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**Documents of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service
(WARC-Aer2) (Geneva, 1978)**

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

- This PDF includes Document No. 1-100
- The complete set of conference documents includes Document No. 1-364, DT No. 1-65, DL No. 2-4

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 1-E
1 November 1976
Original : French
English
Spanish

PLENARY MEETING

Memorandum by the Secretary-General

AGENDA OF THE CONFERENCE

The agenda of the Conference is contained in Resolution No. 763 which was adopted by the Administrative Council at its 28th Session (1973).

The text of the Resolution, as amended after consultation with the Members of the Union in 1976, is annexed hereto.

M. MILI
Secretary-General

Annex : 1



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A N N E X

R No. 763 WORLD ADMINISTRATIVE RADIO CONFERENCE ON THE AERONAUTICAL
(amend- MOBILE (R) SERVICE
ed)*)

The Administrative Council,

considering the result of the consultation following Circular-
telegram No. A 23 dated 13 June 1975,

resolves

1. that the Conference shall meet in Geneva on 6 February 1978*) for a maximum duration of four weeks;
2. that its agenda shall be as follows :
 - 2.1 matters relating to aeronautical mobile (R) service
 - 2.1.1 to revise, on the basis of single sideband operation, the Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations) to satisfy within the minimum amount of spectrum necessary the needs of that service;
 - 2.1.2 to consider and review, as necessary, the provisions of the Radio Regulations and the Additional Radio Regulations governing the aeronautical mobile (R) service which are consequential to item 2.1.1 above;
 - 2.1.3 to adopt such resolutions and recommendations related to the foregoing as may be necessary.
 - 2.2*)

*) Note by the General Secretariat : On a proposal by the Administrative Council (31st Session, 1976), approved by the Members of the Union, the date of the Conference was changed from 7 March 1977 to 6 February 1978. Furthermore, agenda item 2.2 concerning matters relating to the re-arrangement of the Radio Regulations was transferred to the Broadcasting Satellite Conference (see Resolution R No. 762).

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Addendum No. 1 to

Document No. 2-E

3 February 1978

Original : French, English,
Spanish

PLENARY MEETING

Note by the Secretary-General

REPORT BY CCIR STUDY GROUP 8

Study Group 8, during its recent Final Meeting, approved as an addendum to its Report mentioned above an addition to paragraph 8.4 and a new paragraph 8.5.

As requested by the Director of the CCIR I hereby have the honour to transmit these texts to the Conference.

M. MILI

Secretary-General

Annexes : 2



A N N E X 1

ADDENDUM TO THE REPORT BY STUDY GROUP 8
TO THE WORLD ADMINISTRATIVE RADIO CONFERENCE
ON THE AERONAUTICAL MOBILE (R) SERVICE, 1978

ADD on page 15, after para 8.4 "INTERFERENCE FROM INTERMODULATION PRODUCTS"
the following :

" The final meeting of Study Group 8 noted that the CCIR Secretariat had now provided a computer programme and that the IFRB, as part of its preparatory work for the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, 1978, studied the application of this computer programme in the development of a planning method for revision of the Frequency Allotment Plan contained in Appendix 27 to the Radio Regulations and came to the conclusion that general application of the computer programme in the revision of the Plan would be a planning constraint which could reduce the possibilities of achieving economical use of the available spectrum.

The Study Group considered that

- in view of the fact that the aeronautical stations at which this problem might arise are likely to be few in number; and
- the use of frequencies of the same megahertz order at such stations could be examined on a case-by-case basis to avoid third-order intermodulation products

and therefore concluded that there is no need for general application of this computer programme in the revision of the Plan."

A N N E X 2

ADD on page 15 the following new para. 8.5 :

"8.5 ADJACENT CHANNEL PROTECTION CRITERIA FOR THE AERONAUTICAL MOBILE (R) SERVICE

1. CCIR noted that the experience of using the plan contained in Appendix 27 to the Radio Regulations for the allotment of adjacent channels had, since its implementation, been generally satisfactory.
2. The adequacy of the existing allotment plan is thought to be largely due to the statistical nature of numerous factors all combining to offer an acceptable degree of improbability to there being a fundamental adjacent channel interference problem of any significance. The major factors considered were the random access use of the channels and the statistical noise variation with position and distance over largely dispersed geographical areas.
3. CCIR further noted that there had been a few problems of a frequency management nature, concerning adjacent channel assignments with the possible implementation of some sub RDARA allotments.

