of systems using frequency modulation, it is convenient to operate in terms of the power densities in any 4 kc/s bandwidth. Therefore, in the case of interference from an earth station transmitter to terrestrial radio relay systems, P_t is taken as the maximum power density in any 4 kc/s bandwidth supplied by the earth station transmitter to its antenna, and similarly P_r is the maximum permissible power density for any 4 kc/s bandwidth at the receiver input.

When considering interference from a terrestrial transmitter to an earth station receiver, it is more convenient to consider P_t and P_r of (1) as total powers rather than power densities.

It is assumed in computing coordination distances that the communication satellite system is employing carrier energy dispersal techniques when lightly loaded.

3. Computations for Minimum Permissible Basic Transmission Loss

In any direction from the transmitting station, the required minimum value of permissible basic transmission loss (L_b) is obtained as shown in Tables 1 and 2 below.

TABLE 1

INTERFERENCE FROM AN EARTH STATION TRANSMITTER TO A TERRESTRIAL LINE OF SIGHT RADIO-RELAY SYSTEM

	Percentage of time	Values to be assumed for coordination
Permissible total interference in any telephone channel	0.01%	-40 dbm0
Permissible interference from one earth station to one radio-relay system receiver, assuming 4 such non simultaneous interference entries may occur	0.0025%	-40 dbm0
Receiver Transfer Characteristic assuming carrier energy dispersion to distribute interference uniformly over at least 300 kc/s bandwidth	-	1 db (light loading worst case)
Hence maximum value of unwanted-to wanted signal ratio at the receiver	0.0025%	-39 db
Minimum level of wanted signal at receiver input	-	-74 db W
Hence, permissible level of unwanted signal at receiver input, assuming carrier energy dispersion, as above	0.0025%	-113 db W
Factor for conversion of interference bandwidth from 300 kc/s to 4 kc/s	-	19 db
Hence, permissible level of unwanted signal at receiver input in any 4 kc/s bandwidth	0.0025%	-132 db W (per 4 kc/s)
Radio-relay station antenna gain less feeder losses (See Note 1)	-	$G_{terr.}$ db (maximum value 42 db)
Effective earth station antenna gain in the horizontal plane loss feeder and polarization losses (Note 2)	2.5 %	G_{earth} db
Power supplied by earth station transmitter to the antenna per 4 kc/s bandwidth	-	P_{earth} dbW
Earth Station Site-Shielding Factor if applicable	-	F_s db
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{earth} + G_{earth} - F_s + 174$

Note 1 Since no other information would be available, the maximum value of 42 dB for G_{terr}, as given in Table 1 applies. However, when the sensitivity to interference of the terrestrial system is known to be greater than 42 dB, correspondingly larger values of G_{terr} may be used. Using a value of 42 dB for G_{terr}, the formula for the minimum permissible basic transmission loss exceeded for all but 0.1 % of the time becomes:

$$L_b = P_{earth} + G_{earth} - F_s + 174 \quad db$$

Note 2 For simplicity, the appropriate value of G_{earth} to be used shall be the maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 2.5 % of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

TABLE 2

INTERFERENCE FROM A TERRESTRIAL LINE-OF-SIGHT RADIO-RELAY TRANSMITTER TO A COMMUNICATION-SATELLITE EARTH STATION RECEIVER

	Percentage of Time	Values to be assumed for coordination
Permissible total interference in any telephone channel	0.02%	- 38 dbm0
Permissible interference from one terrestrial station to one earth station, assuming 4 such non-simultaneous interference entries may occur.	0.005%	- 38 dbm0
Receiver Transfer Characteristic assuming carrier energy dispersion of the wanted signal	-	10 db
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.005%	- 28 db
Minimum level of wanted signal at receiver input	-	- 117 db W
Hence, permissible level of unwanted signal at receiver input	0.005%	- 145 db W
Effective earth station antenna gain in the horizontal plane (Note 1)	5%	G_{earth} db
Radio-relay station antenna gain less feeder loss	-	$G_{terr.}$ db
Earth Station Site-Shielding Factor where applicable	-	F_s db
Power supplied by terrestrial station transmitter to its antenna	-	P_{terr} db W
Minimum permissible basic transmission loss, L_b, in decibels. (Note 2)	0.1%	$P_{terr} + G_{terr} - F_s + G_{earth} + 145$

Note 1 For simplicity, the appropriate value of G_{earth} to be used shall be that maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the obstacle. If the value of G_{earth} is not known, a value of 20 dB should be employed and the formula for the minimum permissible basic transmission loss exceeded for all but 0.1% of the time becomes:

$$L_b = P_{terr.} + G_{terr.} - F_s + 165 \text{ dB}$$

Note 2 The application of coordination distance procedures for frequency sharing of this type may be facilitated by the administration desiring to set up an earth station preparing contours of coordination distance in the various azimuthal directions for several discrete levels of radiated power from the terrestrial station.

4. Site Shielding Factor

In cases where earth stations are sited below the level of surrounding or nearby terrain it is necessary to adopt the following procedure. Thus, if, in a given azimuthal direction, an obstacle provides an angle of elevation, α, to the earth station then - for that azimuthal direction - it is necessary, in calculating coordination distance, to employ the maximum earth station antenna gain at the angle of elevation, α, rather than the maximum gain along the horizontal.

As previously discussed, where site-shielding applies, the value of required basic transmission loss, L_b, may be reduced by a site-shielding factor, F_S, expressed in decibels. The following values of site-shielding factor shall apply when the obstacle limiting the angle of elevation is situated more than 5 kilometres away from the earth station.

Minimum angle of elevation, α, of obstacle as seen from earth station	Allowable value of site-shielding factor, F_S, in decibels
below 1°	0
between 1° and 2°	5
between 2° and 3°	8
between 3° and 4°	11
between 4° and 5°	13
More than 5°	15

In the case of nearer obstacles the values of site shielding factor which apply may be obtained by multiplying the tabulated values by the fraction $d/5$, where d is the distance from the earth station to the obstacle in kilometres.

5. Equivalent basic transmission loss at 4 Gc/s (L_b')

The propagation data considered in the next paragraph relates to a frequency of 4 Gc/s and it is therefore in general necessary to convert the minimum permissible basic transmission loss (L_b) into an equivalent loss at 4 Gc/s (L_b') before using these data to find the coordination distance.

The equivalent loss in decibels at 4 Gc/s is given by:

$$L_b' = L_b + 13 - 21.6 \log_{10} f$$

where f is the assigned frequency in Gc/s. This relationship is shown in Fig. 1

Coordination distance

6. World Radio Climatic Conditions and Propagation Data.

The propagation curves of Figure 2 are labelled A, B, and C, and correspond to the various basic radio-climatic regions of the world as follows:-

Zone A: Land

Zone B: Sea, at latitudes greater than 23.5° N and 23.5° S

Zone C: Sea, at latitudes between 23.5° N and 23.5° S inclusive.

In any direction from the earth station the required coordination distance is found as follows:

(i) if the equivalent basic transmission loss L_b' is such that the coordination distance in the given direction lies wholly within one of the zones, the coordination distance may be obtained directly from Figure 2 using the appropriate curve;

(ii) if the coordination distance lies partly in one zone and partly in another, the curves for mixed paths, Figures 3, 4 and 5 should be used. These curves show the loss L_b' as a function of the path length in each of the two zones separately. Thus, if the path length in one zone and the required loss are known, the path length in the other zone can be determined. The path length in the first zone is the known distance from the earth station to the zone boundary in the direction concerned, hence the further length in the second zone can be found. The total path length, or coordination distance, is the sum of these two paths lengths. Figures 3, 4 and 5 cover all cases of mixed paths in two zones as follows:

Fig. 3: Zones A and B,

Fig. 4: Zones A and C,

Fig. 5: Zones B and C.

An example of the coordination distance calculation for a mixed path is worked out in the Annex.

(iii) In certain geographical areas where propagation losses are known to be less than the values given by the pertinent zonal propagation curves, coordination distances should be computed on the basis of the better propagation data.

7. Coordination distances for paths in Zone A only *)

The calculation of coordination distance will in many cases involve propagation over land only, for which curve A of Fig. 2 applies. Under such conditions the coordination distances can be plotted against the effective radiated power less earth station site shielding factor - i.e. $P_{earth} + G_{earth} - F_s$ for one direction and $P_{terr} + G_{terr} - F_s$ for the other direction. These parameters are plotted in Figures 6 and 7 versus coordination distance.

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*) This paragraph is provided for the information of members of Committees 4 and 6 and may not be a necessary part of the Regulations.

Annex: 1

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A N N E X

EXAMPLE OF CO-ORDINATION DISTANCE CALCULATION FOR A MIXED PATH

The procedure to be followed in the case of a mixed path is illustrated by the following example, in which it is assumed that a basic transmission loss of 190 db is required to avoid interference from an earth station to terrestrial services in a given direction.

As shown in Fig. 8A, the earth station is situated 50 km from the coast and there is an oversea path of 150 km before the coastline of a neighbouring country is reached. It is required to find the co-ordination distance from the earth station in the given direction using the mixed paths propagation chart represented by Fig. 8B. The procedure is as follows:

1) Starting from the origin, the distance of 50 km from the earth station to the coastline is set off along the A axis of the chart as indicated by the point A_1.

2) The oversea path length of 150 km is then set off parallel to the B axis of the chart as indicated by the point B_1.

3) The further overland distance required is then measured parallel to the A axis from the point B_1 to the point of intersection with the 190 db curve, as indicated by X. This distance is found to be 75 km.

4) The co-ordination distance is the sum of the A and B co-ordinates of the point X and is equal to 50 + 150 + 75 = 275 km.

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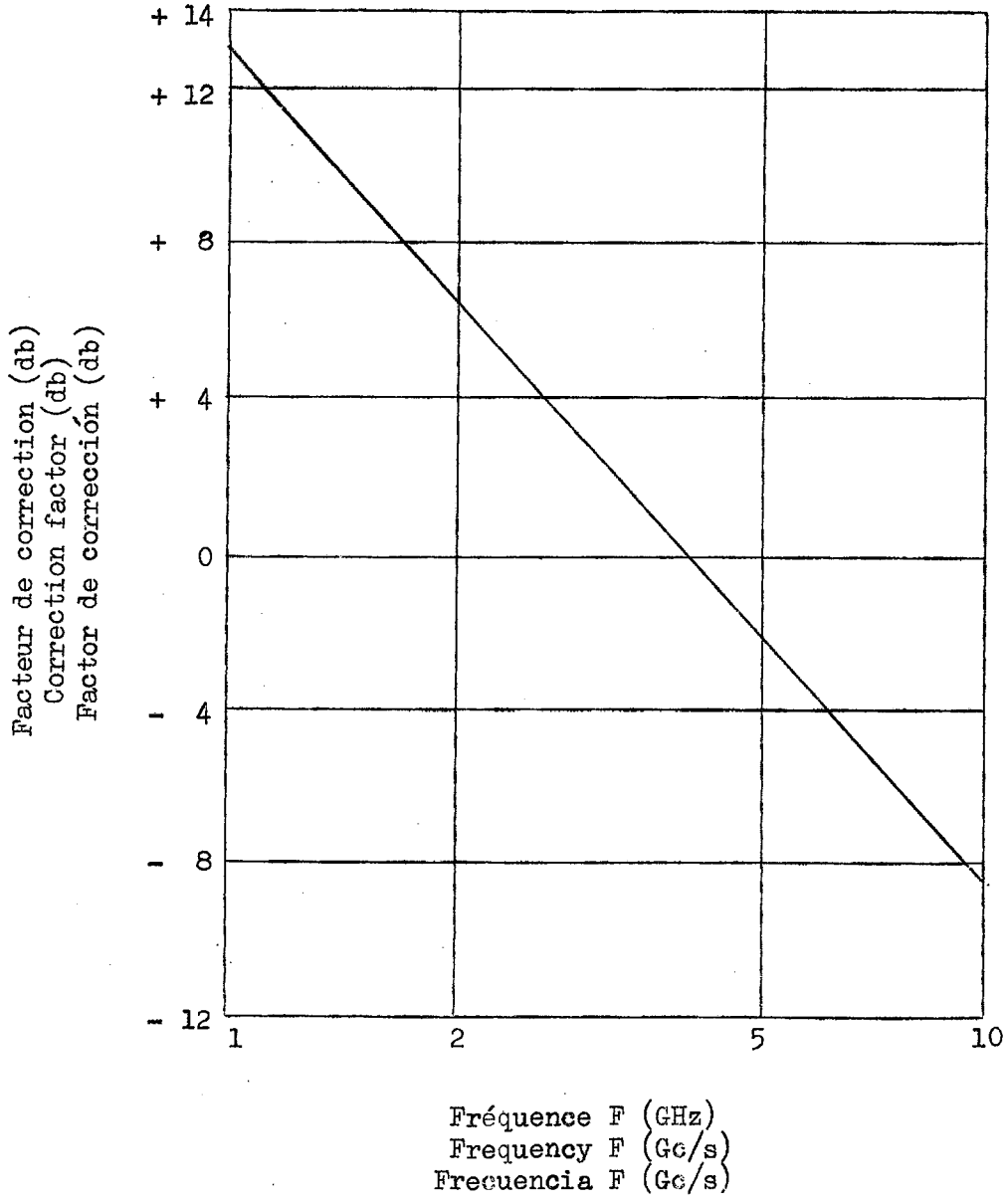
FIG. 1

FACTEUR DE CORRECTION A AJOUTER A L'AFFAIBLISSEMENT DE TRANSMISSION REQUIS L_b A LA FREQUENCE F POUR OBTENIR L'AFFAIBLISSEMENT EQUIVALENT L'_b A LA FREQUENCE 4 GHz

CORRECTION FACTOR TO BE ADDED TO THE REQUIRED LOSS L_b AT FREQUENCY F TO OBTAIN THE EQUIVALENT LOSS L'_b AT 4 Gc/s

FACTOR DE CORRECCIÓN QUE HA DE AÑADIRSE A LA PÉRDIDA REQUERIDA L_b EN LA FRECUENCIA F PARA OBTENER LA PÉRDIDA EQUIVALENTE L'_b EN 4 Gc/s

$L'_b = L_b$ + facteur de correction - $L'_b = L_b$ + correction factor - $L'_b = L_b$ + factor de corrección



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CURVAS SIMPLIFICADAS DE PROPAGACIÓN TROPOSFÉRICA PARA EL CÁLCULO DE LA DISTANCIA DE COORDINACIÓN. PERDIDA BASICA DE TRANSMISIÓN EXCEDIDA DURANTE TODO EL TIEMPO SALVO EL 0,1 % EN 4 Gc/s

COURBES DE PROPAGATION TROPOSPHERIQUE SIMPLIFIEES POUR LE CALCUL DE LA DISTANCE DE COORDINATION. AFFAIBLISSEMENT DE TRANSMISSION DE REFERENCE DEPASSE PENDANT TOUT LE TEMPS, SAUF 0,1 %, A LA FREQUENCE 4 GHz

SIMPLIFIED TROPOSPHERIC PROPAGATION CURVES FOR CALCULATION OF CO-ORDINATION DISTANCE. BASIC TRANSMISSION LOSS EXCEEDED FOR ALL BUT 0,1 % OF THE TIME AT 4 Gc/s

FIG. 2

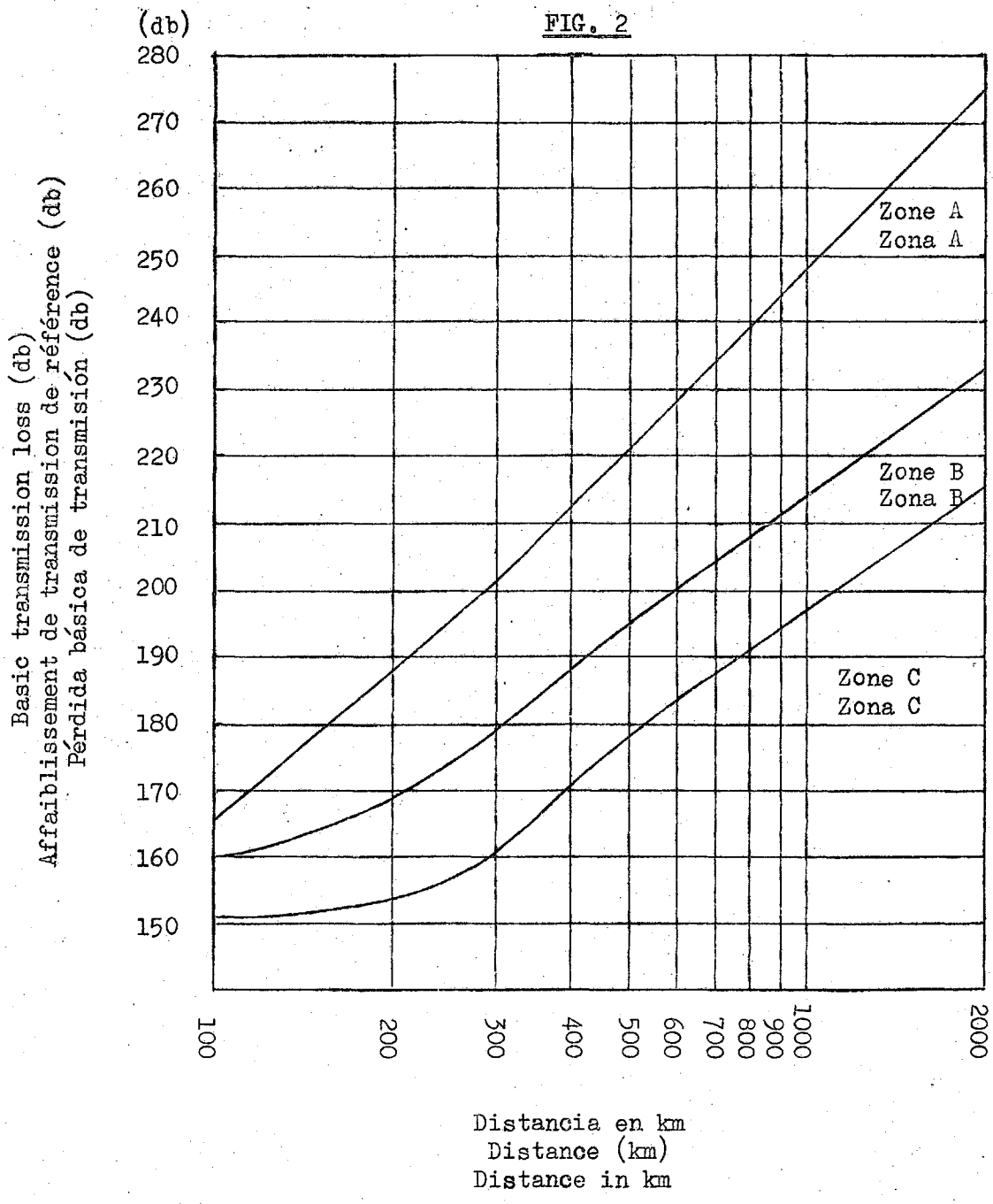

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FIG. 3

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION - TRAJETS MIXTES (ZONES A ET B)
CHART FOR CO-ORDINATION DISTANCE CALCULATIONS - MIXED PATHS IN ZONES A & B
GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACION - TRAYECTOS MIXTOS EN LAS ZONAS A Y B

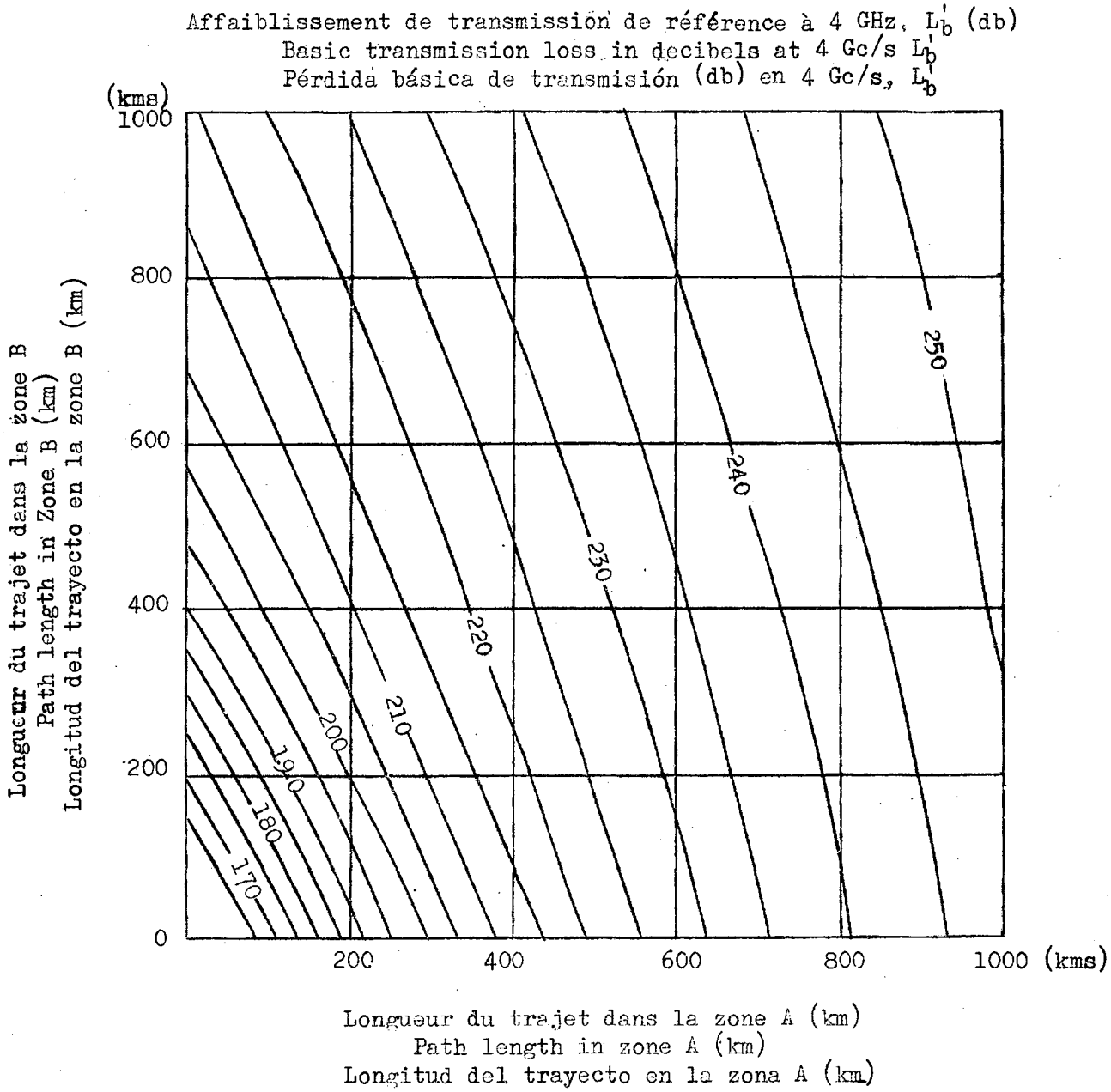

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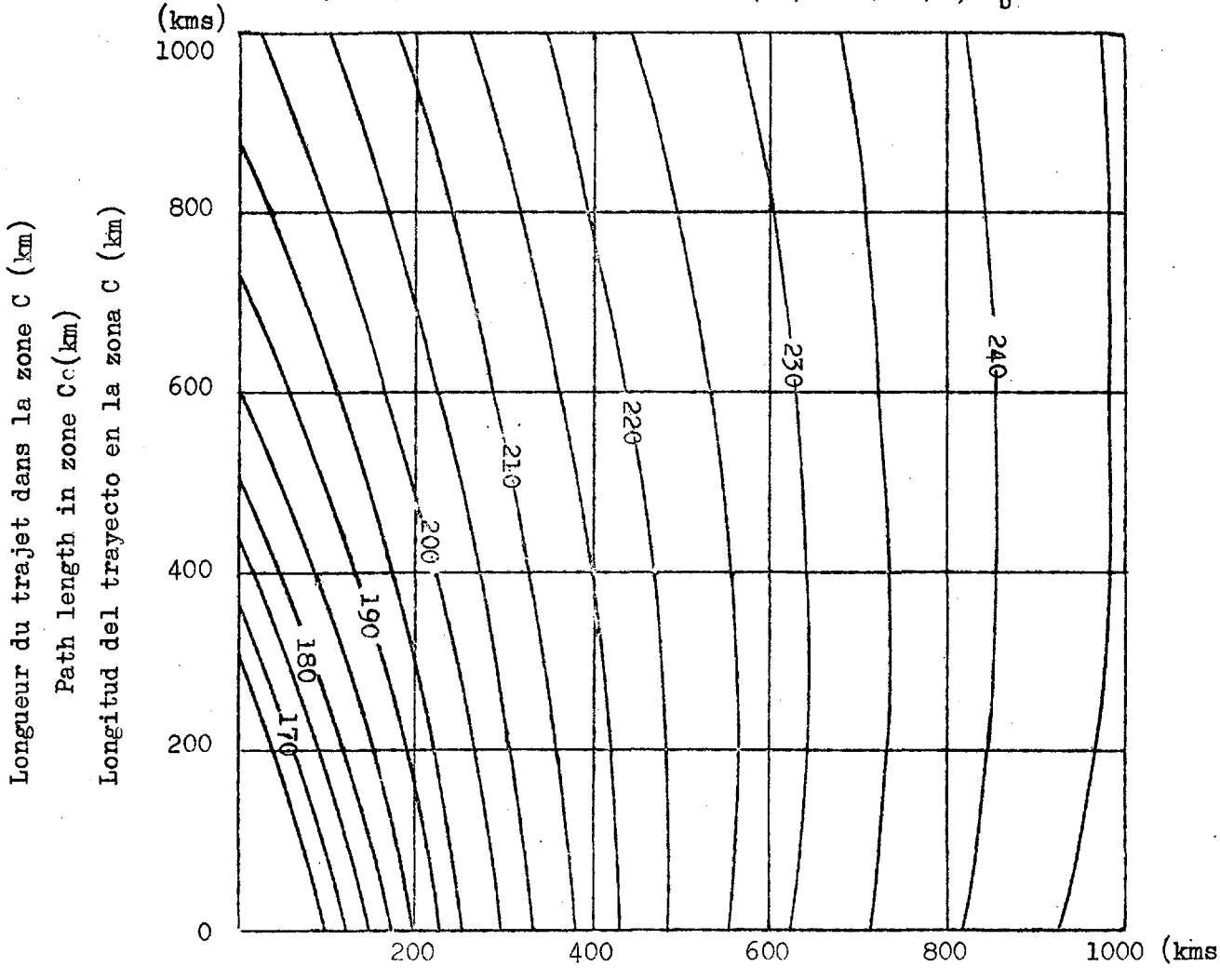
FIG. 4

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES A ET C)
CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES A & C
GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN
TRAYECTOS MIXTOS EN LAS ZONAS A Y C

Affaiblissement de transmission de référence à 4 GHz, L_b' (db)
Basic transmission loss in decibels at 4 Gc/s L_b'
Pérdida básica de transmisión (db) en 4 Gc/s, L_b'



Longueur du trajet dans la zone C (km)
Path length in zone C (km)
Longitud del trayecto en la zona C (km)

Longueur du trajet dans la zone A (km)
Path length in zone A (km)
Longitud del trayecto en la zona A (km)

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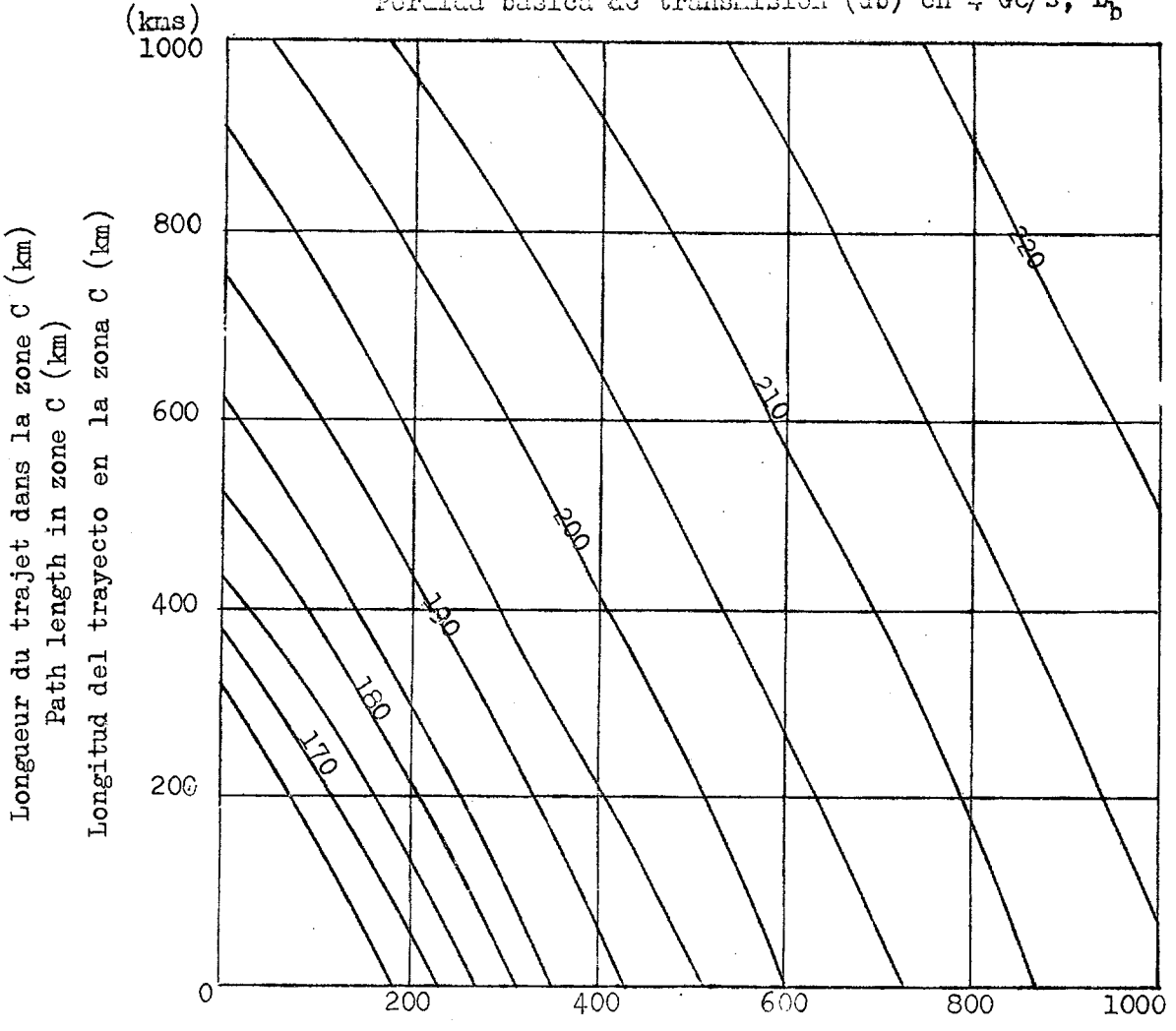
FIG. 5

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES B ET C)

CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES B & C

GRAFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN
TRAYECTOS MIXTOS EN LAS ZONAS B Y C

Affaiblissement de transmission de référence à 4 GHz, L_b' (db)
Basic transmission loss in decibels at 4 Gc/s L_b'
Pérdida básica de transmisión (db) en 4 Gc/s, L_b'



Longueur du trajet dans la zone C (km)
Path length in zone C (km)
Longitud del trayecto en la zona C (km)

Longueur du trajet dans la zone B (km)
Path length in Zone B (km)
Longitud del trayecto en la zona B (km)

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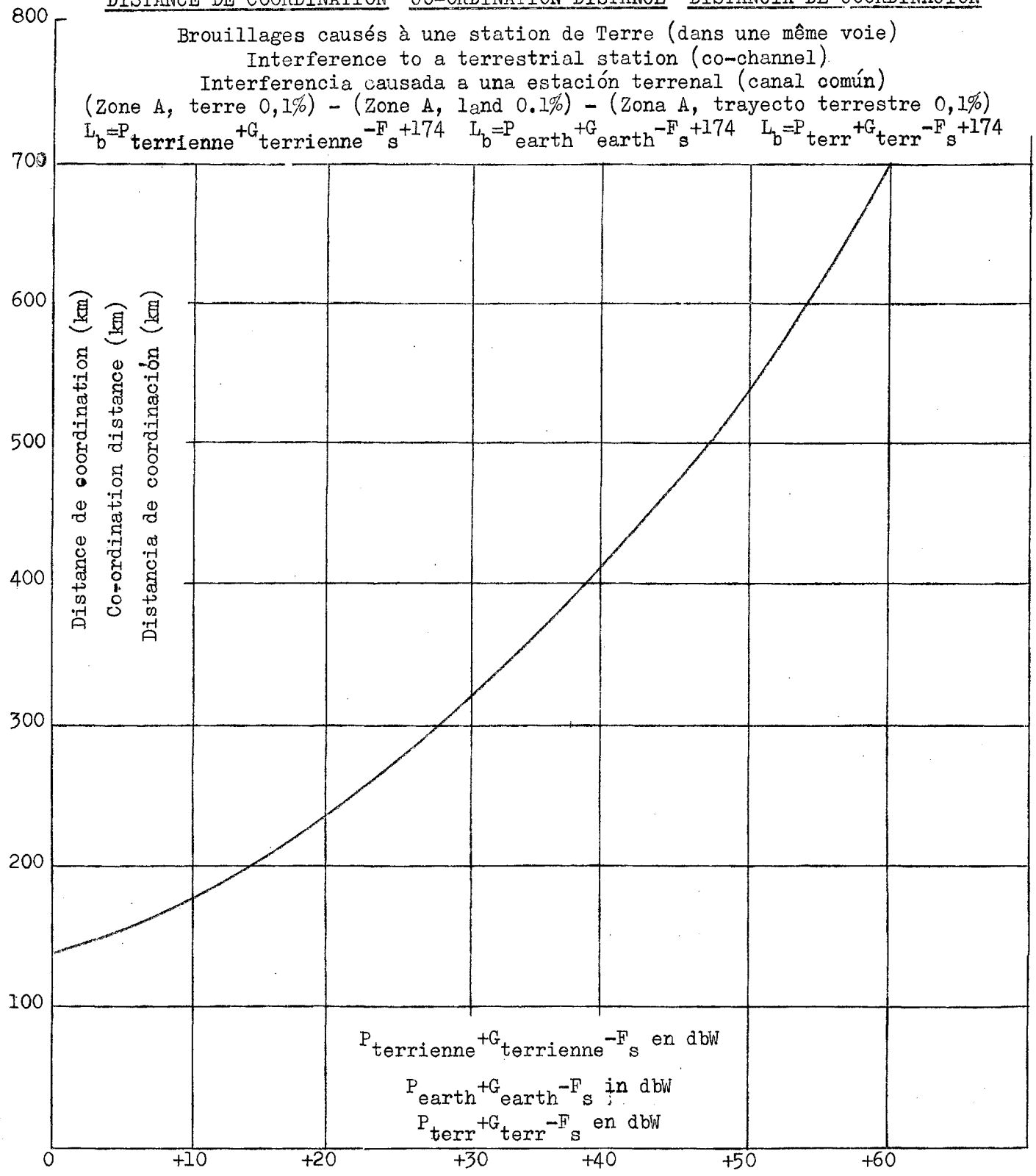
FIG. 6

DISTANCE DE COORDINATION CO-ORDINATION DISTANCE DISTANCIA DE COORDINACIÓN



PUISSANCE DE SORTIE DE L'EMETTEUR DE LA STATION TERRIENNE
DANS TOUTE LA LARGEUR DE BANDE DE 4 kHz
EARTH STATION TRANSMITTER OUTPUT POWER IN ANY 4 Kc/s BAND
POTENCIA DE SALIDA DEL TRANSMISOR DE LA ESTACIÓN TERRENA EN CUALQUIER BANDA DE 4 Kc/s

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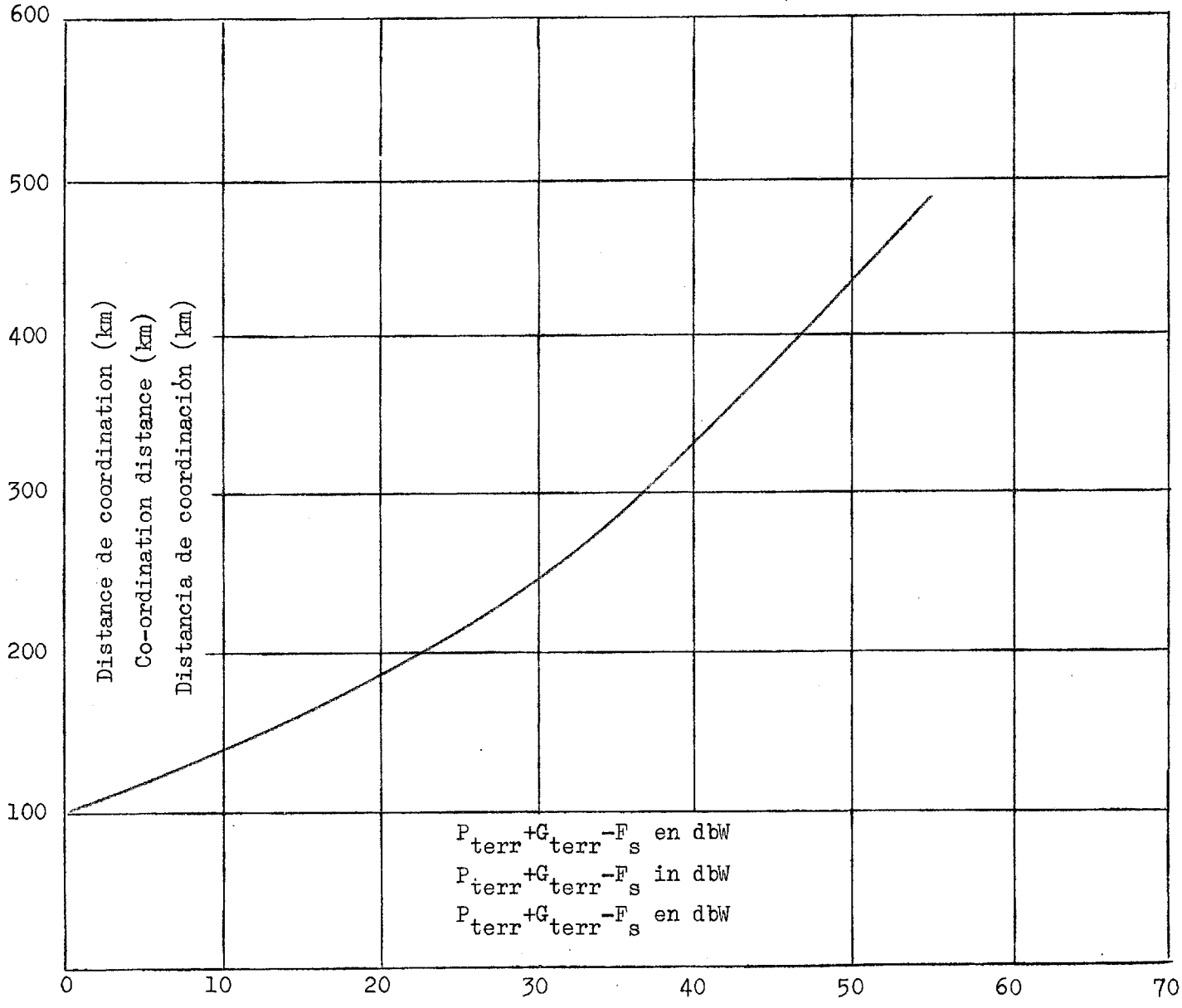
FIG. 7

DISTANCE DE COORDINATION CO-ORDINATION DISTANCE DISTANCIA DE COORDINACIÓN

Brouillages causés à une station terrienne (dans une même voie)
Interference to an earth station (co-channel)
Interferencia causada a una estación terrena (canal común)

(Zone A, terre 0,1%) - (Zone A, land 0.1%) - (Zona A, trayecto terrestre 0,1%)
$L_b = P_{terrienne} + G_{terrienne} - F_s + 165$ $L_b = P_{terr} + G_{terr} - F_s + 165$ $L_b = P_{terr} + G_{terr} - F_s + 165$



PUISSANCE APPARENTE RAYONNEE PAR LA STATION DE TERRE
TERRESTRIAL STATION EFFECTIVE RADIATED POWER
POTENCIA RADIADA APARENTE DE LA ESTACIÓN TERRENAL

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FIG. 8

EXEMPLE DE CALCUL DE LA DISTANCE DE COORDINATION DANS LE CAS D'UN TRAJET MIXTE

EXAMPLE OF COORDINATION DISTANCE. CALCULATION FOR MIXED PATHS

EJEMPLO DE CÁLCULO DE LA DISTANCIA DE COORDINACIÓN PARA TRAYECTOS MIXTOS

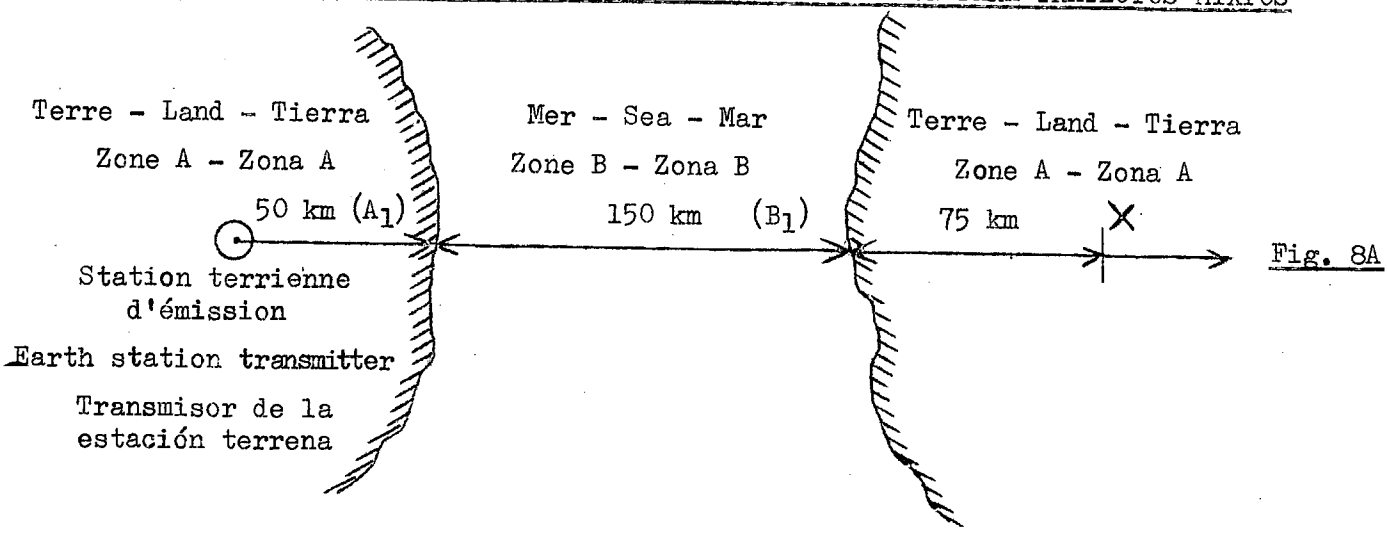

Fig. 8A

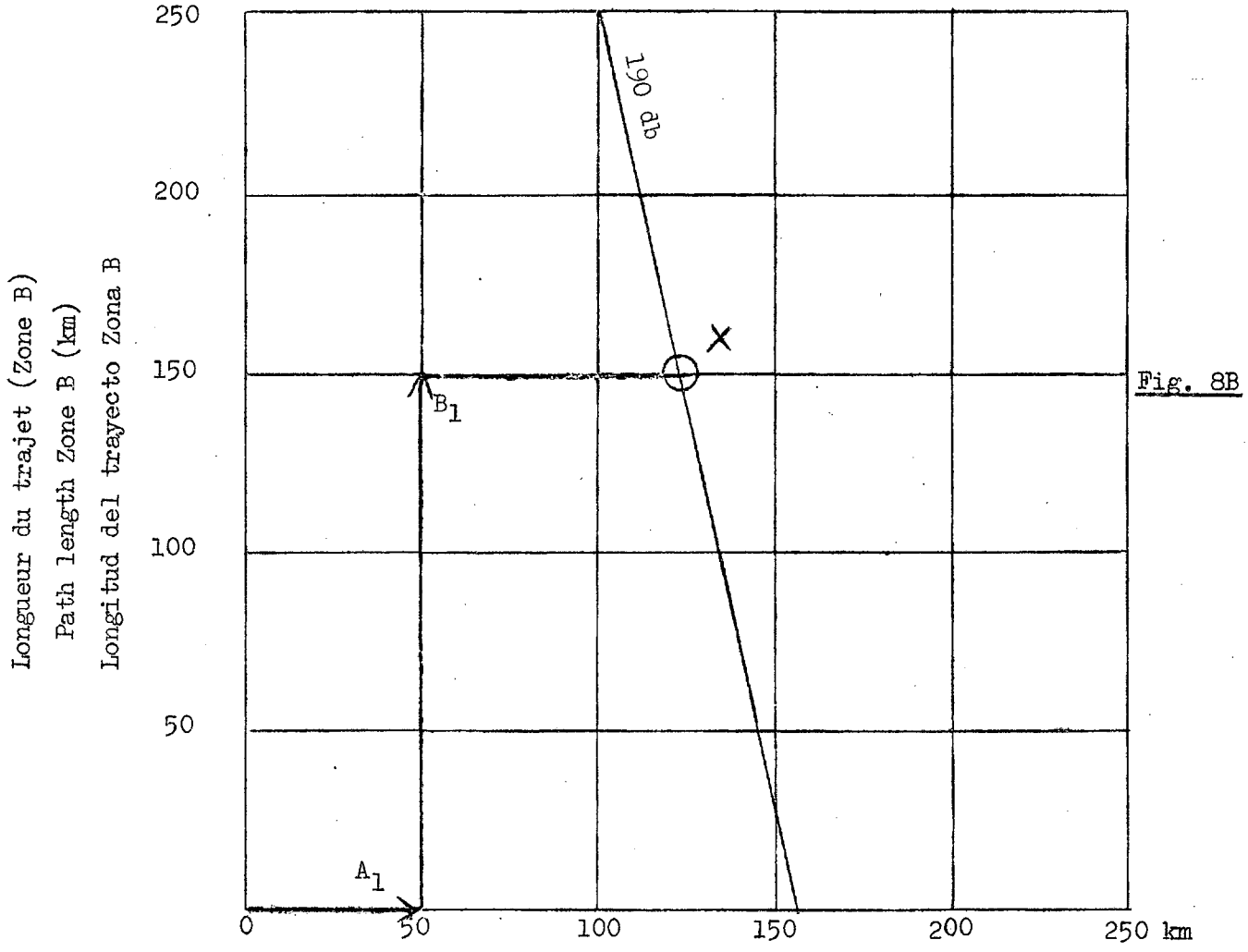

Fig. 8B

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 123-E
27 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

THIRD REPORT BY WORKING GROUP 5B

RADIO ASTRONOMY SERVICE

Band 2690 - 2700 Mc/s

Appendices 1 and 2 attached hereto attempt to reflect the two main trends of the discussion to date, as recorded by the Chair.

V.V. RAO
Chairman
Working Group 5B

Appendices: 2

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A P P E N D I X 1 *)

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2690 - 2700 RADIO ASTRONOMY 363 363A 364A		

MOD

MOD 363 In the F.R of Germany, the band 2550 - 2690 Mc/s is allocated to the fixed service and the band 2690 - 2700 Mc/s is also allocated to the fixed service.

ADD 363A In Israel, ... , ... , ... and . . . . . , the band 2690 - 2700 Mc/s is also allocated to the fixed and mobile services.

MOD 364 In Region 1, tropospheric scatter systems may operate in the band 2550 - 2690 Mc/s under agreements concluded between Administrations concerned and those having services, operating in accordance with the Table, which may be affected.

ADD 364A In . . . . ., ... , ... , ... and . . . . . , tropospheric scatter systems may operate in the band 2690 - 2700 Mc/s under agreements concluded between Administrations concerned and those having services, operating in accordance with the Table, which may be affected.

SUP 365

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*) The following Delegations expressed support for this Appendix:

AFS ARG AUS AUT BEL CAN D DNK E F G GRC I IRL J NOR NZL POR S SUI USA.

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A P P E N D I X 2 *)

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2690 - 2700	2690 - 2700	
FIXED	RADIO ASTRONOMY	
MOBILE		
ADD RADIO ASTRONOMY		
364 365	364A	

MOD 363 In the F.R. of Germany, the band 2550 - 2690 Mc/s is allocated to the fixed service.

NOC 364

ADD 364A In Cuba, the band 2690 - 2700 Mc/s is also allocated to the fixed and mobile services. Tropospheric scatter systems may operate in the band 2690 - 2700 Mc/s under agreements concluded between Administrations concerned and those having services, operating in accordance with the Table, which may be affected. The provisions of No. 365 also apply.

MOD 365 In making assignments to stations of services other than the radio astronomy service to which this band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. The radio astronomy service shall be protected from harmful interference from services operating in other bands in accordance with the provisions of these Regulations, only to the extent that these services are protected from each other.

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*) The following Delegations expressed support for this Appendix:
BUL HNG POL ROU TCH UKR URS.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 124-E
27 October 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

AGENDA

SECOND MEETING OF COMMITTEE 5 (ALLOCATIONS)

Monday, 28 October 1963, at 1430 hours (2.30 p.m.) Room A

1. Summary Record of the First Meeting (Document No. 70)

2. Some basic principles for the work of Committee 5
   Consideration of Document No. 117 (Tentative definitions)

3. a) First Report of Working Group 5A (Document No. 113) (Telemetering)
   b) First Report of Working Group 5B (Document No. 111) (Space Research) together with Second Report of Working Group 5C (Document No. 96)
   Second Report of Working Group 5B (Document No. 112) (Radioastronomy)
   Third Report of Working Group 5B (Document No. 123)(Radioastronomy)
   Fourth Report of Working Group 5B (Document No. 125) (Radio-astronomy)
   c) Third Report of Working Group 5C (Document No. 114) (Aeronautical Services)
   d) Report of Group 5 ad hoc (136 - 138 Mc/s) (Document No. DT/72)

4. Any other business.

W. KLEIN
Chairman
Committee 5 (Allocations)

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 125-E
27 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FOURTH REPORT OF WORKING GROUP 5B

TO COMMITTEE 5

RADIO ASTRONOMY SERVICE

Bands 10.68 - 10.7 Gc/s, 15.35 - 15.4 Gc/s, 19.3 - 19.4 Gc/s and 31.3 - 31.5 Gc/s

1. There was common agreement that these bands should be allocated to the Radio Astronomy Service. In some countries these allocations could be on exclusive basis while in others the existing allocations should be retained along with the Radio Astronomy Service.

2. In formulating the draft new Table for the bands concerned, some Delegations expressed preference for the Radio Astronomy Service to appear in the body of the Table with derogations therefrom in foot-notes to cover the retention of existing allocations. Other Delegations favoured retaining the existing allocations in the Table, together with the associated foot-note 405, and creating new foot-notes for those countries desiring exclusive allocations to the Radio Astronomy Service.

3. The attached Appendices have been drawn up accordingly for the bands concerned as shown hereunder :

Band 10.68 - 10.7 Gc/s - Appendices 1 and 2
Band 15.35 - 15.4 Gc/s - Appendices 3 and 4
Band 19.3 - 19.4 Gc/s - Appendices 5 and 6
Band 31.3 - 31.5 Gc/s - Appendices 7 and 8

V.V. RAO
Chairman
Working Group 5B

Appendices: 8

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A P P E N D I X 1*)

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
10.68 - 10.7		
RADIO ASTRONOMY		
405A 405B		

MOD

SUP 405

ADD 405A In Australia and the United Kingdom, the band 10.68 - 10.7 Gc/s is also allocated, on a secondary basis, to the radiolocation service.

ADD 405B In ....., ..., ..., ... and ....., the band 10.68 - 10.7 Gc/s is also allocated to the fixed and mobile services.

*) The following Delegations expressed support for this Appendix: AFS ARG AUS AUT BEL CAN DNK E G GRC HOL I IRL J NOR NZL S SUI USA.

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A P P E N D I X 2*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	10.68 - 10.7		
NOC		FIXED	
		MOBILE	
		Radiolocation	
ADD		405 405A 405B 405C	

NOC 405

ADD 405A In ....., ..., ..., ... and ....., the bands 10.68 - 10.7 Gc/s, 15.35 - 15.4 Gc/s, 19.3 - 19.4 Gc/s and 31.3 - 31.5 Gc/s are allocated to the radio astronomy service.

ADD 405B In Australia and the United Kingdom, the band 10.68 - 10.7 Gc/s is also allocated to the radio astronomy service. /However, in these countries the allocations to the fixed and mobile services are not required/.

ADD 405C In Japan, the band 10.68 - 10.7 Gc/s is also allocated to the radio astronomy service. /However, in this country the allocation, on a secondary basis, to the radiolocation service is not required/.

*) The following Delegations expressed support for this Appendix:
CUB POL ROU TCH URS.

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A P P E N D I X 3*)

Gc/s

	Allocation to services		
	Region 1	Region 2	Region 3
	15.35 - 15.4		
MOD		RADIO ASTRONOMY	
ADD		409A	

SUP 405

ADD 409A In ....., ..., ... and ....., the band 15.35 - 15.4 Gc/s is also allocated to the fixed and mobile services.

*) The following Delegations expressed support for this Appendix:
AFS ARG AUS AUT BEL CAN DNK E G GRC HOL I IRL J NOR NZL S SUI USA.

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A P P E N D I X 4*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	15.3 - 15.4		
NOC		FIXED	
		MOBILE	
ADD		405 405A	

NOC 405

ADD 405A In ....., ..., ..., ... and ....., the bands 10.68 - 10.7 Gc/s, 15.35 - 15.4 Gc/s, 19.3 - 19.4 Gc/s and 31.3 - 31.5 Gc/s are allocated to the radio astronomy service.

*) The following Delegations expressed support for this Appendix: CUB POL ROU TCH URS.

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A P P E N D I X 5*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	19.3 - 19.4		
MOD	RADIO ASTRONOMY		
ADD	409B		

SUP 405

ADD 409B In ....., ..., ..., ... and ....., the band 19.3 - 19.4 Gc/s is also allocated to the fixed and mobile services.

*) The following Delegations expressed support for this Appendix: AFS ARG AUS AUT BEL CAN DNK E G GRC HOL I IRL J NOR NZL S SUI USA.

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A P P E N D I X 6*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
NOC	19.3 - 19.4	FIXED MOBILE	
ADD		405 405A	

NOC 405

ADD 405A In ....., ..., ..., ..., and ....., the bands 10.68 - 10.7 Gc/s, 15.35 - 15.4 Gc/s, 19.3 - 19.4 Gc/s and 31.3 - 31.5 Gc/s are allocated to the radio astronomy service.

*) The following Delegations expressed support for this Appendix: CUB POL ROU TCH URS.

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A P P E N D I X 7*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	31.3 - 31.5		
MOD		RADIO ASTRONOMY	
ADD		412A	

SUP 405

ADD 412A In ....., ..., ..., ..., and ....., the band 31.3 - 31.5 Gc/s is also allocated to the fixed and mobile services.

*) The following Delegations expressed support for this Appendix:
AFS ARG AUS AUT BEL CAN DNK E G GRC HOL I IRL J NOR NZL S SUI USA.

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A P P E N D I X 8*)

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	31.3 - 31.5	FIXED	
NOC		MOBILE	
ADD		405 405A	

NOC 405

ADD 405A In ....., ..., ..., ..., and ....., the bands 10.68 - 10.7 Gc/s, 15.35 - 15.4 Gc/s, 19.3 - 19.4 Gc/s and 31.3 - 31.5 Gc/s are allocated to the radio astronomy service.

*) The following Delegations expressed support for this Appendix: CUB POL ROU TCH URS.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 126-E(Rev.2)
2 November, 1963
Original : French
English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SECOND REPORT OF WORKING GROUP 4C

SHARING CRITERIA

1. Annex 1 is a draft addendum to Article 7 of the Radio Regulations. This draft contains the sharing criteria which the Working Group has agreed to date.

2. The attention of Committee 4 is especially drawn to the following comments on the proposed Regulations.

Regulations 470A and 470E

3. It is recognized by the Working Group that the E.A.R.C. may wish to refer to that part of the Radio Regulations concerned with coordination procedures. However, the majority view was that reference to the pertinent C.C.I.R. Recommendations was not only acceptable but desirable.

Regulations 470B, 470C and 470D

4. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 406. In the absence of any further data it has proposed, in the text, the same values of power limitation as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and a draft Recommendation to this effect is suggested later.

Regulations 470N, 470O, 470P and 470Q

5. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 358. In the absence of any further data it has proposed, in the text, the same values of power flux limitations as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470S, 470T and 470U

6. The Working Group has taken note that no C.C.I.R. Recommendation exists on the conditions of sharing of frequency bands between meteorological-satellite services and terrestrial services. It has, for the present, therefore, proposed that the limits of power flux at the earth's surface applicable to communication-satellite services be also applied to meteorological-satellite services in bands shared with terrestrial services. However, it is considered important that the C.C.I.R. be requested to study this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470D, 470J, 470M, 470Q and 470U

7. The Working Group assumes that these Regulations will be amended to indicate specifically the frequency bands concerned, when these have been determined.

Regulation 470G

8. A limitation on total ERP was not deemed necessary for the present. However, it is requested that the C.C.I.R. study this requirement, in the light of further developments and studies, including tropospheric scatter effects, scattering from rain, etc.

Footnotes 1), 2), 3), 4) and 5)

9. Apart from footnotes 3) and 5) which were fully agreed to, there was not complete agreement on the necessity of providing the other four footnotes. In this respect, footnotes 1) and 2) may be referred to Committee 5 and footnote 4) to Committee 4 as a whole.

10. The Working Group has discussed the question of the application of limitations to the powers of terrestrial transmitters, operating in bands shared on an equal basis with earth station receivers, as a possible aid to equitable sharing between these services. Insufficient data precluded a definite decision being taken, either as to the necessity of such limitations, or to the actual values to be adopted, were such limitations decided upon, and it is felt that the question should be considered in greater detail by the C.C.I.R.

Frequency sharing between other space services and terrestrial services

11. At the present no technical limitations have been prepared by the Working Group on the sharing of frequency bands between space services other than communication-satellite and meteorological-satellite services and terrestrial services. Whether such limitations will be needed is dependent upon the agreements to be reached in Committee 5.

Subject to the decisions of Committee 5, it may for example be necessary to include reference to such services, as the radionavigation-satellite service, and the space-research services in the text of the proposed Recommendation to the C.C.I.R.

12. A recommendation to the C.C.I.R. is being prepared to bring to the attention of Administrations, members of the C.C.I.R., that more up-to-date data is required in order to improve on the sharing criteria, especially for meteorological-satellite, radionavigation-satellite and space research services sharing frequency bands with terrestrial services, where such data is very limited.

13. The object of this Recommendation is to ensure that if new Recommendations on these subjects are prepared by the C.C.I.R., they should be brought to the attention of the appropriate Radio Frequency Conference which may be held at a date later than the C.C.I.R. XIth Plenary Assembly and at which the present proposed revisions of Article 7 may be revised.

W.A.C. SCHULTZ
Chairman

Annex : 1

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A N N E X

SECTION VII. TERRESTRIAL SERVICES SHARING FREQUENCY BANDS WITH SPACE SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470A 18. Sites and frequencies[1] for terrestrial stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from earth stations.

Power Limitations

470B 19. 1) The maximum effective radiated power of the transmitter and associated antenna, of a station in the fixed or mobile services, shall not exceed + 55 dbW.

470C 2) The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed + 13 dbW.

470D 3) The limitations given in 470B and 470C apply in those frequency bands allocated to reception by space stations in the communications satellite service, shared with equal rights with fixed or mobile services. (The Secretariat will insert here the pertinent frequency bands).

SECTION VIII. SPACE SERVICES SHARING FREQUENCY BANDS WITH TERRESTRIAL SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470E 20. Sites and frequencies[2] for earth stations, operating in frequency bands shared with equal rights between terrestrial and space services shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from terrestrial stations.

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1) Terrestrial station frequencies shall be assigned in bands allocated to terrestrial station transmissions.

2) Earth station frequencies shall be assigned in bands allocated to earth station transmissions.

Power Limitations

470F 21. Earth stations in the Communication-Satellite Service

470G a) The mean effective radiated power transmitted by an earth station in any direction in the horizontal plane[3] shall not exceed + 55 dbW in any 4 kc/s band, except that it may be increased subject to the provisions of 470H or 470I. However, in no case shall it exceed a value of + 65 dbW in any 4 kc/s band.

470H b) In any direction where the distance from an earth station to the boundary of the territory of another Administration exceeds 400 km, the limitation of + 55 dbW in any 4 kc/s band may be increased in that direction by 2 db for each 100 km in excess of 400 km.

470I c) The limitation of + 55 dbW in any 4 kc/s band may be exceeded by agreement between the Administrations concerned or affected.

470J d) The limitations given in 470G apply in the bands allocated to transmissions by earth stations in the communication-satellite service, shared with equal rights with fixed or mobile services. (The Secretariat will insert here the pertinent frequency bands).

Minimum Angle of Elevation

470K 22. Earth stations in the Communication-Satellite Service

470L a) Earth station antennas shall not be employed for transmission at elevation angles less than 3 degrees, measured from the horizontal plane to the central axis of the main lobe, except when agreed to by the Administrations concerned or affected.

470M b) The limitation given in 470L applies in the bands allocated to transmission by earth stations in the communication-satellite service, shared with equal rights with fixed or mobile services. (The Secretariat will insert here the pertinent frequency bands).

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3) For the purpose of this Regulation, the effective radiated power transmitted in the horizontal plane shall be taken to mean the effective radiated power actually transmitted towards the horizon, reduced by the Site Shielding Factor that may be applicable.

The value of this Site Shielding Factor shall be determined as indicated in / Section 4 of Document No. 122-E /.

Power Flux Density Limitations

470N 23. 1) Communication Satellite Space Stations

4700 a) The total power flux density at the earth's surface, produced by an emission from an active communication satellite space station, or reflected (or scattered) from a passive communication satellite space station, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470P b) The power flux density at the earth's surface, produced by an emission from an active communication satellite space station, or reflected (or scattered) from a passive communication satellite space station, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470Q c) The limitations given in 4700 and 470P apply in those frequency bands allocated to transmissions by space stations in the communication-satellite service, shared with equal rights with fixed or mobile services. (The Secretariat will insert here the pertinent frequency bands).

470R 2) Meteorological-Satellite Space Stations[4]

470S a) The power flux density at the earth's surface, produced by the emission from an active satellite in the meteorological-satellite service, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470T b) The power flux density at the earth's surface, produced by an active satellite in the meteorological-satellite service, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

4) In view of the absence of any C.C.I.R. Recommendations relative to sharing between the meteorological-satellite service and other services, power flux density levels applicable to communication-satellite space stations are extended to meteorological-satellite space stations.

470U c) The limitations given in 470S and 470T apply in those frequency bands allocated to transmissions by stations in the meteorological-satellite service, shared with equal rights with fixed or mobile services. (The Secretariat will insert here the pertinent frequency bands).

SECTION IX. SPACE SERVICES

Cessation of Emissions

470V 24. Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices[5] that will ensure definite cessation of emissions.

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5) Battery life, timing devices, ground command, etc.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Corrigendum No. 1 to
Document No. 126-E (Rev.)
2 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

Addendum No. 1 to Document No. 126 (Rev.) is cancelled.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Addendum No. 1 to
Document No. 126-E (Rev.)
1 November, 1963
Original: French
English, Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

ADDENDUM No. 1 TO THE SECOND
REPORT OF WORKING GROUP 4C

SHARING CRITERIA

Under : SECTION VIII. SPACE SERVICES SHARING FREQUENCY BANDS WITH TERRESTRIAL SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Power flux limitations

Add the following Regulations:

470UA 3) Space-Research Space Stations[1].

470UB a) The power flux density at the earth's surface, produced by an emission from an active Space-Research Space Station[1], or by scattering (or diffusion) from a passive Space-Research Space Station[1], shall in no case exceed -140 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470UC b) The limitation given in 470UB apply in those frequency bands allocated to transmissions by space stations in the Space-Research Services[1], shared with equal rights with fixed or mobile services.

Footnote 1) : Deep-Space probes are excluded from this Regulation.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 126-E(Rev.)
1 November, 1963
Original : French
English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SECOND REPORT OF WORKING GROUP 4C

SHARING CRITERIA

1. Annex 1 is a draft addendum to Article 7 of the Radio Regulations. This draft contains the sharing criteria which the Working Group has agreed to date.

2. The attention of Committee 4 is especially drawn to the following comments on the proposed Regulations.

Regulations 470A and 470E

3. It is recognized by the Working Group that the E.A.R.C. may wish to refer to that part of the Radio Regulations concerned with coordination procedures. However, the majority view was that reference to the pertinent C.C.I.R. Recommendations was not only acceptable but desirable.

Regulations 470B, 470C and 470D

4. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 406. In the absence of any further data it has proposed, in the text, the same values of power limitation as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and a draft Recommendation to this effect is suggested later.

Regulations 470N, 470O, 470P and 470Q

5. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 358. In the absence of any further data it has proposed, in the text, the same values of power flux limitations as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470S, 470T and 470U

6. The Working Group has taken note that no C.C.I.R. Recommendation exists on the conditions of sharing of frequency bands between meteorological-satellite services and terrestrial services. It has, for the present, therefore, proposed that the limits of power flux at the earth's surface applicable to communication-satellite services be also applied to meteorological-satellite services in bands shared with terrestrial services. However, it is considered important that the C.C.I.R. be requested to study this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470D, 470J, 470M, 470Q and 470U

7. The Working Group assumes that these Regulations will be amended to indicate specifically the frequency bands concerned, when these have been determined.

Regulation 470G

8. A limitation on total ERP was not deemed necessary for the present. However, it is requested that the C.C.I.R. study this requirement, in the light of further developments and studies, including tropospheric scatter effects, scattering from rain, etc.

Footnotes 1), 2), 3), 4) and 5)

9. Apart from footnotes 3) and 5) which were fully agreed to, there was not complete agreement on the necessity of providing the other four footnotes. In this respect, footnotes 1) and 2) may be referred to Committee 5 and footnote 4) to Committee 4 as a whole.

10. The Working Group has discussed the question of the application of limitations to the powers of terrestrial transmitters, operating in bands shared on an equal basis with earth station receivers, as a possible aid to equitable sharing between these services. Insufficient data precluded a definite decision being taken, either as to the necessity of such limitations, or to the actual values to be adopted, were such limitations decided upon, and it is felt that the question should be considered in greater detail by the C.C.I.R.

Frequency sharing between other space services and terrestrial services

11. At the present no technical limitations have been prepared by the Working Group on the sharing of frequency bands between space services other than communication-satellite and meteorological-satellite services and terrestrial services. Whether such limitations will be needed is dependent upon the agreements to be reached in Committee 5.

Subject to the decisions of Committee 5, it may for example be necessary to include reference to such services, as the radionavigation-satellite service, and the space-research services in the text of the proposed Recommendation to the C.C.I.R.

12. A recommendation to the C.C.I.R. is being prepared to bring to the attention of Administrations, members of the C.C.I.R., that more up-to-date data is required in order to improve on the sharing criteria, especially for meteorological-satellite, radionavigation-satellite and space research services sharing frequency bands with terrestrial services, where such data is very limited.

13. The object of this Recommendation is to ensure that if new Recommendations on these subjects are prepared by the C.C.I.R., they should be brought to the attention of the appropriate Radio Frequency Conference which may be held at a date later than the C.C.I.R. XIth Plenary Assembly and at which the present proposed revisions of Article 7 may be revised.

W.A.C. SCHULTZ
Chairman

Annex : 1

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A N N E X

SECTION VII. TERRESTRIAL SERVICES SHARING FREQUENCY BANDS WITH SPACE SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470A 18. Sites and frequencies[1] for terrestrial stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from earth stations.

Power Limitations

470B 19. 1) The maximum effective radiated power of the transmitter and associated antenna, of a station in the fixed or mobile services, shall not exceed + 55 dbW.

470C 2) The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed + 13 dbW.

470D 3) The limitations given in 470B and 470C apply in those frequency bands allocated to reception by space stations in the communications satellite service, shared with equal rights with fixed or mobile services.

SECTION VIII. SPACE SERVICES SHARING FREQUENCY BANDS WITH TERRESTRIAL SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470E 20. Sites and frequencies[2] for earth stations, operating in frequency bands shared with equal rights between terrestrial and space services shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from terrestrial stations.

---

1) Terrestrial station frequencies shall be assigned in bands allocated to terrestrial station transmissions.

2) Earth station frequencies shall be assigned in bands allocated to earth station transmissions.

Power Limitations

470F 21. Earth stations in the Communication-Satellite Service

470G a) The mean effective radiated power transmitted by an earth station in any direction in the horizontal plane[3] shall not exceed + 55 dbW in any 4 kc/s band, except that it may be increased subject to the provisions of 470H or 470I. However, in no case shall it exceed a value of + 65 dbW in any 4 kc/s band.

470H b) In any direction where the distance from an earth station to the boundary of the territory of another Administration exceeds 400 km, the limitation of + 55 dbW in any 4 kc/s band may be increased in that direction by 2 db for each 100 km in excess of 400 km.

470I c) The limitation of + 55 dbW in any 4 kc/s band may be exceeded by agreement between the Administrations concerned or affected.

470J d) The limitations given in 470G apply in the bands allocated to transmissions by earth stations in the communication-satellite service, shared with equal rights with fixed or mobile services.

Minimum Angle of Elevation

470K 22. Earth stations in the Communication-Satellite Service

470L a) Earth station antennas shall not be employed for transmission at elevation angles less than 3 degrees, measured from the horizontal plane to the central axis of the main lobe, except when agreed to by the Administrations concerned or affected.

470M b) The limitation given in 470L applies in the bands allocated to transmission by earth stations in the communication-satellite service, shared with equal rights with fixed or mobile services.

3) For the purpose of this Regulation, the effective radiated power transmitted in the horizontal plane shall be taken to mean the effective radiated power actually transmitted towards the horizon, reduced by the Site Shielding Factor that may be applicable.

The value of this Site Shielding Factor shall be determined as indicated in [Section 4 of Document No. 122-E].

Power Flux Density Limitations

470N 23. 1) Communication Satellite Space Stations

4700 a) The total power flux density at the earth's surface, produced by an emission from an active communication satellite space station, or reflected (or scattered) from a passive communication satellite space station, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470P b) The power flux density at the earth's surface, produced by an emission from an active communication satellite space station, or reflected (or scattered) from a passive communication satellite space station, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470Q c) The limitations given in 4700 and 470P apply in those frequency bands allocated to transmissions by space stations in the communication-satellite service, shared with equal rights with fixed or mobile services.

470R 2) Meteorological-Satellite Space Stations[4)]

470S a) The power flux density at the earth's surface, produced by the emission from an active satellite in the meteorological-satellite service, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

470T b) The power flux density at the earth's surface, produced by an active satellite in the meteorological-satellite service, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 kc/s band for all angles of arrival.

---

4) In view of the absence of any C.C.I.R. Recommendations relative to sharing between the meteorological-satellite service and other services, power flux density levels applicable to communication-satellite space stations are extended to meteorological-satellite space stations.

470U c) The limitations given in 470S and 470T apply in those frequency bands allocated to reception by earth stations in the meteorological-satellite service, shared with equal rights with fixed or mobile services.

SECTION IX. SPACE SERVICES

Cessation of Emissions

470V 24. Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices[5] that will ensure definite cessation of emissions.

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5) Battery life, timing devices, ground command, etc.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 126-E
28 October, 1963
Original: French
English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SECOND REPORT OF WORKING GROUP 4C

SHARING CRITERIA

1. Annex 1 is a draft addendum to Article 7 of the Radio Regulations. This draft contains the sharing criteria which the Working Group has agreed to date.

2. The attention of Committee 4 is especially drawn to the following comments on the proposed Regulations.

Regulations 470A and 470E

3. It is recognized by the Working Group that the E.A.R.C. may wish to refer to that part of the Radio Regulations concerned with coordination procedures. However, the majority view was that reference to the pertinent C.C.I.R. Recommendations was not only acceptable but desirable.

Regulations 470B, 470C and 470D

4. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 406. In the absence of any further data it has proposed, in the text, the same values of power limitation as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and a draft Recommendation to this effect is suggested later.

Regulations 470F, 470G, 470H and 470I

5. The Working Group has taken note of the provisional nature of C.C.I.R. Recommendation No. 358. In the absence of any further data it has proposed, in the text, the same values of power flux limitations as are given in that Recommendation. However it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470K, 470L and 470M

6. The Working Group has taken note that no C.C.I.R. Recommendation exists on the conditions of sharing of frequency bands between meteorological satellite services and terrestrial services. It has, for the present, therefore, proposed that the limits of power flux at the earth's surface applicable to communication-satellite services be also applied to meteorological-satellite services in bands shared with terrestrial services. However, it is considered important that the C.C.I.R. be requested to study this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested later.

Regulations 470D, 470I and 470M

7. The Working Group assumes that Regulations 470D, 470I and 470M will be amended to indicate specifically the frequency bands concerned, when these have been determined.

Regulation 470O

8. A limitation on total ERP was not deemed necessary for the present. However, it is requested that the C.C.I.R. study this requirement, in the light of further developments and studies, including tropospheric scatter effects, scattering from rain, etc.

Regulations 470R and 470U

9. The Working Group assumes that Regulations 470R and 470U will be amended to indicate specifically the frequency bands concerned, when these have been determined.

Footnotes 1), 2), 3) and 4)

10. Apart from footnotes 5) and 6) which were fully agreed to, there was not complete agreement on the necessity of providing the other four footnotes. In this respect, footnotes 1) and 2) may be referred to Committee 5, footnote 3) to Working Group 4A and footnote 4) to Committee 4 as a whole.

Frequency sharing between other space services and terrestrial services

11. At the present no technical limitations have been prepared by the Working Group on the sharing of frequency bands between space services other than communication-satellite and meteorological-satellite services and terrestrial services. Whether such limitations will be needed is dependent upon the agreements to be reached in Committee 5.

Subject to the decisions of Committee 5, it may for example be necessary to include reference to such services as the radionavigation-satellite service and the space-research service in the text of the proposed Recommendation to the C.C.I.R.

PROPOSED RECOMMENDATION

12. In view of the foregoing, the Working Group proposes to prepare a Recommendation along the following lines:

"that in view of

a) the provisional nature of C.C.I.R. Recommendations referring to the sharing of frequency bands between communication-satellite services and terrestrial services and

b) the lack of Recommendations referring to sharing of frequency bands between the meteorological-satellite service and terrestrial service;

the C.C.I.R. is requested

1. to continue its study of this subject on an urgent basis;

2. to amend its Recommendations at its XI and subsequent Plenary Assemblies if changes in the present Recommendations are needed in the light of new data, to ensure more effective sharing of frequency bands on an equal basis by communication-satellite services and terrestrial services;

3. to make such Recommendations as may be necessary to ensure sharing of frequency bands on an equal basis by the meteorological-satellite service and terrestrial services."

13. The object of this Recommendation is to ensure that if new Recommendations on these subjects are prepared by the C.C.I.R., they should be brought to the attention of the appropriate Radio Frequency Conference which may be held at a date later than the C.C.I.R. XIth Plenary Assembly and at which the present proposed revisions of Article 7 may be revised.

14. If Committee 4 accepts in principle the proposal to prepare such a Recommendation it is the intention of Working Group 4C to prepare a final draft accordingly. Account should be taken of existing C.C.I.R. Study Programs 235A and 235B, in addition to parallel Recommendations submitted by Administrations through the E.A.R.C.

J.R. MARCHAND
Chairman

Annex : 1

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ANNEX

SECTION VII. TERRESTRIAL SERVICES SHARING FREQUENCY BANDS WITH SPACE SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470A 18. Sites and frequencies[1] for terrestrial stations, operating in frequency bands shared on an equal basis between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from earth stations.

Power Limitations

470B 19. 1) The maximum effective radiated power level of the transmitter and associated antenna, of a station in the fixed or mobile services, shall not exceed + 55 dbW.

470C 2) The power level delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed + 13 dbW.

470D 3) The limitations given in 470B and 470C apply in those frequency bands allocated to reception by space stations in the communications satellite service, shared on an equal basis with fixed or mobile services.

SECTION VIII. SPACE SERVICES SHARING FREQUENCY BANDS WITH TERRESTRIAL SERVICES BETWEEN 1 Gc/s AND 10 Gc/s

Choice of Sites and Frequencies

470E 20. Sites and frequencies[2] for earth stations, operating in frequency bands shared on an equal basis between terrestrial and space services shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from terrestrial stations.

Footnotes:

1) Terrestrial station frequencies shall be assigned in bands allocated to terrestrial station transmissions.

2) Earth station frequencies shall be assigned in bands allocated to earth station transmissions.

Power Flux Density Limitations

470F 21. 1) Communications Satellites

470G a) The total power flux density level at the earth's surface, produced by an emission from an active communications satellite, or reflected (or scattered) from a passive communications satellite, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density level shall in no case exceed -149 dbW/m^2 in any 4 Kc/s band for all angles of arrival.

470H b) The power flux density level at the earth's surface, produced by an emission from an active communications satellite, or reflected (or scattered) from a passive communications satellite, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 Kc/s band for all angles of arrival.

470I c) The limitations given in 470G and 470H apply in those frequency bands allocated to transmissions by space stations in the communications satellite service, shared on an equal basis with fixed or mobile services.

470J 2) Meteorological Satellites 3) 4)

470K a) The power flux density level at the earth's surface, produced by the emission from an active satellite in the meteorological satellite service, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density level shall in no case exceed -149 dbW/m^2 in any 4 Kc/s band for all angles of arrival.

Footnotes:

3) The emissions from an active satellite in the meteorological service, considered in 470K, 470L and 470M, are those used for the transmissions to earth of meteorological information obtained directly through instruments on board such a satellite.

4) In view of the absence of any C.C.I.R. Recommendations relative to sharing between Meteorological satellites, and other services, power flux density levels applicable to Communications satellites are extended to Meteorological satellites.

470L b) The power flux density level at the earth's surface, produced by an active satellite in the meteorological satellite service, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed -152 dbW/m^2 in any 4 Kc/s band for all angles of arrival.

470M c) The limitations given in 470K and 470L apply in those frequency bands allocated to reception by earth stations in the meteorological satellite service, shared on an equal basis with fixed or mobile services.

Power Limitations

470N 22. Earth stations in the Communication-Satellite Service

4700 a) The level of the mean effective radiated power transmitted by an earth station in any direction in the horizontal plane[5] shall not exceed + 55 dbW in any 4 Kc/s band, except that it may be increased subject to the provisions of 470 MC or 470 MD. However, in no case shall it exceed a value of + 65 dbW in any 4 Kc/s band.

470P b) In any direction where the distance from an earth station to the boundary of the territory of another Administration exceeds 400 km, the limitation of + 55 dbW in any 4 Kc/s band may be increased in that direction by 2 db for each 100 km in excess of 400 km.

470Q c) The limitation of + 55 dbW in any 4 Kc/s band may be exceeded by agreement between the Administrations concerned or affected.

470R d) The limitations given in 470 MB apply in the bands allocated to transmissions by earth stations in the communication-satellite service, shared on an equal basis with fixed or mobile services.

Note :

5) For the purpose of this Regulation, the effective radiated power transmitted in the horizontal plane shall be taken to mean the effective radiated power actually transmitted towards the horizon, reduced by the Site Shielding Factor that may be applicable.

The value of this Site Shielding Factor shall be determined as indicated in [Section 4 of Document No. 122-E]

Minimum Angle of Elevation

470S 23. Earth stations in the Communication-Satellite Service

470T a) Earth station antennas shall not be employed for transmission at elevation angles less than 3 degrees, measured from the horizontal plane to the central axis of the main lobe, except when agreed to by the Administrations concerned or affected.

470U b) The limitation given in 470 MG applies in the bands allocated to transmission by earth stations in the communication-satellite service, shared on an equal basis with fixed or mobile services.

SECTION IX. SPACE SERVICES

Cessation of Emissions

470V 24. Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices 6) that will ensure definite cessation of emissions.

Footnote :

6) Battery life, timing devices, ground command, etc.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 127-E
28 October, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

THIRD REPORT BY WORKING GROUP 5A

TO COMMITTEE 5 (ALLOCATIONS)

TELEMETERING

1. Band 267 - 273 Mc/s

1.1 The proposal before the Conference concerning this band has been considered.

1.2 The largest measure of agreement is represented by the draft new Table with new footnotes given in Appendix 1 attached hereto.

1.3 The Delegations of the United Kingdom, Pakistan, Japan, the Netherlands and Sweden reserved the right to return to this subject, if they still so desire, at a later stage.

COMMUNICATION-SATELLITE SERVICE

2. Band 5725 - 6425 Mc/s

2.1 All proposals before the Conference concerning this band have been considered.

2.2 The largest measure of agreement is represented by the draft new Table with new, revised or cancelled footnotes, as appropriate, given in Appendix 2 attached hereto.

2.3 A different point of view was expressed by the Delegations of Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R. who favoured allocation of the band 5725 - 6225 Mc/s for the same purpose.

2.4 The Delegations of India, Israel and Yugoslavia reserved the right to return to this subject, if they still so desire, at a later stage.

2.5 There was general agreement on the allocation of the band 5925 - 6225 Mc/s.

2.6 The Chairman suggested as a possible compromise that the band 5850 - 6425 Mc/s might be allocated to the Communication-Satellite Service and the Fixed and Mobile Services on a world-wide basis with a provision that dates of implementation for bands 5850 - 5925 Mc/s and 6225 - 6425 Mc/s would be decided upon at a future conference. Some Delegations indicated that they would like to study this suggestion.

2.7 The Delegations of Sweden and Switzerland indicated that they could agree to a lower band limit of 5850 Mc/s and an upper limit of 6425 Mc/s.

3. Band 3400 - 4200 Mc/s

3.1 All proposals before the Conference concerning this band have been considered.

3.2 The largest measure of agreement is represented by the draft new Table with new, revised or cancelled footnotes, as appropriate, given in Appendix 3 attached hereto.

3.3 A different point of view was expressed by the Delegations of Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R. who favoured allocation of the band 3400 - 3900 Mc/s for the same purpose.

3.4 There was general agreement on the allocation of the band 3700 - 3900 Mc/s.

4. Band 4400 - 4700 Mc/s

4.1 The proposal before the Conference concerning this band has been considered.

4.2 The proposal did not obtain a majority support in the Working Group.

5. Band 1750 - 2250 Mc/s

5.1 The proposal before the Conference concerning allocation of this band to the Communication-Satellite Service has been considered.

5.2 The proposal did not obtain a majority support in the Working Group.

J. W. JEWERS
Rapporteur

P. MORTENSEN
Chairman
Working Group 5A

Appendices: 3

A P P E N D I X 1

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
267 - 272	FIXED MOBILE Space Telemetering 309A 309B	
272 - 273	SPACE TELEMETERING 309A FIXED MOBILE 309C	

ADD 309A Space stations employing frequencies in the band 267 - 273 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD 309B In the band 267 - 272 Mc/s individual administrations may use space telemetering in their countries on a primary basis.

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A P P E N D I X 2

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	5925 - 6425	COMMUNICATION-SATELLITE 392A (Earth to satellite) FIXED MOBILE 391A	

ADD 391A The conditions for the use of this band are specified in Article 7, Section VII, of these Regulations.

ADD 392A This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

SUP 392

MOD 393 In Italy, the band 6450 - 6575 Mc/s is also allocated to the Radiolocation Service.

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A P P E N D I X 3

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
3700 - 4200	3700 - 4200	
ADD COMMUNICATION-SATELLITE 374A (Satellite to earth)	COMMUNICATION-SATELLITE 374A (Satellite to earth)	
FIXED	FIXED	
Mobile	MOBILE	
374 374B	379	

NOC 374

ADD 374A This band may also be used for the transmission of telemetering and tracking signals associated with communication-satellite space stations operating in the same band.

ADD 374B The conditions for the use of this band are specified in Article 7, Section VII, of these Regulations.

NOC 379

SUP 380

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 128-E (Rev.)
29 October, 1963
Original: French
English, Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

REPORT OF WORKING GROUP 4B

(Third Part)

Working Group 4B suggests that Committee 4 propose the adoption of the Recommendation contained in the Annex.