CCIR Study Group 8 agreed that Doc. 8/359 (identical with Doc. No. 42 of the Aeronautical Conference) should be of interest to the Aeronautical Conference (78) and should be carefully considered in order to define the extent to which adjacent channel criteria should be taken into account in planning."

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 2-E

1 November 1976

Original : English

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Spanish

PLENARY MEETING

Note by the Secretary-General

REPORT OF THE SPECIAL MEETING OF
STUDY GROUP 8 OF THE CCIR TO
THE WARC AER(R), 1978

Please find attached hereto the Report of the Special Meeting of Study Group 8 of the CCIR to the WARC AER(R), 1978 (see Administrative Council Resolution No. 764 (amended)).

This Report has been transmitted to me by the Director of the CCIR in view of its distribution to the participants of the Conference.

M. MILI

Secretary-General

Annex : 1



INTERNATIONAL RADIO CONSULTATIVE COMMITTEE

C.C.I.R.

**REPORT BY STUDY GROUP 8 TO THE WORLD ADMINISTRATIVE
RADIO CONFERENCE ON THE AERONAUTICAL MOBILE (R) SERVICE, 1977**

(Special Meeting held in Geneva, 22 to 26 March 1976)

**Published by the
INTERNATIONAL TELECOMMUNICATION UNION
Geneva, 1976**

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1. INTRODUCTION

At its 30th Session (June, 1975), the Administrative Council of the I.T.U. adopted Resolution 763, by which a World Administrative Radio Conference on the Aeronautical Mobile (R) Service [WARC AER (R)] is convened in Geneva on 7 March 1977, for a period of four weeks.

At the same Session the Council also adopted Resolution 764 concerning the preparation of this Conference, instructing, inter alia, the Director of the C.C.I.R.:

"to arrange for the technical bases to be studied for a revision of Part I of Appendix 27 to the Radio Regulations (Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information) and to submit a report to the World Administrative Radio Conference on the Aeronautical Mobile (R) Service".

Considering these instructions, and bearing in mind the provisions of Article 73, paragraph 2(3) (No. 404) of the International Telecommunication Convention, a Special Meeting of experts in aeronautical radiocommunications of Study Group 8 was organized to prepare technical bases for the WARC AER (R) 1977, having a terms of reference the precited instructions of the Administrative Council.

The meeting took place at I.T.U. Headquarters from 22 to 26 March 1976.

While the Special Meeting was formally a meeting of Study Group 8, it was anticipated, in view of the terms of reference, that certain subjects had to be considered which fall within the terms of reference of other C.C.I.R. Study Groups, for example propagation matters, which, because of the frequency range under consideration (i.e. frequencies below 30 MHz), are a subject of concern to C.C.I.R. Study Group 6. Study Group 6, during its Interim Meeting (Geneva, 16 February to 3 March 1976) discussed this matter and designated one of its experts to participate in the Special Meeting. Where matters falling within the terms of reference of the other Study Groups had to be considered, discussions took place on the basis of the latest texts of the Study Groups concerned.

The list of participants is contained in Annex I to this report and the list of contributions to the Meeting in Annex II.

The following report from Study Group 8 presents the proposed technical bases necessary for the revision of Part I of Appendix 27 to the Radio Regulations.

The report is submitted in accordance with Resolution 764 of the Administrative Council, via the Director C.C.I.R., for consideration by the WARC AER (R) 1977.

W. H. BELLCHAMBERS

*Chairman
Study Group 8*

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2. CLASSES OF EMISSION

In considering the more efficient utilization of the spectrum allocated to the Aeronautical Mobile (R) Service below 30 MHz which can be achieved by the exclusive use of equipment employing single sideband emissions, Study Group 8 recommends that the following classes of emission should be adopted:

1. *Telephony*—Amplitude modulation
A3J — single sideband—suppressed carrier.
2. *Telegraphy* (including automatic data transmission)
A2H — telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling — single sideband — full carrier.
A7J — multichannel voice frequency telegraphy — single sideband — suppressed carrier.
A9J — other transmissions such as automatic data transmission — single sideband — suppressed carrier.

Note 1:

Classes of emission A3 and A3H should be retained only for stations directly involved in coordinated search and rescue operations using the frequencies 3023 kHz and 5680 kHz. It should be noted that Aeronautical Mobile (OR), Land Mobile and Maritime Mobile Services are also involved. (See Radio Regulation 969A.)