P. BOUCHIER
Chairman

Annex: 1

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A N N E X

DRAFT RECOMMENDATION No. ...

TO THE C.C.I.R. RELATING TO THE BROADCASTING SATELLITE SERVICE

The E.A.R.C., (Geneva, 1963),

considering

a) that the use of satellite transmissions for direct reception by the general public of sound and television broadcasts may be possible in the future;

b) that the C.C.I.R. is studying the technical feasibility of sound and television broadcasting from satellites, the question of technically suitable frequency bands for such a service and the question of sharing with non-space services;

recommends

that the C.C.I.R., expedite its studies and make early recommendations on Question 241 (IV), Geneva, 1963, in particular, regarding those parts of the question relating to the technical feasibility of broadcasting from satellites, the optimum technical characteristics of the systems to be used, what bands would be technically suitable for such broadcasting and whether and under what conditions those bands could be shared between the broadcasting satellite and non-space services.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 128-E
28 October, 1963
Original: French
English
Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

REPORT OF WORKING GROUP 4B

(Third Part)

Working Group 4B suggests that Committee 4 propose the adoption of the Recommendation contained in the Annex.

P. BOUCHIER
Chairman

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A N N E X

DRAFT RECOMMENDATION No. ...

TO THE C.C.I.R. RELATING TO THE BROADCASTING SATELLITE SERVICE

The E.A.R.C., (Geneva, 1963),

considering

a) that the use of satellite transmissions for direct reception by the general public of sound and television broadcasts may be possible in the future;

b) that the C.C.I.R. is studying the technical feasibility of sound and television broadcasting from satellites, the question of technically suitable frequency bands for such a service and the question of sharing with non-space services;

recommends

1. that the C.C.I.R., expedite its studies and make early recommendations on Question 241 (IV), Geneva, 1963, in particular, regarding those parts of the question relating to the technical feasibility of broadcasting from satellites, the optimum technical characteristics of the systems to be used, what bands would be technically suitable for such broadcasting and whether and under what conditions those bands could be shared between the broadcasting satellite and non-space services;

2. that, until this work is completed, Administrations may use, for the transmission of experimental programmes of sound and vision broadcasting by satellites for direct reception by listeners and viewers, the frequency bands allocated to the broadcasting service under No. 115 of the Radio Regulations.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 129-E
29 October, 1963
Original: English, French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SUMMARY RECORD OF THE
FOURTH MEETING
Saturday, 26 October, 9. 30 a.m.

Chairman: Mr. E. ESPING (Sweden)

Vice-Chairman: Mr. M. ZAHRADNIČEK (Czechoslovakia)

1. Agenda

The Agenda as set out in Document No. 119 was approved after removal of Document No. 118 which was not available for consideration.

2. Summary Record of the Third Meeting (Document No. 116)

Document No. 116 was approved after amendment of the paragraph on page 3 concerning definition B2. The amended paragraph is given as Annex 1.

3. Report from Working Group 4A (Document No. 117)

Colonel Lochard, Chairman of Working Group 4A, introduced this document which includes all the definitions previously adopted by Committee 4 with some additional amendments to definitions B19, B20 and B21. The meeting then adopted Document No. 117.

4. Report from Working Group 4B (Document No. 115)

Mr. Bouchier, Chairman of Working Group 4B, introduced the report which is the second part of the report from that Group. Document No. 115 itself had not been formally adopted by Working Group 4B but an identical temporary document had been accepted by Working Group 4B.

Draft recommendations included as Annexes 1 and 2 to Document No. 115 were discussed, and it was the majority view that these were unnecessary having regard to the existing C.C.I.R. questions and study programmes concerning the same subjects. The document was then adopted after removal of Annexes 1 and 2.

5. Report from Working Group 4C

Mr. Schultz, Chairman of Working Group 4C, reported that documents on sharing criteria and coordination distance calculation methods are nearing completion but unfortunately were not available in time to be presented to this meeting.

6. Other Business

The assignment of Document No. 121 by the United Kingdom to a particular orking roup will be decided in the near future by the Chairman.

The meeting concluded at 10.10 a.m.

E. F. SANDBACH
Rapporteur

E. ESPING
Chairman

Annex: 1

A N N E X

AMENDMENT TO SUMMARY RECORD OF THE THIRD MEETING OF COMMITTEE 4 (DOCUMENT NO. 116)

Replace the paragraph on page 3 dealing with definitions B1, B2, B3, B5 and B6 by the following:

"Definition numbers B1, B2 (after discussion about the possibility of having a station on a space craft which would not be classified as a space station and the ambiguity of the words "major portion of the earth's atmosphere". It is suggested that this phrase should be studied by the competent authority) B3, B5 and B6".

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document N° 130-F-E-S
5 novembre 1963
Original: français
anglais
espagnol

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

CINQUIEME RAPPORT DU GROUPE DE TRAVAIL 5B

A LA COMMISSION 5

Ce rapport a été publié comme Document N° 160.

FIFTH REPORT BY WORKING GROUP 5B

TO COMMITTEE5

This report was published under reference Document No. 160.

QUINTO INFORME DEL GRUPO DE TRABAJO 5B

A LA COMISION 5

Este informe ha sido publicado como Documento N.° 160.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 131-E
29 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

Report by the Secretary-General of the Union

TELECOMMUNICATION AND THE PEACEFUL USES OF OUTER SPACE

In Document No. 12 I brought to the notice of the Conference for its information the main facts of international cooperation in the peaceful uses of outer space developed so far under the auspices of the United Nations with which the I.T.U. has been closely associated.

In order to bring up to date the information on this matter I am submitting to the Conference the two documents which are attached herewith and which were adopted since the preparation of Document No. 12;

- In Annex 1 a resolution adopted by the United Nations Economic and Social Council in July 1963;
- In Annex 2 extracts from the Report of the Committee on the Peaceful Uses of Outer Space which will be considered by the General Assembly of the United Nations at its current session.

Gerald C. GROSS
Secretary-General

Annexes : 2

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A N N E X I

RESOLUTION ADOPTED BY THE ECONOMIC AND SOCIAL COUNCIL OF THE UNITED NATIONS AT ITS 36TH SESSION (JULY 1963)

INTERNATIONAL COOPERATION IN THE PEACEFUL USES OF OUTER SPACE

International Telecommunication Union

"The Economic and Social Council,

Having considered

the Second Report of the International Telecommunication Union on Telecommunication and the Peaceful Uses of Outer Space prepared in response to General Assembly Resolutions 1721 (XVI) and 1802 (XVII) (E/3770);

Noting

the steps taken by the International Telecommunication Union regarding the use of telecommunication for the development of the various peaceful uses of space, in particular telecommunication satellites;

Expresses

its appreciation to the International Telecommunication Union for its prompt and particularly active response to the above-mentioned resolutions of the General Assembly and Resolution 913 (XXXIV) of the Economic and Social Council;

1. Calls the attention

of all Member States to the importance of the action in which the International Telecommunication Union is engaged with reference to peaceful uses of outer space and, in particular, to the desirability of having all Member States participating in the forthcoming Extraordinary Administrative Radio Conference to allocate frequency bands for space radio communication purposes which is due to open in Geneva on 7 October, 1963;

2. Commends

the report of the International Telecommunication Union to the Committee on the Peaceful Uses of Outer Space and the General Assembly;

3. Requests

that the International Telecommunication Union include in its annual report to the Council a section containing information on the development of its activities relating to the peaceful uses of outer space."

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A N N E X 2

EXTRACTS FROM THE REPORT OF THE COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE TO THE GENERAL ASSEMBLY (DOCUMENT NO. A/5549) OF 24 SEPTEMBER 1963

1. Extract from the report itself

Encouragement of international programmes

Programme for international cooperation in the field of space communications.

14. The Committee,

Noting with interest the second report of I.T.U. (E/3770) on studies which it has conducted on telecommunications in the peaceful uses of outer space in the period from May 1962 to April 1963 in response to General Assembly Resolutions 1721 (XVI) and 1802 (XVII).

a) Draws the attention of Member States and specialized agencies to :

i) The successful achievements of I.T.U. in the field of space communications; and

ii) The necessity for a careful study of the various programmes and suggestions put forward in the second report of I.T.U.;

b) Reiterates that international space communications should be available for use of all countries on a global non-discriminatory basis;

c) Urges that due consideration should be given to the technical recommendations of I.T.U. in the development of space communications;

d) Recommends that all Member States, in accordance with the recommendations contained in the report of the Committee on the Peaceful Uses of Outer Space to the General Assembly at its seventeenth session (A/5181), take further appropriate steps, using to the fullest extent the possibilities offered by the technical co-operation programmes, to develop and extend terrestrial communication systems in various parts of the world so that all Member States, regardless of the level of their economic, scientific and technological development, will be able to benefit from international space communications;

e) Invites the specialized agencies and other competent international organizations to assist in the development and extension of such terrestrial systems.

2. Extract from the Chairman's Statement annexed to the Report

The second I.T.U. report submitted to our Committee in response to General Assembly resolution 1802 (XVII) is a progress report on the activities undertaken by I.T.U. in the field of outer space. I have already referred to this report in so far as the Scientific and Technical Sub-Committee has submitted certain relevant recommendations. The I.T.U. Administrative Council at its spring session completed the agenda for the Extraordinary Radio Conference and substantial progress emerged in preparing technical bases on which tentative plans for frequency allocations may be established. The second I.T.U. report mentions a new branch of astronomy, namely radio-astronomy, which has already broadened our knowledge of the universe and which shares many problems of communication satellites systems in that the receiving stations on earth are called upon to receive extremely weak signals coming from points far out in space, such as space probes or even from the sun itself. Thirty-eight recommendations on this subject will be submitted to the Extraordinary Administrative Radio Conference in October 1963. A list of these texts is contained in Annex 2 of the I.T.U. report.

This list shows that there were many important problems connected with space communication systems which have to be investigated and solved before a world-wide space telecommunication system as envisaged by General Assembly resolution 1721 (XVI) could be established.

In general, it can be seen with satisfaction from the report that I.T.U. is tackling all technical aspects of space communications until step by step over a period of years space telecommunications will be fully developed.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 132-E
30 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Delegation of the People's Republic of Poland

STATEMENT

Geneva, 29 October, 1963

In connection with the admittance of persons delegated by the Chiang-Kai-Shek's group to participate in the Extraordinary Administrative Radio Conference to allocate frequency bands for space radiocommunication purposes the delegation of the People's Republic of Poland wishes to state that it does not recognise them as representatives of China.

In the opinion of the People's Republic of Poland delegation only the delegates appointed by the Government of the People's Republic of China can be recognised as true and legally authorised representatives of the Chinese People in the International Telecommunication Union as well as in other international organisations.

I request that this statement be issued as an official document of the Extraordinary Administration Radio Conference.

Head of the People's Republic
of Poland Delegation

Signed : K. KOZŁOWSKI

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 133-E
30 October, 1963
Original: English

COMMITTEE 5

AGENDA

FIFTH MEETING OF COMMITTEE 5 (Allocations)

Wednesday, 30 October, 1963, at 1430 hours (2.30 p.m.)

Room A

1. Report of Group 5 ad hoc (136 - 138 Mc/s) (Document No. DT/72)

2. Paragraph 1 of Third Report by Working Group 5A (Document No. 127) (Space, telemetering)

3. Fourth Report by Working Group 5B (Document No. 125) (Radio Astronomy)

4. Any other business

W. KLEIN
Chairman
Committee 5 (Allocations)

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 134-E
30 October 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 2

SECOND REPORT

BY THE WORKING GROUP OF COMMITTEE 2 (CREDENTIALS)

1. The Working Group of Committee 2 (Credentials) met again on 30 October 1963 at 11.30 a.m. under the chairmanship of Mr. F. Nicotera, Chairman of Committee 2.

2. The following credentials, received since the first meeting of the working party on 17 October, were examined :

Spain
Luxembourg
Morocco (Kingdom of)
Pakistan
Spanish Provinces in Africa
United Arab Republic
Federal Socialist Republic of Yugoslavia

2.1 These credentials were acknowledged to be in order.

3. The working group also examined some additional information received in connection with the following credentials :

Colombia (Republic of)
Cuba
Liechtenstein (Principality of)
Roumania (People's Republic of)

3.1 These credentials were acknowledged to be in order.

4. The working group noted that steps are being taken to approach the competent authorities in order to regularize the credentials of

Costa Rica.

5 The working group also noted that the following countries have not deposited credentials :

Iran
Monaco

Secretary of the
Working Group

A. WINTER-JENSEN

Chairman of Committee 2

F. NICOTERA

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 135-E
30 October, 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 2

AGENDA

2nd MEETING OF COMMITTEE 2 (CREDENTIALS)

Friday, 1 November, 1963 at 9.30 a.m.

1. Adoption of the Summary Record of the 1st Meeting (Document No. 83 and Corr.)

2. Adoption of the first report of the Working Group of Committee 2 (Document No. 98)

3. Adoption of the 2nd report of the Working Group of Committee 2 (Document No. 134)

4. Adoption of the draft report of Committee 2 (Document No. DT/103)

5. Other business.

F. NICOTERA
Chairman of Committee 2

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 136-E
30 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

SECOND AND LAST REPORT OF WORKING GROUP 6B TO COMMITTEE 6

1. The Working Group held its third Meeting on Wednesday, 30 October, 1963 at 0930 hours, with the following Agenda :

1.1 Consideration of Appendices 9 and 10 (Document No. 24 (Rev.))

1.2 Proposal for the amendment of No. 695 RR (Document No. 34, page 5)

1.3 Proposal for the amendment of Article 13 RR (Document No. 36, page 3)

2. Re para. 1.1

The Group was of the opinion that the new List to be added to Appendix 9 should be numbered XII and bear the following title "List of Stations in the Space Service and in the Radio Astronomy Service".

The Group took as a basis for discussion Document No. 24 (Rev.), pages 8-20, submitted by the I.F.R.B.

It was generally understood that

2.1 the headings of the various Sections in List XII would, where necessary, have to be amended so as to be in line with the decisions taken in Committees 4 and 5 with respect to the Terms to be used and the Allocations made to various Space Services;

2.2 the headings of the Columns and in particular the contents of the Remarks Column in each Section would have to be brought into line with the corresponding items in Appendix 1A, as finally agreed upon in Committee 6, in order to enable the I.F.R.B. to extract the necessary information to be included in the List from the Master Register.

After having discussed the various Sections of the List mentioned in Document No. 24(Rev.), the Group entrusted the setting-up of a new lay-out for the List to a small Drafting Group, consisting of Mr. A. Fortnam (United Kingdom) and Messrs. F. Dellamulla and R. Petit, Members of the I.F.R.B.

In doing so, the Drafting Group would take into account the general comments mentioned in paras. 2.1 and 2.2, as well as any further remarks made with respect to a few matters of substance. It was agreed that the draft text for the new list, as well as for Appendix 10, annexed hereto, would be directly submitted to Committee 6.

3. Re para. 1.2.

Although the information required from Committee 4 (see also Document No. 102, para. 4) had not yet been received, the Group discussed at some length the possible merits of the proposal in question, but felt unable to reach a firm conclusion until the information from Committee 4 would be available.

It was therefore agreed to refer this proposal to Committee 6.

4. Re para. 1.3

For the reasons stated in para. 3 above, it was agreed to refer this proposal to Committee 6.

5. There being no further proposals before the Meeting, the Group found that the work entrusted to it had been concluded.

P.E. WILLEMS
Chairman
Working Group 6B

Annexes : 2

A N N E X 1

DRAFT

APPENDIX 9 MOD

LIST /XII/ - LIST OF STATIONS IN THE SPACE SERVICE AND IN THE RADIO ASTRONOMY SERVICE

1 - Communication-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations in alphabetical order

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Transmission						Reception						Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks
			Telecommand			Communication			Telecommand		Tracking		Communication				
			Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Power (kw)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Power (kw)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			1. Special channelling arrangements for: a) telegraphy b) telephony c) other types of communication, as appropriate 2. Special methods of modulation
1	2	3	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8a	8b	9	10	11

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2 - Communication-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations by alphabetical and/or numerical order of designation of station

Identity of the station	Call sign (identification)	Transmission									Reception				Area of coverage or name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Communication			Telecommand		Communication				
		Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8	9	10

Remarks

1. Orbital information*
   a) inclination of the plane
   b) period required for a complete orbit
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth.
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate.
3. Special methods of modulation.

*See Sections D and E of Appendix 1A.

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3 - Meteorological-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations in alphabetical order

1	2	3	Transmission			Reception						8	9	Remarks
				Telecommand where appropriate		Telemetering		Tracking		Reception of meteorological information				
Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kw)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Identity of the station(s) with which communication is to be established	Operating administration or company	Special methods of modulation
1	2	3	4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10

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4 - Meteorological-satellite space station

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations by alphabetical and/or numerical order of designation of station

Identity of the station	Call sign (identification)	Transmission									Reception		Area of coverage or name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of meteorological information			Telecommand where appropriate				
		Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

Remarks

1. Orbital information:*
   a) inclination of the plane
   b) period required for a complete orbit
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate
3. Special methods of modulation

* See Sections D and E of Appendix 1A

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5 - Radionavigation-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations in alphabetical order

1	2	3	Transmission			Reception						8	9	Remarks
			Telecommand			Telemetering		Tracking		Reception of navigation information				
Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call Sign (identification)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Identity of the station(s) with which communication is to be established	Operating administration or company	Special methods of modulation
1	2	3	4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10

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Section 6 - Radionavigation-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations by alphabetical and/or numerical order of designation of stations.

Identity of the Station	Call sign (identification)	Transmission								Reception		Area of coverage or the name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of navigation information		Telecommand				1. Orbital information: *) a) inclination of the plane b) period required for a complete orbit c) altitude of apogee (km) d) altitude of perigee (km) e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth 2. Special channelling arrangements for: a) telegraphy b) telephony c) other types of communication, as appropriate 3. Special methods of modulation
		Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission necessary bandwidth and description of transmission	Power (watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

*) See Sections D and E of Appendix 1A

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Section 7 - Space research earth stations

Names of the countries notifying the stations in alphabetical order of country symbols
Names of stations in alphabetical order

			Transmission			Reception								Remarks
			Telecommand			Telemetering		Tracking		Reception of research information				Any special characteristics of the station and scope of observations
Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Identity of the station(s) with which communication is to be established	Operating administration or company	
1	2	3	4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10

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8 - Space research space stations

Name of the countries notifying the stations in alphabetical order of country symbols

Names of stations by alphabetical and/or numerical order of designation of station

Identity of the station		Transmission								Reception				Remarks
		Telemetering			Tracking		Transmission of information			Telecommand				1. In the case of an earth satellite Orbital information: * a) inclination of the plane b) period required for a complete orbit c) altitude of apogee (km) d) altitude of perigee (km) e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth 2. In the case of a space probe indicate general trajectory of probe 3. Special methods of modulation
Call sign (identification)		Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Area of coverage or name of the locality and country in which the associated receiving station is located	Operating administration or company	* See Sections D and E of Appendix 1A
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

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9 - Space tracking stations

Name of the countries notifying the stations in alphabetical order of country symbols

Names of stations in alphabetical order

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitting site	Call sign (identification)	Reception		Identity of the station(s) with which communication is to be established	Operating administration or country	Remarks
			Tracking				Any special characteristics of the station
			Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3	4a	4b	5	6	7

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10 - Radio astronomy stations

Names of the countries notifying the stations in alphabetical order of country symbols.

Names of stations in alphabetical order

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Centre of the frequency band observed in Mc/s or Go/s as appropriate	Width of the frequency band observed	Operating administration or company	Remarks
					a) Any special characteristics of the station including : 1) altitude in metres above sea level, 2) main particulars of antenna, 3) scope and time of observations, 4) class of observations (as defined by C.C.I.R.)
1	2	3	4	5	6

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[11 - Broadcasting-satellite stations]

Names of the countries notifying the stations in alphabetical order of country symbols

Names of stations by alphabetical and/or numerical order of designation of station

1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8	9	10
Identity of the Station	Call Sign (identification)	Transmission									Reception				Area of coverage	Operating administration or company	Remarks
		Telemetering			Tracking			Broadcasting			Telecommand		Reception of broadcasting programmes				1. Orbital information: * a) inclination of the plane b) period required for a complete orbit c) altitude of apogee (km) d) altitude of perigee (km) e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth 2. Special methods of modulation
		Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (watts)	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency on Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			

* See Sections D and E of Appendix 1A.

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A N N E X 2

DRAFT

APPENDIX 10 MOD

Insert additional symbols as follows :

RA	Radio astronomy station
EC	Communication-satellite space station
TC	Communication-satellite earth station
/EB	Broadcasting-satellite station/
EM	Meteorological-satellite space station
TM	Meteorological-satellite earth station
EN	Radionavigation-satellite space station
TN	Radionavigation-satellite earth station
EH	Space research space station
TH	Space research earth station
/ER	Space telemetering space station/
/TR	Space telemetering earth station/
/ED	Space telecommand space station/
/TD	Space telecommand earth station/
/EK	Space tracking space station/
TK	Space tracking station

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 137-E
30 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

AGENDA

SIXTH MEETING OF COMMITTEE 5 (ALLOCATIONS)
Thursday, 31 October, 1963, at 1430 hours (2.30 p.m.)

1. Paragraph 1 of Third Report by Working Group 5A (Document No. 127)
2. Fourth Report by Working Group 5B (Document No. 125) (Radio Astronomy)
3. Report by Convenor 5 ad hoc (band 136 - 137 Mc/s)
4. Report of Group 5 ad hoc (Document No. DT/72) band 137 - 138 Mc/s
5. Any other business

W. KLEIN
Chairman
Committee 5 (Allocations)

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 138-E
31 October, 1963
Original: French, English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

SUMMARY RECORD

OF THE FIFTH MEETING

Wednesday, 30 October 1963, 2.30 p.m.

Chairman: Mr. E. ESPING (Sweden)

Vice-Chairman: Mr. M. ZAHRADNIČEK (Czechoslovak S.R.)

1. Agenda

The Agenda as set out in Document No. 118 was approved after the addition of Document No. DT/98 to item No. 3.

2. Summary Record of the Fourth Meeting (Document No. 129)

Document No. 129 was approved.

3. Report from Working Group 4B (Document No. 128 (Rev.))

Mr. Bouchier introduced Document No. 128 (Rev.) which was the final report by Working Group 4B. After some discussion in which the Chairman of the I.F.R.B. (Mr. Gayer), the acting Director of the C.C.I.R. (Mr. Hayes) and delegates of France (Mr. Place) and Belgium (Mr. Bouchier) participated, the document was adopted without amendment. The statement by Mr. Place is given in Annex 1. Annex 2 concerns only the French text.

4. Report from Working Group 4C (Documents Nos. 122, 126 and DT/98)

In introducing Document No. 122, Mr. Schultz, the Chairman of Working Group 4C drew attention to the need for Committee 6 to consider it before a final text can be adopted. In this regard Mr. Esping will ask the Chairman of Committee 6 to provide an answer by 6 p.m. on Thursday, 31 October 1963.

After examination of Document No. 122, the following amendments were agreed :

a) replace the phrase "on an equal basis" by "with equal rights" wherever it appears;

b) an additional note to indicate that Tables A, B, 1 and 2 apply only for a frequency of 4 Gc/s and a 960 channel radio-relay system;

c) in Table 1, the factor for conversion of interference bandwidth should be shown as -19 db;

d) removal of plotting errors in Figures 3, 4 and 5.

Mr. Schultz agreed to incorporate these amendments and the document was adopted on this basis.

While introducing Document No. 126, Mr. Schultz pointed out that the final form of the Annex will depend partly on the decisions of other Committees.

After examination of the Annex the following amendments were agreed :

a) removal of the word "level" in the English text;

b) introduce the standard definitions approved by Committee 4;

c) remove foot-note 3;

d) replace the phrase "on an equal basis" by "with equal rights" wherever it appears;

e) place paragraphs 470N to 470U immediately after 470E with appropriate renumbering of the cross-references.

Mr. Schultz undertook to arrange with the Chairman of Committee 5 for the relevant frequency bands to be included in the appropriate paragraphs of Document No. 126.

During discussion, it was understood that 470R and 470U would include the operating frequency bands for earth stations transmitters of passive satellite systems. The Indonesian delegate observed that in Document No. 126, the C.C.I.R. Recommendations had apparently been extended to include terrestrial services, whereas they specifically referred to sharing with line-of-sight radio services. He discussed this aspect in detail with Mr. Schultz during a break in the meeting.

Paragraphs 470A to 470U, after incorporation of the amendments listed above, were then accepted by the meeting together with footnotes 1, 2 and 5.

470V was discussed and the addition of the words "when necessary" was suggested. Due to lack of agreement on this subject, this proposed regulation was referred back to Working Group 4C for further discussion.

The proposed recommendation on page 3, Document No. DT/98 and footnote 4 were similarly referred back to Working Group 4C. In this connection the delegate of Israel suggested that all the matters to be referred to the C.C.I.R. could perhaps be included in the one recommendation.

The meeting was closed at 5.15 p.m.

E.F. SANDBACH
Rapporteur

E. ESPING
Chairman

Annexes: 2

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A N N E X 1

STATEMENT BY MR. PLACE RELATING TO DOCUMENT NO. 128 (REV.)

The delegate of France states that, because of the dearth of available data, the question of whether or not direct broadcasting via satellites is feasible should be examined by later conferences. He agreed that the problem should, therefore, be referred to the C.C.I.R. within the framework of Question 241 (IV).

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A N N E X 2

DRAFT RECOMMENDATION NO. ...

TO THE C.C.I.R. RELATING TO THE BROADCASTING SATELLITE SERVICE

The E.A.R.C. (Geneva, 1963),

considering

a) that the use of satellite transmissions for direct reception by the general public of sound and television broadcasts may be possible in the future;

b) that the C.C.I.R. is studying the technical feasibility of sound and television broadcasting via satellites, the technically suitable frequency bands for such a service and sharing with non-space services;

recommends

that the C.C.I.R., expedite its studies and make early recommendations on Question 241 (IV), Geneva, 1963, in particular, regarding those parts of the question relating to the technical feasibility of broadcasting from satellites, the optimum technical characteristics of the systems to be used, what bands would be technically suitable and whether and under what conditions those bands could be shared between the broadcasting satellite and non-space services.

SPACE RADIOCOMMUNICATION CONFERENCE

Addendum No. 1 to
Document No. 139-E
1 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

COMMUNICATION-SATELLITE SERVICE

The attached text of new foot-note No. 392D is submitted for the consideration of Committee 5 in conjunction with Appendix 5 to Document No. 139. The text has been prepared on the request of Working Group 5A at its final meeting and, therefore, is presented for first consideration in Committee 5.

P. MORTENSEN
Chairman
Working Group 5A

Annex : 1

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A N N E X

/ADD 392d/ As an exception, passive communications-satellite systems also may be accommodated in the band 7250-7750 Mc/s, subject to: a) agreement between administrations concerned and those whose services, operating in accordance with the Table, may be affected, and b) the co-ordination procedure laid down in Article 9. Such systems shall not cause any more interference at active earth station receivers than would be caused by fixed or mobile services. Power-flux density limitations at the earth's surface after reflection from the passive communications satellites shall not exceed those prescribed in these Regulations for active communications-satellite systems.

The maximum effective power radiated in any direction in the horizontal plane by earth stations of passive satellite systems shall not exceed + 55 dbW, not taking the site shielding factor into account. If the distance between a transmitting station of a passive system and the territory of another Administration exceeds 400 km, this limitation may be increased in that direction by 2 db for each 100 km in excess of 400 km up to a maximum of 65 dbW.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 139-E
31 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FOURTH AND LAST REPORT BY WORKING GROUP 5A

TO COMMITTEE 5 (ALLOCATIONS)

COMMUNICATION-SATELLITE SERVICE

1. Following the publication of Document No. 127, further consideration has been given by Working Group 5A to the proposals for frequency allocations for the Communication-satellite Service. All proposals in this respect have been considered and in an attempt to reach the largest measure of agreement, proposals for certain bands have been withdrawn, and those for other bands have been modified.

2. In its consideration the Working Group recognized that it clearly would be desirable to locate the Communication-satellite Service entirely within bands allocated to the fixed and mobile services; nevertheless, development of fixed and mobile services has not been carried out on a world-wide basis entirely in the same bands. Thus, some accommodation of the Communication-satellite Service is required in bands other than those allocated to fixed and mobile services, if the needs of all administrations are to be met.

3. Provided there is sufficient geographical separation between administrations operating in the Communication-satellite Service on the one hand and high-powered stations of terrestrial services on the other, the Working Group took the view that the two services would be compatible. This may call for certain measures to be taken in the design of communication-satellite systems and in the siting of the earth stations.

4. Furthermore, in the view of the Working Group, it would be essential to recognize that for certain bands the co-ordination procedure under Article 9 and power limitation in Article 7, would have to be waived if the Communication-satellite Service and other services in these bands are to co-exist. Accordingly, certain proposals have been forwarded to Committees 4 and 6 for amendment of the Articles concerned. For information these proposals are given in Appendix 7 attached hereto.

5. Band 1750 - 2250 Mc/s

The proposals concerning the Communication-satellite Service for this band have been withdrawn.

6. Band 3400 - 4200 Mc/s

6.1 The largest measure of agreement is represented by the draft new Table, with one new foot-note, given in Appendix 1 attached hereto.

6.2 The Delegations of Austria, Denmark, Yugoslavia and the U.A.R. reserved the right to return to this subject, if they still so desire, at a later stage.

7. Band 4400 - 4700 Mc/s

The largest measure of agreement is represented by the draft new Table, with a new foot-note, given in Appendix 2 attached hereto.

8. Band 5725 - 6425 Mc/s

8.1 The largest measure of agreement is represented by the draft new Table, with one new foot-note, given in Appendix 3 attached hereto.

8.2 The Delegation of Sweden reserved the right to return to this subject, if they still so desire, at a later stage.

9. Band 6425 - 7150 Mc/s

The proposals for allocation of this band for the Communication-satellite Service have been withdrawn. The present Table will therefore remain unchanged for the band 6425 - 7150 Mc/s. However, a new foot-note associated with this band (proposed by the United Kingdom and the U.S.A.) was considered acceptable by a majority of the Working Group. The text of this new foot-note (No. 392B) is given in Appendix 4.

10. Band 7150 - 7250 Mc/s

A new foot-note which will provide for the operation of Meteorological-satellite Space Stations in this area of the spectrum, was agreed by a majority of the Working Group. This foot-note is partly associated with the band 7150 - 7250 Mc/s and is reproduced in Appendix 5 as No. 392F.

11. Band 7250 - 7750 Mc/s

11.1 All proposals for this band have been considered. There was general agreement that this band should be allocated for the Communication-satellite Service. However, several Delegations have proposed the first 50 Mc/s, namely the band 7250 - 7300 Mc/s, for allocation to the Communication-satellite Service on an exclusive basis. Therefore, this band is presented as a separate block in the draft new Table for the band 7250 - 7750 Mc/s given in Appendix 5. The Appendix represents the largest measure of agreement in the Group.

11.2 A different point of view was expressed by the Delegations of Algeria, Bielorussia, Bulgaria, Cyprus, Cuba, Finland, Hungary, Kuwait, Lebanon, Morocco, Poland, Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia, U.A.R., Ukrainia, U.S.S.R., who favoured the retention of the Fixed and Mobile Services in the draft new Table for the band 7250 - 7300 Mc/s and a foot-note indicating the names of the 34 countries who were in favour of an exclusive allocation.

11.3 Alternatively, since the majority of the countries who could not accept an exclusive allocation of this band to the Communication-satellite Service were countries of Region 1, it was proposed that the band 7250 - 7300 Mc/s be allocated in Region 1 to the Communication-satellite, Fixed and Mobile Services, with a foot-note indicating those Region 1 countries who were in favour of the exclusive allocation to the Communication-satellite Service. For Regions 2 and 3, the band could be allocated exclusively to the Communication-satellite Service with a foot-note indicating those countries who would like to retain the allocation to the Fixed and Mobile Services in addition to the Communication-satellite Service.

12. Band 7900 - 8400 Mc/s

12.1 All proposals for this band have been considered. There was general agreement that this band should be allocated for the Communication-satellite Service. However, several Delegations have proposed a certain band of 50 Mc/s width within these limits, namely the band 7975 - 8025 Mc/s, for allocation to the Communication-satellite Service on an exclusive basis. Therefore, this particular band is presented as a separate block in the draft new Table for the band 7900 - 8400 Mc/s given in Appendix 6 attached hereto.

12.2 The Appendix represents the largest measure of agreement in the Group. A different point of view was expressed by the Delegations of Algeria, Bielorussia, Bulgaria, Cuba, Finland, Hungary, Kuwait, Lebanon, Morocco, Poland, Yugoslavia, Roumania, Switzerland, Czechoslovakia, U.A.R., Ukrainia, U.S.S.R., who favoured the retention of the Fixed and Mobile Services in the draft new Table for the band 7975 - 8025 Mc/s and a foot-note indicating the names of the 34 countries who were in favour of an exclusive allocation.

12.3 Alternatively, since the majority of the countries who could not accept an exclusive allocation of this band to the Communication-satellite Service were countries of Region 1, it was proposed that the band 7975-8025 Mc/s be allocated in Region 1 to the Communication-satellite, Fixed and Mobile Services, with a foot-note indicating those Region 1 countries who were in favour of the exclusive allocation to the Communication-satellite Service. For Regions 2 and 3, the band could be allocated exclusively to the Communication-satellite Service with a foot-note indicating those countries who would like to retain the allocation to the Fixed and Mobile Services in addition to the Communication-Satellite Service.

J.W. JEWERS
Rapporteur

P. MORTENSEN
Chairman
Working Group 5A

Appendices: 7

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A P P E N D I X 1

Mc/s

ADD

Allocation to Services		
Region 1	Region 2	Region 3
3400 - 3600 COMMUNICATION-SATELLITE (Satellite-to-earth) FIXED MOBILE Radiolocation 372 373 374 375 374A	3400 - 3500 COMMUNICATION-SATELLITE (Satellite-to-earth) RADIOLOCATION Amateur 376 374A	
3600 - 4200 COMMUNICATION-SATELLITE (Satellite-to-earth) FIXED Mobile 374 374A	3500 - 3700 COMMUNICATION-SATELLITE (Satellite-to-earth) FIXED MOBILE RADIOLOCATION 374A	3500 - 3700 COMMUNICATION-SATELLITE (Satellite-to-earth) RADIOLOCATION Fixed Mobile 377 378 374A
	3700 - 4200 COMMUNICATION-SATELLITE (Satellite-to-earth) FIXED MOBILE 379 374A	

NOC 372 374 375 376 377 378 379

MOD 373 In Denmark, Norway, Sweden and Switzerland, the communication-satellite, fixed, mobile and radiolocation services operate on a basis of equality in the band 3400 - 3600 Mc/s.

ADD 374A This band may also be used for the transmission of tracking and telemetering signals associated with communication-satellite space stations operating in the same band.

SUP 380

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A P P E N D I X 2

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	4400 - 4700		
ADD		COMMUNICATION-SATELLITE (Earth-to-satellite)	392A
		FIXED	
		MOBILE	

ADD 392A This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

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A P P E N D I X 3

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	5725 - 5850 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A RADIOLOCATION Amateur 354 388 390 391	5650 - 5850 RADIOLOCATION Amateur 389 391	
ADD	5850 - 5925 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A FIXED MOBILE 391	5850 - 5925 RADIOLOCATION Amateur 391	5850 - 5925 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A FIXED MOBILE Radiolocation 391
ADD	5925 - 6425 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A FIXED MOBILE		

NOC 354 388 389 390 391

SUP 392

ADD 392A This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

MOD 393 In Italy, the band 6425 - 6575 Mc/s is also allocated to the radiolocation service.

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APPENDIX 4

ADD 393A The frequency band 7120 - 7130 Mc/s may be used for general telecommand purposes in conjunction with space radiocommunication, subject to agreement between administrations concerned and those whose services, operating in accordance with the Table, may be affected.

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APPENDIX 5

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	7250 - 7300	COMMUNICATION-SATELLITE (Satellite-to-earth) 374A 392C [392D] 392Y	
ADD	7300 - 7750	COMMUNICATION-SATELLITE 374A [392D] (Satellite-to-earth) FIXED MOBILE 392F	

ADD 374A This band may also be used for the transmission of tracking and telemetering signals associated with communication-satellite space stations operating in the same band.

ADD 392C Stations of the fixed and mobile services, previously authorized in the bands 7250 - 7300 Mc/s and 7975 - 8025 Mc/s, may continue to operate until 1 January 1969. This provision does not apply to stations operating in conformity with 392Y and 392YY.

ADD 392Y In Algeria, Austria, Bulgaria, Cyprus, Cuba, Finland, Hungary, Japan, Kuwait, Lebanon, Morocco, Poland, Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia, U.A.R. and U.S.S.R., the band 7250 - 7300 Mc/s is also allocated to the fixed and mobile services.

[ADD 392D]

ADD 392F In the bands 7200 - 7250 Mc/s and 7300 - 7750 Mc/s, the meteorological-satellite service may use a band up to 100 Mc/s in width on a primary basis. These bands may also be used for the transmission of tracking and telemetering signals associated with meteorological-satellite space stations operating in the same band.

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A P P E N D I X 6

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	7900 - 7975 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A FIXED MOBILE		
MOD	7975 - 8025 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A 392C 392YY		
ADD	8025 - 8400 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A FIXED MOBILE MOD 394		

ADD 392A This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

ADD 392C Stations of the fixed and mobile services, previously authorized in the bands 7250 - 7300 Mc/s and 7975 - 8025 Mc/s may continue to operate until 1 January 1969. This provision does not apply to stations operating in conformity with 392Y and 392YY.

ADD 392YY In Algeria, Bulgaria, Cuba, Finland, Hungary, Japan, Kuwait, Lebanon, Morocco, Poland, Yugoslavia, Roumania, Switzerland, Czechoslovakia, U.A.R. and U.S.S.R., the band 7975 - 8025 Mc/s is also allocated to the fixed and mobile services.

MOD 394 In Australia and in the United Kingdom, the band 8250 - 8400 Mc/s is allocated to the radiolocation and communication-satellite services.

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A P P E N D I X 7

1. Amend the text of No. 470D, as shown in Document No. 126, 28 October 1963, to read as follows (pertains to Article 7):

470D 3) The limitations given in 470B and 470C apply in those frequency bands allocated to reception by space stations in the communication-satellite service, shared on an equal basis with fixed and mobile services, except in the case of the bands 4400 - 4700 Mc/s and 8100 - 8400 Mc/s.

2. Substitute the following for the initial portion of the text of No. 492A now under consideration in Working Group 6A-1 for Article 9:

492A Before an Administration notifies to the Board or brings into use any frequency assignment to a station in a fixed or mobile service for transmitting, it shall effect co-ordination of the assignment with any other Administration which has previously effected co-ordination under the provisions of 639E in respect of an earth station if the proposed fixed or mobile station is to be located within the co-ordination distance of the earth station concerned and if the occupied bandwidth of the frequencies in use in any way overlap.

3. Substitute the following for the initial portion of the text of No. 639E now under consideration in Working Group 6A-1 for proposed Article 9A:

639E Before an Administration notifies to the Board or brings into use any frequency assigned to an earth station whether for transmitting or receiving, it shall effect co-ordination of the assignment with any other administration whose territory lies wholly or partly within the co-ordination distance, but only in respect of fixed or mobile services enjoying equal sharing rights with space services. This procedure does not apply to the bands 4400 - 4700 Mc/s and 8100 - 8400 Mc/s.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 140-E
31 October 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD OF THE
FOURTH MEETING
Tuesday, 29 October 1963, at 8 p.m.

1. The agenda (examination of documents Nos. 114 and 95 (Rev.) was adopted.

2. The meeting first considered document No. 114. The Chairman of Working Group 5C, Mr. J. Penwarden emphasized at the outset the importance of the role of Mr. Chef of the French Delegation, who had given substantial help in preparing the document.

The Delegate of Italy pointed out that the letters MOD, in place of NOC, should be shown beside 351 in Appendix 3.

Mr. Chef suggested that Appendix 8 should be regarded as a proposal arising out of document No. 117, which was considered at the 2nd meeting.

Document 124 was then adopted without discussion.

3. The meeting then turned to document No. 95 (Rev.).

Australia pointed out that footnote 279 ought not to be shown in the table, as it did not refer any more to that band.

A long discussion took place on the footnotes to pages 279A and 279B, in which the delegates of Denmark, Sweden, the Federal Republic of Germany, Portugal, the U.S.S.R., Italy, the Roumanian P.R., the P.R. of Poland, the Czeckoslovak S.R., Jamaica, the Republic of Colombia, Spain, Cuba, and Dr. M. Joachim (C.C.I.R.) took part.

Since there was no likelihood of an agreement, the matter was put to the vote.

It was decided by 24 votes to 7, with 15 abstentions, to delete footnote 279B and the draft resolution in Appendix 2 to which it referred. The proposal to delete the 2nd sentence in the footnote 279A was rejected (13 votes IN FAVOUR, 17 AGAINST and 18 ABSTENTIONS).

Appendix 1 to document No. 95 (Rev.), with references 279 and 279A omitted, was thus adopted.

J.P. WEST
Rapporteur

W. KLEIN
Chairman

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 141-E
31 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

STATEMENT
BY THE DELEGATION OF THE REPUBLIC OF CHINA TO
THE E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR
SPACE RADIO COMMUNICATION PURPOSES

Geneva, 31 October 1963

With reference to the statement of the Delegation of Poland (Document No. 132-E of 30 October 1963), I wish to state that my statement appearing in Document No. 90-E dated 16 October 1963 applies to this delegation also.

I request that this statement be issued as an official document of the E.A.R.C.

For the HEAD

Chen SHU-JEN
Delegate, Delegation
of the Republic of China

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 142-E
31 October 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE THIRD MEETING

Tuesday 29 October 1963, 9.30 a.m. (Salle A)

1. The agenda (examination of Documents Nos. 112 and 123) was adopted.

2. The meeting first considered Document No. 112 (Radio-astronomy Service).

The Chairman asked the delegate of Bulgaria whether he agreed to the deletion of the note at the foot of page 350. Since the latter was agreeable, Appendix 1 thus amended was submitted to Committee 5 for approval, which adopted it without discussion.

Document No. 112 was then adopted in toto.

3. Since a clear majority was in favour of Appendix 1 to Document No. 123, it was taken as the basis for discussion.

India, the Republic of the Philippines, Cuba, the P.D.R. of Algeria, Kuwait, Pakistan, the United Arab Republic and the Federal Socialist Republic of Yugoslavia asked to be included in the footnote to page 363 A.

Spain made a comment concerning the Spanish text: the matter would be clarified with the Secretariat.

The U.S.S.R., the Czechoslovak S.R., the United Arab Republic, the People's Republics of Poland, Hungary, Bulgaria, and Roumania and the Federal Socialist Republic of Yugoslavia asked to be included in the footnote to page 364 A.

At Prof. V. Popović's suggestion a new footnote was added to Appendix 1 :

"In allocating frequencies to stations in the Fixed and Mobile Services, Administrations are requested to do everything possible to protect radio-astronomical observations from harmful interference. Under the terms of these Regulations,

the radio-astronomy service shall be afforded the same degree of protection vis-à-vis the omissions of services operating in other bands as these services have vis-à-vis one another."

With the above amendments, Appendix 1 was adopted.

4. The meeting rose at 12.30 p.m.

Rapporteur
J.P. WEST

Chairman
W. KLEIN

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 143-E
31 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

REPORT OF WORKING GROUP 6A TO COMMITTEE 6

The second meeting of Working Group 6A, held on the 31st October, 1963, approved, with amendments, draft documents received from Sub-Working Group 6A1 and submits them for the consideration of Committee 6.

These documents are :

1. Document No. 144 - Article 9
2. Document No. 145 - Article 9A
3. Document No. 146 - Appendix 1 (MOD)
4. Document No. 147 - Appendix 1A
5. Document No. 148 - RR No. 114 (MOD)
6. Document No. 149 - Recommendation : Relating to the notification of frequency assignments for joint space telecommunication systems
7. Document No. 152 - Resolution : Relating to the provision of information regarding international satellite systems

An ad hoc working group is preparing a text for insertion in Document No. 145 covering the case of _____ earth stations on board ships and aircraft and this text will be submitted to Committee 6 for consideration in the near future.

J.M. POWER
Chairman
Working Group 6A

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 144-E
31 October, 1963
Original: French
English
Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT

ARTICLE 9

Title MOD NOTIFICATION AND RECORDING IN THE MASTER INTERNATIONAL FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS TO STATIONS IN TERRESTRIAL SERVICES.[0)]

Title MOD Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

486 MOD §1. (1) Any frequency assignment[1), 2)] to a fixed, land, broadcasting[3)], radionavigation land, radiolocation land or standard frequency station, or to a ground-based station in the meteorological aids service, shall be notified to the International Frequency Registration Board,

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration[4)]; or

---

Title ADD 0) For the notification and recording in the Master International Frequency Register of frequency assignments to stations in the space and radio astronomy services, see Article 9A.

486.4 ADD 4) The attention of administrations is specifically drawn to the application of the provisions of Nos. 486 a) MOD and 486 c) MOD in those cases where they make a frequency assignment to a station in a terrestrial service, located within co-ordination distance of an earth station (see No. 452A), in a band which this service shares /with equal rights/ with the space service.

b) if the frequency is to be used for international radiocommunication, or

c) if it is desired to obtain international recognition of the use of the frequency. [4]

487 MOD (2) Similar notice shall be given for any frequency to be used for the reception of mobile stations by a particular land station in each case where one or more of the conditions specified in No. 486 MOD are applicable.

491 MOD §3. (1) Whenever practicable each notice should reach the Board before the date on which the assignment is brought into use. It must reach the Board not earlier than ninety days before the date on which it is to be brought into use, but in any case not later than thirty days after the date it is actually brought into use. However, for a frequency assignment to a station in a terrestrial service mentioned in No. 492A, the notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use.

492 MOD (2) Any frequency assignment, the notice of which reaches the Board after the applicable period specified in No. 491 MOD shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. 491 MOD.

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4) (See first page of this document)

492A ADD Before an administration notifies to the Board or brings into use any frequency assignment to a station in a terrestrial service, whether for transmitting or receiving, in a particular band allocated /with equal rights/ to the space service and a terrestrial service, it shall effect co-ordination of the assignment with any other administration which has previously effected coordination /within the same band/ under the provisions of No. 639E, for the establishment of an earth station, if the proposed terrestrial station is to be located within the co-ordination distance[1)] of the earth station, and the necessary bandwidths of the emissions of the station concerned in the space service on the one hand, and on the terrestrial station concerned on the other, are separated by less than /one quarter of the necessary bandwidth of the station concerned in the space service/. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the terrestrial station and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to begin operations.

492B ADD An administration with which co-ordination is sought under No. 492A shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish :

---

1)

492A.1 ADD For the purposes of this Article the expression "co-ordination distance" means the distance from the earth station calculated along the lines of procedures shown in /...../ within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in a terrestrial service sharing the same frequency band, or as the case may be, of the use of a given frequency for reception at an earth station receiving harmful interference caused by such terrestrial stations.

a) in the case of a frequency assignment to be used for transmitting by the terrestrial station, whether the use would cause harmful interference to the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. 639E has been effected or the co-ordination procedure has already begun;

b) in the case of a frequency assignment to be used for reception by the terrestrial station, whether harmful interference would be caused to reception at the terrestrial station by the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. 639E has been effected or the co-ordination procedure has already begun;

and shall, within a further period of thirty days either notify the administration requesting co-ordination of its agreement to the proposals or, if this is not possible, indicate the reasons therefor and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

492C ADD (not used)

492D ADD No co-ordination under No. 492A is required when an administration proposes :

a) to bring into use a station in a terrestrial service which is not located, in relation to an earth station, within the co-ordination distance defined in [.....]; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the earth stations of other administrations.

492E ADD An administration seeking co-ordination may request the Board to endeavour to effect coordination, in those cases where :

a) an administration with which co-ordination is sought under No. 492A fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

492F ADD Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may request any additional information which they may require to assess the probability of harmful interference to the services concerned.

492G Where the Board receives a request under No. 492E a), or where the Board receives no reply within ninety days to its request for coordination in the case foreseen in No. 492E c), it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram it shall be deemed that the

administration with which co-ordination was sought shall have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the terrestrial station to the services rendered by its earth station.

492H ADD Where necessary, as part of the procedure under No. 492E the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

499A ADD Sub-Section IIA - Procedure to be followed in the case where the provisions of No. 492A are not applicable

535 MOD §17 In applying the provisions of the whole of this Sub-Section, any resubmitted notice which is received by the Board more than one hundred and eighty days after the date of its return by the Board shall be considered as a new notice.

570AA ADD Sub-Section IIB - Procedure to be followed in the case where the provisions of No. 492A are applicable

570AB ADD The Board shall examine each notice:

570AC ADD a) with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations (with the exception of those relating to the co-ordination procedure and the probability of harmful interference);

570AD ADD b) with respect to its conformity with the provisions of No. 492A relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

570AE ADD c) where appropriate, with respect to the probability of harmful interference to the service rendered by an earth station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of No. 639BF, if this frequency assignment has not, in fact, caused harmful interference to any frequency assignment in conformity with Nos. 501, or 570AC, as appropriate, previously recorded in the Master Register.

570 AF ADD Depending upon the findings of the Board subsequent to the examination prescribed in Nos. 570AC, 570AD and 570AE, further action shall be as follows:

570AG ADD Finding unfavourable with respect to No. 570AC.

570AH ADD Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

570AI ADD Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

570AJ ADD If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. 570AI.

570AK ADD If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

570AL ADD If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. 570AC, the notice shall be treated under the provisions of Nos. 570AM to 570AZ. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

570AM ADD Finding Favourable with respect to No. 570AC.

570AN ADD Where the Board finds that the co-ordination procedure mentioned in No. 570AD has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

570AO ADD Where the Board finds that the co-ordination procedure mentioned in No. 570AD has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. 570AN. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. 570AE.

570AP ADD Where the Board finds that the co-ordination procedure mentioned in No. 570AD has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

570AQ ADD Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. 570AD has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

570AR ADD Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. 570AO. However, in any subsequent recording of the assignment, the date of receipt by the Board of the re-submitted notice shall be entered in the Remarks Column.

570AS ADD Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. 570AE.

However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

570AT ADD Finding favourable with respect to Nos. 570AC and 570AE.

570AU ADD The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

570AV ADD Finding favourable with respect to No. 570AC but unfavourable with respect to No. 570AE.

570AW ADD The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

570AX ADD Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. 570AE, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the re-submitted notice shall be indicated in the Remarks Column.

570AY ADD Should the notifying administration re-submit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. 570AX

to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

570AZ ADD The period of one hundred and twenty days mentioned in No. 570AY shall count from :

- the date when the assignment to the terrestrial station which received an unfavourable finding is brought into use, if the assignment to the earth station is then in use;
- otherwise, from the date when the assignment to the earth station is brought into use.

But if the assignment to the earth station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. 570BG.

570BA ADD Change in the Basic Characteristics of Assignments already recorded in the Master Register.

570BB ADD A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 (except those entered in Columns 3 and 4a) of the Master Register), shall be examined by the Board according to Nos. 570AC and 570AD and, where appropriate 570AE, and the provisions of Nos. 570AG to 570AZ inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

570BC ADD However, in the case of a change in the basic characteristics of an assignment which is in conformity with No. 570AC, should the Board reach a favourable finding with respect to No. 570AD, and, where its provisions are applicable, with respect to No. 570AE, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

570BD ADD In applying the provisions of the whole of this Sub-Section, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

570BE ADD (1) Recording of Frequency Assignments notified before being brought into use.

570BF ADD (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to Nos. 570AC and 570AD and, where appropriate, with respect to No. 570AE, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

570BG ADD (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

570BH ADD (4) In the circumstances described in No. 570AY, and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. 570AZ, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. 570AY, the information provided for in No. 570AY relating to the absence of complaint of harmful interference.

570BI ADD (5) If the Board does not receive this confirmation within the period referred to in No. 570BG or at the end of the period referred to in No. 570BH, as appropriate, the entry concerned shall be cancelled.

572 MOD §25 The procedure for recording dates in the appropriate part of Column 2 of the Master Register which shall be applied according to the frequency bands and services concerned is described in the following Nos. 573 to 604 for frequency assignments referred to in Sub-Section IIA.

Title not modified (Section IV)

611A ADD If harmful interference to the reception of any station whose assignment is in accordance with No. 639BF is actually caused by the use of a frequency assignment which is not in conformity with Nos. 501 or 570AC, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Title not modified (Section V)

613 MOD The Board, in the light of all the data at its disposal, shall review the matter, taking into account Nos. 501 or 570AC and Nos. 502, 503, 570AD or 570AE, as appropriate, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

615 MOD §38 After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistance of the notifying administration, following an unfavourable finding with respect to Nos. 502, 503 or 570AE, as appropriate, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, first having consulted the administrations concerned.

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E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT

ARTICLE 9A

NOTIFICATION AND RECORDING IN THE MASTER INTERNATIONAL FREQUENCY REGISTER OF FREQUENCY ASSIGNMENTS TO STATIONS IN THE SPACE AND RADIO ASTRONOMY SERVICES

Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

639A ADD §1 (1) Any frequency assignment[1] to an earth or space station shall be notified to the International Frequency Registration Board :

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency.

639A.1 ADD[1] The expression frequency assignment, wherever it appears in this Article, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called Master Register).

639B ADD (2) Similar notice shall be given for any frequency to be used for the reception of transmissions from earth or space stations by a particular space or earth station in each case where one or more of the conditions specified in No. 639A are applicable.

639C ADD Similar notice may be given for any frequency or frequency band to be used for reception by a particular radio astronomy station, if it is desired that such data should be included in the Master Register.

639D ADD (not used)

639E ADD Before an administration notifies to the Board or brings into use any frequency assignment to an earth station, whether for transmitting or receiving, in a particular band allocated /with equal rights/ to the space service and a terrestrial service, it shall effect co-ordination of the assignment with any other administration whose territory lies wholly or partly within co-ordination distance[1]. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the earth station and showing the

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639E.1 ADD [1] For the purposes of this Article the expression "co-ordination distance" menas the distance from the earth station calculated along the lines of procedures shown in /......./ within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in a terrestrial service sharing the same frequency band, or as the case may be, of the use of a given frequency for reception at an earth station receiving harmful interference for reception at an earth station receiving harmful interference caused by such terrestrial stations.

co-ordination distance from the earth station, for the cases of transmission and reception by the earth station, as a function of azimuth and the data on which it is based, including all pertinent details of the proposed frequency assignment, as listed in Appendix 1A, and an indication of the approximate date on which it is planned to begin operations.

639F ADD An administration with which co-ordination is sought under No. 639E shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish :

a) in the case of a frequency assignment to be used for transmitting by the earth station, whether the use would cause harmful interference to the service rendered by its stations in a terrestrial service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

b) in the case of a frequency assignment to be used for reception by the earth station, whether harmful interference would be caused to reception at the earth station by the service rendered by its stations in a terrestrial service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

and shall within a further period of thirty days, notify the administration requesting co-ordination of its agreement. If the administration with which co-ordination is sought does not agree it shall, within

the same period, send to the administration seeking co-ordination a copy of a diagram drawn to an appropriate scale showing the location of its terrestrial stations which are within the co-ordination distance of the earth transmitting and receiving station, as appropriate, together with all other relevant basic characteristics, and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem. A copy of these data shall be sent to the Board, as notification within the period specified for such a case in No. 491 MOD.

639G ADD (Not used)

639H ADD No co-ordination under No. 639E is required when an administration proposes :

a) to bring into use an earth station which is located in relation to the territory of any other country, outside the co-ordination distance defined in [.....]; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the terrestrial stations of other administrations.

639HA ADD (Text to be prepared by the ad hoc working group).

639I ADD An administration seeking co-ordination may request the Board to endeavour to effect co-ordination in those cases where :

a) an administration with which co-ordination is sought under No. 639E fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

639J ADD Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may request additional information which they may require to assess the probability of harmful interference to the services concerned.

639K ADD Where the Board receives a request under No. 639I a), or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. 639I c), it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the earth station to the services rendered by its stations in a terrestrial service.

639KA ADD Where necessary, as part of the procedure under No. 639I the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

639L ADD For any notification under Nos. 639A, 639B or 639C an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A, which specifies in Sections B, C, D, E or F the basic characteristics to be furnished, according to the case. It is recommended that the notifying administration should also supply the additional data called for in Section A of that Appendix, together with such further data as it may consider appropriate.

639M ADD For a frequency assignment to an earth or space station, each notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use. It must reach the Board in any case not later than one hundred and eighty days before this date, except in the case of assignments in the space research service /in bands allocated exclusively to this service or in shared bands in which this service is the sole primary service/. In the case of such an assignment in the space research service the notice should, whenever practicable, reach the Board before the date on which the assignment is brought into use, but in any case must reach the Board not later than thirty days after the date it is actually brought into use.

639N ADD Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in No. 639M shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. 639 M.

Section II. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

639BA ADD Any notice which does not contain at least those characteristics specified in Appendix 1A (Sections B, C, D, E, or F, as appropriate) shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

639BB ADD Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in the weekly circular referred to in No 497, which shall contain the particulars of all such notices received since the publication of the previous circular.

639BC ADD The circular shall constitute the acknowledgment to the notifying administration of the receipt of a complete notice.

639BD ADD Complete notices shall be considered by the Board in the order of their receipt. The Board shall not postpone the formulation of a finding unless it lacks sufficient data to render a decision in connection therewith; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board, until it has reached a finding with respect to such earlier notice.

639BE ADD The Board shall examine each notice

639BF ADD a) with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations

(with the exception of those relating to the co-ordination procedure and the probability of harmful interference);

639BG ADD b) where appropriate, with respect to its conformity with the provisions of No. 639E relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

639BH ADD c) where appropriate, with respect to the probability of harmful interference to the service rendered by a terrestrial station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of Nos. 501 or 570AC as appropriate, if this frequency assignment has not, in fact, caused harmful interference to any frequency assignment in conformity with No. 639BF previously recorded in the Master Register.

639BI ADD Depending upon the findings of the Board subsequent to the examination prescribed in Nos. 639BF, 639BG and 639BH, further action shall be as follows:

639BJ ADD Finding favourable with respect to No. 639BF in cases where the provisions of No. 639BG are not applicable.

639BK ADD The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

639BL ADD Finding unfavourable with respect to No. 639BF.

639BM ADD Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

639BN ADD Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

639BO ADD If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. 639BN. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, or with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. 639BF, and the provisions of No. 639BG are not applicable, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

639BP ADD Finding favourable with respect to No. 639BF in cases where the provisions of No. 639BG are applicable.

639BQ ADD Where the Board finds that the co-ordination procedure mentioned in No. 639BG has been successfully completed with all administrations whose terrestrial services may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

639BR ADD Where the Board finds that the co-ordination procedure mentioned in No. 639BG has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. 639BQ. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. 639BH.

639BS ADD Where the Board finds that the co-ordination procedure mentioned in No. 639BG has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

639BT ADD Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. 639BG has been successfully completed with all administrations whose terrestrial services may be affected, the assignment shall be recorded in the Master Register.

The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

639BU ADD Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. 639BR. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

639BV ADD Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. 639BH. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

639BW ADD Finding favourable with respect to Nos. 639BF and 639BH.

639BX ADD The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

639BY ADD Finding favourable with respect to No. 639BF but unfavourable with respect to No. 639BH.

639BYA ADD The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

639BZ ADD Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. 639BH, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

639CA ADD Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. 639BZ to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only

if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

639CB ADD The period of one hundred and twenty days mentioned in 639CA shall count from:

- the date when the assignment to the earth station which received an unfavourable finding is brought into use, if the assignment to the terrestrial station is then in use;
- otherwise, from the date when the assignment to the terrestrial station is brought into use.

But if the assignment to the terrestrial station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. 639CI.

639CBA ADD Notices relating to radio astronomy stations

639CBB ADD A notice relating to a radio astronomy station shall not be examined by the Board with respect to Nos. 639BG or 639BH. Whatever the finding, the assignment shall be recorded in the Master Register with a date in Column 2c. The date of receipt by the Board of the notice shall be recorded in the Remarks Column.

639CC ADD Change in the basic characteristics of assignments already recorded in the Master Register.

639CD ADD A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1A (except the call sign, the name of the station or the name of the locality in which it is situated) shall be examined by the Board according to No. 639BF, and, where appropriate, Nos. 639BG or 639BH, and the provisions of Nos. 639BJ to 639CBB inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

639CE ADD However, in the case of a change in the characteristics of an assignment which is in conformity with No. 639BF, should the Board reach a favourable finding with respect to Nos. 639BG or 639BH, where these provisions apply, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. The date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

639CF ADD In applying the provisions of the whole of this Section, any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

639CG ADD (1) Recording of Frequency Assignments notified before being brought into use.

639CH ADD (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to No. 639BF and, where appropriate, Nos. 639BG or 639BH, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

639CI ADD (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

639CJ ADD (4) In the circumstances described in No. 639CA, and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. 639CB, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. 639CA, the information provided for in No. 639CA relating to the absence of complaint of harmful interference.

639CK ADD (5) If the Board does not receive this confirmation within the period referred to in No. 639CI or at the end of the period referred to in No. 639CJ, as appropriate, the entry concerned shall be cancelled.

Section III. Recording of Findings in the Master Register

639CL ADD In any case where a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a. In addition, a remark indicating the reasons for any finding shall be inserted in the Remarks Column.

Section IV. Categories of Frequency Assignments

639CM ADD The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

639CN ADD If harmful interference to the reception of any station whose assignment is in accordance with Nos. 501, 570AC or 639BF as appropriate, is actually caused by the use of a frequency assignment which is not in conformity with No. 639BF, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section V. Reviews of Findings

639CO ADD (1) The review of a finding by the Board may be undertaken:

- at the request of the notifying administration,
- at the request of any other administration interested in the question, but only on the grounds of actual harmful interference,

- on the initiative of the Board itself when it considers this is justified.

639CP ADD (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. 639BF and Nos. 639BG or 639BH, where these latter provisions apply, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

639CQ ADD (1) After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistance of the notifying administration, following an unfavourable finding with respect to No. 639BH this administration may request the Board to review the finding. Thereupon the Board shall review the matter, having first consulted the administrations concerned.

639CR ADD (2) If the finding of the Board is then favourable, it shall enter in the Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

639CS ADD (3) If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

Section VI. Modification, Cancellation and Review of Entries in the Master Register

639CT ADD In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.

639CU ADD Whenever it appears to the Board from the information available that a recorded assignment has not been brought into regular operation in accordance with the notified basic characteristics, or is not being used in accordance with those basic characteristics, the Board shall consult the notifying administration and, subject to its agreement, shall either cancel or suitably modify the entry.

639CV ADD If, in connection with an enquiry by the Board under No. 639CU, the notifying administration has failed to supply the Board within ninety days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

Section VII. Studies and Recommendations

639CW ADD (1) If it is requested by any administration, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these Regulations, or of harmful interference.

639CX ADD (2) The Board shall thereupon prepare and forward to the administration concerned a report containing its finding and recommendations for the solution of the problem.

639CY ADD In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these administrations within a period of thirty days, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

Section VIII. Miscellaneous Provisions

639CZ ADD The technical standards of the Board shall be based upon the relevant provisions of these Regulations and the Appendices thereto, the decisions of Administrative Conferences of the Union as appropriate, and the Recommendations of the C.C.I.R..

639DA ADD The Board shall promulgate to administrations its findings and reasons therefor, together with all changes made to the Master Register, through the weekly circular referred to in No. 497.

639DB ADD In case a Member or Associate Member of the Union avails itself of the provisions of Article 27 of the Convention, the Board shall, upon request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.

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COMMITTEE 6

DRAFT

APPENDIX 1 MOD

Title not modified (Section A)

MOD Column 5a Locality(ies) or area(s) with which communication is established.

This is not a basic characteristic for land, radionavigation land, radiolocation land or standard frequency stations, or for ground-based stations in the meteorological aids service.

MOD Column 5b Length of circuit (km)

This is a basic characteristic only for land, radionavigation land, radiolocation land and standard frequency stations.

MOD Supplementary information: reference frequency or frequencies, if any and any co-ordination required by No. 492A.

Title not modified (Section B)

MOD Column 4b Country in which the receiving land station is located.

MOD Column 4c Longitude and latitude of the site of the receiving land station.

MOD Column 5a Name of the receiving land station.

MOD Column 5b Maximum distance in km between mobile stations and the receiving land station.

MOD Column 6 Class of mobile stations and nature of service.

MOD Column 7 Class of emission of mobile stations and necessary bandwidth.

MOD Column 8 Highest power used by the mobile stations.

MOD Column 10 Maximum hours of operation of the mobile stations (G.M.T.)

ADD Supplementary information: any co-ordination required by No. 492A.

Title not modified (Section C)

ADD Supplementary information: any co-ordination required by No. 492A.

Title not modified (Section E.II)

MOD Column 4b The country in which the receiving land station is located. (reception)

MOD Column 4c The geographical co-ordinates (in degrees and minutes) of the (reception) site of the receiving land station.

MOD Column 5a para. 3 For land, radionavigation land, radiolocation land and standard frequency stations, and ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

MOD Column 5a para. 5 For reception in the circumstances described in No. 487, the name of the locality by which the receiving land station is known or in which it is situated should be indicated.

MOD Column 5b para. 2 For reception in the circumstances described in No. 487 the maximum distance between the mobile stations and the receiving land station should be indicated.

MOD Column 5b para. 3 This information is not a basic characteristic except in the case of paragraph 2 above, and in the case of land, radionavigation land, radiolocation land and standard frequency stations. In these latter cases, the distances shown shall represent the service ranges.

MOD Column 6 para. 2 When the frequency assignment is used for reception in the circumstances described in No. 487, the class of station and nature of service applicable to the mobile stations should be indicated.

MOD Column 7 para. 2 — When the frequency assignment is used for reception in the circumstances described in No. 487, the particulars to be indicated are those applicable to the mobile stations.

MOD Column 8 para. 5 — When the frequency assignment is used for reception in the circumstances described in No. 487 the power of the mobile stations should be indicated. If not all of the stations use the same power, the highest power should be indicated.

MOD Column 10 para. 1 — When the frequency assignment is used for reception in the circumstances described in No. 487 the maximum hours of operation are those relating to the mobile stations.

Title not modified — (Supplementary information)

MOD para. 5 — Only the information specified in paragraph 3 above is a basic characteristic; it is recommended, however, that the information under paragraphs 1 and 2 above be supplied. However, in the case of terrestrial stations referred to in No. 492A, the name of any administration with which co-ordination of the use of the frequency has been sought and the name of any administration with which such co-ordination has been effected are basic characteristics.

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COMMITTEE 6

APPENDIX 1A

NOTICES RELATING TO STATIONS IN THE SPACE AND RADIO ASTRONOMY SERVICES

(See Article 9 A)

Section A - General Instructions

1. A separate notice in a form convenient to the notifying administration shall be sent to the International Frequency Registration Board for notifying:

- each new frequency assignment,
- any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register),
- any total deletion of a frequency assignment recorded in the Master Register.

2. When submitting notices under No. 639A for earth and space transmitting assignments and under No. 639B for space and earth receiving assignments, separate notices shall be submitted. In the case of a passive satellite system, only earth transmitting and receiving assignments shall be notified.

3. In the case of a satellite system employing multiple space stations with the same general characteristics:

- for stationary satellites, a separate notice shall be submitted for each space station; and
- for non-stationary satellites, one notice covering all the space stations may be submitted.

4. The following information should be shown on the notice:

a) the serial number of the notice and the date on which the notice is sent to the Board;

b) the name of the notifying administration;

c) sufficient data to identify the particular satellite system in which the earth or space station will operate;

d) whether the notice reflects

1) the first use of a frequency by a station,

2) the first use of an additional frequency by a station,

3) a change in the characteristics of a frequency assignment recorded in the Master Register (indicate whether the change is a replacement, addition or deletion of existing characteristics), or

4) a deletion of an assignment in all of its notified characteristics);

e) any other information which the administration considers to be relevant, e.g., any special channelling arrangements or methods of modulation, the degree of terrain shielding throughout all azimuthal angles for the earth stations, an indication that the assignment concerned would be operating in accordance with No. 115, information concerning the use of the notified frequency if such use is restricted, or, in the case of notices pertaining to space stations, if the transmissions of the station are to be permanently switched off after a certain period.

Section B - Basic Characteristics to be furnished in Notices relating to Frequencies used by Earth Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Items 3 or a), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity and location of the earth station

a) Indicate the name by which the station is known or the name of the locality in which it is situated.

b) Indicate the country in which the station is located. Symbols from the preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the transmitter site.

Item 5 Station(s) with which communication is to be established

Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a satellite system, the identity of the satellite(s) and the location of the receiving earth station(s).

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In the case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 8 Power (kW)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

- Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. 96);

- Peak envelope power (Pp) for all classes of emission other than those referred to above.

Item 9 Transmitting antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees (clockwise) from True North the range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the gain (db) of the antenna in the direction of maximum radiation (see No. 100).

e) Indicate the maximum gain (db) of the antenna in the horizontal plane with the antenna at any angle above the minimum angle of elevation (see No. 100).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 10 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in Item 1.

Item 11 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of this frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section C - Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Earth Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when actual reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Item 3a), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity and location of the receiving earth station

a) Indicate the name by which the receiving earth station is known or the name of the locality in which it is situated.

b) Indicate the country in which the receiving earth station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the receiver site.

Item 4 Associated transmitting station(s)

Identify the associated transmitting space station(s) by reference to the notification thereof or in any other sppropriate manner, or, in the case of a satellite system, the identity of the satellite(s) and the associated transmitting earth station(s).

Item 5 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 6 Class of emission, necessary bandwidth and description of the transmission to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission to be received, in accordance with Article 2 and Appendix 5. Indicate also the overall receiver bandwidth at which the receiver response is 6 db below maximum.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 7 Earth station receiving antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees (clockwise) from True North the range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the gain (db) of the antenna in the direction of the main lobe (see No. 100).

e) Indicate the maximum gain (db) of the antenna in the horizontal plane with the antenna at any angle above the minimum angle of elevation (see No. 100).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 8 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in Item 1.

Item 9 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of the frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 10 Noise temperature

Indicate the overall receiving system operating noise temperature (°K) under "quiet sky" conditions at the planned minimum operating angle of the antenna.

Item 11 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section D - Basic Characteristics to be furnished in Notices relating to Frequencies used by Space Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Items 3 or 4), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity of the space station

Indicate the identity of the space station.

Item 5 Area of coverage

Indicate the area of intended coverage or the name of the locality and country in which the associated receiving station is located.

Item 6 Orbital information

Indicate, where applicable, the inclination of plane[1] and the true period of orbit and the altitude of apogee and perigee in kilometers, measured from the surface of the earth, of the space station(s). In the case of a space station aboard a stationary satellite,[2] indicate the geographical longitude of the projection of the satellite's position on the surface of the earth.

Item 7 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 8 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 9 Power (kW)

The power supplied to the antenna shall be notified as follows, according to the class of emission :

- Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. 96),

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1) For the purpose of this item, the inclination of the plane of orbit is the angle between the plane of the orbit and the equatorial plane of the earth.

2) For the purpose of this item, a stationary satellite is one which remains as a first approximation in a fixed position relative to the earth's surface.

Peak envelope power (P_p) for all classes of emission other than those referred to above.

Item 10 Transmitting antenna characteristics

a) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the gain (db) of the antenna in the direction of maximum radiation (see No. 100).

c) For stationary satellites employing directional antennas, indicate the point on the earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 11 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in Item 1.

Item 12 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 13 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section E - Basic characteristics to be furnished in Notices relating to Frequencies to be received by Space Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Item 3), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity of the receiving space station

Indicate the identity of the receiving space station.

Item 4 Orbital information

Indicate, where applicable, the inclination of plane[1] and the true period of orbit and the altitude of apogee and perigee in kilometers, measured from the surface of the earth, of the space station(s). In the case of a space station on board a stationary satellite[2] indicate the geographical longitude of the projection of the satellite's position on the surface of the earth.

Item 5 Associated transmitting earth station(s)

Identify the associated transmitting earth station(s) by reference to the notification thereof or in any other appropriate manner.

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of the transmission(s) to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission(s) to be received, in accordance with Article 2 and Appendix 5. Indicate also the overall receiver bandwidth at which the receiver is 6 db below maximum. In the case of a communication-satellite space station, designed to receive as a composite signal two or more emissions in continguous channels and transmitted from one or more earth stations, the description should state the number of such emissions, the spacing between their assigned frequencies and the total bandwidth collectively encompassed by them.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 8 Space station receiving antenna characteristics

a) Indicate the beamwidth in degrees, between the half power points (describe in detail if not symmetrical).

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1) For the purpose of this item, the inclination of the plane of orbit is the angle between the plane of the orbit and the equatorial plane of the earth.

2) For the purpose of this item, a stationary satellite is one which remains as a first approximation in a fixed position relative to the earth's surface.

b) Indicate the gain (db) of the antenna in the direction of the main lobe (see No. 100).

c) For stationary satellites employing directional antennas, indicate the point on the earth's surface toward which the antenna is directed and the accuracy of maintaining this direction.

Item 9 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in Item 1.

Item 10 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 11 Noise temperature

Indicate the overall receiving system operating noise temperature (°K).

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section F - Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Radio Astronomy Stations

Item 1 Observed frequency

Indicate the centre of the frequency band observed, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) Indicate the date (actual or foreseen, as appropriate) when actual reception of the frequency band begins.

b) Whenever there is a change in any of the basic characteristics, as shown in this Section (except in the case of a change in Item 3b), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Name and location of the station

a) Indicate the letters "RA".

b) Indicate the name by which the station is known or the name of the locality in which it is situated.

c) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

d) Indicate the geographical co-ordinates (in degrees and minutes) of the station site.

Item 4 Bandwidth

Indicate the width of the frequency band observed by the station.

Item 5 Antenna characteristics

Indicate the antenna type, effective area and angular coverage in azimuth and elevation.

Item 6 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency band shown in Item 1.

Item 7 Noise temperature

Indicate the overall receiving system noise temperature (°K).

Item 8 Class of observations

Indicate the class of observations to be taken on the frequency band shown in Item 1. Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

Item 9 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 148-E
31 October 1963
Original: French
English
Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT

114 MOD §2. Any new assignment or any change of frequency or other basic characteristic of an existing assignment (see Appendix 1 MOD or Appendix 1A) shall be made in such a way as to avoid causing harmful interference to services rendered by stations using frequencies assigned in accordance with the Table of Frequency Allocations in this Chapter and the other provisions of these Regulations, the characteristics of which assignments are recorded in the Master International Frequency Register.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 149-E
31 October 1963
Original : French
English
Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT

RECOMMENDATION NO.....

RELATING TO THE NOTIFICATION OF FREQUENCY ASSIGNMENTS

FOR JOINT SPACE TELECOMMUNICATION SYSTEMS

The Extraordinary Administrative Radio Conference, Geneva, 1963,

referring to

- Article 9A of the Radio Regulations (Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Space and Radio Astronomy Services)
- Appendix 1A of the Radio Regulations (Notices Relating to Stations in the Space and Radio Astronomy Services)

considering

that the Radio Regulations provide for the notification of frequency assignments to stations in the Space Service to the International Frequency Registration Board, for recording in the Master International Frequency Register;

recognizing

that, in the establishment of space telecommunication systems involving more than one Member or Associate Member of the Union, it appears necessary to state which of the participating Administrations will notify the frequency assignments to the space stations concerned;

recommends

that Administrations establishing a joint space telecommunication system should designate one of their number to be responsible for submission of all notices of frequency assignments to space stations of the system, and to advise the Board accordingly.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 150-E
4 November, 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

LIST OF DOCUMENTS FOR THE SPACE RADIOCOMMUNICATION CONFERENCE

(Documents No. 1 to 150)

No.	Title	Origin	Destination
1 Corr. 1,2 and Add.	Recomendations, resolutions and reports	C.C.I.R.	P.M.
2	Frequency requirements for communication satellite services	U.K.	P.M.
3 and Corr. 1 and 2	Proposals for the revision of Art.5 of the Radio Regulations	U.K.	P.M.
4	Proposals for the revision of Art.7 of the Radio Regulations	U.K.	P.M.
5	Proposals for the revision of Art.9 and Appendix 1 to the Radio Regulations	U.K.	P.M.
6	Proposal concerning the form of the Final Acts of the Conference	U.K.	P.M.
7 and Corr.	Proposed amendments to the Radio Regulations	France	P.M.
8 Corr. 1,2 and Add.	Proposals for the revision of the Radio Regulations	U.S.A.	P.M.
9	Proposals for frequency allocations to space radio research and communications	Nigeria	P.M.
10	Proposals for the revision of the Radio Regulations	Canada	P.M.
11	Proposals for the revision of the Radio Regulations	Japan	P.M.
12	Telecommunication and the peaceful uses of outer space	G.S.	P.M.

No.	Title	Origin	Destination
13	Subscribers tolerance of propagation time and of echos	C.C.I.T.T.	P.M.
14	Radio Astronomy observations in the frequency band 606-614 Mc/s	Sweden	P.M.
15	Proposed recommendation concerning the calculation of co-ordination distances for communication-satellite earth stations	U.K.	P.M.
16	Note by the General Secretariat	G.S.	P.M.
17 and Corr. 1,2	Proposals of administrations relating to Art.5 of the Radio Regulations	I.F.R.B. and G.S.	P.M.
18	Proposals concerning the Radio Regulations	G.S.	P.M.
19	Proposals for frequency allocations for the Radio Astronomy Service	Australia	P.M.
20(Rev)	Proposals for the revision of Art.1 of the Radio Regulations	I.F.R.B. and G.S.	P.M.
21 (Rev)	Proposals for the revision of Art.7 of the Radio Regulations	I.F.R.B.	P.M.
22	Note of the General Secretariat	G.S.	P.M.
23	Note of the General Secretariat	G.S.	P.M.
24 (Rev)	Proposals for the revision of Art.20 of the Radio Regulations and Appendices 9 and 10 thereto	I.F.R.B. and G.S.	P.M.

No.	Title	Origin	Destination
25	Proposals for the revision of Art.1 of the Radio Regulations terms and definitions	U.K.	P.M.
26	Proposals for the revision of Art.5 of the Radio Regulations (radio astronomy)	Netherlands	P.M.
27	Proposals for consideration by the extra-ordinary Administrative Radio Conference, Geneva, 1963	Australia	P.M.
28	Note by the French administration on the development of space telecommunications	France	P.M.
29	The activity of the Fucino earth station with the experimental satellites Relay, Telstar I, Telstar II	Italy	P.M.
30	Earth station of the Deutsche Bundespost for the transmission of communications via artificial earth satellites	F.R. of Germany	P.M.
31	Proposals for the revision of the Radio Regulations	Israel	P.M.
32 (Rev.2)	Proposals by the Union of Soviet Socialist Republics	U.S.S.R.	P.M.
33 Corr. 1	Progress in the development of space communication system	Japan	P.M.
34	Proposals for the revision of Art.1, 4, 9 and 14 of the Radio Regulations	Australia	P.M.
35	Proposals for Art.5 of Radio Regulations	Mexico	P.M.
36	Proposals for Radio Regulations	Mexico	P.M.
37	Scientific and Technical progress in space exploration and radiocommunication by U.S.A.	U.S.A.	P.M.

N.°	Title	Origin	Destination
38	Traffic Data assembled for the Plan Committee	C.C.I.T.T.	P.M.
39	Proposal to the Conference	Israel	P.M.
40	Report on studies relating to the possible addition of new Appendix (No. 26 A) to the Radio regulations	I.F.R.B.	Com.4
41 and Add	Report on existing and planned frequency usage of certain frequency bands in which the existing categories of service to which the bands are allocated, will either be eliminated or their status will be down-graded under proposals submitted to the Conference by Administrations	I.F.R.B.	Com.5
42	Note by the chairman of the conference		-
43	Report on studies relating to the possible revision of Art.9 of the Radio regulations and Appendix 1 thereto	I.F.R.B.	Com.6
44	Reserved		
45	Report on studies relating to the possible lay-out of the final Acts of the space radiocommunication Conference	I.F.R.B.	Com.7
46	Convening of the Conference	S.G.	P.M.
47	Invitations to the Conference	S.G.	P.M.
48	Situation of certain countries with respect to the Convention	S.G.	P.M.
49	Secretariat of the Conference	S.G.	P.M.
50	Proposals for the work of the Conference	S.G.	P.M.
51	Agenda, 1st meeting of the Heads of delegations	S.G.	Heads of delegation
52 and Add	Suggestions for the organisation of the work of the Conference	S.G.	P.M.

No	Title	Origin	Destination
53	Budget of the Conference	S.G.	P.M.
54	List of documents for the Conference	S.G.	-
55	Proposals for the revision of Art.5 of the radio regulations	Japan	P.M.
56	Agenda for the 1st plenary meeting	S.G.	P.M.
57	Agenda of the 1st meeting of Committee 4	Com.4	Com.4
58	Agenda of the 1st meeting of Committe 5	Com.5	Com.5
59 and Corr.	Committee structure and Corr.	S.G.	P.M.
60	Report on the activities of the Scandinavian countries in the field of space communications	Denmark Norway Sweden	Com.4
61	Utilisation of telecommunication satellites for television	E.B.U.	Com.4
62	Basic achievements and trends in space research in the Soviet Union	USSR	Com.4
63	Agenda 1st meeting of Committee 6 (Regulations)	Com.6	Com.6
64 and Corr.	Structure of the working groups of Committee 4 (technical)	Com.4	Com.4
65 and Corr.	Structure of the working groups of Committee 5	Com.5	Com.5
66	Summary record of the 1st meeting	Com.4	Com.4
67 and Corr.	Minutes of the 1st meeting of Heads of delegations	Rapporteurs	Heads of delegation
68	Statement concerning Doc.32 Rev.	Bulgaria Hungary Poland Roumania Czechoslovakia	Com.4,5,6
69	Structure of the working groups of Committee 6 (Regulations)	Com.6	Com.6

No	Title	Origin	Destination
70	Summary record of the 1st meeting	Com.5	Com.5
71	Agenda of the 1st meeting of Committee 2 (Credentials)	Com.2	Com.2
72	Statement	USSR Bielorussia Ukrainia	P.M.
73	Minutes of the 1st meeting of Committee 6 (Regulations)	Com.6	Com.6
74	Minutes of the opening plenary meeting	Rapporteurs	P.M.
75 and Add	Radio astronomy and space research services - IUCAF recommendations	W.G. 5B	W.G. 5B
76	Experimental earth station at Goonhilly Downs	United Kingdom	P.M.
77 (Rev)	Special meeting of the space radio-communication Conference	S.G.	-
78	Agenda for the 1st meeting	Com.7	Com.7
79	Note by the Secretariat to the budget control committee of the space Conference	S.G.3	Com.3
80	Agenda 1st meeting of Committee 3 (Budget Control Committee)	Com.3	Com.3
81	Proposals for revision of Art.8	India	Com.6
82	Proposals for formulation of a new Art. 9 bis	India	Com.6
83 and Corr	Summary record of the 1st meeting	Com.2	Com.2
84	Oscar space satellite program of the International Amateur Radio Union	W.G. 5C	W.G. 5C
85	Statement by the Delegation of the Republic of Cuba to the EARC on space communications	Cuba	P.M.
86	Statement	Cuba	Com.4,5,6

No.	Title	Origin	Destination
87	Note by the Secretary-General	S.G.	P.M.
88	Limitation of horizontal effective radiated power (E.R.P.) of earth stations and of terrestrial stations in bands shared with communications-satellite earth station receivers	United Kingdom	Com.4
89	Summary record of the 1st meeting	Com.3	Com.3
90	Statement	Rep. of China	P.M.
91 and Corr.	Report of working group 4B	W.G.4B	Com.4
92(Rev.)	Summary report of the 1st meeting	Com.7	Com.7
93	Situation of certain countries with respect to the Convention	S.G.	P.M.
94	Agenda 2nd meeting of Committee 4	Com.4	Com.4
95 (Rev)	1st report of the WG.5C to Committee 5.Amateur service	W.G. 5C	Com.5
96	2nd report of WG.5C to Committee 5 Satellite identification	W.G. 5C	Com.5
97	Additional proposal for consideration by the extra-ordinary Administrative Radio Conference	Australia	Com.5
98	1st report by the Working Party of Committee 2 (Credentials)	W.P. Com.2	Com.2
99	Proposals for revision of Art.1	Belgium France Portugal	Com.4
100	List of documents	S.G.	-

No.	Title	Origin	Destination
101	Statement by the delegations of the People's Republic of Bulgaria, the Hungarian People's Republic, the Roumanian People's Republic, and the Czechoslovak Socialist Republic	Bulgaria Hungary Roumania Czechoslovakia	S.P.
102 and Corr.	First report of working group 6B to Committee 6	W.G. 6B	Com. 6
103	Situation of certain countries with respect to the Convention	S.G.	P.M.
104	Summary record of the second meeting	Com. 4	Com. 4
105 (Rev)	Agenda third meeting of Committee 4	Com. 4	Com. 4
106	Statement	China	P.M.
107 (Rev 2)	Memorandum on amateur experimental space satellite activity	I.A.R.U.	-
108	First report by working group 5A to Committee 5 (Allocations)	W.G. 5A	Com. 5
109	Proposed resolution to the Administrative Council concerning future management of frequency bands allocated for Space Radiocommunication purposes	U.S.A.	P.M.
110 and Corr.	Terms of reference of the C.C.I.T.T./ C.C.I.R. plan committee	C.C.I.T.T. C.C.I.R.	-
111	First report by Working Group 5B to Committee 5 - Space research service	W.G. 5B	Com. 5
112	Second report by Working Group 5B to Committee 5 (Radio Astronomy Service) - Telemetering	W.G. 5B	Com. 5
113 and Add.	Second report by Working Group 5A to Committee 5 (Allocations)	W.G. 5A	Com. 5
114	Third report by Working Group 5C to Committee 5 (Allocations) - Aeronautical Services	W.G. 5C	Com. 5

No.	Title	Origin	Destination
115	Report of Working Group 4B (part 2)	W.G. 4B	W.G. 4B
116	Summary record of the third meeting	Com. 4	Com. 4
117	Tentative proposals for terms and definitions	W.G. 4A	W.G. 4A
118	Agenda fifth meeting of Committee 4	Com. 4	Com. 4
119	Agenda fourth meeting of Committee 4	Com. 4	Com. 4
120	Co-ordination procedure explanatory memorandum	United Kingdom	Com. 6
121	Draft Resolution - The interconnection of communication-satellite systems and other transmission systems	United Kingdom	Com. 4
122 (Rev)	First report of Working Group 4C - Co-ordination distance procedure in the 1-10 Gc/s band	W.G. 4C	Com. 4
123	Third report by Working Group 5B - Radio Astronomy Service	W.G. 5B	Com. 5
124	Agenda second meeting of Committee 5 (Allocations)	Com. 5	Com. 5
125	Fourth report of Working Group 5B to Committee 5 - Radio Astronomy Service	W.G. 5B	Com. 5
126 (Rev 2) and Corr.	Second report of Working Group 4C - Sharing criteria	W.G. 4C	Com. 4
127	Third report by Working Group 5A to Committee 5 (Allocations) - Telemetering	W.G. 5A	Com. 5
128 (Rev)	Report of Working Group 4B (third part)	W.G. 4B	Com. 4
129	Summary record of the fourth meeting	Com. 4	Com. 4
130	Report of Working Group 5B to Committee 5 - Radio Astronomy	W.G. 5B	Com. 5
131	Telecommunication and the peaceful uses of outer space	S.G.	-

No.	Title	Origin	Destination
132	Statement by the Delegation of the People's Republic of Poland	Poland	P.M.
133	Agenda fifth meeting of Committee 5 (Allocations)	Com. 5	Com. 5
134	Second report by the Working Group of Committee 2 (Credentials)	W.G./ Com. 2	Com. 2
135	Agenda second meeting of Committee 2 (Credentials)	Com. 2	Com. 2
136	Second and last report of Working Group 6B to Committee 6	W.G. 6B	Com. 6
137	Agenda sixth meeting of Committee 5 (Allocations)	Com. 5	Com. 5
138	Summary Record of the fifth meeting	Com. 4	Com. 4
139 and Add.	Fourth and last report by Working Group 5A to Committee 5 (Allocations) - Communication-satellite Service	W.G. 5A	Com. 5
140	Summary Record of the fourth meeting	Com. 5	Com. 5
141	Statement by the Delegation of the Republic of China to the E.A.R.C. to allocate frequency bands for space radio communication purposes	China	P.M.
142	Summary Record of the third meeting	Com. 5	Com. 5
143	Report of Working Group 6A to Committee 6	W.G. 6A	Com. 6
144	Draft - Article 9	Com. 6	Com. 6
145	Draft - Article 9A	Com. 6	Com. 6
146	Draft - Appendix 1 MOD	Com. 6	Com. 6
147	Appendix 1A - Notices relating to stations in the space and radio astronomy services	Com. 6	Com. 6
148	Draft - 114 MOD § 2	Com. 6	Com. 6
149	Draft Recommendation relating to the notification of frequency assignments for joint space telecommunication systems	Com. 6	Com. 6
150	List of documents	-	-

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 151-E
31 October 1963
Original: Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

AGENDA

SECOND MEETING OF COMMITTEE 6

(REGULATIONS)

Friday 1 November at 2.30 p.m. in Room C

1. Summary Record of the first meeting (Document No. 73)

2. Report of Working Group 6A (Document No.143)

3. Examination of the following documents submitted by working group 6A for the amendment of the Radio Regulations (Geneva, 1959):

   a) Article 9 (Document No. 144)

   b) Article 9A (Document No. 145)

   c) Appendix 1 (Document No. 146)

   d) Appendix 1A (Document No. 147)

   e) No. 114 of the RR (Document No. 148)

   f) Recommendation: relating to the notification of frequency assignments for joint space telecommunication systems

   g) Resolution: relating to the provision of information regarding international satellite systems (Document No. 152)

4. First report of Working Group 6B (Document No. 102)

5. Second report of Working Group 6B (Document No. 136)

6. Proposal by India for Revision of Article 8 of the RR (Document No. 81)

7. Other business.

Juan A. AUTELLI
Chairman of Committee 6

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 152-E
31 October, 1963
Original: French
English
Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT

RESOLUTION NO. ...

RELATING TO THE PROVISION OF INFORMATION REGARDING INTERNATIONAL SATELLITE SYSTEMS

The Extraordinary Administrative Radio Conference, Geneva 1963,

considering

the interest of all administrations concerning the effective use of the radio frequency spectrum by the Space Services,

believing

a) that international satellite systems should provide for the interests and requirements of all countries,

b) that, in accordance with Article 4 of the International Telecommunication Convention, Geneva 1959, the International Telecommunication Union should closely observe the development of the telecommunications aspects of international satellite systems;

c) that the permanent organs of the International Telecommunication Union should assist in that development as far as may be practicable;

d) that the development of space telecommunications ought not to be delayed, but that a suitable period of time will be needed for the acquisition of the additional data which will result from further experiment and operational experience;

e) that the interest mentioned above will best be served by the provision to administraions, as early as practicable, of information regarding the development of international satellite systems.

f) that this information, by reason of its early provision, must be regarded as of a preliminary nature.

observing

that the data mentioned in d) above will need to be collated and evaluated by the International Telecommunication Union for use by such future conferences as may be called to consider the international regulation of space communications systems;

resolves

1. that, as a measure which will enable administrations to make early comment upon satellite system projects, any administration (or group of administrations) which intends to establish an international satellite system shall provide the Board, as early as practicable during the co-ordination process (Radio Regulation No. 639E) with information /similar to the data mentioned in Appendix IA/ such as will provide a general description of the satellite system, e.g.

a) the frequencies and bandwidths to be used in the initial operation of the system;

b) the over-all frequencies and bandwidths of the satellite system (required to facilitate the final development of the system, in order to meet the needs of other administrations wishing to participate in the system);

c) the sites and functions of the earth stations in the system and the co-ordination distances, as a function of azimuth, which are applicable thereto, as defined in Radio Regulation No. . . . .

2. that the Board shall put these data in a special section of its weekly circular, for the information of all administrations, and,

3. that, if after studying the information given under 1) above, an administration believes that it has reason to expect that harmful interference may be caused to its space services (either those existing, or those concerning which information has already been circulated under the provisions of this Resolution), it shall address its comments, within ninety days of receipt of the relevant circular, to the administration concerned; a copy of those comments shall be sent to the Board.

4. that, if comments, as allowed for in 3) above, are received, then the administration concerned shall endeavour to find a solution satisfactory to the administration which has made the comments.

5. that, if an agreement is not reached the Board may be asked for such suggestions as it may be able to offer in the circumstances;

6. that, if within the time referred to in paragraph 3), no comments concerning the data mentioned in paragraph 2) are received, the administration concerned is entitled to assume that there are no comments on the action proposed;

7. that, in order to keep up-to-date the information relating to space systems, the Board shall collate this information and publish it periodically.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 153-E (Rev. 2)
6 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD
OF THE SECOND MEETING

Monday, 28 October 1963 at 2.30 p.m.

Chairman: Mr. W. KLEIN (Switzerland)
Vice Chairman: Mr. S. FUJIKI (Japan)

1. Agenda

The agenda for the Meeting as set forth in Document No. 124 was approved with the following amendments :

Add to 3.a) Document No. 108 (Telecommand)

Change 3.a) (Document No. 113) from "First" to "Second" Report of Working Group 5A

Add to 3.c) Document No. 95 (Revised) (Amateur Service)

2. Summary Record of the First Meeting (Document No. 70)

This document was approved with the Chairman noting that a minor correction would be made in the English version.

3. Some basic principles for the work of Committee 5

Agreement was reached on the following basic principles for the deliberations of Committee 5:

Committee 5 must finish its work this week and must base its considerations and decisions on temporary documents available and likely to be accepted by Committees 4 and 6. In the light of decisions yet to be taken by Committees 4 and 6, Committee 5 decisions may have to be subsequently revised by Committee 5 or the Plenary.

Committee 5 should avoid taking votes as far as possible in its deliberations. However, if the Committee fails to reach agreement within a reasonable time, it may have to resort to a vote.

Allocations to the table should reflect agreement by a clear majority for each region. Proposals by the minority for derogations to such allocations should be shown by footnotes to the table.

The tentative terms and definitions of Document No. 117 will serve as a basis for the Frequency allocations by Committee 5.

4. Consideration of Document No. 117 (Tentative definitions)

The Chairman introduced Document No. 117 which while tentative will form the basis for Committee 5's allocation work. Observations on the tentative terms and definitions drafted by Working Group 4A were requested and would be based on the allocation requirements of Committee 5 and would be sent to Committee 4 before noon, Thursday, 31 October. Lt. Colonel J. West Rapporteur for English, was designated by the Chairman to keep a record of the observations which are shown below:

B5 - Page 5

There was fair agreement that no ambiguity would result if the brackets from this term were removed. The resulting term would be consistent with other terms in Document No. 117 such as B11 - page 7, B14 - page 8 and B17 - page 9 and would now read :

B5 - Communication satellite space station

Some administrations expressed a contrary view to the preceding on the basis that only terms and definitions containing square brackets should be considered by Committee 5.

B9 - Page 6 and C3 - Page 12

It was agreed that the definitions for these two terms would be quite clear if the square brackets were removed from the word and phrase involved so as to read as follows :

B9 - Satellite System

Any group of co-operating stations providing a given space service and including one or more active or passive satellites.

C3 - Space Tracking

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar.

B19, B20 and B21 - Page 10

There was general agreement that there would be no ambiguity in the English terms if both the parentheses and the word "aids" within were removed so as to read as follows :

B19 - Meteorological-satellite service

B20 - Meteorological-satellite Space Station

B21 - Meteorological-satellite Earth Station

5. The Chairman directed the attention of Committee 5 to Documents DT/61 (Rev.) and DT/8 on sharing criteria for assistance in deliberations on allocations concerning space services sharing with terrestrial services.

6. First Report of Working Group 5A (Document No. 108) (Telecommand)

This document was introduced by Mr. P. Mortensen (Norway) Chairman of Working Group 5A, with a modification to Appendix 3 changing the space service for the band 1427-1429 Mc/s to read "SPACE (telecommand)". Appendix 2 was amended by correcting the band figures to read "449.75-450.25 Mc/s". Appendices 1, 2 (amended) and 3 (modified) to Document No. 108 were then accepted by Committee 5 with the following reservations:

Mexico - reservation on Appendix 1.

Cuba - reservations on Appendices 1 and 2.

7. Second Report of Working Group 5A (Document No. 113) (Telemetering)

This document was introduced by Mr. P. Mortensen (Norway), Chairman of Working Group 5 with modifications to footnotes 350A (Appendix 1) and 315A (Appendix 2) by adding the phrase "for telemetering" after the frequency band numbers. He pointed out that Working Group 5A had agreed on the text of a Draft Resolution shown in Appendix 3 (Addendum No. 1 to Document No. 113) on which some Administrations had made reservations. The U.S.S.R. maintained its reservation and thought it essential that existing services should retain the status granted by the 1959 Radio Regulations for the band 1525-1540 Mc/s. This view was supported by the U.A.R.

The Chairman asked for an informal sounding of opinion by regions for approval of Appendix 1 in order to avoid a lengthy discussion. A clear majority was indicated for Regions 2 and 3 and it was considered that the Appendix 1 table was acceptable for these regions. For Region 1, a bare majority approval was indicated and the question remained open. The U.S.S.R. delegate stated that although there was not a clear majority for Region 1, and as countries such as his were included in footnote 352, he would not make any undue reservation in order not to impede the work of the Committee.

France pointed out that footnote 350C in Appendix 1 should be amended as follows: "In Albania....the mobile except aeronautical mobile service allocation is on a primary basis." The Cuban delegate requested that the footnotes should state in his country the mobile service was a primary service in the 1525-1535 Mc/s band. The U.A.R. and Yugoslavia stated they wished to be included in footnote 350C.

Appendix 1 with the preceding amendments was accepted. Appendix 2 was accepted by Committee 5 with a footnote 315B that in Australia and Pakistan in the band 401-402 Mc/s space telemetering is on a secondary basis. Appendix 3 was accepted as written.

8. First Report of Working Group 5B (Document No. 111) (Space Research)

Mr. V. Rao (India), Chairman of Working Group 5B introduced this document. The Appendix 7 table for Regions 1 and 3 was corrected by adding footnote 394 to these regions. In addition the last part of the sentence after the semicolon in footnote 394 was deleted and Australia added to Footnote 394A. The appendices to Document No. 111 were accepted by Committee 5 as follows :

Appendix 1 as written.

Appendix 2 with a modification to the space service changed to read "SPACE (satellite identification)".

Appendix 3 as written.

Appendix 4 as written.

Appendix 5 with an amendment, footnote 356B, added that in Austria and Ethiopia space research is on a secondary basis in the band 2290-2300 Mc/s.

Appendix 6 delete Sweden from footnote 384.

Add new footnote 384A for Sweden with the same wording to cover only the band 5255-5350 Mc/s.

Appendix 7 as amended by the Chairman of Working Group 5B, and further amended as follows:

Delete the following countries from footnote 394A: Cuba, Federal Republic of Germany, Italy, Portugal, Spain, Sweden and Switzerland.

Amend footnote 394B to read: In Cuba the band 8400-8500 Mc/s is allocated on a primary basis to the fixed and mobile services, the space research service being a secondary service.

Add new footnote 394C: In the United Kingdom the band 8250-8500 Mc/s is also allocated to the radiolocation service.

Appendix 8 as written.

9. Mr. H. Goetze, the observer for the International Broadcasting and Television Organization (I.B.T.O.), made a statement which was presented to the rapporteurs in writing at the request of the Chairman and is shown in the attached Appendix 1.

10. The meeting rose at 6.30 p.m.

Rapporteur:	Chairman
J. WEST	W. KLEIN

Appendix: 1

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A P P E N D I X 1

STATEMENT BY Mr. GOETZ (I.B.T.O.) AT THE 2nd MEETING OF COMMITTEE 5, 28 OCTOBER, 1963

"I have followed the discussions in the Working Groups of Committee 5 with great interest.

" I should like to direct your attention to the fact that there are in the German Democratic Republic a great number of radio services operated in frequency bands which are the subject of discussions in Working Groups of Committee 5.

" An examination of proposals contained in the Working Documents proves that there are some cases where frequency bands should exclusively be allocated on a world-wide basis to Space radiocommunications and, therefore, interference between services in operation in the German Democratic Republic and Space radiocommunications might arise.

" I am authorized to declare that the Administration of the German Democratic Republic is prepared to negotiate with any Administration whose interests are concerned and who wishes to do so, taking as a basis the relevant technical criteria set up by this Conference.

" In the course of work of Committee 5, I will submit information about services in the German Democratic Republic as far as this proves to be appropriate."

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 153-E (Rev.)
4 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD
OF THE SECOND MEETING

Monday, 28 October 1963 at 2.30 p.m.

Chairman: Mr. W. KLEIN (Switzerland)
Vice Chairman: Mr. S. FUJIKI (Japan)

1. Agenda

The agenda for the Meeting as set forth in Document No. 124 was approved with the following amendments :

Add to 3.a) Document No. 108 (Telecommand)

Change 3.a) (Document No. 113) from "First" to "Second" Report of Working Group 5A

Add to 3.c) Document No. 95 (Revised) (Amateur Service)

2. Summary Record of the First Meeting (Document No. 70)

This document was approved with the Chairman noting that a minor correction would be made in the English version.

3. Some basic principles for the work of Committee 5

Agreement was reached on the following basic principles for the deliberations of Committee 5:

Committee 5 must finish its work this week and must base its considerations and decisions on temporary documents available and likely to be accepted by Committees 4 and 6. In the light of decisions yet to be taken by Committees 4 and 6, Committee 5 decisions may have to be subsequently revised by Committee 5 or the Plenary.

Committee 5 should avoid taking votes as far as possible in its deliberations. However, if the Committee fails to reach agreement within a reasonable time, it may have to resort to a vote.

Allocations to the table should reflect agreement by a clear majority for each region. Proposals by the minority for derogations to such allocations should be shown by footnotes to the table.

The tentative terms and definitions of Document No. 117 will serve as a basis for the Frequency allocations by Committee 5.

4. Consideration of Document No. 117 (Tentative definitions)

The Chairman introduced Document No. 117 which while tentative will form the basis for Committee 5's allocation work. Observations on the tentative terms and definitions drafted by Working Group 4A were requested and would be based on the allocation requirements of Committee 5 and would be sent to Committee 4 before noon, Thursday, 31 October. Lt. Colonel J. West Rapporteur for English, was designated by the Chairman to keep a record of the observations which are shown below:

5. The Chairman directed the attention of Committee 5 to Documents DT/61 (Rev.) and DT/8 on sharing criteria for assistance in deliberations on allocations concerning space services sharing with terrestrial services.

6. First Report of Working Group 5A (Document No. 108) (Telecommand)

This document was introduced by Mr. P. Mortensen (Denmark), Chairman of Working Group 5A, with a modification to Appendix 3 changing the space service for the band 1427-1429 Mc/s to read "SPACE (telecommand)". Appendix 2 was amended by correcting the band figures to read "449.75-450.25 Mc/s". Appendices 1, 2 (amended) and 3 (modified) to Document No. 108 were then accepted by Committee 5 with the following reservations:

Mexico - reservation on Appendix 1.

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7. Second Report of Working Group 5A (Document No. 113) (Telemetering)

This document was introduced by Mr. P. Mortensen (Denmark), Chairman of Working Group 5 with modifications to footnotes 350A (Appendix 1) and 315A (Appendix 2) by adding the phrase "for telemetering" after the frequency band numbers. He pointed out that Working Group 5A had agreed on the text of a Draft Resolution shown in Appendix 3 (Addendum No. 1 to Document No. 113) on which some Administrations had made reservations. The U.S.S.R. maintained its reservation and thought it essential that existing services should retain the status granted by the 1959 Radio Regulations for the band 1525-1540 Mc/s. This view was supported by the U.A.R.

The Chairman asked for an informal sounding of opinion by regions for approval of Appendix 1 in order to avoid a lengthy discussion. A clear majority was indicated for Regions 2 and 3 and it was considered that the Appendix 1 table was acceptable for these regions. For Region 1, a bare majority approval was indicated and the question remained open. The U.S.S.R. delegate stated that although there was not a clear majority for Region 1, and as countries such as his were included in footnote 352, he would not make any undue reservation in order not to impede the work of the Committee.

France pointed out that footnote 350C in Appendix 1 should be amended as follows: "In Albania....the mobile except aeronautical mobile service allocation is on a primary basis." The Cuban delegate requested that the footnotes should state in his country the mobile service was a primary service in the 1525-1535 Mc/s band. The U.A.R. and Yugoslavia stated they wished to be included in footnote 350C.

Appendix 1 with the preceding amendments was accepted. Appendix 2 was accepted by Committee 5 with a footnote 315B that in Australia and Pakistan in the band 401-402 Mc/s space telemetering is on a secondary basis. Appendix 3 was accepted as written.

8. First Report of Working Group 5B (Document No. 111) (Space Research)

Mr. V. Rao (India), Chairman of Working Group 5B introduced this document. The Appendix 7 table for Regions 1 and 3 was corrected by adding footnote 394 to these regions. In addition the last part of the sentence after the semicolon in footnote 394 was deleted and Australia added to Footnote 394A. The appendices to Document No. 111 were accepted by Committee 5 as follows :

Appendix 1 as written.

Appendix 2 with a modification to the space service changed to read "SPACE (satellite identification)".

Appendix 3 as written.

Appendix 4 as written.

Appendix 5 with an amendment, footnote 356B, added that in Austria and Ethiopia space research is on a secondary basis in the band 2290-2300 Mc/s.

Appendix 6 delete Sweden from footnote 384.

Add new footnote 384A for Sweden with the same wording to cover only the band 5255-5350 Mc/s.

Appendix 7 as amended by the Chairman of Working Group 5B, and further amended as follows:

Delete the following countries from footnote 394A: Cuba, Federal Republic of Germany, Italy, Portugal, Spain, Sweden and Switzerland.

Amend footnote 394B to read: In Cuba the band 8400-8500 Mc/s is allocated on a primary basis to the fixed and mobile services, the space research service being a secondary service.

Add new footnote 3940: In the United Kingdom the band 8250-8500 Mc/s is also allocated to the radiolocation service.

Appendix 8 as written.

9. Mr. H. Goetze, the observer for the International Broadcasting and Television Organization (I.B.T.O.), made a statement which was presented to the rapporteurs in writing at the request of the Chairman and is shown in the attached Appendix 1.

10. The meeting rose at 6.30 p.m.

Rapporteur: J. WEST

Chairman W. KLEIN

Appendices : 2

A P P E N D I X 1

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"I have followed the discussions in the Working Groups of Committee 5 with great interest.

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A P P E N D I X 2

OBSERVATIONS OF COMMITTEE 5 ON DOCUMENT No. 117, "TENTATIVE PROPOSALS FOR TERMS AND DEFINITIONS"

B5 - Page 5

There was fair agreement that no ambiguity would result if the brackets from this term were removed. The resulting term would be consistent with other terms in Document No. 117 such as B11 - page 7, B14 - page 8 and B17 - page 9 and would now read :

B5 - Communication satellite space station

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B19, B20 and B21 - Page 10

There was general agreement that there would be no ambiguity in the English terms if both the parentheses and the word "aids" within were removed so as to read as follows :

B19 - Meteorological-satellite service

B20 - Meteorological-satellite Space Station

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SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 153-E
31 October 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD
OF THE SECOND MEETING

Monday, 28 October 1963 at 2.30 p.m.

Chairman: Mr. W. KLEIN (Switzerland)
Vice Chairman: Mr. S. FUJIKI (Japan)

1. Agenda

The agenda for the Meeting as set forth in Document No. 124 was approved with the following amendments :

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Change 3.a) (Document No. 113) from "First" to "Second" Report of Working Group 5A

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Appendix 1 with the preceding amendments was accepted. Appendix 2 was accepted by Committee 5 with a footnote 315B that in Australia and Pakistan in the band 401-402 Mc/s space telemetering is on a secondary basis. Appendix 3 was accepted as written.

8. First Report of Working Group 5B (Document No. 111) (Space Research)

Mr. V. Rao (India), Chairman of Working Group 5B introduced this document. The Appendix 7 table for Regions 1 and 3 was corrected by adding footnote 394 to these regions. In addition the last part of the sentence after the semicolon in footnote 394 was deleted and Australia added to Footnote 394A. The appendices to Document No. 111 were accepted by Committee 5 as follows :

Appendix 1 as written.

Appendix 2 with a modification to the space service changed to read "SPACE (satellite identification)".

Appendix 3 as written.

Appendix 4 as written.

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Appendix 6 delete Sweden from footnote 384.

Add new footnote 384A for Sweden with the same wording to cover only the band 5255-5350 Mc/s.

Appendix 7 as amended by the Chairman of Working Group 5B, and further amended as follows:

Delete the following countries from footnote 394A: Cuba, Federal Republic of Germany, Italy, Portugal, Spain, Sweden and Switzerland.

Amend footnote 394B to read: In Cuba the band 8400-8500 Mc/s is allocated on a primary basis to the fixed and mobile services, the space research service being a secondary service.

Add new footnote 3940: In the United Kingdom the band 8250-8500 Mc/s is also allocated to the radiolocation service.

Appendix 8 as written.

9. Mr. H. Goetze, the observer for the International Broadcasting and Television Organization (I.B.T.O.), made a statement which was presented to the rapporteurs in writing at the request of the Chairman and is shown in the attached Appendix 1.

10. The meeting rose at 6.30 p.m.

Rapporteur: J. WEST

Chairman W. KLEIN

Appendices : 2

A P P E N D I X 1

STATEMENT BY Mr. GOETZ (I.B.T.O.) AT THE 2nd MEETING OF COMMITTEE 5, 28 OCTOBER, 1963

"I have followed the discussions in the Working Groups of Committee 5 with great interest.

" Speaking on behalf of the Administration of the German Democratic Republic I should like to direct your attention to the fact that there are in the German Democratic Republic a great number of radio services operated in frequency bands which are the subject of discussions in Working Groups of Committee 5.

" An examination of proposals contained in the Working Documents proves that there are some cases where frequency bands should exclusively be allocated on a world-wide basis to Space radiocommunmcations and, therefore, interference between services in operation in the German Democratic Republic and Space radiocommunications might arise.

" I am authorized to declare that the Administration of the German Democratic Republic is prepared to negotiate with any Administration whose interests are concerned and who wishes to do so, taking as a basis the relevant technical criteria set up by this Conference.

" In the course of work of Committee 5, I will submit information about services in the German Democratic Republic as far as this proves to be appropriate."

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A P P E N D I X 2

OBSERVATIONS OF COMMITTEE 5 ON DOCUMENT No. 117, "TENTATIVE PROPOSALS FOR TERMS AND DEFINITIONS"

B5 - Page 5

There was fair agreement that no ambiguity would result if the brackets from this term were removed. The resulting term would be consistent with other terms in Document No. 117 such as B11 - page 7, B14 - page 8 and B17 - page 9 and would now read :

B5 - Communication satellite space station

Some administrations expressed a contrary view to the preceding on the basis that only terms and definitions containing square brackets should be considered by Committee 5.

B9 - Page 6 and C3 - Page 12

It was agreed that the definitions for these two terms would be quite clear if the square brackets were removed from the word and phrase involved so as to read as follows :

B9 - Satellite System

Any group of co-operating stations providing a given space service and including one or more active or passive satellites.

C3 - Space Tracking

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar.

B19, B20 and B21 - Page 10

There was general agreement that there would be no ambiguity in the English terms if both the parentheses and the word "aids" within were removed so as to read as follows :

B19 - Meteorological-satellite service

B20 - Meteorological-satellite Space Station

B21 - Meteorological-satellite Earth Station

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 154-E
31 October, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

AGENDA

SEVENTH MEETING OF COMMITTE 5 (ALLOCATIONS)

Friday, 1 November, 1963, at 0930 hours (9:30 a.m.).

1. Fourth Report by Working Group 5B (Document No. 125) (Radio Astronomy)

2. Report by Convenor Working Group 5 ad hoc (band 136 - 137 Mc/s)

3. Report of Group 5 ad hoc (Document No. DT/72) band 137 - 138 Mc/s

4. Fourth and last Report by Working Group 5A (Document No. 139) (Communication-satellite Service)

5. Any other business

W. KLEIN
Chairman
Committe 5 (Allocations)

SPACE RADIOCOMMUNICATION CONFERENCE

Document N° 155-F/E/S
1er novembre 1963
Original: français,
anglais,
espagnol

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMISSION 4
COMMITTEE 4
COMISIÓN 4

CHAPITRE PREMIER
CHAPTER I
CAPÍTULO PRIMERO

Terminologie
Terminology
Terminología

Article 1 - Termes et définitions
Article 1 - Terms and definitions
Artículo primero - Términos y definiciones

Introduction

Les définitions qui suivent ne sont peut être pas toutes nécessaires dans le Règlement des Radiocommunications. La Commission 4 estime qu'il appartient à l'Assemblée Plénière de décider s'il convient de conserver, en particulier, les définitions : 84ao, 84ap, 84aq, 84aqbis, 84bb, 84bc, 84bd, 84be, 84bf, 84bg.

Foreword

It is possible that some of the following definitions are unnecessary for the Radio Regulations. Committee 4 considers that the Plenary Assembly should decide whether certain definitions should be retained, in particular Nos. 84ao, 84ap, 84aq, 84aqbis, 84bb, 84bc, 84bd, 84be, 84bf, 84bg.

Introducción

Las definiciones que siguen pueden no ser necesarias para el Reglamento de Radiocomunicaciones. La Comisión 4 estima que la Asamblea plenaria decidirá si ciertas definiciones deben ser mantenidas, en particular: 84ao, 84ap, 84aq, 84aqbis, 84bb, 84bc, 84bd, 84be, 84bf, 84bg.

Section II - Systèmes, services et stations radioélectriques

Section II - Radio Systems, Services and Stations

Sección II - Sistemas, servicios y estaciones radioeléctricas

34 Voir note 1.

See note 1.

Véase nota 1.

35 MOD Station d'aéronef

Station mobile du service mobile aéronautique installée à bord d'un aéronef ou d'un véhicule aéro-spatial.

Aircraft station

A mobile station in the aeronautical mobile service on board an aircraft.

Estación de aeronave

Estación móvil del servicio móvil aeronáutico instalada a bordo de una aeronave o en un vehículo aeroespacial.

70 SUP
71 SUP
72 SUP
73 SUP

75a ADD Station de radioastronomie

Station du service de radioastronomie.

Radio Astronomy station

A station in the radio astronomy service.

Estación de radioastronomía

Estación del servicio de radioastronomía.

84aa ADD Service de Terre

Tout service radioélectrique défini dans le présent Règlement, autre qu'un service spatial ou que le service de radioastronomie.

Terrestrial service

Any radio service defined in these Regulations, other than a space service or the radio astronomy service.

Servicio terrenal

Cualquier servicio radioeléctrico definido en el presente Reglamento distinto a un servicio espacial o de radioastronomía.

84ab ADD Station de Terre

Station d'un service de Terre.

Terrestrial station

A station in a terrestrial service.

Estación terrenal

Estación de un servicio terrenal.

Titre ADD

Section IIa - Systèmes, services et stations spatiaux

Section IIa - Space systems, Services and Stations

Sección IIa - Sistemas, servicios y estaciones espaciales

84ac ADD Service spatial

Service de radiocommunication :

- entre stations terriennes et stations spatiales,
- ou entre stations spatiales,
- ou entre stations terriennes lorsque les signaux sont retransmis par des stations spatiales, ou transmis par réflexion ou diffusion sur des objets situés dansl'espace en excluant la réflexion ou la diffusion par l'ionosphère ou dans l'atmosphère terrestre.

Space service

A radiocommunication service:

- between earth stations and space stations,
- or between space stations,
- or between earth stations when the signals are re-transmitted by space stations, or transmitted by reflection or by scattering from objects in space excluding reflection or scattering by the ionosphere or within the earth's atmosphere.

Servicio espacial

Servicio de radiocomunicación:

- entre estaciones terrenas y estaciones espaciales,
- o entre estaciones espaciales,
- o entre estaciones terrenas cuando las señales son retransmitidas por estaciones espaciales o transmitidas por reflexión o dispersión en objetos situados en el espacio, excluyendo la reflexión o dispersión en la ionosfera o dentro de la atmósfera terrestre.

84ad ADD Station terrienne

Station du service spatial située soit sur la surface de la Terre, y compris à bord d'un navire, soit à bord d'un aéronef.

Earth station

A station in the space service located either on the earth's surface, including on board a ship, or on board an aircraft.

Estación terrena

Estación del servicio espacial situada en la superficie de la Tierra, a bordo de un barco inclusive, o a bordo de una aeronave.

84ae ADD Station spatiale

Station du service spatial située sur un objet se trouvant, ou destiné à aller, ou étant allé au-delà de la partie principale de l'atmosphère terrestre.

Space station

A station in the space service located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the earth's atmosphere.

Estación espacial

Estación del servicio espacial situada en un objeto que se encuentra, o que está destinado a ir o que ya estuvo fuera de la parte principal de la atmósfera terrestre.

84af ADD Service de radiocommunication par satellites

Service spatial :

- entre stations terriennes, lorsqu'il est fait usage de satellites actifs ou passifs pour l'échange de communications du service fixe ou du service mobile,
- ou entre une station terrienne et des stations situées sur des satellites actifs, pour l'échange des communications du service mobile, en vue de leur retransmission vers ou à partir de stations du service mobile.

Communication-satellite service

A space service:

- between earth stations, when using active or passive satellites for the exchange of communications of the fixed or mobile service, or
- between an earth station and stations on active satellites for the exchange of communications of the mobile service, with a view to their retransmission to or from stations in the mobile service.

Servicio de radiocomunicación por satélite

Servicio espacial:

- entre estaciones terrenas, cuando se utilizan satélites activos o pasivos para el intercambio de comunicaciones en los servicios fijo o móvil,
- o, entre una estación terrena y estaciones situadas en satélites activos, para el intercambio de comunicaciones del servicio móvil, con vista a retransmitir desde o hacia estaciones del servicio móvil.

84ag ADD Station terrienne de radiocommunications par satellites

Station terrienne du service de radiocommunication par satellites.

Communication-satellite earth station

An earth station in the communication-satellite service.

Estación terrena de radiocomunicación por satélite

Estación terrena del servicio de radiocomunicación por satélite.

84ah ADD Station spatiale de satellite de radiocommunication

Station spatiale du service de radiocommunication par satellites, située sur un satellite de la Terre.

Communication satellite space station

A space station in the communication-satellite service, on an earth satellite.

Estación espacial de satélites de radiocomunicación

Estación espacial del servicio de radiocomunicación por satélite situada en un satélite de la Tierra.

84ai ADD Satellite actif

Satellite de la Terre portant une station destinée à émettre ou retransmettre des signaux de radiocommunication.

Active satellite

An earth satellite carrying a station intended to transmit or re-transmit radiocommunication signals.

Satélite activo

Satélite de la Tierra provisto de una estación destinada a emitir o retransmitir señales de radiocomunicación.

84aj ADD Satellite passif

Satellite de la Terre destiné à transmettre des signaux de radiocommunication par réflexion ou diffusion.

Passive satellite

An earth satellite intended to transmit radiocommunication signals by reflection or by scattering.

Satélite pasivo

Satélite de la Tierra destinado a transmitir señales de radiocomunicación por reflexión o dispersión.

84ak ADD Système à satellites

Tout ensemble de stations, coopérant entre elles, assurant un service spatial donné, et comprenant un ou plusieurs satellites actifs ou passifs.

Satellite system

Any group of co-operating stations providing a given space service and including one or more active or passive satellites.

Sistema de satélites

Cualquier conjunto coordinado de estaciones, que proporcionan determinado servicio espacial e incluyen uno o más satélites activos o pasivos.

84al ADD Service de recherche spatiale

Service spatial dans lequel on utilise des engins spatiaux pour la recherche scientifique ou technique.

Space research service

A space service in which spacecraft are used for scientific or technological research purposes.

Servicio de investigación espacial

Servicio espacial en el cual se utilizan vehículos espaciales para fines de investigación, científica y tecnológica.

84am ADD Station terrienne de recherche spatiale

Station terrienne du service de recherche spatiale.

Space research earth station

An earth station in the space research service.

Estación terrena para la investigación del espacio

Estación terrena del servicio de investigación espacial.

84an ADD Station spatiale de recherche spatiale

Station spatiale du service de recherche spatiale.

Space research space station

A space station in the space research service.

Estación espacial para la investigación del espacio

Estación espacial del servicio de investigación espacial.

84ao ADD Service de radiodiffusion par satellites

Service spatial dans lequel des signaux émis ou retransmis par des stations spatiales ou transmis par réflexion ou diffusion par des objets en orbite autour de la Terre, sont destinés à être reçus directement par le public en général.

Broadcasting-satellite service

A space service in which signals transmitted or re-transmitted by space stations, or transmitted by reflection or by scattering from objects in orbit around the earth, are intended for direct reception by the general public.

Servicio de radiodifusión por satélites

Servicio espacial en el cual las señales emitidas o retransmitidas por estaciones espaciales o transmitidas por reflexión o dispersión en objetos situados en órbita alrededor de la Tierra, están destinadas a la recepción directa por el público en general.

84ap ADD Station terrienne de radiodiffusion par satellites

Station terrienne du service de radiodiffusion par satellites.

Broadcasting-satellite earth station

An earth station in the broadcasting-satellite service.

Estación terrena de radiodifusión por satélites

Estación terrena del servicio de radiodifusión por satélites.

84aq ADD Station spatiale de satellite de radiodiffusion

Station spatiale du service de radiodiffusion par satellite située sur un satellite de la Terre.

Broadcasting-satellite space station

A space station in the broadcasting-satellite service, on an earth satellite.

Estación espacial de satélite de radiodifusión

Estación espacial del servicio de radiodifusión por satélites, situada en un satélite de la Tierra.

84aq bis ADD Station de satellite de radiodiffusion (Note 2)

Station de radiodiffusion située sur un satellite de la Terre.

Broadcasting satellite station (Note 2)

A broadcasting station on an earth satellite.

Estación de satélite de radiodifusión (Nota 2)

Estación de radiodifusión situada en un satélite de la Tierra.

84ar ADD Service de radionavigation par satellites

Service faisant usage de stations spatiales situées sur des satellites de la Terre pour assurer une radionavigation, et comprenant, dans certains cas, l'émission ou la retransmission de renseignements complémentaires nécessaires au fonctionnement de cette radionavigation.

Radionavigation-satellite service

A service using space stations on earth satellites for the purposes of radionavigation, including, in certain cases, transmission or retransmission of supplementary information necessary for the operation of the navigational system.

Servicio de radionavegación por satélites

Servicio que utiliza estaciones espaciales instaladas en satélites de la Tierra para fines de radionavegación, incluyendo en ciertos casos la transmisión o retransmisión de información complementaria, necesaria para el funcionamiento de la misma.

84as ADD Station terrienne de radionavigation par satellites

Station terrienne du service de radionavigation par satellites.

Radionavigation-satellite earth station

An earth station in the radionavigation-satellite service.

Estación terrena de radionavegación por satélites

Estación terrena del servicio de radionavegación por satélites.

84at ADD Station spatiale de satellite de radionavigation

Station spatiale du service de radionavigation par satellites située sur un satellite de la Terre.

Radionavigation-satellite space station

A space station in the radionavigation-satellite service, on an earth satellite.

Estación espacial de satélite de radionavegación

Estación espacial del servicio de radionavegación por satélites situada en un satélite de la Tierra.

84au ADD Service des auxiliaires de la météorologie par satellites

Service spatial dans lequel les résultats d'observations météorologiques faites à l'aide d'appareils situés sur des satellites de la Terre sont transmis à des stations terriennes à partir de stations spatiales situées sur ces satellites.

Meteorological - satellite service

A space service in which the results of meteorological observations, made by instruments on earth satellites, are transmitted to earth stations by space stations on these satellites.

Servicio de ayudas a la meteorología por satélites

Servicio espacial en el cual los resultados de las observaciones meteorológicas obtenidas por instrumentos situados en satélites terrestres se transmiten a estaciones terrenas desde estaciones espaciales situadas en dichos satélites.

84av ADD Station terrienne de météorologie par satellites

Station terrienne du service des auxiliaires de la météorologie par satellites.

Meteorological - satellite earth station

An earth station in the meteorological - satellite service.

Estación terrena de meteorología por satélites

Estación terrena del servicio de ayudas de la meteorología por satélites.

84aw ADD Station spatiale de météorologie par satellites

Station spatiale du service des auxiliaires de la météorologie par satellites située sur un satellite de la Terre.

Meteorological - satellite space station

A space station in the meteorological - satellite service on an earth satellite.

Estación espacial de meteorología por satélites

Estación espacial del servicio de ayudas de la meteorología por satélites situada en un satélite de la Tierra.

84ax ADD Télémesure spatiale

Télémesure utilisée pour la transmission à partir d'une station spatiale des résultats des mesures effectuées dans un engin spatial, y compris celles qui concernent le fonctionnement de l'engin.

Space telemetering

The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

Telemedida espacial

Telemedida para la transmisión desde una estación espacial, de mediciones efectuadas en un vehículo espacial, con inclusión de las relativas a su funcionamiento.

84ay ADD Télémesure spatiale de maintenance

Télémesure spatiale concernant exclusivement les conditions électriques et mécaniques de fonctionnement d'un engin spatial et de l'appareillage qu'il contient ainsi que les conditions du milieu proche de l'engin.

Maintenance space telemetering

Space telemetering relating exclusively to the electrical and mechanical condition of a spacecraft and its equipment together with the condition of the environment of the spacecraft.

Telemedida espacial de mantenencia

Telemedida espacial relativa únicamente a las condiciones eléctricas y mecánicas de funcionamiento, de un vehículo espacial y de su equipo, como también a las condiciones del medio ambiente que rodean al vehículo espacial.

84az ADD Télécommando spatiale

Utilisation de signaux radioélectriques transmis à une station spatiale pour mettre en fonctionnement cette station ou des appareils installés à bord de l'engin spatial associé, ou pour en modifier ou arrêter le fonctionnement.

Space Telecommand

The use of radiocommunication to a space station to initiate, modify or terminate functions of the space station or of the associated spacecraft.

Telemando espacial

Empleo de señales radioeléctricas transmitidas a una estación espacial para iniciar, modificar o interrumpir funciones de la estación espacial o de un vehículo espacial asociado.

84ba ADD Poursuite spatiale

Détermination de l'orbite, de la vitesse ou de la position instantanée d'un objet situé dans l'espace, par l'utilisation du radiorepérage à l'exclusion de la radiodétection primaire.

Space tracking

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination excluding primary radar.

Seguimiento espacial

Determinación de la órbita, velocidad o posición instantánea de un objeto en el espacio, por medio de la radiodeterminación con exclusión del radar primario.

Titre ADD

Section IIb - Espace, orbites et types d'objets spatiaux

Section IIb - Space, orbits and types of objects in space

Sección IIb - Espacio, órbitas y tipos de objetos espaciales

84bb ADD Espace lointain

Région de l'espace située à des distances de la Terre égales ou supérieures à la distance entre la Terre et la Lune.

Deep space

Space at distances from the Earth equal to or greater than the distance between the Earth and the Moon.

Espacio lejano

Región del espacio situada a una distancia de la Tierra igual o superior a la existente entre la Tierra y la Luna.

84bc ADD Orbite

Trajectoire décrite dans l'espace par le centre de gravité d'un satellite ou autre objet spatial.

Orbit

The path in space described by the centre of gravity of a satellite or other object in space.

Órbita

Trayectoria seguida en el espacio por el centro de gravedad de un satélite u otro objeto espacial.

84bd ADD Angle d'inclinaison d'une orbite

Angle aigu que fait le plan contenant une orbite avec le plan de l'équateur terrestre.

Angle of inclination of an orbit

The acute angle between the plane containing an orbit and the plane of the earth's equator.

Ángulo de inclinación de una órbita

Ángulo agudo comprendido por el plano que contiene la órbita y el plano del ecuador terrestre.

84be ADD Période d'un objet spatial

Temps compris entre deux passages consécutifs d'un objet spatial au même point d'une orbite fermée.

Period of an object in space

The time elapsing between two consecutive passages of an object in space through the same point on a closed orbit.

Periodo de un objeto espacial

El tiempo comprendido entre dos pasajes sucesivos de un objeto espacial en un mismo punto de una órbita cerrada.

84bf ADD Altitude de l'apogée

Altitude, au-dessus de la surface de la Terre, du point d'une orbite fermée où un satellite se trouve à sa distance maximale du centre de la Terre.

Altitude of the apogee

Altitude above the surface of the Earth of the point on a closed orbit, where a satellite is at its maximum distance from the centre of the Earth.

Altitud del apogeo

Altitud a partir de la superficie de la Tierra del punto de una órbita cerrada en que un satélite se encuentra a la distancia máxima del centro de la Tierra.

84bg ADD Altitude du périgée

Altitude, au-dessus de la surface de la Terre, du point d'une orbite fermée où un satellite se trouve à sa distance minimale du centre de la Terre.

Altitude of the perigee

Altitude above the surface of the Earth of the point on a closed orbit, where a satellite is at its minimum distance from the centre of the Earth.

Altitud del perigeo

Altitud a partir de la superficie de la Tierra del punto de una órbita cerrada en que un satélite se encuentra a la distancia mínima del centro de la Tierra.

84bh ADD Satellite stationnaire

Satellite dont l'orbite circulaire est dans le plan de l'équateur terrestre et qui tourne autour de l'axe des pôles de la Terre dans le même sens et avec la même période que celle de la rotation de la Terre.

Stationary satellite

A satellite, the circular orbit of which lies in the plane of the earth's equator and which turns about the polar axis of the Earth in the same direction and with the same period as that of the earth's rotation.

Satélite estacionario

Satélite cuya órbita circular se encuentra en el plano ecuatorial terrestre y que gira en torno a los ejes polares de la Tierra en el mismo sentido y con igual periodo de rotación.

NOTES PROVISOIRES

TEMPORARY NOTES

NOTAS PROVISIONALES

1) Une proposition (Etats-Unis, Doc. 8 et Commission 5, Doc. 114, Appendice 8) tendant à ajouter à la fin de la définition N° 34 : "Station aéronautique" du Règlement, les mots :

"... ou d'un satellite de la Terre"

a été examinée par le Groupe de travail 4A.
Cette proposition a pour objet de permettre l'emploi, dans le Service mobile aéronautique, d'un satellite actif comme relais en vue d'augmenter la portée des ondes dans la bande 5, actuellement employées dans ce service.

Au sein du groupe de Travail, on a fait remarquer, en particulier :

a) que la définition 34 ainsi modifiée se trouverait en contradiction avec la définition 31, d'après laquelle une station terrestre est " .... non destinée à être utilisée lorsqu'elle est en mouvement."

b) que d'après la rédaction actuelle du N° 429, la station placée à bord d'un satellite non habité serait ainsi : ".... principalement chargé d'assurer la sécurité et la régularité de la navigation aérienne le long des routes nationales ou internationales de l'aviation civile."

En conséquence, le Groupe de travail n'a pu trouver de majorité pour approuver cette modification de la définition N° 34.

Pour satisfaire aux besoins du service aéronautique indiqués plus haut, il a été suggéré au sein du Groupe de travail 4A, de remplacer cette modification de la définition N° 34 par un texte tel que le suivant qui pourrait être inséré dans un article convenable (par exemple, l'Article 7).

> "Dans les conditions fixées ..... (citer ici les articles, paragraphes et numéros convenables du Règlement) .... le Service Mobile Aéronautique peut faire usage de stations situées sur des satellites actifs pour une retransmission entre les stations aéronautiques et les stations d'aéronef.
>
> La liaison entre la station aéronautique et le satellite fait alors partie du Service de radiocommunication par satellite.
>
> La liaison entre les stations d'aéronefs et le satellite fait partie du Service mobile aéronautique."

Le Groupe de travail a estimé qu'il appartient à la Commission 4 de trancher entre les deux solutions ci-dessus.

* * * * *

A proposition (Document No. 8 (United States) and Document No. 115, Appendix 8 (Commission 5)) to add at the end of Definition No. 34, "Aeronautical station", the following words :

"..... or an earth satellite."

was examined by Working Group 4A.

The object of this proposition is to permit the use, in the Aeronautical Mobile Service, of an active satellite as a relay, to increase the range of the emissions in band 5, used at present in this service.

The Working Group made, among others, the following observations :

a) that Definition 34, modified as shown above, would be in contradiction with Definition 31, in accordance with which, a Land station is ".....not intended to be used while in motion."

b) that, in accordance with No. 429, in its present form, the station on an unmanned satellite would be "... primarily concerned with the safety and regularity of flight along national or international air routes."

In consequence, Working Group 4A was not able to obtain a clear majority for the approval of this modification to Definition No. 34.

It was suggested, in the Working Group, that the requirements of the Aeronautical Mobile Service, as set forth above, would be met if the modification to No. 34 of the Radio Regulations were to be replaced by a text on the lines of the following which could be inserted in the appropriate Article of the Radio Regulations (for example, Article 7).

> "In the conditions described in ..... (cite here the appropriate Articles, paragraphs and numbers of the Radio Regulations), the Aeronautical Mobile Service may make use of stations on active satellites, for re-transmission between Aeronautical stations and Aircraft stations.
>
> The link between the Aeronautical station and the satellite is then part of the Communication-satellite service.
>
> The link between the Aircraft stations and the satellite is part of the Aeronautical Mobile Service."

Working Group 4A considers that it was for Commission 4 to decide between these two possible solutions.

* * * * * *

La Propuesta (Documento N.° 8 (Estados Unidos de Norteámerica) y Documento N.° 114, Apéndice 8 (Comisión 5)) de agregar al final de la Definición N.° 34 del Reglamento de Radiocomunicaciones "Estación aeronáutica", las palabras:

"..... ó de un satélite de la Tierra",

ha sido examinada por el Grupo de trabajo 4A.

Esta proposición tiene por objeto permitir el empleo, en el servicio móvil aeronáutico, de un satélite activo como repetidor en el fin de aumentar el alcance de las emisiones en la banda 5, actualmente empleada para este servicio.

En el seno del Grupo de trabajo, se ha remarcado, en particular:

a) Que la Definición N.° 34 modificada en la forma propuesta, se encontraría en contradicción con la Definición N.° 31, de acuerdo con lo cual, una estación terrestre está "..... no destinada a ser utilizada en movimiento."

b) Que, en concordancia con lo ya expresado en el N.° 429, la estación situada a bordo de un satélite no habitado sería: "..... principalmente encargada de asegurar la seguridad y la regularidad de la navegación aérea, a lo largo de las rutas nacionales e internacionales de la aviación civil."

En consecuencia el Grupo de trabajo no ha podido encontrar la mayoría suficiente para aprobar la modificación a la Definición N.° 34.

Para satisfacer los requerimientos del servicio móvil aeronáutico arriba indicado, se ha sugerido en el seno del Grupo 4A, de reemplazar la modificación de la Definición N.° 34 por el siguiente texto, que podría ser insertado en un artículo conveniente (por ejemplo el Artículo 7):

> "En las condiciones establecidas en ..... (citar aquí los artículos, párrafos y números convenientes del Reglamento) ....., el servicio móvil aeronáutico puede hacer uso de las estaciones, sobre los satélites activos para una retransmisión entre las estaciones aeronáuticas y las estaciones de aeronaves.
>
> El enlace entre la estación aeronáutica y al satélite por una parte del servicio de radiocomunicación por satélite.
>
> El enlace entre las estaciones de aeronaves y el satélite forma parte del servicio móvil aeronáutico."

El Grupo de trabajo 4A, ha estimado que corresponde a la Comisión 4 decidir entre las dos soluciones enunciadas.

2) Cette définition n'est suggérée que dans l'hypothèse où la Conférence estimerait inutile d'insérer dans le Réglement des radiocommunications une définition pour le service de radiodiffusion par satellites, mais estimerait nécessaire de définir la station de satellite de radiodiffusion.

* * *

This definition would only be useful if the Conference decides not to include in Article 1 a definition of the broadcasting satellite service, but decides that the definition of Broadcasting satellite station is useful.

* * *

Se sugiere esta definición únicamente en la hipótesis de que la Conferencia estime superfluo incluir en el Reglamento de Radiocomunicaciones una definición relativa al servicio de radiodifusión por satélites, pero estime útil incluir la definición de estación de radiodifusión por satélites.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 156-E (Rev.)
2 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

AGENDA

SIXTH MEETING OF COMMITTEE 4

Monday, 4 November, 1963, at 9.30 a.m.

1. Summary record of fifth meeting (Document No. 138)
2. Report of Working Group 4A (Document No. 155)
3. Report of Working Group 4C (Document Nos. 122 (Rev.), 126 (Rev-2), 159 (Rev.), 163 and 168)
4. Any other business.

E. ESPING
Chairman

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 156-E
1 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

AGENDA

SIXTH MEETING OF COMMITTEE 4

Saturday, 2 November, 1963, at 9.30 a.m.

1. Summary record of fifth meeting (Document No. 138)
2. Report of Working Group 4A (Document No. 155)
3. Report of Working Group 4C (Document Nos. 122, 126 and Add. (or Corr.)
4. Any other business.

E. ESPING
Chairman

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 157-E
1 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

DRAFT RECOMMENDATION

No. CALCULATION OF CO-ORDINATION DISTANCE FOR EARTH STATIONS IN THE COMMUNICATION-SATELLITE SERVICE

The E.A.R.C., Geneva, 1963,

considering

a) that Article 9 requires frequency assignments for earth stations in shared frequency bands to be co-ordinated with terrestrial services within interference range;

b) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at that earth station will cause harmful interference to reception at a terrestrial station may be regarded as negligible: this is the co-ordination distance in that direction.

c) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at a terrestrial station will cause harmful interference to reception at that earth station may be regarded as negligible: this is the co-ordination distance in that direction.

d) that a simple procedure is required to enable administrations to calculate the co-ordination distance from an earth station according to its location and characteristics;

noting

that the Reports and Recommendations of the C.C.I.R. Xth Plenary Assembly provide a technical basis for the calculation of co-ordination distance which is provisional and subject to further study by the C.C.I.R.;

recommends

that the procedure set out in the Annex to this Recommendation should be used to determine co-ordination distances until such time as the C.C.I.R. may recommend a procedure to be used for this purpose;

and invites the C.C.I.R.

to study the question of co-ordination distance and as soon as improved calculation methods and more accurate propagation data become available to make suitable recommendations to replace the procedure set out in the Annex to this Recommendation.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 158-E (Rev.)
6 November, 1963
Original : French/English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD
OF THE 5TH MEETING

Wednesday, 30 October, 1963 at 2.30 p.m.

Chairman : Mr. W. KEIN (Switzerland)
Vice-Chairman : Mr. S. FUJIKI (Japan)

1. The Agenda (Document No. 133, dated 30 October, 1963) was adopted.

2. Document No. DT/72 of 25 October, 1963

Dr. V. Popović (Yugoslavia), Chairman of Working Group 5 ad hoc (136 - 138 Mc/s) introduced the document and proposed that the respective terms in the table would be modified as follows :

SPACE RESEARCH (Telemetering and tracking)

SPACE (Telemetering and tracking)

This would entail deletion of footnote 3).

The Delegates of the United Kingdom and the U.S.S.R. had no objection.

The status of non-space services in the 136 - 137 Mc/s band was then considered. A long discussion ensued, in which nearly all the delegations took part. Three possible solutions emerged :

1) that the band should be reserved exclusively for space research;

2) that space research only should be entered in the Table and the other services mentioned in the footnotes, with a date by which they should have cleared the band;

3) that the fixed and mobile services should be entered as primary services, with space research, and that a draft resolution should be prepared inviting administrations using fixed and mobile services in that band to clear the band as soon as possible.

The representative of France observed that footnote 281 would have to be revised.

The Chairman established an ad hoc Group to prepare the draft resolution for the third solution envisaged and to revise footnote 281 for Regions 1 and 3. The Group consists of the representatives of France, the Republic of India, the F.S.R. of Yugoslavia, the United Kingdom and the U.S.S.R., with Mr. Nielsen (Denmark) as Chairman.

Australia pointed out that the footnote to page 279 did not apply to the band under consideration.

As regards Region 2, it was agreed to set the band aside exclusively for space research, and to insert the following footnotes :

281B In Argentina and Mexico the 136 - 137 Mc/s band is also allocated, until 1.1.69, to the fixed and mobile service;

281C In Cuba the fixed and mobile services will continue to operate, for an indefinite period, as primary services in the 136 - 137 Mc/s band.

However, Mexico made reservations on the date mentioned in note 281B.

It was decided to defer examination of the 137 - 138 Mc/s band to the following meeting.

3. Appendix I to Document No. 127 on telemetering (267 - 273 Mc/s)

Mr. P. Mortensen (Norway), Chairman of Working Group 5A, introduced this Document and observed that it represented the preponderant majority opinion of his Working Group.

At the request of certain countries to have a footnote inserted giving space telemetering a secondary status, the Delegate of the F.S.R. of Yugoslavia observed once again that administrations were entitled to lower the status of a service in their own country and that there was no need to overload the Radio Regulations with unnecessary footnotes. The representative of the I.F.R.B., Mr. Ziołkowski, (See Appendix 1) shared that point of view.

4. The Meeting rose at 6 p.m. in order to give the delegates time to consider whether there was any need to include footnotes providing for the lowering of the status of a service in a country.

J.P.WEST
Rapporteur

W. KLEIN
Chairman

Appendix : 1

A P P E N D I X

STATEMENT OF I.F.R.B. REPRESENTATIVE

Mr. Chairman,

I think that it would be helpful if your Committee were to consider the following specific example :

Let us suppose that in the Table of Frequency Allocations in the band xx, the allocations on a world-wide scale are as follows :

Fixed service is on a primary basis

Mobile service is on a secondary basis.

Let us suppose that the following footnote is added to the Table of Frequency Allocations :

"In country A the band is allocated to the Mobile service on a primary basis".

This would mean that the Mobile Service in country A is allocated on a primary basis within its own territory but that outside this country A, it remains a secondary service.

The interpretation of the footnote must then be considered from the following two aspects :

1) Inside country A

The Mobile service inside country A has equal rights with the Fixed service operating outside country A (which has primary status in accordance with the Table of Frequency Allocations). Taking this into account, the Mobile service of country A can claim protection from harmful interference inside country A from stations of a primary service, in this case, the Fixed Service, operating outside country A, if these latter stations are brought into operation at a later date. It cannot claim protection from Fixed stations in other countries to which frequencies have already been assigned. It can, of course, claim protection within country A from stations of a secondary service, in this case the Mobile service operating outside country A.

2) Outside country A

The mobile service of country A remains a secondary service, the rights of which are given in the provisions in 139 of the RR:

a) shall not cause harmful interference to stations of primary or permitted services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

b) cannot claim protection from harmful interference from stations of a primary or permitted service to which frequencies are already assigned or may be assigned at a later date;

c) can claim protection, however, from harmful interference from stations of the same or other secondary services(s) to which frequencies may be assigned at a later date.

I would like also to add that the Members and Associate Members of the Union agree to assign frequencies to stations in accordance with the Table of Frequency Allocations and associated provisions of the Radio Regulations. (Nos. 113 and 114 of the RR). However, if such assignments are in bands which are not allocated to the service concerned in the Table, an Administration cannot claim protection for such assignments and what is more important must not cause any harmful interference to the stations operating in accordance with the provisions of the Convention and of the Radio Regulations (No. 115 of the RR).

Mr. Chairman, we would be able to give many other examples of rights between primary and secondary services concerning services operating according to the Table of Frequency Allocations, but I think that this would take up too much time of your Committee and I propose therefore to discuss these problems outside the meetings of Committee 5.

Thank you, Mr. Chairman.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 158-E
1 November, 1963
Original : French, English, Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE 5TH MEETING

Wednesday, 30 October, 1963 at 2.30 p.m.

1. The Agenda (Document No. 133, dated 30 October, 1963) was adopted.

2. Document No. DT/72 of 25 October, 1963

Dr. V. Popovic introduced the document and proposed that the Table be simplified by putting in all cases :

SPACE RESEARCH (Telemetering and tracking)

This would entail deletion of footnote 3).

The delegates of the United Kingdom and the U.S.S.R. had no objection.

The status of non-space services in the 136 - 137 Mc/s band was then considered. A brief discussion ensued, in which nearly all the delegations took part. Three trends emerged :

1) that the band should be reserved exclusively for space research;

2) that space research only should be entered in the Table and the other services mentioned in the footnotes, with a date by which they should have cleared the band;

3) that the fixed and mobile services should be entered as primary services, with space research, and that a draft resolution should be prepared inviting administrations using fixed and mobile services in that band to clear the band as soon as possible.

The representative of France observed that footnote 281 would have to be revised.

The Chairman established an ad hoc Group to prepare the draft resolution for the third solution envisaged and to revise footnote 281 for Regions 1 and 3. The Group consists of the representatives of France, the Republic of India, the F.S.R. of Yugoslavia, the United Kingdom and the U.S.S.R., with Mr. Nielsen as Chairman.

As regards Region 2, it was agreed to set the band aside exclusively for space research, and to insert the following footnotes :

281B In Argentina and Mexico the 136 - 137 Mc/s band is also allocated, until 1.1.69, to the fixed and mobile service;

281C In Cuba the fixed and mobile services will continue to operate, for an indefinite period, as primary services in the 136 - 137 Mc/s band.

It was decided to defer examination of the 137 - 138 Mc/s band to the following meeting.

3. Appendix I to Document No. 127

Mr. P. Mortensen, Chairman of Working Group 5A, introduced this Document and observed that it represented the preponderant majority opinion of his Working Group.

At the request of certain countries to have a footnote inserted giving space telemetering a secondary status, the Delegate of the F.S.R, of Yugoslavia observed once again that administrations were entitled to lower the status of a service in their own country and that there was no need to overload the Radio Regulations with unnecessary footnotes. The representative of the I.F.R.B., Mr. Ziołkowski, (See Appendix 1) shared that point of view.

4. The Meeting rose at 6 p.m. in order to give the delegates time to consider whether there was any need to include footnotes providing for the lowering of the status of a service in a country.

J.P. WEST
Rapporteur

W. KLEIN
Chairman

Appendix: 1

A P P E N D I X 1

STATEMENT OF I.F.R.B. REPRESENTATIVE

Mr. Chairman,

I think that it would be helpful if your Committee were to consider the following specific example :

Let us suppose that in the Table of Frequency Allocations in the band xx, the allocations on a world-wide scale are as follows :

Fixed service is on a primary basis

Mobile service is on a secondary basis.

Let us suppose that the following footnote is added to the Table of Frequency Allocations :

"In country A the band is allocated to the Mobile service on a primary basis".

This would mean that the Mobile Service in country A is allocated on a primary basis within its own territory but that outside this country A, it remains a secondary service.

The interpretation of the footnote must then be considered from the following two aspects :

1) Inside country A

The Mobile service inside country A has equal rights with the Fixed service operating outside country A (which has primary status in accordance with the Table of Frequency Allocations). Taking this into account, the Mobile service of country A can claim protection from harmful interference inside country A from stations of a primary service, in this case, the Fixed Service, operating outside country A, if these latter stations are brought into operation at a later date. It cannot claim protection from Fixed stations in other countries to which frequencies have already been assigned. It can, of course, claim protection within country A from stations of a secondary service, in this case the Mobile service operating outside country A.

2) Outside country A

The mobile service of country A remains a secondary service, the rights of which are given in the provisions in 139 of the RR:

a) shall not cause harmful interference to stations of primary or permitted services to which frequencies are already assigned or to which frequencies may be assigned at a later date;

b) cannot claim protection from harmful interference from stations of a primary or permitted service to which frequencies are already assigned or may be assigned at a later date;

c) can claim protection, however, from harmful interference from stations of the same or other secondary services(s) to which frequencies may be assigned at a later date.

I would like also to add that the Members and Associate Members of the Union agree to assign frequencies to stations in accordance with the Table of Frequency Allocations and associated provisions of the Radio Regulations. (Nos. 113 and 114 of the RR). However, if such assignments are in bands which are not allocated to the service concerned in the Table, an Administration cannot claim protection for such assignments and what is more important must not cause any harmful interference to the stations operating in accordance with the provisions of the Convention and of the Radio Regulations (No. 115 of the RR).

Mr. Chairman, we would be able to give many other examples of rights between primary and secondary services concerning services operating according to the Table of Frequency Allocations, but I think that this would take up too much time of your Committee and I propose therefore to discuss these problems outside the meetings of Committee 5.

Thank you, Mr. Chairman.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 159-E (Rev.)
2 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

DRAFT RECOMMENDATION

The Extraordinary Administrative Radiocommunication Conference, Geneva, 1963,

considering

a) that the technical basis for sharing the frequency bands between terrestrial services and space services, with equal rights, is based inter alia on geographical separation between the stations of these two types of services;

b) that the Final Acts of this Conference refer to the process of co-ordination between Administrations, the later stages of which will involve the calculation of interference potential between stations of the two Services;

c) that such calculations will require a knowledge of the parameters of the terrestrial system and space system involved and a knowledge of the propagation characteristics in the appropriate geographical areas;

d) that a concise presentation in readily usable form of the appropriate values of the factors governing interference between a variety of typical terrestrial and space systems would be helpful in the implementation of the co-ordination procedures laid down in the Final Acts of this Conference;

noting

(i) that C.C.I.R., through its various Study Groups, particularly Study Groups Nos. IV, V and IX, is engaged in the active study of the various parameters which influence the sharing of frequency bands by the terrestrial services and the space services;

(ii) that, nevertheless, the data available at present from the C.C.I.R. does not make it possible for this conference to lay down sufficiently precise and detailed methods for calculating in all cases the probability of harmful interference between stations of the two services.

invites Administrations

during the period preceding the XIth Plenary Assembly of the C.C.I.R. to submit contributions concerning :

1. the essential steps to be taken in the calculation of the interference potential between stations of the two services;

2. the values of those factors which govern interference between the stations of typical terrestrial and space systems;

and invites the C.C.I.R.

during the XIth Plenary Assembly, and in the light of contributions submitted under 1 and 2 to decide the most appropriate form, for example a separate manual, in which the material adopted should be published.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 159-E
1 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

DRAFT RECOMMENDATION

The Extraordinary Administrative Radiocommunication Conference, Geneva, 1963,

considering

a) that the technical basis for sharing the frequency bands between terrestrial services and space services, with equal rights, is based inter alia on geographical separation between the stations of these two types of services;

b) that the Final Acts of this Conference refer to the process of co-ordination between Administrations, the later stages of which will involve the calculation of interference potential between stations of the two Services;

c) that such calculations will require a knowledge of the parameters of the terrestrial system and space system involved and a knowledge of the characteristics of propagation in the appropriate geographical areas;

d) that a concise presentation in readily usable form of the appropriate values of the factors governing interference between a variety of typical terrestrial and space systems would be helpful in the implementation of the co-ordination procedures laid down in the Final Acts of this Conference;

noting

(i) that C.C.I.R., through its various Study Groups, particularly Study Groups Nos. IV, V and IX, is engaged in the active study of the various parameters which influence the sharing of frequency bands by the terrestrial services and the space services;

(ii) that, nevertheless, the data available at present from the C.C.I.R. does not make it possible for this conference to lay down sufficiently precise and detailed methods for calculating the probability of harmful interference between stations of the two services.

invites Administrations

during the period preceding the XIth Plenary Assembly of the C.C.I.R. to submit contributions concerning :

1. the essential steps to be taken in the calculation of the interference potential between stations of the two services;

2. the values of those factors governing interference between the stations of typical terrestrial and space systems;

invites the C.C.I.R.

during the XIth Plenary Assembly, and in the light of contributions submitted under 1 and 2 to decide the most appropriate form, for example a separate manual, in which the material adopted should be published.

SPACE RADIOCOMMUNICATION CONFERENCE

Addendum to
Document No. 160-E
2 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

RADIO ASTRONOMY SERVICE

1. Band 33.4 - 34.0 Gc/s

1.1 The Group agreed to retain the existing allocation to the Radiolocation Service and the associated foot-notes.

1.2 There was general agreement that the requirement for the Radio Astronomy Service would be accommodated in a foot-note for the countries concerned as shown in Appendix 7 attached hereto.

2. Band 36.5 - 37.5 Gc/s

2.1 The Group agreed to retain the existing allocations to the Fixed and Mobile Services.

2.2 There was general agreement that the requirement for the Radio Astronomy Service would be accommodated in a foot-note for the countries concerned as shown in Appendix 8 attached hereto.

V.V. RAO
Chairman
Working Group 5B

Appendices : 2

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A P P E N D I X 7

NOC

ADD 412A In Algeria, Bulgaria, Cuba, Hungary, Morocco, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 33.4 - 34.0 Gc/s is also allocated to the radio astronomy service.

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A P P E N D I X 8

NOC

ADD 412B In Algeria, Bulgaria, Cuba, Hungary, Morocco, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 36.5 - 37.5 Gc/s is also allocated to the radio astronomy service.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Corrigendum No. 1 to
Document No. 160-E
2 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

CORRIGENDUM

FIFTH REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

RADIO ASTRONOMY SERVICE

Page 3:

Delete sub-paragraphs 5.2 c) and d).

Page 11:

Replace Appendix 4 by the attached revised page, which contains a revised text of footnote 332 MOD submitted by the Group ad hoc - Convenor: Mr. D.E. Baptiste (United Kingdom).

Appendix: 1

APPENDIX 4

NOC	Table

MOD 330 In Region 1, except the African Broadcasting Area[1], the radionavigation service .....

ADD 330A In the African Broadcasting Area[1], the band 606 - 614 Mc/s is allocated to the radio astronomy service.

MOD 332 In Region 1, except the African Broadcasting Area[1], the band 606 - 614 Mc/s, and in Region 3, the band 610 - 614 Mc/s may be used by the radio astronomy service. Administrations shall avoid using the band concerned for the broadcasting service as long as possible, and thereafter, as far as practicable, shall avoid the use of such effective radiated powers as will cause harmful interference to radio astronomy observations.

In Region 2, the band 608 - 614 Mc/s is reserved exclusively for the radio astronomy service until the first Administrative Radio Conference subsequent to 1 January, 1974 which is competent to review this provision, however this provision does not apply to Cuba.

---

1) For the purposes of this regulation, the term African Broadcasting Area designates:

a) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North.

b) Islands in the Indian Ocean west of meridian 60° East, situated between the parallel 40° South and the great circle arc joining the points 45° East 11° 30' North and 60° East 15° North.

c) Islands in the Atlantic Ocean east of Line B defined in No. 131 of the Radio Regulations, situated between the parallels 40° South and 30° North.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 160-E
1 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FIFTH REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

RADIO ASTRONOMY SERVICE

1. Band 37.75 - 38.25 Mc/s

1.1 Proposals concerning this band were considered.

1.2 Initially a discussion centred around accommodating the new requirement for an allocation, on a secondary basis, to the Radio Astronomy Service, in a new foot-note. After the Delegations of Australia, and the United Kingdom had withdrawn their proposals in favour of that submitted by Canada, unanimous agreement was reached on showing the new allocation in the body of the Table.

1.3 The resultant draft new Table for the band concerned appears in Appendix 1 attached hereto.

2. Band 73.0 - 74.6 Mc/s

2.1 In presenting the proposal for an exclusive allocation to the Radio Astronomy Service for Region 2, the Delegation of Canada suggested that consideration be given to the extension of such an allocation to Regions 1 and 3 also, with a foot-note provision authorizing the continuance of existing fixed and mobile operations on a non-interference basis to the Radio Astronomy Service and on a world-wide basis.

2.2 Strong opposition to such extension was manifested by Delegations of countries situated in Regions 1 and 3. The Delegation of Cuba stated that they were unable to accept the proposal for Region 2 and moved the retention of the present provisions contained in foot-note 253 unchanged. The resultant draft new Table for the band 73.0 - 74.6 Mc/s appears in Appendix 2 attached hereto.

3. Bands 150.05 - 151 Mc/s and 151 - 153 Mc/s

3.1 The proposals by the United Kingdom concerning the above bands were considered.

3.2 The Delegations of Spain, Israel and Austria supported the proposals for the exclusive allocation to Radio Astronomy Service in the band 150.05 - 151 Mc/s. The Delegation of Spain supported the allocation to this service on a primary basis in the band 151 - 153 Mc/s with Meteorological Aids on a secondary basis but with the exclusion of the existing allocations to the Fixed and Mobile, except aeronautical mobile, Services.

3.3 Ten Delegations were against any change to the existing allocations and associated foot-notes in the band 150.05 - 151 Mc/s, while twelve Delegations were against any change to those in the band 151 - 153 Mc/s.

3.4 Consequently, the Group agreed by a majority viewpoint to maintain the existing allocations without change.

4. Band 404 - 410 Mc/s

4.1 The proposals by Canada and the U.S.A. for the band 404 - 406 Mc/s and those by Australia and the Netherlands for the band 406 - 410 Mc/s were considered jointly.

4.2 The largest measure of agreement is represented by the modified foot-note 317 given in Appendix 3 attached hereto.

5. Band 606 - 614 Mc/s

5.1 The proposals concerning this band by the Netherlands and Sweden appearing in Document No. 17 and those by the U.S.A. and Australia contained in Addendum No. 1 to Document No. 8 and in Document No. 97 respectively, were considered.

5.2 The principal positions taken by Delegations may be summarized as follows :

a) Support was given to a solution by Regions as shown in Appendix 4 attached hereto, which also includes a new foot-note reflecting the unanimous expressed viewpoint of Delegations of countries situated in the African Region, as defined in the African Regional Agreement, Geneva, 1963.

b) In Region 2, except in Cuba, the band 606 - 614 Mc/s is allocated exclusively to the Radio Astronomy Service. The Delegation of Cuba was agreeable to limit the power of broadcasting stations in this band to permit radio astronomy observations within the territory of Cuba.

c) The Delegations of the United Kingdom, Japan, Kuwait and Argentina desired to have time for giving their final opinion.

d) The Delegations of the U.S.S.R., Czechoslovakia, Poland, Hungary, Bulgaria, Ukraine and Bielorussia favoured the retention of the existing Table and foot-note.

6. Band 1664.4 - 1668.4 Mc/s

6.1 The Delegations of Canada and the U.S.A. confirmed that the METEOROLOGICAL AIDS Service should be retained and accordingly should appear in the body of the Table.

6.2 The draft new Table for this band, reflecting the general viewpoint appears at Appendix 5 attached hereto.

7. Footnote 354

7.1 The Delegation of the U.S.S.R. explained that his Administration's proposal appearing under "Some Additions and Comments" on page 8 of Document No. 32 (Rev.) paragraph 4, referred not only to the band 1400 - 1427 Mc/s but also to the insertion in the Table of the Radio Astronomy Service in each of the bands mentioned in foot-note 354.

7.2 The Group agreed that the wording of the existing foot-note 354 satisfied the requirement and should be retained unchanged.

7.3 The Delegations of the countries concerned confirmed their understanding that in their countries and in the bands listed in the foot-note, the radio astronomy service has co-equal status with the other services to which the bands are allocated.

8. Band 33.0 - 33.4 Gc/s

8.1 The proposal concerning this band was for an allocation on a world-wide basis to the Radio Astronomy Service in addition to the existing Radio-navigation Service. However, the representatives of Administrations in Regions 2 and 3, except Cuba and India, were not in favour of introducing Radio Astronomy in the band concerned. Administrations in Region 1 were for admitting Radio Astronomy along with the Radionavigation Service.

8.2 A draft new Table for the band concerned, reflecting the viewpoints as outlined above, appears in Appendix 6 attached hereto.

V.V. RAO
Chairman

Appendices : 6

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A P P E N D I X 1

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	37.75 - 38.25	FIXED 228 229 230 231 MOBILE Radio Astronomy 233	

NOC 228

NOC 229

NOC 230

NOC 231

NOC 233

SUP 234

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A P P E N D I X 2

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	NOC	73.0 - 74.6 RADIO ASTRONOMY 253A	NOC

SUP 253

ADD 253 A In Region 2, fixed, mobile and broadcasting service operations previously authorized in the band 73 - 74.6 Mc/s may continue to operate on a non-interference basis to the radio astronomy service.

ADD 253B In Cuba, the band 73.0 - 74.6 Mc/s is also allocated to the fixed, mobile and broadcasting services.

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APPENDIX 3

NOC

Table

MOD 317 The band 404 - 410 Mc/s in Region ~~2 and 3~~ and the band 406 - 410 Mc/s in Regions 1 and 3 are also allocated to the radio astronomy service. An appropriate continuous band within these limits shall be designated on a national or area basis. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. The radio astronomy service shall be protected from harmful interference from services operating in other bands in accordance with the provisions of these Regulations, only to the extent that these services are protected from each other.

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A P P E N D I X 4

NOC

Table

MOD 330 In Region 1, except the African Broadcasting Area[1)], the Radionavigation Service .....

ADD 330A In the African Broadcasting Area[1)], the band 606 - 614 Mc/s is allocated to the Radio Astronomy Service.

MOD 332 In Region 1, except the African Broadcasting Area[1)], the band 606 - 614 Mc/s, and in Region 3, the band 610 - 614 Mc/s are also allocated to the radio astronomy service. Administrations shall do everything possible to avoid using the bands concerned for the broadcasting service before 1 January 1969 and, from this date, to limit its use to very low power stations. In Region 2, the band 608 - 614 Mc/s is reserved exclusively for the radio astronomy service until the first Administrative Radio Conference subsequent to 1 January 1974 which is competent to review this provision, however this provision does not apply to Cuba.

---

1) For the purposes of this regulation, the term African Broadcasting Area designates :

a) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North.

b) Islands in the Indian Ocean west of meridian 60° East, situated between the parallel 40° South and the great circle arc joining the points 45° East 11°30' North and 60° East 15° North.

c) Islands in the Atlantic Ocean east of Line B defined in No. 131 of the Radio Regulations, situated between the parallels 40° South and 30° North.

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A P P E N D I X 5

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1664.4 - 1668.4		
/W.G. 5C/ /Doc. 164/ ADD	METEOROLOGICAL AIDS /METEOROLOGICAL-SATELLITE/ Radio Astronomy 353 354 354A	

NOC 353

NOC 354

ADD 354A In Bulgaria, Cuba, the U.A.R., Spain, Hungary, Kuwait, New Zealand, Pakistan, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 1664.4 - 1668.4 Mc/s is also allocated to the Fixed Service and the Mobile, except Aeronautical Mobile, Service.

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A P P E N D I X 6

Gc/s

ADD

Allocation to Services		
Region 1	Region 2	Region 3
33.0 - 33.4 RADIO ASTRONOMY RADIONAVIGATION	33.0 - 33.4 RADIONAVIGATION 412A	

ADD 412A In Cuba and India, the band 33.0 - 33.4 Gc/s is also allocated to the radio astronomy service.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 161-E
1 November, 1963
Original: Spanish

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

AGENDA

THIRD MEETING OF COMMITTEE 6 (REGULATIONS)

Saturday, 2 November 1963, at 9.30 a.m. in Room C

1. First Report of Working Group 6B (Document No. 102)

2. Second Report of Working Group 6B (Document No. 136)

3. Proposal by India for Revision of Article 8 of the Radio Regulations (Document No. 81)

4. Draft Recommendation on Calculation of co-ordination distance for earth stations in the communication-satellite service (Document No. 157) (see also Document No. 122 emanating from Committee 4)

5. Other business.

Juan AUTELLI
Chairman of Committee 6

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 162-E (Rev.2)
6 November, 1963
Original: French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE 6th MEETING

Friday, 1 November 1963 at 9.30 a.m. and 2.30 p.m.

Chairman: Mr. W. KLEIN (Switzerland)

Vice-Chairman: Mr. S. FUJIKI (Japan)

1. The Agenda for the Meeting as set forth in Document No. 154 was approved with the following amendments: Change Meeting number to "SIXTH". Add new 1) Paragraph 1 of Document No. 127 on Telemetering (267 - 273 Mc/s). Renumber subsequent paragraphs.

2. Appendix 1 of Third Report by Working Group 5A (Document No. 127) on Space Telemetering (267 - 273 Mc/s Band)

a) Appendix 1 to Document No. 127 was accepted as amended below: Add the following words to the end of Footnote 309B: "subject to agreement between the administrations concerned and administrations which may be affected." /to be drafted, for example, on the lines of footnote 276/.

b) Add new footnote 309C for band 272 - 273 Mc/s:

"In Ethiopia, Israel and in Japan, in the 272 - 273 Mc/s band, the FIXED and MOBILE services are primary services and SPACE TELEMETERING a secondary service."

c) Appendix 1 to Document No. 127 as amended above was adopted.

3. Fourth Report of Working Group 5A (Document No. 125 Radioastronomy Service)

a) This document was introduced by Mr. V. Rao (India) with remarks on the two different forms of presentation resulting from differences of opinion expressed by some administrations. A clear majority was expressed for Appendices 1, 3, 5 and 7 to Document No. 125 which were approved as amended below:

b) Appendices 1 and 3 :

Add the following administrations to footnotes 405B and 409A: the P.R. of Bulgaria, Cuba, the Hungarian P.R., Japan, Kuwait, Lebanon, Pakistan, the P.R. of Poland, the U.A.R., the F.S.R. of Yugoslavia, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R.

c) Appendix 5 :

Add the following administrations to footnote 409B : the P.R. of Bulgaria, Cuba, the Hungarian P.R., Kuwait, Lebanon, the P.R. of Poland, the U.A.R., the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R.

d) Appendix 7 :

Add the following administrations to footnote 412A : the P.R. of Bulgaria, Cuba, the Hungarian P.R., the P.R. of Poland, the U.A.R., the Roumanian P.R., the P.R. of Czechoslovakia and the U.S.S.R.

4. Second Report from Working Group 5 (Document No. DT/106)
136 - 137 Mc/s band

a) This document was introduced by Mr. B. Nielsen (Denmark), Chairman of Working Group 5 ad hoc. An additional footnote 281B was added for Region 2 by Mr. Nielsen after the meeting of the ad hoc group.

As at the preceding meeting (Document No. 158), it was agreed to put in the Table for the three Regions :

SPACE RESEARCH (Telemetering and Tracking)

b) Annex 1 to Document No. DT/106 was accepted with the following amendment :

Delete footnote 279 from this part of the spectrum for Region 3.

It was left to the Plenary Meeting to decide whether the amended footnote 281 should be deleted or retained, unless the U.S.S.R. were to change its reservation before the Plenary Meeting, in which case the note would be deleted.

It was left to the Editorial Committee to decide whether or not footnote 281A should be included.

c) Annex 2 to Document No. DT/106 was agreed to by Committee 5 with the following amendments :

"Recommendation No. .....
relating to .....

The Conference .....

considering

a) .....

b) .....

c) .....

d) .....

recommends

1. that Administrations of all Regions operating stations in the Fixed and Mobile Services in the band 136 - 137 Mc/s cease the operation of these stations as soon as possible;

2. .....

requests the I.F.R.B.

to publish ....."

5. Report by Working Group 5 ad hoc (Document No. DT/72) (137 - 138 Mc/s Band)

The Appendix to this document was accepted as discussed and amended as follows :

The Radiolocation Service which had been a permitted service in Region 2, is deleted from the 137 - 138 Mc/s band.

For all Regions, the following services should be in the Table with the footnote status indicated below for the band 137 - 138 Mc/s :

SPACE RESEARCH (Telemetering and Tracking)
SPACE (Telemetering)
METEOROLOGICAL SATELLITES

276A In Regions 2 and 3, the band 137 - 138 Mc/s is also allocated to the Fixed and Mobile Services until 1 January 1969.

281E In Cuba, Pakistan and in the Republic of the Philippines the band 137 - 138 Mc/s is also allocated to the FIXED and MOBILE Services.

278 Modify to exclude this portion of the spectrum from the footnote.

279A Modify as follows : "In Australia the band 137 - 144 Mc/s is also allocated to the broadcasting (television) service."

282 Modify to exclude this portion of spectrum from the footnote.

283B In the P.R. of Bulgaria, the Hungarian P.R., Kuwait, Lebanon, the P.R. of Poland, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. the Aeronautical Mobile Service is a primary service. In all other countries in Region 1 the Aeronautical Mobile Service will remain a primary service until 1 January 1969.

283A In Norway, Switzerland and Turkey the FIXED and MOBILE Services may continue to operate as primary services until 1 January 1969.

/Note: Switzerland and Turkey may reconsider their position at the Plenary Meeting./

275 Since most of the administrations concerned were absent, it was decided that it would be left to the Plenary Meeting to decide whether the 137 - 138 Mc/s band should be retained or deleted from footnote 275. South Africa, however, was present and is prepared to delete 137 - 138 Mc/s from footnote 275.