Note 2:

Classes of emission such as the following should not be permitted unless appropriate precautions are taken to ensure that no harmful interference is caused to the classes of emission given above:

A1; A7A; A7H; F1 and F2.

In addition, these emissions should be in accordance with the table given in § 7 and care should be taken not to place these emissions at or near the edges of the channel.

Note 3:

For reasons of possible interference potential, it would be advisable not to utilize common channels in the same allotment area for voice and data transmissions.

3. POWER LIMITS

The Study Group concluded that the following values for the peak envelope power (P_p) supplied to the antenna transmission line should not be exceeded:

Station	Class of emission ⁽¹⁾	Maximum peak envelope power
Aeronautical	A3J, A2H, A3H ⁽²⁾ , A7J, A9J	6 kW
Aircraft	A3J, A2H, A3H ⁽²⁾ , A7J, A9J	400 W ⁽²⁾

⁽¹⁾ For other classes of emission the maximum peak envelope power should not exceed:

- 1.5 kW for aeronautical stations and
- 75 W for aircraft stations.

⁽²⁾ It is recognized that the power employed by some types of aircraft transmitters may, in practice, exceed the above limits. However, the use of such increased power should not cause harmful interference to stations operating in accordance with the Allotment Plan.

It was considered by some Administrations that increased power would be necessary to compensate for large modern aircraft that have less efficient antenna systems due to size and speed. In such cases the interference potential should not be increased.

⁽³⁾ Applicable to stations directly involved in coordinated search and rescue operations on frequencies 3023 and 5680 kHz.

4. FREQUENCY TOLERANCES

The Study Group considers that the following frequency tolerances should apply:

Type of emission	Aircraft stations	Aeronautical stations
A2H, A3H ⁽¹⁾ , A3J, A7J, A9J	± 20 Hz	± 10 Hz
A1, F1, F2	± 20 Hz	± 10 Hz

⁽¹⁾ Applicable to stations directly involved in coordinated search and rescue operations on frequencies 3023 and 5680 kHz.

The Study Group recognized that some existing and future aircraft station SSB transmitters which are or may be used for national purposes may not need to comply with a tolerance of ± 20 Hz. Administrations are therefore encouraged to consider requirements for national purposes and, if deemed appropriate, make suitable contributions to the WARC AER (R), Geneva, 1977.

5. CHANNEL SPACING, OCCUPIED AND NECESSARY BANDWIDTH

Channel spacing

The Study Group considers that for SSB operation in the Aeronautical Mobile (R) bands below 30 MHz, the channels designated by their carrier reference frequency should be allotted at 3 kHz intervals and on integral multiples of 1 kHz to simplify the equipment and operating controls in aircraft stations.

Necessary bandwidth and audio-frequency band

The Study Group considers that, in defining the necessary bandwidth required for the classes of emission contemplated, especially A3J, the audio-frequency band from 300 to 2700 Hz should normally be used (see Recommendation 328-3, Vol. I*). In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions suggested in § 7 are met. It is recognized that for systems such as those which do not use selective calling, the lower limit can be above 300 Hz.

* Where C.C.I.R. texts are cited, reference is to be made to the appropriate Volume of the Conclusions of the XIIIth Plenary Assembly of the C.C.I.R., Geneva, 1974.

6. VALIDITY OF EXISTING INTERFERENCE RANGE CONTOURS

Study Group 8, in consultation with the designated representative of Study Group 6, concludes that the interference contours associated with Appendix 27 to the Radio Regulations remain valid for frequency planning as the Aeronautical Mobile (R) Service transfers from double sideband operation (A3) to single sideband operation (A3J). The contours are also considered valid for other emissions with comparable protection requirements, e.g. A9J.

This conclusion is based on the following considerations:

- the contours have been used in the planning of double sideband operations since their development in 1948;
- the Study Group expressed complete satisfaction with the use of these contours in frequency planning and operations;
- no Administration or International Organization expressed any serious concern with the continued use of these contours for planning purposes at the forthcoming conference for any of the proposed emissions;
- limited examinations using the latest available ionospheric propagation prediction techniques provided no evidence that the contours should be changed;
- Report 525, Vol. I, indicates a difference of only 1 dB in required protection ratios between A3 and A3J emissions. This difference is in favour of the A3J emissions.

In reaching this conclusion it is noted that:

- the contours represent the minimum separation distance required between an aircraft operating at the limit of its service range (normally assumed to be at the boundary of the air route area) and any interfering co-channel aeronautical station with a mean effective radiated power of 1 kW, in order to provide a protection ratio of not less than 15 dB between the wanted and unwanted signals at the aircraft;
- due to the variability of propagation conditions, not only from hour to hour within the day-time and night-time periods but also from day-to-day, with season, with solar activity and geographic location, the 15 dB protection ratio may be expected to have marked variations and accordingly a greater protection may be available much of the time, especially when the aircraft is not operating at the limit of its service range;
- it may be useful to illustrate the use of the concept of interference range in frequency planning through the determination of repetition distance. Fig. 1 illustrates this usage.

It is further concluded that the concept of an auroral zone as described in Appendix 27 should be retained, noting that Study Group 6 is developing ionospheric prediction methods which specifically consider the auroral zone and as these become available the geographic location and degree of isolation provided by this zone should be re-evaluated.

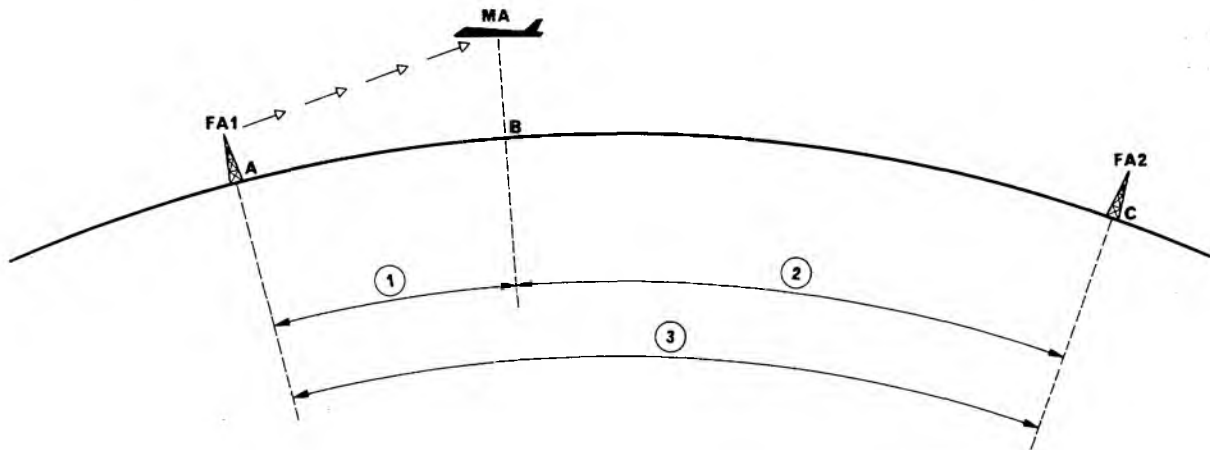


FIGURE 1

Service range, interference range, repetition distance

FA1 : aeronautical station in communication with aircraft station MA

FA2 : aeronautical station in communication with aircraft stations other than MA

MA : aircraft station in communication with aeronautical station FA1

① : service range AB

② : interference range CB

③ : repetition distance AC

7. LIMITS OF UNWANTED EMISSIONS

7.1 The Study Group considered the tolerable levels of unwanted emissions for newly designed equipment and concluded the following:

In a single sideband transmission, the peak envelope power of any unwanted emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency shall be less than the peak envelope power (P_p) of the transmitter in accordance with the following table:

Frequency separation, Δ , from the assigned frequency (kHz)	Minimum attenuation below peak envelope power (dB)
$1.5 < \Delta \leq 4.5$	30
$4.5 < \Delta \leq 7.5$	38
$7.5 < \Delta$	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> $\left\{ \begin{array}{l} \text{aircraft stations} \\ \text{aeronautical station (see § 7.2 below)} \end{array} \right.$ </div> <div> 43 </div> </div>

7.2 With regard to aeronautical stations the Study Group was not able to reach total agreement concerning the tolerable level of unwanted emissions on frequencies separated more than 7.5 kHz from the assigned frequency.

7.2.1 Some Administrations preferred a requirement for 43 dB attenuation, with the obligation to attenuate the power of such emissions to a value below 50 mW.