6. The meeting rose at 4.30 p.m.

Rapporteur : Chairman :

J. BUSSY W. KLEIN

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 162-E (Rev.)
3 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE SIXTH MEETING

Friday 1 November 1963 at 9.30 a.m. and 2.30 p.m.

1. The agenda as set out in Document No. 137 was approved.

2. Document No. 127, § 1, 267 - 273 Mc/s Band

a) It was decided to insert the following words in footnote 309B : "subject to agreement between the administrations concerned" /to be drafted, for example, on the lines of footnote 276/.

b) A footnote 309C was added :

"In Ethiopia, in Israel and in Japan, in the 272 - 273 Mc/s band, the FIXED and MOBILE services are primary services and SPACE TELEMETERING a secondary service."

c) Appendix 1 to Document No. 127 as amended above was adopted.

3. Document No. 125 (Radioastronomy Service)

a) In accordance with the wish of the majority, Appendices 1, 3, 5 and 7 were taken as a basis for discussion.

b) Appendices 1 and 3 :

The P.R. of Bulgaria, Cuba, the Hungarian P.R., Japan, Kuwait, Lebanon, Pakistan, the P.R. of Poland, the U.A.R., the F.S.R. of Yugoslavia, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. should be included in footnotes 405B and 409A.

c) Appendix 5 :

The P.R. of Bulgaria, Cuba, the Hungarian P.R., Kuwait, Lebanon, the P.R. of Poland, the U.A.R., the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. should be inserted in footnote 409B.

d) Appendix 7

The P.R. of Bulgaria, Cuba, the Hungarian P.R., the P.R. of Poland, the U.A.R., the Roumanian P.R., the P.R. of Czechoslovakia and the U.S.S.R. should be inserted in footnote 412A.

e) Appendices 1, 3, 5 and 7, thus amended were approved.

4. Document No. DT/106 (136 - 137 Mc/s band)

a) As at the preceding meeting, it was decided to put in the Table for the three Regions :

SPACE RESEARCH (Telemetering and tracking).

b) It was left to the Plenary Meeting to decide whether the amended footnote 281 should be deleted or retained, unless the U.S.S.R. were to change its position before the Plenary Meeting, in which case the note would be deleted.

c) It was left to the Editorial Committee to decide whether or not footnote 281A should be inserted.

d) With the above amendment and reservations, Annex 1 to Document No. DT/106 was adopted.

e) Annex 2 was amended as follows :

"
Recommendation No. .....
relating to .....

The Conference ....

considering

a) .....

b) .....

c) .....

d) .....

recommends

1. that Administrations of all Regions operating stations in the Fixed and Mobile Services in the band 136 - 137 Mc/s cease the operation of these stations as soon as possible;

2. .....

requests the I.F.R.B.

to publish....."

f) Document No. DT/106, as amended above, was adopted.

5. Document No. DT/72 (137 - 138 Mc/s Band)

a) The Radiolocation Service which had been a permitted service in Region 2, was excluded from the 137 - 138 Mc/s band.

b) For Regions 2 and 3 it was decided :

- to put in the Table : SPACE RESEARCH (Telemetering and Tracking),
SPACE (Telemetering)
METEOROLOGICAL SATELLITES

with the following footnotes :

276A In Regions 2 and 3, the band 137 - 138 Mc/s is also allocated to the Fixed and Mobile Services until 1 January 1969.

276B In Cuba and in the Republic of the Philippine the band 137 - 138 Mc/s is also allocated to the Fixed and Mobile Services.

279A In Australia the band 137 - 144 Mc/s is also allocated to Broadcasting (Television).

c) The Table, thus amended in respect of Regions 2 and 3, was adopted.

d) For Region 1 it was decided :

- to put in the table : SPACE RESEARCH (Telemetering and Tracking),
SPACE (Telemetering)
METEOROLOGICAL SATELLITES

with the following footnotes :

281A In the P.R. of Bulgaria, the Hungarian P.R., the P.R. of Poland, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. the Aeronautical Mobile Service is a primary service. In all other countries in Region 1 the Aeronautical Mobile Service will remain a primary service until 1 January 1969.

283A In Norway, Sweden and Turkey the Fixed and Mobile Services may continue to operate as primary services until 1 January 1969.

/Note : Switzerland and Turkey may reconsider their position at the Plenary Meeting/.

e) Since most of the countries concerned were absent, it was decided that it would be left to the Plenary Meeting to decide whether footnote 275 should be retained or deleted.

f) Document No. DT/72, as amended above, was approved.

6. The meeting rose at 4.30 p.m.

Chairman

W. KLEIN

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 162-E
1 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE SIXTH MEETING

Friday 1 November 1963 at 9.30 a.m. and 2.30 p.m.

1. The agenda as set out in Document No. 137 was approved.

2. Document No. 127, § 1, 267 - 273 Mc/s Band

a) It was decided to insert the following words in footnote 309B : "subject to agreement between the administrations concerned" /to be drafted, for example, on the lines of footnote 276/.

b) A footnote 309C was added :

"In Ethiopia, in Israel and in Japan, in the 272 - 273 Mc/s band, the FIXED and MOBILE services are primary services and SPACE TELEMETERING a secondary service."

c) Appendix 1 to Document No. 127 as amended above was adopted.

3. Document No. 125 (Radioastronomy Service)

a) In accordance with the wish of the majority, Appendices 1, 3, 5 and 7 were taken as a basis for discussion.

b) Appendices 1 and 3 :

The P.R. of Bulgaria, Cuba, the Hungarian P.R., Japan, Kuwait, Lebanon, Pakistan, the P.R. of Poland, the U.A.R., the F.S.R. of Yugoslavia, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. should be included in footnotes 405B and 409A.

c) Appendix 5 :

The P.R. of Bulgaria, Cuba, the Hungarian P.R., Kuwait, Lebanon, the P.R. of Poland, the U.A.R., the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. should be inserted in footnote 409B.

d) Appendix 7

The P.R. of Bulgaria, Cuba, the Hungarian P.R., the P.R. of Poland, the U.A.R., the Roumanian P.R., the P.R. of Czechoslovakia and the U.S.S.R. should be inserted in footnote 412A.

e) Appendices 1, 3, 5 and 7, thus amended were approved.

4. Document No. DT/106 (136 - 137 Mc/s band)

a) As at the preceding meeting, it was decided to put in the Table for the three Regions :

SPACE RESEARCH (Telemetering and tracking).

b) It was left to the Plenary Meeting to decide whether the amended footnote 281 should be deleted or retained, unless the U.S.S.R. were to change its position before the Plenary Meeting, in which case the note would be deleted.

c) It was left to the Editorial Committee to decide whether or not footnote 281A should be inserted.

d) With the above amendment and reservations, Annex 1 to Document No. DT/106 was adopted.

e) Annex 2 was amended as follows :

"

Recommendation No. .....
relating to .....

The Conference ....

considering

a) .....

b) .....

c) .....

d) .....

recommends

1. that Administrations of all Regions operating stations in the Fixed and Mobile Services in the band 136 - 137 Mc/s cease the operation of these stations as soon as possible;

2. .....

requests the I.F.R.B.

to publish....."

f) Document No. DT/106, as amended above, was adopted.

5. Document No. DT/72 (137 - 138 Mc/s Band)

a) The Radiolocation Service which had been a permitted service in Region 2, was excluded from the 137 - 138 Mc/s band.

b) For Regions 2 and 3 it was decided :

- to put in the Table : SPACE RESEARCH (Telemetering and Tracking),
SPACE TELEMETERING
METEOROLOGICAL SATELLITES

with the following footnotes :

276A In Regions 2 and 3, the band 137 - 138 Mc/s is also allocated to the Fixed and Mobile Services until 1 January 1969.

276B In Cuba and in the Republic of the Philippine the band 137 - 138 Mc/s is also allocated to the Fixed and Mobile Services.

279A In Austria the band 137 - 138 Mc/s is also allocated to Broadcasting (Television).

c) The Table, thus amended in respect of Regions 2 and 3, was adopted.

d) For Region 1 it was decided :

- to put in the table : SPACE RESEARCH (Telemetering and Tracking),
SPACE TELEMETERING
METEOROLOGICAL SATELLITES

with the following footnotes :

281A In the P.R. of Bulgaria, the Hungarian P.R., the P.R. of Poland, the Roumanian P.R., the S.R. of Czechoslovakia and the U.S.S.R. the Aeronautical Mobile Service is a primary service. In all other countries in Region 1 the Aeronautical Mobile Service will remain a primary service until 1 January 1969.

283A In Norway, Sweden and Turkey the Fixed and Mobile Services may continue to operate as primary services until 1 January 1969.

/Note : Switzerland and Turkey may reconsider their position at the Plenary Meeting/.

e) Since most of the countries concerned were absent, it was decided that it would be left to the Plenary Meeting to decide whether footnote 275 should be retained or deleted.

f) Document No. DT/72, as amended above, was approved.

6. The meeting rose at 4.30 p.m.

Chairman
W. KLEIN

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 163-E (Rev.)
2 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

DRAFT RECOMMENDATION

STUDY OF MODULATION METHODS FOR RADIO RELAY SYSTEMS

The E.A.R.C., Geneva, 1963,

considering

a) that Article 5 of the Radio Regulations permits the sharing of certain frequency bands by the communication-satellite service and the fixed service,

b) that the sharing criteria to avoid mutual interference between the stations in these two services have been established in Article 7,

c) that among many factors of overall efficiency of utilization of frequency bands it seems that the reduction of interference between two services is most important.

noting

i) that the overall efficiency of utilization of the frequency bands shared by the two services depends on the methods of modulation used by the systems concerned,

ii) that studies of the preferred modulation characteristics for communication-satellite systems are to be carried out under Study Programme 235D (IV) of the C.C.I.R.

recommends

that the C.C.I.R. should study especially, under the general framework of Question 236, modulation methods (such as P.C.M. using phase or frequency modulation) in particular for line-of-sight radio relay systems in relation to sharing with communication satellite systems.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 163-E
1 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

DRAFT RECOMMENDATION

STUDY OF MODULATION METHODS FOR RADIO RELAY SYSTEM

The E.A.R.C., Geneva, 1963,

considering

a) that Article 5 of the Radio Regulations permits the sharing of certain frequency bands by the communication-satellite service and fixed service,

b) that the sharing criteria to avoid mutual interference between the stations in these two services have been established in Article 7,

c) that the overall efficiency of utilization of the frequency bands shared by the two services depends on the methods of modulation used by the systems concerned,

noting

i) that among many factors of overall efficiency of utilization of frequency bands it seems that the reduction of interference between two services is most important.

ii) that studies of the preferred modulation characteristics for communication-satellite systems are to be carried out under Study Programme 235D,

recommends

that the C.C.I.R. should study especially, under the general framework of Question 236, modulation methods for line-of-sight radio-relay system (such as P.C.M. using phase or frequency modulation) in relation to sharing with communication-satellite system.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 164-E
2 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FOURTH REPORT BY WORKING GROUP 5C

TO COMMITTEE 5 (ALLOCATIONS)

METEOROLOGICAL-SATELLITE SERVICE

1. With the exception of proposals for the re-allocation of frequencies in the bands 137 - 138 Mc/s and 7200 - 7750 Mc/s which were dealt with in other Working Groups, all proposals before the Conference concerning Meteorological-satellites have been considered in this Working Group.

2. Consequential amendments to the Table of Frequency Allocations in Article 5 are presented in the Appendices attached which are subject to the following comments:

2.1 Band 400.05 - 401 Mc/s

Appendix 1 was agreed without opposition.

2.2 Band 450 - 470 Mc/s

Appendix 2 represents the largest measure of agreement reached on proposals in this band. The Delegation of France was strongly opposed to the inclusion of Meteorological-satellites in this band and pressed for the retention of the existing allocations. The Delegations of Ethiopia and Kuwait supported the French view and those of Lebanon and Switzerland reserved their positions.

2.3 Band 1660 - 1670 Mc/s

The Group recognised that in this band there were also proposals for Radio Astronomy, dealt with in Group 5B which affected part of the band. For clarity, it was agreed to present this band as in Appendix 3 there being sufficient uniformity in the relevant foot-notes to do so. The appropriate document for cross-reference is No. 160.

2.4 Band 1690 - 1700 Mc/s

Appendix 4 represents the maximum extent of agreement attainable on the proposals in this band. The Delegations of the countries appearing in foot-note 354A, in this band, pressed for the retention of the existing allocations in the Table. The Delegation of the U.S.A. reserved its position on this Appendix.

2.5 Band 1770 - 1790 Mc/s

With respect to Appendix 5, the Delegation of France supported by Ethiopia and Kuwait, strongly opposed the inclusion of Meteorological-satellites in this band and sought the retention of the existing allocations.

The Delegations of the U.S.A., Canada, Spain, Japan, Italy and Norway reserved their positions and the right to return to this question at a later stage.

2.6 Bands 9.8 - 10 Gc/s and 10.7 - 11.7 Gc/s

The Group considered the stated requirement for the addition of a foot-note to the Table to permit the use of frequencies at this order for weather radar on Meteorological-satellites. The need for such a foot-note on the lines of that at A of Appendix 6 was agreed. The Delegations of Canada, France, the United Kingdom, the U.S.A. and the U.S.S.R. undertook to prepare a co-ordinated proposal to Committee 5 for the precise choice of the band required. Appendix 6A is one possible example.

2.7 Band 33.4 - 36 Gc/s

The Group accepted the requirement for the Radio Regulations to contain provisions for the Meteorological-satellite Service to use part of the band 33.4 - 36 Gc/s for devices capable of detecting clouds. As for the 10,000 Mc/s band there was some lack of agreement on the precise frequencies and the same Delegations undertook to prepare a suitable co-ordinated proposal to Committee 5. Appendix 6B is an example of a possible foot-note.

J. PENWARDEN
Chairman
Working Group 5C

Appendices : 6

A P P E N D I X 1

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
400.05 - 401	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE (Maintenance Telemetering) SPACE RESEARCH (Telemetering and Tracking) 312A 313 314	

SUP 280

SUP 312

ADD 312A In Sweden, the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services until 1 January, 1966.

MOD 313 In Albania, Bulgaria, Greece, Hungary, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services.

MOD 314 In the United Kingdom, the band 400.05 - 420 Mc/s is also allocated to the radiolocation service, however, between 400.05 and 410 Mc/s the allocation to the radiolocation service is on a secondary basis.

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A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
450 - 460	FIXED MOBILE 318	
460 - 470	FIXED METEOROLOGICAL-SATELLITE 324A MOBILE	

MOD

NOC 318

ADD 324A It is intended that meteorological-satellite space stations operating in this band shall transmit to selected earth stations. The location of such earth stations is subject to agreement among administrations concerned and those whose services, operating in accordance with the Table, may be affected. See Article 7, Section for further conditions governing the use of this band by the meteorological-satellite service.

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A P P E N D I X 3

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	1660 - 1664.4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	
ADD	1664.4 - 1668.4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A Radio Astronomy 353 354 354A 354B	
ADD	1668.4 - 1670	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	

ADD 324A /See Appendix 2/

NOC 353

NOC 354

ADD 354A In Bulgaria, Cuba, the U.A.R., Hungary, Kuwait, Lebanon, Morocco, Pakistan, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the bands 1660 - 1670 Mc/s and 1690 - 1700 Mc/s are also allocated /on a primary basis/ to the fixed service and the mobile, except aeronautical mobile, service.

ADD 354B In Australia, Indonesia and New Zealand, the bands 1660 - 1670 Mc/s and 1690 - 1700 Mc/s are also allocated, on a secondary basis, to the fixed service and the mobile, except aeronautical mobile, service.

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A P P E N D I X 4

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1690 - 1700 METEOROLOGICAL AIDS METEOROLOGICAL - SATELLITE 324A Fixed Mobile except aeronautical mobile 353 354 354A 354B	1690 - 1700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 354A 354B	

ADD 324A /See Appendix 2/

NOC 353

NOC 354

ADD 354A /See Appendix 3/

ADD 354B /See Appendix 3/

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A P P E N D I X 5

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1770 - 1790 FIXED METEOROLOGICAL-SATELLITE 324A Mobile 356 356A	1770 - 1790 FIXED METEOROLOGICAL-SATELLITE 324A MOBILE	

ADD 324A /See Appendix 2/

NOC 356

ADD 356A In Israel, the band 1770 - 1790 Mc/s is allocated, on a secondary basis, to the meteorological-satellite service.

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A P P E N D I X 6A

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
9500 - 9800 RADIOLOCATION 398 399A		

NOC 398

ADD 399A The band 9600 - 9800 Mc/s may be used by weather radar on meteorological-satellites.

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A P P E N D I X 6B

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
33.4 - 36 RADIOLOCATION 407 408 412 412A		

NOC 407

NOC 408

NOC 412

ADD 412A The band (100 Mc/s wide) may be used by weather radar devices on meteorological-satellites for the detection of cloud.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 165-E
3 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SIXTH AND LAST REPORT BY WORKING GROUP 5B

TO COMMITTEE 5

SPACE RESEARCH SERVICE

1. Bands 15,762 - 15,768 kc/s and 18,030 - 18,036 kc/s

1.1 The proposal to allocate these bands on a shared basis between the Fixed and Radio Astronomy Services was supported by two Delegations while two other Delegations expressed doubt as to the utility of such sharing. A number of countries could agree to satisfy the requirement by allocating the bands on a secondary basis, to the Radio Astronomy Service.

1.2 There was general agreement to provide for the allocation to the interested countries in a foot-note, the text of which appears in Appendix 1 attached hereto.

2. Band 143.6 - 143.65 Mc/s

There was general agreement on the draft new Table which appears in Appendix 2 attached hereto.

3. Band 400.05 - 401 Mc/s

The draft new Table, with new and revised foot-notes, as appropriate, given in Appendix 3 attached hereto was agreed, subject to the consideration, in Working Group 5C, of proposals concerning the Meteorological-satellite Service.

4. Band 900 - 1000 Mc/s

The proposal reproduced on page 9/5 of Document No. 17 was introduced by the Delegation of the U.S.S.R., who explained that the requirement was in connection with Space Research. However, the Group preferred to have this proposal considered in Committee 5.

5. Band 1700 - 1710 Mc/s

The Group agreed on the draft new Table and associated foot-note as shown in **Appendix 4** attached hereto.

6. Band 5670 - 5725 Mc/s

6.1 Consideration of the proposal appearing on page 14/6 (Rev.) of Document No. 17 was undertaken by a Group ad hoc comprising representatives of the U.S.S.R., the U.S.A., France, New Zealand and the United Kingdom with Mr. Mohr (F.R. of Germany) as its Convenor.

6.2 The Group ad hoc was invited to report the results obtained to the Chairman of Working Group 5B for inclusion in the final report to Committee 5.

6.3 The resultant draft new Table and associated foot-notes appear in Appendix 5 attached hereto.

7. Band 15.15 - 15.35 Gc/s

7.1 All proposals before the Conference concerning the allocation to the Space Research Service in the band 15.25 - 15.35 Gc/s were considered.

7.2 The proposers of this allocation pointed out that this proposal had, as a consequential change, the up-grading of the existing allocations to the Fixed and Mobile Services, in the band 15.15 - 15.25 Gc/s, from secondary services to primary services. The Fixed and Mobile Services would then be allocated, in the draft new Table, on a primary basis for a continuous band from 14.4 Gc/s to 15.25 Gc/s.

7.3 There was no objection to the allocation on a primary basis in the band 15.25 - 15.35 Gc/s to the Space Research Service. However, the Delegations of the U.S.S.R. and Poland reiterated the proposal to place in the draft new Table for Region 1 to the Space Research, Fixed and Mobile Services on an equal status of primary services.

7.4 The draft new Table and associated foot-notes reflecting the above agreement appears at Appendix 6 attached hereto.

8. Bands 31.0 - 31.3 Gc/s, 31.8 - 32.3 Gc/s and 34.2 - 35.2 Gc/s

8.1 Consideration of the relevant proposals was undertaken by a Group ad hoc comprising representatives of the U.S.S.R., France, New Zealand, India and the United Kingdom with Mr. B. Desta (Ethiopia) as its Convenor.

8.2 The resultant draft new Tables and associated foot-notes, as agreed by the Working Group, appear at Appendices 7, 8 and 9 to the present report.

V.V. RAO
Chairman
Working Group 5B

Appendices : 9

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A P P E N D I X 1

NOC	Table 215A

ADD 215A In Czechoslovakia, the U.S.S.R., ..., ..., ..., ..., and ....., the bands 15,762 - 15,768 kc/s and 18,030 - 18,036 kc/s are also allocated, on a secondary basis, to the radio astronomy service.

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A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
143.6 - 143.65	143.6 - 143.65	143.6 - 143.65
SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)
AERONAUTICAL MOBILE (OR)	FIXED	FIXED
	MOBILE	MOBILE
	RADIOLOCATION (Permitted service)	
275 282 283		278 279A 284

NOC 275

NOC 278

ADD 279A In Australia, the band 137 - 144 Mc/s is allocated to the broadcasting service for television.

NOC 282

NOC 283

NOC 284

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A P P E N D I X 3

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
400.05 - 401		
/WG. 5@7 ADD	/METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE/ SPACE RESEARCH (Telemetering) 314A 312A 313 314	

ADD 312A In Sweden, the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services until 1 January, 1966.

MOD 313 In Albania, Bulgaria, Greece, Hungary, Poland, Yugoslavia, Roumainia, Czechoslovakia and the U.S.S.R., the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services.

MOD 314 In the United Kingdom, the band 400.05 - 420 Mc/s is also allocated to the radiolocation service; however, between 400.05 and 410 Mc/s the allocation to the radiolocation service is on a secondary basis.

ADD 314A Space research stations employing frequencies in the band 400.05 - 401 Mc/s for telemetering purposes may also transmit tracking signals in this band.

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A P P E N D I X 4

Mc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
	1700 - 1710	1700 - 1710	1700 - 1710
	FIXED	SPACE RESEARCH (Telemetering and tracking)	FIXED
MOD	SPACE RESEARCH (Telemetering and tracking)		SPACE RESEARCH (Telemetering and tracking)
	Mobile		MOBILE
ADD		355A	

ADD 355A In Cuba, the band 1700 - 1710 Mc/s is also allocated to the fixed and mobile services.

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APPENDIX 5

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5670 - 5725	RADIOLOCATION Amateur Space Research (Deep space) 389 389A	

NOC 389

ADD 389A In the U.S.S.R., ..., ..., and ....., the band 5670 - 5725 Mc/s is also allocated, on a primary basis, to the space research service.

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A P P E N D I X 6

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	14.4 - 15.25 FIXED MOBILE		
MOD ADD	15.25 - 15.35 SPACE RESEARCH 409A 409B		

ADD 409A In Bulgaria, Cuba, Hungary, Kuwait, Pakistan, Poland, the U.A.R., Roumania, Czechoslovakia and the U.S.S.R., the band 15.25 - 15.35 Gc/s is also allocated to the fixed and mobile services.

ADD 409B In Austria, Belgium, Japan, the Netherlands, Portugal, the F.R. of Germany, the United Kingdom, and Switzerland, the band 15.25 - 15.35 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

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A P P E N D I X 7

Gc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
ADD	31.0 - 31.3 FIXED MOBILE Space Research 412A		

ADD 412A In Bulgaria, Cuba, Hungary, Poland, Czechoslovakia and the U.S.S.R., the band 31.0 - 31.3 Gc/s is also allocated, on a primary basis, to the space research service.

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A P P E N D I X 8

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
ADD 31.8 - 32.3	RADIONAVIGATION Space Research 412B	

ADD 412B In Bulgaria, Cuba, Hungary, Poland, Yugoslavia, Czechoslovakia and the U.S.S.R., the band 31.8 - 32.3 Gc/s is also allocated, on a primary basis, to the space research service.

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A P P E N D I X 9

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
34.2 - 35.2 RADIOLOCATION Space Research 407 408 412 412C		

NOC 407

NOC 408

NOC 412

ADD 412C In Bulgaria, Cuba, Hungary, Poland, Czechoslovakia and the U.S.S.R., the band 34.2 - 35.2 Gc/s is also allocated, on a primary basis, to the space research service.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 166-E
5 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Delegation of the State of Israel

RECOMMENDATION

The Extraordinary Administrative Radio Conference, Geneva 1963,

considering,

Resolutions 1721 (XVI) part D and 1802 (XVII) part IV para. 3 of the General Assembly of the United Nations which refer inter alia to the unanimous belief of the members of the United Nations that communication satellites should be organized on a global basis with non-discriminatory access for all nations,

considering,

the economic and social implications for all nations of global communications by satellites recently expressed in the report prepared for Member States and Associate Members of U.N.E.S.C.O. in accordance with the decision of the 12th session of its General Conference in December 1962,

recognizing,

that all Members and Associate Members of the Union have an interest in and right to an equitable and rational use of frequency bands allocated for space communications,

recommends,

to all Member States and Associate Members of the I.T.U.,

that the utilization and exploitation of the frequency spectrum for space communication be subject to international law and to international agreements based on principles of justice and equity permitting the use and sharing of allocated frequencies in the mutual interest of all nations.

Ing. E. RON
Head of the Israeli Delegation

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Addendum to
Document No. 167-E
5 November 1963

A D D E N D U M

Add on page B1-04

ADD 286A In the United Kingdom the band 150.05 to 151 Mc/s is allocated to Radio Astronomy and the band 151 to 153 Mc/s is allocated to Radio Astronomy on a primary basis and Meteorological Aids on a secondary basis; however, in this band the provisions of No. 274 apply.

BLUE PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 167
4 November, 1963

E

B. 1

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Cttee 5	Doc 111 App 1	3	9995-10005 kc/s	
	Doc 111 App 1	3	19990-20010 kc/s	
	Doc 111 App 1 and Doc 111 App 2	3 + 5	29·7-41 Mc/s	
	Doc 95 App 1	3	144-146 Mc/s	
	Doc 108 App 1	3	146-174 Mc/s	
	Doc 111 App 3	7	174-216 Mc/s	
	Doc 113 App 2	5	401-402 Mc/s	
	Doc 108 App 2	5	420-470 Mc/s	
	Doc 112 App 1	3	1400-1427 Mc/s	
	Doc 108 App 3	7	1427-1429 Mc/s	
	Doc 113 App 1	3	1525-1660 Mc/s	
	Doc 111 App 4	9	1710-2290 Mc/s	
	Doc 111 App 5	11	2290-2300 Mc/s	
	Doc 123 App 1	3	2550-2700 Mc/s	
	Doc 112 App 2	5	4990-5000 Mc/s	
	Doc 111 App 6	13	5250-5350 Mc/s	
	Doc 111 App 7	15	8400-8500 Mc/s	
	Doc 111 App 8	17	31·5-31·8 Gc/s	
	Doc 113 App 3	7	Resolution	Band 1525-1540 Mc/s

Y. PLACE
Chairman of the Editorial Committee

Annex : 17 Pages

In Article 5, for the Table of Frequency Allocations for the band 9 995-10 005 kc/s there shall be substituted the following:

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
9 995—10 005		
	STANDARD FREQUENCY	
	204 214 215	

(MOD) **215** The band 10 003-10 005 kc/s is also allocated, on a secondary basis, to the space research service.

In Article 5, for the Table of Frequency Allocations for the band 19 990-20 010 kc/s there shall be substituted the following:

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
19 990—20 010		
	STANDARD FREQUENCY	
	204 220 221	

(MOD) **221** The band 19 990-20 010 kc/s is also allocated, on a secondary basis, to the space research service.

In Article 5, for the Table of Frequency Allocations for the band 29·7-41 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
29·7—30·005	FIXED 228 229 231 232 MOBILE 233	
30·005—30·010	FIXED 228 229 231 MOBILE SPACE RESEARCH SPACE (Satellite identification) 233	
30·010—41	FIXED 228 229 230 231 MOBILE 233 234 235 236	

(MOD) **235** The band 39·986-40·002 Mc/s is also allocated, on a secondary basis, to the space research service.

In Article 5, for the Table of Frequency Allocations for the band 144-146 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
144—146		
AMATEUR		
279A		

SUP **[279]** [Deleted for the band 144-146 Mc/s].

ADD **279A** In the band 144-146 Mc/s, space satellites may be used by the Amateur Service. Such use should be co-ordinated among national amateur organisations concerned and is subject to the provisions of Article 41.

In Article 5, for the Table of Frequency Allocations for the band 146-174 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
146—151 FIXED MOBILE except aeronautical mobile (R) 274 285 285A 286	**146—148** AMATEUR 289	
151—154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 285 286	**148—174** FIXED MOBILE	**148—170** FIXED MOBILE
154—156 FIXED MOBILE except aeronautical mobile (R) 285 285A		279 285A 287 290
156—174 FIXED MOBILE except aeronautical mobile 285 287 288	285A 287	**170—174** FIXED MOBILE BROADCASTING

ADD

285A The frequencies 148·25 Mc/s ± 15 kc/s and 154·2 Mc/s ± 15 kc/s may be used for space telecommand, subject to agreement among the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

In Article 5, for the Table of Frequency Allocations for the band 174-216 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
174—216	**174—216**	
BROADCASTING	FIXED MOBILE BROADCASTING	
291 292 293 294	294 295 296	

MOD **294** The band 183·1-184·1 Mc/s is also allocated, on a secondary basis, to the space research service.

In Article 5, for the Table of Frequency Allocations for the band 401-406 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
401—402		
	METEOROLOGICAL AIDS	
	SPACE (TELEMETERING) 315A	
	Fixed	
	Mobile except aeronautical mobile	
	314 315 315B 316	
402—406		
	METEOROLOGICAL AIDS	
	Fixed	
	Mobile except aeronautical mobile	
	314 315 316 317	

ADD

MOD **314** In the United Kingdom, the band 400.05-420 Mc/s is also allocated to the radiolocation service; however, between 400.05 and 410 Mc/s the allocation to the radiolocation service is on a secondary basis.

NOC **315**

ADD **315A** Space stations employing frequencies in the band 401-402 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD **315B** In Australia and Pakistan, the space (telemetering) service in the band 401-402 Mc/s, is a secondary service.

NOC **316**

NOC **317**

In Article 5, for the Table of Frequency Allocations for the band 420-470 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
420—430 FIXED MOBILE except aeronautical mobile *Radiolocation* 318 319	**420—450**	
430—440 AMATEUR RADIOLOCATION 318 319 320 321 322		RADIOLOCATION *Amateur*
440—450 FIXED MOBILE except aeronautical mobile *Radiolocation* 318 319 319A		318 319A 323 324
450—470 FIXED MOBILE 318 319A		

319A The band 449.75-450.25 Mc/s may be used for space telecommand, subject to agreement among the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

In Article 5, for the Table of Frequency Allocations for the band 1400-1427 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1400—1427		
	RADIO ASTRONOMY	

SUP [350]

In Article 5, for the Table of Frequency Allocations for the band 1427-1429 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1427—1429	FIXED	
	MOBILE except aeronautical mobile	
	SPACE (TELECOMMAND)	

In Article 5, for the Table of Frequency Allocations for the band 1429-1540 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 429—1 525 FIXED MOBILE except aeronautical mobile	**1 429—1 435** FIXED MOBILE **1 435—1 525** MOBILE *Fixed*	**1 429—1 525** FIXED MOBILE
1525—1535 FIXED 350B SPACE (TELEMETERING) 350A *Mobile* except aeronautical mobile 350C	**1525—1535** SPACE (TELEMETERING) 350A *Fixed* *Mobile* 350D	**1525—1535** FIXED 350B SPACE (TELEMETERING) 350A *Mobile* 350E
1535—1540 SPACE (TELEMETERING) 350A 351 352		

ADD **350A** Space stations employing frequencies in the band 1 525-1 540 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD **350B** As regards the category of the fixed service, see Resolution No. [redacted].

ADD **350C** In Albania, Bulgaria, France, Hungary, Poland, United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 1 525-1 535Mc/s is also allocated, on a primary basis, to the mobile, except aeronautical mobile, service. As regards the category of this service, see Resolution No. [redacted].

ADD **350D** In Cuba, the band 1 525-1 535 Mc/s is also allocated, on a primary basis, to the mobile service.

ADD **350E** In Japan, the band 1 525-1 535 Mc/s is also allocated to the mobile service, on a primary basis, until 1 January, 1969.

MOD **351** In Italy, the band 1 535-1 600 Mc/s is also allocated to the fixed service until 1 January, 1970.

MOD **352** In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 1 535-1 660 Mc/s is also allocated to the fixed service. As regards the category of the fixed service in the band 1 535-1 540 Mc/s, see Resolution No. [redacted].

In Article 5, for the Table of Frequency Allocations for the band 1710-2290 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 710—2 290	**1 710—2 290**	
FIXED	FIXED	
Mobile	MOBILE	
356 356A	356A	

NOC **356**

ADD **356A** The band 2 110-2 120 Mc/s may be used for telecommand in conjunction with spacecraft engaged in deep space research, subject to agreement between the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

In Article 5, for the Table of Frequency Allocations for the band 2290-2300 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2 290—2 300	**2 290—2 300**	**2 290—2 300**
FIXED	SPACE RESEARCH (Telemetering and tracking in deep space)	FIXED
SPACE RESEARCH 356A (Telemetering and tracking in deep space)		MOBILE
Mobile	356B	SPACE RESEARCH (Telemetering and tracking in deep space)

SUP [355]

ADD **356A** In Austria and Ethiopia, the space research service in the band 2 290-2 300 Mc/s is a secondary service.

ADD **356B** In Cuba, the band 2 290-2 300 Mc/s, is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the band 2550-2700 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
2 550—2 690	FIXED MOBILE 362 363 364	
2 690—2 700	RADIO ASTRONOMY 363 364A 364B 365	

NOC **362**

MOD **363** In the F.R. of Germany, the band 2 550-2 690 Mc/s is allocated to the fixed service; and the band 2 690-2 700 Mc/s is also allocated to the fixed service.

MOD **364** In Region 1, tropospheric scatter systems may operate in the band 2 550-2 690 Mc/s under agreements concluded between Administrations concerned and those having services, operating in accordance with the Table, which may be affected.

ADD **364A** In Algeria, Bulgaria, Cuba, Hungary, India, Israel, Kuwait, Pakistan, the Philippines, Poland, United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 2 690-2 700 Mc/s is also allocated to the fixed and mobile services.

ADD **364B** In Bulgaria, Hungary, Poland, United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., tropospheric scatter systems may operate in the band 2 690-2 700 Mc/s under agreements concluded between Administrations concerned and those having services operating in accordance with the Table, which may be affected.

MOD **365** In making assignments to stations in the fixed and mobile services, Administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. The radio astronomy service shall be protected from harmful interference from services operating in other bands in accordance with the provisions of these Regulations, only to the extent that these services are protected from each other.

In Article 5, for the Table of Frequency Allocations for the band 4400-5000 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
4 400—4 990 FIXED MOBILE 354		
4 990—5 000 FIXED MOBILE RADIO ASTRONOMY 365	**4 990—5 000** RADIO ASTRONOMY 383A	**4 990—5 000** FIXED MOBILE RADIO ASTRONOMY 365

MOD

365 In making assignments to stations in the fixed and mobile services, Administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. The radio astronomy service shall be protected from harmful interference from services operating in other bands in accordance with the provisions of these Regulations, only to the extent that these services are protected from each other.

ADD

383A In Cuba, the band 4 990-5 000 Mc/s is also allocated to the fixed and mobile services, and the provisions of No. 365 apply.

In Article 5, for the Table of Frequency Allocations for the band 5250-5350 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5 250—5 255	RADIOLOCATION *Space Research* 384	
5 255—5 350	RADIOLOCATION 384 384A	

MOD **384** In Albania, Austria, Bulgaria, Hungary, Poland, Roumania, Switzerland, Czechoslovakia and the U.S.S.R., the band 5 250-5 350 Mc/s is also allocated to the radionavigation service.

ADD **384A** In Sweden, the band 5 255-5 350 Mc/s is also allocated to the radionavigation service.

In Article 5, for the Table of Frequency Allocations for the band 8400-8500 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
8 400—8 500	**8 400—8 500**	**8 400—8 500**
SPACE RESEARCH	SPACE RESEARCH	SPACE RESEARCH
FIXED		FIXED
MOBILE		MOBILE
394A 394B	394C	394A 394B

MOD **394** [See 7 900-8 400 Mc/s, Doc. 139, page 15].

ADD **394A** In Australia and the United Kingdom, the band 8 400-8 500 Mc/s is allocated to the radiolocation and space research services.

ADD **394B** In Austria, Cyprus, Ethiopia, France, Israel, Malaysia and New Zealand, the allocation to the space research service in the band 8 400-8 500 Mc/s is on a secondary basis.

ADD **394C** In Cuba, the band 8 400-8 500 Mc/s is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the band 31·5-31·8 Gc/s there shall be substituted the following:

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
31·5—31·8	**31·5—31·8**	**31·5—31·8**
SPACE RESEARCH	SPACE RESEARCH	SPACE RESEARCH
Fixed		*Fixed*
Mobile		*Mobile*
	405C	

ADD

405C In Cuba, the band 31·5-31·8 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

DRAFT RESOLUTION No. [illegible]

The category of the Fixed and Mobile Services in the band 1525-1540 Mc/s

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the Table of Frequency Allocations, Geneva, 1959, made certain provisions for the Fixed and Mobile Services in the sub-bands 1525-1535 Mc/s and 1535-1540 Mc/s;

b) that a number of Administrations have Fixed and Mobile Services operating in accordance with these provisions;

c) that the Extraordinary Administrative Radio Conference, Geneva, 1963, has agreed that the Space (Telemetering) Service shall be allocated on a primary basis in the band 1525-1540 Mc/s, and that continuing provision shall be made for Fixed and Mobile Services now operating in this band;

d) the economic consequences of an early down-grading of the category of the Fixed and Mobile Services are not at present acceptable to the Administrations concerned;

resolves

that nevertheless, it is highly desirable that reception of the very weak signals of the Space (Telemetering) Service shall be afforded protection against interference from stations in the Fixed and Mobile Services;

invites

those Administrations operating stations in the Fixed and Mobile Services on a primary basis in the band 1525-1540 Mc/s, to consider the possibility of agreeing to modify the category of these services from " primary " to " secondary " at the earliest possible date.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 168-E
2 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 4

DRAFT RECOMMENDATION

1. Annex 1 is a Draft Recommendation which takes into account technical questions arising during the work of Working Group 4C and for which further answers are required.

2. The Recommendation has been prepared in such a manner as to indicate:

a) the particular problems encountered.

b) the relevant C.C.I.R. Questions and Study Programmes.

c) the specific Regulations concerned.

3. It is hoped that this form of presentation will draw the attention of Administrations and Private Operating Agencies to specific problems, and thus facilitate their early solution within the framework of the C.C.I.R.

W.A.C. SCHULTZ
Chairman
Working Group 4C

Annex : 1

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A N N E X

DRAFT RECOMMENDATION

The E.A.R.C., Geneva, 1963

recognising

a) the value to the Conference of the material contained in Document No. 1 (results of C.C.I.R. studies relating to space telecommunications concluded at its Xth Plenary Assembly);

b) that further studies on a wide range of questions dealing with space communications form the subject of C.C.I.R. Questions and Study Programmes approved by the Xth Plenary Assembly;

considering however that

a) certain of the C.C.I.R. Recommendations, listed below, are provisional and call for further work and study before they can become definite;

Recommendation 355 (Study Group IV)	"ACTIVE COMMUNICATION-SATELLITE SYSTEMS - Feasibility of sharing frequency bands with terrestrial radio services."
Recommendation 356 (Study Group IV)	"COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS - Maximum allowable values of interference in a telephone channel of a communication-satellite system."
Recommendation 357 (Study Group IV)	"COMMUNICATION-SATELLITE SYSTEMS SHARING FREQUENCY BANDS WITH LINE-OF-SIGHT RADIO-RELAY SYSTEMS - Maximum allowable values of interference in a telephone channel of a radio relay system."
Recommendation 358 (Study Group IV)	"COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS - Maximum allowable values of power flux density at the surface of the earth produced by communication satellites."

Recommendation 406 (Study Group IX) "LINE-OF-SIGHT RADIO-RELAY SYSTEMS SHARING THE SAME FREQUENCY BANDS AS THE SATELLITE RECEIVERS OF ACTIVE EARTH-SATELLITE COMMUNICATION SYSTEMS - Maximum effective radiated powers of line-of-sight radio-relay system transmitters."

b) as a result of the deliberations of this Conference, particularly in relation to the provisions of Article 7, Sections VII, VIII and IX, and to the Annex to Recommendation / Document No. 157 /, further information is required in reply to the following Questions and Study Programmes already set for study by the C.C.I.R. :

Question 235 (Study Group IV) "TECHNICAL CHARACTERISTICS OF COMMUNICATION-SATELLITE SYSTEMS"

under Decides 4 : Particularly,

a) the need for, and application of, maximum limits of power to earth stations and terrestrial stations in shared bands (cf. Regulations 470B and 470G),

b) the need for, and application of, escalation clauses on such power limits to permit the use of higher powers in certain cases, when stations are situated at substantial distances from the boundary of neighbouring Administrations (cf. Regulation 470H).

under Decides 5 : Particularly, as it may affect the coordination of frequency assignments for earth stations (cf. Articles / Documents Nos. 144 and 145 /).

Study Programme 235(A) (Study Group IV) "FEASIBILITY OF FREQUENCY SHARING BETWEEN COMMUNICATION-SATELLITE SYSTEMS AND TERRESTRIAL RADIO SERVICES"

under Decides 1 : Particularly, the values which should be allowed for site-shielding factors,

a) in the application of power limits (cf. Regulation 470G, footnote 3);

b) in the calculation of coordination distance (cf. Recommendation / Document No. 157 /);

under Decides 3 : Particularly, the minimum angle of elevation which should be employed by earth station antennae, taking account of tropospheric effects (cf. Regulation 470L).

under Decides 5 :	Power flux limitations for all space stations in bands shared with terrestrial services, particularly meteorological satellites, radionavigation satellites, research satellites, space probes (cf. Regulations 470O, 470P, 470S and 470T).
under Decides 6 :	Particularly, as it concerns the selection of sites and frequencies for terrestrial stations and earth stations operating in shared frequency bands (cf. Regulations 470A and 470E).
Question 236 (Study Group IV)	"SHARING OF RADIO FREQUENCY BANDS BY LINKS BETWEEN EARTH STATION AND SPACECRAFT"
under Decides 2 :	Particularly, sharing between space services and terrestrial services other than line-of-sight radio-relay systems.
New aspect :	Limits in spurious emissions desirable to facilitate sharing of frequency bands between space services and terrestrial services.
New aspect :	Frequency tolerances desirable to facilitate sharing of frequency bands between space services and terrestrial services.
Question 242 (Study Group IV)	"TECHNICAL CHARACTERISTICS OF RADIONAVIGATION-SATELLITE SYSTEMS"
under Decides 3 :	Feasibility of sharing frequency bands with other services, and relevant sharing criteria.
Study Programme 243A (Study Group IV)	"RADIO-COMMUNICATION ASPECTS OF METEOROLOGICAL-SATELLITE SYSTEMS"
under Decides 3 :	Particularly, feasibility of sharing frequency bands with other services, and relevant sharing criteria.
Question 244 (Study Group IV)	"RADIOASTRONOMY"
under Decides 2.1 :	Levels of harmful interference.
Study Programme 188 (Study Group V)	"INFLUENCE OF IRREGULAR TERRAIN ON TROPOSPHERIC PROPAGATION"
under Decides .. :	Particularly the application of site-shielding factors (cf. Regulation 470G, footnote 3, and Recommendation [Document No. 157]).

Study Programme 190 (Study Group V) (See also Study Programmes 185A(V) and 185B(V))	"TROPOSPHERIC PROPAGATION FACTORS AFFECTING THE SHARING OF THE RADIO-FREQUENCY SPECTRUM BETWEEN RADIO-RELAY SYSTEMS, INCLUDING SPACE AND TERRESTRIAL TELE-COMMUNICATIONS SYSTEMS"

under Decides .. : Particularly,

a) the provision of more precise data on the minimum values of transmission loss occurring, under various climatic conditions, for very short periods of time (e.g. 0.1%, 0.01%), for overland, oversea, and mixed land/sea paths;

b) the effects of rain, cloud and tropospheric scatter in producing interference at long distances especially when using antennae with extremely narrow beamwidths.

recommends

that all Administrations and Private Operating Agencies, through their participation in the work of the C.C.I.R., consider, as a matter of priority, the submission of contributions on these subjects, so that definite Recommendations can be prepared at the Interim Meetings of the relevant Study Group for adoption by the XIth Plenary Assembly of the C.C.I.R.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 169-E
3 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

FIFTH REPORT BY WORKING GROUP 5C

TO COMMITTEE 5

RADIONAVIGATION-SATELLITE SERVICE

1. All proposals for the allocation of frequencies for Radionavigation Satellites were considered and the Group is happy to report that complete agreement was reached on the attached Appendices.

2. The necessity for the Recommendation in Appendix 3 was unanimously recognised and it should be noted that Committee 4 has been requested to ensure that the C.C.I.R. is aware of the need for studying sharing criteria for the Fixed and Mobile Services, on the one hand, and Radionavigation Service on the other, in the bands in question.

J. PENWARDEN

Chairman
Working Group 5C

Appendices : 4

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A P P E N D I X 1

Mc/s

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td rowspan="2">146 - 149.9
FIXED
MOBILE except aeronautical mobile (R)
285</td><td>146 - 148
AMATEUR
289</td><td rowspan="2"></td></tr>
<tr><td>148 - 149.9
FIXED
MOBILE
290</td></tr>
<tr><td colspan="3">149.9 - 150.05
RADIONAVIGATION-SATELLITE
285A</td></tr>
<tr><td>150.05 - 151
FIXED
MOBILE except aeronautical mobile (R)
285 286</td><td>150.05 - 174
FIXED
MOBILE
287</td><td>150.05 - 170
FIXED
MOBILE
287 290</td></tr>
</table>

SUP 274

MOD 279 [RR 279 = MOD 279 132 - 136 Mc/s, Document No. 114 and ADD 279A 137 - 144 Mc/s, Document No. DT/73]

MOD 285 In Rhodesia and Nyasaland and the Republic of South Africa and Territory of South West Africa, the bands 146 - 149.9 Mc/s and 150.05 - 174 Mc/s are also allocated to the aeronautical mobile service.

ADD 285A Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Austria, Bulgaria, Cuba, Hungary, Iran, Kuwait, Morocco, the Netherlands, Poland, the United Arab Republic and Yugoslavia where the fixed and mobile services may continue to have equal primary status with the radionavigation-satellite service. See Recommendation No. .....

MOD 286 In Region 1, the band 150.05 - 153 Mc/s is also allocated to the radio astronomy service. In making assignments to new stations of other services to which this band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference. The radio astronomy service shall be protected from harmful interference from services operating in other bands in accordance with the provisions of these Regulations, only to the extent that these services are protected from each other.

MOD 290 In New Zealand, the bands 148 - 149.9 Mc/s and 150.05 - 156 Mc/s are allocated to the aeronautical mobile (OR) service.

A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
335.4 - 399.9	FIXED MOBILE	
399.9 - 400.05	RADIONAVIGATION-SATELLITE 311A	
400.05 - 401	METEOROLOGICAL AIDS METEOROLOGICAL STAELLITES SPACE RESEARCH (Telemetering) 312 312A 313 314	

/See Document No. DT/92/

ADD 311A Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Bulgaria, Cuba, the United Arab Republic, Greece, Hungary, Iran, Kuwait, Morocco and Yugoslavia where the fixed and mobile services may continue to have equal status with the radionavigation service. See Recommendation No....

MOD 312 In Greece, the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services.

ADD 312A In Yugoslavia and Sweden, the band 400.05 - 401 Mc/s is also allocated to the fixed and mobile services until January, 1970.

MOD 313 In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 400.05 - 401 Mc/s, is also allocated to the fixed and mobile services.

MOD 314 In the United Kingdom, the band 400.05 - 420 Mc/s is also allocated to the radiolocation service; however, between 400.05 and 410 Mc/s the allocation to the radio location service is on a secondary basis.

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APPENDIX 3

DRAFT RECOMMENDATION ...

RELATING TO THE DELETION OF FIXED AND MOBILE STATION OPERATIONS IN BANDS ALLOCATED TO THE RADIONAVIGATION-SATELLITE SERVICE

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the frequency bands 149.9 - 150.05 Mc/s and 399.9 - 400.05 Mc/s have been allocated to the Radionavigation-satellite Service on an exclusive world-wide basis;

b) that many Administrations require an extended period of time to re-accomodate existing fixed and mobile operations in other appropriately allocated bands;

c) that early implementation of the Radionavigation-satellite Service will be of benefit to all Administrations, and particularly in its application to the Maritime Mobile Service;

d) that interference to users of the Radionavigation-satellite Service could consitute a hazard to the safety of life and property; and

e) that the C.C.I.R. is studying the feasibility of sharing between the Radionavigation-satellite Service and Terrestrial Services but has not yet been able to reach a conclusion in this regard;

recommends

1) that, pending an affirmative determination by the C.C.I.R. that sharing is possible and practicable between stations of the Radionavigation-satellite Service and the Fixed and Mobile Services, Administrations take all possible steps to protect from harmful interference the operations of mobile stations using the Radionavigation-satellite Service;

2) that, in the light of 1) above, Administrations be urged to cease operation of their fixed and mobile stations in the bands 149.9 - 150.05 Mc/s and 399.9 - 400 Mc/s as soon as practicable, with particular emphasis on those stations located in coastal areas.

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A P P E N D I X 4

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
14.3 - 14.4 RADIONAVIGATION-SATELLITE		

MOD 407 In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the bands 13.25 - 13.5 Gc/s, 14.175 - 14.3 Gc/s, 15.4 - 17.7 Gc/s, 21 - 22 Gc/s 23 - 24.25 Gc/s and 33.4 - 36 Gc/s are also allocated to the fixed and mobile services.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 170-E
4 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

A G E N D A

FOR THE

SECOND PLENARY MEETING

Tuesday, 5 November, at 09.30 hours

1. Approval of the Minutes of the 1st Plenary Meeting (Document No. 74)
2. First series of "blue" texts[1] submitted by the Editorial Committee (Document No. 167)
3. Second series of "blue" texts[2] submitted by the Editorial Committee (Document No. 171)
4. Third series of "blue" texts[1] submitted by the Editorial Committee (Document No. 172)
5. Fourth series of "blue" texts[1] submitted by the Editorial Committee (Document No. 175)
6. Miscellaneous

Gunnar PEDERSEN
Chairman of the Conference

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1) Texts submitted to Committee 7 by Committee 5

2) Texts submitted to Committee 7 by Committee 6

BLUE PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 171
3 November, 1963

E

B. 2

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Cttee 6	148		No. 114	
	144		Art. 9	
	146		App. 1	
	147		App. 1A	
	136	Annex 1	App. 9	
	136	Annex 2	App. 10	
	152		Resolution	Satellite Systems

Y. PLACE
Chairman of the Editorial
Committee

Annex : 43 Pages

In Article 3, for Regulation No. 114 there shall be substituted the following Regulation :

MOD **114** § 2. Any new assignment or any change of frequency or other basic characteristic of an existing assignment (see Appendix 1 MOD or Appendix 1A) shall be made in such a way as to avoid causing harmful interference to services rendered by stations using frequencies assigned in accordance with the Table of Frequency Allocations in this Chapter and the other provisions of these Regulations, the characteristics of which assignments are recorded in the Master International Frequency Register.

Article 9 of the Radio Regulations shall be amended as follows :

MOD

ARTICLE 9

MOD

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in Terrestrial Services [0]

MOD

Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

MOD **486** § 1. (1) Any *frequency assignment* [1], [2] to a fixed, land, broadcasting [3], radionavigation land, radiolocation land or standard frequency station, or to a ground-based station in the meteorological aids service, shall be notified to the International Frequency Registration Board,

ADD

[0] For the notification and recording in the Master International Frequency Register of frequency assignments to stations in the space and radio astronomy services, see Article 9A.

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration [4]; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency.[4]

MOD **487** (2) Similar notice shall be given for any frequency to be used for the reception of mobile stations by a particular land station in each case where one or more of the conditions specified in No. 486 MOD are applicable.

MOD **491** § 3. (1) Whenever practicable each notice should reach the Board before the date on which the assignment is brought into use. It must reach the Board not earlier than ninety days before the date on which it is to be brought into use, but in any case not later than thirty days after the date it is actually brought into use. However, for a frequency assignment to a station in a fixed or mobile service mentioned in No. 492A, the notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use.

MOD **492** (2) Any frequency assignment, the notice of which reaches the Board after the period specified in No. 491 MOD shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. 491 MOD.

ADD **492A** Before an administration notifies to the Board, or brings into use any frequency assignment to a station in the fixed or mobile service, whether for transmitting or receiving, in a particular band allocated with

ADD **486.4** [4] The attention of administrations is specifically drawn to the application of the provisions of Nos. 486 *a)* MOD and 486 *c)* MOD in those cases where they make a frequency assignment to a station in a fixed or mobile service, located within co-ordination distance of an earth station (see No. 492A), in a band which this service shares with equal rights with the space service.

equal rights to the space service and the fixed or mobile service in the frequency spectrum between one and ten Gc/s, it shall effect co-ordination of the assignment with any other administration which has previously effected co-ordination under the provisions of No. 639AD, for the establishment of an earth station, if the proposed terrestrial station is to be located within the co-ordination distance [1] of the earth station, and the necessary bandwidth of emission of the station concerned in the space service on the one hand, and of the station concerned in the fixed or mobile service on the other, are separated by less than six Mc/s. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the station in the fixed or mobile service and all other pertinent details of the proposed frequency assignment, and the approximate date on which it is planned to begin operations.

ADD

492B An administration with which co-ordination is sought under No. 492A shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish:

a) in the case of a frequency assignment to be used for transmitting by the station in the fixed or mobile service, whether the use would cause harmful interference to the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. 639AD has been effected or the co-ordination procedure has already begun;

ADD

492A.1 [1] For the purposes of this Article the expression " co-ordination distance " means the distance from the earth station calculated along the lines of procedures shown in Recommendation No. ... [Document No. 157] within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in the fixed or mobile service in the frequency spectrum between one and ten Gc/s, sharing the same frequency band, or, as the case may be, of the use of a given frequency for reception at an earth station receiving harmful interference caused by such stations in the fixed or mobile service.

b) in the case of a frequency assignment to be used for reception by the station in the fixed or mobile service, whether harmful interference would be caused to reception at the station in the fixed or mobile service by the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the proviso that in this latter case co-ordination specified in No. 639AD has been effected or the co-ordination procedure has already begun;

and shall, within a further period of thirty days either notify the administration requesting co-ordination of its agreement to the proposals or, if this is not possible, indicate the reasons therefore and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

ADD **492C** No co-ordination No. 492A is required when an administration proposes:

a) to bring into use a station in the fixed or mobile service which is not located, in relation to an earth station, within the co-ordination distance defined in No. 492A.1; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the earth stations of other administrations.

ADD **492D** An administration seeking co-ordination may request the Board to endeavour to effect co-ordination, in those cases where:

a) an administration with which co-ordination is sought under No. 492A fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

ADD **492E** Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may request additional information which they may require to assess the probability of harmful interference to the services concerned.

ADD **492F** Where the Board receives a request under No. 492D *a)*, or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. 492D *c)*, it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the station in the fixed or mobile service to the services rendered by its earth station.

ADD **492G** Where necessary, as part of the procedure under No. 492D the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

ADD **499A** **Sub-Section IIA. Procedure to be followed in the case where the provisions of No. 492A are not applicable**

MOD **535** § 17. *In applying the provisions of the whole of this* Sub-Section, any resubmitted notice which is received by the Board more than one hundred and eighty days after the date of its return by the Board shall be considered as a new notice.

ADD **570AA** **Sub-Section IIB. Procedure to be followed in the case where the provisions of No. 492A are applicable**

ADD **570AB** The Board shall examine each notice:

ADD **570AC** *a)* with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations (with the exception of those relating to the co-ordination procedure and the probability of harmful interference);

ADD **570AD** *b)* with respect to its conformity with the provisions of No. 492A relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

ADD **570AE** *c)* where appropriate, with respect to the probability of harmful interference to the service rendered by an earth station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of No. 639AS, if this frequency assignment has not, in fact, caused harmful interference to any frequency assignment in conformity with Nos. 501, or 570AC, as appropriate, previously recorded in the Master Register.

ADD **570AF** Depending upon the findings of the Board subsequent to the examination prescribed in Nos. 570AC, 570AD and 570AE, further action shall be as follows:

ADD **570AG** *Finding unfavourable with respect to No. 570AC.*

ADD **570AH** Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AI** Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the pro-

visions of No. 115, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AJ** If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. 570AI.

ADD **570AK** If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **570AL** If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. 570AC, the notice shall be treated under the provisions of Nos. 570AM to 570AZ. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **570AM** *Finding favourable with respect to No. 570AC.*

ADD **570AN** Where the Board finds that the co-ordination procedure mentioned in No. 570AD has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AO** Where the Board finds that the co-ordination procedure mentioned in No. 570AD has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. 570AN. If the Board's efforts are unsuccessful, the notice

shall be examined by the Board with respect to the provisions of No. 570AE.

ADD **570AP** Where the Board finds that the co-ordination procedure mentioned in No. 570AD has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AQ** Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. 570AD has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AR** Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. 570AO. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AS** Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. 570AE. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AT** *Finding favourable with respect to Nos. 570AC and 570AE.*

ADD **570AU** The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AV** *Finding favourable with respect to No. 570AC but unfavourable with respect to No. 570AE.*

ADD **570AW** The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AX** Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. 570AE, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the re-submitted notice shall be indicated in the Remarks Column.

ADD **570AY** Should the notifying administration re-submit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. 570AX to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

ADD **570AZ** The period of one hundred and twenty days mentioned in No. 570AY shall count from:

— the date when the assignment to the station in the fixed or mobile service which received an unfavourable finding

is brought into use, if the assignment to the earth station is then in use;
otherwise, from the date when the assignment to the earth station is brought into use.

But if the assignment to the earth station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. 570BG.

ADD **570BA** *Change in the Basic Characteristics of Assignments already recorded in the Master Register.*

ADD **570BB** A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 MOD (except those entered in Columns 3 and 4a of the Master Register), shall be examined by the Board according to Nos. 570AC and 570AD and, where appropriate No. 570AE, and the provisions of Nos. 570AG to 570AZ inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

ADD **570BC** However, in the case of a change in the basic characteristics of an assignment which is in conformity with No. 570AC, should the Board reach a favourable finding with respect to No. 570AD, and, where its provisions are applicable, with respect to No. 570AE, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

ADD **570BD** *In applying the provisions of the whole of this Sub-Section,* any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

ADD **570BE** (1) *Recording of Frequency Assignments notified before being brought into use.*

ADD **570BF** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to Nos. 570AC and 570AD and, where appropriate, with respect to No. 570AE, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

ADD **570BG** (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

ADD **570BH** (4) In the circumstances described in No. 570AY, and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. 570AZ, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. 570AY, the information provided for in No. 570AY relating to the absence of complaint of harmful interference.

ADD **570BI** (5) If the Board does not receive this confirmation within the period referred to in No. 570BG or at the end of the period referred to in No. 570BH, as appropriate, the entry concerned shall be cancelled.

MOD **572** § 25. The procedure for recording dates in the appropriate part of Column 2 of the Master Register which shall be applied according to the frequency bands and services concerned is described in the following Nos. 573 to 604 for frequency assignments referred to in Sub-Section IIA.

ADD **611A** If harmful interference to the reception of any station whose assignment is in accordance with No. 639BF is actually caused by the use of a frequency assignment which is not in conformity with Nos. 501 or 570AC, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

MOD **613** The Board, in the light of all the data at its disposal, shall review the matter, taking into account Nos. 501 or 570AC and Nos. 502, 503, 570AD or 570AE, as appropriate, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

MOD **615** § 38. After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistance of the notifying administration, following an unfavourable finding with respect to Nos. 502, 503 or 570AE, as appropriate, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, first having consulted the administrations concerned.

The relevant texts of Appendix 1 shall be replaced by the following texts:

MOD

Section A. Basic Characteristics to be Furnished for Notification under No. 486 MOD of the Regulations

MOD

Column 5a Locality(ies) or area(s) with which communication is established.

This is not a basic characteristic for land, radionavigation land, radiolocation land or standard frequency stations, or for ground-based stations in the meteorological aids service.

MOD

Column 5b Length of circuit (km)

This is a basic characteristic only for land, radionavigation land, radiolocation land and standard frequency stations.

MOD

Supplementary information: reference frequency or frequencies, if any, and any co-ordination required by No. 492A.

MOD

Section B. Basic Characteristics to be Furnished for Notification under No. 487 MOD of the Regulations

MOD

Column 4b Country in which the receiving land station is located.

MOD

Column 4c Longitude and latitude of the site of the receiving land station.

MOD

Column 5a Name of the receiving land station.

MOD

Column 5b Maximum distance in km between mobile stations and the receiving land station.

MOD

Column 6 Class of mobile stations and nature of service.

MOD *Column 7* Class of emission of mobile stations and necessary bandwidth.

MOD *Column 8* Highest power used by the mobile stations.

MOD *Column 10* Maximum hours of operation of the mobile stations (G.M.T.).

ADD Supplementary information: any co-ordination required by No. 492A.

Title not modified **Section C.**

ADD Supplementary information: any co-ordination required by No. 492A.

Title not modified **Section E. II**

MOD *Column 3 (para. 2)* *This information is a basic characteristic*, except for stations referred to in Nos. 490 and 735.1 or when the frequency assignment is used for reception in the circumstances described in No. 487 MOD.

MOD *Column 4 (reception)* However, when the frequency assignment is used for reception in the circumstances described in No. 487 MOD, the indication to be given in Column 4 is as follows:

MOD *Column 4b (reception)* The country in which the receiving land station is located.

MOD *Column 4c (reception)* The geographical co-ordinates (in degrees and minutes) of the site of the receiving land station.

MOD *Column 5a (para. 3)* For land, radionavigation land, radiolocation land and standard frequency stations, and ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

MOD	*Column 5a para. 5*	For reception in the circumstances described in No. 487 MOD, the name of the locality by which the receiving land station is known or in which it is situated should be indicated.
MOD	*Column 5b para. 2*	For reception in the circumstances described in No. 487 MOD, the maximum distance between the mobile stations and the receiving land station should be indicated.
MOD	*Column 5b para. 3*	This information is not a basic characteristic except in the case of paragraph 2 above, and in the case of land, radionavigation land, radiolocation land and standard frequency stations. In these latter cases, the distances shown shall represent the service ranges.
MOD	*Column 6 para. 2*	When the frequency assignment is used for reception in the circumstances described in No. 487 MOD, the class of station and nature of service applicable to the mobile stations should be indicated.
MOD	*Column 7 para. 2*	When the frequency assignment is used for reception in the circumstances described in No. 487 MOD, the particulars to be indicated are those applicable to the mobile stations.
MOD	*Column 8 para. 5*	When the frequency assignment is used for reception in the circumstances described in No. 487 MOD, the power of the mobile stations should be indicated. If not all of the stations use the same power, the highest power should be indicated.
MOD	*Column 9a para. 3*	*This information is a basic characteristic*, except for stations referred to in No. 490 or when the frequency assignment is used for reception in the circumstances described in No. 487 MOD.
MOD	*Column 10 para. 1*	When the frequency assignment is used for reception in the circumstances described in No. 487 MOD, the maximum hours of operation are those relating to the mobile stations.

Title not modified

(Supplementary *information*)

MOD

para. 5

Only the information specified in paragraph 3 above is a basic characteristic; it is recommended, however, that the information under paragraphs 1 and 2 above be supplied. However, in the case of stations in the fixed and mobile service referred to in No. 492A, the name of any administration with which co-ordination of the use of the frequency has been sought and the name of any administration with which such co-ordination has been effected are basic characteristics.

The following new Appendix shall be inserted in the Radio Regulations.

APPENDIX 1A

Notices Relating to Stations in the Space and Radio Astronomy Services

(See Article 9 A)

Section A. General Instructions

1. A separate notice in a form convenient to the notifying administration shall be sent to the International Frequency Registration Board for notifying:

— each new frequency assignment,

— any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register),

— any total deletion of a frequency assignment recorded in the Master Register.

2. When submitting notices under No. 639AA for earth and space transmitting assignments and under No. 639AB for space and earth receiving assignments, separate notices shall be submitted to the Board. In the case of a passive satellite system, only earth transmitting and receiving assignments shall be notified.

3. In the case of a satellite system employing multiple space stations with the same general characteristics:

— for stationary satellites, a separate notice shall be submitted for each space station; and

— for non-stationery satellites, one notice covering all the space stations may be submitted.

4. The following information should be shown on the notice:

a) the serial number of the notice and the date on which the notice is sent to the Board;

b) the name of the notifying administration;

c) sufficient data to identify the particular satellite system in which the earth or space station will operate;

d) whether the notice reflects

1) the first use of a frequency by a station,

2) the first use of an additional frequency by a station,

3) a change in the characteristics of a frequency assignment recorded in the Master Register (indicate whether the change is a replacement, addition or deletion of existing characteristics), or

4) a deletion of an assignment in all of its notified characteristics;

e) any other information which the administration considers to be relevant, e.g., any special channelling arrangements or methods of modulation, the degree of terrain shielding throughout all azimuthal angles for the earth stations, an indication that the assignment concerned would be operating in accordance with No. 115, information concerning the use of the notified frequency if such use is restricted, or, in the case of notices pertaining to space stations, if the transmissions of the station are to be permanently switched off after a certain period.

Section B. Basic Characteristics to be furnished in Notices relating to Frequencies used by Earth Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1 MOD, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in Items *3* or *4a*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19 MOD.

Item 4 Identity and location of the earth station

a) Indicate the name by which the station is known or the name of the locality in which it is situated.

b) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the transmitter site.

Item 5 Station(s) with which communication is to be established

Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite and the location of the receiving earth station(s).

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10 MOD.

Item 7 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 8 Power (kW)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**);

— Peak envelope power (Pp) for all classes of emission other than those referred to above.

Item 9 Transmitting antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees (clockwise) from True North the range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

e) Indicate the maximum gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 10 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1.*

Item 11 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of this frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15 MOD).

Section C. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Earth Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1 MOD, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3a*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity and location of the receiving earth station

a) Indicate the name by which the receiving earth station is known or the name of the locality in which it is situated.

b) Indicate the country in which the receiving earth station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the receiver site.

Item 4 Associated transmitting earth station(s)

Identify the associated transmitting space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite(s) and the associated transmitting earth station(s).

Item 5 Class of station and nature of service

Indicate the class of station and nature of service performed using the symbols shown in Appendix 10 MOD.

Item 6 Class of emission, necessary bandwidth and description of the transmission to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission to be received, in accordance with Article 2 and Appendix 5. Indicate also the overall receiver bandwidth at which the receiver response is 6 db below maximum.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 7 Earth station receiving antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees (clockwise) from True North the range of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the gain (db) of the antenna in the direction of the main lobe (see No. **100**).

e) Indicate the maximum gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 8 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1*.

Item 9 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of the frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 10 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K) under " quiet sky " conditions at the planned minimum operating angle of elevation of the antenna.

Item 11 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15 MOD).

Section D. · Basic Characteristics to be furnished in Notices relating to Frequencies used by Space Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1 MOD, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3* or *4*, the date to be given shall be that of the latest change (actual of foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19 MOD.

Item 4 Identity of the space station

Indicate the identity of the space station.

Item 5 Area of coverage

Indicate the area of intended coverage or the name of the locality and country in which the associated receiving station is located.

Item 6 Orbital information

Indicate, where applicable, the inclination of plane [1] and the period required for a complete orbit and the altitude of apogee and perigee in kilometers, measured from the surface of the Earth, of the space station(s). In the case of a space station aboard a

[1] For the purpose of this Appendix, the inclination of the plane of orbit is the angle between the plane of the orbit and the equatorial plane of the Earth.

stationary satellite [1], indicate the geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 7 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10 MOD.

Item 8 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 9 Power (Watts)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**).

— Peak envelope power (Pp) for all classes of emission other than those referred to above.

Item 10 Transmitting antenna characteristics

a) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

[1] For the purpose of this Appendix, a stationary satellite is one which remains as a first approximation in a fixed position relative to the Earth's surface.

b) Indicate the gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

c) For stationary satellites employing directional antennas, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 11 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1*

Item 12 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 13 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15 MOD).

Section E. Basic characteristics to be furnished in Notices relating to Frequencies to be received by Space Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1 MOD, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity of the receiving space station

Indicate the identity of the receiving space station.

Item 4 Orbital information

Indicate, where applicable, the inclination of plane and the period required for a complete orbit and the altitude of apogee and perigee in kilometers, measured from the surface of the Earth of the space station(s). In the case of a space station on board a stationary satellite indicate the geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 5 Associated transmitting earth station(s)

Identify the associated transmitting earth station(s) by reference to the notification thereof or in any other appropriate manner.

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10 MOD.

Item 7 Class of emission, necessary bandwidth and description of the transmission(s) to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission(s) to be received, in accordance with Article 2 and Appendix 5. Indicate also the overall receiver bandwidth at which the receiver response is 6 db below maximum. In the case of a communication-satellite space station, designed

to receive as a composite signal two or more emissions in contiguous channels and transmitted from one or more earth stations, the description should state the number of such emissions, the spacing between their assigned frequencies and the total bandwidth collectively encompassed by them.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 8 Space station receiving antenna characteristics

a) Indicate the beamwidth in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the gain (db) of the antenna in the direction of the main lobe (see No. **100**).

c) For stationary satellites employing directional antennas, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 9 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1*.

Item 10 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 11 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K).

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15 MOD).

Section F. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Radio Astronomy Station

Item 1 Observed frequency

Indicate the centre of the frequency band observed, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) Indicate the date (actual or foreseen, as appropriate) when actual reception of the frequency band begins.

b) Whenever there is a change in any of the basic characteristics, as shown in this Section (except in the case of a change in *Item 3b*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Name and location of the station

a) Indicate the letters " RA ".

b) Indicate the name by which the station is known or the name of the locality in which it is situated.

c) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

d) Indicate the geographical co-ordinates (in degrees and minutes) of the station site.

Item 4 Bandwidth

Indicate the width of the frequency band observed by the station.

Item 5 Antenna characteristics

Indicate the antenna type, effective area and angular coverage in azimuth and elevation.

Item 6 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency band shown in *item 1*.

Item 7 Noise temperature

Indicate the over-all receiving system noise temperature (°K).

Item 8 Class of observations

Indicate the class of observations to be taken on the frequency band shown in *Item 1*. Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

Item 9 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15 MOD).

List VIII A. — List of Stations in the Space Service and in the Radio Astronomy Service [1]

1 — Communication-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbol.
Names of stations in alphabetical order.

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Transmission						Reception						Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks
			Telecommand			Communications			Telemetering		Tracking		Communication				
			Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Power (kW)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Power (kW)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth, and description of transmission	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8a	8b	9	10	11
																	1. Special channelling arrangements for: *a)* telegraphy *b)* telephony *c)* other types of communication, as appropriate 2. Special methods of modulation

[1] For the cases where these data must be Supplied, see No. 639AA.

In Appendix 9, after List VIII, there shall be inserted the following new List.

2 — Communication-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station	Call sign (identification)	Transmission									Reception				Area of coverage or name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Communications			Telecommand		Communications				
		Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			1. Orbital information [1] *a)* inclination of the plans *b)* period required for a complete orbit *c)* altitude of apogee (km) *d)* altitude of perigee (km) *e)* in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the earth. 2. Special channelling arrangements for: *a)* telegraphy *b)* telephony *c)* other types of communication, as appropriate. 3. Special methods of modulation.
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8	9	10

[1] See Sections D and E of Appendix 1A.

3 — Meteorological-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated													
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site													
3	Call sign (identification)													
		Transmission			Reception									Remarks
				Telecommand where appropriate	Telemetering		Tracking		Reception of meteorological information					
4a	Frequency in Mc/s or Gc/s as appropriate													Special methods of modulation
4b	Class of emission, necessary bandwidth and description of transmission													
4c	Power (kW)													
5a	Frequency in Mc/s or Gc/s as appropriate													
5b	Class of emission, necessary bandwidth and description of transmission													
6a	Frequency in Mc/s or Gc/s as appropriate													
6b	Class of emission, necessary bandwidth and description of transmission													
7a	Frequency in Mc/s or Gc/s as appropriate													
7b	Class of emission, necessary bandwidth and description of transmission													
8	Identity of the station(s) with which communication is to be established													
9	Operating administration or company													
10														

4 — Meteorological-satellite space station

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the Station	Call sign (identification)	Transmission: Telemetering: Frequency in Mc/s or Gc/s as appropriate	Transmission: Telemetering: Class of emission, necessary bandwidth and description of transmission	Transmission: Telemetering: Power (Watts)	Transmission: Tracking: Frequency in Mc/s or Gc/s as appropriate	Transmission: Tracking: Class of emission, necessary bandwidth and description of transmission	Transmission: Tracking: Power (Watts)	Transmission: Transmission of meteorological information: Frequency in Mc/s or Gc/s as appropriate	Transmission: Transmission of meteorological information: Class of emission, necessary bandwidth and description of transmission	Transmission: Transmission of meteorological information: Power (Watts)	Reception: Telecommand where appropriate: Frequency in Mc/s or Gc/s as appropriate	Reception: Telecommand where appropriate: Class of emission, necessary bandwidth and description of transmission	Area of coverage or the name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. Orbital information: [1]
   a) inclination of the plane
   b) period required for a complete orbit
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate
3. Special methods of modulation

[1] See Sections D and E of Appendix 1A

5 — Radionavigation-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

			Transmission			Reception							
	Name by which the station is known or the name of the locality in which it is situated				Telecommand, where appropriate	Telemetering		Tracking		Reception of navigation information			Remarks
	Geographical co-ordinates (in degrees and minutes) of the transmitter site												
		Call sign (identification)											
			Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Identity of the station(s) with which communication is to be established	Operating administration or company	Special methods of modulation
1	2	3	4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10

6 — Radionavigation-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of stations.

Identity of the station	Call sign (identification)	Transmission									Reception		Area of coverage or the name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of navigation information			Telecommand, where appropriate				
		Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Powers (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. Orbital information: [1]
   - *a)* inclination of the plane
   - *b)* period required for a complete orbit
   - *c)* altitude of apogee (km)
   - *d)* altitude of perigee (km)
   - *e)* in the case of a stationary satellite the geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   - *a)* telegraphy
   - *b)* telephony
   - *c)* other types of communication, as appropriate
3. Special methods of modulation

[1] See Sections D and E of Appendix 1A

7 — *Space research earth stations*

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

			Transmission			Reception							
			Telecommand			Telemetering		Tracking		Reception of research information			
1	Name by which the station is known or the name of the locality in which it is situated												
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site												
3	Call sign (identification)												
4a		Frequency in Mc/s or Gc/s as appropriate											
4b			Class of emission, necessary bandwidth and description of transmission										
4c				Power (Watts)									
5a					Frequency in Mc/s or Gc/s as appropriate								
5b						Class of emission, necessary bandwidth and description of transmission							
6a							Frequency in Mc/s or Gc/s as appropriate						
6b								Class of emission, necessary bandwidth and description of transmission					
7a									Frequency in Mc/s or Gc/s as appropriate				
7b										Class of emission, necessary bandwidth and description of transmission			
8	Identity of the station(s) with which communication is to be established												
9	Operating administration or company												
10	Remarks	Any special characteristics of the station and scope of research											

8 — Space research space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station	Call sign (identification)	Transmission									Reception		Area of coverage or the name of the locality and country in which the associated receiving station is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of information			Telecommand				
		Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency in Mc/s or Gc/s as appropriate	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. In the case of an earth satellite, orbital information: [1]
   - *a)* inclination of the plane
   - *b)* period required for a complete orbit
   - *c)* altitude of apogee (km)
   - *d)* altitude of perigee (km)
   - *e)* in the case of a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the Earth
2. In the case of a space probe general indication of the trajectory of probe
3. Special methods of modulation

[1] See Sections D and E of Appendix 1A

9 — Radio astronomy stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the station	Centre of the frequency band observed in Mc/s or Gc/s as appropriate	Width of the frequency band observed	Operating administration or company	Remarks
1	2	3	4	5	*a)* Any special characteristics of the station including: 1) altitude in metres above sea level, 2) main particulars of antenna, 3) scope and time of observations, 4) class of observations (as defined by C.C.I.R.)

In Appendix 10 of the Radio Regulations there shall be inserted in alphabetical order the following additional symbols :

RA	Radio astronomy station
EC	Communication-satellite space station
TC	Communication-satellite earth station
EM	Meteorological-satellite space station
TM	Meteorological-satellite earth station
EN	Radionavigation-satellite space station
TN	Radionavigation-satellite earth station
EH	Space research space station
TH	Space research earth station
ER	Space telemetering space station
TR	Space telemetering earth station
ED	Space telecommand space station
TD	Space telecommand earth station
EK	Space tracking space station
TK	Space tracking earth station

RESOLUTION No. [redacted]

Relating to the Provision of Information Regarding International Satellite Systems

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

the interest of all administrations concerning the effective use of the radio frequency spectrum by the Space Services;

believing

a) that international satellite systems should provide for the interests and requirements of all countries;

b) that, in accordance with Article 4 of the International Telecommunication Convention, Geneva, 1959, the International Telecommunication Union should closely observe the development of the telecommunications aspects of international satellite systems;

c) that the permanent organs of the International Telecommunication Union should assist in that development as far as may be practicable;

d) that the development of space telecommunications ought not to be delayed, but that a suitable period of time will be needed for the acquisition of the additional data which will result from further experimental and operational experience;

e) that the interest mentioned above will best be served by the provision to administrations, as early as practicable, of information regarding the development of international satellite systems;

f) that this information, by reason of its early provision, must be regarded as of a preliminary nature;

observing

that the data mentioned in *d)* above will need to be collated and evaluated by the International Telecommunication Union for

use by such future conferences as may be called to consider the international regulation of space communication systems;

resolves

1. that, as a measure which will enable administrations to make early comment upon satellite system projects, any administration (or group of administrations) which intends to establish an international satellite system shall provide the Board, as early as practicable during the co-ordination process (Radio Regulation No. 639AD) with information similar to the data mentioned in Appendix IA such as will provide a general description of the satellite system, e.g.

   a) the frequencies and bandwidths to be used in the initial operation of the system;

   b) the over-all frequencies and bandwidths of the satellite system required to facilitate the final development of the system, in order to meet the needs of other administrations wishing to participate in the system;

   c) the sites and functions of the earth stations in the system and the co-ordination distances, as a function of azimuth, which are applicable thereto, as defined in Recommendation No. [redacted] [Document No. 157];

2. that the Board shall put these data in a special section of its weekly circular, for the information of all administrations;

3. that, if after studying the information given under 1) above, an administration believes that it has reason to expect that harmful interference may be caused to its space services (either those existing, or those concerning which information has already been circulated under the provisions of this Resolution), it shall address its comments, within ninety days of receipt of the relevant circular, to the administration concerned; a copy of those comments shall be sent to the Board.

4. that, if comments, as allowed for in 3) above, are received, then the administration concerned shall endeavour to find a solution satisfactory to the administration which has made the comments.

5. that, if an agreement is not reached the Board may be asked for such suggestions as it may be able to offer in the circumstances;

6. that, if within the time referred to in paragraph 3), no comments concerning the data mentioned in paragraph 2) are received the administration concerned is entitled to assume that there are no comments on the action proposed;

7. that, in order to keep up-to-date the information relating to space systems, the Board shall collate this information and publish it periodically.

BLUE PAGES

Addendum to
Document No. 172-E
4 November 1963

A D D E N D U M

Add on page B3-02

[MOD

373 In Denmark, Norway, Sweden and Switzerland, the radiolocation service will operate in the band 3400 - 3600 Mc/s with equal rights with respect to the communication-satellite service in other countries.]

BLUE PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 172
3 November, 1963

E

B. 3

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Cttee 5	139 139 139	App. 1 App. 2 App. 3, 4, 5, 6	3300-4200 Mc/s 4400-5000 Mc/s 5650-8400 Mc/s	

Y. PLACE
Chairman of the Editorial
Committee

Annex : 7 Pages

In Article 5, for the Table of Frequency Allocations for the bands 3300-4200 Mc/s there shall be substituted the following:

Mc/s

<table>
<tr><th colspan="3">Allocation to Services</th></tr>
<tr><th>Region 1</th><th>Region 2</th><th>Region 3</th></tr>
<tr><td>3 300—3 400</td><td colspan="2">3 300—3 400</td></tr>
<tr><td>3 400—3 600
FIXED
MOBILE
COMMUNICATION-SATELLITE (Satellite-to-earth)
Radiolocation
372 373 374 374A 375</td><td colspan="2">3 400—3 500
COMMUNICATION-SATELLITE (Satellite-to-earth)
RADIOLOCATION
Amateur
374A 376</td></tr>
<tr><td rowspan="2">3 600—4 200
FIXED
COMMUNICATION-SATELLITE (Satellite-to-earth)
Mobile
374 374A</td><td>3 500—3 700
FIXED
MOBILE
COMMUNICATION-SATELLITE (Satellite-to-earth)
RADIOLOCATION
374A</td><td>3 500—3 700
COMMUNICATION-SATELLITE (Satellite-to-earth)
RADIOLOCATION
Fixed
Mobile
374A 377 378</td></tr>
<tr><td colspan="2">3 700—4 200
FIXED
MOBILE
COMMUNICATION-SATELLITE (Satellite-to-earth)
374A 379</td></tr>
</table>

NOC **370 371 372 374 375 376 377 378**

MOD **373** In Denmark, Norway, Sweden and Switzerland, the communication-satellite, fixed, mobile and radiolocation services operate on a basis of equality in the band 3 400-3 600 Mc/s.

ADD **374A** This band may also be used for the transmission of tracking and telemetering signals associated with communication-satellite space stations operating in the same band.

MOD **379** In Australia, the band 3 700-3 770 Mc/s is allocated to the communication-satellite and radiolocation services.

SUP **380**

In Article 5, for the Table of Frequency Allocations for the band 4400-5000 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
4 400—4 700		
	FIXED	392A
	MOBILE	
	COMMUNICATION-SATELLITE (Earth-to-satellite)	
4 700—5 000 *		

ADD

392A This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

In Article 5, for the Table of Frequency Allocations for the bands 5650-8400 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5 650—5 725	**5 650—5 850**	
5 725—5 850 COMMUNICATION-SATELLITE (Earth-to-satellite) 392A RADIOLOCATION *Amateur* 354 388 390 391	RADIOLOCATION *Amateur* 389 391	
5 850—5 925 392A FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 391	**5 850—5 925** RADIOLOCATION *Amateur* 391	**5 850—5 925** FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 392A *Radiolocation* 391
5 925—6 425	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite)	392A

NOC **354 388 389 390 391**

SUP [392]

ADD **392A** This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
6 425—7 250	392F 393 393A	
7 250—7 300	COMMUNICATION-SATELLITE (Satellite-to-earth) 374A 392C 392D 392F 392Y	
7 300—7 750	FIXED MOBILE COMMUNICATION-SATELLITE 374A 392D (Satellite-to-earth) 392F	

ADD

374A This band may also be used for the transmission of tracking and telemetering signals associated with communication-satellite space stations operating in the same band.

ADD

392C Stations of the fixed and mobile services, previously authorized in the bands 7 250-7 300 Mc/s and 7 975-8 025 Mc/s, may continue to operate until 1 January, 1969. This provision does not apply to the countries listed in 392Y and 392YY.

ADD

392D As an exception, passive communications-satellite systems also may be accommodated in the band 7 250-7 750 Mc/s, subject to:

a) agreement between administrations concerned and those whose services, operating in accordance with the Table, may be affected;

b) the co-ordination procedure laid down in Article 9.

Such systems shall not cause any more interference at active earth station receivers than would be caused by fixed or mobile services. Power-flux density limitations at the earth's surface after reflection from the passive communications satellites shall not exceed those prescribed in these Regulations for active communications-satellite systems.

The maximum effective power radiated in any direction in the horizontal plane by earth stations of passive satellite systems shall not exceed + 55 dbW, not taking the site shielding factor into account. If the distance between a transmitting station of a passive system and the territory of another Administration exceeds 400 km, this limitation may be increased in that direction by 2 db for each 100 km in excess of 400 km up to a maximum of 65 dbW.

ADD **392F** In the bands 7 200-7 250 Mc/s and 7 300-7 750 Mc/s, the meteorological-satellite service may use a band up to 100 Mc/s in width on a primary basis. These bands may also be used for the transmission of tracking and telemetering signals associated with meteorological-satellite space stations operating in the same band.

ADD **392Y** In Algeria, Austria, Bulgaria, Cyprus, Cuba, Ethiopia, Finland, Hungary, Japan, Kuwait, Lebanon, Liberia, Morocco, Poland, the U.A.R., Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia and U.S.S.R., the band 7 250-7 300 Mc/s is also allocated to the fixed and mobile services.

MOD **393** In Italy, the band 6 450-6 575 Mc/s is also allocated to the radiolocation service.

ADD **393A** The band 7 120-7 130 Mc/s may be used for telecommand in association with space services, subject to agreement between the administrations concerned and those whose services, operating in accordance with the Table, may be affected.

Mc/s

Allocation to Services				
Region 1	Region 2		Region 3	
7 750—7 900				
7 900—7 975	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite)	392A		
7 975—8 025	COMMUNICATION-SATELLITE (Earth-to-satellite)	392A	392C	392YY
8 025—8 400	FIXED MOBILE COMMUNICATION-SATELLITE (Earth-to-satellite) 394 394B	392A		

ADD **392A** This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

ADD **392C** Stations of the fixed and mobile services, previously authorized in the bands 7 250-7 300 Mc/s and 7 975-8 025 Mc/s may continue to operate until 1 January, 1969. This provision does not apply to the countries listed in 392Y and 392YY.

ADD **392YY** In Algeria, Bulgaria, Cuba, Ethiopia, Finland, Hungary, Japan, Kuwait, Lebanon, Morocco, Poland, the U.A.R., Yugoslavia, Roumania, Sweden, Switzerland, Czechoslovakia and the U.S.S.R., the band 7 975-8 025 Mc/s is also allocated to the fixed and mobile services.

MOD **394** In Australia and in the United Kingdom, the band 8 250-8 400 Mc/s is allocated to the radiolocation and communication-satellite services.

ADD **394B** In Israel, the band 8 025-8 400 Mc/s is allocated, on a primary basis, to the fixed and mobile services and, on a secondary basis, to the communication-satellite service.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 173-E
3 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SIXTH AND LAST REPORT OF WORKING GROUP 5C

TO COMMITTEE 5

FREQUENCIES FOR USE IN EMERGENCIES INVOLVING MANNED SPACE SATELLITES

1. Introduction

1.1 The Working Group was charged to consider the only proposals before the Conference for the allocation of two frequency bands specifically for the location and rescue of spacemen and space vehicles in case of forced landing due to some failure in flight.

1.2 These proposals, fuller details of which may be found in Document No. 32 (Rev. 2) were for :

a) a guard band between 20,010 and 20,016 kc/s,

b) a guard band between 114.1 and 114.4 Mc/s.

1.3 The Working Group has devoted considerable time to the study of these proposals particularly on the need for frequencies in addition to those already provided under the Radio Regulations for Distress, Emergency and Survival Craft.

1.4 There was unanimous agreement in the Group that matters concerning the safety of human life are of paramount importance and that the Radio Regulations should not in any way deny to the occupants of spacecraft access to the same facilities provided for other travellers. The conclusions of the Working Group should be read against this background.

2. Proposal No. 1 in the High Frequency Band

2.1 After considerable discussion the Working Group agreed that there appeared to be justification for an additional frequency at the order proposed and that the Radio Regulations should be quite clear as to the purpose for which it is intended.

2.2 There was unanimous agreement on the amendment to the Table of Frequency Allocations set out in Appendix 1.

3. Proposal No. 2 in the Very High Frequency Band

3.1 Discussions on this proposal were protracted and very detailed but did not lead to complete agreement on the need for a frequency between 100 and 156 Mc/s additional to 121.5 Mc/s, designated in RR No. 273. There was no disagreement that 121.5 Mc/s is available for spacemen in emergency.

3.2 Despite the doubts mentioned in 3.1 the Group devoted considerable time to an objective study of the proposal for the band 114.1 - 114.4 Mc/s. In the course of this study it was explained that the basic requirement was to provide for a situation where the occupant of a spacecraft may be forced to abandon his vehicle during descent in emergency. In such circumstances it was agreed that the safety of the cosmonaut would best be assured by the use of 121.5 Mc/s. For the location and recovery of the vehicle itself the additional frequency was required to avoid possible confusion and delay in rescuing the man.

3.3 The Group was unable to agree to the allocation proposed in view of the weight of objections to the choice of the band in question. The Group recognised that the entire band 108 - 117.975 Mc/s is allocated to the Aeronautical Radionavigation and in many countries is heavily subscribed in accordance with internationally agreed plans. For a fuller appreciation of the factors involved Committee 5 is invited to refer to paragraph 5 of Document No. DT/87, the adopted report of Group 5C1.

3.4 The Working Group considered the proposal, amended in the light of the discussion as set out in Appendix 2. In the absence of agreement upon this alternative it was agreed to refer the matter to Committee 5 for resolution.

J. PENWARDEN
Chairman

Appendices : 2

A P P E N D I X 1

kc/s

	Allocation to Services		
	Region 1	Region 2	Region 3
MOD	19,990 - 20,010 STANDARD FREQUENCY 204 215 220 221A		

NOC 204 (see Document 112)

MOD 215 (see Document 111)

NOC 220

SUP 221 (see Document 111)

ADD 221A The frequency 20,007 kc/s ± 3 kc/s may also be used, in emergency, in the search for, and rescue of, astronauts and space vehicles. Emissions must be confined in a band of ± 3 kc/s about this frequency.

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A P P E N D I X 2

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
108 - 117.975 AERONAUTICAL RADIONAVIGATION 272A		

ADD 272A In certain countries the band 114.1 - 114.4 Mc/s is used for the search and rescue of astronauts or space vehicles forced down in emergency. In countries where such operations cannot be carried out in this band the authorised emergency frequencies may be used.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 174-E
3 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

AGENDA

NINTH MEETING OF COMMITTEE 5 (ALLOCATIONS)

Monday, 4 November, 1963, at 0930 hours (9.30 a.m.), room A

1. Report by Convenor Working Group 5 ad hoc (RR 373 MOD) (Document No. 139, Appendix 1)
2. Fifth Report by Working Group 5B - Radio Astronomy (Document No. 160 plus Addendum and Corrigendum)
3. Sixth and last Report by Working Group 5B - Space Research (Document No. 165)
4. Fourth Report by Working Group 5C - Meteorological-satellite (Document No. 164)
5. Fifth Report by Working Group 5C - Radionavigation-satellite (Document No. 169)
6. Sixth and last Report by Working Group 5C - Emergency frequencies (Document No. 173)
7. Summary Records (as available)
8. Any other business

W. KLEIN
Chairman

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SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 175
3 November, 1963

E

B. 4

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Cttee 5	114	3	117·935-136 Mc/s	
	127	App. 1	235-328·6 Mc/s	
	114	5	960-1215 Mc/s	
	114	7	1540-1660 Mc/s	
	114	9	4200-4400 Mc/s	
	114	11	5000-5250 Mc/s	
	125	3	10·55-10·7 Gc/s	
	125	7	15·25-15·4 Gc/s	
	114	13	15·4-15·7 Gc/s	
	125	11	17·7-21 Gc/s	
	125	15	25·25-31·5 Gc/s	
	114	15	Recommendation	Aeronautical Mobile (R)

Y. PLACE
Chairman of the Editorial Committee

Annex : 12 Pages

In Article 5, for the Table of Frequency Allocations for the bands 117·975-136 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
117·975—132	AERONAUTICAL MOBILE (R)	
	273 273A	
132—136	**132—136**	
AERONAUTICAL MOBILE (R)	FIXED	
	MOBILE 273A 276 277	
273A 274 275	278 279	

ADD **273A** In the band 117·975-132 Mc/s and in the band 132-136 Mc/s where the aeronautical mobile (R) service is authorized, the use and development, for this service, of systems using space communication techniques may be authorized but limited initially to satellite relay stations of the aeronautical mobile (R) service. Such use and development shall be subject to co-ordination between administrations [directly] concerned [and those whose services, operating in accordance with the Table, may be affected.]

NOC **273**

NOC **274**

MOD **275** [See the band 136-138 Mc/s.]

NOC **276**

NOC **277**

MOD **278** [See the band 136-137 Mc/s.]

MOD **279** In Australia, the band 132-136 Mc/s is allocated to the aeronautical mobile service.

In Article 5, for the Table of Frequency Allocations for the bands 235-328·6 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
235—267		
267—272	FIXED MOBILE *Space* (Telemetering) 309A 309B	
272—273	FIXED MOBILE SPACE (Telemetering) 309A 309C	
273—328·6		

ADD **309A** Space stations employing frequencies in the band 267-273 Mc/s for telemetering purposes may also transmit tracking signals in the band.

ADD **309B** In the band 267-272 Mc/s individual administrations may use space telemetering in their countries on a primary basis, subject to the agreement of the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

ADD **309C** In Ethiopia, Israel and Japan, the band 272-273 Mc/s is allocated, on a primary basis, to the fixed and mobile services and, on a secondary basis, to the space telemetering service.

In Article 5, for the Table of Frequency Allocations for the bands 960-1 215 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
960—1 215 AERONAUTICAL RADIONAVIGATION 341		

MOD

341 The band 960-1 215 Mc/s is reserved on a world-wide basis for the use and development of airborne electronic aids to air navigation and any directly associated ground-based facilities.

In Article 5, for the Table of Frequency Allocations for the bands 1 540-1 660 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 540—1 660	AERONAUTICAL RADIONAVIGATION 351 352 352A 352B	

MOD **341** [Retain for 960-1 215 Mc/s.]

MOD **351** In Italy, the band 1 535-1 600 Mc/s is also allocated to the fixed service until 1 January, 1970.

NOC **352**

ADD **352A** The bands 1 540-1 660 Mc/s, 4 200-4 400 Mc/s, 5 000-5 250 Mc/s and 15·4-15·7 Gc/s are reserved, on a world-wide basis, for the use and development of airborne electronic aids to air navigation and any directly associated ground-based or satellite-borne facilities.

ADD **352B** The bands 1 540—1 660 Mc/s, 5 000-5 250 Mc/s and 15·4-15·7 Gc/s are also allocated to the aeronautical mobile (R) service for the use and development of systems using space communication techniques. Such use and development is subject to agreement and co-ordination between administrations [directly] concerned [and those whose services, operating in accordance with the Table, may be affected].

In Article 5, for the Table of Frequency Allocations for the bands 4 200-4 400 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
4 200—4 400		
AERONAUTICAL RADIONAVIGATION		
352A 381 382 383		

MOD **341** [Retain for the band 960-1 215 Mc/s.]

ADD **352A** [See 1 540-1 660 Mc/s.]

NOC **381**

NOC **382**

NOC **383**

In Article 5, for the Table of Frequency Allocations for the bands 5 000-5 250 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
5 000—5 250	AERONAUTICAL RADIONAVIGATION 352A 352B	

MOD **341** [Retain for the band 960-1 215 Mc/s.]

ADD **352A** [See 1 540-1 660 Mc/s.]

ADD **352B** [See 1 540-1 660 Mc/s.]

In Article 5, for the Table of Frequency Allocations for the bands 10·55-10·7 Gc/s there shall be substituted the following:

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
10·55—10·68		
10·68—10·7	RADIO ASTRONOMY 405A 405B	

SUP **[405]**

ADD **405A** In Australia and the United Kingdom, the band 10·68-10·7 Gc/s is also allocated on a secondary basis, to the radiolocation service.

ADD **405B** In Bulgaria, Cuba, Hungary, Japan, Kuwait, Lebanon, Pakistan, Poland, the U.A.R., Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 10·68-10·7 Gc/s is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the bands 15·25-15·4 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
15·25—15·35		
15·35—15·4	RADIO ASTRONOMY 409A	

SUP [**405**]

ADD **409A** In Bulgaria, Cuba, Hungary, Japan, Kuwait, Lebanon, Pakistan, Poland, the U.A.R., Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 15·35-15·4 Gc/s is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the bands 15·4-15·7 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
15·4—15·7	AERONAUTICAL RADIONAVIGATION 352A 352B 407	

MOD **341** [Retain for the band 960-1 215 Mc/s.]

ADD **352A** [See 1 540-1 660 Mc/s.]

ADD **352B** [See 1 540-1 660 Mc/s.]

NOC **407**

In Article 5, for the Table of Frequency Allocations for the bands 17·7-21 Gc/s there shall be substituted the following:

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
17·7—19·3		
19·3—19·4	RADIO ASTRONOMY 409B	
19·4—21		

SUP [405]

ADD **409B** In Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Poland, the U.A.R., Roumania, Czechoslovakia and the U.S.S.R., the band 19·3-19·4 Gc/s is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the bands 25·25-31·5 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
25·25—31·3		
31·3—31·5	RADIO ASTRONOMY 412A	

SUP [405]

ADD **412A** In Bulgaria, Cuba, Hungary, the U.A.R., Roumania, Czechoslovakia and the U.S.S.R., the band 31·3-31·5 Gc/s is also allocated to the fixed and mobile service.

DRAFT RECOMMENDATION No. [redacted]

Frequency requirements in the HF bands exclusively allocated to the Aeronautical Mobile (R) Service

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering,

a) that for the safety of all aircraft it is essential to provide communications for routine flight of transport aerospace vehicles intended to fly between points on the earth's surface both within and beyond the major part of the atmosphere,

b) that frequencies in the HF bands (between 2 850 and 22 000 kc/s) are technically suitable for such communications as well as those frequencies above 100 Mc/s now available to the Aeronautical Mobile (R) Service,

recommends

that at the Extraordinary Administrative Radio Conference to be called to revise Appendix 26 in accordance with Resolution No. 13, Geneva, 1959, the necessary measures be taken to provide the high frequency channels required for this purpose.

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SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 176-E
3 November, 1963

E

B. 5

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing COM.	No.	Pages	Reference	Comments
Ctte 6			Art. 3 Art. 9A No. 695 Nos. 711A, 711B Art. 19 Art. 20	

Y. PLACE
Chairman of the Editorial
Committee

Annex : 18 pages

In Article 3, of the Radio Regulations, after Regulation No. 116 there shall be inserted the following new Regulation:

ADD

116A § 4A. For the purpose of resolving cases of harmful interference, the Radio Astronomy Service shall be treated as a radiocommunication service. However, protection from services in other bands shall be afforded the Radio Astronomy Service only to the extent that such services are afforded protection from each other.

The following new article shall be inserted in the Radio Regulations:

ARTICLE 9A

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in the Space and Radio Astronomy Services

Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

ADD

639AA § 1 (1) *Any frequency assignment* [1] to an earth or space station shall be notified to the International Frequency Registration Board:

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency.

ADD

639AA.1 [1] The expression *frequency assignment*, wherever it appears in this Article, shall be understood to refer either to a new frequency assignment or to a change in an assignment already recorded in the Master International Frequency Register (hereinafter called *Master Register*).

ADD

639AB (2) Similar notice shall be given for any frequency to be used for the reception of transmissions from earth or space stations by a particular space or earth station in each case where one or more of the conditions specified in No. 639AA are applicable.

ADD

639AC Similar notice may be given for any frequency or frequency band to be used for reception by a particular radio astronomy station, if it is desired that such data should be included in the Master Register.

ADD

639AD Before an administration notifies to the Board or brings into use any frequency assignment to an earth station, whether for transmitting or receiving, in a particular band allocated with equal rights to the space service and the fixed or. mobile service in the frequency spectrum one and ten Gc/s, it shall effect co-ordination of the assignment with any other administration whose territory lies wholly or partly within co-ordination distance [1]. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the earth station and showing the co-ordination distance from the earth station, for the cases of transmission and reception by the earth station, as a function of azimuth and the data on which it is based, including all pertinent details of the proposed frequency assignment, as listed in Appendix 1A, and an indication of the approximate date on which it is planned to begin operations.

ADD

639AD.1 [1] For the purposes of this Article the expression " co-ordination distance " means the distance from an earth station calculated along the lines of the procedures shown in Recommendation No. [illegible] [Doc. 157] within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in the fixed or mobile service in the frequency spectrum between one and ten Gc/s sharing the same frequency band, or as the case may be, of the use of a given frequency for reception at this earth station receiving harmful interference caused by such stations in the fixed or mobile service.

ADD **639AE** An administration with which co-ordination is sought under No. 639AD shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish:

a) in the case of a frequency assignment to be used for transmitting by the earth station, whether the use would cause harmful interference to the service rendered by its stations in the fixed or mobile service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

b) in the case of a frequency assignment to be used for reception by the earth station, whether harmful interference would be caused to reception at the earth station by the service rendered by its stations in the fixed or mobile service operating in accordance with the Convention and these Regulations, or to be so operated within the next two years;

and shall within a further period of thirty days, notify the administration requesting co-ordination of its agreement. If the administration with which co-ordination is sought does not agree it shall, within the same period, send to the administration seeking co-ordination a copy of a diagram drawn to an appropriate scale showing the location of its fixed or mobile stations which are within the co-ordination distance of the earth transmitting and receiving station, as appropriate, together with all other relevant basic characteristics, and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem. A copy of these data shall be sent to the Board, as notification within the period specified for such a case in No. 491 MOD.

ADD **639AF** No co-ordination under No. 639AD is required when an administration proposes:

a) to bring into use an earth station which is located in relation to the territory of any other country, outside the co-ordination distance defined in 639AD.1; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the fixed or mobile stations of other administrations;

c) to bring into use an earth station in the band 4 400-4 700 Mc/s or the band 8 100-8 400 Mc/s.

d) to operate an earth station located on board a ship or aircraft; however, in such a case the operation of this station in the band referred to in number 639AD, if the ship or aircraft is within the co-ordination distance with respect to the boundaries of another country, shall be subject to prior agreement between the administrations concerned, in order to avoid harmful interference to the established fixed and mobile services of that country.

ADD **639AG** An administration seeking co-ordination may request the Board to endeavour to effect co-ordination in those cases where:

a) an administration with which co-ordination is sought under No. 639AD fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

ADD **639AH** Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may

request additional information which they may require to assess the probability of harmful interference to the services concerned.

ADD **639AI** Where the Board receives a request under No. 639 AG *a)*, or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. 639AG *c)*, it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will be made in respect of any harmful interference which may be caused by the earth station to the services rendered by its stations in the fixed or mobile service.

ADD **639AJ** Where necessary, as part of the procedure under No.639AG, the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

ADD **639AK** For any notification under Nos. 639AA, 639AB, or 639AC, an individual notice for each frequency assignment shall be drawn up as prescribed in Appendix 1A, which specifies in Sections B, C, D, E or F the basic characteristics to be furnished, according to the case. It is recommended that the notifying administration should also supply the additional data called for in Section A of that Appendix, together with such further data as it may consider appropriate.

ADD **639AL** For a frequency assignment to an earth or space station, each notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use. It must reach the Board in any case not later than one hundred and eighty days before this date, except in the case of assignments in the space research service in bands allocated exclusively to this service or in shared bands in which this service is the sole primary service. In the case of such an assignment in the space research service the notice should, whenever practicable, reach the Board before the date on which the assignment is brought into use, but in any case must reach

the Board not later than thirty days after the date it is actually brought into use.

ADD **639AM** Any frequency assignment to an earth or space station, the notice of which reaches the Board after the applicable period specified in No. 639AL shall, where it is to be recorded, bear a remark in the Master Register to indicate that it is not in conformity with No. 639AL.

Section II. Procedure for the Examination of Notices and the Recording of Frequency Assignments in the Master Register

ADD **639AN** Any notice which does not contain at least those characteristics specified in Appendix 1A (Sections B, C, D, E, or F, as appropriate) shall be returned by the Board immediately, by airmail, to the notifying administration with the reasons therefor.

ADD **639AO** Upon receipt of a complete notice, the Board shall include the particulars thereof, with the date of receipt, in the weekly circular referred to in No. 497, which shall contain the particulars of all such notices received since the publication of the previous circular.

ADD **639AP** The circular shall constitute the acknowledgment to the notifying administration of the receipt of a complete notice.

ADD **639AQ** Complete notices shall be considered by the Board in the order of their receipt. The Board shall not postpone the formulation of a finding unless it lacks sufficient data to render a decision in connection therewith; moreover, the Board shall not act upon any notice which has a technical bearing on an earlier notice still under consideration by the Board, until it has reached a finding with respect to such earlier notice.

ADD **639AR** The Board shall examine each notice:

ADD **639AS** *a)* with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations (with the exception of those

relating to the co-ordination procedure and the probability of harmful interference);

ADD **639AT** *b)* where appropriate, with respect to its conformity with the provisions of No. 639AD relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

ADD **639AU** *c)* where appropriate, with respect to the probability of harmful interference to the service rendered by the fixed or mobile station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of Nos. 501 or 570AC as appropriate, if this frequency assignment has not, in fact, caused harmful interference to any frequency assignment in conformity with No. 639AS previously recorded in the Master Register.

ADD **639AV** Depending upon the findings of the Board subsequent to the examination prescribed in Nos. 639AS, 639AT and 639AU, further action shall be as follows:

ADD **639AW** *Finding favourable with respect to No. 639AS in cases where the provisions of No. 639AT are not applicable.*

ADD **639AX** The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639AY** *Finding unfavourable with respect to No. 639AS.*

ADD **639AZ** Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BA** Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, it shall be returned immediately by airmail to the

notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BB** If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. 639BA. If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. 115, or with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. 639AS, and the provisions of No. 639AT are not applicable, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD **639BC** *Finding favourable with respect to No. 639AS in cases where the provisions of No. 639AT are applicable.*

ADD **639BD** Where the Board finds that the co-ordination procedure mentioned in No. 639AT has been successfully completed with all administrations whose fixed or mobile services may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BE** Where the Board finds that the co-ordination procedure mentioned in No. 639AT has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. 639BD. If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. 639AU.

ADD **639BF** Where the Board finds that the co-ordination procedure mentioned in No. 639AT has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the

notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BG** Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. 639AT has been successfully completed with all administrations whose fixed or mobile services may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BH** Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. 639BE. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BI** Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. 639AU. However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **639BJ** *Finding favourable with respect to Nos. 639AS and 639AU.*

ADD **639BK** The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **639BL** *Finding favourable with respect to No. 639AS but unfavourable with respect to No. 639AU.*

ADD **639BM** The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **639BN** Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. 639AU, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be indicated in the Remarks Column.

ADD **639BO** Should the notifying administration resubmit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. 639BN to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

ADD **639BP** The period of one hundred and twenty days mentioned in 639BO shall count from:

— the date when the assignment to the earth station which received an unfavourable finding is brought into use, if the assignment to the fixed or mobile station is then in use;

— otherwise, from the date when the assignment to the fixed or mobile station is brought into use.

But if the assignment to the fixed or mobile station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. 639BY.

ADD **639 BQ** *Notices relating to radio astronomy stations.*

ADD **639BR** A notice relating to a radio astronomy station shall not be examined by the Board with respect to Nos. 639AT or 639AU. Whatever the finding, the assignment shall be recorded in the Master Register with a date in Column 2c. The date of receipt by the Board of the notice shall be recorded in the Remarks Column.

ADD **639BS** *Change in the basic characteristics of assignments already recorded in the Master Register.*

ADD **639BT** A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1A (except the call sign, the name of the station or the name of the locality in which it is situated) shall be examined by the Board according to No. 639AS, and, where appropriate, Nos. 639AT or 639AU, and the provisions of Nos. 639AW to 639BR inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

ADD **639BU** However, in the case of a change in the characteristics of an assignment which is in conformity with No. 639AS, should the Board reach a favourable finding with respect to Nos. 639AT or 639AU, where these provisions apply, or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. The date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

ADD **639BV** *In applying the provisions of the whole of this Section,* any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

ADD **639BW** (1) *Recording of Frequency Assignments notified before being brought into use.*

ADD **639BX** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to No. 639AS and, where appropriate, Nos. 639AT or 639AU, it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

ADD **639BY** (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

ADD **639BZ** (4) In the circumstances described in No. 639BO, and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. 639BP, the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. 639BO, the information relating to the absence of complaint of harmful interference.

ADD **639CA** (5) If the Board does not receive this confirmation within the period referred to in No. 639BY or at the end of the period referred to in No. 639BZ, as appropriate, the entry concerned shall be cancelled.

Section III. Recording of Findings in the Master Register

ADD **639CB** In any case where a frequency assignment is recorded in the Master Register, the finding reached by the Board shall be indicated by a symbol in Column 13a. In addition, a remark indicating the reasons for any finding shall be inserted in the Remarks Column.

Section IV. Categories of Frequency Assignments

ADD

639CC The date in Column 2c shall be the date of putting into use notified by the administration concerned. It is given for information only.

ADD

639CD If harmful interference to the reception of any station whose assignment is in accordance with Nos. 501, 570AC or 639AS as appropriate, is actually caused by the use of a frequency assignment which is not in conformity with No. 639AS, the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

Section V. Reviews of Findings

ADD

639CE (1) The review of a finding by the Board may be undertaken:

— at the request of the notifying administration,

— at the request of any other administration interested in the question, but only on the grounds of actual harmful interference,

— on the initiative of the Board itself when it considers this is justified.

ADD

639CF (2) The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. 639AS and Nos. 639AT or 639AU, where these latter provisions apply, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

ADD

639CG (1) After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistance of the notifying administration, following an unfavourable finding with respect to No. 639AU, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, having first consulted the administrations concerned.

ADD

639CH (2) If the finding of the Board is then favourable, it shall enter in the Master Register the changes that are required so that the entry shall appear in the future as if the original finding had been favourable.

ADD

639CI (3) If the finding with regard to the probability of harmful interference remains unfavourable, no change shall be made in the original entry.

Section VI. Modification, Cancellation and Review of Entries in the Master Register

ADD

639CJ In case of permanent discontinuance of the use of any recorded frequency assignment, the notifying administration shall inform the Board within three months of such discontinuance, whereupon the entry shall be removed from the Master Register.

ADD

639CK Whenever it appears to the Board from the information available that a recorded assignment has not been brought into regular operation in accordance with the notified basic characteristics, or is not being used in accordance with those basic characteristics, the Board shall consult the notifying administration and, subject to its agreement, shall either cancel or suitably modify the entry.

ADD

639CL If, in connection with an enquiry by the Board under No. 639CK, the notifying administration has failed to supply the Board within ninety days with the necessary or pertinent information, the Board shall make suitable entries in the Remarks Column of the Master Register to indicate the situation.

Section VII. Studies and Recommendations

ADD

639CM (1) If it is requested by any administration, and if the circumstances appear to warrant, the Board, using such means at its disposal as are appropriate in the circumstances, shall conduct a study of cases of alleged contravention or non-observance of these Regulations, or of harmful interference.

ADD **639CN** (2) The Board shall thereupon prepare and forward to the administration concerned a report containing its finding and recommendations for the solution of the problem.

ADD **639CO** In a case where, as a result of a study, the Board submits to one or more administrations suggestions or recommendations for the solution of a problem, and where no answer has been received from one or more of these administrations within a period of ninety days, the Board shall consider that the suggestions or recommendations concerned are unacceptable to the administrations which did not answer. If it was the requesting administration which failed to answer within this period, the Board shall close the study.

Section VIII. Miscellaneous Provisions

ADD **639CP** The technical standards of the Board shall be based upon the relevant provisions of these Regulations and the Appendices thereto, the decisions of Administrative Conferences of the Union as appropriate, and the Recommendations of the C.C.I.R.

ADD **639CQ** The Board shall promulgate to administrations its findings and reasons therefore, together with all changes made to the Master Register, through the weekly circular referred to in No. 497.

ADD **639CR** In case a Member or Associate Member of the Union avails itself of the provisions of Article 27 of the Convention, the Board shall, upon request, make its records available for such proceedings as are prescribed in the Convention for the settlement of international disputes.

In Article 14 of the Radio Regulations, for Regulation No. 695 there shall be substituted the following Regulation:

MOD **695** § 3. In order to avoid interference:

— locations of transmitting stations and, where the nature of the service permits, locations of receiving stations shall be selected with particular care;

— radiation in and reception from unnecessary directions shall be minimized, where the nature of the service permits, by taking the maximum practical advantage of the properties of directional antennae;

— the choice and use of transmitters and receivers shall be in accordance with the provisions of Article 12 ;

— space stations shall be fitted with appropriate devices to quickly terminate their radio emissions whenever required to do so under the provisions of these Regulations.

In Article 15 of the Radio Regulations, after Regulation No. 711, there shall be inserted the following new Regulations:

ADD **711A** § 8A. When the service rendered by an earth station suffers interference, the administration having jurisdiction of the receiving station experiencing the interference may also approach directly the administration having jurisdiction over the interfering station.

ADD **711B** § 8B. When cases of harmful interference occur as a result of emissions from space stations, the administrations concerned shall, upon request from the administration having jurisdiction over the station experiencing the interference, furnish current ephemeral data necessary to allow calculation of the positions of the space station.

Article 19 of the Radio Regulations is modified as follows:

MOD **735.1** 1 In the present state of the technique, it is recognized nevertheless that the transmission of identifying signals for certain radio systems (e.g. radiodetermination, radio relay systems and space systems) is not always possible.

ADD **737A** § 2A. In the event that the transmission of identification signals by a space station is not possible that station shall be identified by specifying the inclination of the plane and the period required for a

complete orbit and the altitude of apogee and perigee in kilometers, measured from the surface of the Earth. In the case of a space station on board a stationary satellite, the geographical longitude of the projection of the satellite's position on the surface of the Earth should be specified. (See Appendix 1A.)

In Article 19 of the Radio Regulations, after Regulation No. 773, there shall be inserted the following new Regulations:

ADD *Space stations*

ADD **773A** § 21A. When call signs for stations in the space service are employed it is recommended that they consist of:

— two letters followed by two or three digits (other than the digits 0 and 1 in cases where they immediately follow a letter). (See also No. 737A.)

Article 20 of the Radio Regulations is modified as follows:

MOD **808** (VII) *List VII. Alphabetical List of Call Signs Assigned from the International Series to Stations Included in Lists I to VI and VIIIA.*

ADD **811A** (VIIIA) *List (VIIIA.) List of Stations in the Space Service and in the Radio Astronomy Sevice.*

This list shall contain particulars of earth and space stations and of radio astronomy stations. In this list, each class of station shall occupy a special section.

MOD **815** § 2. (1) The Secretary-General shall publish the amendments to be made in the documents listed in Nos. 790 to 814 inclusive. Once a month administrations shall inform him, in the form shown for the lists themselves in Appendix 9 MOD, of the additions, modifications or deletions to be made in Lists IV, V and VI using for this purpose the appropriate symbols shown in Appendix 10 MOD. Furthermore, in order to make the necessary additions, modifications and deletions to Lists I, II, III and VIIIA, he shall use the data provided by the International Frequency Registration Board, obtained from the

information received in application of the provisions of Articles 9 MOD 9A and 10. He shall make the requisite amendments to List VII by using the data he has received for Lists I to VI and VIIIA.

ADD

829A § 10A. The List of Stations in the Space Service and in the Radio Astronomy Service (List VIIIA) shall be republished at intervals to be determined by the Secretary-General. Recapitulative supplements shall be published every six months.

MOD

831 § 12. (1) The forms in which the Lists I to VI inclusive, the Lists VIII and VIIIA and the Radiocommunication Statistics are to be prepared are given in Appendix 9 MOD. Information concerning the use of these documents shall be given in the Prefaces thereto. Each entry shall include the appropriate symbol, as shown in Appendix 10 MOD, to designate the category of station concerned. Additional symbols, where necessary, may be selected by the Secretary-General, any such new symbols being notified by the Secretary-General to administrations.

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SPACE
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GENEVA, 1963

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4 November, 1963

E

B. 6

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
C. 5	DT 106 DT 106	App. 2 Annex 2	136-138 Mc/s Rec.	 136-137 Mc/s

Y. PLACE
Chairman of the Editorial
Committee

Annex : 3 Pages

In Article 5, for the Table of Frequency Allocations for the bands 136-138 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
136—137	**136—137**	**136—137**
SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)	SPACE RESEARCH (Telemetering and tracking)
FIXED		FIXED
MOBILE		MOBILE
275A 281 281A	281A 281B	281A
137—138		
	SPACE (Telemetering and tracking)	
	SPACE RESEARCH	
	METEOROLOGICAL-SATELLITE	
275A 279A 281C 281D 281E		

MOD **275** [For the bands 132-136 and 138-144 Mc/s]
In Burundi, the Congo (Leopoldville), Nigeria, Sierra Leone, Gambia, Portuguese Oversea Provinces in Region 1 south of the equator, Rhodesia and Nyasaland Rwanda and the R. of South Africa and Territory of South West Africa, the bands 132-136 Mc/s and 138-144 Mc/s are allocated to the fixed and mobile services.

ADD **275A** In Burundi, the Congo (Leopoldville), Nigeria, Sierra Leone, Gambia, Portuguese Oversea Provinces in Region 1 south of the equator, Rhodesia and Nyassaland, Rwanda and the R. of South Africa and Territory of South West Africa, the band 136-138 Mc/s is also allocated to the fixed and mobile services.

MOD **278** [For the bands 132-136 and 138-144 Mc/s]
In New Zealand, the bands 132-136 Mc/s and 138-144 Mc/s are allocated to the aeronautical mobile (OR) service.

MOD **279** [See the band 132-136 Mc/s and 279A for the band 137-144 Mc/s]

ADD **279A** In Australia, the band 137-144 Mc/s is also allocated to the broadcasting service for television.

SUP **[280]** [Delete throughout the Table]

MOD **281** In Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 136-137 Mc/s is *also* allocated to the aeronautical mobile service.

ADD **281A** For the use of the band 136-137 Mc/s, see Recommendation No. [redacted].

ADD **281B** In Region 2, the band 136-137 Mc/s is also allocated to the fixed and mobile services until 1 January 1969. Thereafter, in Cuba, the band will continue to be allocated also to the fixed and mobile services.

ADD **281C** In Algeria, Bulgaria, Hungary, Kuwait, Lebanon, Morocco, Poland, the U.A.R., Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 137-138 Mc/s is also allocated to the aeronautical mobile (OR) service. In the remaining countries of Region 1, the band 137-138 Mc/s is also allocated to the aeronautical mobile (OR) service until 1 January 1969.

ADD **281D** In Norway, Switzerland and Turkey, the band 137-138 Mc/s is also allocated to the fixed service until 1 January 1969.

ADD **281E** In Regions 2 and 3, the band 137-138 Mc/s is also allocated to the fixed and mobile services until 1 January 1969.
Thereafter in Cuba, Pakistan and the Philippines, the band 137-138 Mc/s will continue to be allocated also to the fixed and mobile services.

MOD **282** In Austria, the Netherlands and the United Kingdom, the band 138-144 Mc/s will, at some future date, be allocated to the fixed service and mobile, except aeronautical mobile, service.

MOD **283** In Denmark, Greece, Norway, Portugal, F.R. of Germany, Sweden, Switzerland and Turkey, the band 138-144 Mc/s is also allocated to the fixed service and mobile, except aeronautical mobile (R) service.

MOD **284** In China, the band 138-144 Mc/s is also allocated to the radiolocation service. [282 283 284 for the band 138-144 Mc/s].

DRAFT RECOMMENDATION No. [redacted]

Relating to the use of the Band 136-137 Mc/s by the fixed and mobile services

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the Table of Frequency Allocations, Geneva, 1959, made provisions for the fixed and mobile services together with space services in the band 136-137 Mc/s;

b) that a number of Administrations have fixed and mobile services operating in accordance with these provisions;

c) that the modified Table of Frequency Allocations, Geneva, 1963, makes provision for the space research service on a primary basis in the band 136-137 Mc/s, and makes provision for the continued operation of the fixed and mobile services on a primary basis in this band;

d) the great importance of affording the space research service protection against interference from stations in the fixed and mobile services, taking into account the very weak signals which may be used in the space research service;

recommends

1. that administrations of all Regions operating, or intending to operate, stations in the fixed and mobile services in the band 136-137 Mc/s take all possible steps to give the required protection to the space research service and to cease the operation of these stations as soon as possible;

2. that administrations notify the I.F.R.B., preferably in advance, of the date when these stations will have ceased operations, and that specific reference should be made to this Recommendation;

and requests

the International Frequency Registration Board to publish this information every six months.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 178-E
4 November, 1963
Original: French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 2

SUMMARY RECORD
OF THE SECOND MEETING

Saturday, 2 November 1963, at 11.30 a.m.

Chairman: Dr. F. NICOTERA (Italy)

1. Item 1 of the Agenda (Document No. 135) - Adoption of the Summary Record of the 1st Meeting (Document No. 83 and Corr.)

The document was adopted without any alterations.

2. First report by the Committee 2 Working Group (Document No. 98)

The document was adopted as it stood.

3. Second report by the Committee 2 Working Group (Document No. 134)

The document was adopted as it stood.

4. Draft Report by Committee 2 (Document No. DT/103)

With regard to Item 4 of the draft report (credentials of the Delegation of China), the representatives of the People's Republic of Poland, the Czechoslovak Socialist Republic and Cuba asked that the statements appearing in Documents Nos. 132 (People's Republic of Poland), 85 (Cuba) and 101 (Czechoslovak Socialist Republic) should be annexed to the report by Committee 2.

It was so decided.

The representatives of the United States of America, the Republic of Korea, the Union of Soviet Socialist Republics and Pakistan made statements concerning the representation of China and asked for them to be included in the report by Committee 2.

It was so decided.

Following a discussion concerning the validity of the credentials presented by the Delegation of China, the Chairman decided to ask the delegations present to state their views individually.

The following delegations considered that the credentials were in order: Commonwealth of Australia, Republic of Korea, Canada, Denmark, Spain, United States of America, Italy, Japan, Federal Republic of Germany, Vatican City State.

The following delegations considered that the credentials in question should not be accepted: Cuba, Republic of Indonesia, Pakistan, People's Republic of Poland, Czechoslovak Socialist Republic, Union of Soviet Socialist Republics.

The representative of the Vatican City State specified that no political significance should be attached to his vote, since Committee 2's duties were purely technical: i.e. to make a formal check of the credentials presented by the delegations. It was in that light that he had expressed his point of view concerning the credentials of the Delegation of China.

The representative of Denmark spoke to the same effect.

5. The representative of the Republic of Indonesia raised a point concerning the denomination of a Member, the Federation of Malaysia.

The Chairman said that the question was not within the province of Committee 2 and requested the delegate of Indonesia to approach the I.T.U. Secretariat, which would give him all the necessary information.

The meeting rose at 12.45 p.m.

Rapporteur :
A. CARUSO

Chairman :
F. NICOTERA

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 179-E
4 November, 1963
Original: French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

REPORT

BY COMMITTEE 2 (CREDENTIALS)

1. Committee 2 met on 11 October and 2 November, 1963. At its first meeting it set up a working group to ascertain whether the delegations were accredited to vote and to sign the Final Acts of the Conference.

2. Committee 2 decided to accept the credentials signed by the competent authorities in the following form :

a) credentials conferring full power;

b) credentials indicating that the delegation is entitled to participate, vote and sign the Final Acts;

c) credentials indicating that the delegation represents its country;

d) credentials indicating the composition of the delegation.

3. In the light of this decision, Committee 2 reached the conclusions set out in the Annex to this report.

4. In connection with the credentials of the Delegation of China, the following statements were submitted for inclusion in this report:

Union of Soviet Socialist Republics	- Annex 2
People's Republic of Poland	- Annex 3
Czechoslovak Socialist Republic, People's Republic of Bulgaria, Hungarian People's Republic, Roumanian People's Republic.	- Annex 4
Republic of Cuba	- Annex 5
United States of America	- Annex 6
Republic of Korea	- Annex 7
Pakistan	- Annex 8

Committee 2 considers that the credentials of China are in order.

5. Committee 2 recommends that any credentials deposited after its last meeting should be examined by its Chairman, who will report to the Plenary Assembly.

Chairman of Committee 2 :
F. NICOTERA

Annexes : 8

ANNEX 1

POSITION ON 1 NOVEMBER, 1963, OF THE CREDENTIALS OF THE COUNTRIES REPRESENTED AT THE SPACE CONFERENCE

Country	Credentials			Comments
	in order	not in order	not received	
1	2	3	4	5
A. Members				
Algeria (Democratic Popular Republic of)	x			
Argentine Republic	x			
Australia (Commonwealth of)	x			
Austria	x			
Belgium	x			
Bielorussian Soviet Socialist Republic	x			
Brazil				1) Observer
Bulgaria (People's Republic of)	x			
Cambodia (Kingdom of)	x			2)
Canada	x			
China	x			
Cyprus (Republic of)	x			
Vatican City State	x			
Colombia (Republic of)	x			
Congo (Republic of the) (Léopoldville)	x			
Korea (Republic of)	x			
Costa Rica		x		1)
Cuba	x			

	2	3	4	5
Denmark	x			
Group of Territories represented by the French Overseas Post and Telecommunication Agency	x			
Spain	x			
United States of America	x			
Ethiopia	x			
Finland	x			
France	x			
Ghana	x			
Greece	x			1)
Guatemala	x			
Hungarian People's Republic	x			
India (Republic of)	x			
Indonesia (Republic of)	x			
Iran			x	1)
Ireland	x			
Iceland	x			
Israel (State of)	x			
Italy	x			
Jamaica	x			
Japan	x			
Kuwait	x			
Lebanon	x			
Liberia (Republic of)	x			
Liechtenstein (Principality of)	x			
Luxembourg	x			
Malaysia	x			
Morocco (Kingdom of)	x			
Mexico	x			
Monaco			x	
Norway	x			
New Zealand	x			

1	2	3	4	5
Uganda	x			
Pakistan	x			
Netherlands (Kingdom of the)	x			
Philippines (Republic of the)	x			1)
Poland (People's Republic of)	x			
Portugal	x			
Spanish Provinces in Africa	x			
United Arab Republic	x			
Federal Republic of Germany	x			
Federal Socialist Republic of Yugoslavia	x			
Ukrainian Soviet Socialist Republic	x			
Roumanian People's Republic	x			
United Kingdom of Great Britian and Northern Ireland	x			
South Africa (Republic of) and Territory of South-West Africa	x			
Sweden	x			
Switzerland (Confederation)	x			
Tanganyika	x			
Czechoslovak Socialist Republic	x			
Territories of the United States of America	x			
Overseas Territories for the international relations of which the Government of the United Kingdom of Great Britain and Northern Ireland are responsible	x			
Union of Soviet Socialist Republics	x			
B. Associate Member Kenya	x			

1) Has not ratified the International Telecommunication Convention (Geneva, 1959)

2) Has not acceded to the International Telecommunication Convention (Geneva, 1959)

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A N N E X 2

STATEMENT BY THE U.S.S.R. DELEGATION

In connection with the examination of the report of the Working Group set up to verify the credentials of the delegations participating in the work of the Conference, the representative of the U.S.S.R. delegation deems it necessary to state that the persons appointed by the Chiang Kai-Shek clique cannot represent China or speak on behalf of the Chinese people. In view of this, the U.S.S.R. Delegation is opposed to having their credentials recognized as valid.

The only legitimate representatives of China in the International Telecommunication Union, as in the other international organizations, can be only those appointed by the Government of the Chinese People's Republic.

The representative of the U.S.S.R. Delegation would like to draw the attention of Committee 2 to Document No. 72 dated 10 October 1963, specifying that the delegations of the Bielorussian S.S.R. and the Ukrainian S.S.R. occupy a similar position in regard to this matter.

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ANNEX 3

STATEMENT BY THE DELEGATION OF THE PEOPLE'S REPUBLIC OF POLAND

Geneva, 29 October, 1963

In connection with the admittance of persons delegated by the Chiang-Kai-Shek's group to participate in the Extraordinary Administrative Radio Conference to allocate frequency bands for space radiocommunication purposes the delegation of the People's Republic of Poland wishes to state that it does not recognise them as representatives of China.

In the opinion of the People's Republic of Poland delegation only the delegates appointed by the Government of the People's Republic of China can be recognised as true and legally authorised representatives of the Chinese People in the International Telecommunication Union as well as in other international organisations.

I request that this statement be issued as an official document of the Extraordinary Administration Radio Conference.

Head of the People's Republic
of Poland Delegation

Signed : K. KOZŁOWSKI

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ANNEX 4

STATEMENT BY THE DELEGATIONS
OF THE PEOPLE'S REPUBLIC OF BULGARIA, THE HUNGARIAN PEOPLE'S REPUBLIC,
THE ROUMANIAN PEOPLE'S REPUBLIC, AND THE CZECHOSLOVAK SOCIALIST REPUBLIC

Geneva, 18 October, 1963

The Extraordinary Administrative Conference allocating frequency bands for space radio communications is called upon, by its terms of reference, to tackle the major problems of space communication. These problems are such that they cannot be solved without close co-operation by all the countries operating radio communications.

A very large country with a highly-developed system of radio communications - namely China - is not represented at this Conference. The representatives of Chiang Kai-Shek, who claim to defend the interests of China, cannot possibly do so, being unable to enter into obligations of any kind with regard to the radio communications of this country. The only government which can legitimately appoint persons to represent China at this Conference is the Government of the People's Republic of China.

Our delegations consider that the absence of a country as important in the field of radio as China is seriously detrimental to the activities of this Conference and jeopardizes its successful outcome.

	Head of the Delegation of the People's Republic of Bulgaria	Head of the Delegation of the Hungarian People's Republic
Signed :	M. VELKOV	L. HORVATH
	Head of the Delegation of the Roumanian People's Republic	Head of the Delegation of the Czechoslovak Socialist Republic
Signed :	M. GRIGORE	M. ZAHRADNÍČEK

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ANNEX 5

STATEMENT BY THE DELEGATION OF THE REPUBLIC OF CUBA TO THE E.A.R.C. ON SPACE COMMUNICATIONS

Geneva, 14 October 1963

With respect to the provisional and final lists of participants in the Conference, the Delegation of the Republic of Cuba wishes to state that although it is undoubtedly a matter of satisfaction to all members of the International Telecommunication Union that many countries, both great and small, should have become members of the I.T.U. in recent years, it is nonetheless true that the legitimate rights of an important country, the Chinese People's Republic, have still not been recognized by the Union and that at the present time those who claim to represent the Chinese people - we refer to the representatives of Chang-Kai-Chek - are not empowered to represent them in any way.

It is well-known that there is only one Chinese People's Republic, an age-old people comprising more than 650 million human beings - a fact that cannot be disputed. Moreover, in recent years the progress achieved by the Chinese People's Republic in the sphere of telecommunications is considerable, embracing as it does the various communication services, and many Administrations represented at the Conference have radiocommunications with the Chinese People's Republic; therefore we do not consider that the work of this important Conference can have the world-wide significance that it should have if the Chinese People's Republic does not take part.

Cuba considers that the only real representatives of China in the I.T.U. are those appointed by the Government of the Chinese People's Republic, and that until this anomalous situation is remedied, the International Telecommunication Convention and the Regulations cannot be fully operative.

Head of the Delegation of Cuba
Pedro M. Luis TORRES

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A N N E X 6

STATEMENT BY UNITED STATES DELEGATION

The United States strongly opposes any proposal or suggestion to substitute a Delegation of the Chinese Communist regime for the duly accredited Delegation of the Government of the Republic of China. This Conference was called under the I.T.U. Convention which provides that only members and associate members of the I.T.U. may participate in conferences of the Union. In 1959 the I.T.U. Administrative Radio Conference in Recommendation No. 36 specifically named "members and associate members of the Union as the ones to be informed of the date and place" for this Conference. The Republic of China is a member of the I.T.U. The Chinese Communist regime has no status in the I.T.U. As recently as October 21, 1963, the Eighteenth United Nations General Assembly, reaffirmed the right of the Government of the Republic of China to represent China in United Nations bodies, when by a vote of 44 in favor, 57 opposed and with 12 abstentions, it rejected an Albanian proposal to replace representatives of the Government of the Republic of China with the Chinese Communists in all United Nations organs. This technical conference convened under the I.T.U. Convention should be guided by the relevant political decisions of the United Nations General Assembly.

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A N N E X 7

STATEMENT BY THE REPUBLIC OF KOREA

Since the establishment of the Organization of the United Nations, the Government of the Republic of China has represented China as a full member of the Organization and of all its specialized agencies, with the faithful fulfilment of all the obligations which it has entered vis-a-vis these organizations, and has also fully contributed for its part to the attainment of the objectives of these organizations in their respective fields.

Concerning this Extraordinary Administrative Conference under the I.T.U. on the subject of space radiocommunication, the Delegation of the Republic of China takes part in the Conference, with the invitation duly sent by the Secretary General of the I.T.U., of which the Republic of China is a legitimate member country, and also with the credentials duly issued by the competent authorities of the Government of the Republic of China, as proved to be such, after a scrupulous examination by the working party of the Credentials Committee at its first sitting.

The participation in this Conference of the Delegation of the Republic of China is perfectly in compliance with the relevant provisions of the I.T.U. Convention, in every respect, and leaves no room for any doubt whatsoever.

To make an issue of the matter which is in order, in compliance with the Convention, constitutes in itself a flagrant deviation from the Convention and has nothing to do with the proceeding of the Conference. The Delegation of the Republic of Korea strongly requests that such arguments should be ruled out of order, as they are utterly irrelevant to the conducting of this Conference, bringing about only an adverse effect upon the smooth proceeding of the Conference.

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A N N E X 8

STATEMENT BY PAKISTAN

The Delegation of Pakistan wishes to make the following reservation on the First and Draft Reports of the Working Group of Committee 2 (Credentials), which may please be placed on record :

"Pakistan considers that China should be represented in the I.T.U. by the Government of the People's Republic of China and not by the Republic of China (Nationalist China).

Pakistan's stand on the matter is determined by the legal position that the Government of the People's Republic of China, being the effective government of China, has the right to represent China in the I.T.U. Pakistan maintains Diplomatic Relations with the People's Republic of China and enjoys very friendly relations with its great neighbour."

O.H. MOHAMED

Leader
Pakistan Delegation

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 180-E
4 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Chairman of the Conference

DRAFT RECOMMENDATION

Considering

a) that man is progressing rapidly in the conquest of outer space; that all nations will benefit, and that this progress depends upon efficient and orderly space communications;

b) that the E.A.R.C. in Geneva, 1963, has taken the first steps in the field of development of space radiocommunications in having allocated frequency bands for space radiocommunications and having established technical criteria and frequency registration and notification procedures designed to facilitate the further development of space radiocommunications;

recognizing

i) that the development of space services will go on in parallel with the development of terrestrial communications systems;

ii) that all members of the Union have an interest in the rational use of frequency bands allocated for space communications services; in the avoidance of harmful interference to space and other services, and in the international regulation of the use of these frequency bands;

iii) that the decisions of the Conference may be subject to increasing refinement and improvement by future Conferences of the Union; and

iv) that there will be available additional data relating to space radiocommunications resulting from further experimental and operational experience;

believing

that such refinement and improvement is in the best interests of all Members and Associate Members of the Union if the full benefits of new technology are to be realised;

recommends

1) that Members and Associate Members of the Union make available, to the appropriate permanent organs of the Union, pertinent data resulting from experimental and operational experience relating to space radiocommunications, as well as their proposals concerning space radiocommunications, and

2) that the Administrative Council of the Union should review annually the progress in Space radiocommunications made by Administrations, and the available reports and recommendations of the permanent organs of the Union with respect thereto;

and further recommends

1) that until revised by a future conference, including the conference mentioned in 2) below, notification and registration of frequency assignments to space services shall be effected in accordance with the procedures adopted by this E.A.R.C. of 1963;

2) that the Administrative Council of the Union should, in the light of its annual review, and at a date which it will determine, recommend to Administrations the convening of an Extraordinary Administrative Conference to work out further agreements for the international regulation of the use of radio frequency bands allocated for space radiocommunications by this present Conference.

BLUE PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 181
4 November, 1963

E

B. 8

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Ad Hoc Gp C. 4.	138	1	Agreement	Rec Broadcasting Satellite Service

Y. PLACE
Chairman of the Editorial Committee

Annex : 5 Pages

PARTIAL REVISON OF THE RADIO REGULATIONS, GENEVA, 1959

Recommendation No. 36 of the Ordinary Administrative Radio Conference, Geneva, 1959, recommended that the Administrative Council of the Union should consider the convening, in the latter part of 1963, of an Extraordinary Administrative Radio Conference to allocate frequency bands for Space Radiocommunication Purposes.

The Administrative Council considered this question during its annual session, in 1962, and, at its session in 1963, adopted Resolution No. 524, which, with the prior concurrence of a majority of the Members of the Union, determined the Agenda of the Conference and decided that it should be convened in Geneva on 7th October 1963.

The Extraordinary Administrative Radio Conference accordingly convened on the appointed date, and in accordance with the provisions of Nos. 60 and 61 of the Convention, revised the relevant portions of the Radio Regulations, Geneva, 1959. Particulars of these revisions are given in the attached Annexes.

The revised provisions of the Radio Regulations, Geneva, 1959, shall form an integral part of the Radio Regulations, which are annexed to the International Telecommunication Convention. They shall come into force on..... upon which date the provisions of the Radio Regulations, Geneva, 1959, which are cancelled or modified by these revisions, shall be abrogated.

The delegates signing this revision of the Radio Regulations, Geneva, 1959, hereby declare that should an administration make reservations concerning the application of one or more of the revised provisions of the Radio Regulations, Geneva, 1959, no other administration shall be obliged to observe that provision or those provisions in its relations with that particular administration.

In witness whereof the delegates of the Members and Associate Members of the Union represented at the Extraordinary Administrative Radio

Conference, Geneva, 1963, have signed in the names of their respective countries this revision of the Radio Regulations, Geneva, 1959, in a single copy which will remain in the archives of the International Telecommunication Union and of which a certified copy will be delivered to each Member and Associate Member of the Union.

Done at Geneva, the ... of November 1963.

EXAMPLES OF PROPOSED ANNEXES

Annex 1

Revision of Article 1 of the Radio Regulations

Article 1 of the Radio Regulations shall be amended as follows:

Example 1

(Substitution of a new text for an existing text)	For Regulation No. . . ., there shall be substituted the following Regulations:—

Example 2

(Addition of new Regulation in between existing Regulations)	After Regulation No. . . ., there shall be inserted the following new Regulation:—

Example 3

(Deletion of a Regulation)	Regulation No. . . . shall be repealed. (A note to this effect would be inserted in any reprint of the Radio Regulations incorporating the amendments.)

Example 4

(Addition of a new Section)	After Section . . ., there shall be inserted the following new Section:—

Annex [redacted]

Revision of Article 5 of the Radio Regulations

Example

(Amendment to Table of Frequency Allocations in this example only one part of the section is given.)	In the Table of Frequency Allocations for the bands . . . Mc/s, there shall be substituted the following:—

Annex [redacted]

Addition of a new article (Article 9A) to the Radio Regulations

The following new Article ... shall be added to the Radio Regulations following Article 9.

RECOMMENDATION No. [redacted]

To the C.C.I.R. relating to the Broadcasting Satellite Service

The E.A.R.C. (Geneva, 1963),

considering

a) that the use of satellite transmissions for direct reception by the general public of sound and television broadcasts may be possible in the future;

b) that the C.C.I.R. is studying the technical feasibility of sound and television broadcasting via satellites, the technically suitable frequency bands for such a service including the possibility of sharing with terrestrial services;

recommends

that the C.C.I.R., expedite its studies and make early recommendations on Question 241 (IV), Geneva, 1963, in particular, regarding those parts of the question relating to the technical feasibility of broadcasting from satellites, the optimum technical characteristics of the systems to be used, what bands would be technically suitable and whether and under what conditions those bands could be shared between the broadcasting satellite and terrestrial services.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 182-E
5 November, 1963
Original : French
English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE SEVENTH MEETING

Saturday, 2 November 1963 at 9.30 a.m.

1. The agenda consisting of the Fourth and Last Report by Working Group 5A (Document No. 139) (Communication-Satellite Service) and its Addendum No. 1 was adopted.

2. Mr. Rao made a statement the text of which is set out in Appendix 1.

3. Document No. 139 (Communication-Satellite Service)

a) Introducing that document, Mr. P. Mortensen, Chairman of Working Group 5A, mentioned that the reference 393A in the last line in paragraph 9 should read 392B. Thanks should be expressed to Lt. Cdr. J.W. Jewers of the Canadian Delegation, Chairman of Working Group 5A, for his efficient co-operation as rapporteur.

b) The Chairman of Committee 5 thanked the Working Group and its Chairman, Mr. P. Mortensen, for the excellent work accomplished.

c) Appendix 1 (3,400 - 4,200 Mc/s Band) was examined.

Australia proposed that footnote 379 should be amended to read:

MOD 379 In Australia the band 3,700 - 3,770 Mc/s is allocated to the Radiolocation and the Communication-Satellite (Satellite-Earth) Services.

Sweden made a reservation regarding footnote 373. An ad hoc group was set up under the chairmanship of Mr. B. Nielsen, (Denmark) consisting of representatives from Sweden, Japan and the I.F.R.B. to study the wording of that footnote and the problem of protection relating thereto. Austria, Colombia and the other countries listed in paragraph 6.2

also reserved the right to revert to the matter later, in the light of the final wording of Article 7.

With those amendments and reservations Appendix 1 was adopted.

d) Appendix 2 (4,400 - 4,700 Mc/s Band) was adopted without discussion.

e) Appendix 3 was adopted subject to a reservation by Sweden and Cuba concerning the band 5,725 - 5,850 Mc/s and the following modified footnote 393:

In Italy, the band 6,450 - 6,575 Mc/s is also allocated to the radiolocation service.

f) Appendix 4 was adopted without discussion

g) Appendix 5 (7,250 - 7,300 Mc/s Band)

After a long discussion in which the U.S.S.R. Italy, the Hungarian P.R., the S.R. of Czechoslovakia, New Zealand, the F.R. of Germany, France, Spain, the F.S.R. of Yugoslavia, the Roumanian P.R., the U.S.A. and Mr. Mortensen took part, the U.S.S.R. proposal for a secret ballot vote was accepted. The Chairman explained that the vote would refer to the insertion in the table, for Region 1, of the following primary services:

7,250 - 7,300 Mc/s	COMMUNICATION-SATELLITE
	(Satellite-Earth)
	FIXED
	MOBILE

with the footnotes amended accordingly.

The proposal for such insertion was rejected (20 votes in favor, 35 votes against and 4 abstentions).

Ethiopia wished to be included in footnote 392Y.

Since certain countries did not quite agree on the form of footnote 392C, it was decided to leave it to Committee 7 to draft the note.

The band 7,250 - 7,300 Mc/s in Appendix 5, together with the relevant footnotes, was adopted.

h) The band 7,300 - 7,750 Mc/s was likewise adopted.

Yugoslavia made a reservation in note 392F.

i) Appendix 6

The band 7,900 - 7,975 Mc/s, together with footnote 392A, was adopted without discussion.

The band 7,975 - 8,025 Mc/s, together with the three footnotes, was likewise adopted. However, Sweden and Ethiopia wished to be included in footnote 392YY and the U.S.S.R. made a reservation concerning that band.

In regard to the band 8,025 - 8,400 Mc/s, Israel asked for a new footnote specifying that the FIXED and the MOBILE Services were primary services and the Communication-Satellite Service (Earth - Satellite) a secondary service.

It was decided to put that note in square brackets [ ] since its usefulness was disputable.

Appendix 6, as amended above, was adopted.

The meeting rose at 12.50 p.m.

Rapporteur : Chairman

J.P. WEST W. KLEIN

Appendix : 2

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APPENDIX 1

I have pleasure in making an announcement on the results obtained at the Massachusetts Institute of Technology in the Department of Electrical Engineering concerning the detection of the OH lines. A telegram has been received to say that an absorption dip of two degrees Kelvin was noticed; the two most intense lines of OH were observed at 1667357 and 1665402 kc/s.

It is indeed a coincidence, with perhaps one in a billion chance, that the first observations should have been made right at the time when the band around 1670 Mc/s is being discussed for allocation to the Radio Astronomy Service at an International forum.

V.V. RAO

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A P P E N D I X 2

The Swedish Delegation requests that this statement should be included in the Minutes of the Meeting of Committee 5 this morning.

"Article 9 of the RR does not anticipate the notification of mobile stations in the Radiolocation Service. Priority thus cannot be given to stations in the Radiolocation and Communication Satellite Services according to the date of notification.

Therefore Sweden requests that the putting into use of stations in the Communication Satellite Service which need protection from mobile stations in the Radiolocation Service shall be subject to agreement between Administrations concerned and affected."

Geneva, 2 November, 1963

Hakan STERKY

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SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 183
4 November, 1963

E

B. 9

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
C. 4	155	1-16		

Y. PLACE
Chairman of the Editorial
Committee

Annex : 6 Pages

MODIFICATIONS TO ARTICLE 1 OF THE RADIO REGULATIONS

Foreword

It is possible that some of the following definitions are unnecessary for the Radio Regulations. Committee 4 considers that the Plenary Assembly should decide whether all definitions should be retained.

Article 1 of the Radio Regulations shall be amended as follows:

Section II. Radio Systems, Services and Stations

MOD **34** *Aeronautical station*

A land station in the aeronautical mobile service. In certain instances an aeronautical station may be placed on board a ship or an earth satellite.

MOD **35** *Aircraft station*

A mobile station in the aeronautical mobile service on board an aircraft or an air-space vehicle.

SUP **70**

SUP **71**

SUP **72**

SUP **73**

ADD **75A** *Radio Astronomy station*

A station in the radio astronomy service.

ADD **84AA** *Terrestrial service*

Any radio service defined in these Regulations, other than a space service or the radio astronomy service.

ADD **84AB** *Terrestrial station*

A station in a terrestrial service.

ADD **Title** **Section IIA. Space systems, Services and Stations**

ADD **84 AC** *Space service*

A radiocommunication service:

— between earth stations and space stations,

— or between space stations,

— or between earth stations when the signals are re-transmitted by space stations, or transmitted by reflection from objects in space, excluding reflection or scattering by the ionosphere or within the earth's atmosphere.

ADD **84 AD** *Earth station*

A station in the space service located either on the earth's surface, including on board a ship, or on board an aircraft.

ADD **84AE** *Space station*

A station in the space service located on an object which is beyond, is intended to go beyond, or has been beyond, the major portion of the earth's atmosphere.

ADD **84AF** *Space system*

Any group of co-operating earth and space stations, providing a given space service and which, in certain cases, may use objects in space for the reflection of the radiocommunication signals.

ADD **84 AG** *Communication satellite service*

A space service:

— between earth stations, when using active or passive satellites for the exchange of communications of the fixed or mobile service, or

— between an earth station and stations on active satellites for the exchange of communications of the mobile service, with a view to their retransmission to or from stations in the mobile service.

ADD **84AH** *Communication-satellite earth station*

An earth station in the communication-satellite service.

ADD **84AI** *Communication-satellite space station*

A space station in the communication-satellite service, on an earth satellite.

ADD **84AJ** *Active satellite*

An earth satellite carrying a station intended to transmit or re-transmit radiocommunication signals.

ADD **84AK** *Passive satellite*

An earth satellite intended to transmit radiocommunication signals by reflection.

ADD **84AL** *Satellite system*

Any group of co-operating stations providing a given space service and including one or more active or passive satellites.

ADD **84AM** *Space research service*

A space service in which spacecraft or other objects in space are used for scientific or technological research purposes.

ADD **84AN** *Space research earth station*

An earth station in the space research service.

ADD **84AO** *Space research space station*

A space station in the space research service.

ADD **84AP** *Broadcasting-satellite service*

A space service in which signals transmitted or re-transmitted by space stations, or transmitted by reflecion from objects in orbit around the earth, are intended for direct reception by the general public.

ADD **84AQ** *Radionavigation-satellite service*

A service using space stations on earth satellites for the purpose of radionavigation, including, in certain cases, transmission or retransmission of supplementary information necessary for the operation of the radio navigation system.

ADD **84AR** *Radionavigation-satellite earth station*

An earth station in the radionavigation-satellite service.

ADD **84AS** *Radionavigation-satellite space station*

A space station in the radionavigation-satellite service, on an earth satellite.

ADD **84AT** *Meteorological-satellite service*

A space service in which the results of meteorological observations, made by instruments on earth satellites, are transmitted to earth stations by space stations on these satellites.

ADD **84AU** *Meteorological-satellite earth station*

An earth station in the meteorological-satellite service.

ADD **84AV** *Meteorological-satellite space station*

A space station in the meteorological-satellite service on an earth satellite.

ADD **84AW** *Space telemetering*

The use of telemetering for the transmission from a space station of results of measurements made in a spacecraft, including those relating to the functioning of the spacecraft.

ADD **84AX** *Maintenance space telemetering*

Space telemetering relating exclusively to the electrical and mechanical condition of a spacecraft and its equipment together with the condition of the environment of the spacecraft.

ADD **84AY** *Space telecommand*

The use of radiocommunication for the transmission of signals to a space station to initiate, modify or terminate functions of the equipment on a space object, including the space station.

ADD **84AZ** *Space tracking*

Determination of the orbit, velocity or instantaneous position of an object in space by means of radiodetermination, excluding primary radar, for the purpose of following the movement of the object.

ADD Title **Section IIB. Space, orbits and types of objects in space**

ADD **84BA** *Deep space*

Space at distances from the Earth equal to or greater than the distance between the Earth and the Moon.

ADD **84BB** *Orbit*

The path in space described by the centre of mass of a satellite or other object in space.

ADD **84BC** *Angle of inclination of an orbit*

The acute angle between the plane containing an orbit and the plane of the earth's equator.

ADD **84BD** *Period of an object in space*

The time elapsing between two consecutive passages of an object in space through the same point on a closed orbit.

ADD **84BE** *Altitude of the apogee*

Altitude above the surface of the Earth of the point on a closed orbit, where a satellite is at its maximum distance from the centre of the Earth.

ADD **84BF** *Altitude of the perigee*

Altitude above the surface of the Earth of the point on a closed orbit, where a satellite is at its minimum distance from the centre of the Earth.

ADD **84 BG** *Stationary satellite*

A satellite, the circular orbit of which lies in the plane of the earth's equator and which turns about the polar axis of the Earth in the same direction and with the same period as that of the earth's rotation.

ADD **84 BH** *Spacecraft*

Any type of space vehicle, including earth satellites, deep space probes, whether manned or unmanned.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 184-E
5 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

DRAFT RESOLUTION No.

RELATING TO SPACE VEHICLES IN DISTRESS

AND EMERGENCY

The Extraordinary Administrative Radio Conference, 1963,

considering:

a) that the number of flights by manned space vehicles or satellites is likely to increase,

b) that as a result the possibility of such vehicles being forced down in emergency anywhere on the earth's surface cannot be ignored,

c) that in such circumstances the search for and rescue of the occupants and recovery of the vehicles present problems very similar to those encountered by aircraft and ships in distress and emergency,

d) that the frequency of 20,007 kc/s has been selected by the Conference for search and rescue to augment those already designated in the Radio Regulations for distress emergency and survival craft;

notes:

that although the relevant Regulations for the Mobile Services concerning distress and emergency contain no specific reference to space vehicles or their occupants;

resolves:

that until such time as the Radio Regulations may be revised, the appropriate provisions of Chapters VII and VIII concerning Distress and Emergency be construed to apply equally to spacemen and space vehicles in the dircumstances described herein.

Submitted by :

J. PENWARDEN
Convenor, 5 ad hoc

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SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 185-E
4 November, 1963

E

B. 10

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Cttee 4 Cttee 6	126 (Rev. 2) 157	1-8	Rec.	Calculation of co-ordination distance for earth stations.
Cttee 4	159 (Rev.)		Draft Rec.	Calculation of probability of interference.
Cttee 4	168	1-6	Draft Rec.	

Y. PLACE
Chairman of the Editorial
Committee

Annex : 19 pages

Modification to Article 7 of the Radio Regulations

Comments by Committee 4

Sharing Criteria

1. *Annex 1 is a draft addendum to Article 7 of the Radio Regulations. This draft contains the sharing criteria which Committee 4 has agreed.*

2. *The attention of the Plenary Assembly is especially drawn to the following comments on the proposed Regulations.*

Regulations 470A and 470E

3. *It is recognized by Committee 4 that the E.A.R.C. may wish to refer to that part of the Radio Regulations concerned with coordination procedures. However, the majority view was that reference to the pertinent C.C.I.R. Recommendations was not only acceptable but desirable.*

Regulations 470B, 470C and 470D

4. *Committee 4 has taken note of the provisional nature of C.C.I.R. Recommendation No. 406. In the absence of any further data it has proposed, in the text, the same values of power limitation as are given in that Recommendation. However, it considers it important that the C.C.I.R. should be requested to continue further studies of this subject on an urgent basis and a draft Recommendation to this effect is suggested (Doc. No. 168).*

Regulations 470N, 470O, 470P and 470Q

5. *Committee 4 has taken note of the provisional nature of C.C.I.R. Recommendation No. 358. In the absence of any further data it has adopted, in the text, the same values of power flux limitations as are given in that Recommendation. However, it considers it important that the C.C.I.R. should be requested to continue further*

studies of this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested (Doc. No. 168).

Regulations 470S, 470T and 470U

6. *Committee 4 has taken note that no C.C.I.R. Recommendation exists on the conditions of sharing of frequency bands between meteorological-satellite services and terrestrial services. It has, for the present, therefore, proposed that the limits of power flux at the Earth's surface applicable to communication-satellite services be also applied to meteorological-satellite services in bands shared with terrestrial services. However, it is considered important that the C.C.I.R. be requested to study this subject on an urgent basis and this requirement also is covered in the draft Recommendation suggested (Doc. No. 168).*

Regulations 470D, 470J, 470M, 470Q and 470U

7. *Committee 4 assumes that these Regulations will be amended to indicate specifically the frequency bands concerned, when these have been determined.*

Regulation 470G

8. *A limitation on total ERP was not deemed necessary for the present. However, it is requested that the C.C.I.R study this requirement, in the light of further developments and studies, including tropospheric scatter effects, scattering from rain, etc. (See draft Recommendation in Doc. No. 168.)*

Footnotes 1), 2), 3), 4) and 5)

9. *Apart from footnotes 3) and 5) which were fully agreed to, there was not complete agreement on the necessity of providing the other three footnotes.*

10. *Committee 4 has discussed the question of the application of limitations to the powers of terrestrial transmitters, operating in bands shared with equal rights with earth station receivers, as a possible aid to equitable sharing between these services. Insufficient data precluded a definite decision being taken, either as to the necessity of such limi-*

tations, or to the actual values to be adopted, were such limitations decided upon, and it is felt that the question should be considered in greater detail by the C.C.I.R.

Frequency sharing between other space services and terrestrial services

11. *No technical limitations have been prepared by Committee 4 on the sharing of frequency bands between space services other than communication-satellite and meteorological-satellite services and terrestrial services.*

Reference to such services, as the radionavigation-satellite service, and the space-research service is included in the text of the proposed Recommendation to the C.C.I.R. (Doc. No. 168).

12. *A Recommandation to the C.C.I.R. (Doc. No. 168) has been prepared by Committee 4 to bring to the attention of Administrations and members of the C.C.I.R., that more up-to-date data is required in order to improve on the sharing criteria, especially for meteorological-satellite, radionavigation-satellite and space research services sharing frequency bands with terrestrial services, where such data is very limited.*

13. *The object of this Recommendation is to ensure that if new Recommendations on these subjects are prepared by the C.C.I.R., they should be brought to the attention of the appropriate Administrative Radio Conference which may be held at a date later than the C.C.I.R. XIth Plenary Assembly and at which the present proposed revisions of Article 7 may be revised.*

New Sections VII, VIII and IX shall be added to Article 7.

ADD

Section VII. Terrestrial Services sharing Frequency Bands with Space Services between 1 Gc/s and 10 Gc/s

Choice of Sites and Frequencies

ADD

470A 18. Sites and frequencies [1] for terrestrial stations, operating in frequency bands shared with equal rights between terrestrial and space services, shall be selected having regard to the relevant recommendations of the C.C.I.R. with respect to the geographical separation from earth stations.

Power Limitations

ADD

470B 19. (1) The maximum effective radiated power of the transmitter and associated antenna, of a station in the fixed or mobile services, shall not exceed + 55 dbW.

ADD

470C (2) The power delivered by a transmitter to the antenna of a station in the fixed or mobile services shall not exceed + 13 dbW.

ADD

470D (3) The limitations given in Regulation Nos. 470B and 470C apply in those frequency bands allocated to reception by space stations in the communications satellite service, shared with equal rights with fixed or mobile services. These frequency bands are the following . . .

ADD

Section VIII. Space Services sharing Frequency Bands with Terrestrial Services between 1 Gc/s and 10 Gc/s

Choice of Sites and Frequencies

ADD

470E 20. Sites and frequencies [2] for earth stations, operating in frequency bands shared with equal rights between terrestrial and space services shall be selected having regard to the relevant recom-

[1] The frequencies for terrestrial station transmissions shall be assigned in bands allocated to terrestrial services.

[2] The frequencies for earth station transmissions shall be assigned in bands allocated to space services for transmissions by earth stations.

mendations of the C.C.I.R. with respect to the geographical separation from terrestrial stations.

Power Limits

ADD **470F** 21. Earth stations in the Communication-Satellite Service

ADD **470G** *a)* The mean effective radiated power transmitted by an earth station in any direction in the horizontal plane [1] shall not exceed + 55 dbW in any 4 kc/s band, except that it may be increased subject to the provisions of 470H or 470I. However, in no case shall it exceed a value of + 65 dbW in any 4 kc/s band.

ADD **470H** *b)* In any direction where the distance from an earth station to the boundary of the territory of another Administration exceeds 400 km, the limit of + 55 dbW in any 4 kc/s band may be increased in that direction by 2 db for each 100 km in excess of 400 km.

ADD **470I** *c)* The limit of + 55 dbW in any 4 kc/s band may be exceeded by agreement between the Administrations concerned or affected.

ADD **470J** *d)* The limits given in 470G apply in the bands allocated to transmissions by earth stations in the communication-satellite service, shared with equal rights with the fixed or mobile services. These frequency bands are the following . . .

[1] For the purpose of this Regulation, the effective radiated power transmitted in the horizontal plane shall be taken to mean the effective radiated power actually transmitted towards the horizon, reduced by the site shielding factor that may be applicable. The value of this site shielding factor shall be determined as indicated in Section 5 of the annex to Recommendation [redacted] [Document No. 122 (Rev.)].

Minimum Angle of Elevation

ADD **470K** 22. Earth stations in the Communication-Satellite Service

ADD **470L** *a)* Earth station antennas shall not be employed for transmission at elevation angles less than 3 degrees, measured from the horizontal plane to the central axis of the main lobe, except when agreed to by the Administrations concerned or affected.

ADD **470M** *b)* The limit given in 470L applies in the bands allocated to transmission by earth stations in the communication-satellite service, shared with equal rights with the fixed or mobile services. These frequency bands are the following . . .

Power Flux Density Limits

ADD **470N** 23. (1) Communication-Satellite Space Stations

ADD **470O** *a)* The total power flux density at the Earth's surface, produced by an emission from a communication-satellite space station, or reflected from a passive communication satellite, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed -130 dbW/m^2 for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed -149 dbW/m^2 in any 4 kc/s band for all angles of arrival.

ADD **470P** *b)* The power flux density at the Earth's surface, produced by an emission from a communication-satellite space station, or reflected from a passive communication satellite, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no

case exceed −152 dbW/m² in any 4 kc/s band for all angles of arrival.

ADD **470Q** *c)* The limits given in 470O and 470P apply in those frequency bands allocated to transmissions by space stations in the communication-satellite service, shared with equal rights with the fixed or mobile services. These frequency bands are the following . . .

ADD **470R** (2) Meteorological-Satellite Space Stations [1]

ADD **470S** *a)* The power flux density at the Earth's surface, produced by an emission from a meteorological-satellite space station, where wide-deviation frequency (or phase) modulation is used, shall in no case exceed −130 dbW/m² for all angles of arrival. In addition, such signals shall be continuously modulated, if necessary by a suitable waveform, so that the power flux density shall in no case exceed −149 dbW/m² in any 4 kc/s band for all angles of arrival.

ADD **470T** *b)* The power flux density at the Earth's surface, produced by an emission from a meteorological-satellite space station, where modulation other than wide-deviation frequency (or phase) modulation is used, shall in no case exceed −152 dbW/m² in any 4 kc/s band for all angles of arrival.

ADD **470U** *c)* The limits given in 470S and 470T apply in those frequency bands allocated to transmissions by space stations in the meteorological-satellite service, shared with

[1] In view of the absence of any C.C.I.R. Recommendations relative to sharing between the meteorological-satellite service and other services, power flux density levels applicable to communication-satellite space stations are extended to meteorological-satellite space stations.

equal rights with the fixed or mobile services. The frequency bands are the following...

ADD

Section IX. Space Services

Cessation of Emissions

ADD

470V 24. Space stations shall be made capable of ceasing radio emissions by the use of appropriate devices [1] that will ensure definite cessation of emissions.

[1] Battery life, timing devices, ground command, etc.

RECOMMENDATION No. [redacted]

Calculation of Co-ordination Distance for Earth Stations

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that Article 9A requires frequency assignments for earth stations in certain shared frequency bands to be co-ordinated with fixed or mobile services, in order to avoid mutual harmful interference;

b) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at that earth station will cause harmful interference to reception to a station in the fixed or mobile services may be regarded as negligible: this is the co-ordination distance in that direction;

c) that, in any direction from an earth station there is a distance beyond which the possibility that the use of a given transmitting frequency at a fixed or mobile station will cause harmful interference to reception at that earth station may be regarded as negligible: this is the co-ordination distance in that direction;

d) that a simple procedure is required to enable administrations to calculate the co-ordination distance from an earth station according to its location and characteristics;

noting

that the Recommendations and Reports of the C.C.I.R. Xth Plenary Assembly provide a technical basis for the calculation of co-ordination distance which is provisional and subject to further study by the C.C.I.R.;

recommmends

that the procedure set out in the Annex to this Recommendation should be used to determine co-ordination distances until such time as the C.C.I.R. may recommend a procedure to be used for this purpose;

and invites the C.C.I.R.

to study the question of co-ordination distance and as soon as improved calculation methods and more accurate propagation data become available to make suitable Recommendations to replace the procedure set out in the Annex to this Recommendation.

DRAFT RECOMMENDATION

Calculation of Probability of Interference between Stations within Co-ordination Distance

The Extraordinary Administrative Radiocommunication Conference, Geneva, 1963,

considering

a) that the technical basis for sharing the frequency bands between terrestrial services and space services, is based *inter alia* on geographical separation between the stations of these two types of services;

b) that the Final Acts of this Conference refer to the process of coordination between Administrations, the later stages of which will involve the calculation of the probability of interference between stations of the two Services;

c) that such calculations will require a knowledge of the system parameters of the terrestrial and space service involved and a knowledge of the propagation characteristics in the appropriate geographical areas;

d) that a concise presentation in readily usable form of the appropriate values of the factors governing interference between a variety of typical systems in the terrestrial and space services would be helpful in the implementation of the co-ordination procedures laid down in the Final Acts of this Conference;

noting

(i) that C.C.I.R., through its various Study Groups, particularly Study Groups Nos. IV, V and IX, is engaged in the active study of the various parameters which influence the sharing of frequency bands by the terrestrial services and the space services;

(ii) that, nevertheless, the data available at present from the C.C.I.R. does not make it possible for this Conference to lay down sufficiently precise and detailed methods for calculating in all cases the probability of harmful interference between stations of the two services;

invites Administrations

during the period preceding the XIth Plenary Assembly of the C.C.I.R. to submit contributions concerning:

1. the essential steps to be taken in the calculation of the probability of interference between stations of the two services;

2. the values of those factors which govern interference between the stations of typical terrestrial and space systems;

and invites the C.C.I.R.

during the XIth Plenary Assembly, and in the light of contributions submitted under 1 and 2 to decide the most appropriate form, for example a separate manual, in which the material adopted should be published.

DRAFT RECOMMENDATION

1. Attached is a Draft Recommendation which takes into account technical questions arising during the work of Committee 4 and for which further answers are required.

2. The Recommendation has been prepared in such a manner as to indicate:

a) the particular problems encountered,

b) the relevant C.C.I.R. Questions and Study Programmes,

c) the specific Regulations concerned.

3. It is hoped that this form of presentation will draw the attention of Administrations and Private Operating Agencies to specific problems, and thus facilitate their early solution within the framework of the C.C.I.R.

DRAFT RECOMMENDATION

The Extraordinary Administrative Radio Conference, Geneva, 1963,

recognising

a) the value to the Conference of the material contained in Document No. 1 (results of C.C.I.R. studies relating to space telecommunications concluded at its Xth Plenary Assembly);

b) that further studies on a wide range of problems dealing with space communications form the subject of C.C.I.R. Questions and Study Programmes approved by the Xth Plenary Assembly;

considering however

a) that certain of the C.C.I.R. Recommendations, listed below, are provisional and call for further work and study before they can become definite:

Recommendation 355	" ACTIVE COMMUNICATION-SATELLITE SYSTEMS —Feasibility of sharing frequency bands with terrestrial radio services."
Recommendation 356	" COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values of interference in a telephone channel of a communication-satellite system."
Recommendation 357	" COMMUNICATION-SATELLITE SYSTEMS SHARING FREQUENCY BANDS WITH LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values

of interference in a telephone channel of a radio relay system."

Recommendation 358 — " COMMUNICATION-SATELLITE SYSTEMS SHARING THE SAME FREQUENCY BANDS AS LINE-OF-SIGHT RADIO-RELAY SYSTEMS—Maximum allowable values of power flux density at the surface of the Earth produced by communication satellites."

Recommendation 406 — " LINE-OF-SIGHT RADIO-RELAY SYSTEMS SHARING THE SAME FREQUENCY BANDS AS THE SATELLITE RECEIVERS OF ACTIVE EARTH-SATELLITE COMMUNICATION SYSTEMS—Maximum effective radiated powers of line-of-sight radio-relay system transmitters."

b) that as a result of the deliberations of this Conference, particularly in relation to the provisions of Article 7, Sections VII, VIII and IX, and to the Annex to Recommendation [Document No. 157], further information is required in reply to the following Questions and Study Programmes already set for study by the C.C.I.R.:

Question 235 (IV) — " TECHNICAL CHARACTERISTICS OF COMMUNICATION-SATELLITE SYSTEMS "

under Decides 4: Particularly,

a) the need for, and application of, maximum limits of power to earth stations and terrestrial stations in shared bands (cf. Regulations 470B and 470G),

b) the need for, and application of, escalation clauses on such power limits to permit the use

of higher powers in certain cases; when stations are situated at substantial distances from the boundary of neighbouring Administrations (cf. Regulation 470H);

under Decides 5: Particularly, as it may affect the co-ordination of frequency assignments for earth stations (cf. Articles [Documents Nos. 144 and 145]);

Study Programme 235A (IV) " FEASIBILITY OF FREQUENCY SHARING BETWEEN COMMUNICATION-SATELLITE SYSTEMS AND TERRESTRIAL RADIO SERVICES "

under Decides 1: Particularly, the values which should be allowed for site-shielding factors,

a) in the application of power limits (cf. Regulation 470G, footnote 3),

b) in the calculation of co-ordination distance (cf. Recommendation . . . [Document No. 157]);

under Decides 3: Particularly, the minimum angle of elevation which should be employed by earth station antennas, taking account of tropospheric effects (cf. Regulation 470L);

under Decides 5: Power flux density limits for communication-satellite space stations in bands shared with terrestrial services (cf. Regulations 470 O, 470P);

under Decides 6: Particularly, as it concerns the selection of sites and frequencies for terrestrial stations and earth stations operating in shared frequency bands (cf. Regulations 470A and 470E);

Question 236 (IV)	" SHARING OF RADIO FREQUENCY BANDS BY LINKS BETWEEN EARTH STATION AND SPACECRAFT "
under Decides 2:	*(a)* Particularly, sharing between space services sight radio-relay systems and *(b)* power flux density limitations for space stations of the meteorological-satellite service, the radionavigation-satellite service and the space research service, in bands shared with terrestrial services (cf. Regulations 470S and 470T);
New aspect:	Feasibility of sharing frequency bands, and the necessary sharing criteria, in bands below 1 Gc/s and above 10 Gc/s;
Question 237 (IV)	" TECHNICAL CHARACTERISTICS OF LINKS BETWEEN EARTH STATIONS AND SPACECRAFT "
under Decides 1, 2, 3 and 4:	Particularly the sharing of frequency bands between telecommand, telemetry, tracking or data transmissions of the space services and terrestrial services;
Question 242 (IV)	" TECHNICAL CHARACTERISTICS OF RADIONAVIGATION-SATELLITE SYSTEMS "
under Decides 3:	Feasibility of sharing frequency bands with other services, and relevant sharing criteria;
Study Programme 243A (IV)	" RADIO-COMMUNICATION ASPECTS OF METEOROLOGICAL-SATELLITE SYSTEMS "
under Decides 3:	Particularly, feasibility of sharing frequency bands with other services, and relevant sharing criteria;

Question 244 (IV)	" RADIOASTRONOMY "
under Decides 2.1:	Acceptable levels of harmful interference;
Study Programme 188 (V)	" INFLUENCE OF IRREGULAR TERRAIN ON TROPOSPHERIC PROPAGATION "
CCIR:	Particularly the application of site-shielding factors (cf. Regulation 470G, footnote 3, and Recommendation . . . [Document No. 157]);
Study Programme 190 (V) (See also Study (Programmes) (185A) *(V)* and (185B) *(V)*)	" TROPOSPHERIC PROPAGATION FACTORS AFFECTING THE SHARING OF THE RADIO-FREQUENCY SPECTRUM BETWEEN RADIO-RELAY SYSTEMS, INCLUDING SPACE AND TERRESTRIAL TELECOMMUNICATIONS SYSTEMS "
under Decides 3:	Particularly, the provision of more precise data on the minimum values of transmission loss occurring, under various climatic conditions, for very short periods of time (e.g. 1%, 0.1%), for overland, oversea, and mixed land/sea paths;
under Decides 5:	Particularly, the effects of reflections from rain, hail, cloud and aircraft in producing interference at long distances especially when using antennas with extremely narrow beamwidths;

recommends

a) that all Administrations and Private Operating Agencies, through their participation in the work of the C.C.I.R., consider, as a matter of priority, the submission of contributions on these subjects, so that definite Recommendations can be prepared at the Interim Meetings of the relevant Study Group for adoption by the XIth Plenary Assembly of the C.C.I.R.;

b) that the C.C.I.R. should study:

1. the permissible interference criteria for the various space and terrestrial services sharing the frequency bands allocated by the EARC, Geneva, 1963 in order to permit the determination of,

1.1 the co-ordination distance and the probability of interference between stations within that distance;

1.2 the necessary limitation of power flux density set up at the Earth's surface by space stations;

2. the necessary limitation of spurious emissions and the frequency tolerances to be observed in both the terrestrial and space services in so far as they may affect sharing of frequency bands.