7.2.2 Other Administrations favoured a requirement for an attenuation, in dB, of a value determined by the formula:

$$43 + 10 \log_{10} P_p \quad (P_p \text{ in watts})$$

but, with transmitted power in excess of 50 W (P_p), the attenuation need not exceed 60 dB.

7.3 The Administrations supporting the proposal in § 7.2.2 above recognized the need to reduce the level of unwanted emissions, which comprise spurious emissions and out-of-band emissions. Subsequently, the C.C.I.R. should advise the Administrations on what can be achieved by using the latest state of the technique as a basis for their future decisions on regulations.

8. MISCELLANEOUS TECHNICAL MATTERS

8.1 LEVEL OF THE SUPPRESSED CARRIER IN A3J EMISSIONS

For aeronautical stations, the power of the carrier should be at least 40 dB below the peak envelope power.

For aircraft stations, the power of the carrier should be at least 26 dB below the peak envelope power.

The Study Group took note of Recommendation 326-2, Vol. I, §§ 1.5 and 1.6, concerning the definition of reduced and suppressed carrier. According to this Recommendation, stations emitting with a carrier reduced by 26 dB correspond to the class of emission A3A as defined in the Radio Regulations. The Study Group was however of the opinion, taking also into account No. 94 of the Radio Regulations, that the designation of the class of emission for aeronautical and aircraft stations should be the same, i.e. A3J.

It is possible that in the future, levels of carrier suppression greater than 26 dB in operational service may be necessary for the operation of the system. In the event that the level of suppression is greater than 32 dB, the class of emission of aircraft stations would then be in strict agreement with Recommendation 326-2, Vol. I.

8.2 ASSIGNED FREQUENCY

Considering the occupied bandwidth, frequency tolerance and characteristics of the permitted classes of emission (A2H, A3J and other classes of emissions for 3 kHz spacing), the Study Group considers that the assigned frequency of a single sideband channel of a station in the Aeronautical Mobile (R) Service should be 1400 Hz higher than the carrier (reference) frequency.

8.3 RECEIVER CHARACTERISTICS

Discussions were held on the Aeronautical Mobile (R) Service system design as it would affect the specification of receiver characteristics for the Aeronautical Mobile (R) Service. The Study Group agreed that receiver parameters were adequately covered in internationally agreed regulatory documentation directly concerned with the Aeronautical Mobile Service.

BIBLIOGRAPHY

- Annex 10 to Volume I of the Chicago Convention on International Civil Aviation.
- Circular Letter from I.C.A.O., ST 8/4-2-74/52 of 17 July 1974.
- Minimum Performance Standards coordinated by EUROCAE and the Radio Technical Commission for Aeronautics (RTCA) for adoption by the European Civil Aviation Conference and the Federal Aviation Administrations (FAA) of the U.S.A.
Note. — This documentation is also used by a number of other civil aviation authorities for regulatory purposes.
- ARINC Characteristic No. 559A, Mark 2 Airborne HF SSB/AM System (February 1976).

8.4 INTERFERENCE FROM INTERMODULATION PRODUCTS

The Study Group considered the problem posed by intermodulation products generated by transmitters at aeronautical stations. It agreed that the problem:

- was essentially local in character;
- was most likely to occur at aeronautical stations where a large complement of frequencies, of the same frequency orders, was assigned;
- was related to third-order intermodulation products which were the most probable potential source of interference.

It was agreed that, when drawing up the revised Frequency Allotment Plan, there should be an examination, particularly in respect of those stations with large frequency complements, to identify frequency combinations which could potentially give rise to intermodulation products, co-channel with other frequencies used for air-ground operations at the same station.

The Study Group further agreed that the C.C.I.R. Secretariat should investigate the possibility of developing a computer programme to examine frequency assignment proposals for such third-order intermodulation products, in advance of the WARC AER (R), 1977.