BLUE PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 186
5 November, 1963

E

B. 11

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Assembly for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Com. 4	122 (Rev.)	1-25		Proceding for calculating coordination.
Com. 4	163 (Rev.)		Draft recommendation	Study of modulation methods.

Y. PLACE
Chairman of the Editorial
Committee

Annex : 20 pages

ANNEX TO RECOMMENDATION No. ....

Procedure for Calculating Co-ordination Distance between Earth Stations and Terrestrial Stations sharing the Same Frequency Band in the Range 1-10 Gc/s

1. *Objectives*

Co-ordination is required when earth stations and terrestrial stations operate in shared frequency bands with equal rights. In specific circumstances, co-ordination may involve more than two administrations depending upon the siting of the stations and the co-ordination distances involved. The co-ordination area around an earth station is arrived at by ascertaining the co-ordination distance measured in the various azimuths from that station.

For the calculation of co-ordination distance three separate cases must be considered:

a) interference from an earth station transmitter to terrestrial station receivers;

b) interference from terrestrial station transmitters to a communication-satellite or meteorological-satellite earth station receiver;

c) interference from terrestrial station transmitters to a space research earth station receiver.

In the case of *a)* it has been assumed, for the purpose of calculation, that the terrestrial receiving station is a line-of-sight radio-relay station designed according to C.C.I.R. Recommendations. In the case of *b)* it has been assumed, for both applications, that the earth station forms a part of a communication-satellite system. Further, in order to ensure that a safe value of co-ordination distance shall be obtained, it has been assumed that in all cases the receiving station antenna is of typically high gain. For the same reason, in all cases, appropriately low-noise sensitive receivers are assumed.

2. *Minimum Permissible Basic Transmission Loss (L_b).*

The general formula for calculating the required minimum permissible basic transmission loss is:

$$L_b=(P_t+G_t)-F_s-(P_r-G_r) \qquad (1)$$

where P_t is the power in dbW supplied by the interfering transmitter to the transmission line input.

G_t is the isotropic gain in db of the transmitting antenna of the interfering station effective in the direction of the receiving station liable to interference, including the effect of all feeder losses, and losses due to any artificial screens.

F_s is the earth station site-shielding factor in db, discussed later.

P_r is the maximum permissible interference level in dbW at the receiver input of the receiving station.

G_r is the isotropic gain in db of the antenna of the receiving station effective in the direction of the interfering transmitter, less feeder loss and polarization discrimination if applicable.

When considering interference to telephone transmission systems, particularly in the case of systems using frequency modulation, it is convenient to operate in terms of the power densities in any 4 kc/s bandwidth. Therefore, in the case of interference from an earth station transmitter to terrestrial radio-relay systems, P_t is taken as the maximum power density in any 4 kc/s bandwidth supplied by the earth station transmitter to the transmission line input, and similarly P_r is the maximum permissible power density for any 4 kc/s bandwidth at the receiver input.

When considering interference from a terrestrial transmitter to an earth station receiver, it is more convenient to consider P_t and P_r of (1) as total powers rather than power densities.

It is assumed in computing co-ordination distances for cases *a)* and *b)* of Section 1 that the communication-satellite system is employing carrier energy dispersal techniques when lightly loaded.

3. *Computations for Minimum Permissible Basic Transmission Loss*

In any direction from the transmitting station, the required minimum value of permissible basic transmission loss (L_b) is obtained from the following Tables 1, 2 and 3.

TABLE 1

Interference from a Communication-Satellite Earth Station Transmitter to a Terrestrial Line-of-Sight Radio-Relay System

	Percentage of time	Values to be assumed for co-ordination
Permissible total interference in any telephone channel	0.01 %	−40 dbm0
Permissible interference from one earth station to one radio-relay system receiver, assuming four such non-simultaneous interference entries	0.0025 %	−40 dbm0
Receiver transfer characteristic assuming carrier energy dispersion to distribute interference uniformly over at least 300 kc/s bandwidth	—	1 db * (light loading worst case)
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.0025 %	−39 db
Minimum level of wanted signal at receiver input	—	−74 dbW *
Hence, permissible level of unwanted signal at receiver input, assuming carrier energy dispersion as above	0.0025 %	−113 dbW
Factor for conversion of interference bandwidth to 4 kc/s from 300 kc/s	—	−19 db
Hence, permissible level of unwanted signal at receiver input in any 4 kc/s bandwidth	0.0025 %	−132 dbW (per 4 kc/s)
Isotropic gain of radio-relay station antenna less feeder losses (Note 1)	—	42 db

* These figures are taken from an example of a 960 channel line-of-sight radio-relay system but the maximum permissible unwanted signal level of −113 dbW is almost independent of the number of channels carried.

	Percentage of time	Values to be assumed for co-ordination
Isotropic gain of earth station antenna, effective in the horizontal plane less feeder and polarization losses (Note 2)	2.5%	G_{earth} db
Power supplied by earth station transmitter to the transmission line input per 4 kc/s bandwidth	—	P_{earth} dbW
Earth station site-shielding factor if applicable	—	F_s db
Minimum permissible basic transmission loss, L_b (in decibels)	0.1%	$P_{earth} + G_{earth} - F_s + 174$

Note 1 The value of 42 db, given in Table 1, should be used unless it is known that the terrestrial station receiving antenna gain is greater than 42 db, in which case the higher value may be used.

Note 2 For simplicity, the appropriate value of G_{earth} to be used shall be the maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 2.5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

TABLE 2

Interference from a Terrestrial Line-of-Sight Radio-Relay Transmitter to a Communication-Satellite Earth Station Receiver

	Percentage of time	Values to be assumed for co-ordination
Permissible total interference in any telephone channel	0.02%	−38 dbm0
Permissible interference from one terrestrial station to one earth station, assuming four such non-simultaneous interference entries	0.005%	−38 dbm0
Receiver transfer characteristic assuming carrier energy dispersion of the wanted signal	—	10 db *
Hence, maximum value of unwanted-to-wanted signal ratio at the receiver input	0.005%	−28 db
Minimum level of wanted signal at receiver input	—	−117 dbW *
Hence, permissible level of unwanted signal at receiver input	0.005%	−145 dbW
Isotropic gain of earth station antenna effective in the horizontal plane (Note 1)	5%	G_{earth} db
Isotropic gain of radio-relay station antenna less feeder loss	—	$G_{terr.}$ db
Earth station site-shielding factor if applicable	—	F_s db
Power supplied by terrestrial station transmitter to the transmission line input	—	$P_{terr.}$ dbW
Minimum permissible basic transmission loss, L_b, (in decibels) (Note 2)	0.1%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+145$

* These figures are taken from an example of a 1200 channel communication-satellite system but the maximum permissible unwanted signal level of −145 dbW is almost independent of the number of channels carried.

Note 1 For simplicity, the appropriate value of G_{earth} to be used shall be that maximum value obtained in the horizontal plane in the pertinent azimuthal direction rather than the value exceeded for 5% of the time. However, when site-shielding is allowed, the value to be used shall be that maximum value obtaining at the angle of elevation of the screening obstacle.

Note 2 The application of co-ordination procedures for frequency sharing of this type involves the preparation, by the administration desiring to set up an earth station, of equal-power contours of co-ordination distance in the various azimuthal directions for several discrete levels of radiated power from the terrestrial station.

TABLE 3

Interference from a Terrestrial Transmitter to a Space Research Earth Station Receiver

	Percentage of time	Values to be assumed for co-ordination
Permissible interference in any bandwidth of 1 c/s at receiver input (Note 1)	0.1%	−220 dbW
Permissible interference in any bandwidth of 10 kc/s at receiver input (Note 2)	0.1%	−180 dbW
Isotropic gain of earth station antenna effective in the horizontal plane in the pertinent direction (Note 3)	10%	G_{earth} db
Isotropic gain of radio-relay station antenna less feeder losses	—	$G_{terr.}$ db
Earth station site-shielding factor if applicable	—	F_s db
Power supplied by terrestrial station transmitter to the transmission line input	—	$P_{terr.}$ dbW
Minimum permissible basic transmission loss, L_b, in decibels	1.0%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+180$
Factor to convert from use of 1.0% to 0.1% transmission loss curves (Note 4)	—	15 db
Minimum permissible basic transmission loss, L_b, in decibels	0.1%	$P_{terr.}+G_{terr.}-F_s+G_{earth}+165$

Note 1 A comparison of the C.C.I.R. criteria for near-earth, deep space and manned space research indicates that the permissible levels of interference at the receiver input are substantially the same.

Note 2 Measurements on terrestrial station emissions indicate that the minimum occupied bandwidth under no-load conditions is of the order of at least 10 kc/s.

Note 3 In order to meet the 0.1% time criteria for which the −220 dbW per cycle per second is permitted, the combination of earth station antenna gain, G_{earth}, in the horizontal plane and pertinent azimuthal direction, exceeded for 10% of the time and the basic transmission loss, L_b, exceeded for 1.0% of the time, is taken as an appropriate combination.

Note 4 From available propagation curves it is noted that $L_b(1\%)$—$L_b(0.1\%)$ over a range of typical co-ordination distances is about 10 db overland (Zone A) and 15 db oversea (Zones B and C). The conversion ratio of 15 db was selected to permit the use of the same 0.1% transmission loss curves as are used in connection with Tables 1 and 2.

---

4. *Summary*

The formulae giving the required basic transmission loss in db (L_b) not to be exceeded for 0.1% of the time are summarised below:

(1) For co-ordination between an earth transmitting station and terrestrial receiving stations:

$$L_b = P_{earth} + G_{earth}\ * - F_s + 174$$

(2) For co-ordination between terrestrial transmitting stations and a communication-satellite or meteorological-satellite earth receiving station:

$$L_b = P_{terr.} + G_{terr.} - F_s + G_{earth}\ * + 145$$

(3) For co-ordination between terrestrial transmitting stations and a space research earth receiving station:

$$L_b = P_{terr.} + G_{terr.} - F_s + G_{earth}\ ** + 165$$

---

* See Note 2 of Table 1.
** See Note 3 of Table 3.

5. *Site-Shielding Factor*

In cases where earth stations are sited below the level of surrounding or nearby terrain it is necessary to adopt the following procedure. Thus, if, in a given azimuthal direction, an obstacle provides an angle of elevation, θ, to the earth station then—for that azimuthal direction—it is necessary, in calculating co-ordination distance, to employ the maximum earth station antenna gain at the angle of elevation, θ, rather than the maximum gain along the horizontal.

As previously discussed, where site-shielding applies, the value of required basic transmission loss, L_b, may be reduced by a site-shielding factor, F_s, expressed in decibels. The following values of site-shielding factor shall apply when the obstacle limiting the angle of elevation is situated more than 5 kilometres away from the earth station.

Minimum angle of elevation, θ, of obstacle, as seen from earth station	Allowable value of site-shielding factor, F_s, in decibels
below 1°	0
between 1° and 2°	5
between 2° and 3°	8
between 3° and 4°	11
between 4° and 5°	13
More than 5°	15

In the case of nearer obstacles the values of site-shielding factor which apply may be obtained by multiplying the tabulated values by the fraction d/5, where d is the distance from the earth station to the obstacle in kilometres.

The values of site-shielding factor quoted here shall be used with caution where terrestrial stations may be located, within co-ordination distance, at sites which are substantially above the horizontal plane passing through the earth station.

6. *Equivalent basic transmission loss at 4 Gc/s (L_b')*

The propagation data considered in the next paragraph relates to the frequency of 4 Gc/s and it is therefore in general necessary to convert the minimum permissible basic transmission loss (L_b) into an equivalent loss at 4 Gc/s (L_b') before using these data to find the co-ordination distance. The equivalent loss in decibels at 4 Gc/s is given by:

$$L_b' = L_b + 13 - 21.6 \log_{10} f$$

where f is the assigned frequency in Gc/s. This relationship is shown in Fig. 1.

7. *World Radio-Climatic Conditions and Propagation Data.*

The propagation curves of Figure 2 are labelled Zone A, Zone B, and Zone C, and correspond to the various basic radio-climatic regions of the world as follows:—

Zone A: Land

Zone B: Sea, at latitudes greater than 23.5° N and 23.5° S.

Zone C: Sea, at latitudes between 23.5° N and 23.5° S inclusive.

In any direction from the earth station the required co-ordination distance is found as follows:

a) if the equivalent basic transmission loss L_b' is such that the co-ordination distance in the given direction lies wholly within one of the zones, the co-ordination distance may be obtained directly from Figure 2 using the appropriate curve;

b) if the co-ordination distance lies partly in one zone and partly in another, the curves for mixed paths, Figures 3, 4 and 5 should be used. These curves show the loss L_b' as a function of the path length in each of the two zones separately. Thus, if the path length in one zone and the required loss are known, the path length in the other zone can be determined. The path length in the first zone is the known distance from the earth station to the zone boundary in the direction concerned,

hence the further length in the second zone can be found. The total path length, or co-ordination distance, is the sum of these two paths lengths. Figures 3, 4 and 5 cover all cases of mixed paths in two zones as follows:

Fig. 3: Zones A and B,
Fig. 4: Zones A and C,
Fig. 5: Zones B and C.

An example of the co-ordination distance calculation for a mixed path is worked out in the Appendix.

c) In certain geographical areas where propagation losses are known to be less than the values given by the pertinent zonal propagation curves, co-ordination distances should be computed on the basis of the known propagation data.

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FIG. 1

FACTEUR DE CORRECTION A AJOUTER A L'AFFAIBLISSEMENT DE TRANSMISSION REQUIS L_b A LA FREQUENCE f POUR OBTENIR L'AFFAIBLISSEMENT EQUIVALENT L'_b A LA FREQUENCE 4 GHz

CORRECTION FACTOR TO BE ADDED TO THE REQUIRED LOSS L_b AT FREQUENCY f TO OBTAIN THE EQUIVALENT LOSS L'_b AT 4 Gc/s

FACTOR DE CORRECCIÓN QUE HA DE AÑADIRSE A LA PÉRDIDA REQUERIDA L_b EN LA FRECUENCIA f PARA OBTENER LA PÉRDIDA EQUIVALENTE L'_b EN 4 Gc/s

$L'_b = L_b$ + facteur de correction. $L'_b = L_b$ + correction factor. $L'_b = L_b$ + factor de corrección

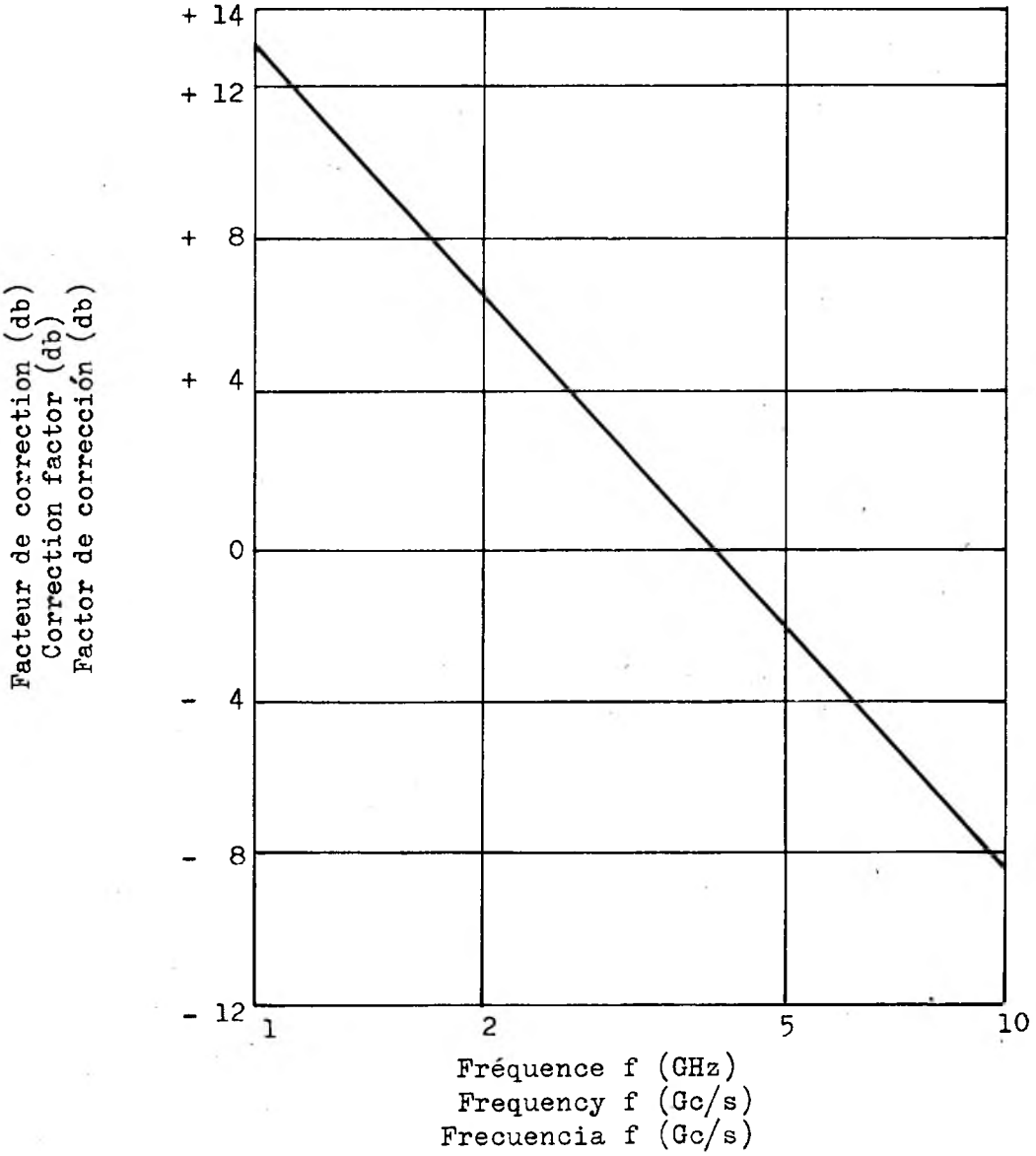


FIG. 2

COURBES DE PROPAGATION TROPOSPHERIQUE SIMPLIFIEES POUR LE CALCUL DE LA DISTANCE DE COORDINATION. AFFAIBLISSEMENT DE TRANSMISSION DE REFERENCE NON DEPASSE PENDANT 0.1 % DU TEMPS. A LA FREQUENCE 4 GHz

SIMPLIFIED TROPOSPHERIC PROPAGATION CURVES FOR CALCULATION OF CO-ORDINATION DISTANCE. BASIC TRANSMISSION LOSS NOT EXCEEDED FOR 0.1 % OF THE TIME AT 4 Gc/s

CURVAS SIMPLIFICADAS DE PROPAGACION TROPOSFERICA PARA EL CALCULO DE LA DISTANCIA DE COORDINACION. PERDIDA BASICA DE TRANSMISION NO EXCEDIDA DURANTE EL 0.1 % DEL TIEMPO EN 4 Gc/s

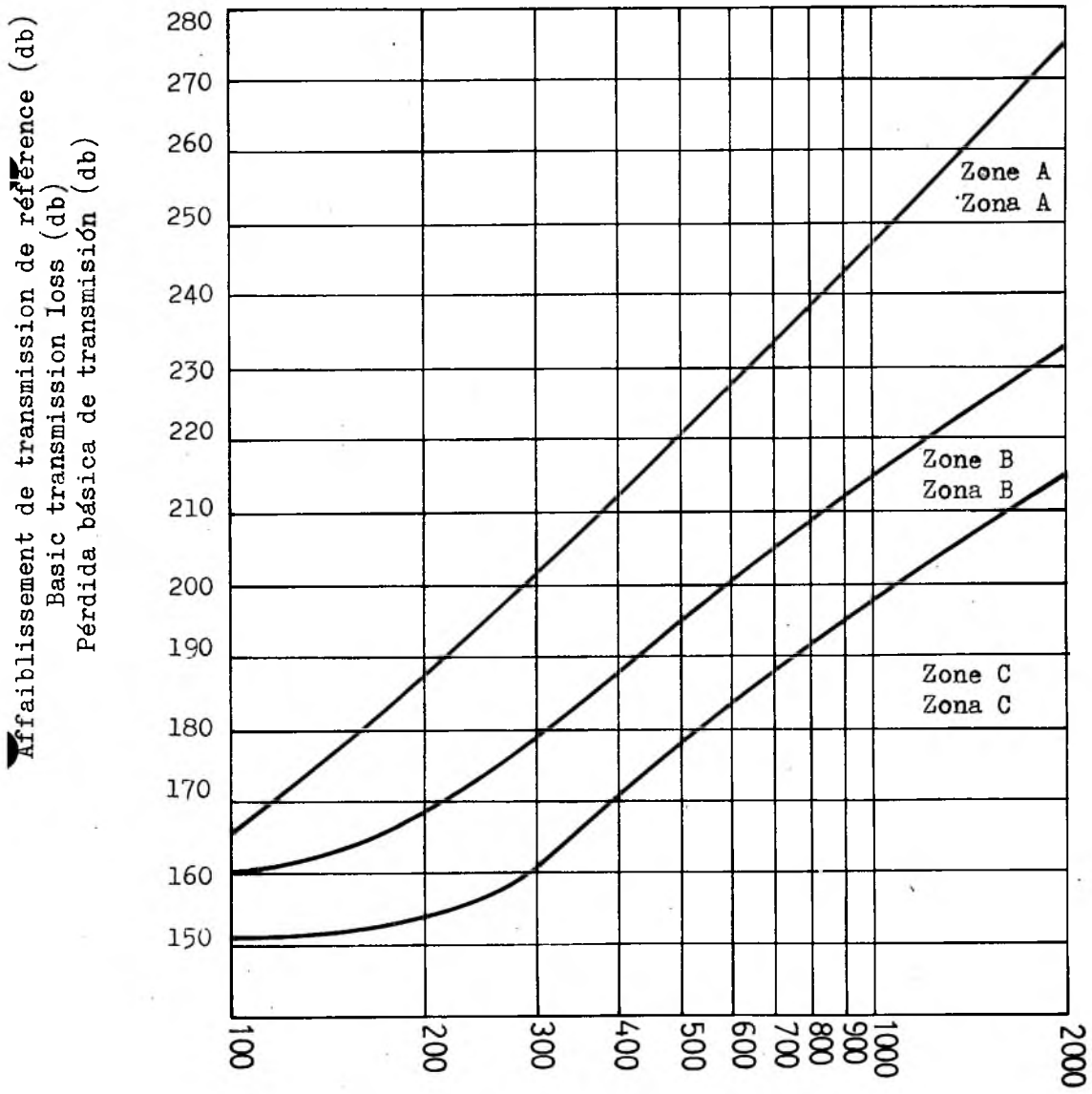


FIG. 3

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION - TRAJETS MIXTES (ZONES A ET B)

CHART FOR CO-ORDINATION DISTANCE CALCULATIONS - MIXED PATHS IN ZONES A & B

GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN - TRAYECTOS MIXTOS EN LAS ZONAS A Y B

Affaiblissement de transmission de référence à la fréquence 4 GHz, L'_b (db)

Basic transmission loss at 4 Gc/s L'_b (db)

Pérdida básica de transmisión en 4 Gc/s, L'_b (db)

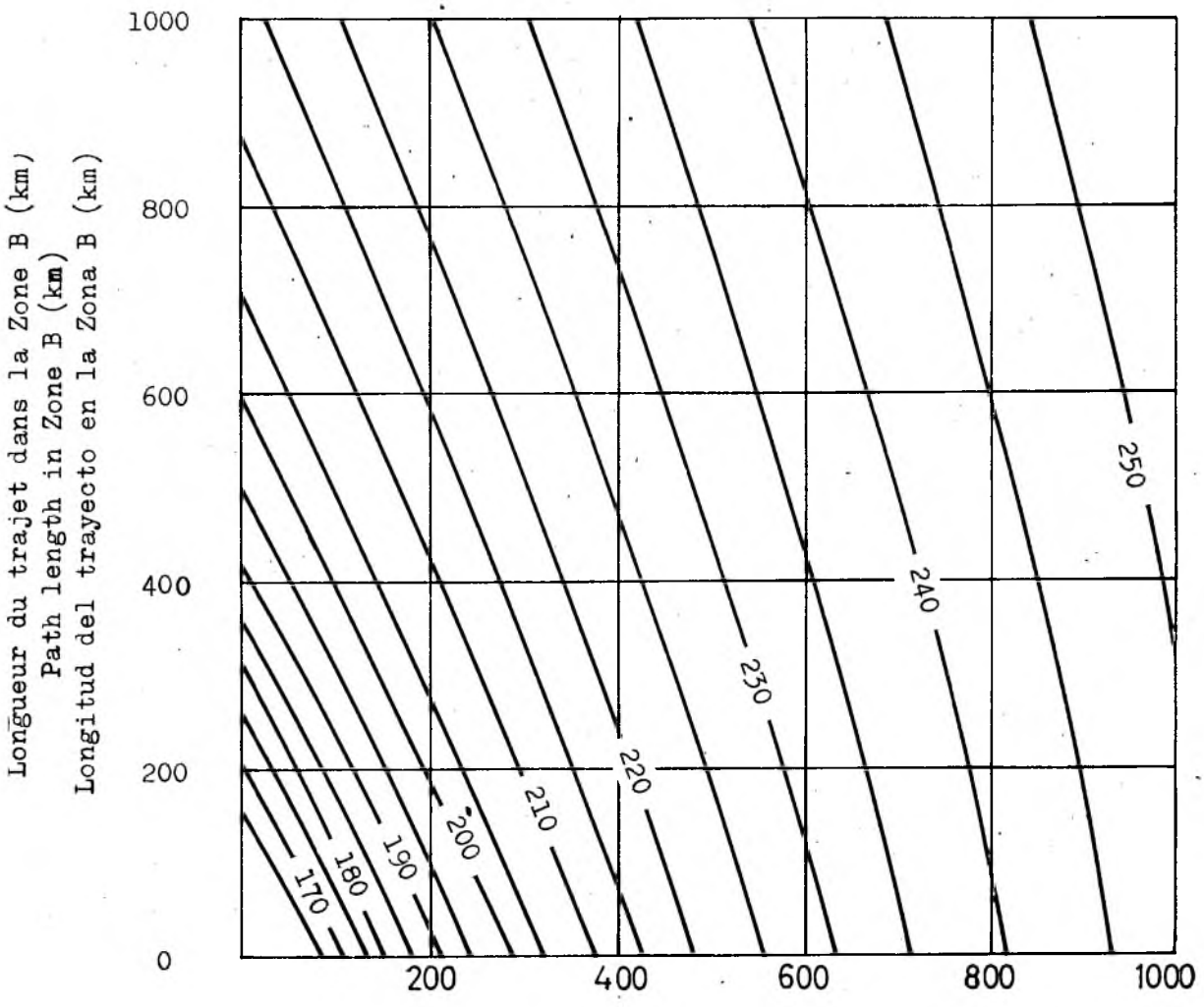
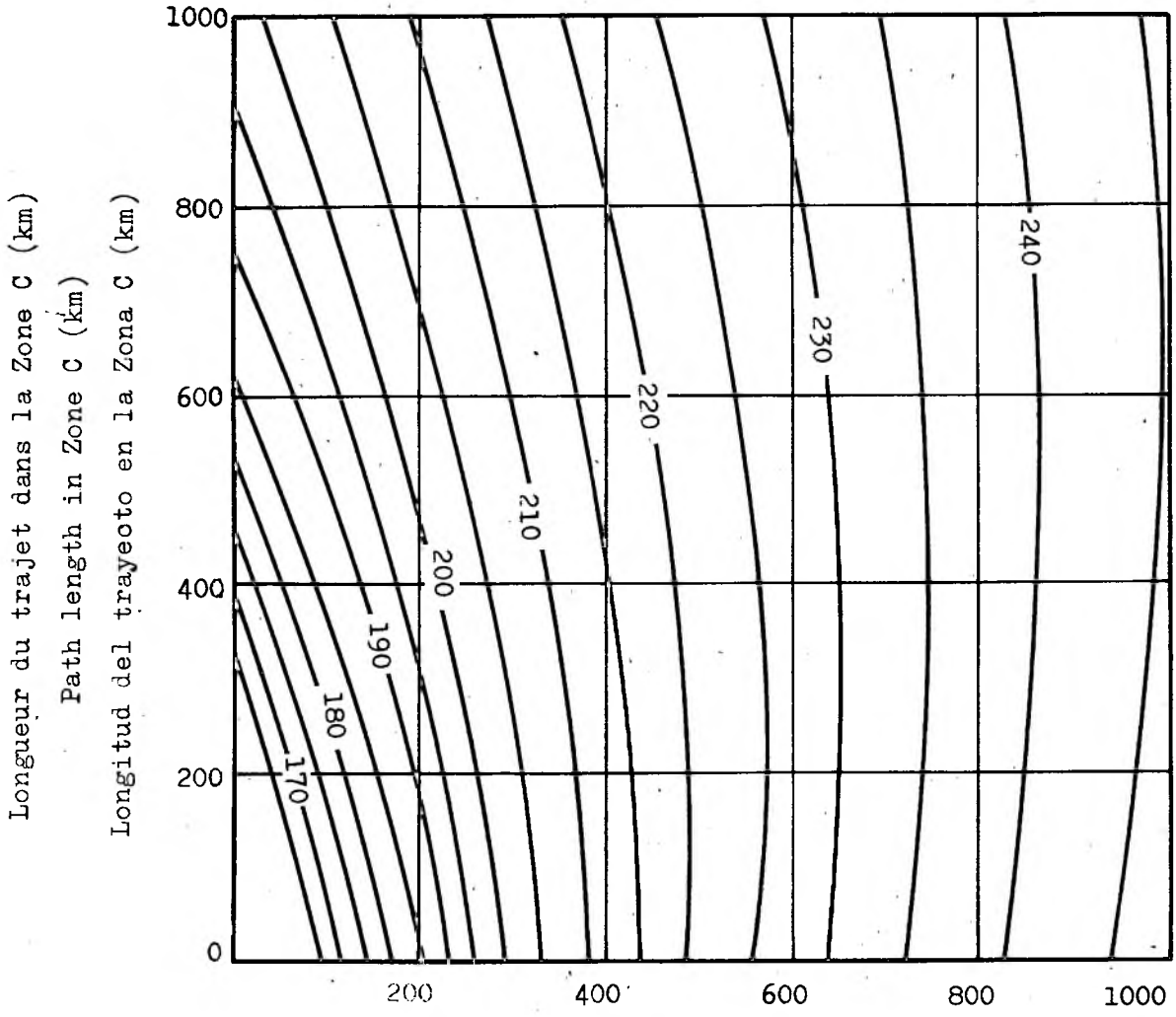


FIG. 4

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES A ET C)
CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES A & C
GRÁFICO PARA CALCULAR LA DISTANCIA DE COORDINACIÓN
TRAYECTOS MIXTOS EN LAS ZONAS A Y C

Affaiblissement de transmission de référence à la fréquence 4 GHz, L'_b (db)
Basic transmission loss at 4 Gc/s L'_b (db)
Pérdida básica de transmisión en 4 Gc/s, L'_b (db)



Longueur du trajet dans la Zone A (km)
Path length in Zone A (km)
Longitud del trayecto en la Zona A (km)

FIG. 5

DIAGRAMME POUR LE CALCUL DE LA DISTANCE DE COORDINATION
TRAJETS MIXTES (ZONES B ET C)

CHART FOR CO-ORDINATION DISTANCE CALCULATIONS
MIXED PATHS IN ZONES B & C

GRAFICO PARA CALCULAR LA DISTANCIA DE COORDINACION
TRAYECTOS MIXTOS EN LAS ZONAS B Y C

Affaiblissement de transmission de référence à la fréquence 4 GHz, L'_b (db)

Basic transmission loss at 4 Gc/s L'_b (db)

Pérdida básica de transmisión en 4 Gc/s, L'_b (db)

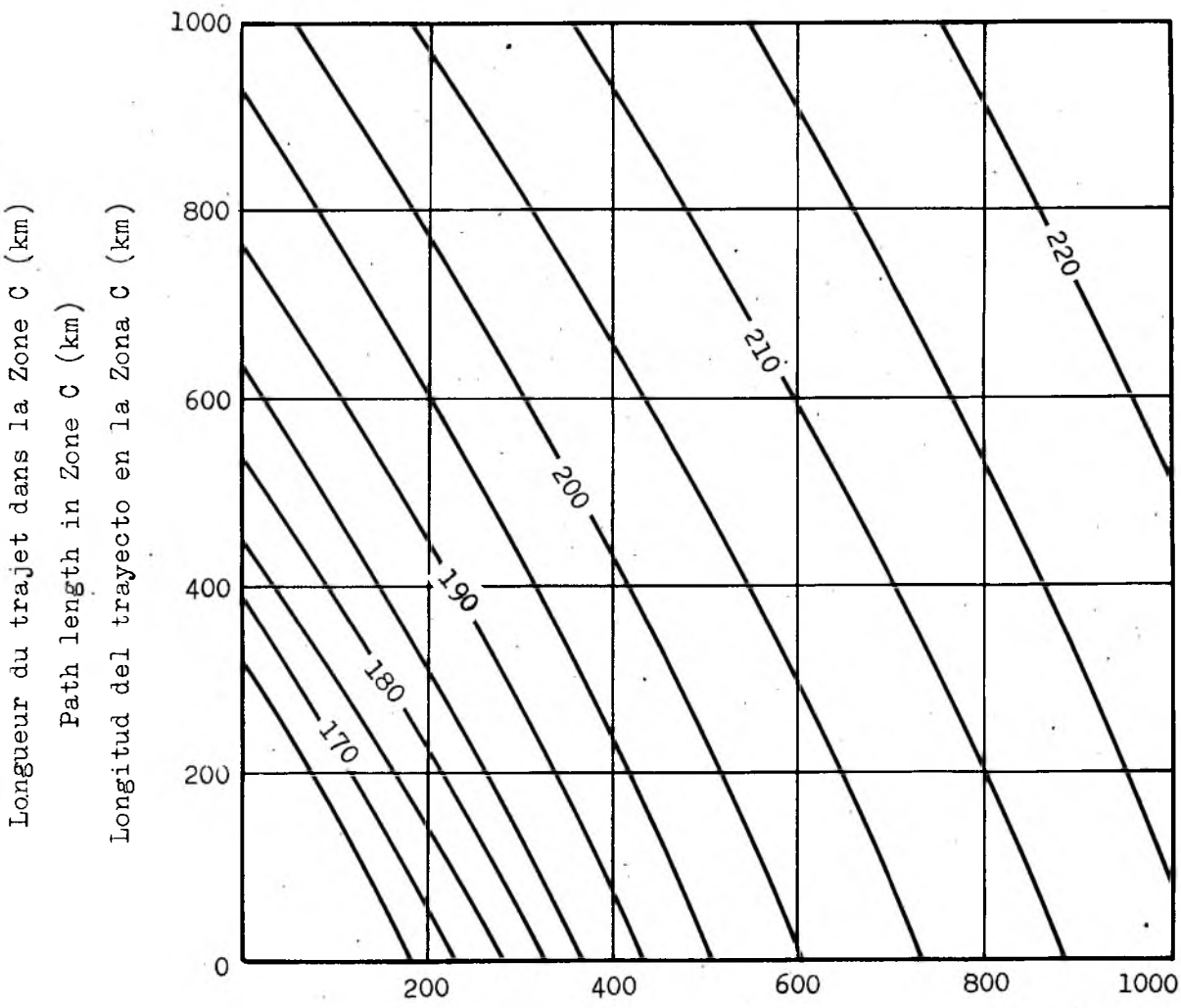


FIG. 6

EXEMPLE DE CALCUL DE LA DISTANCE DE COORDINATION DANS LE CAS D'UN TRAJET MIXTE

EXAMPLE OF COORDINATION DISTANCE. CALCULATION FOR MIXED PATHS

EJEMPLO DE CÁLCULO DE LA DISTANCIA DE COORDINACIÓN PARA TRAYECTOS MIXTOS

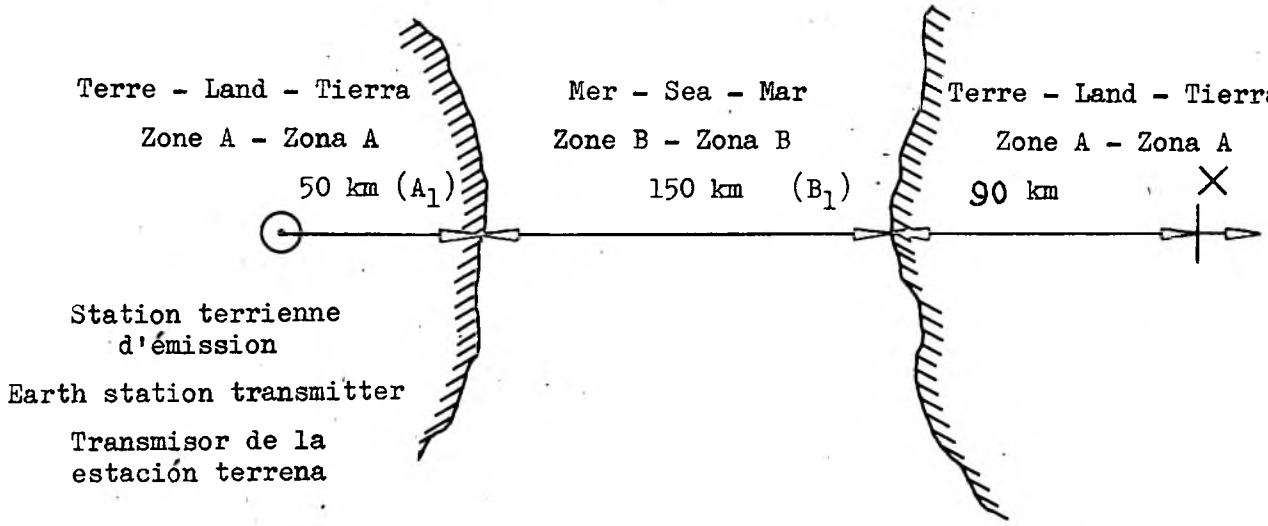
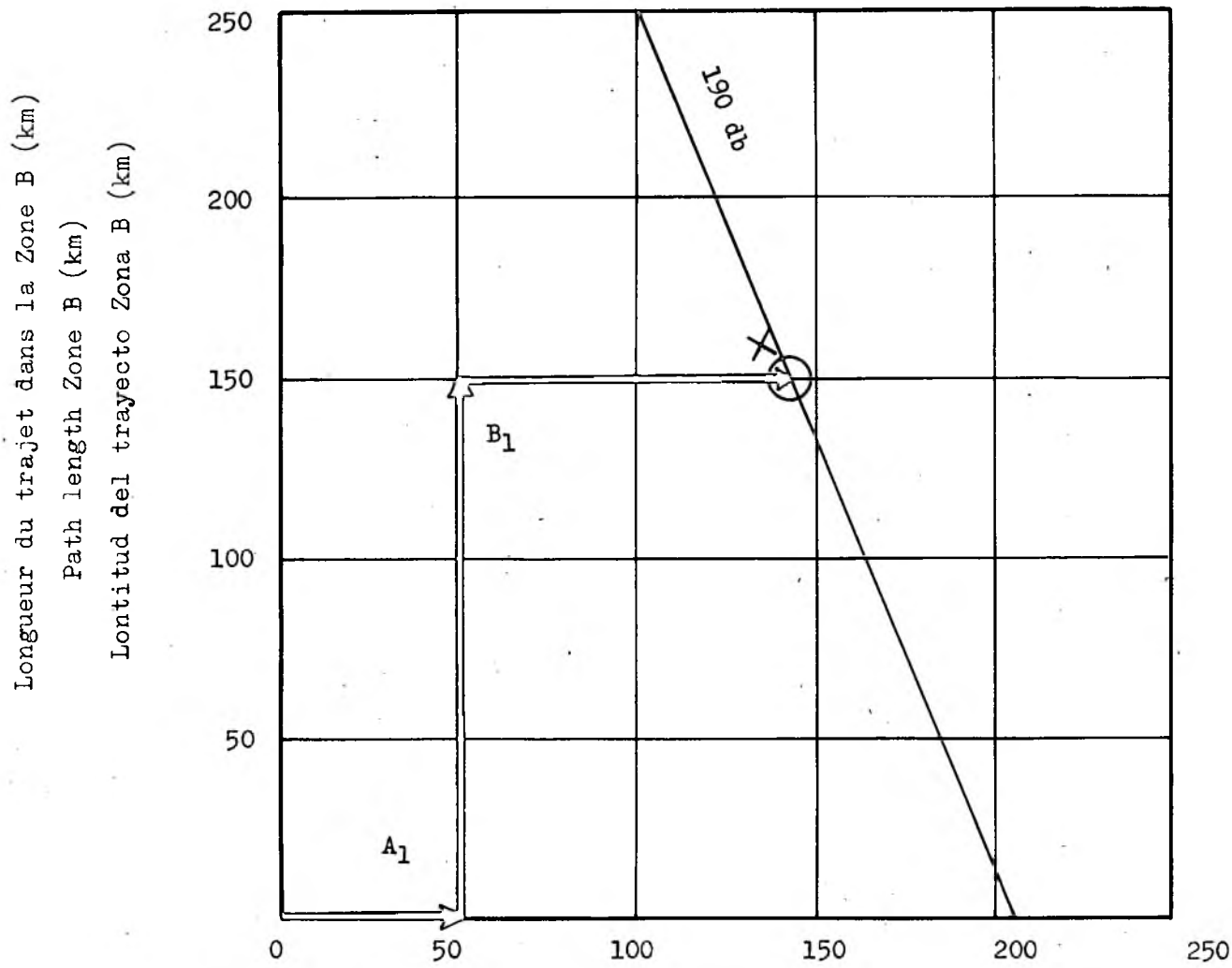


Fig. 6A



Longueur du trajet dans la Zone A (km) - Path length Zone A (km) - Longitud del trayecto Zona A (km)

APPENDIX

Example of Co-ordination Distance Calculation for a Mixed Path

The procedure to be followed in the case of a mixed path is illustrated by the following example, in which it is assumed that a basic transmission loss of 190 db is required to avoid interference from an earth station to terrestrial services in a given direction.

As shown in Fig. 6A, the earth station is situated 50 km from the coast and there is an oversea path of 150 km before the coastline of a neighbouring country is reached. It is required to find the co-ordination distance from the earth station in the given direction using the mixed paths propagation chart represented by Fig. 6B. The procedure is as follows:

1. Starting from the origin, the distance of 50 km from the earth station to the coastline is set off along the A axis of the chart as indicated by the point A_1.

2. The oversea path length of 150 km is then set off parallel to the B axis of the chart as indicated by the point B_1.

3. The further overland distance required is then measured parallel to the A axis from the point B_1 to the point of intersection with the 190 db curve, as indicated by X. This distance is found to be 90 km.

4. The co-ordination distance is the sum of the A and B co-ordinates of the point X and is equal to $50+150+90=290$ km.

DRAFT RECOMMENDATION

Study of Modulation Methods for Radio Relay Systems in Relation to sharing with Communication-Satellite Systems

The Extraordinary Administrative Radio Conference, Geneva, 1963

considering

a) that Article 5 of the Radio Regulations permits the sharing of certain frequency bands by the communication-satellite service and the fixed service;

b) that the sharing criteria to avoid mutual interference between the stations in these two services have been established in Article 7;

c) that among many factors of over-all efficiency of utilization of frequency bands it seems that the reduction of interference between two services is most important;

noting

i) that the over-all efficiency of utilization of the frequency bands shared by the two services depends on the methods of modulation used by the systems concerned;

ii) that studies of the preferred modulation characteristics for communication-satellite systems are to be carried out under Study Programme 235D (IV) of the C.C.I.R.;

recommends

that the C.C.I.R. should study especially, under the general framework of Question 236, modulation methods (such as Pulse-Code Modulation using phase or frequency modulation) in particular for line-of-sight radio relay systems in relation to sharing with communication-satellite systems.

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SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 187
5 November, 1963

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B.7

PLENARY MEETING
FIRST READING

The Editorial Committee, having examined the following documents, submits the attached texts to the Plenary Meeting for a first reading.

Issuing Com.	No.	Pages	Reference	Comments
Com. 5	160 App 1	1	37,75-38,25 Mc/s	
	160 App 2	1	73,0-74,6 Mc/s	
	160 App 3	1	404-410 Mc/s	
	160 App 4	2	606-614 Mc/s	
	160 App 4	1	ADD 133A	
	160 App 6	2	31,8-40 Gc/s	
	169 App 1	3	146-170 Mc/s	
	169 App 2	1	335,4-401 Mc/s	
	169	1	Draft rec.	
	169 App 4	1	14,3-14,4 Mc/s	
	164 App 3	3	1660-1670 Mc/s	
	164 App 2	1	450-470 Mc/s	
	165 App 7	4	31-31,3 Gc/s	
	165 App 1	3	15.762-15.768 kc/s	
	164 App 6A	1	9975-10 000 Mc/s	
	—	1	890-946 Mc/s	
	165 App 5	1	5670-5725 Mc/s	
	165 App 6	2	14,4-15,35 Gc/s	Radionaviga-
	164 App 5	2	1770-1790 Mc/s	tion-Satellite
	165 App 2	1	143,6-143,65 Mc/s	Service

Y. PLACE
Chairman of the Editorial
Committee

Annex : 27 pages

In Article 5, for the Table of Frequency Allocations for the bands 29.7-41 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
29.7—37.75	[*See page B1-02, Doc. 167*]	
37.75—38.25	FIXED 228 229 231 MOBILE *Radio Astronomy* 233	
38.25—41		

NOC **228**

NOC **229**

NOC **230**

NOC **231**

NOC **233**

SUP [**234**]

In Article 5, for the Table of Frequency Allocations for the bands 68-74.6 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
	68—73	
	73—74.6 RADIO ASTRONOMY 253A 253B	

SUP [253]

ADD **253A** In Region 2, fixed, mobile and broadcasting service operations previously authorized in the band 73-74.6 Mc/s may continue to operate on a non-interference basis to the radio astronomy service.

ADD **253B** In Cuba and Mexico, the band 73-74.6 Mc/s is also allocated to the fixed, mobile and broadcasting services.

In Article 5, the Table of Frequency Allocations for the bands 401-420 Mc/s there shall be substituted the following:

MOD

317 The band 404-410 Mc/s in Region 2 and the band 406-410 Mc/s in Regions 1 and 3 are also allocated to the radio astronomy service. An appropriate continuous band within these limits shall be designated on a national or area basis. In making assignments to stations of other services to which these bands are allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

In Article 5, the Table of Frequency Allocations, notes 330 and 332 shall be modified and note 330A added as follows :

MOD **330** In Region 1, except the African Broadcasting Area, the radionavigation service may continue to operate in the band 606-610 Mc/s until the band is required for the broadcasting service.

ADD **330A** In the African Broadcasting Area, the band 606-614 Mc/s is allocated to the radio astronomy service.

MOD **332** In Region 1, except the African Broadcasting Area, the band 606-614 Mc/s, and in Region 3, the band 610-614 Mc/s may be used by the radio astronomy service. Administrations shall avoid using the band concerned for the broadcasting service as long as possible, and thereafter, as far as practicable, shall avoid the use of such effective radiated powers as will cause harmful interference to radio astronomy observations.

In Region 2, the band 608-614 Mc/s is reserved exclusively for the radio astronomy service until the first Administrative Radio Conference after 1 January, 1974 which is competent to review this provision; however this provision does not apply to Cuba.

In Article 5, No. 133A which follows shall be added after No. 133 :

ADD

133A The African Broadcasting Area comprises:

a) African countries, parts of countries, territories and groups of territories situated between the parallels 40° South and 30° North.

b) Islands in the Indian Ocean west of meridian 60° East, situated between the parallel 40° South and the great circle arc joining the points 45° East 11° 30′ North and 60° East 15° North.

c) Islands in the Atlantic Ocean east of Line B defined in No. 131 of these Regulations, situated between the parallels 40° South and 30° North.

In Article 5, for the Table of Frequency Allocations for the bands 31.8-40 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
31.8—33		
33—33.4 RADIO ASTRONOMY RADIONAVIGATION	**33—33.4** RADIONAVIGATION 412A	
33.4—36	412B	
36—40	412C	

ADD **412A** In Cuba and India, the band 33-33.4 Gc/s is also allocated to the radio astronomy service.

ADD **412B** In Algeria, Bulgaria, Cuba, Hungary, Morocco, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 33.4-34 Gc/s is also allocated to the radio astronomy service.

ADD **412C** In Bulgaria, Cuba, Hungary, Morocco, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 36.5-37.5 Gc/s is also allocated to the radio astronomy service.

Note by the Editorial Committee : Page to be examined together with page B7-15

In Article 5, for the Table of Frequency Allocations for the bands 146-174 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
146—149.9 FIXED MOBILE except aeronautical mobile (R) 274 285 285A	**146—148** AMATEUR 289	
	148—149.9 FIXED MOBILE 285A 290	
149.9—150.05 RADIONAVIGATION-SATELLITE 285B		

NOC **274**

MOD **279** [Refers to the bands 132-136 Mc/s and 137-144 Mc/s in Australia. Doc. 114, + ADD 279A Doc. DT/73.]

MOD **285** In Rhodesia and Nyasaland and the R. of South Africa and Territory of South West Africa, the bands 146-149·9 Mc/s and 150·05-174 Mc/s are also allocated to the aeronautical mobile service.

ADD **285A** The frequencies 148·25 Mc/s ±15 kc/s and 154·2 Mc/s ±15 kc/s may be used for space telecommand, subject to agreement among the Administrations concerned and those whose services, operating in accordance with the Table, may be affected.

ADD **285B** Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Austria, Bulgaria, Cuba, Hungary, Iran, Kuwait, Morocco, Pakistan, the Netherlands, Poland, the United Arab Republic, Yugoslavia and Roumania where the fixed and mobile services may continue to have equal primary status with the radionavigation-satellite service. (See Recommendation No. [redacted])

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
150.05—151 FIXED MOBILE except aeronautical mobile (R) 274 285 286	**150.05—174** FIXED MOBILE	**150.05—170** FIXED MOBILE
151—154 FIXED MOBILE except aeronautical mobile (R) Meteorological aids 285 286		
154—156 FIXED MOBILE except aeronautical mobile (R) 285 285A		285A 287 290
156—174 FIXED MOBILE except aeronautical mobile 285 287 288	285A 287	**170—174** FIXED MOBILE BROADCASTING

MOD

286 In Region 1, the band 150·05-153 Mc/s is also allocated to the radio astronomy service. In making assignments to new stations of other services to which this

band is allocated, administrations are urged to take all practicable steps to protect radio astronomy observations from harmful interference.

NOC **287**

NOC **288**

NOC **289**

MOD **290** In New Zealand, the bands 148-149·9 Mc/s and 150·05-156 Mc/s are allocated to the aeronautical mobile (OR) service.

In Article 5, for the Table of Frequency Allocations for the bands 335·4-401 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
335.4—399.9		
	FIXED	
	MOBILE	
399.9—400.05		
	RADIONAVIGATION-SATELLITE	
	311A	
400.05—401		
	METEOROLOGICAL AIDS	
	METEOROLOGICAL-SATELLITE (Maintenance telemetering)	
	SPACE RESEARCH (Telemetering and tracking)	
	312A 313 314	

ADD **311A** Stations operating in the fixed and mobile services may continue to use this band until 1 January, 1969. This cessation date shall not apply in Bulgaria, Cuba, Greece, Hungary, Iran, Kuwait, Morocco, the United Arab Republic and Yugoslavia where the fixed and mobile services may continue to have equal status with the radionavigation-satellite service. (See Recommendation No. .....)

SUP **[312]**

ADD **312A** In Sweden, the band 400.05-401 Mc/s is also allocated to the fixed and mobile services until January, 1966.

MOD **313** In Albania, Bulgaria, Greece, Hungary, Poland, U.A.R., Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 400.05-401 Mc/s, is also allocated to the fixed and mobile services.

MOD **314** In the United Kingdom, the band 400.05-420 Mc/s is also allocated to the radiolocation service; however, between 400.05 and 410 Mc/s the allocation to the radio location service is on a secondary basis.

In Article 5, for the Table of Frequency Allocations for the bands 14-14.4 Gc/s there shall be substituted the following:

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
14—14.3		
	407	
14.3—14.4		
	RADIONAVIGATION-SATELLITE	

MOD

407 In Albania, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the bands 13.25-13.5 Gc/s, 14.175-14.3 Gc/s, 15.4-17.7 Gc/s, 21-22 Gc/s, 23-24.25 Gc/s and 33.4-36 Gc/s are also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the bands 1 660-1 710 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 660—1 664·4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	
1 664·4—1 668·4	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A *Radio Astronomy* 353 353A 354 354A 354B	
1 668·4—1 670	METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 353 354 354A 354B	
1 670—1 690		
1 690—1 700 METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A *Fixed* *Mobile* except aeronautical mobile 353 354A 354B	**1 690—1 700** METEOROLOGICAL AIDS METEOROLOGICAL-SATELLITE 324A 354A 354B	

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 700—1 710	**1 700—1 710**	**1 700—1 710**
FIXED	SPACE RESEARCH (Telemetering and tracking)	FIXED
SPACE RESEARCH (Telemetering and tracking)		MOBILE
Mobile	355A	SPACE RESEARCH (Telemetering and tracking)

SUP **[280]**

ADD **324A** It is intended that meteorological-satellite space stations operating in this band shall transmit to selected earth stations. The location of such earth stations is subject to agreement among administrations concerned and those whose services, operating in accordance with the Table, may be affected. See Article 7, Section [redacted] for further conditions governing the use of this band by the meteorological-satellite service.

[*Note by the Editorial Committee : The above text has been extracted from DOC. 164, Appendix 2 where it has been replaced by ADD 318A which does not appear applicable to the bands considered here.*]

NOC **353**

ADD **353A** In view of the recent successful detection of two spectral lines in the region of 1 665 Mc/s and 1 667 Mc/s by astronomers, administrations are urged to give all practical protection in the band 1 664·4-1 668·4 Mc/s for future research in radio astronomy.

NOC **354**

ADD **354A** In Bulgaria, Cuba, Hungary, Kuwait, Lebanon, Morocco, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the bands 1 660-1 670 Mc/s and 1 690-1 700 Mc/s are also allocated to the fixed service and the mobile, except aeronautical mobile, service.

ADD **354B** In Australia, Cyprus, Spain, Ethiopia, Indonesia, Israel, New Zealand, Portugal, the United Kingdom, Sweden and Switzerland, the bands 1 660-1 670 Mc/s and 1 690-1 700 Mc/s are also allocated, on a secondary basis, to the fixed service and the mobile, except aeronautical mobile, service.

SUP **[355]**

ADD **355A** In Cuba, the band 1 700-1 710 Mc/s is also allocated to the fixed and mobile services.

In Article 5, for the Table of Frequency Allocations for the bands 450-470 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
450—460		
	FIXED	
	MOBILE	
	318 319A	
460—470		
	FIXED	
	MOBILE	
	Meteorological-Satellite 318A	

NOC **318**

ADD **318A** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 460-470 Mc/s may be used, on a primary basis, by the meteorological-satellite service subject to agreement among administrations concerned and those whose services, operating in accordance with the Table, may be affected. [See Article 7, Section [..] for further conditions governing the use of this band by the meteorological-satellite service.]

ADD **319A** [*See Doc. 167, Page B1-07*]

[*Note by the Editorial Committee : The Table shown in Doc. 167, Page B1-07 for the band 450-470 Mc/s is cancelled and replaced by the new Table shown above.*]

In Article 5, for the Table of Frequency Allocations for the bands 25·25-36 Gc/s there shall be substituted the following :

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
25·25—31		
31—31·3	FIXED MOBILE *Space Research* 412AA	
31·3—31·5	RADIO ASTRONOMY 412A	
31·5—31·8 SPACE RESEARCH *Fixed* *Mobile*	**31·5—31·8** SPACE RESEARCH 405C	**31·5—31·8** SPACE RESEARCH *Fixed* *Mobile*
31·8—32·3	RADIONAVIGATION *Space Research* 412B	
32·3—33·4		
33·4—34·2		

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
34.2—35.2	RADIOLOCATION *Space Research* 407 408 412 412C 412D	
35.2—36		

SUP **[280]**

SUP **[405]**

ADD **405C** In Cuba, the band 31·5-31·8 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

NOC **407**

NOC **408**

NOC **412**

ADD **412A** In Bulgaria, Cuba, Hungary, the United Arab Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 31·3-31·5 Gc/s is also allocated to the fixed and mobile services.

ADD **412AA** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia, and the U.S.S.R., the space research service is a primary service in the band 31-31·3 Gc/s.

ADD **412B** In Bulgaria, Cuba, Hungary, Poland, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 31·8-32·3 Gc/s.

ADD **412C** In Bulgaria, Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 34·2-35·2 Gc/s.

ADD **412D** The band 34·4-34·5 Gc/s may be used by weather radar devices on meteorological-satellites for the detection of cloud.

[*Note by the Editorial Committee: This table has been prepared taking into account the Tables shown in Doc. 167, page B1-16, and Doc. 175, page B4-11.*]

In Article 5, for the Table of Frequency Allocations for the bands 15 450-16 460 kc/s and 18 030-20 010 kc/s there shall be substituted the following:

kc/s

Allocation to Services		
Region 1	Region 2	Region 3
15 450—15 762	FIXED	
15 762—15 768	FIXED *Space Research* 215A	
15 768—16 460	FIXED	
18 030—18 036	FIXED *Space Research* 215A	
18 036—19 990	FIXED	
19 990—20 010	STANDARD FREQUENCY 204 220 221 221A	

NOC **204**

ADD **215A** In Cuba, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the bands 15 762-15 768 kc/s and 18 030-18 036 kc/s.

NOC **220**

(MOD) **221** The band 19 990-20 010 kc/s is also allocated, on a secondary basis to the space research service.

ADD **221A** The frequency 20 007 kc/s may also be used, in emergency, in the search for, and rescue of, astronauts and space vehicles. Emissions must be confined in a band of $\pm$ 3 kc/s about this frequency.

[*Note by Editorial Committee : the part of this table concerning the band 18 030-20 010 kc/s contains modifications already shown in Doc. 167, page B1-01.*]

In Article 5, for the Table of Frequency Allocations for the bands 9 800-10 000 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
9 800—10 000	RADIOLOCATION *Fixed* 400 401 401A	
10 000—10 500	RADIOLOCATION *Amateur* 401A 402 403	

NOC **400 401**

[ADD **401A** The band 9 975-10 025 Mc/s may be used by weather radar on meteorological-satellites.]

In Article 5, for the Table of Frequency Allocations for the bands 9800-10000 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
9 800—10 000	RADIOLOCATION *Fixed* 400 401 401A	
10 000—10 500	RADIOLOCATION *Amateur* 401A 402 403	

NOC **400 401**

[ADD **401A** The band 9975-10025 Mc/s may be used by weather radar on meteorological-satellites.]

In Article 5, the Table of Frequency Allocations, the following note should be inserted against the bands 890-942 Mc/s and 942-960 Mc/s.

ADD

339A In the U.S.S.R., [redacted] and [redacted], specific portions of the frequency band [900-960 Mc/s] may also be used for experimental purposes and space research, subject to agreement with administrations concerned and those whose services, operating in accordance with the Table, may be affected.

In Article 5, for the Table of Frequency Allocations for the bands 5670-6425 Mc/s there shall be substituted the following :

Mc/s

<table>
<tr><td colspan="3">Allocation to Services</td></tr>
<tr><td>Region 1</td><td>Region 2</td><td>Region 3</td></tr>
<tr><td>5 670—5 725

388 389 389A</td><td colspan="2">RADIOLOCATION
Amateur
Space Research (Deep Space)</td></tr>
<tr><td>5 725—5 850
RADIOLOCATION
COMMUNICATION-SATELLITE
(Earth-to-satellite) 392A

Amateur
354 388 390 391</td><td colspan="2">5 725—5 850

RADIOLOCATION
Amateur

389 391</td></tr>
<tr><td>5 850—5 925
FIXED
MOBILE
COMMUNICATION-SATELLITE
(Earth-to-satellite) 392A

391</td><td>5 850—5 925
RADIOLOCATION
Amateur

391</td><td>5 850—5 925
FIXED
MOBILE
COMMUNICATION-SATELLITE
(Earth-to-satellite) 392A

Radiolocation
391</td></tr>
<tr><td>5 925—6 425</td><td colspan="2">FIXED
MOBILE
COMMUNICATION-SATELLITE
(Earth-to-satellite) 392A</td></tr>
</table>

NOC **354 388 389 390 391**

ADD **389A** In Cuba, Hungary, Roumania, Czechoslovakia and the U.S.S.R., the space research service is a primary service in the band 5 670-5 725 Mc/s.

SUP **[392]**

ADD **392A** This band may also be used for the transmission of telecommand signals associated with communication-satellite earth stations operating in the same band.

[*Note by Editorial Committee : This part of the Table contains modifications already shown in Doc 172, Page B3-04.*]

In Article 5, for the Table of Frequency Allocations for the bands 14·4-15·7 Gc/s there shall be substituted the following:

Gc/s

Allocation to Services		
Region 1	Region 2	Region 3
14·4—15·25	FIXED MOBILE	
15·25—15·35	SPACE RESEARCH 409AA 409B	
15·35—15·4	RADIO ASTRONOMY 409A	
15·4—15·7	AERONAUTICAL RADIONAVIGATION 352A 352B 407	

SUP **[280]**

MOD **341** [Retain for the band 960-1 215 Mc/s]

ADD **352A** [See the band 1 540-1 660 Mc/s.]

ADD **352B** [See the band 1 540-1 660 Mc/s.]

SUP **[405]**

NOC **407**

ADD **409AA** In Bulgaria, Cuba, Hungary, Kuwait, Pakistan, Poland, the United Arab Republic, Roumania, Czechoslovakia and the U.S.S.R., the band 15·25-15·35 Gc/s is also allocated to the fixed and mobile services.

ADD **409A** In Bulgaria, Cuba, Hungary, Japan, Kuwait, Lebanon, Pakistan, Poland, the United Arab Republic, Yugoslavia, Roumania, Czechoslovakia and the U.S.S.R., the band 15.35-15.4 Gc/s is also allocated to the fixed and mobile services.

ADD **409B** In Austria, Belgium, Japan, the Netherlands, Portugal, the F.R. of Germany, the United Kingdom and Switzerland, the band 15·25-15·35 Gc/s is also allocated, on a secondary basis, to the fixed and mobile services.

[*Note by the Editorial Committee : This part of the Table contains modifications already shown in Doc. 175, Pages B4-08 and B4-09.*]

In Article 5, for the Table of Frequency Allocations for the bands 138-144 Mc/s there shall be substituted the following:

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
138—143·6		
143·6—143·65 AERONAUTICAL MOBILE (OR) SPACE RESEARCH (Telemetering and tracking) 275 282 283	**143·6—143·65** FIXED MOBILE SPACE RESEARCH (Telemetering and tracking) Radiolocation	**143·6—143·65** FIXED MOBILE SPACE RESEARCH (Telemetering and tracking) 278 279A 284
143·65—144		

MOD **275**
MOD **278**
ADD **279A**
MOD **282**
MOD **283**
MOD **284**

[All footnotes are shown in the new Table for the band 136-138 Mc/s.]

279 [See the band 132-136 Mc/s.]

[*Note by Editorial Committee: The note ADD 279A above should not be confused with the note ADD 279A shown in Doc 167, page B1-03; the final numbering will resolve any ambiguity.*]

In Article 5, for the Table of Frequency Allocations for the bands 1 710-2 290 Mc/s there shall be substituted the following :

Mc/s

Allocation to Services		
Region 1	Region 2	Region 3
1 710—1 770 FIXED *Mobile* 356	**1 710—1770** FIXED MOBILE	
1 770—1 790 FIXED *Meteorological-Satellite* 356AA *Mobile* 356	**1 770—1 790** FIXED MOBILE *Meteorological-Satellite* 356AA	
1 790—2 290 FIXED *Mobile* 356 356A	**1 790—2 290** FIXED MOBILE 356A	

NOC **356**

ADD **356AA** In Bulgaria, Cuba, Hungary, Poland, Roumania and Czechoslovakia, the meteorological-satellite service, in the band 1 770-1 790 Mc/s, shall be on a primary basis subject to co-ordination with the administrations concerned and those whose services, operating in conformity with the Table, may be affected with respect to the siting of earth stations.

ADD **356A** The band 2 110-2 120 Mc/s may be used for telecommand in conjunction with spacecraft engaged in deep space research, subject to agreement between the administrations concerned and those whose services, operating in accordance with the Table, may be affected.

[*Note by Editorial Committee : This part of the Table contains modifications for the band 1 710-2 290 Mc/s already shown in Doc. 167, page B1-10.*]

DRAFT RECOMMENDATION No. .....

Relating to the introduction of the radionavigation-satellite service in the bands 149.9-150.05 Mc/s and 399.9-400.05 Mc/s

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

a) that the frequency bands 149.9-150.05 Mc/s and 399.9-400.05 Mc/s have been allocated to the radionavigation-satellite service on an exclusive world-wide basis;

b) that many Administrations require an extended period of time to re-accomodate existing fixed and mobile operations in other appropriately allocated bands;

c) that early implementation of the radionavigation-satellite service will be of benefit to all administrations, and particularly in its application to marine navigation;

d) that interference to users of the radionavigation-satellite service could constitute a hazard to the safety of life and property; and

e) that the C.C.I.R. is studying the feasibility of sharing frequency bands between the radionavigation-satellite service and terrestrial services but has not yet been able to reach a conclusion in this regard;

recommends

1. that, pending an affirmative determination by the C.C.I.R. that sharing is possible and practicable between stations of the radionavigation-satellite service and the fixed and mobile services, administrations take all possible steps to protect from harmful interference the operations of mobile earth stations using the radionavigation-satellite service;

2. that, in the light of 1) above, administrations be urged to cease operation of their fixed and mobile stations in the bands 149.9-150.05 Mc/s and 399.9-400 Mc/s as soon as practicable, with particular emphasis on those stations located in coastal areas.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 188-E
5 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

Note by the Secretariat

The Chairman of the Conference has authorized the distribution of the attached report on "Space Communication and the Mass Media" drawn up by the Director-General of UNESCO on the occasion of the Space Radiocommunication Conference. This report is distributed for information.

C. STEAD
Secretary of the Conference

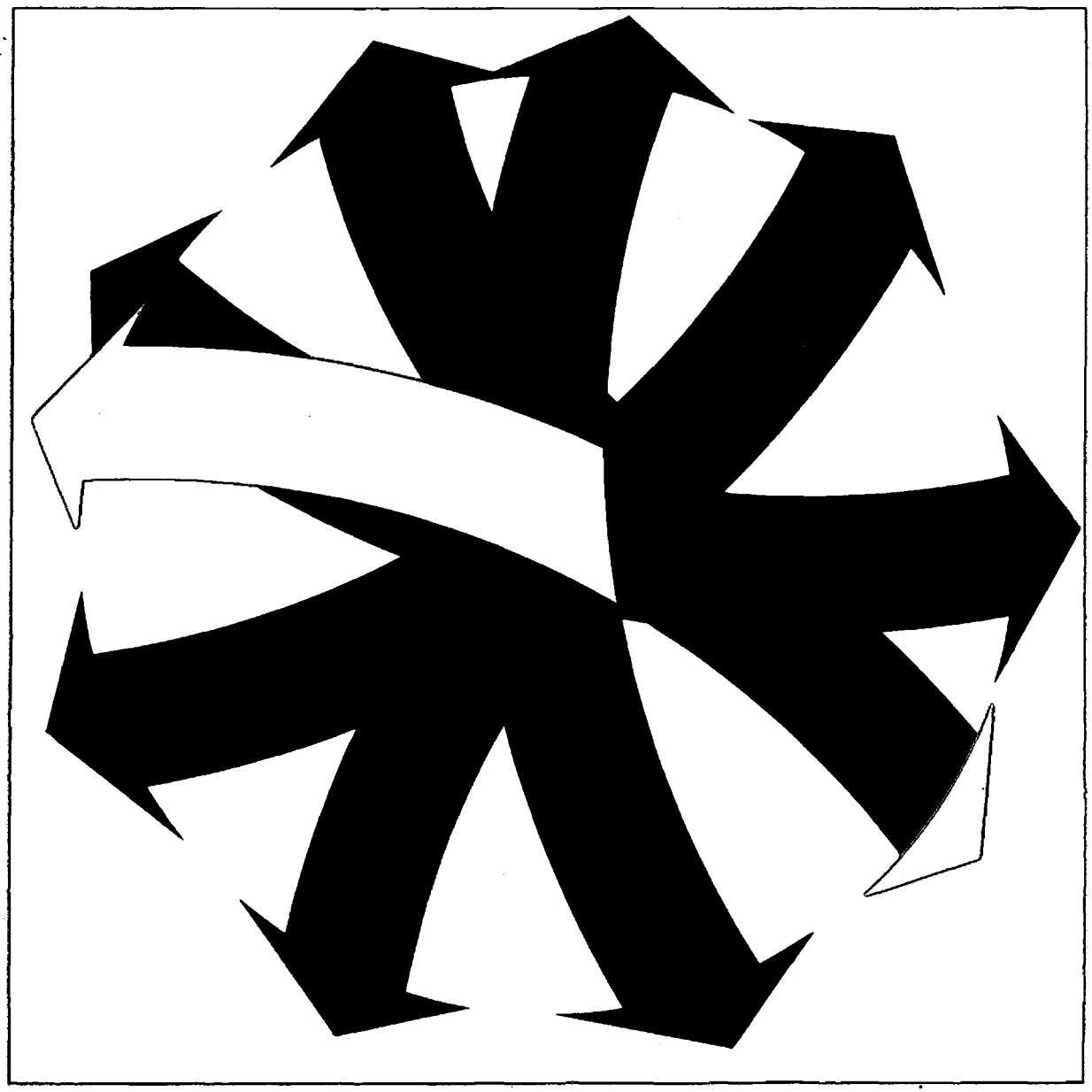
Annex : 1 report

Doc. No. 188

No. 41

Space Communication and the Mass Media

Reports and Papers on Mass Communication



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12 *Paper for Printing and Writing - Tentative Forecasts of Demand in 1955, 1960 and 1965.* April 1954 (out of print).
13 *Tentative International Bibliography of Works Dealing with Press Problems (1900-1952).* September 1954 (out of print).
14 *Catalogues of Short Films and Filmstrips - Selected List.* February 1955 ($0.40; 2/- (Stg.); 1 F).
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17 *International Rules for the Cataloguing of Educational, Scientific and Cultural Films and Filmstrips.* Preliminary edition, May 1956 (out of print).
18 *A Manual for Evaluators of Films and Filmstrips.* May 1956 ($0.40; 2/- (Stg.); 1 F).
19 *List of Films Recommended for Children and Adolescents up to 16 Years Following Selection made in 22 Countries.* June 1956 (out of print).
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28 *Film Programmes for the Young.* 1959 (out of print).
29 *Film-making on a Low Budget.* 1960 (out of print).
30 *Developing Mass Media in Asia.* 1960 ($1.50; 7/6 (Stg.); 5,25 F).
31 *The Influence of the Cinema on Children and Adolescents. An Annotated International Bibliography.* 1961 ($1.50; 7/6 (Stg.); 5,25 F).
32 *Film and Television in the Service of Opera and Ballet and of Museums.* 1961 (out of print).
33 *Mass Media in the Developing Countries. A Unesco Report to the United Nations.* 1961 ($0.50; 2/6 (Stg.); 1,75 F).
34 *Film Production by International Co-operation.* 1961 ($0.50; 2/6 (Stg.); 1,75 F).
35 *World Film Directory. Agencies Concerned with Educational, Scientific and Cultural Films.* 1962 ($1; 5/- (Stg.); 3,50 F).
36 *Methods of Encouraging the Production and Distribution of Short Films for Theatrical Use.* 1962. ($0.50; 2/6 (Stg.); 1,75 F).
37 *Developing Information Media in Africa. Press, Radio, Film, Television.* 1962 ($1; 5/- (Stg.); 3,50 F).
38 *Social Education through Television,* 1963 ($0.50; 2/6 (stg.); 1,75).
39 *The Teaching Film in Primary Education,* 1963 ($1; 5/- (stg.); 3,50 F).
40 *Study of the Establishment of National Centres for Cataloguing of Films and Television Programmes ,* 1963 ($0.50; 2/6 (stg.); 1,75 F).

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UNESCO

This brochure contains the report, Space Communication in the Promotion of Unesco's Aims, transmitted to Member States of Unesco by the Director-General under Circular Letter 1673 on the occasion of the Extraordinary Administrative Radio Conference on Space Communications (Geneva, October 1963).

Space Communication and the Mass Media

A Unesco report on the
occasion of the 1963
Space Communications Conference

Unesco

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FOREWORD

This report attempts to assess the prospects offered by space communication for enhancing the range and scope of the press, radio broadcasting and television. Although such an assessment at the present incipient and rapidly developing phase of space communication is bound to be highly speculative and transitory in character, it might nevertheless be of interest at this time to those concerned with the use of this new telecommunication technique by the mass media.

The origin of the report was a decision of the General Conference of Unesco in December 1962 authorizing a study of "the consequences which the use of new techniques of communication on a world scale, by means of artificial satellites", is likely to have upon the achievement of Unesco's essential objectives. The Organization was also to aid "the international bodies concerned with these questions, so that the interests of education, science, culture and mass communication may, in the handling of these problems, be given the special attention which is their due".

The report was prepared on the occasion of the Extraordinary Administrative Radio Conference on Space Communications, convened by the International Telecommunication Union at Geneva in October 1963. Among other things, it was designed to indicate, from the point of view of the mass media, the long-term implications of the allocation of frequencies for space communication services.

The report seeks at the outset to define the features of space communication within the pattern of communication as a whole. It then deals with technical problems affecting the development and operation of space communication services and, finally, with the possible use of space communication to promote the flow of information, the spread of education and cultural exchange, The principal points emerging from the report are set forth in a concluding page.

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CHAPTER I

FEATURES OF SPACE COMMUNICATION

A new era in human communication opened in mid-1962 when, for the first time, press dispatches, news photos, radio bulletins and live television programmes were relayed between continents by means of artificial satellites in outer space. Although rapid long-distance communication through more conventional channels, such as cable and radio, have become a general feature of our time, space communication opens up significant new possibilities for the future in which distances and other natural barriers will no longer impede contact among peoples anywhere on the globe.

Satellite transmissions thus far have been of an experimental character, and there are many problems to be solved before the technique comes into use on a regular or economically viable basis. However, experience shows that the gap between the experimental and practical stages of any demonstrably useful invention, particularly in the communication field, tends to be shorter and shorter as time goes on. It is not too early, therefore, even at the present incipient phase of space communication, to examine the prospects offered by this new technological advance.

Artificial satellites constitute a powerful instrument for long-distance communication, making possible high speed transmission in greater volume than can be achieved by other means now available. To the advantages of speed and volume are added that of world-wide coverage; at a sufficient altitude, a single satellite would be accessible at any given moment to ground stations throughout nearly one-third of the globe. This means that a space communication system could make it possible for important events to be seen and heard simultaneously by greater audiences than ever before - as was dramatically demonstrated in September 1962 by the simultaneous television broadcast, on both sides of the Atlantic, of ceremonies held in New York, Paris and Uppsala (Sweden) in memory of Dag Hammarskjold on the first anniversary of his death. Satellites might also, in time, provide the means of relaying programmes direct to individual radio and television receivers, opening up vast new possibilities particularly in regions where the construction of transmitting stations is prohibited by sparsity of population or lack of economic resources.

Because of the versatility and flexibility of the services which they can provide, satellites seem to meet the increasing need for long-distance communication facilities of all kinds. At present, most of the world's long distance communication channels are being used to capacity. According to one expert estimate, moreover, communication capacity on routes linking major regions of the world, including the developing areas, would need to increase fivefold by 1970 in order to keep up with the demand.[7] Higher capacity ocean cables are in prospect and will improve the service on high traffic volume routes. Cables cannot, however, serve as wide a variety of terminals effectively, as can satellites. Space communication may therefore provide a useful supplement to conventional channels. Moreover, some experts anticipate that when it has reached an advanced stage of development, space communication could offer services at relatively lower cost than those now available.

For the developing countries particularly, satellites could generally provide greater security and flexibility, both by making alternative routes available and if appropriate satellites were used by assuring direct access to areas which have only limited links by cable or radio with the outside world. Many of the plans for space communication now under study envisage satellites which would be used interchangeably or simultaneously for television and other purposes.

The problems involved in developing a comprehensive satellite system are so complex and diverse that it is still too early to predict what type of system will be adopted, and when. Nevertheless, a considerable body of opinion foresees three phases of satellite development by the end of this century. In the first phase, a global system of low-powered satellites would be established, serving ground stations which in general would be of a high-powered, sophisticated type, linked to conventional distribution networks. This sytem would provide telephone and telegraph services of the same quality as the best now available, and facilities for the relay of sound and visual broadcasting. In the second phase, a system of high-powered satellites and lower-powered, less sophisticated ground stations would furnish direct communications between cities and perhaps direct broadcasts to homes. In the third phase, a comprehensive system of manned satellites would link cities, countries and continents directly.[8]

EVOLUTION OF TELECOMMUNICATION

While the future of space communications presents a great many unknowns, the past history of telecommunication suggests that the interaction with

the mass media will be swift. Each technical advance in this field has spurred the information process which has in turn acted as a catalyst to technological progress.

If the invention of mechanical printing marked the advent of mass communication, the introduction of the electric telegraph first made possible the speedy transmission of messages over long distances. Less than 20 years elapsed between the time when the electric telegraph was first conceived and when it came into general use. By the 1850's, large areas of Europe and North America were covered with a network of telegraph lines, spreading news rapidly, and providing speedy communication for governmental, commercial and private users.

The effect of the telegraph on newspaper publishing was nothing short of revolutionary. The printing press had made the newspaper possible, but it was the telegraph that gave the newspaper its contemporary form. Before telegraphy came into use, news from distant points could not be published until long after the event; if news of an event aroused public opinion, it was usually too late for such opinion to make itself effectively felt. News sent by telegraph, however, could be published in a matter of hours.

Since the telegraph first made rapid long-distance contact possible, major advances in communication techniques have been measured, at most, in decades. The telephone followed the telegraph by less than 40 years. Twenty-five years later came wireless telegraphy, which could provide instantaneous communication between points not linked by telegraph lines or between moving points, such as ships at sea. This new invention had hardly been revealed to the world when experts began to apply its techniques to the telephone.

On the heels of wireless telegraphy came broadcasting. Great as was the impact of the telegraph, telephone and wireless on social, economic and even political life, none of them provided a new means of direct communication to large numbers of people. In other words, they did not constitute new mass communication media, even though they did contribute immensely to the expansion of the one medium of mass communication then in existence: the press. Broadcasting was a new medium in itself, and one that was destined to reach millions of people who could not have read newspapers even if they had had any.

About the same time as inventors were first developing the wireless transmission of signals and sounds, other pioneers were working on new techniques involving images. By the first years of the Twentieth century they had learned how to present a rapid succession of photographs on a screen to give the illusion of motion, and the cinema soon became the third great medium of mass communication. Meanwhile, experiments were being made with the rapid transmission of images over long distances - first by telegraph wire, then by radio. The next step was an effort to use the radio for transmitting moving pictures. Although the problems here were quite different from those involved in transmitting single images, they were solved in their turn, and moving pictures entered the home through television. Television had just been introduced to the public when its further development was postponed by the Second World War. Once the war was over, however, its popularity grew rapidly, and it was recognized as the fourth - and most versatile - of the great mass communication media.

In the century and a quarter since the telegraph was invented, the history of telecommunications has been one of extremely rapid advance. Clearly, new inventions in the field would not have been developed so swiftly if the practical need for them had not been evident - as in the case of the telegraph, for example or if they had not answered some psychological need - as radio broadcasting, then television, did by providing entertainment to millions who, as the working day shortened, were gaining leisure they had never enjoyed before.

In the same pattern, outer space communication makes its appearance at a time when there is an acute need for increased telecommunication facilities. Artificial satellites do not provide a new medium of communication; they constitute a technical innovation which permits the extension of existing means - as the power-driven rotary press speeded up the printing of newspapers and made very large editions possible, or as the audion improved radio transmission and reception and thus paved the way for organized broadcasting. The experiments already made have shown that satellites can be used to relay every type of information commonly transmitted by telegraphy or telephone, radio or television - if not yet with equal efficiency in every field. Thus, space communication brings a new dimension to all the great media of mass communication, offering them a potential extension of range and scope which could permit them to play a greater rôle than ever before.

USES FOR INFORMATION AND EDUCATION

The possible applications of space communication through the mass media are described in Chapter III. However, it may be useful here to consider the requirements in the fields of information and education which space communication may in time help to meet.

In the information field, the impact of this striking new departure is all the more unpredictable since it comes at a time when the media of mass communication are already changing rapidly. The supremacy of the printed word has been challenged first by the spoken word transmitted by radio, and then by the image transmitted on television. As they developed and perfected their techniques, radio broadcasting and television have vied increasingly with the press, at least as the initial purveyor of news. Today, the individual

often listens to the news, or sees it, before he reads it.

It is clear that the instantaneous, world-wide transmission of a greater volume of words and images through space communication will give still greater range and scope to broadcasting and particularly to television. But it can also serve the press in the immediate future for the collection of news and may, in the long run, be applicable for distribution as well by providing facsimile channels for the simultaneous reproduction of a newspaper at widely separated cities and its direct transmission into homes. By providing new dimensions to the press and to sound and visual broadcasting alike, space communication is bound to accelerate the already changing pattern of each of the media and their relation to each other in the information process.

Whatever the medium with which it is associated, space communication would seem to respond to at least three requirements of information in modern society. First, its speed of transmission keeps pace with the quickening tempo of world events. Second, its range allows for dissemination to and from the far corners of the earth, which are becoming increasingly the focus of crisis and change. Third, its volume of transmission is consonant with the growing complexity of news events and the need for greater background about them. In all three respects, space communication holds great potentialities as a means of permitting the mass media to create a more informed public opinion.

In carrying out its most immediate rôle as a stimulant to the flow of news and other information, space communication thus serves as an auxiliary to education in its broadest sense. As far as formal education is concerned, greater uncertainty prevails as to the place of this new technique. For the foreseeable future, its utility will no doubt be weighed against the cost factor and the possibility of alternative means of adequately swift communication. In the realm of speculation is the long-term prospect of direct broadcasting from satellites and the new avenues that would open for the transmission of educational programmes to television screens in schools, homes and community groups.

The use of new techniques of communication for educational purposes was examined at a broadly representative meeting of experts on this subject, convened by Unesco in 1962. The experts noted that "the resources which modern technology makes available to education may be employed both to improve the teaching process and to bring instruction within the reach of a continually increasing number of children and adults". They added that "among these resources, the potentialities of sound and visual broadcasting, far from being fully explored, are proving greater day by day, as seems to be indicated by plans for relaying radio and television through the use of satellites". Commenting on the future prospects of "the world-wide use of sound and picture messages", the report of the meeting observes: "Without wishing to express a final opinion at this stage concerning the practical use of satellites, and without minimizing the technical, legal, linguistic and other educational problems that would be involved, the members of the meeting drew Unesco's attention to the need for considering at the appropriate time the setting aside of wave-lengths for educational programmes."(9)

These same considerations have engaged the attention of outstanding individual experts in the mass media field. An expert from France has observed that the advent of space communication was causing educators to consider whether the systematic dissemination of information over vast international zones might not lead to the development of new educational methods. In particular, he added, the possibility of diffusing educational programmes over broad areas might facilitate the wider use of simplified educational services such as a series of teleclubs directed by a single teacher instead of expensive traditional systems.(10)

Another specialist of the mass media, from the United States of America, has remarked that "a satellite in orbit will perhaps be able to transmit an educational programme to an entire nation". Space communication, he added, could thus "contribute strikingly to the information, the education and the binding together of the people of a nation".(11)

DEVELOPING COUNTRIES

For the developing countries, in particular, space communication poses perplexing questions. As they expand their conventional telecommunication services, this new technique may well permit them to bypass some of the intermediate steps which have hitherto been necessary in establishing a communication system and thus to have at their disposal, within a relatively short space of time, more plentiful and more versatile communications facilities than would have seemed possible even a decade ago. But it also presents a number of imponderables ranging from the practical one of cost to the more far-reaching problem of determining the effect on traditional cultures of these new avenues of communication.

However, any assessment made by the developing countries is likely to take into account primarily the value of this new technique, in combination with the mass media, as a means of coping with the stupendous educational problems they face. Some 60 per cent of adult persons in these regions are illiterate, while the school population is increasing with explosive speed. Facilities for formal education range from barely adequate to extremely inadequate and at the secondary and higher levels are largely concentrated in urban areas. There is good reason to believe that large-scale use of the mass media would materially assist in overcoming illiteracy and spreading educational opportunities.

Yet even the mass media are in critically short supply: nearly 70 per cent of the world's people,

living in over 100 countries in Africa, Asia and Latin America, have less than the minimum facilities in the fields of press, radio and film, and only a few have been able as yet to initiate television services. Hence, the attitude toward space communication in these regions will no doubt depend on the degree to which its judicious introduction, along with the expansion of conventional telecommunication, may permit a quickening pace of educational and in turn economic and social progress.

Addressing himself to this question in a recent speech to the Economic Commission for Africa, the Secretary-General of the International Telecommunication Union observed that the developing countries should aim to employ "the most modern telecommunication techniques to link with international traffic centres and large national main traffic lines" while at the same time using "more orthodox and simple techniques... to reach areas which are still in the early stages of development". He envisaged the use of satellites for long-distance links, while telephone lines and cables, as well as simple radio transmitters and receivers, would be used simultaneously to reach small towns and villages in the interior of a country. "Regular sound broadcasting and television", he added, "will support the educational process. Low-cost transistorized equipment will overcome economic barriers and the lack of power supplies". He concluded that "it is essential that all the areas of the world should be able to participate in the benefits of this latest achievement of science at the earliest possible moment".(12)

PROMOTION OF INTERNATIONAL UNDERSTANDING

If it is a truism to say that the mass media are merely instruments to be used for good or for ill as men wish, this is all the more so when applied to space communication which is no more than a transmission technique. Yet their technique is so revolutionary an innovation that it has prompted the highest authorities to assess its implications for the promotion of international understanding.

Following the successful launching of the first communications satellites, the General Assembly of the United Nations at its 17th session in December 1962 adopted a resolution recording the view that "communication by satellite offers great benefits to mankind, as it will permit the expansion of radio, telephone and television transmissions, thus facilitating contact among the peoples of the world".(13)

Similar convictions have been voiced by leaders in a number of countries engaged in the development of space communication. As early as July 1961, the President of the United States of America, in a statement on communications satellite policy, declared that "science and technology have progressed to such a degree that communication through the use of space satellites has become possible". All nations, he suggested, might "participate in a communication satellite system, in the interest of world peace and closer brotherhood among peoples throughout the world".(14)

A parallel concern for the effective use of space communication was evinced by the Chairman of the Council of Ministers of the Union of Soviet Socialist Republics, in an exchange of messages in March 1962 with the President of the United States of America on the exploration and use of outer space. The Chairman stated that the use of space satellites for creating international communication networks "can lead to a considerable improvement of means of communication and television on the earth. People will get reliable means of communication and new unprecedented possibilities will arise for expanding contacts between the peoples."(15)

The importance of space communications as an aid to international understanding was also emphasized by the President of France in a speech made during a visit in October 1962 to the French ground station at Pleumeur Bodou, Brittany. Hailing the transmission of messages through satellites as an "international success", the President declared that space communication "will probably be decisive for relations among men, for their mutual understanding, for their friendship. The day is coming when it will be harder to imagine war, when all men, wherever they may be, will see one another as they are and will understand one another - in other words, will seem like men to one another".(16)

Space communication has also been a growing preoccupation in other countries. The British Postmaster-General, at a conference of the Commonwealth Press Union in June 1962, drew attention to the "great prospects" opened up by the development of space communication services.(17) A satellite communication conference of 11 Commonwealth Governments, held earlier in 1962 recommended international action in developing a world space communication system which would serve as large a number of countries as possible and have maximum flexibility; and, in Europe, the telecommunication administrations of 15 countries have jointly initiated studies on the co-operative development of space communication.

Unesco, for its part, could not remain indifferen to the possibilities offered by space communication to promote international understanding between peoples, as well as other basic aims of the Organization. Hence the General Conference, in the resolution adopted at its twelfth session which inspired the present report, observed that space communication offers "boundless prospects" for advancing Unesco's objectives and expressed the hope that "these new and powerful means of communication will first of all be applied to the achievement of these objectives through fruitful co-operation between the nations."(18)

CHAPTER II

TECHNICAL PROBLEMS

The technical problems affecting the development and use of space communication as a global service are so novel that it is difficult even to identify them, much less to attempt to review them here in any comprehensive fashion. However, it would appear that a few of the main problems, which are dealt with here, concern the provision of physical facilities such as communication satellites and ground stations; the allocation of frequency bands and the assignment of radio frequencies for satellite transmissions; and the day-to-day functioning of a space communication system. Finally, an examination will be made of the rôle of international co-operation in dealing with certain of these issues.

PHYSICAL FACILITIES

Satellites

As of August 1963, experiments had been conducted with active as well as passive satellites. The active satellites were of a low-powered, non-synchronous type orbiting at comparatively low altitudes and capable only of relaying signals from ground transmitters to special ground receiving stations. These satellites required the use at ground stations of mobile antennas, with computer control, to track the satellites as they moved across the sky.

Research was also being conducted in the development of non-synchronous satellites orbiting at medium altitudes (between 6,000 and 12,000 miles) which would give wider transmission range. In addition, experiments were being carried out in the establishment of high altitude "stationary" satellites which orbit at an altitude of 22,000 miles over the equator at a speed synchronized with the rotation of the earth. These initial experiments have had promising results. It was foreseen that a single synchronous satellite would be able to cover a whole region continually, and a system of three satellites, substantially the whole globe. Another expected advantage with synchronous satellites is that ground stations with fixed antennas could be used; these would be simpler and cheaper to construct and would not require arrangements to transfer traffic from one satellite to another as they rose and set.

The current use of low-powered satellites necessitates the employment of ground stations which amplify signals as they are received for relay through domestic networks to individual radio or television receivers. Research is now being conducted into the development of high-powered satellites which would require less sophisticated and therefore less costly ground stations. Study is also in progress on the problem of designing a satellite which could relay signals directly to individual receivers on the ground.

The setting up of a global satellite system raises very considerable financial, administrative and technical problems. It is still too early to foresee what the international configuration of such a system might be, or the precise method in which it might develop.

According to expert opinion, however, it is not likely that a comprehensive system would be established at one time and, without basic change, serve the world for an indefinite period. Rather, as in the case of the cable, radio and other conventional services, a world-wide satellite system would be the product of continuous growth. The first phase of this system might originate with one country or a limited number of countries which are technically developed. But some of the later phases might be provided by other countries in a position to do so.

For the time being, the very high cost of developing a satellite system would appear to put such an activity beyond the resources of all but a few countries acting individually. By way of example, it may be noted that a United States telecommunication corporation was reported as being prepared to invest some $480 million in establishing a system based on 15 non-synchronous, medium altitude satellites in equatorial orbits and 40 in random polar orbits.[19] In the United Kingdom, studies by the telecommunication administration have been directed towards a system employing 12 non-synchronous satellites in equatorial orbits, the estimated capital cost being from 160 million to 190 million pounds sterling ($448 million to $532 million).[20] Meanwhile, a European industrial study group estimates that the capital costs of a system employing 12 non-synchronous satellites would be the equivalent of $336 million, compared to $132 million for a system based on a single synchronous, high altitude satellite.[21]

On the other hand, much could be accomplished through collective action by countries, including those with more limited economic and technical resources. The various phases of developing a world system, possibly with different types of satellites and of orbits, could be planned and implemented so as to provide the best possible global service at the lowest possible cost. Countries

could thus carry on in the tradition of co-operation built up over many years in the field of conventional telecommunication.

Ground stations

A number of countries, while not yet prepared to participate in the construction and launching of satellites, are interested in establishing ground stations to send or receive space transmissions. According to published reports, ground stations had been constructed as of August 1963 in the United States of America, the Union of Soviet Socialist Republics, the United Kingdom, France, Italy and Brazil, and were being set up in the Federal Republic of Germany and in Japan. Several additional countries were planning to establish them.

Many of the developing countries may not find the financial problem of establishing a ground station to be insuperable. The cost of a station may vary from $1 million to $8 million, depending largely on the capacity of the installation, its location and the complexity of its equipment. The cost of linking the station to the domestic communication network is also to be taken into account.

Of particular interest to countries with limited resources is the possibility of developing a low-capacity ground station which would be used with a medium-altitude non-synchronous satellite system. Such a station, handling up to 12 or 24 two-way telephone channels, might be simplified and cheapened in relation to a typical high-capacity station carrying from 60 to 240 channels. The telephone channels could of course also be used for telegraphy, data transmission and other purposes, such as the exchange of broadcasting programmes. No very extensive installations would be required to make the link with domestic networks. Also of interest is the recent development of a movable ground station which travels in a van and three trailers and can be assembled by four men in as little as 16 hours; an experimental station of this type has been set up in Brazil.

As explained earlier, the introduction of synchronous satellites would make possible the use of simplified, cheaper ground stations with fixed antennas. For both synchronous and non-synchronous satellites, the type of modulation can influence the cost and ease with which access to a system may be obtained. Some systems may require complex and expensive auxiliary timing and co-ordination equipment. Also influencing costs are certain characteristics of domestic distribution networks such as, in television, the number of lines and frames and the modulation polarity. Converters may be required to make various national distribution systems compatible.

It may be expected that there will be considerable interest in the means by which ground stations could be shared by neighbouring countries. If a large volume of traffic is to be handled by a single telecommunication administration or operating agency, the administration or agency would be justified in installing its own ground station. However, the expected high capacity of the channels in a satellite system would indicate that a large number of channels could be handled by a single station and that these consolidated facilities would be economically desirable provided other problems can be solved.

For effective use of a ground station, there must be a local distribution network. If such a network extends to the borders of a particular country, it would probably be less costly to link it with the distribution network across the border than to install a new station in the second country. This, of course, would call for close co-operation between the countries concerned. It is also probable that if a country is to avail itself of satellite services at an early stage it would need to do so through shared stations, because of the expense and difficulties likely to be encountered in operating a large number of ground stations.

In countries with heavy traffic loads, consideration of competitive development in techniques may weigh against the consolidation of ground stations. In such cases, it would be desirable to assure that each administration or agency could, if it so desired, own its own station. This provision would admittedly make the communication system more complex at any particular time. Consequently, as the system develops, it would frequently be necessary to decide whether prospective benefits from competitive developments outweigh the immediate benefits obtainable through the joint establishment and ownership of stations. In any system, administrations or agencies will no doubt not wish to forego the right to establish their own station eventually.

FREQUENCIES

The allocation of frequencies is a key element in the development of all space activity. The Administrative Radio Conference convened by the ITU in 1959, while recommending the holding of the 1963 Conference on space communication, itself took steps to allocate frequencies immediately required for space research. The major concern of the 1963 conference will be to allocate frequencies for space communication proper and in fact for all space services.

As already observed, space communication is, technically, an extension of the conventional means of communication. By the same token, the problem of allocating frequencies for space communication may be regarded as an extension of the complex frequency problem encountered in the development of terrestrial radio services during the past 60 years.

The ITU, which over the years has carried out the task of apportioning the spectrum among the various services, has consistently sought to allocate frequencies on the basis of international co-operation. Difficulties arose, however, when no more desirable frequency bands remained to be

allocated and the needs of all services continued to increase. These services have, in fact, expanded so rapidly in scope and variety that taking into account the needs of radiotelegraphy, radiotelephony, aviation, shipping, defence, science and industry, little more than five per cent of total radio spectrum space has been available for sound broadcasting and television. Thus, by World War II, interference had become common throughout the frequency spectrum. The result was to impair the effectiveness of broadcasting, particularly in the high-frequency bands used for long-distance transmissions.

The need for international co-operation to assure rational and effective use of the radio spectrum has been demonstrated by the number of international conferences convened to examine frequency problems since 1945. The ITU's first post-war Plenipotentiary Conference and its concurrent administrative conferences, held at Atlantic City in 1947, aimed at dealing with the problem of frequency allocation systematically on a world-wide basis. An extended table of frequency allocations was prepared and revised bands of frequencies were allocated for the various radio services.

To implement the new allocation table and deal with other frequency problems, over a dozen world and regional conferences were held during the period 1948-1952. In addition, the International Frequency Registration Board (IFRB) was established, under a decision of the 1947 Plenipotentiary Conference, to assist in reducing any interference that new frequency changes might cause to stations already in operation. The latest general meeting to deal with frequency problems was the Administrative Radio Conference of 1959.

Much, however, remains to be done to secure general agreement on the allocation of frequencies. A persistent problem is that the total frequency requirements submitted by individual countries have greatly exceeded the available spectrum space. In addition, many countries, when considering recommendations for a reduction of their demands, concluded that they themselves would have to be the judge of their requirements.

Promotion of the effective use of frequencies for broadcasting, it may be noted, has preoccupied not only the ITU but also Unesco as part of its work to further the free flow of information through the media of mass communication. In a message to the ITU's Plenipotentiary Conference in 1947, the Director-General of Unesco urged that frequencies for international broadcasting be allocated in a manner which would give all nations and diverse cultures adequate facilities for expression. This same view was voiced by Unesco at subsequent frequency conferences convened by the ITU. In addition, the Organization examined the problem of interference to domestic broadcasts in many countries as a result of overcrowding in the low and medium frequency bands. The Radio Conference of 1959 adopted a recommendation, inspired by Unesco, that countries might seek to overcome this problem by using frequency modulation broadcasting on very high frequencies in their domestic services.(22)

The advent of space communication may provide interested international organizations and their member countries with an opportunity to avoid some of the difficulties experienced in the past in conventional radio services. Space communications are relatively economic in frequency usage and it would appear that protection against harmful interference could be assured through processes of international allocation and assignment of frequencies.

Study of the growing world demand for communication channels and of plans for the expansion of conventional services indicate that, beginning about 1965, these facilities will be overloaded in many areas. An alternative means of communication, such as that offered by space satellites, will need to be developed. It would therefore appear necessary that adequate spectrum space be allocated to the satellite service to meet foreseeable needs up to at least 1975.

In determining the amount of spectrum space required for space communication, provision would need to be made for telegraph relay, facsimile relay, telephone relay, television relay, AM/FM broadcasting and television broadcasting. In addition, frequencies would be required for telemetry, tracking, guidance and other aspects of satellite and space vehicle operation.

International agreement on the allocation of frequencies for space communication is manifestly a first essential. A major problem confronting the 1963 Conference is that the high frequencies in the range 1,000 Mc/s to 10,000 Mc/s, which would be technically suitable for space communication systems, have since 1959 been fully allocated to conventional radio relay systems which play so important a part in international telephone and television traffic. It therefore appears inevitable that this band of frequencies would need to be shared between the two services - space communication and radio relays. International study of the problem has resulted in a recommendation by the Tenth Plenary Assembly of the ITU's International Radio Consultative Committee (CCIR), held at Geneva early in 1963, that frequency sharing between the two services is in fact technically possible and that the grade of service of already established conventional systems will not be materially affected.(23)

At the time of preparation of this report, the only published information on suggestions by Members of the ITU as to frequencies which might be reserved to some degree for space communication concerned preliminary proposals made by the U.S.A. and the USSR. The estimate of the U.S.A. is that 2,975 Mc/s would be needed between 3,700 and 8,400 Mc/s for satellite relays, plus a relatively small allocation for other purposes. In general, the bands would be shared with other radio services. However, because of the much greater difficulty in providing protection against interference

to and from mobile stations, two bands of 50 Mc/s width are proposed for exclusive allocation to space communication.(24)

The estimate of the USSR is that 950 Mc/s between 3,550 and 6,170 Mc/s and 1,500 Mc/s between 28,000 and 29,500 Mc/s (a total of 2,450 Mc/s) should be allocated for space communication.(25)

Except for the bands selected for sharing, the two views are not far apart. However, there is a substantial difference in views on the ease of sharing between communication satellites and the radio relay services concerned.

It may be noted that in many cases these services are operated by countries which, while not yet engaged in space communication, have every prospect of benefiting from its development. Failure to agree, or failure to implement agreed measures could, in the words of the Secretary-General of the ITU, "set space telecommunications back a decade"(26) and result in the same confusion and difficulties as have plagued the development of terrestrial radio services. Concerted international action is needed in this and other fields to bring the benefits of space communication as soon as possible to all countries.

A frequency problem of long-term interest is that of direct sound or television broadcasting to home receivers. The practicability of broadcasts to the general public by relay through national control stations has been demonstrated by the first communication satellites, notably through the Eurovision and Intervision networks. However, the organization of direct broadcasts from satellites raises various technical, administrative and legal issues. Apart from the radio-technical problems in this field, there are those involving international agreement on broadcasting into a State from a satellite not under that State's control. Other problems concern the co-ordination of operations so that interference does not occur.

The ITU, in its second report to the United Nations in April 1963 on "Telecommunication and the Peaceful Uses of Outer Space", commented that "it seems to be very doubtful that such a form of broadcasting would come into being within the foreseeable future". Nevertheless, the 1963 conference might consider that the reopening of the ITU's frequency allocation table for review is a special occasion which should take into account the ultimate possibility of direct broadcasting from satellites.

OPERATIONAL PROBLEMS

Participation in a space communication system would raise a variety of operational problems, some of which would be of particular concern to countries with limited resources.

Access to the system

It is apparent that a prerequisite to the effective development of space communication is freedom of access to its facilities by all countries, both for the sending and receiving of transmission. Stated opinion on this issue has been unanimous.

The General Assembly of the United Nations, in the resolution of 1961 referred to earlier, expressed its belief that outer space should be used "for the benefit of States irrespective of the stage of their economic and scientific development" and that space communication specifically "should be available to the nations of the world as soon as possible on a global and non-discriminatory basis".(27) Subsequently, in 1962, the Administrative Council of the ITU requested all member countries of the Union to participate actively in the forthcoming conference so that the conference would be able to take decisions which might influence space communication development for the benefit of all the world's peoples.(28)

To be economically viable, a global system would in fact need to be founded upon participation by many countries. In this way, its high capacity channels would be fully utilized and operating costs would be reduced. If the pattern of development of conventional communication were to be followed, the degree and character of participation in a world system might vary from country to country.

For example, certain countries might desire to share in the ownership and management of the satellite portion of the system and have a voice in its establishment and management. Other countries might wish to participate through ownership and operation of their own ground stations which would give them access to the system. Other countries, again, might be content to have access to the system through the ground stations of neighbouring countries. And there might be those countries - a diminishing group over the years - which might find that conventional facilities were sufficient to meet their needs for the time being.

Costs and rates

A major problem is the operating cost of a ground station. Annual costs, which will depend on local conditions and the nature of the station, would run at an estimated 25 per cent of the initial investment cost of the terminal. Included in these costs would be provision for skilled operating staff. To support a 24-hour station operated continually, between 20 and 27 persons would be required for administrative, technical and other purposes. Low-capacity stations of the type already described would probably be less costly to operate and require fewer personnel.

One of the questions most widely discussed is the way in which rates for space communication might be established. Under existing procedures, rates for various conventional services are set by the telecommunication administrations or operating agencies concerned. The Telegraph and Telephone Regulations of the ITU set only the maximum allowable rates and specify how the charge for a particular transmission shall be divided among the various administrations or agencies over whose

lines the transmission has passed.

It is obvious that the present structure has given rise to many disparities in rates, particularly in the developing regions and between those regions and other parts of the world. Surveys conducted by Unesco have shown that in these regions, charges made for similar services for the transmission of press messages may vary by as much as 700 per cent. These disparities are largely due to differences in methods of fixing charges, to the vagaries of exchange rates and to the fact that the same charges are frequently made for messages sent by radio, even where no intermediate handling is involved, as for those sent by cable and requiring the payment of extra transit fees to one or more intermediate stations.

It may be noted that while there has been considerable speculation as to the level of rates to be charged for space communication services, no definitive statement on this complex problem has so far been made. For one thing, it is still too early to estimate accurately the operating costs per channel of a satellite system, since only experimental satellites have so far been launched. For another, present conceptions of costs and rates will no doubt be conditioned by the fact that the same satellite will probably be used at the same time for various purposes, such as telecommunication relay and radio navigation.

Nevertheless, there seems to be a widespread belief among authorities in the field that if the capacity of a satellite system was fully utilized and its component satellites remained reliably in service for a sufficiently long time, the impact on communication rates generally would be favourable. The following quoted statements are typical of expert opinion in countries at present engaged in the development or study of space communication.

The Chief of the Office of Satellite Communications, Federal Communications Commission, United States of America, has stated: "It is much too soon to predict what the impact of satellites will be on communication rates, having in mind the technological uncertainties that remain to be resolved. It is, of course, the hope and expectation that satellites will provide channels of communications at a lower cost per channel than conventional cable or radio, which, in turn, should make possible a lowering of rates charged to the public. This does not mean, however, that the rate for a telephone call routed via satellite will be different from a rate for a call routed via cable between the same terminals. Based upon rate-making practices traditionally employed by United States common carriers, we expect that the rates for service between any given pair of points will continue to be the same whether the message is transmitted via high frequency radio, cable or satellite. In other words, as is the case today, rates charged to the public in the United States will in effect be predicated upon an averaging of the cost of all classes of facilities used in furnishing overseas service. The practice to be followed by other countries will, of course, depend upon the rate-making policies of each country".(29)

In the United Kingdom, the Postmaster-General stated recently in Parliament that the increased communication capacity necessary to handle the very rapid growth in international telephoning could probably be handled more cheaply by satellite than by cable, although the two systems would be complementary for many years to come.(30) Meanwhile, a European industrial study group has estimated that a satellite system could provide telephone services at rates some 40 per cent less than the present international tariff.(31)

INTERNATIONAL CO-OPERATION

Solution of the foregoing problems depends to a very great extent on technical co-operation. Telecommunication, by its very nature, calls for co-operation between countries and the promotion of such co-operation has been the concern of the ITU over a period of nearly a century. Since space communication is essentially global in nature, it involves the basic features of international co-operation to an even greater degree.

The importance of international co-operation in this field has been recognized from the outset. At its 16th session in 1961 the General Assembly of the United Nations, on the suggestion of the Committee on the Peaceful Use of Outer Space, adopted a resolution in which it noted with satisfaction that the ITU planned "to call a special conference in 1963 to make allocations of radio frequency bands for outer space activities" and recommended that the ITU "consider at this conference those aspects of space communication in which international co-operation will be required".(32) Subsequently, in 1962, the General Assembly considered the first report of the ITU on "Telecommunication and the Peaceful Uses of Outer Space" and emphasized "the importance of international co-operation to achieve effective satellite communication which will be available on a world-wide basis". The General Assembly also maintained that it was of the utmost importance that the 1963 conference "make allocations of radio frequency bands sufficient to meet expected outer space needs".(33) It may be noted that in its current second report to the United Nations on "Telecommunication and the Peaceful Uses of Outer Space", the ITU observes that the results of the forthcoming conference "are likely to have a very important bearing on the development of space applications of all kinds for the next 10 to 15 years".

International co-operation presents a number of manifest advantages for the development of space communication. Firstly, it provides the framework for the allocation of frequencies which is essential if space transmissions are to be free of interference. Secondly, it facilitates the establishment and use of ground stations and connecting distribution networks. Finally, international

co-operation offers the widest possibilities for helping the developing countries by making available knowledge and techniques to them under the United Nations Expanded Programme of Technical Assistance and other aid programmes.

Facilities of the International Telecommunication Union

Within the ITU, the principal means for international consideration of the technical aspects of frequency allocations is the International Radio Consultative Committee (CCIR). As explained below the Administrative Radio Conference and the International Frequency Registration Board are also concerned with these problems. Responsibility for international review of various other technical communication problems rests with the International Telegraph and Telephone Consultative Committee (CCITT), which is concerned with cables, microwave and landline connexions and, in many regions of the world, with rates charged for services.

Study Group IV of the CCIR is responsible for studies of space communication and radio astronomy. It has been extremely active during the past three years in the preparation of study programmes, reports and recommendations on various phases of planning for the use of communication satellites. At the recent Plenary Assembly of the CCIR, by far the greatest number of documents and volume of interest centred on the study group's work in this area. Another reason for this interest, of course, was the CCIR's specific obligation to advise the forthcoming conference.

Of particular interest to Member States from Unesco's point of view would be those recommendations and reports of the CCIR and the CCITT concerning conditions of establishment of ground stations and the integration of national communications systems with the world-wide conventional telecommunication system and the satellite system now envisaged. Many of the documents resulting from the recent Plenary Assembly of the CCIR deal with these problems.

A joint committee of the CCIR and CCITT has been formed to promote circuit planning of all cables, landlines and radio facilities. Sub-committees of this main committee have also been established to carry out the work for each major region such as Africa, Asia and Latin America. These sub-committees produce circuit lists and maps showing interconnexions among the various international terminals. It would presumably be necessary at some point to incorporate satellite terminals in these plans. Sharing of the use of these terminals would of course be effected by interconnecting the national conventional systems involved with each satellite terminal.

The permanent body of the ITU concerned with the notification and registration of frequencies and the procedures laid down in the Radio Regulations is the International Frequency Registration Board, composed of 11 elected independent members, each of whom is a national of a different member country of the ITU.

One of the Board's duties is the technical planning for Administrative Radio Conferences with a view to reducing their duration. It is also responsible for providing assistance to administrations in the field of radio spectrum utilization, in particular to administrations needing special assistance. Another function is the recommendation to administrations, where appropriate, of adjustments in their frequency assignments, in order to secure a better use of the radio spectrum. Administrations can request the Board to investigate cases of harmful interference in the use of the radio frequency spectrum and to recommend solutions.

In connexion with the duties mentioned above, the Board is collecting data from administrations for analysis and presentation to the 1963 conference at Geneva. In order to ensure that space communication transmissions do not interfere with each other or with terrestrial telecommunication networks, the Board will, it is expected, be required to apply procedures. These procedures, which will be adopted at the 1963 conference, will form the basis on which space communications will be developed. The Board has similarly contributed to the preparation of procedures for FM sound broadcasting and television services in Europe and Africa. Administrations are vitally interested in these efforts which will help in attaining the mutual goal of the ITU and Unesco, namely, an adequate and satisfactory service.

In the studies which the various organs of the ITU may be expected to make following the 1963 conference, there may be areas in which Unesco could assist by advising on possibilities for the use of space communication for information, education and cultural exchange. Unesco would be ready, if desired, to co-operate with the ITU in this manner.

TECHNICAL ASSISTANCE

Coupled with the opportunities for advice and assistance through the organs of the ITU are those offered by technical assistance. The importance of such co-operation has been demonstrated even during the present experimental phase of space communication development. For example, a number of countries, including Brazil, France, the Federal Republic of Germany, Italy and Japan have received technical advice, on a bilateral basis, on the installation and use of ground stations.

Technical assistance is of particular importance to the developing countries both in the establishment of ground stations and in the expansion of domestic distribution networks so that they will be prepared to send and receive space transmissions when these become available. Under the United Nations Expanded Programme of Technical Assistance, the ITU has been designated the executing agency for assistance in development of all forms of telecommunication.

The significance of technical assistance in the development of space communication was recognized by the General Assembly of the United Nations in 1961, when, in adopting its resolution on "International Co-operation in the Peaceful Uses of Outer Space", it invited the Expanded Programme of Technical Assistance and the United Nations Special Fund, in consultation with the ITU, "to give sympathetic consideration to requests from Member States for technical aid and other assistance for the survey of their telecommunication needs and for the development of their domestic communication facilities so that they may make effective use of space communication".(34)

In the case of each developing country or region, planning for the use of space communication obviously presupposes a considerable body of knowledge concerning all the factors involved, both in developing and utilizing a communication system and in giving the communication programme its rightful place in a general programme of economic and social development. In many fields, the knowledge now available is far from sufficient. It is important that research to fill the gaps be pursued as expeditiously as possible by the countries concerned, with such assistance as can be provided by the competent international organizations, individual governments and other interested agencies.

Planning for the best use of space communication by the developing countries is only one of the many areas in which international co-operation will be required if the greatest possible benefits are to be derived from this revolutionary new technique. For if space communication can enable nations as well as individuals to work together in ways that have not been possible before, its functioning will also require new forms of co-operation among them.

FUTURE ACTION

The Administrative Council of the ITU at its 18th session in March-April 1963 decided that the agenda for the forthcoming conference should provide for the allocation of frequencies for space communication and for radio astronomy, for the necessary revisions of the Radio Regulations of 1959 and for the adoption of such additional provisions as are essential to the effective implementation of the conference decisions.(35)

The Administrative Council also considered replies to the request which it had made to Members and Associate Members of the Union(36) that they suggest subjects which they regarded as appropriate for international co-operation in order to achieve the objectives set forth in General Assembly resolution 1721 D (XVI) of 1961. These objectives, specifically, were the availability of space communication "to the nations of the world as soon as possible on a global and non-discriminatory basis", the establishment of effective satellite communication to that end, and the provision of technical assistance to Member States for the development of their domestic communication systems so that they might make effective use of space communication.

Among the replies submitted by Members of the ITU to the Administrative Council were some which contained suggestions going beyond the scope of the provisional agenda for the forthcoming conference.(37) Australia proposed the formulation of plans for the integration of satellite communication links into the international telecommunication network. The Federal Republic of Germany mentioned regulations for direct broadcasts by satellite, and for licences for groups of countries forming supra-national organizations. Japan referred to measures for the international co-ordination of satellite systems and an international guarantee for non-discriminatory participation by all countries in the use of such systems. Sweden suggested operational and financial questions concerning space communication services, technical assistance for participation in space communication, legal problems, and requirements of the United Nations and certain of the Specialized Agencies.

Similarly, the United Kingdom listed the arrangements to be made for the interconnexion of satellite systems and national or international networks; for the setting up of a satellite system, taking into account the need for access to satellites by numbers of low and high capacity ground stations, the traffic capacities to be provided and the form of the system to be used; and for the planning, construction and ownership of a system, its control, management and financing, the provision of ground stations and the sharing of their use.

Subjects proposed by the U.S.A. were the establishment of ground stations; the gathering of statistics on international telecommunication traffic and reliable estimates of anticipated traffic volume; consideration of international telecommunication rates in the light of the impact of satellite communications; and the nature and extent of planning required for new and expanded cable, radio and satellite communication facilities so as to derive maximum benefit from each of these modes of communication.

The Secretary-General of the ITU, in commenting on the above replies, observed in his report to the Administrative Council that "even if it is thought that the whole range of aspects referred to in the General Assembly resolution might be more suitably examined by a later conference, it should also be realized that events in space communications are now proceeding with such speed that preparatory consideration of all those aspects at an international level needs to be initiated as soon as possible". Such preparation, the Secretary-General suggested, might lead to the convening of an ITU world conference on the general aspects of space communication.(38)

CHAPTER III

APPLICATION THROUGH THE MASS MEDIA

It is evident that telecommunication is the key to all activities in outer space, not only for communication through the mass media, but also for space research, space travel, meteorology, navigation and other purposes. Telecommunication is indispensable for the command and tracking of satellites and space-probes, for the telemetering to earth of research and other information gained in spacecraft and for the vital links between manned spacecraft and their controlling ground stations.

Setting aside the multiple aspects of the uses of space communication which are not germane to the present report, an examination may be made of space communication in the light of its effectiveness in enhancing the range and scope of the mass media of press, radio broadcasting and television. This examination will deal in the main with the rôle of space communication during the anticipated initial period of its use, when facilities for telephone and telegraph services and for relayed radio and television broadcasts would be made available. An assessment will be made according to the media - press, radio and television - through which space transmissions would be channelled.

CHANNELS FOR SPACE COMMUNICATION

Press

For economic and technical reasons, it seems likely that space communication will first be used regularly to provide long distance telegraph and telephone services for the press and other commercial users. As the first communication satellites were being developed and tested, their potentialities were being studied with cautious but optimistic anticipation by news agency executives as well as by newspaper publishers.

Press interest in these potentialities had already been stimulated by the successful initial relay, in mid-1962, of world news agency dispatches by satellite between Europe and North America. London and New York newspapers had also exchanged dispatches by this means.

While predictions varied as to the date when a satellite service would be available for world-wide transmission of news and photographs, news agency experts pointed out that the extent of news agency participation in the initial stages would be determined by several factors other than simple availability.

In the first place, much would depend upon whether the service were provided by synchronous or non-synchronous satellites. If non-synchronous satellites were used, news agencies could have no direct rôle in their use. Many satellites would be involved in a non-synchronous system operating at low or medium altitudes ranging from 300 to 12,000 miles. Transmitting and receiving facilities would have to be capable of tracking each of the fast-moving satellites as it became "visible" over sending and receiving points for brief periods. Only commercial and governmental organizations would be able to underwrite the expense of such facilities. News agencies could only lease channels - assuming reasonable cost - as they now lease land lines.

However, spokesmen for the agencies agreed that they would welcome even this system, because it would expand greatly the limited number of radio communications channels available around the globe and would improve the quality of these services.

Technicians were far more interested in the possible use of synchronous high altitude satellites. Such satellites would not only make available the same number of radio frequency channels as would non-synchronous satellites, but they would permit the use of much simpler and less expensive receiver on the ground. Presumably, newspapers subscribing to the agency's services could install and maintain these receivers as they do now to receive messages transmitted by terrestrial means.

It was pointed out, however, that such direct reception by newspapers might not be possible at first even if synchronous satellites were used. Because of the difficulty of launching a heavy satellite into an orbit as high as 22,300 miles, the first few units are expected to carry only low-power transmitters. In this case, ground receiving stations would probably have to be ultra-sensitive, employing parametric or maser amplifiers. While the cost of these receivers is much less than that of receiving systems necessary for tracking and receiving signals from non-synchronous satellites, it is still much too costly for general use at all news agency subscriber reception centres around the world.

The experts considered it conceivable that a few major news agency reception points might be equipped with these expensive receivers and antennas to take immediate advantage of the new facility and gain experience with its use. But they believed that the real expansion of the new system, so far as news agencies were concerned, would probably not occur until large synchronous satellites carrying comparatively high-powered transmitters were

put into orbit. Then the receiver requirements would become much less severe, and the cost of receiving equipment would probably no longer be a critical factor. They were ready to predict that, from then on, the reception of news agency radiophotographs and news by satellite would spread rapidly around the globe.

News agency experts pointed out that the use of space communication for the collection and distribution of news and pictures would have two advantages over the radio communication system now employed. First, as already noted, communications between various news agency bureaux and newspaper subscribers in all parts of the world would be made easier and more reliable. Second, to the developing countries, especially in regions such as Asia and Africa where distances are great and communication facilities very limited, space communication would bring their first completely dependable contact with the rest of the world.

For the transmission of news and pictures generally, a successful satellite communication system would be significant in two ways. For one thing, it would provide additional high quality commercial communication channels for possible use in point-to-point transmission of news and pictures. (While facilities for this particular type of service are adequate at present, this condition will not hold indefinitely, and a reserve source of facilities for possible future needs would be helpful.) In addition, such a system would provide improved area-wide and world-wide reception of news and pictures in comparison with the present method.

Present methods of transmitting and receiving by high frequency radio have a number of shortcomings. One of these is erratic fading of the radio signal in high frequency communication over long distances. This can reduce the quality of reception, or interrupt it completely, at unpredictable times. Another is the need for changing frequencies for reception according to the time of day, the season, and even the sunspot cycle.

For the high frequency service, every morning and evening, difficult transition periods occur when the best reception frequency changes, usually very rapidly, from a low to a high frequency or vice-versa. In addition, frequencies must be changed at other times during each twenty-four-hour period because the optimum frequency varies gradually from hour to hour. As a general rule, this pattern is repetitive from day to day over a period of several months, but seasonal corrections have to be made several times a year. Finally, the eleven-year sunspot cycle has a strong effect on radio communications. During a three-or-four-year period of minimum sunspot activity in each cycle, the higher frequencies of the H.F. bands become less useful than at other times for communication purposes, and all the world's radio communications must be squeezed into the lower frequency bands. This increases interference between different services.

In order to minimize these various obstacles to clear and regular reception, complicated and expensive precautions must be taken. One precaution is to use two or more frequencies simultaneously to transmit the same information, either to increase reliability during difficult periods or for other reasons. As reception points relatively close to a transmitter require a lower frequency than points much further away, the use of more than one frequency is often necessary when transmitting simultaneously to widely separated points.

Another palliatory measure is diversity reception, which is the use of two separate radio receivers fed by separate antennas spaced an appreciable distance apart. This practice is based on the theory that as a fading signal becomes weaker at one antenna it will become stronger at the other. The cost of receiving equipment is practically doubled under this system, but it is considered essential for the reception of news.

News agency technicians believe that all these shortcomings will be eliminated or reduced by the use of satellites. Transition periods will not exist, because every frequency assigned for satellite use will be practically as good as any other, and this will hold true 24 hours a day all year round. Thus the troublesome changing of frequencies several times a day at both transmitting and receiving points will be eliminated. This will permit, in essence, fully automatic, unattended reception. It will also make the use of more than one frequency unnecessary, thus saving on the cost of extra channels, and permitting those channels to be used for other services.

The eleven-year sunspot cycle is not expected to have any effect on signal strength at any frequency proposed for use in satellite communication. Diversity reception will probably no longer be necessary, since fading is expected to be almost non-existent. The elimination of fading will be a boon in several ways. It will improve radiophoto reception, which at present, for technical reasons, cannot enjoy the benefits of diversity reception. For radio-teletype reception, it should make a second antenna and radio receiver unnecessary. The problem of finding space for the double antenna system would thus be simplified and costs would be reduced.

The possibility of solving so many problems, most of them serious and costly, is considered reason enough for any news agency with international interests or contacts to look forward hopefully to the successful establishment of space communication.

The special significance of space communication for news services in the developing countries has been noted both by representatives of world news agencies and by spokesmen for the press in the developing countries themselves. African news agency experts participating in a meeting on development of news agencies in Africa, convened by Unesco in Tunis in April 1963, urged governments of the region to "give due consideration, in their plans for the integration of national telecommunication networks, to the possibilities which are likely to

be offered in the not too distant future by space communication", and to ensure that, when space communication services are established, facilities be included "for the transmission of press messages within Africa and between Africa and other regions of the world".(39)

At present most of the developing countries have very few facilities for communicating with each other or with the rest of the globe. News agencies are gradually establishing radioteletype and radiophoto reception points wherever feasible, and taking advantage of commercial radio transmitting and wire line facilities for transmission of news and pictures wherever these facilities are available. Agency experts believe that this trend is bound to continue whether radio communication remains in its present state or leaps ahead suddenly into the space age, but that it will be greatly accelerated when commercial service via satellites is established.

In its early stages, as at present, the transmission of news and pictures would need to be done on a contract basis by governmental or commercial telecommunication agencies, which are able to spread the large cost of transmitting facilities over many subscriber services. Reception, on the other hand, is now handled to a large extent by the news agencies themselves and their subscriber newspapers, as the costs involved are much lower and the flexibility provided by the ability to set up reception points wherever required is of great advantage. To be of greatest value to news agencies, satellite communications would have to provide the same flexibility - which means primarily that the cost of the necessary receiving equipment could not be much higher than at present.

Will such be the case? As of mid-1963, news agency experts were not yet able to predict the answer to this key question, which will of course have an important bearing on the rapidity with which news agencies can expand their coverage in the developing countries, as well as elsewhere. While they knew that many of the component factors of the overall cost would be smaller (due to elimination of the use of more than one frequency and diversity reception), they were obliged to recognize the fact that other costs might be higher. They hoped, however, that the overall cost would be comparable with present costs.

It is apparent that users of space communications will enjoy many advantages. Better services with higher quality and reliability will be provided, reception at long distances will be facilitated and costs may be reduced. As already noted, however, the provision of space communication services will involve considerable expense for some time due to the cost of the satellites themselves as well as of ground stations and linking terrestrial networks.

In so far as they depend on news agencies for their world news, newspapers may be expected to benefit from space communication to the same extent as news agencies. This prospect has already engaged the attention of professional organizations of the press. The International Federation of Newspaper Publishers and the Commonwealth Press Union, to cite but two examples, have dealt with the issue at their conferences. Space communication is also of special interest to the comparatively few major newspapers which maintain their own correspondents abroad: these correspondents should logically have open to them satellite channels reserved for press dispatches. If space communication should prove to be less costly than communication by present means or bring about a general reduction in press rates, editors would be encouraged to ask for wider coverage of world news and thus to have a broader selection of material from which to select news reports for presentation to their readers.

It has also been suggested that, by the time a space communication system is working, journalists might have available to them small machines, roughly the size of portable typewriters, on which they could record their news reports on paper or magnetic tape; this tape would be utilized for retransmission in much the same way as teletypewriter tape is now utilized. The use of such tape might considerably speed up transmissions, thus adding to the news-carrying efficiency of the satellite system and therefore to its value where both news agencies and newspapers are concerned.

There is a second way in which space communication may well be of vital importance to newspapers: for the distribution, rather than the collection, of news.

Up to recent times, a newspaper, no matter what its size or importance, was essentially a local enterprise, printing all its editions in one spot, from which they were distributed in the city of publication or further afield. Within the present century, however, and especially since the end of World War II, there has been an increasing tendency among major newspapers to issue editions in more than one city, sometimes in more than one country. In order for editions to be issued simultaneously, or almost simultaneously, at widely separated points, dependable high-speed transmission facilities, such as facsimile and teletype-setting, are a vital necessity.

In mid-1962, a United States newspaper, which publishes editions in New York and Paris, carried out an experiment which showed that this type of service can be performed through space communication. The newspaper transmitted several articles from New York to its edition in Paris through a communication satellite, as well as whole pages to and from the satellite. Simultaneously, the newspaper sent the same information from New York to Paris via conventional communications channels. While some of the information sent by conventional means was received garbled in Paris, the information sent by satellite was received without errors.

The advent of space communication may therefore be expected to accelerate the current trend towards newspaper expansion and make possible the simultaneous publication of newspaper editions or

features in several countries or throughout whole regions. With vastly increased and dependable communication facilities available, newspapers may be able to expand, nationally and internationally, on a scale that has not been possible before.

Radio broadcasting and television

The success of the experimental television relays which have recently been conducted by satellite in both directions across the Atlantic has impressively demonstrated the potentialities of this medium for the world-wide exchange of live television programmes. There is no doubt that such exchanges could greatly widen the range from which live programme material could be drawn. When satellite systems provide regularly available television links between continents, they will open up a rich field from which the television services of all countries could benefit.

Space communication also has significant implications for radio broadcasting. The sound component of a television programme can be transmitted along with the vision component and there appears to be no technical reason why radio as well as television programmes should not be exchanged by satellite. This is an important consideration, particularly for the developing countries. For, although space satellites are popularly associated with television, it should not be forgotten that many areas of the world cannot yet receive reliable, good quality sound. The advent of space communication, coupled with the timely development of low-cost transistorized receivers, which could be used to pick up satellite transmissions relayed by local stations, might give a great stimulus to clearer, more reliable radio broadcasting.

At the same time, it should be recognized that the use of space communication through the broadcasting media raises more numerous and more complex problems than does its use through the press. Recent conferences of professional organizations of broadcasters, such as the European Broadcasting Union and the International Broadcasting and Television Organization, have in fact been considerably concerned with the technical, programming, economic and legal problems of space communication.

Both for radio and for television, a satellite system could be used in three possible ways. The first, as illustrated in the recent trans-Atlantic tests, is to relay live programmes over long distances for exchange between countries in different parts of the world for retransmission by local stations in the receiving country. In this case the satellite system provides a point-to-point link between the broadcasting organizations of two countries or of two continents.

The second possibility is to carry programmes from one country direct to listeners and viewers in another country. As already observed, this form of broadcasting raises a number of technical and other problems and does not show promise of realization until further technological development has been achieved. The third possibility is the use of a synchronous satellite as a means of extending the coverage of a single station over the whole of a large country or over a group of adjacent countries. This possibility also awaits a further breakthrough in technological development.

It is the first possible use of a satellite system - that is, the relay of programmes for local distribution - which is mainly dealt with here. This is already an accomplished fact, though on a relatively modest scale.

The future use of space communication will depend on its viability as against other methods of transmission. In the field of radio, existing methods of broadcasting provide a relatively simple means of achieving national coverage. The exchange of live programmes between countries throughout the world can also be carried out by conventional means - land-lines, submarine cables, microwave systems, point-to-point high frequency links, and direct reception of high frequency (short-wave) broadcasts. Reception by these means is, however, in many instances far from perfect.

For those radio programmes in which there is no element of topicality or suspense, international exchange can also be carried out effectively by means of recordings on magnetic tape. Satellite systems, however, can carry a large number of sound channels simultaneously and it is possible that the use of such channels for carrying radio programmes would be economic if, for example, the channels were employed at a time when other traffic is light.

In that event, programmes could be broadcast once for all interested receivers, thus eliminating the need for making "x" number of tapes for distribution. Language barriers could to a considerable extent be overcome if there were local translators at ground stations to "dub in" the appropriate language. Educational and other institutions on a global scale could then tape broadcasts and build up extensive and varied radio libraries.

For television, space communication perhaps holds greater promise, due largely to the fact that there are important routes over which no alternative method is yet available for the transmission of live programmes. Because of the relatively wide frequency band required, and the propagation characteristics of the frequencies used, television transmission across oceans cannot be achieved over high-frequency radio links and the use of microwave links would require a number of intermediate stations carried by ships or aircraft, or installed on conveniently located islands. Submarine cables could no doubt be developed for television transmission over long distances but would be costly because of the bandwidth required. Methods have been proposed for compressing the bandwidth of a television signal, but so far none has proved worth while.

In the field of television, in short, satellites open up a new era by affording faster communication

over long distances than has ever previously been possible. Through the international exchange of live programmes, viewers are enabled to see far-off events as they happen and when they happen. The implications of this technological breakthrough, particularly for television journalism, are manifold.

Certain of the purely technical problems of television exchanges via satellites have already been solved. The technical quality of the received pictures has been remarkably high. Many of those exchanges across the Atlantic were free from fading, of good definition and contrast, and had a low level of noise. Successful experiments have been made in the transmission of pictures in colour, which demand a very high standard of technical performance.

As already noted, ground stations must be accessible to existing national and international networks. In North America and Europe, connexions have already been established between them. For example, the existence of the Eurovision network in Western Europe and the Intervision network in Eastern Europe makes possible the dissemination of programmes at any of the European ground stations over almost the whole continent. The organization of such relays, however, demands considerable care and can be complex, particularly if sound commentaries in different languages have to be combined with the visual element.

A further difficulty is that nearly all television services in Europe and Africa use the 625-line/50 field standard, whereas the 525-line/60 field standard is established in most countries of the Americas and in some Asian countries. Consequently, standards converters must be used for live relays between one system and another. This applies also to programmes exchanged on magnetic tape. In the United Kingdom the 405-line/50-field system is in use (though it will ultimately be replaced by 625 lines), and in France, Belgium and a few other countries the 819-line system is used.

Standards conversion unavoidably involves some degradation in picture quality, especially in cases where there is a difference in field rate as well as the number of lines. Existing converters are sufficiently good for programme exchanges and further improvements may be expected. No method of conversion has, however, yet been developed for colour television.

So far satellites have been made available for television exchanges on an experimental basis and for short periods of time. The available period in each orbit varies from about 10 to 100 minutes. The use of satellite facilities on a large scale would require that circuits be regularly available over the principal routes and at reasonable rates.

The use of satellite systems for the exchange of television programmes is obviously of special value for topical items and those in which there is an element of suspense. It is therefore in the field of news, public events and sport that space communication can provide a particularly valuable enrichment of programmes. It is the visual presentation that is most important, especially since language differences will often necessitate the translation of the spoken word. Since the time element is vital, the use of non-synchronous satellites that are available for only a short time in each orbit presents difficulties and particularly so if the route is such that two hops are required. Synchronous satellites would have an important advantage in this respect.

Live television via satellite, it may be expected, will be most frequently used to cover the great "human events" - a summit meeting, a space flight, a coronation or the Olympic Games. Within limits, neither time nor money will matter, for the essence of such events is immediacy. For more routine news, satellites will be used in a more routine way. For example, news cameramen will film a meeting between two European statesmen in Paris. The Paris correspondents for the U.S. broadcasting networks will narrate the film, add other background information and transmit the material by satellite to the newsrooms of the networks in New York. World news, in other words, will be covered ordinarily just as domestic news has been covered, except that a new dimension will be added. Until now, it has been almost impossible to transmit films of events taking place in the afternoon in Western Europe to New York in time for evening newscasts in North America. Television news, in its coverage of overseas events happening late in the day, has been scarcely different from radio news, except for the projection of the image of the commentator reading it. This need no longer be so. The most significant contribution of space communication in this field may be simply to enable television journalism to be more visual.

In cases where neither topicality nor suspense is a vital element, the exchange of recordings on magnetic tape or on film would usually fill the need. Such recordings can be flown by jet aircraft to almost any part of the world within 24 hours. The question of timing is important in relation to time differences (i.e. in the case of east-west or west-east communication) and peak viewing hours in the receiving country. Unless a news item is of quite exceptional importance, it would be sufficient for it to be shown to domestic viewers on the evening of the day when it occurs. There would be little justification for using satellite services if the programme in question has to be recorded in the receiving country for subsequent use at a convenient viewing period in circumstances where a film or tape could be made available in time.

Unless the circumstances are such as to introduce an element of topicality, entertainment and instructional programmes (such as documentaries, variety, drama, opera, ballet and educational or cultural transmissions generally) could be exchanged in recorded form. On the other hand, it should be noted that as in the case of radio programmes, satellite communication could be used to distribute such programmes simultaneously to a number of broadcasting organizations, thus reducing the

number of tapes or films required for distribution. Both means of high-speed transmission would facilitate the establishment of television libraries by educational and other institutions.

The effective development of television exchanges, whether by satellite or other means, will of course depend very largely on the availability of receivers for home or community use. There is a particular need in the developing countries for receivers which could be used in non-electrified areas. Some progress has been made in the production of battery-operated transistor sets and experiments are now being conducted in the development of receivers which would use other sources of power.

An expert from the United Kingdom has meanwhile suggested that it would be technically possible to develop a compromise between radio and full-scale television reception. The new facility would consist of a low-cost and simple slow-scan facsimile-plus-sound receiver which would operate on the normal radio bandwidth, without requiring the approximately 1000-fold spectrum space needed by television. Such a device could reproduce line-drawings and cartoons at an adequate speed for educational purposes, where the same picture has to stay in view for a minute or two. It would be the remote equivalent of the teacher's blackboard and would make possible the teaching of languages to people who did not know their instructor's tongue. By this means, it is suggested, it would be possible to tape programmes suitable for classes distributed over a wide region.(40)

If direct broadcasting from satellites to viewers and listeners should prove feasible, a new range of possibilities both for national and international broadcasting would in certain cases be opened up. Here again, time differences and language differences would present problems. The entire prospect of direct broadcasting remains one of the most speculative aspects of space transmission. However, if the numerous technical and other problems affecting direct broadcasting could be solved, it might be possible to envisage the day when viewers would have a choice not only among half-a-dozen national or local television programmes but, as they now have in the field of high-frequency radio broadcasting, among stations throughout the world. The great advantage of direct broadcasting would be that a single transmission could reach a vast audience over a wide area.

Space communication has raised many programming problems to which broadcasters are now giving considerable study. As indicated earlier, the most immediate use of satellites is for international newscasts and it is this aspect which has captured first attention. It is clear from the essentially global nature of space communication that the trend towards co-operation between broadcasting organizations in many countries will be accentuated by this new technique.

Many of the issues raised by space communication are an extension of the problems encountered in programming through conventional channels. Thus, in the fields of copyright and performers' rights, it has given a new dimension to legal problems which for a number of years have preoccupied radio and television organizations. The new factor is that relays or re-emissions are made from satellites in space which are outside territorial limits.

In the field of copyright, it would at least be clear that if the original emission(s) and the post-satellite re-emission(s) and the final destination(s) were all in areas in States bound by an international copyright system such as the Unesco-sponsored Universal Copyright Convention or the Berne Union, adequate and orderly protection would normally be assured without reference to the satellite emission. Short of these circumstances, there are so many possible combinations that could bear on protection, including the possibility of reference to the satellite emission, that no general rules can be laid down.

The question of performers' rights is even more complex. The Unesco-sponsored "International Convention for the Protection of Performers, Producers of Phonograms and Broadcasting Organizations" (Rome Convention) of 1961 attempts to regulate performers' rights on a world-wide basis. However, even if the Rome Convention were in force between all the States bound by an international copyright system, there would appear to be problems of the application of the convention, bearing on satellite emissions, which would need to be studied by the Intergovernmental Committee to be set up under the Convention.

Other fields

It is apparent that the development of space communication will open the way to applications for the world-wide flow of information which are not necessarily linked to the press, radio broadcasting and television.

Among significant examples is the use of space communication in the processing, classifying and transmission of data. It may thus help to make more readily available in usable form the vast store of knowledge which has resulted particularly from recent advances in science and technology. This application is all the more likely since the high-speed transmission of data by satellite will in many cases require only radio or telephone bandwidths.

Digital data has already been transmitted by satellite between computers in North America and Europe at a speed of 3,300 words a minute and the possibilities of installing tele-computer systems throughout Europe, linked to national telephone networks, are now being explored. The immediate possibilities of applying data transmission in the fields of science and technology have been illustrated by recent satellite experiments such as the broadcasting of weather maps for international forecasts and the dispatch of medical data between continents.

In time, satellites might be used with domestic telephone networks, computers and other facilities to provide a world-wide data transmission service

for scholars, scientists, governments and educational, scientific and cultural institutions. Such a service could not only tap contemporary sources of information but also help to make available the accumulated knowledge of the past through the dispatch of microfilm copies of books between libraries in different regions. Since it is now possible to store any written material or any illustration in electronic form such as video tape, the service might ultimately provide for the establishment of central electronic libraries in each region as part of the world communications network. Readers or scholars would thus be able to call for any document and see it flashed via satellite on their television screens.

Space communication is likely to have unpredictable and ultimately astonishing effects on person-to-person communication generally. For example, it may accelerate the growing tendency of our time to develop contact between people from different countries for the discussion and solution of common problems and the exchange of information. Thus, when adequate facilities have become available and costs are sufficiently low, satellites could be used for international conferences and seminars in which the participants would confer with each other by means of closed-circuit television.

CONCLUSIONS AND SUGGESTIONS

It is evident from the foregoing report that space communication has significant long-term implications for the promotion of Unesco's aims. The report embodies a number of conclusions and suggestions which are summarized below.

1. Space communication is evolving at a time when there is a world-wide need for the expansion of telecommunication to transmit a greater volume of words and images over greater distances. It is apparent that, even at its present incipient phase, this new technique contributes to the development of telecommunication as a whole and that it will do so to an increasing extent. It will ultimately provide links for new global communication systems.

2. Space communication is a technique which enlarges the range and scope of the press, radio broadcasting and television and which, as it develops, will enhance the rôle of these mass media in the dissemination of information, the rapid spread of education, and cultural exchange.

3. In its application specifically through the mass media, it seems likely that space communication will first be used regularly for the intercontinental transmission of press messages and for radio and television relay of events of world interest. Even these initial uses of space communication, by providing a long-distance link between peoples, can help increase mutual knowledge and understanding.

4. As part of a growing trend to use new techniques of communication for more than purely information purposes, space communication may in the long run help in promoting the spread of education. For the developing countries it may be of service in the years ahead in their programmes for rapid progress in education and will also be a means of bringing them into closer contact with other parts of the world, as well as with each other.

5. Programming for space communication will present complex problems which even at the present early stage might be studied by broadcasting services in co-operation with interested organizations, including those in the educational field.

6. A first essential in the development of space communication services is the allocation of frequency bands at the Extraordinary Administrative Radio Conference on Space Communications being held at Geneva in October 1963. The allocation should take due account of the long term frequency requirements of the mass media, together with other communication services.

7. It is anticipated that, as a sequel to the forthcoming Geneva conference, technical studies of the application of space communication will be made under the auspices of the competent organs of the International Telecommunication Union. Such studies might examine the measures necessary to assure technical compatibility among radio and television programme relay facilities in different countries. Unesco would be prepared to assist in these studies in its fields of competence.

8. As the General Assembly of the United Nations and the General Conference of Unesco have affirmed, international co-operation is essential for the solution of many of the problems posed in developing space communication. These problems might usefully be studied at an intergovernmental conference which could in due course be convened subsequent to the 1963 meeting, as suggested by the Secretary-General of the ITU, to review the more general aspects of the development of space communication. In view of the many features of interest to Unesco, as evidenced in the foregoing report, the Organization would wish to be closely associated with such a conference.

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SPACE RADIOCOMMUNICATION CONFERENCE

Corrigendum N° 1 au
Document N° 189-F/E/S
6 novembre 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMISSION 6

COMPTE RENDU
DE LA DEUXIEME SEANCE DE LA COMMISSION 6
Vendredi 1er novembre 1963, 14 h.30

Point 3 a) ii), Remplacer les 3 dernières lignes par les suivantes :

"**. . . . . .**
l'envoi d'un graphique indiquant l'emplacement de leurs stations des services de Terre n'est pas nécessaire et ne justifie pas le supplément de travail que cela imposerait

---

Does not concern the English text

No concierne al texto español

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 189-E
5 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

SUMMARY RECORD
OF SECOND MEETING OF COMMITTEE 6 (REGULATIONS)

Friday, 1st November, 1963 at 2.30 p.m.

Chairman : Mr. J.A. AUTELLI (Argentine)
Vice-Chairman : Mr. A.B. EL SIDDICK EID (United Arab Republic)

1. Summary Record of the first meeting (Document No. 73)

On page 4 of the Spanish version, the words "al control de" in sub-paragraph viii), line 5, should be replaced by "a la informacion que debe proporcionarse".

This record was agreed.

2. Report of Working Group 6A (Document No. 143)

The Chairman of Working Group 6A, Mr. J.M. Power (New Zealand), briefly introduced the documents submitted by that Working Group to Committee 6 (see paragraph 3 below).

3. Examination of the documents submitted by Working Group 6A for the amendment of the Radio Regulations (Geneva, 1959)

a) Document No. 144 (Article 9)

i) The Committee decided after the discussion began with the Delegate of Mexico, to adopt a guard band of 6 Mc/s for the avoidance of harmful interference (see No. 492A).

ii) The Delegate of Italy requested that it be recorded that in the view of the Italian Administration the provision requiring administrations seeking co-ordination to send a diagram indicating the location of terrestrial stations was unnecessary, and would place upon administrations an inordinate amount of extra work.

iii) Document No. 144 was agreed to with minor amendments.

b) Document No. 145 (Article 9A)

i) Mr. Parker (United Kingdom) pointed out that in consequence of the work of Committees 4 and 5, certain amendments would be required to the new Article 9A. The necessary amendments, however, raised no question of principle. It was agreed that this could be left to the drafting group.

ii) A paragraph dealing with earth stations on board ship or aircraft was also agreed to, and handed over to the drafting group for insertion in the appropriate place in the new article.

c) Document No. 146 (Appendix 1) : with certain small amendments was agreed.

d) Document No. 147 (Appendix 1A) : was agreed, with certain small amendments.

e) Document No. 148 (No. 114 of the Radio Regulations) : was agreed.

f) Document No. 149 (Recommendation relating to the notification of frequency assignments for joint space telecommunication systems.

The Delegate of Canada announced that in view of the fact that the substance of the Recommendation (which had been sponsored by Canada) had since been covered elsewhere, the proposed recommendation was withdrawn.

g) Document No. 152 (Resolution relating to the provision of information regarding international satellite systems): was agreed.

4. At this point the meeting was adjourned, Items 4, 5, 6 and 7 of the Agenda (Document No. 151) being left for consideration at the third meeting of Committee 6.

Reporter : Chairman :

A. FORTNAM J.A. AUTELLI

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 190-E
5 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Australia

PROPOSED AMENDMENT TO DOCUMENT No. 171

Page 17, Appendix 1A, Section A, paragraph 2:

In the second sentence, after the word "system" insert the words "except for resonant passive satellites [1]".

Footnote

1) For the purposes of this Appendix, resonant passive satellites are passive satellites which are identical resonant objects dispersed fairly evenly in large numbers in orbits around the earth.

Page 26

Insert:

Section D bis. Basic characteristics to be furnished in Notices relating to resonant passive satellites.

Item 1. Resonant frequency or frequencies.

Item 2. Bandwidth - Indicate the bandwidth in Mc/s between half power points for each resonant frequency.

Item 3. Date of putting into orbit.

Item 4. Expected life characteristics.

Item 5. Oribital information - Indicate perigee, apogee, inclination of orbital plane or planes.

Item 6. Planned density of satellites - Indicate the number planned per cubic kilometer.

Reason: Draft texts concerning notification for passive communication satellite schemes require only the earth station transmitting and receiving frequencies to be notified. Resonant passive satellites in orbit consititute interference hazards which may be different in their technical and other characteristics to those indicated by the associated transmitting and receiving characteristics of the passive communication satellite system. In addition, they also constitute interference hazards to other space services whether or not there is an associated earth station transmitter.

In the interests of complete information, and to assist in the control of interference, it is considered that the basic characteristics of resonant passive satellites should be notified.

L.M. HARRIS

SPACE RADIOCOMMUNICATION CONFERENCE

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5 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

AGENDA

FOR THE 3RD PLENARY MEETING

Tuesday, 5 November at 14.30 hours

1. Second series of "blue" texts[1] submitted by the Editorial Committee - conclusion of discussion (Document No. 171)
2. Draft recommendation by the Chairman of the Conference (Document No. 180)
3. First series of "blue" texts[2] submitted by the Editorial Committee (Document No. 167)
4. Third series of "blue" texts[2] submitted by the Editorial Committee (Document No. 172 and Addendum)
5. Fourth series of "blue" texts[2] submitted by the Editorial Committee (Document No. 175)
6. Fifth series of "blue" texts[2] submitted by the Editorial Committee (Document No. 176)
7. Miscellaneous

Gunnar PEDERSEN
Chairman of the Conference

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1) Texts submitted to Committee 7 by Committee 6

2) Texts submitted to Committee 7 by Committee 5

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 192-E
5 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Delegation of the S.F.R. of Yugoslavia

INTERNATIONAL TECHNICAL COOPERATION AND ASSISTANCE IN THE FIELD OF SPACE RADIOCOMMUNICATIONS

The new radiocommunication technique using earth satellites opens the door wide to unprecedented developments on a world scale, of telecommunication, radionavigation, meteorology and the great variety of space research.

It will permit great progress towards the establishment of wider and more reliable telecommunication means between all countries of the world so no matter how distant they may be geographically. The results to be reached by the various forms of space research and radio astronomy will constitute real wealth for the whole of humanity.

Conscious of the importance of these new techniques, the General Assembly of the United Nations in its Resolutions No. 1721 (XVI) and 1802 (XVII) the Economic and Social Council by its resolution of July 1963, as well as the Committee on the Peaceful Uses of Outer Space (Document No. A/5549 of 24 September 1963) have underlined the prime importance of space radiocommunications and have recommended to the competent specialized agency - the International Telecommunication Union - to take the necessary measures so that, as soon as possible, space telecommunication techniques may be of a general application at the disposal of all countries.

Furthermore, the results of the I.T.U.'s efforts in this field are awaited with the greatest interest by the United Nations, UNESCO and the other international organizations which are themselves prepared to use the total possibilities offered by space telecommunication in order to extend on a world-wide scale their humanitarian activities and to make better known the efforts they pursue to assure the prosperity and peace of the world.

The work of the Extraordinary Administrative Radio Conference - that is to say, the recognizing of the new radio services resulting from space techniques and the rearrangement of the Frequency Allocation Table in order to allocate the necessary bands to these services - represents only one step, surely as important as it is indispensable, towards new activities of the I.T.U. in this field.

But the debates of the Conference have without doubt confirmed that the countries Members of the United Nations and of the I.T.U. find themselves in situations which vary greatly as regards the possibilities of the utilization of the new radiocommunication techniques by satellites. Except for a very limited number of countries which have the necessary technical means and economic power, the large majority of countries of the world - and especially the new or developing ones - are not in a position either to make the necessary studies on the possibility of co-existence in the same frequency bands of space radio services and other very important radio services, or to make the studies and tests indispensable to decide on the manner in which their existing telecommunication networks could be integrated to telecommunication systems by satellites. A large number of these countries do not even have the specialists necessary to follow usefully the work concerning the new space radiocommunication technique of the various I.T.U. organs, such as, for example, the C.C.I.R. or this Extraordinary Administrative Radio Conference.

In these circumstances it is obvious, that without thorough and properly directed international technical cooperation intended to help the countries which are less developed from the technical as well as from the economic point of view, it will not be practically possible to develop satisfactory space telecommunications. Thus, it is necessary to consider the studying, the setting up and realization, within the shortest time possible, of one of the very important plans which can be conceived in the field of international technical cooperation. The question is to organize, within or under the aegis of the I.T.U. with the indispensable collaboration of the United Nations, a project which would include broadly speaking the study of the practical questions faced by the various countries in the development of space radiocommunications, the creation of a system of education and training of specialists in space radiocommunications and the study of the technical means t to be created in such countries so that they can participate in any space telecommunication system which might be developed in the future.

There is no doubt that the specialists gathered at this Extraordinary Administrative Radio Conference are in the best position and are the most competent to make a recommendation on this matter to all the Member countries of the Union and to the appropriate organs of this organization. Such is the purpose of the draft resolution which is submitted herewith for consideration by the Conference.

Annex : 1

A N N E X

DRAFT RESOLUTION

RELATING TO INTERNATIONAL COOPERATION AND TECHNICAL ASSISTANCE IN THE FIELD OF SPACE RADIO COMMUNICATIONS

The Extraordinary Administrative Radio Conference, Geneva, 1963,

having carefully considered the frequency requirements for the various applications of space techniques;

having decided, in the light of the studies and recommendations of the C.C.I.R., as well as the proposals submitted by the different administrations, to allocate on a world-wide basis to space radiocommunications frequency bands, with a few exceptions, shared with the other terrestrial services;

considering that a great number of countries will not be in a position to take immediately advantage of the communication satellite techniques for the development of their various telecommunications services;

recognizing that the problems raised, the sharing of frequency bands between the terrestrial services and the space services, as well as the practical use of communication satellites, appear under similar forms in all countries and that, from the economic, operational and technical point of view, there would be advantage in studying them within the framework of a world-wide plan;

resolves

that in conformity with Resolutions Nos. 1721 (XVI) and 1802(XVII) of the General Assembly of the United Nations, the resolution of July 1963 of the UNESCO, Document No. A/5549 (September, 1963) of the Committee on the Peaceful Uses of Outer Space, special measures should be taken as soon as possible to the effect of organizing on a world-wide scale an efficient plan of cooperation which would permit the solving, on behalf of and in the evident interest of all countries, of the problems raised by the development and the common utilization of the services of space radiocommunications;

invites

the Administrative Council, with a view to evolving the above mentioned plan, to elaborate during its next Session the appropriate programme of action, concerning inter alia

a) a study, made for example by a panel of highly qualified experts, of the implementation of a world system of space radiocommunication and of its technical, operational and economical aspects, indicating also, as precisely as possible, the modalities of participation, in this system, of the countries members of the I.T.U., their networks of telecommunications included;

b) organization of assistance in the matter of education and training, of corresponding specialized staff in the field of space radiocommunications, as well as of the special service of informations of scientific and technical nature, for the benefit of all administrations interested in the planning, construction and operation of earth stations which have to be integrated into the above mentioned world system of space services;

requests

the Secretary-General of the I.T.U., with a view to accomplishing the programme of action fixed by the Administrative Council, to solicit from the competent agencies of the United Nations Organisation, the special funds necessary for the realization of international technical cooperation and assistance in the field of space radiocommunications.

Vojin POPOVIC

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 193-E
5 November, 1963
Original: English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

United Nations

The United Nations puts forward the following statement to the Extraordinary Administrative Radio Conference.

The introduction of space communications through communication satellites faces mankind with new opportunities and new challenges, which will have far-reaching consequences for all peoples of the world. Delegates to the Extraordinary Administrative Radio Conference are aware of the interest shown by the United Nations in the peaceful uses of outer space and in space communications as an essential field of outer space activity. The importance which the General Assembly attaches to this matter can easily be appreciated by the fact that space communications is one of the topics discussed by the 28-power Committee on the Peaceful Uses of Outer Space established by the General Assembly. This committee has studied the two I.T.U. reports on space communications and will continue to give attention to this question.

United Nations Resolutions on Space Communications

Following the reports of the above mentioned Committee, the U.N. General Assembly has adopted two important resolutions dealing with the peaceful uses of outer space, and in each case communication satellites were specifically mentioned, as well as this Extraordinary Administrative Radio Conference. In Resolution 1721 (XVI) of 1961, the General Assembly recognizes the common interest of mankind in furthering the peaceful uses of outer space and the urgent need to strengthen international co-operation in this important field, and expresses the belief that "the exploration and use of outer space should be only for the betterment of mankind and to the benefit of States irrespective of the stage of their economic and scientific development". With particular reference to space communications, the General

Assembly expresses the view that "communication by means of satellites should be available to the nations of the world as soon as practicable on a global and non-discriminatory basis", (Resolution No. 1721 (XVI) and emphasizes "the importance of international co-operation to achieve effective satellite communications which will be available on a world-wide basis". (Resolution No. 1802 (XVII).

For its part, the U.N. Economic and Social Council at its last Session, in July 1963, adopted Resolution No. 980 c (XXXVI) on International Cooperation in the Peaceful Uses of Outer Space. The Council noted the steps taken by the I.T.U. "regarding the use of telecommunications for the development of the various peaceful uses of space, in particular telecommunication satellites" and expressed "its appreciation to the I.T.U. for its prompt and particularly active response" to the two above mentioned General Assembly Resolutions (1721 (XVI) and 1802 (XVII)). The Council furthermore called "the attention of all member states to the importance of the action in which the I.T.U. is engaged with reference to the peaceful uses of outer space" and called upon member states to participate in this Conference.

The Committee on the Peaceful Uses of Outer Space, meeting again at the beginning of September in New York, noted with interest the second report of I.T.U. on studies which it has conducted on telecommunications and the peaceful uses of outer space, and continued by drawing attention to :

"i) the successful achievements of I.T.U. in the field of space communications and,

ii) the necessity for a careful study of the various programmes and suggestions put forward in the second report of I.T.U.".

The Committee also

"b) reiterates that international space communications should be available for the use of all countries on a global non-discriminatory basis,

c) urges that due consideration should be given to the technical recommendations of I.T.U. in the development of space communications,

d) recommends that all member states, in accordance with the recommendation contained in the report of the Committee on the Peaceful Uses of Outer Space to the General Assembly at its Seventeenth Session (A/5181), take further appropriate steps, using to the fullest extent the possibilities offered by the technical co-operation programmes, to develop and extend terrestrial communication systems in various parts of the world

so that all Member States, regardless of the level of their economic, scientific and technological development, will be able to benefit from international space communications;

e) invites the specialized agencies and other competent international organizations to assist in the development and extension of such terrestrial systems."

It may also be remembered that satellite communications on a world-wide basis will provide opportunities of particular importance to developing areas. The General Assembly, having expressed the belief that outer space activity should be of benefit to all states, irrespective of the stage of their economic and scientific development, stated that "sympathetic consideration" should be given to requests from member states for technical and other assistance for the development of their domestic communication facilities "so that they may make effective use of space communication" (Resolution No. 1721 (XVI)). In the above mentioned recommendations by the U.N. Committee on the Peaceful Uses of Outer Space, this aspect has again been emphasized.

As noted above, the General Assembly in Resolution 1721 (XVI) and 1802 (XVII) recognized outer space activities, including space communications, as a field belonging to mankind as a whole. The first attempts at using outer space have already added new dimensions to many fields of human endeavour and offer opportunities for action and research which reinforce the need to adopt a global perspective as the only possible framework for outer space activities.

This Conference is dealing with technical aspects of space communications. Other competent bodies of the United Nations will need to discuss further aspects of space communications pertaining to problems which must be solved in order to achieve effective space communications via communication satellites, as set out in the General Assembly Resolutions.

United Nations requirements for space communications

The United Nations is vitally interested in the development of a global communications system, both for informational and operational purposes. At its first session in 1946 the General Assembly stated the principle that the goals of the United Nations cannot be realised without the peoples of the world being kept informed of its aims and activities (Resolution 13 (I)). At the same session, the Assembly approved a recommendation which said, in part "the Department of Public Information should actively assist and

encourage the use of radio broadcasting for the dissemination of information about the United Nations. The United Nations should also have its own radio broadcasting station or stations with necessary wavelengths for communication both with memebers and with the branch offices, and for the origination of United Nations Programmes" (Resolution No. 13 (I)).

A comprehensive plan designed to give effect to the above mentioned recommendations was prepared during 1947 by an Advisory Committee on United Nations telecommunications. In 1948 the General Assembly approved "in principle the establishment of a United Nations telecommunications system" and reaffirmed "the United Nations' position as an operating agency in the field of international telecommunications". (Resolution No. 240 (III)). However, for financial reasons, it was not possible to establish such a system but only to provide for certain limited facilities. With the advent of satellite communications, the United Nations will be for the first time in a position to implement the General Assembly resolutions calling for a United Nations world-wide telecommunications system, without the United Nations having to create its own facilities.

The General Assembly recognized the value of space communications to United Nations telecommunications when noting in 1961 "the potential importance of communications satellites for use by the United Nations and its principal organs and specialized agencies for both operational and informational requirements" (Resolution No. 1721 (XVI)) and stating in 1962 that "communication by satellite offers great benefits to mankind as it will promote the expansion of radio, telephone and television transmissions including the broadcast of United Nations activities, thus facilitating contact among the peoples of the world" (Resolution No. 1802 (XVII)).

It would follow from the resolutions of the General Assembly and the agreement between the United Nations and the I.T.U. that all Administrations participating in the establishment and/or operation of space communication facilities should take into account the requirements of the United Nations, and that the United Nations enjoy the same privileges as regards access and usage as those accorded to governments.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 194-E (Rev.)
7 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

SUMMARY RECORD OF THE THIRD AND LAST MEETING
OF COMMITTEE 6 (REGULATIONS)

Saturday, 2 November - 9.30 a.m.

Chairman : Mr. Juan A. AUTELLI (Argentine Republic)

Adoption of the agenda

Document No. 161 was adopted with the following amendments :

- the item "Other business" was renumbered Item 6.
- a new item 5 was inserted: it concerned the examination of the last paragraph on page 3 of Document No.32(Rev.) (U.S.S.R.).

Item 1 of the agenda : first report of Working Group 6B (Document No. 102).

Mr. Willens, Chairman of Working Group 6B, introduced the document and said that the Committee would have to decide whether the square brackets should be deleted.

Amendments decided by Committee 6 :

116A ADD All the square brackets were deleted. The wording was retained. It would be for Committee 5 to delete the footnotes if necessary.

711A ADD The square brackets were deleted.

735-1-MOD 1) In the French and Spanish texts the words "Telecommunications par satellites" and the Spanish equivalent should be replaced by "services spatiaux" and the Spanish equivalent.

2) The retention or deletion of the words "space service" gave rise to a lengthy discussion. Some countries thought that the words should be deleted so that a space station could always be identified; others thought that if the transmission of identifying signals was impossible (confirmation of an actual situation), No. 737A - to which reference may be made - enables the station to be identified by other means. The words concerned should therefore be kept.

A vote was then taken, the results of which were :

In favour of keeping the words "space service", without the square brackets : 21 votes

Against retention of these words : 4 votes

737A ADD After a long discussion about the need for all space stations to have a means of identification, the following new version of No. 737A ADD was unanimously approved :

"737A ADD - In transmission of identifying signals by a space station is impossible, it may also be identified by, etc....." (the rest of the text given in Document No. 102 unchanged).

773A ADD As a result of the foregoing, the Committee decided to adopt the following new draft :

"773A ADD - When call signs are used in the space service, it is recommended that these call signs consist of :

- two letters, etc. ..." (the rest of the text in Document No. 102 unchanged).

807A ADD The Chairman of Working Group 6B proposed that the new list should be numbered VIIIA. Committee 6 left it to Committee 7 to decide on this point.

- The square brackets enclosing the number to be given to the List were kept; the others were deleted.

815 MOD - In the fifth line of the proposed text, it was decided to delete : "and (/VI bis/);

- In line 7, the phrase : "and (/VI bis/)" was replaced by "Lists Ia VI and /.../".

826 ADD The square brackets in the first line were deleted.

The number of the list appearing in square brackets in the second line will be amended by Committee 7.

831 MOD The same remark applies to the designation of the new list.

With the above amendments, the contents of Document No. 102 were approved.

At the request of France, the Committee went on to examine that country's proposal for No. 711 of the R.R., set out in Document No. 7. In order to avoid amending No. 711, France proposed that the following text be inserted after that Number :

> "711A ADD - When interference is caused to a service operated by an earth station, the administration having jurisdiction over the receiving station experiencing the interference may also approach directly the Administration having jurisdiction over the interfering station."

The Committee agreed unanimously to the inclusion of the above text in Article 15.

Item 2 of the Agenda : examination of the second report by Working Group 6B (Document No. 136).

Mr. Willens, Chairman of Working Group 6B, introduced the document briefly and thanked the members of the Group who had prepared it.

Summary of the discussions

There was a lengthy exchange of views on the layout of the new list contained in Annex I of Document No. 136. The U.S.S.R. and some other countries thought that the information relating to Telecommand and Telemetering should be placed in a separate section. Other countries considered that that information and the principal space services to which it referred should preferably be incorporated in the same part of the list. To do so, the columns relating to Telecommand and Telemetering would have to be retained in that part.

It was finally agreed unanimously that the following note should be inserted, with the Drafting Group deciding on the place of insertion :

"For those cases where these data must be provided, see No. 639A,

Annex 1 to Document No. 136 was approved with the following amendments :

- Page 3 - the word "Telemetry" in column 6 of the English text should read "Telemetering";

- Page 19 should be put in square brackets; Committee 7 would decide whether or not that page should be deleted in the light of the work of Committee 4.

- Page 23 of Document No. 136 (Broadcasting-satellite stations) was deleted.

Annex 2 to Document No. 136 was approved subject to the following amendments :

- the line "[E B Broadcasting-satellite station]" was deleted;

- the line "T K Space tracking station" was put in brackets. It was left to Committee 7 to decide finally, in the light of the work of Committee 4, whether that line and the five preceding lines left in brackets should be retained or deleted.

The Chairman then introduced the proposals of Australia (Document No. 34) and Mexico (Document No. 36) forwarded to the Committee by Working Group 6B and dealing with the termination of emissions.

After discussion, the Committee accepted the principle contained in the Australian proposal that it was essential to be able to put a stop to the emissions of a space station in those cases where it was known that interference was being caused by that station and the space station was at fault under the relevant provisions of the Radio Regulations.

The following amendment to the text given in Document No. 34 was approved for insertion in Article 14 :

> "Space stations shall be fitted with appropriate devices to terminate their radio emissions quickly, in accordance with No. 470 V, whenever required to do so in conformity with the provisions of the present regulations."

Mexico stated that the proposal in Document No. 36 was already covered by the provisions contained in Articles 9 MOD and 9A, and that there was therefore no need for further discussion.

Item 4 of the Agenda

The Committee agreed to examine this item before item 3 to facilitate the work of the Drafting Group.

The recommendation appearing in Document No. 122 was unanimously approved. It will be inserted in the Radio Regulations and will have an Annex consisting of pages 5 to 31 of Document No. 122.

Item 3 of the Agenda

The representative of India made a statement (Annex 1 hereto) relative to Document No. 81.

Item 5 of the Agenda

The Chairman opened the discussion regarding the last paragraph on page 3 of Document No. 32(Rev.) (U.S.S.R.).

The U.S.S.R. made a statement which is included in Annex 2 hereto.

The United States made a statement which is contained in Annex 3 hereto.

The United Kingdom also made a statement, which is contained in Annex 4.

The following countries wished to express their support for one of these two standpoints :

In favour of the standpoint of the U.S.S.R. : P.R. of Bulgaria, Hungarian P.R., Roumanian P.R.

In favour of the standpoint of the United States and the United Kingdom : F.R. of Germany, Australia, Belgium, Canada, China, Spain, France, Italy, Israel, Japan, Liechtenstein, Luxembourg, New Zealand, Netherlands, Portugal, Switzerland.

The U.S.S.R. stated that it intended to repeat its point of view before the Plenary Meeting.

The Committee considered that a vote should not be taken on the subject, and that a report should be made to the Plenary Meeting about the discussion which had just taken place.

Item 6 of the Agenda

The Chairman declared that the Drafting Group of Committee 6 would bear in mind all the results reached by Committees 4 and 5. He would not fail to inform the delegates in the Plenary Meeting of any amendments that might have been made, for this reason, to the texts prepared by Committee 6.

No points were raised under the item "Other business".

The Delegate of the United Kingdom then made the following statement :

"Before you close this meeting, I should like,on behalf of the United Kingdom Delegates (and I am sure I can also speak for other delegates on this matter), to thank you, Sir, for your must able and skilful Chairmanship.

" The successful and speedy conclusion of the work of this Committee has been due in a large measure to your guidance and energetic direction. We are most grateful to you Sir.

" I should like also to thank the interpreters, who have worked so competently and so patiently. Their services have been of the utmost value to us all."

The Chairman made the following statement :

"The decisions we have just adopted have brought us to the conclusion of the tasks entrusted to us. All this has been possible only because of the strong spirit of cooperation shown by all of you, which greatly facilitated our work.

" It remains for me to thank our Vice-Chairman, Mr. Eid, who always offered me his special advice on the problems I had to face. I also wish to pay tribute to the very active Chairmen of Working Groups 6A and 6B, Mr.Power and Mr. Willems, and to Mr. Place, Chairman of the Drafting Group, whose drafting experience is so great that it would be difficult to surpass. I would also thank Mr.Dellamulla and Mr. Petit, who have worked with us day and night, and whose experience helped to make our work so efficient. Lastly, I should like to thank Mr. Stead, the interpreters, and the Secretariat for their invaluable assistance.

" In recognizing the contribution made by all of you, I wish to point out that it is due to this cooperation that our Committee had the satisfaction of being the first one to finish its work."

The Meeting rose at 2.p.m.

Juan A. AUTELLI
Chairman

Annexes : 4

A N N E X 1

STATEMENT MADE BY THE DELEGATION OF INDIA

The delegation of India has made the proposal contained in Document No. 81 in order to fulfil adequately the terms of reference of this Conference as contained in the agenda items 3 and 4. For the effective implementation of the decisions of the Conference, the I.T.U. must act as an integral unit and the actions of the I.F.R.B. must be supported on the technical side by the C.C.I.R. and on the regulations side by the Administrative Council of the Union. However, the means of realising this would be involved and a discussion of major proportions would result if this good proposal is to be understood and adopted. Considering the late stage at which this proposal has come up for consideration and recognising that the Conference as a whole is not ready to discuss issues of wider implications, I have the displeasure to withdraw this proposal in the interest of speedy disposal of the large proportion of the work remaining before us.

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ANNEX 2

STATEMENT MADE BY THE DELEGATION OF U.S.S.R.

Committee 6 is now coming to the end of its work, in accordance with its terms of reference, and the time has come to take a decision regarding the status of the procedure worked out for the notification and registration of frequency assignments.

The Soviet Delegation took part, throughout the duration of the Committee's work, in the preparation of Documents Nos. 145 and 147.

The allocation of frequency bands for the various categories of space communication will be followed by a period of practical familiarization with and utilization of such bands by Members of the I.T.U.

It is with this end in view that a definite procedure for the notification, registration and utilization of frequencies has been established.

However, the procedure worked out is very complicated, to a great extent theoretical and is unsupported by operational experience. It repeats, to a great extent (with the exception of the co-ordination procedure) the procedure established by the Radio Regulations of 1959 for Earth stations.

Is this correct, or not? It is difficult to say at present since there is as yet a lack of sufficient operational experience in space communication.

Experience in operating space communications is bound to result in modification and amendment of the procedure worked out at the present conference for the co-ordination of frequency assignments and for their notification and registration.

Document No. 157, containing a recommendation to the C.C.I.R., adopted by the Committee, also refers to the temporary nature of the basic provision in document No. 145 on the co-ordination distance.

In view of the above, the Soviet Delegation proposes to the Committee that the procedure for the notification and registration of frequency allocations for space services should be regarded as an interim procedure.

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ANNEX 3

STATEMENT OF THE UNITED STATES OF AMERICA

In drawing up the new Article 9A and Appendix 1A, and in modifying the existing Article 9 and Appendix 1 this Conference has acted properly and in conformity with the terms of reference of the Conference ("to revise only such provisions of the Radio Regulations, Geneva, 1959, as are essential for the effective implementation of the decisions of the Conference relating to the allocation, notification, recording and use of frequencies for space, earth-space, and radio astronomy services"). To have done otherwise or to have drawn up only temporary procedures would have been in direct conflict with these terms of reference.

Insofar as the decisions of any Administrative Radio Conference are subject to amendment by later Conferences, the procedures agreed upon at this Conference might be described as being of an interim nature, but the United States' administration cannot accept that the provisions agreed upon at this Conference are any more interim than those of any other Administrative Radio Conference.

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ANNEX 4

STATEMENT OF THE UNITED KINGDOM

We have during the course of the work of this Committee agreed new Regulations, and modifications to other Regulations, to provide for the notification and registration of frequencies for use in the Space Service. We have proceeded fully in accordance with the terms of the Agenda of this present properly constituted Extraordinary Administrative Radio Conference. Future Conferences of one kind and another, there will undoubtedly be, and at the proper time, an appropriate Conference will no doubt revise the procedures agreed upon at this E.A.R.C. But the United Kingdom Administration cannot accept that the procedures adopted at this present Conference are any more temporary or provisional than those adopted at any other properly constituted Conference. The United Kingdom Delegation therefore fully supports the Statement which has just been made by the Delegate of the United States.

SPACE
RADIOCOMMUNICATION
CONFERENCE

Document No. 194-E
5 November 1963
Original : French

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 6

SUMMARY RECORD OF THE THIRD AND LAST MEETING
OF COMMITTEE 6 (REGULATIONS)

Saturday, 2 November - 9.30 a.m.

Chairman : Mr. Juan A. AUTELLI (Argentine Republic)

Adoption of the agenda

Document No. 161 was adopted with the following amendments :

- the item "Other business" was renumbered Item 6.
- a new item 5 was inserted: it concerned the examination of the last paragraph on page 3 of Document No.32(Rev.) (U.S.S.R.).

Item 1 of the agenda : first report of Working Group 6B (Document No. 102).

Mr. Willems, Chairman of Working Group 6B, introduced the document and said that the Committee would have to decide whether the square brackets should be deleted.

Amendments decided by Committee 6 :

116A ADD All the square brackets were deleted. The wording was retained. It would be for Committee 5 to delete the footnotes if necessary.

711A ADD The square brackets were deleted.

735-1-MOD 1) In the French and Spanish texts the words "Telecommunications par satellites" and the Spanish equivalent should be replaced by "services spatiaux" and the Spanish equivalent.

2) The retention or deletion of the words "space service" gave rise to a lengthy discussion. Some countries thought that the words should be deleted so that a space station could always be identified; others thought that if the transmission of identifying signals was impossible (confirmation of an actual situation), No. 737A - to which reference may be made - enables the station to be identified by other means. The words concerned should therefore be kept.

A vote was then taken, the results of which were :

In favour of keeping the words "special services", without the square brackets : 21 votes

Against retention of these words : 4 votes

737A ADD After a long discussion about the need for all space stations to have a means of identification, the following new version of No. 737A ADD was unanimously approved :

"737A ADD - In transmission of identifying signals by a space station is impossible, it may also be identified by, etc....." (the rest of the text given in Document No. 102 unchanged).

773A ADD As a result of the foregoing, the Committee decided to adopt the following new draft :

"773A ADD - When call signs are used in the space service, it is recommended that these call signs consist of :

- two letters, etc. ..." (the rest of the text in Document No. 102 unchanged).

807A ADD The Chairman of Working Group 6B proposed that the new list should be numbered VIIIA. Committee 6 left it to Committee 7 to decide on this point.

- The square brackets enclosing the number to be given to the List were kept; the others were deleted.

815 MOD - In the fifth line of the proposed text, it was decided to delete : "and (/VI bis/);

- In line 7, the phrase : "and (/VI bis/)" was replaced by "Lists Ia VI and /.../".

826 ADD The square brackets in the first line were deleted.

The number of the list appearing in square brackets in the second line will be amended by Committee 7.

831 MOD The same remark applies to the designation of the new list.

With the above amendments, the contents of Document No. 102 were approved.

At the request of France, the Committee went on to examine that country's proposal for No. 711 of the R.R., set out in Document No. 7. In order to avoid amending No. 711, France proposed that the following text be inserted after that Number :

"711A ADD - When interference is caused to a service operated by an earth station, the administration having jurisdiction over the receiving station experiencing the interference may also approach directly the Administration having jurisdiction over the interfering station."

The Committee agreed unanimously to the inclusion of the above text in Article 15.

Item 2 of the Agenda : examination of the second report by Working Group 6B (Document No. 136).

Mr. Willems, Chairman of Working Group 6B, introduced the document briefly and thanked the members of the Group who had prepared it.

Summary of the discussions

There was a lengthy exchange of views on the layout of the new list contained in Annex I of Document No. 136. The U.S.S.R. and some other countries thought that the information relating to Telecommand and Telemetering should be placed in a separate section. Other countries considered that that information and the principal space services to which it referred should preferably be incorporated in the same part of the list. To do so, the columns relating to Telecommand and Telemetering would have to be retained in that part.

It was finally agreed unanimously that the following note should be inserted, with the Drafting Group deciding on the place of insertion :

"In cases where these data must be provided" (see No. 639A).

Annex 1 to Document No. 136 was approved with the following amendments :

- Page 3 - the word "Telemetry" in column 6 of the English text should read "Telemetering";

- Page 19 should be put in square brackets; Committee 7 would decide whether or not that page should be deleted in the light of the work of Committee 4.

- Page 23 of Document No. 136 (Broadcasting-satellite stations) was deleted.

Annex 2 to Document No. 136 was approved subject to the following amendments :

- the line "[E B Broadcasting-satellite station]" was deleted;

- the line "T K Space tracking station" was put in brackets. It was left to Committee 7 to decide finally, in the light of the work of Committee 4, whether that line and the five preceding lines left in brackets should be retained or deleted.

The Chairman then introduced the proposals of Australia (Document No. 34) and Mexico (Document No. 36) forwarded to the Committee by Working Group 6B and dealing with the termination of emissions.

After discussion, the Committee accepted the principle contained in the Australian proposal that it was essential to be able to put a stop to the emissions of a space station in cases where it was known that interference was being caused by that station.

The following amendment to the text given in Document No. 34 was approved for insertion in Article 14 :

> "Space stations shall be fitted with appropriate devices to terminate their radio emissions quickly, in accordance with No. 470 V, whenever required to do so in conformity with the provisions of the present regulations."

Mexico stated that the proposal in Document No. 36 was already covered by the provisions contained in Articles 9 MOD and 9A, and that there was therefore no need for further discussion.

Item 4 of the Agenda

The Committee agreed to examine this item before item 3 to facilitate the work of the Drafting Group.

The recommendation appearing in Document No. 122 was unanimously approved. It will be inserted in the Radio Regulations and will have an Annex consisting of pages 5 to 31 of Document No. 122.

Item 3 of the Agenda

The representative of India made a statement (Annex 1.hereto) relative to Document No. 81.

Item 5 of the Agenda

The Chairman opened the discussion regarding the last paragraph on page 3 of Document No. 32(Rev.) (U.S.S.R.).

The U.S.S.R. made a statement which is included in Annex 2 hereto.

The United States made a statement which is contained in Annex 3 hereto.

The United Kingdom also made a statement, which is contained in Annex 4.

The following countries wished to express their support for one of these two standpoints :

In favour of the standpoint of the U.S.S.R. : P.R. of Bulgaria, Hungarian P.R., Roumanian P.R.

In favour of the standpoint of the United States and the United Kingdom : F.R. of Germany, Australia, Belgium, Canada, China, Spain, France, Italy, Israel, Japan, Liechtenstein, Luxembourg, New Zealand, Netherlands, Portugal, Switzerland.

The U.S.S.R. stated that it intended to repeat its point of view before the Plenary Meeting.

The Committee considered that a vote should not be taken on the subject, and that a report should be made to the Plenary Meeting about the disucssion which had just taken place.

Item 6 of the Agenda

The Chairman declared that the Drafting Group of Committee 6 would bear in mind all the results reached by Committees 4 and 5. He would not fail to inform the delegates in the Plenary Meeting of any amendments that might have been made, for this reason, to the texts prepared by Committee 6.

No points were raised under the item "Other business".

The Delegate of the United Kingdom then made the following statement :

"Before you close this meeting, I should like,on behalf of the United Kingdom Delegates (and I am sure I can also speak for other delegates on this matter), to thank you, Sir, for your must able and skilful Chairmanship.

" The successful and speedy conclusion of the work of this Committee has been due in a large measure to your guidance and energetic direction. We are most grateful to you Sir.

" I should like also to thank the interpreters, who have worked so competently and so patiently. Their services have been of the utmost value to us all."

The Chairman made the following statement :

"The decisions we have just adopted have brought us to the conclusion of the tasks entrusted to us. All this has been possible only because of the strong spirit of cooperation shown by all of you, which greatly facilitated our work.

" It remains for me to thank our Vice-Chairman, Mr. Eid, who always offered me his special advice on the problems I had to face. I also wish to pay tribute to the very active Chairmen of Working Groups 6A and 6B, Mr.Power and Mr. Willems, and to Mr. Place, Chairman of the Drafting Group, whose drafting experience is so great that it would be difficult to surpass. I would also thank Mr.Dellamulla and Mr. Petit, who have worked with us day and night, and whose experience helped to make our work so efficient. Lastly, I should like to thank Mr. Stead, the interpreters, and the Secretariat for their invaluable assistance.

" In recognizing the contribution made by all of you, I wish to point out that it is due to this cooperation that our Committee had the satisfaction of being the first one to finish its work."

The Meeting rose at 2.p.m.

Juan A. AUTELLI
Chairman

Annexes : 4

A N N E X 1

STATEMENT MADE BY THE DELEGATION OF INDIA

The delegation of India has made the proposal contained in Document No. 81 in order to fulfil adequately the terms of reference of this Conference as contained in the agenda items 3 and 4. For the effective implementation of the decisions of the Conference, the I.T.U. must act as an integral unit and the actions of the I.F.R.B. must be supported on the technical side by the C.C.I.R. and on the regulations side by the Administrative Council of the Union. However, the means of realising this would be involved and a discussion of major proportions would result if this good proposal is to be understood and adopted. Considering the late stage at which this proposal has come up for consideration and recognising that the Conference as a whole is not ready to discuss issues of wider implications, I have the displeasure to withdraw this proposal in the interest of speedy disposal of the large proportion of the work remaining before us.

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ANNEX 2

STATEMENT MADE BY THE DELEGATION OF U.S.S.R.

Committee 6 is now coming to the end of its work, in accordance with its terms of reference, and the time has come to take a decision regarding the status of the procedure worked out for the notification and registration of frequency assignments.

The Soviet Delegation took part, throughout the duration of the Committee's work, in the preparation of Documents Nos. 145 and 147.

The allocation of frequency bands for the various categories of space communication will be followed by a period of practical familiarization with and utilization of such bands by Members of the I.T.U.

It is with this end in view that a definite procedure for the notification, registration and utilization of frequencies has been established.

However, the procedure worked out is very complicated, to a great extent theoretical and is unsupported by operational experience. It repeats, to a great extent (with the exception of the co-ordination procedure) the procedure established by the Radio Regulations of 1959 for Earth stations.

Is this correct, or not? It is difficult to say at present since there is as yet a lack of sufficient operational experience in space communication.

Experience in operating space communications is bound to result in modification and amendment of the procedure worked out at the present conference for the co-ordination of frequency assignments and for their notification and registration.

Document No. 157, containing a recommendation to the C.C.I.R., adopted by the Committee, also refers to the temporary nature of the basic provision in document No. 145 on the co-ordination distance.

In view of the above, the Soviet Delegation proposes to the Committee that the procedure for the notification and registration of frequency allocations for space services should be regarded as an interim procedure.

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ANNEX 3

STATEMENT OF THE UNITED STATES OF AMERICA

In drawing up the new Article 9A and Appendix 1A, and in modifying the existing Article 9 and Appendix 1 this Conference has acted properly and in conformity with the terms of reference of the Conference ("to revise only such provisions of the Radio Regulations, Geneva, 1959, as are essential for the effective implementation of the decisions of the Conference relating to the allocation, notification, recording and use of frequencies for space, earth-space, and radio astronomy services"). To have done otherwise or to have drawn up only temporary procedures would have been in direct conflict with these terms of reference.

Insofar as the decisions of any Administrative Radio Conference are subject to amendment by later Conferences, the procedures agreed upon at this Conference might be described as being of an interim nature, but the United States' administration cannot accept that the provisions agreed upon at this Conference are any more interim than those of any other Administrative Radio Conference.

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A N N E X 4

STATEMENT OF THE UNITED KINGDOM

We have during the course of the work of this Committee agreed new Regulations, and modifications to other Regulations, to provide for the notification and registration of frequencies for use in the Space Service. We have proceeded fully in accordance with the terms of the Agenda of this present properly constituted Extraordinary Administrative Radio Conference. Future Conferences of one kind and another, there will undoubtedly be, and at the proper time, an appropriate Conference will no doubt revise the procedures agreed upon at this E.A.R.C. But the United Kingdom Administration cannot accept that the procedures adopted at this present Conference are any more temporary or provisional than those adopted at any other properly constituted Conference. The United Kingdom Delegation therefore fully supports the Statement which has just been made by the Delegate of the United States.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 195-E
5 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

AGENDA

FOR THE 4TH PLENARY MEETING

Wednesday, 6 November at 09.30 hours

1. Fifth series of "blue" texts[1] submitted by the Editorial Committee (Document No. 176)
2. Fourth series of "blue" texts[2] submitted by the Editorial Committee (Document No. 175)
3. Sixth series of "blue" texts[2] submitted by the Editorial Committee (Document No. 177)
4. Eighth series of "blue" texts[3] submitted by the Editorial Committee (Document No. 181)
5. Ninth series of "blue" texts[3] submitted by the Editorial Committee (Document No. 183)
6. Draft Resolution relating to Space vehicles in distress (Document No. 184)
7. Miscellaneous

Gunnar PEDERSEN
Chairman of the Conference

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1) Texts submitted to Committee 7 by Committee 6
2) Texts submitted to Committee 7 by Committee 5
3) Texts submitted to Committee 7 by Committee 4

PINK PAGES

SPACE
RADIOCOMMUNICATION
CONFERENCE
GENEVA, 1963

Document No. 196
5 November, 1963

E

R.1

PLENARY MEETING
SECOND READING

The Editorial Committee, having examined document No. 171 submits the attached texts to the Plenary Assembly for a second reading.

Article 3
Article 9
Appendix 1
Appendix 1A
Appendix 9
Appendix 10
Resolution Satellite Systems

Y. PLACE
Chairman of the Editorial
Committee

Annex : 43 Pages

ANNEX 2

Revision of Article 3 of the Radio Regulations

Article 3 of the Radio Regulations shall be amended as follows:

For Regulation No. 114, there shall be substituted the following :

MOD

114 § 2. Any new assignment or any change of frequency or other basic characteristic of an existing assignment (see Appendix 1 or Appendix 1A) shall be made in such a way as to avoid causing harmful interference to services rendered by stations using frequencies assigned in accordance with the Table of Frequency Allocations in this Chapter and the other provisions of these Regulations, the characteristics of which assignments are recorded in the Master International Frequency Register.

After Regulation No. 116 there shall be inserted the following new Regulation :

ADD

116A § 4A. For the purpose of resolving cases of harmful interference, the Radio Astronomy Service shall be treated as a radiocommunication service. However, protection from services in other bands shall be afforded the Radio Astronomy Service only to the extent that such services are afforded protection from each other.

ANNEX 5

Revision of Article 9 of the Radio Regulations

Article 9 of the Radio Regulations shall be amended as follows:

The title of the Article, the title of Section 1 and numbers 486, 487 and 491 shall be substituted by the following :

MOD

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Stations in Terrestrial Services [0]

MOD

Section I. Notification of Frequency Assignments and Co-ordination Procedure to be Applied in appropriate Cases

MOD

486 § 1. (1) Any *frequency assignment* [1,2] to a fixed, land, broadcasting [3], radionavigation land, radiolocation land or standard frequency station, or to a ground-based station in the meteorological aids service, shall be notified to the International Frequency Registration Board,

a) if the use of the frequency concerned is capable of causing harmful interference to any service of another administration [4]; or

b) if the frequency is to be used for international radiocommunication; or

c) if it is desired to obtain international recognition of the use of the frequency.[4]

ADD

[0] For the notification and recording in the Master International Frequency Register of frequency assignments to stations in the space and radio astronomy services, see Article 9A.

ADD

486.4 [4] The attention of administrations is specifically drawn to the application of the provisions of Nos. **486** *a)* and **486** *c)* in those cases where they make a frequency assignment to a station in the fixed or mobile service, located within co-ordination distance of an earth station (see No. **492A**), in a band which these services share with equal rights with the space service.

MOD **487** (2) Similar notice shall be given for any frequency to be used for the reception of mobile stations by a particular land station in each case where one or more of the conditions specified in No. **486** are applicable.

MOD **491** § 3. (1) Whenever practicable each notice should reach the Board before the date on which the assignment is brought into use. It must reach the Board not earlier than ninety days before the date on which it is to be brought into use, but in any case not later than thirty days after the date it is actually brought into use. However, for a frequency assignment to a station in the fixed or mobile service mentioned in No. **492A**, the notice must reach the Board not earlier than two years before the date on which the assignment is to be brought into use.

After Regulation No. 492, there shall be inserted the following new Regulations :

ADD **492A** Before an administration notifies to the Board, or brings into use any frequency assignment to a station in the fixed or mobile service, whether for transmitting or receiving, in a particular band allocated with equal rights to the space service and the fixed or mobile service in the frequency spectrum between one and ten Gc/s, it shall effect co-ordination of the assignment with any other administration which has previously effected co-ordination under the provisions of No. 639AD, for the establishment of an earth station, if the proposed station in the fixed or mobile service is to be located within the co-ordination distance [1] of the earth station, and the necessary bandwidths of emission of the station concerned in the space service on the one hand, and of the station concerned in the fixed or mobile service on the

ADD **492A.1** [1] For the purposes of this Article the expression " co-ordination distance " means the distance from an earth station calculated along the lines of the procedures shown in Recommendation No. ... [Document No. 157] within which there is a possibility of the use of a given transmitting frequency at this earth station causing harmful interference to stations in the fixed or mobile service in the frequency spectrum between one and ten Gc/s, sharing the same frequency band, or, as the case may be, of the use of a given frequency for reception at this earth station receiving harmful interference caused by such stations in the fixed or mobile service.

other, are separated by less than six Mc/s. For this purpose it shall send to any other such administration a copy of a diagram drawn to an appropriate scale indicating the location of the station in the fixed or mobile service and all other pertinent details of the proposed frequency assignment and the approximate date on which it is planned to begin operations.

ADD **492B** An administration with which co-ordination is sought under No. **492A** shall acknowledge receipt of the co-ordination data within thirty days and shall promptly examine the matter to establish:

a) in the case of a frequency assignment to be used for transmitting by the station in the fixed or mobile service, whether the use would cause harmful interference to the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the provision that in this latter case co-ordination specified in No. **639AD** has been effected or the co-ordination procedure has already begun;

b) in the case of a frequency assignment to be used for reception by the station in the fixed or mobile service, whether harmful interference would be caused to reception at the station in the fixed or mobile service by the service rendered by its earth stations operating in accordance with the Convention and these Regulations, or to be so operated within the next two years, with the provision that in this latter case co-ordination specified in No. **639AD** has been effected or the co-ordination procedure has already begun;

and shall, within a further period of thirty days either notify the administration requesting co-ordination of its agreement to the proposals or, if this is not possible, indicate the reasons therefore and make such suggestions as it may be able to offer with a view to a satisfactory solution of the problem.

ADD: **492C** No co-ordination under No. **492A** is required when an administration proposes:

a) to bring into use a station in the fixed or mobile service which is not located, in relation to an earth station, within the co-ordination distance defined in No. **492A.1**; or

b) to change characteristics of an existing assignment in such a way as not to increase the probability of harmful interference to the earth stations of other administrations.

ADD **492D** An administration seeking co-ordination may request the Board to endeavour to effect co-ordination, in those cases where:

a) an administration with which co-ordination is sought under No. **492A** fails to reply within a period of ninety days;

b) there is a disagreement between the administration seeking co-ordination and an administration with which co-ordination is sought as to the probability of harmful interference; or

c) co-ordination between administrations is not possible for any other reason.

In so doing, it shall furnish the Board with the necessary information to enable it to effect such co-ordination.

ADD **492E** Either the administration seeking co-ordination or an administration with which co-ordination is sought, or the Board, may request additional information which they may require to assess the probability of harmful interference to the services concerned.

ADD **492F** Where the Board receives a request under No. **492D** *a)*, or where the Board receives no reply within ninety days to its request for co-ordination in the case foreseen in No. **492D** *c)*, it shall immediately send a telegram to the administration with which co-ordination is sought. If no reply has been received from that administration within a period of sixty days from the date of despatch of the telegram it shall be deemed that the administration with which co-ordination was sought shall have undertaken that no complaint will

be made in respect of any harmful interference which may be caused by the station in the fixed or mobile service to the services rendered by its earth station.

ADD **492G** Where necessary, as part of the procedure under No. **492D**, the Board shall assess the probability of harmful interference. In any case, the Board shall inform the administrations concerned of the results obtained.

The following new title is added after No. 499:

ADD **499A** **Sub-Section IIA. Procedure to be followed in the case where the provisions of No. 492A are not applicable**

For Regulation No. 535, there shall be substituted the following new Regulation :

MOD **535** § 17. *In applying the provisions of the whole of this Sub-Section,* any resubmitted notice which is received by the Board more than one hundred and eighty days after the date of its return by the Board shall be considered as a new notice.

After Regulation No. 570, there shall be inserted the following new Regulation :

ADD **570AA** **Sub-Section IIB. Procedure to be followed in the case where the provisions of No. 492A are applicable**

ADD **570AB** The Board shall examine each notice:

ADD **570AC** *a)* with respect to its conformity with the Convention, the Table of Frequency Allocations and the other provisions of the Radio Regulations (with the exception of those relating to the co-ordination procedure and the probability of harmful interference);

ADD **570AD** *b)* with respect to its conformity with the provisions of No. **492A** relating to the co-ordination of the use of the frequency assignment with the other administrations concerned;

ADD **570AE** *c)* where appropriate, with respect to the probability of harmful interference to the service rendered by an earth

receiving station for which a frequency assignment already recorded in the Master Register is in conformity with the provisions of No. **639AS**, and if the corresponding frequency assignment to the space transmitting station has not, in fact, caused harmful interference to any frequency assignment in conformity with Nos. **501,** or **570AC,** as appropriate, previously recorded in the Master Register.

ADD **570AF** Depending upon the findings of the Board subsequent to the examination prescribed in Nos. **570AC, 570AD** and **570AE,** further action shall be as follows:

ADD **570AG** *Finding unfavourable with respect to No.* **570AC.**

ADD **570AH** Where the notice includes a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115,** the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AI** Where the notice does not include a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115**, it shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AJ** If the notifying administration resubmits the notice unchanged, it shall be treated in accordance with the provisions of No. **570AI.**

ADD **570AK** If it is resubmitted with a specific reference to the fact that the station will be operated in accordance with the provisions of No. **115,** the assignment shall be recorded in the Master Register. The date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD

570AL If the notifying administration resubmits the notice with modifications which, after re-examination, result in a favourable finding by the Board with respect to No. **570AC,** the notice shall be treated under the provisions of Nos. **570AM** to **570AZ.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in Column 2d.

ADD

570AM *Finding favourable with respect to No.* **570AC.**

ADD

570AN Where the Board finds that the co-ordination procedure mentioned in No. **570AD** has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD

570AO Where the Board finds that the co-ordination procedure mentioned in No. **570AD** has not been applied, and the notifying administration requests the Board to effect the required co-ordination, the Board shall take the appropriate action necessary and shall inform the administrations concerned of the results obtained. If the Board's efforts are successful, the notice shall be treated in accordance with No. **570AN.** If the Board's efforts are unsuccessful, the notice shall be examined by the Board with respect to the provisions of No. **570AE.**

ADD

570AP Where the Board finds that the co-ordination procedure mentioned in No. **570AD** has not been applied, and the notifying administration does not request the Board to effect the required co-ordination, the notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this action and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD

570AQ Where the notifying administration resubmits the notice and the Board finds that the co-ordination procedure mentioned in No. **570AD** has been successfully completed with all administrations whose earth stations may be affected, the assignment shall be recorded

in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AR** Where the notifying administration resubmits the notice with a request that the Board effect the required co-ordination, it shall be treated in accordance with the provisions of No. **570AO.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AS** Where the notifying administration resubmits the notice and states it has been unsuccessful in effecting the co-ordination, it shall be examined by the Board with respect to the provisions of No. **570AE.** However, in any subsequent recording of the assignment, the date of receipt by the Board of the resubmitted notice shall be entered in the Remarks Column.

ADD **570AT** *Finding favourable with respect to Nos.* **570AC** *and* **570AE.**

ADD **570AU** The assignment shall be recorded in the Master Register. The date of receipt by the Board of the notice shall be entered in Column 2d.

ADD **570AV** *Finding favourable with respect to No.* **570AC** *but unfavourable with respect to No.* **570AE.**

ADD **570AW** The notice shall be returned immediately by airmail to the notifying administration with the reasons of the Board for this finding and with such suggestions as the Board may be able to offer with a view to the satisfactory solution of the problem.

ADD **570AX** Should the notifying administration resubmit the notice with modifications which result, after re-examination, in a favourable finding by the Board with respect to No. **570AE,** the assignment shall be recorded in the Master Register. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of

receipt by the Board of the re-submitted notice shall be indicated in the Remarks Column.

ADD **570AY** Should the notifying administration re-submit the notice, either unchanged, or with modifications which decrease the probability of harmful interference, but not sufficiently to permit the provisions of No. **570AX** to be applied, and should that administration insist upon reconsideration of the notice, but should the Board's finding remain unchanged, the assignment shall be recorded in the Master Register. However, this entry shall be made only if the notifying administration informs the Board that the assignment has been in use for at least one hundred and twenty days without any complaint of harmful interference having been received. The date of receipt by the Board of the original notice shall be entered in Column 2d. The date of receipt by the Board of the advice that no complaint of harmful interference has been received shall be indicated in the Remarks Column.

ADD **570AZ** The period of one hundred and twenty days mentioned in No. **570AY** shall count from:

— the date when the assignment to the station in the fixed or mobile service which received an unfavourable finding is brought into use, if the assignment to the earth station is then in use;

— otherwise, from the date when the assignment to the earth station is brought into use.

But if the assignment to the earth station has not been brought into use by the notified date, the period of one hundred and twenty days shall be counted from this date. Allowance may be made for the additional period mentioned in No. **570BG.**

ADD **570BA** *Change in the Basic Characteristics of Assignments already recorded in the Master Register.*

ADD **570BB** A notice of a change in the basic characteristics of an assignment already recorded, as specified in Appendix 1 (except those entered in Columns 3 and 4a of the Master Register), shall be

examined by the Board according to Nos. **570AC** and **570AD** and, where appropriate No. **570AE,** and the provisions of Nos. **570AG** to **570AZ** inclusive applied. Where the change should be recorded, the assignment shall be amended according to the notice.

ADD **570BC** However, in the case of a change in the basic characteristics of an assignment which is in conformity with No. **570AC,** should the Board reach a favourable finding with respect to No. **570AD,** and, where its provisions are applicable, with respect to No. **570AE,** or find that the change does not increase the probability of harmful interference to assignments already recorded, the amended assignment shall retain the original date in Column 2d. In addition, the date of receipt by the Board of the notice relating to the change shall be entered in the Remarks Column.

ADD **570BD** *In applying the provisions of the whole of this Sub-Section,* any resubmitted notice which is received by the Board more than two years after the date of its return by the Board, shall be considered as a new notice.

ADD **570BE** (1) *Recording of Frequency Assignments notified before being brought into use.*

ADD **570BF** (2) If a frequency assignment notified in advance of bringing into use has received a favourable finding by the Board with respect to Nos. **570AC** and **570AD** and, where appropriate, with respect to No. **570AE,** it shall be entered provisionally in the Master Register with a special symbol in the Remarks Column indicating the provisional nature of that entry.

ADD **570BG** (3) If, within the period of thirty days after the projected date of bringing into use, the Board receives confirmation from the notifying administration of the date of putting into use, the special symbol shall be deleted from the Remarks Column. In the case where the Board, in the light of a request from the notifying administration received before the end of the thirty-day period, finds that exceptional circumstances warrant an extension of this period, the extension shall in no case exceed one hundred and fifty days.

ADD **570BH** (4) In the circumstances described in No. **570AY,** and as long as an assignment which received an unfavourable finding cannot be resubmitted as a consequence of the provisions of No. **570AZ,** the notifying administration may ask the Board to enter the assignment provisionally in the Master Register, in which event a special symbol to denote the provisional nature of the entry shall be entered in the Remarks Column. The Board shall delete this symbol when it receives from the notifying administration, at the end of the period specified in No. **570AY,** the information provided for in No. **570AY** relating to the absence of complaint of harmful interference.

ADD **570BI** (5) If the Board does not receive this confirmation within the period referred to in No. **570BG** or at the end of the period referred to in No. **570BH,** as appropriate, the entry concerned shall be cancelled.

For Regulation No. 572, there shall be substituted the following Regulation :

MOD **572** § 25. The procedure for recording dates in the appropriate part of Column 2 of the Master Register which shall be applied according to the frequency bands and services concerned is described in the following Nos. **573** to **604** for frequency assignments referred to in Sub-Section IIA.

After Regulation No. 611, there shall be inserted the following new Regulation :

ADD **611A** If harmful interference to the reception of any station whose assignment is in accordance with No. **639AS** is actually caused by the use of a frequency assignment which is not in conformity with Nos. **501** or **570AC,** the station using the latter frequency assignment must, upon receipt of advice thereof, immediately eliminate this harmful interference.

For Regulations Nos. 613 and 615, there shall be substituted the following Regulation :

MOD **613** The Board, in the light of all the data at its disposal, shall review the matter, taking into account No. **501** or **570AC** and

No. **502, 503, 570AD** or **570AE,** as appropriate, and shall render an appropriate finding, informing the notifying administration prior either to the promulgation of its finding or to any recording action.

MOD **615** § 38. After actual use for a reasonable period of an assignment which has been entered in the Master Register on the insistance of the notifying administration, following an unfavourable finding with respect to Nos. **502, 503** or **570AE,** as appropriate, this administration may request the Board to review the finding. Thereupon the Board shall review the matter, first having consulted the administrations concerned.

ANNEX 11

Revision of Appendix 1 of the Radio Regulations

Appendix 1 of the Radio Regulations shall be amended as follows :

NOC

Section A. Basic Characteristics to be Furnished for Notification under No. 486 of the Regulations

MOD *Column 5a* Locality(ies) or area(s) with which communication is established.

This is not a basic characteristic for land, radionavigation land, radiolocation land or standard frequency stations, or for ground-based stations in the meteorological aids service.

MOD *Column 5b* Length of circuit (km)

This is a basic characteristic only for land, radionavigation land, radiolocation land and standard frequency stations.

MOD Supplementary information: reference frequency or frequencies, if any, and any co-ordination required by No. **492A.**

NOC

Section B. Basic Characteristics to be Furnished for Notification under No. 487 of the Regulations

MOD *Column 4b* Country in which the receiving land station is located.

MOD *Column 4c* Longitude and latitude of the site of the receiving land station.

MOD *Column 5a* Name of the receiving land station.

MOD *Column 5b* Maximum distance in km between mobile stations and the receiving land station.

MOD *Column 6* Class of mobile stations and nature of service.

MOD *Column 7* Class of emission of mobile stations and necessary bandwidth.

MOD *Column 8* Highest power used by the mobile stations.

MOD *Column 10* Maximum hours of operation of the mobile stations (G.M.T.).

ADD Supplementary information: any co-ordination required by No. **492A.**

Title not modified **Section C.**

ADD Supplementary information: any co-ordination required by No. **492A.**

Title not modified **Section E. II**

MOD *Column 4b (reception)* The country in which the receiving land station is located.

MOD *Column 4c (reception)* The geographical co-ordinates (in degrees and minutes) of the site of the receiving land station.

MOD *Column 5a (para. 3)* For land, radionavigation land, radiolocation land and standard frequency stations, and ground-based stations in the meteorological aids service, it is not necessary to indicate any information in this column.

MOD *Column 5a para. 5* For reception in the circumstances described in No. **487,** the name of the locality by which the receiving land station is known or in which it is situated should be indicated.

MOD *Column 5b para. 2* For reception in the circumstances described in No. **487,** the maximum distance between the mobile stations and the receiving land station should be indicated.

MOD — *Column 5b para. 3* — This information is not a basic characteristic *except in the case of paragraph 2 above, and in the case of land, radionavigation land, radiolocation land and standard frequency stations. In these latter cases, the distances shown shall represent the service ranges.*

MOD — *Column 6 para. 2* — When the frequency assignment is used for reception in the circumstances described in No. **487**, the class of station and nature of service applicable to the mobile stations should be indicated.

MOD — *Column 7 para. 2* — When the frequency assignment is used for reception in the circumstances described in No. **487**, the particulars to be indicated are those applicable to the mobile stations.

MOD — *Column 8 para. 5* — When the frequency assignment is used for reception in the circumstances described in No. **487**, the power of the mobile stations should be indicated. If not all of the stations use the same power, the highest power should be indicated.

MOD — *Column 10 para. 1* — When the frequency assignment is used for reception in the circumstances described in No. **487** the maximum hours of operation are those relating to the mobile stations.

Title not modified — *Supplementary information*

MOD — *para. 5* — *Only the information specified in paragraph 3 above is a basic characteristic ; it is recommended, however, that the information under paragraphs 1 and 2 above be supplied. However, in the case of stations in the fixed or mobile service referred to in No.* **492A**, *the name of any administration with which co-ordination of the use of the frequency has been sought and the name of any administration with which such co-ordination has been effected are basic characteristics.*

ANNEX 12

Addition of a new Appendix to the Radio Regulations

The following new Appendix 1A shall be added to the Radio Regulations following Appendix 1.

APPENDIX 1A

Notices Relating to Stations in the Space and Radio Astronomy Services

(See Article 9 A)

Section A. General Instructions

1. A separate notice in a form convenient to the notifying administration shall be sent to the International Frequency Registration Board for notifying:

— each new frequency assignment,

— any change in the characteristics of a frequency assignment recorded in the Master International Frequency Register (hereinafter called the Master Register),

— any total deletion of a frequency assignment recorded in the Master Register.

2. When submitting notices under No. **639AA** for earth and space transmitting assignments and under No. **639AB** for space and earth receiving assignments, separate notices shall be submitted to the Board. In the case of a passive satellite system, only earth transmitting and receiving assignments shall be notified.

3. In the case of a satellite system employing multiple space stations with the same general characteristics:

— for stationary satellites, a separate notice shall be submitted for each space station; and

— for non-stationary satellites, one notice covering all the space stations may be submitted.

4. The following information should be shown on the notice:

a) the serial number of the notice and the date on which the notice is sent to the Board;

b) the name of the notifying administration;

c) sufficient data to identify the particular satellite system in which the earth or space station will operate;

d) whether the notice reflects

1) the first use of a frequency by a station,

2) the first use of an additional frequency by a station,

3) a change in the characteristics of a frequency assignment recorded in the Master Register (indicate whether the change is a replacement, addition or deletion of existing characteristics), or

4) a deletion of an assignment in all of its notified characteristics;

e) any other information which the administration considers to be relevant, e.g., any special channelling arrangements or methods of modulation, the degree of terrain shielding throughout all azimuthal angles for the earth stations, an indication that the assignment concerned would be operating in accordance with No. **115**, information concerning the use of the notified frequency if such use is restricted, or, in the case of notices pertaining to space stations, if the transmissions of the station are to be permanently switched off after a certain period.

Section B. Basic Characteristics to be furnished in Notices relating to Frequencies used by Earth Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Items 3* or *4a*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity and location of the earth station

a) Indicate the name by which the station is known or the name of the locality in which it is situated.

b) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the transmitter site.

Item 5 Station(s) with which communication is to be established

Identify the associated receiving space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite and the location of the receiving earth station(s).

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 8 Power (kW)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**);

— Peak envelope power (Pp) for all classes of emission other than those referred to above. (See No. **95**.)

Item 9 Transmitting antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degres, clockwise from True North, the planned range(s) of azimuthal angles.

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the isotropic gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

e) Indicate the maximum isotropic gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 10 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1.*

Item 11 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of this frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section C. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Earth Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3a*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity and location of the receiving earth station

a) Indicate the name by which the receiving earth station is known or the name of the locality in which it is situated.

b) Indicate the country in which the receiving earth station is located. Symbols from the Preface to the International Frequency List should be used.

c) Indicate the geographical co-ordinates (in degrees and minutes) of the receiver site.

Item 4 Associated transmitting station(s)

Identify the associated transmitting space station(s) by reference to the notification thereof or in any other appropriate manner, or, in the case of a passive satellite, the identity of the satellite(s) and the associated transmitting earth station(s).

Item 5 Class of station and nature of service

Indicate the class of station and nature of service performed using the symbols shown in Appendix 10.

Item 6 Class of emission, necessary bandwidth and description of the transmission to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission to be received, in accordance with Article 2 and Appendix 5. Indicate also the over-all receiver bandwidth at which the receiver response is 6 db below maximum.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 7 Earth station receiving antenna characteristics

a) Indicate in degrees from the horizontal plane the planned minimum operating angle of elevation of the antenna.

b) Indicate in degrees, clockwise from True North, the planned range azimuthal angle(s).

c) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

d) Indicate the isotropic gain (db) of the antenna in the direction of the main lobe (see No. **100**).

e) Indicate the maximum isotropic gain (db) of the antenna in the horizontal plane with the antenna at any angle of elevation above the minimum angle of elevation (see No. **100**).

f) Indicate the height (metres) of the antenna above mean sea level.

Item 8 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1.*

Item 9 Co-ordination

Indicate the name of any administration with which co-ordination has been effected for the use of the frequency, and, if appropriate, the name of any administration with which co-ordination has been sought but not effected.

Item 10 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K) under " quiet sky " conditions at the planned minimum operating angle of elevation of the antenna.

Item 11 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section D. Basic Characteristics to be furnished in Notices relating to Frequencies used by Space Stations for transmitting

Item 1 Assigned frequency

Indicate the assigned frequency as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment, indicate the date (actual or foreseen, as appropriate) of putting the frequency assignment into use.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3* or *4)*, the date to be given shall be that of the latest change (actual of foreseen, as appropriate).

Item 3 Call sign (Identification)

Indicate the call sign or other identification used in accordance with Article 19.

Item 4 Identity of the space station

Indicate the identity of the space station.

Item 5 Area of coverage

Indicate the area of intended coverage or the name of the locality and country in which the associated receiving station(s) is located.

Item 6 Orbital information

Indicate, where applicable, the angle of inclination of the orbit and the period of the object in space on the orbit and the altitude in kilometers, of apogee and perigee of the orbit of the space station(s). In the case of a space station aboard a stationary

satellite, indicate the mean geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 7 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 8 Class of emission, necessary bandwidth and description of transmission

a) Indicate the class of emission, necessary bandwidth and description of transmission, in accordance with Article 2 and Appendix 5.

b) In any case where there are one or more reference frequencies in a particular emission, indicate such frequencies.

Item 9 Power (Watts)

The power supplied to the antenna shall be notified as follows, according to the class of emission:

— Mean power (Pm) for amplitude modulated emissions using unkeyed full carrier, and for all frequency modulated emissions (see No. **96**).

— Peak envelope power (Pp) for all classes of emission other than those referred to above (see No. **95**).

Item 10 Transmitting antenna characteristics

a) Indicate the beamwidth, in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the isotropic gain (db) of the antenna in the direction of maximum radiation (see No. **100**).

c) For stationary satellites employing directional antennas, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 11 Maximum hours of operation

Indicate in G.M.T. the maximum hours of operation on the frequency shown in *Item 1*

Item 12 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 13 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference, quality of emissions and questions referring to the technical operation of stations (see Article 15).

Section E. Basic characteristics to be furnished in Notices relating to Frequencies to be received by Space Stations

Item 1 Assigned frequency

Indicate the assigned frequency of the emission to be received, as defined in Article 1, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) In the case of a new assignment indicate the date (actual or foreseen, as appropriate) when reception of the assigned frequency begins.

b) Whenever the assignment is changed in any of its basic characteristics, as shown in this Section (except in the case of a change in *Item 3*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Identity of the receiving space station

Indicate the identity of the receiving space station.

Item 4 Orbital information

Indicate, where applicable, the angle of inclination of the orbit and the period of the object in space on the orbit and the altitude in kilometers, of apogee and perigee of the orbit of the space station(s). In the case of a space station on board a stationary satellite indicate the mean geographical longitude of the projection of the satellite's position on the surface of the Earth.

Item 5 Associated transmitting earth station(s)

Identify the associated transmitting earth station(s) by reference to the notification thereof or in any other appropriate manner.

Item 6 Class of station and nature of service

Indicate the class of station and nature of service performed, using the symbols shown in Appendix 10.

Item 7 Class of emission, necessary bandwidth and description of the transmission(s) to be received

a) Indicate the class of emission, necessary bandwidth and description of the transmission(s) to be received, in accordance with Article 2 and Appendix 5. Indicate also the over-all receiver bandwidth at which the receiver response is 6 db below maximum. In the case of a communication-satellite space station, designed

to receive as a composite signal two or more emissions in contiguous channels and transmitted from one or more earth stations, the description should state the number of such emissions, the spacing between their assigned frequencies and the total bandwidth collectively encompassed by them.

b) In any case where there are one or more reference frequencies in a particular received emission, indicate such frequencies.

Item 8 Space station receiving antenna characteristics

a) Indicate the beamwidth in degrees, between the half power points (describe in detail if not symmetrical).

b) Indicate the isotropic gain (db) of the antenna in the direction of the main lobe (see No. **100**).

c) For stationary satellites employing directional antennas, indicate the point on the Earth's surface towards which the antenna is directed and the accuracy of maintaining this direction.

Item 9 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency shown in *Item 1*.

Item 10 Number of space stations

In the case of non-stationary satellites, indicate the number of space stations covered by the notice.

Item 11 Noise temperature

Indicate the over-all receiving system operating noise temperature (°K).

Item 12 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

Section F. Basic Characteristics to be furnished in Notices relating to Frequencies to be received by Radio Astronomy Station

Item 1 Observed frequency

Indicate the centre of the frequency band observed, in kc/s up to 30 000 kc/s inclusive, and in Mc/s above 30 000 kc/s.

Item 2 Date of putting into use

a) Indicate the date (actual or foreseen, as appropriate) when reception of the frequency band begins.

b) Whenever there is a change in any of the basic characteristics, as shown in this Section (except in the case of a change in *Item 3b*), the date to be given shall be that of the latest change (actual or foreseen, as appropriate).

Item 3 Name and location of the station

a) Indicate the letters " RA ".

b) Indicate the name by which the station is known or the name of the locality in which it is situated or both.

c) Indicate the country in which the station is located. Symbols from the Preface to the International Frequency List should be used.

d) Indicate the geographical co-ordinates (in degrees and minutes) of the station site.

Item 4 Bandwidth

Indicate the width of the frequency band observed by the station.

Item 5 Antenna characteristics

Indicate the antenna type and dimensions, effective area and angular coverage in azimuth and elevation.

Item 6 Maximum hours of reception

Indicate in G.M.T. the maximum hours of reception of the frequency band shown in *Item 1.*

Item 7 Noise temperature

Indicate the over-all receiving system noise temperature (°K).

Item 8 Class of observations

Indicate the class of observations to be taken on the frequency band shown in *Item 1.* Class A observations are those in which the sensitivity of the equipment is not a primary factor. Class B observations are those of such a nature that they can be made only with advanced low-noise receivers using the best techniques.

Item 9 Operating Administration or Company

Indicate the identity of the operating administration or company and the postal and telegraphic addresses of the administration to which communication should be sent on urgent matters regarding interference and questions referring to the technical operation of stations (see Article 15).

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ANNEX 13

Revision of Appendix 9 to the Radio Regulations

Appendix 9 to the Radio Regulations shall be modified as follows:

After List VIII, there shall be inserted the following new List.

List VIII A. — List of Stations in the Space Service and in the Radio Astronomy Service [1]

1 — Communication-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbol.
Names of stations in alphabetical order.

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Transmission						Reception						Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks
			Telecommand where appropriate			Communications			Telemetering		Tracking		Communications				
			Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth, and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth, and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth, and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth, and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8a	8b	9	10	11
																	1. Special channelling arrangements for: *a)* telegraphy *b)* telephony *c)* other types of communication, as appropriate 2. Special methods of modulation

[1] For the cases where these data must be supplied, see Nos. **639AA, 639AB** and **639AC.**

2 — Communication-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station	Call sign (identification)	Transmission									Reception				Area of coverage or name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	Remarks
		Telemetering			Tracking			Communications			Telecommand where appropriate		Communications				
		Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7a	7b	8	9	10

1. Orbital information
   a) angle of inclination of the orbit
   b) period of the object in space on the orbit
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the earth.
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate.
3. Special methods of modulation.

3 — Meteorological-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated												
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site												
3	Call sign (identification)												
		Transmission			Reception								
		Telecommand where appropriate			Telemetering		Tracking		Reception of meteorological information				Remarks
4a	Frequency (Mc/s or Gc/s)												Special methods of modulation
4b	Class of emission, necessary bandwidth and description of transmission												
4c	Power (kW)												
5a	Frequency (Mc/s or Gc/s)												
5b	Class of emission, necessary bandwidth and description of transmission												
6a	Frequency (Mc/s or Gc/s)												
6b	Class of emission, necessary bandwidth and description of transmission												
7a	Frequency (Mc/s or Gc/s)												
7b	Class of emission, necessary bandwidth and description of transmission												
8	Identity of the station(s) with which communication is to be established												
9	Operating administration or company												
10													

4 — Meteorological-satellite space station

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the Station	Call sign (identification)	Transmission									Reception		Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of meteorological information			Telecommand where appropriate				
		Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. Orbital information:
   a) angle of inclination of the orbit
   b) period of the object in space on the orbit
   c) altitude of apogee (km)
   d) altitude of perigee (km)
   e) in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   a) telegraphy
   b) telephony
   c) other types of communication, as appropriate
3. Special methods of modulation

5 — Radionavigation-satellite earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the transmitter site	Call sign (identification)	Transmission			Reception						Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks
						Telemetering		Tracking		Supplementary information necessary for the operation of the radionavigational system				
			Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			Special methods of modulation
1	2	3	4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10

6 — Radionavigation-satellite space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of stations.

Identity of the station	Call sign (identification)	Transmission									Reception		Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of navigation information			Telecommand where appropriate				
		Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. Orbital information:
   - *a)* angle of inclination of the orbit
   - *b)* period of the object in space on the orbit
   - *c)* altitude of apogee (km)
   - *d)* altitude of perigee (km)
   - *e)* in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth
2. Special channelling arrangements for:
   - *a)* telegraphy
   - *b)* telephony
   - *c)* other types of communication, as appropriate
3. Special methods of modulation

7 — Space research earth stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

1	Name by which the station is known or the name of the locality in which it is situated													
2	Geographical co-ordinates (in degrees and minutes) of the transmitter site													
3	Call sign (identification)													
		Transmission			Reception									
		Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (kW)	Telecommand where appropriate			Telemetering		Tracking		Reception of research information		
		4a	4b	4c	5a	5b	6a	6b	7a	7b	8	9	10	
											Identity of the station(s) with which communication is to be established	Operating administration or company	Remarks	
													Any special characteristics of the station and scope of research	

8 — Space research space stations

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations by alphabetical and/or numerical order of designation of station.

Identity of the station	Call sign (identification)	Transmission									Reception		Area of coverage or the name of the locality and country in which the associated receiving station(s) is located	Operating administration or company	Remarks
		Telemetering			Tracking			Transmission of information			Telecommand where appropriate				
		Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission	Power (Watts)	Frequency (Mc/s or Gc/s)	Class of emission, necessary bandwidth and description of transmission			
1	2	3a	3b	3c	4a	4b	4c	5a	5b	5c	6a	6b	7	8	9

1. In the case of an earth satellite, orbital information:
   - *a)* angle of inclination of the orbit
   - *b)* period of the object in space on the orbit
   - *c)* altitude of apogee (km)
   - *d)* altitude of perigee (km)
   - *e)* in the case of a stationary satellite, the mean geographical longitude of the projection of the satellite's position on the surface of the Earth
2. In the case of a space probe general indication of the trajectory of its orbit
3. Special methods of modulation

Names of the countries notifying the stations in alphabetical order of country symbols.
Names of stations in alphabetical order.

Name by which the station is known or the name of the locality in which it is situated	Geographical co-ordinates (in degrees and minutes) of the station	Centre of the frequency band observed (Mc/s or Gc/s)	Width of the frequency band observed	Antenna characteristics	Maximum hours of reception (G.M.T.)	Noise temperature (°K)	Class of observation	Operating administration or company	Remarks
1	2	3	4	5	6	7	8	9	10
									Any special additional characteristics of the station including: 1) altitude in metres above sea level, 2) main particulars of antenna, 3) scope of observations.

ANNEX 14

Revision of Appendix 10

In Appendix 10 of the Radio Regulations there shall be inserted in alphabetical order the following additional symbols :

EC	Communication-satellite space station
ED	Space telecommand space station
EH	Space research space station
EK	Space tracking space station
EM	Meteorological-satellite space station
EN	Radionavigation-satellite space station
ER	Space telemetering space station
RA	Radio astronomy station
TC	Communication-satellite earth station
TD	Space telecommand earth station
TH	Space research earth station
TK	Space tracking earth station
TM	Meteorological-satellite earth station
TN	Radionavigation-satellite earth station
TR	Space telemetering earth station

RESOLUTION No. [illegible]

Relating to the Provision and use of Information Regarding International Satellite Systems

The Extraordinary Administrative Radio Conference, Geneva, 1963,

considering

the interest of all administrations concerning the effective use of the radio frequency spectrum by the Space Services;

believing

a) that international satellite systems should provide for the interests and requirements of all countries;

b) that, in accordance with Article 4 of the International Telecommunication Convention, Geneva, 1959, the International Telecommunication Union should closely observe the development of the telecommunications aspects of international satellite systems;

c) that the permanent organs of the International Telecommunication Union should assist in that development as far as may be practicable;

d) that the development of space telecommunications ought not to be delayed, but that a suitable period of time will be needed for the acquisition of the additional data which will result from further experiment and operational experience;

e) that the interest mentioned above will best be served by the provision to administrations, as early as practicable, of information regarding the development of international satellite systems;

f) that this information, by reason of its early provision, must be regarded as of a preliminary nature;

g) that the data mentioned in *d)* above will need to be collated by the C.C.I.R.,C.C.I.T.T. and the I.F.R.B. for use by such future con-

ferences as may be called to consider the international regulation of space communication systems;

resolves

1. that, as a measure which will enable administrations to make early comment upon satellite system projects, any administration (or group of administrations) which intends to establish an international satellite system shall provide the Board, as early as practicable during the co-ordination process (Radio Regulation No. **639AD**) with information similar to the data mentioned in Appendix IA such as will provide a general description of the satellite system, e.g.

   a) the frequencies and bandwidths to be used in the initial operation of the system;

   b) the over-all frequencies and bandwidths of the satellite system required to facilitate the final development of the system, in order to meet the needs of other administrations wishing to participate in the system;

   c) the sites and functions of the earth stations in the system and the co-ordination distances, as a function of azimuth, which are applicable thereto, as defined in Recommendation No. [Document No. 157];

2. that the Board shall put these data in a special section of its weekly circular, for the information of all administrations;

and further resolves

3. that, if after studying the information given under 1) above, an administration believes that it has reason to expect that harmful interference may be caused to its space services (either those existing, or those concerning which information has already been circulated under the provisions of this Resolution), it shall address its comments, within ninety days of receipt of the relevant circular, to the administration concerned; a copy of those comments shall be sent to the Board.

4. that, if comments, as allowed for in 3) above, are received, then the administration concerned shall endeavour to find a solution satisfactory to the administration which has made the comments.

5. that, if an agreement is not reached the Board may be asked for such suggestions as it may be able to offer in the circumstances;

6. that, if within the time referred to in paragraph 3), no comments concerning the data mentioned in paragraph 2) are received the administration concerned is entitled to assume that there are no comments on the action proposed;

7. that, in order to keep up-to-date the information relating to space systems, the Board shall collate this information and publish it periodically.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 197-E
6 November, 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

AGENDA

FOR THE 5TH PLENARY MEETING

Wednesday, 6 November, 1963, at 14.30 hours

1. Any items outstanding from the 4th Plenary Meeting.

2. Tenth series of "blue" texts 1) 3) submitted by the Editorial Committee (Document No. 185).

3. Eleventh series of "blue" texts 3) submitted by the Editorial Committee (Document No. 186).

4. Miscellaneous.

Gunnar PEDERSEN
Chairman of the Conference

1) Texts submitted by Committee 6 to Committee 7

3) Texts submitted by Committee 4 to Committee 7

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 198-E (Rev.)
6 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Memorandum by the Secretary-General

SITUATION OF CERTAIN COUNTRIES WITH RESPECT TO THE CONVENTION

Referring to Document No. 48, I take pleasure in informing the Conference that the Government of the Republic of the Philippines has today deposited an instrument of ratification of the Geneva Convention.

GERALD C. GROSS
Secretary-General

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 198-E
6 November 1963
Original : English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

PLENARY MEETING

Memorandum by the Secretary-General

SITUATION OF CERTAIN COUNTRIES WITH RESPECT TO THE CONVENTION

Referring to Document No. 48, I take pleasure in informing the Conference that the Government of the Republic of the Philippines has today deposited an instrument of accession to the Geneva Convention.

GERALD C. GROSS
Secretary-General

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 199-E
6 November 1963
Original: French
English

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

COMMITTEE 5

SUMMARY RECORD

OF THE 8th MEETING

Monday, 4 November 1963, at 9.30 a.m.

1. The agenda contained in Document No. 174 was adopted, except for item 7 which was deleted.

2. Mr. Place (France), Chairman of Committee 7, drew the attention of Committee 5 to the need for it to finish its work by 12.30 p.m. on Monday, 4 November, if the signature was to take place, as planned, on Friday, 8 November, towards 10 p.m.

3. Fifth Report by Working Group 5B - Radio Astronomy (Document No. 160, with addendum and corrigendum)

Appendices 1 and 2 were approved without discussion.

It was decided to place the last sentence in Appendix 3 in square brackets. Appendix 3 was then approved, with this amendment.

Appendix 4, as presented in corrigendum No. 1 to Document No. 160, was approved. Appendix 5 was amended in accordance with Appendix 3 to Document No. 164. Moreover, the United Kingdom, Belgium, the Republic of Cyprus, Spain, Ethiopia, the State of Israel, Portugal, Sweden and the Swiss Confederation requested to be included in foot-note 354B. With this amendment, Appendix 5 was adopted.

Subject to the alignment by the Editorial Committee of Appendix 6 and foot-note 412A as it appears in Appendix 7 with Appendix 6B of Document No. 164, which also contains a foot-note 412A, Appendices 6 and 7 of Document No. 160 were approved.

Appendix 8, in which Algeria was deleted from foot-note 412B, was approved without discussion.

Mr. V.V. Rao (Republic of India), Chairman of Working Group 5B, thanked the delegates for their fine co-operation, especially Mr. B. Nielsen (Denmark), Mr. R. Gonze (Belgium), Mr. D.J.M. Pardo Horno (Spain) and Mr. G.W. Swenson (U.S.A.).

It was decided to leave it to the plenary meeting to consider the draft foot-note proposed by the United Kingdom in Document No. DL/42.

4. Sixth and Last Report by Working Group 5B - Space Research (Document No. 165)

Mr. V.V. Rao (Republic of India), introducing Document No. 165, pointed out that "Radio Astronomy" should be replaced by "Space Research" in paragraph 1.1 and in foot-note 215A of Appendix 1.

a) Appendix 1 was then amended as follows :

- the space research service was added to the Table as a secondary service on a world-wide basis,

- following an explanation by Mr. A. Matthey (see Annex 1) and with the agreement of the U.S.S.R. delegation, foot-note 215A was drafted to read :

215A In Cuba, Poland, Hungary, Roumania, Czechoslovakia and the U.S.S.R., space research is a primary service in the bands 15,762 - 15,768 kc/s and 18,030 - 18,036 kc/s.

Subject to those amendments, Appendix 1 to Document No. 165 was adopted.

b) In Appendix 2, foot-note 278 should be amended as follows :

MOD 278 In New Zealand, the bands 132 - 136 Mc/s and 138 - 144 Mc/s are allocated to the aeronautical mobile (OR) service.

Moreover, in the English version of foot-note 279A, the word "also" should be inserted before "allocated".

Subject to this amendment and correction, Appendix 2 was approved.

c) Appendix 3 was not examined. It will be examined together with Document No. 164.

d) Appendix 4 was approved without discussion.

e) Appendix 5 was amended as follows :

- foot-note 388 was added,

- foot-note 389A was drafted as follows :

389A In Cuba, Poland, Hungary, Roumania, Czechoslovakia and the U.S.S.R., the band 5670 - 5725 Mc/s is allocated, on a primary basis, to the space research service.

Appendix 5 was adopted, subject to these amendments.

As Chairman of Working Group 5B, Mr. V.V. Rao thanked his collaborators, particularly Mr. F.W.U. Mohr (F.R. of Germany), who had helped him to prepare that Appendix.

f) Appendix 6 was approved without discussion.

g) Appendix 7 was adopted, subject to the inclusion of Roumania and the deletion of the word "also" in foot-note 412A.

h) Appendix 8 was adopted, subject to the inclusion of Roumania and the deletion of the word "also" in foot-note 412B.

i) Appendix 9 was adopted, subject to the inclusion of Roumania and the deletion of the word "also" in foot-note 412C.

j) Mr. V.V. Rao thanked Mr. B. Desta for his valuable assistance in the preparation of that document.

k) The U.S.S.R. made some reservations regarding the band 900 - 1000 Mc/s (paragraph 4 of Document No. 165).

l) The Chairman thanked Mr. V.V. Rao and his Working Group for the excellent work they had done.

5. Fourth report of Working Group 5C - Meteorological-Satellite Service (Document No. 164)

a) Subject to the inclusion of the United Arab Republic in foot-note 313, Appendix 1 was adopted.

b) Appendix 2 was amended as follows :

- band 460 - 470 Mc/s — FIXED (primary service)
  MOBILE (primary service)
  Meteorological-satellite (secondary service)

with the following foot-note :

324A In Cuba, Bulgaria, Hungary, Poland, Roumania, Czechoslovakia and the U.S.S.R., the band 460 - 470 Mc/s may be used by the meteorological-satellite service, on a primary basis, subject to agreement between the Administrations concerned and those whose services, operating in accordance with the present Table, are affected.

With these amendments, Appendix 2 was approved.

c) Appendix 3 was amended as follows :

354B In Australia, Belgium, Cyprus, Spain, Ethiopia, Indonesia, Israel, New Zealand, Portugal, the United Kingdom, Sweden and Switzerland, the bands 1660 - 1670 Mc/s and 1690 - 1700 Mc/s are also allocated, on a secondary basis, to the fixed service and mobile, except aeronautical mobile, service.

354C In view of the recent discovery of two spectrum lines in the 1665 - 1667 Mc/s band, Administrations are requested to take all possible steps to protect radio astronomy observations from all harmful interference.

With those foot-notes, Appendix 3 was approved.

d) Appendix 4 was approved without discussion.

e) Subject to the insertion in the Table of the meteorological-satellite service as a secondary service and the deletion of foot-notes 324A and 356A, Appendix 5 was adopted by 30 votes to none, with 21 abstentions.

f) The Committee then adopted the foot-note relating to the 9800 - 10,000 Mc/s and the 10,000 - 10,500 Mc/s bands.

399A The band 9975 - 10,025 Mc/s may be used by radiolocation devices on meteorological satellites.

The U.S.S.R. made a reservation in respect of that foot-note.

g) It was decided to submit to the Plenary meeting the new text for foot-note 412A proposed by the U.S.S.R.

412A The band 34.4 - 34.5 Gc/s may be used by radiolocation devices on meteorological-satellites.

6. Sixth and last report of Working Group 5C - Frequencies for use in emergencies (Document No. 173)

a) Footnote 221A was amended to read :

The frequency 20 007 kc/s may also be used, in emergency ....(the rest remaining unchanged).

With the above amendment, Appendix 1 was adopted.

b) Appendix 2 was rejected by 42 votes AGAINST, 9 votes IN FAVOUR and 7 abstentions. However, Mr. J.T. Penwarden was requested to prepare, jointly with the Delegates of the U.S.S.R. and the U.S.A., a draft resolution on the lines of paragraph 1.4. The draft resolution would be submitted directly to the Plenary Meeting.

It was so agreed.

7. Report of ad hoc Group 5 (RR 373 MOD) (Document No. 139, Appendix 1)

Denmark, supported by Sweden, proposed the following wording for foot-note 373 :

"In Denmark, Norway, Sweden and Switzerland, the Radiolocation Service in the band 3400 - 3600 Mc/s operates on a basis of equality with the Communication-satellite Service in other countries."

That foot-note would be forwarded, together with the foot-note in Appendix 1 to Document No. 139, directly to the Plenary Meeting.

The U.S.S.R. stated that it would make a statement relating to the Communication-satellite Service at that Plenary Meeting.

8. Fifth report of Working Group 5C - Radionavigation-satellite Service (Document No. 169)

a) Appendix 1 was adopted, subject to the retention of foot-note 274 and the inclusion in foot-note 285A of Pakistan, Roumania and Lebanon.

b) The band 400.05 - 402 Mc/s, the Table and foot-notes in Appendix 3 to Document No. 165, were adopted for Appendix 2.

Thus amended, Appendix 2 was adopted.

c) Appendix 3, with the title changed to "Draft recommendation relating to the introduction and use of the Radionavigation-satellite Service" was adopted.

d) Appendix 4 was approved without discussion.

9. The Chairman asked for the delegations' views regarding the date of implementation of the decisions taken at the present Conference. Many Administrations appeared to favour the date of 1 January 1965.

10. Mr. J.T. Penwarden thanked Mr. A. Matthey of the I.F.R.B. Secretariat for his excellent work. The Chairman joined in the thanks.

11. Colombia stated that it wished to make a reservation with regard to the bands 3,400 - 4,200 Mc/s and 4,400 - 4,700 Mc/s (§ 6.2 and 7 in Document No. 139).

12. The meeting rose at 6.20 p.m.

Chairman

W. KLEIN

Annex : 1

ANNEX

EXPLANATION BY A. MATTHEY, SECRETARY OF THE COMMITTEE

In answer to the question about the wording of footnote 215A, I cannot commit the I.F.R.B., but, as secretary of the Committee, I can give my understanding of the Board's views as applied to this situation which is as follows: the existing world-wide allocation to the Fixed Service is retained in the Table; the Committee has opposed the placing of the Space Research Service in the Table on a primary basis but, as a compromise, agrees that this service may be included in the Table on a secondary basis. This means that the countries other than those mentioned in the proposed footnote are unable to recognize the Space Research Service in these bands on anything but a secondary basis, for which No. 139 of the Radio Regulations is quite explicit.

The footnote proposed is framed in the standard terminology "In Czechoslovakia and the U.S.S.R., the bands 15,762 - 15,768 kc/s and 18,030 - 18,036 kc/s are also allocated, on a primary basis, to the space research service". That it is not necessary to include the words "on a primary basis" is a minor drafting point, however, explanations have recently been given as to the interpretation of the standard wording and clearly such wording is not appropriate in this particular case, because countries outside the footnote area have agreed to admit the Space Research Service in these bands only on a secondary basis.

As I understood the last intervention of the U.S.S.R. Delegation, Mr. Chairman, they wish, in these circumstances, to inform all countries that in their country they will consider the Space Research Service as being on a primary basis. It is, of course, their sovereign right to do so. Their present object in asking for a footnote appears to be to inform all countries of this situation.

In this case, therefore, I feel sure that the standard terminology of "also allocated" should not be used.

Other wording, which may be interpreted in the light of the present circumstances, should be found. Perhaps a wording such as "In Czechoslovakia and the U.S.S.R., the space research service in the bands 15,762 - 15,768 kc/s and 18,030 - 18,036 kc/s is a primary service", might be acceptable, it being understood that these countries are not seeking any recognition of this status from outside countries, outside the area covered in the footnote.

In short, Mr. Chairman, for the present case, the standard wording of "also allocated" is not appropriate and the real intention should perhaps be spelled out.

Thank you, Mr. Chairman.

SPACE RADIOCOMMUNICATION CONFERENCE

Document No. 200-E
7 November, 1963

E.A.R.C. TO ALLOCATE FREQUENCY BANDS FOR SPACE RADIOCOMMUNICATION PURPOSES - GENEVA - 1963

LIST OF DOCUMENTS FOR THE SPACE RADIOCOMMUNICATION CONFERENCE

(Documents No. 1 to 200)

No.	Title	Origin	Destination
1 Corr. 1, 2 and Add.	Recommendations, Resolutions and Reports	C.C.I.R.	P.M.
2	Frequency requirements for communication satellite services	U.K.	P.M.
3 Corr. 1 & 2	Proposals for the revision of Art.5 of the Radio Regulations	U.K.	P.M.
4	Proposals for the revision of Art. 7 of the Radio Regulations	U.K.	P.M.
5	Proposals for the revision of Art.9 and Appendix 1 to the Radio Regulations	U.K.	P.M.
6	Proposal concerning the form of the Final Acts of the Conference	U.K.	P.M.
7 and Corr.	Proposed amendments to the Radio Regulations	France	P.M.
8 Corr. 1, 2 and Add	Proposals for the revision of the Radio Regulations	U.S.A.	P.M.
9	Proposals for frequency allocations to space radio research and communications	Nigeria	P.M.
10	Proposals for the revision of the Radio Regulations	Canada	P.M.
11	Proposals for the revision of the Radio Regulations	Japan	P.M.
12	Telecommunication and the peaceful uses of outer space	G.S.	P.M.

No.	Title	Origin	Destination
13	Subscribers tolerance of propagation time and of echos	C.C.I.T.T.	P.M.
14	Radio Astronomy observations in the frequency band 606-614 Mc/s	Sweden	P.M.
15	Proposed recommendation concerning the calculation of co-ordination distances for communication-satellite earth stations	U.K.	P.M.
16	Note by the General Secretariat	G.S.	P.M.
17 and Corr.1,2	Proposals of administrations relating to Art.5 of the Radio Regulations	I.F.R.B. and G.S.	P.M.
18	Proposals concerning the Radio Regulations	G.S.	P.M.
19	Proposals for frequency allocations for the Radio Astronomy Service	Australia	P.M.
20 (Rev)	Proposals for the revision of Art.1 of the Radio Regulations	I.F.R.B. and G.S.	P.M.
21 (Rev)	Proposals for the revision of Art.7 of the Radio Regulations	I.F.R.B.	P.M.
22	Note of the General Secretariat	G.S.	P.M.
23	Note of the General Secretariat	G.S.	P.M.
24 (Rev)	Proposals for the revision of Art. 20 of the Radio Regulations and Appendices 9 and 10 thereto	I.F.R.B. and G.S.	P.M.
25	Proposals for the revision of Art.1 of the Radio Regulations terms and definitions	U.K.	P.M.
26	Proposals for the revision of Art.5 of the Radio Regulations (radio astronomy)	Netherlands	P.M.
27	Proposals for consideration by the extraordinary Administrative Radio Conference, Geneva, 1963	Australia	P.M.
28	Note by the French administration on the development of space telecommunications	France	P.M.

No.	Title	Origin	Destination
29	The activity of the Fucino earth station with the experimental satellites Relay, Telstar I, Telstar II	Italy	P.M.
30	Earth station of the Deutsche Bundespost for the transmission of communications via artificial earth satellites	F.R. of Germany	P.M.
31	Proposals for the revision of the Radio Regulations	Israel	P.M.
32 (Rev.2)	Proposals by the Union of Soviet Socialist Republics	U.S.S.R.	P.M.
33 Corr. 1	Progress in the development of space communication system	Japan	P.M.
34	Proposals for the revision of Art.1,4, 9 and 14 of the Radio Regulations	Australia	P.M.
35	Proposals for Art.5 of Radio Regulations	Mexico	P.M.
36	Proposals for Radio Regulations	Mexico	P.M.
37	Scientific and Technical progress in space exploration and radiocommunication by U.S.A.	U.S.A.	P.M.
38	Traffic Data assembled for the Plan Committee	C.C.I.T.T.	P.M.
39	Proposal to the Conference	Israel	P.M.
40	Report on studies relating to the possible addition of new Appendix (No. 26 A) to the Radio Regulations	I.F.R.B.	Com.4
41 and Add	Report on existing and planned frequency usage of certain frequency bands in which the existing categories of service to which the bands are allocated, will either be eliminated or their status will be down-graded under proposals submitted to the Conference by Administrations	I.F.R.B.	Com.5
42	Note by the chairman of the Conference	-	-

No.	Title	Origin	Destination
43	Report on studies relating to the possible revision of Art.9 of the Radio Regulations and Appendix 1 thereto	I.F.R.B.	Com. 6
44	Reserved		
45	Report on studies relating to the possible lay-out of the final Acts of the Space Radiocommunication Conference	I.F.R.B.	Com. 7
46	Convening of the Conference	S.G.	P.M.
47	Invitations to the Conference	S.G.	P.M.
48	Situation of certain countries with respect to the Convention	S.G.	P.M.
49	Secretariat of the Conference	S.G.	P.M.
50	Proposals for the work of the Conference	S.G.	P.M.
51	Agenda, 1st meeting of the Heads of delegations	S.G.	Heads of Delegations
52 and Add	Suggestions for the organisation of the work of the Conference	S.G.	P.M.
53	Budget of the Conference	S.G.	P.M.
54	List of documents for the Conference	S.G.	-
55	Proposals for the revision of Art.5 of the Radio Regulations	Japan	P.M.
56	Agenda for the 1st plenary meeting	S.G.	P.M.
57	Agenda of the 1st meeting of Committee 4	Com.4	Com.4
58	Agenda of the 1st meeting of Committee 5	Com 5	Com.5
59 and Corr	Committee structure	S.G.	P.M.
60	Report on the activities of the Scandinavian countries in the field of space communications	Denmark Norway Sweden	Com.4
61	Utilisation of telecommunication satellites for television	E.B.U.	Com.4
62	Basic achievements and trends in space Research in the Soviet Union	U.S.S.R.	Com.4

No.	Title	Origin	Destination
63	Agenda 1st meeting of Committee 6 (Regulations)	Com. 6	Com. 6
64 and Corr.	Structure of the working Groups of Committee 4 (technical)	Com. 4	Com. 4
65 and Corr.	Structure of the working groups of Committee 5	Com. 5	Com. 5
66	Summary record of the 1st meeting	Com. 4	Com. 4
67 and Corr.	Minutes of the 1st meeting of Heads of delegations	Rapporteurs	Heads of Delegation
68	Statement concerning Doc.32 Rev.	Bulgaria Hungary Poland Roumania Czechoslovakia	Com.4,5,6
69	Structure of the working groups of Committee 6 (Regulations)	Com.6	Com.6
70	Summary record of the 1st meeting	Com.5	Com.5
71	Agenda of the 1st meeting of Committee 2 (Credentials)	Com. 2	Com.2
72	Statement	U.S.S.R. Bielorussia Ukrania	P.M.
73	Minutes of the 1st meeting of Committee 6 (Regulations)	Com.6	Com.6
74	Minutes of the opening plenary meeting	Rapporteurs	P.M.
75 and Add	Radio Astronomy and space research services - IUCAF recommendations	W.G. 5B	W.G. 5B
76	Experimental earth station at Goonhilly Downs	U.K.	P.M.
77 (Rev.)	Special meeting of the space radio-communication Conference	S.G.	-
78	Agenda for the 1st meeting	Com.7	Com.7
79	Note by the Secretariat to the budget control committee of the space Conference	S.G.	Com.3

No.	Title	Origine	Destination
80	Agenda 1st meeting of Committee 3 (Budget Control Committee)	Com.3	Com.3
81	Proposals for revision of Art.8	India	Com.6
82	Proposals for formulation of a new Art. 9 bis	India	Com.6
83 and Corr.	Summary record of the 1st meeting	Com. 2	Com. 2
84	Oscar space satellite program of the International Amateur Radio Union	W.G. 5C	W.G. 5C
85	Statement by the Delegation of the Republic of Cuba to the EARC on space communications	Cuba	P.M.
86	Statement	Cuba	Com. 4,5,6
87	Note by the Secretary-General	S.G.	P.M.
88	Limitation of horizontal effective radiated power (E.R.P) of earth stations and of terrestrial stations in bands shared with communications-satellites earth station receivers	U.K.	Com.4
89	Summary record of the 1st meeting	Com.3	Com.3
90	Statement	Rep. of China	P.M.
91 and Corr.	Report of working group 4B	W.G. 4B	Com.4
92 (Rev.)	Summary report of the 1st meeting	Com. 7	Com. 7
93	Situation of certain countries with respect to the Convention	S.G.	P.M.
94	genda 2nd meeting of Committee 4	Com. 4	Com. 4
95 (Rev.)	1st report of the W.G. 5C to Committee 5 - Amateur service	W.G. 5C	Com. 5
96	2nd report of W.G. 5C to Committee 5 - Satellite identification	W.G. 5C	Com. 5
97	Additional proposal for consideration by the extraordinary Administrative Radio Conference	Australia	Com. 5
98	1st report by the Working Party of Committee 2 (Credentials)	W.P.Com.2	Com. 2
99	Proposals for revision of Art. 1	Belgium France Portugal	Com. 4

No.	Title	Origin	Destination
100	List of documents	S.G.	-
101	Statement by the delegations of the People's Republic of Bulgaria, the Hungarian People's Republic, the Roumanian People's Republic, and the Czechoslovak Socialist Republic	Bulgaria Hungary Roumania Czechoslovakia	P.M.
102 and Corr.	First report of Working Group 6B to Committee 6	W.G. 6B	Com.6
103	Situation of certain countries with respect to the Convention	S.G.	P.M.
104	Summary report of the second meeting	Com.4	Com.4
105 (Rev.)	Agenda third meeting of Committee 4	Com.4	Com.4
106	Statement	China	P.M.
107 (Rev.2)	Memorandum on amateur experimental space satellite activity	I.A.R.U.	-
108	First report by working group 5A to Committee 5 (Allocations)	W.G. 5A	Com.5
109	Proposed Resolution to the Administrative Council concerning future management of frequency bands allocated for Space Radiocommunication purposes	U.S.A.	P.M.
110 and Corr.	Terms of reference of the C.C.I.T.T./ C.C.I.R. plan committee	C.C.I.T.T. C.C.I.R.	-
111	First report by Working Group 5B to Committee 5 - Space research service	W.G. 5B	Com.5
112	Second report by Working Group 5B to Committee 5 (Radio Astronomy Service) - Telemetering	W.G. 5B	Com.5
113 and Add.	Second report by Working Group 5A to Committee5 (Allocations)	W.G. 5A	Com.5
114	Third report by Working Group 5C to Committee 5 (Allocations) - Aeronautical Services	W.G. 5C	Com.5
115	Report of Working Group 4B (part 2)	W.G. 4B	W.G. 4B
116	Summary record of the third meeting	Com. 4	Com.4
117	Tentative proposals for terms and definitions	W.G. 4A	W.G. 4A
118	Agenda fifth meeting of Committee 4	Com. 4	Com. 4

No.	Title	Origin	Destination
119	Agenda fourth meeting of Committee 4	Com.4	Com.4
120	Co-ordination procedure Explanatory memorandum	United Kingdom	Com.6
121	Draft Resolution - The interconnection of communication -satellite systems and other transmission systems	United Kingdom	Com.4
122 (Rev.)	First report of Working Group 4C - Co-ordination distance procedure in the 1-10 Gc/s band	W.G. 4C	Com.4
123	Third report by Working Group 5B - Radio-Astronomy Service	W.G. 5B	Com.5
124	Agenda second meeting of Committee 5 (Allocations)	Com.5	Com.5
125	Fourth report of Working Group 5B to Committee5 Radio Astronomy Service	W.G. 5B	Com.5
126 (Rev.2) and Corr.	Second report of Working Group 4C - Sharing Criteria	W.G. 4C	Com.4
127	Third report by Working Group 5A to Committee 5 (Allocations) - Telemetering	W.G. 5A	Com.5
128 (Rev,)	Report of Working Group 4B (third part)	W.G. 4B	Com.4
129	Summary record of the fourth meeting	Com. 4	Com.4
130	Report of Working Group 5B to Committee 5 -	W.G. 5B	Com.5
131	Telecommunication and the peaceful uses of outer space	S.G.	-
132	Statement by the Delegation of the People's Republic of Poland	Poland	P.M.
133	Agenda fifth meeting of Committee 5 (Allocations)	Com. 5	Com.5
134	Second report by the Working Group of Committee 2, (Credentials)	W.G. Com. 2	Com.2
135	Agenda second meeting of Committee 2 (Credentials)	Com.2	Com.2
136	Second and last report of Working Group 6B to Committee 6	W.G. 6B	Com.6
137	Agenda sixth meeting of Committee 5(Allocations)	Com.5	Com.5
138	Summary Record of the fifth meeting	Com.4	Com.4

No.	Title	Origin	Destination
139 and Add.	Fourth and last report by Working Group 5A to Committee 5 (Allocations)- Communication-satellite service	W.G. 5A	Com.5
140	Summary Record of the fourth meeting	Com. 5	Com.5
141	Statement by the Delegation of the Republic of China to the E.A.R.C. to allocate frequency bands for space radio communication purposes	China	P.M.
142	Summary Record of the third meeting	Com.5	Com.5
143	Report of Working Group 6A to Committee 6	W.G. 6A	Com.6
144	Draft - Article 9	Com.6	Com.6
145	Draft - Article 9A	Com.6	Com.6
146	Draft - Appendix 1 MOD	Com.6	Com.6
147	Appendix 1A - Notices relating to stations in the space and radio astronomy services	Com.6	Com.6
148	Draft - 114 MOD § 2	Com.6	Com.6
149	Draft Recommendation relating to the notification of frequency assignments for joint space telecommunication systems	Com.6	Com.6
150	List of documents	-	-
151	Agenda of the 2nd meeting of Committee 6 (Regulations)	Com.6	Com.6
152	Draft Resolution relating to the provision of information regarding International Satellite systems	Com.6	Com.6
153 (Rev.2)	Summary record of the 2nd meeting of Committee 5	Com.5	Com.5
154	Agenda of 7th meeting of Committee 5 (Allocations)	Com.5	Com.5
155	Chapter 1-Terminology	Com.4	Com.4
156 (Rev.)	Agenda of 6th meeting of Committee 4	Com.4	Com.4
157	Draft recommendation (Calculation of Co-ordination distance for earth stations in the communication-satellite service)	Com.6	Com.6
158 (Rev.)	Summary record of the fifth meeting	Com.5	Com.5

No.	Title	Origin	Destination
159 and Rev.	Draft Recommendation	Com.4	Com.4
160, Corr.1 and Add	Fifth Report by Working Group 5B to Committee 5 (Radio Astronomy Service)	Com.5	Com.5
161	Agenda of the 3rd meeting of Committee 6 (Regulations)	Com.6	Com.6
162 (Rev.2)	Summary Record of the 6th meeting	Com.5	Com.5
163 (Rev.)	Draft recommendation (Study of modulation methods for radio relay systems)	Com.4	Com.4
164	Fourth report by Working Group 5C to Committee 5 (Allocations)	W.G.5C	Com.5
165	Sixth and last report by Working Group 5B to Committee 5	W.G.5B	Com.5
166	Recommendation	Delegation of Israel	P.M.
167 and Add.	B.I (First Reading)	Edit.Com.	P.M.
168	Draft Recommendation	Com.4	Com.4
169	Fifth report by Working Group 5C to Committee 5	W.G.5C	Com.5
170	Agenda for the Second Plenary Meeting	P.M.	P.M.
171	B.2 (First Reading)	Edit.Com.	P.M.
172 and Add.	B.3 (First Reading)	Edit.Com.	P.M.
173	Sixth and last report of Working Group 5C to Committee 5	W.G.5C	Com.5
174	Agenda of the ninth meeting of Committee 5	Com.5	Com.5
175	B.4 (First Reading)	Edit.Com.	P.M.
176	B.5 (First Reading)	Edit.Com.	P.M.
177	B.6 (First Reading)	Edit.Com.	P.M.
178	Summary record of the second meeting of Committee 2 (Credentials)	Com.2	Com.2

No.	Title	Origin	Destination
179	Report by Committee 2 (Credentials)	Com.2	P.M.
180	Draft Recommendation	Chairman of the Conference	P.M.
181	B.8 (First Reading)	Edit.Com.	P.M.
182	Summary record of the 7th meeting of Committee 5	Com. 5	Com. 5
183	B.9 (First Reading)	Edit.Com.	P.M.
184	Draft Resolution relating to space vehicles in distress and emergency	W.G. 5 ad hoc	P.M.
185	B. 10 (First Reading)	Edit.Com.	P.M.
186	B. 11 (First Reading)	Edit.Com.	P.M.
187	B. 7 (First Reading)	Edit.Com.	P.M.
188	Note by the Secretariat	S.G.	-
189 & Corr.	Summary record of 2nd meeting of Committee 6 (Regulations)	Com. 6	Com. 6
190	Proposed amendment to document No. 171	Australia	P.M.
191	Agenda for the 3rd plenary meeting	P.M.	P.M.
192	International technical cooperation and assistance in the field of space radio-communications	Delegation of S.F.R. of Yugoslavia	P.M.
193	Declaration by the United Nations	United Nations	P.M.
194 Rev.	Summary record of the third and last meeting of Committee 6 (Regulations)	Com.6	Com.6
195	Agenda for the 4th plenary meeting	P.M.	P.M.
196	R.1 (Second Reading)	Edit.Com.	P.M.
197	Agenda for the 5th plenary meeting	P.M.	P.M.
198	Memorandum by the Secretary-General- Situation of certain countries with respect to the Convention	S.G.	P.M.
199	Summary record of the 8th Meeting of Committee 5	Com. 5	Com. 5
200	List of documents for the Conference	-	-