ANNEX I

LIST OF PARTICIPANTS

ADMINISTRATIONS

Germany (Fed. Rep. of)
Australia
Canada
Cuba
Spain
United States of America
Finland
France
India
Ireland
Italy
Japan
Norway
Poland
Portugal
German Democratic Republic
United Kingdom of Great Britain and Northern Ireland
Sweden
Union of Soviet Socialist Republics

RECOGNIZED PRIVATE OPERATING AGENCIES

Aeronautical Radio, Inc. (ARINC)
RCA Corporation (RCA)
Kokusai Denshin Denwa Co., Ltd. (KDD)
Nippon Telegraph and Telephone Public Corp. (NTT)

INTERNATIONAL ORGANIZATIONS

International Air Transport Association (IATA)

SCIENTIFIC OR INDUSTRIAL ORGANIZATIONS

Siemens
Rockwell International/Collins Radio Group
Electronic Industries Association of Japan

SPECIALIZED AGENCIES OF THE UNITED NATIONS

International Civil Aviation Organization (ICAO)

INTERNATIONAL TELECOMMUNICATION UNION (I.T.U.)

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

ANNEX II
LIST OF CONTRIBUTIONS

No.	Submitted by	Title
S/8/1	Japan	Contribution to the Special Meeting of Study Group 8 concerning the revision of Appendix 27 to the Radio Regulations
S/8/2	IATA	Limits of spurious emissions
S/8/3	IATA	Frequency tolerances
S/8/4	IATA	Occupied and necessary bandwidths
S/8/5	IATA	Interference range contours
S/8/6	IATA	Need for 3 kHz channelling on integral kHz in the revised Appendix 27 Aeronautical Mobile (R) Services Frequency Allotment Plan
S/8/7	IATA	The classes of emission
S/8/8	IATA	Power limits of aeronautical and aircraft stations
S/8/9	United Kingdom	Classes of emission
S/8/10	United Kingdom	Power limits of aeronautical and aircraft stations
S/8/11	United Kingdom	Frequency tolerances
S/8/12	United Kingdom	Occupied and necessary bandwidths
S/8/13	United Kingdom	Limits of unwanted emissions
S/8/14	United Kingdom	Other technical matters
S/8/15	ICAO	Review of technical bases of Appendix 27 to the Radio Regulations of particular relevance to the formulation of an SSB allotment plan for the Aeronautical Mobile (R) Service
S/8/16	United States of America	Special Meeting of Study Group 8 for the preparation of the Aeronautical (R) World Administrative Radio Conference, 1977
S/8/17	Australia	Consideration of stability requirements for SSB HF radiotelephone communications in the Aeronautical Mobile Service
S/8/18	I.F.R.B.	Signal-to-interference protection ratios in the mobile services—Adjacent channel interference, in aeronautical mobile and maritime mobile services using single sideband radiotelephone emissions in the frequency bands below 30 MHz

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, ~~1977~~)

Document No. 3-E
1 November 1976
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PLENARY MEETING

Note by the Secretary-General

CREDENTIALS OF DELEGATIONS

Delegations taking part in the work of the Conference will have to establish, on behalf of their respective governments, texts which constitute a multilateral agreement between governments.

The establishment of these texts will no doubt necessitate the exercise of delegations' right to vote.

Moreover, when the agreement is drawn up, it will have to be signed by the delegations.

Consequently, delegations to the Conference should be duly accredited, not only to participate in the Conference, but also to vote and sign the Final Acts, in accordance with the provisions of Article 67 of the Convention (see Annex).

The attention of delegations is drawn in particular to Nos. 361 and 363 to 366 of the above-mentioned provisions.

M. MILI

Secretary-General

Annex : 1



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A N N E X

ARTICLE 67

Credentials for Delegations to Conferences

359 1. The delegation sent by a Member of the Union to a conference shall be duly accredited in accordance with 360 to 366.

360 2. (1) Accreditation of delegations to Plenipotentiary Conferences shall be by means of instruments signed by the Head of State, by the Head of the Government or by the Minister for Foreign Affairs.

361 (2) Accreditation of delegations to administrative conferences shall be by means of instruments signed by the Head of State, by the Head of the Government, by the Minister for Foreign Affairs or by the Minister responsible for questions dealt with during the conference.

362 (3) Subject to confirmation prior to the signature of the Final Acts, by one of the authorities mentioned in 360 or 361, delegations may be provisionally accredited by the Head of the diplomatic mission of the country concerned to the government of the country in which the conference is held. In the case of a conference held in the country of the seat of the Union, a delegation may also be provisionally accredited by the Head of the Permanent Delegation of the country concerned to the United Nations Office at Geneva.

363 3. Credentials shall be accepted if they are signed by the appropriate authority mentioned under 360 to 362, and fulfil one of the following criteria:

364 — they confer full powers;

365 — they authorize the delegation to represent its government, without restrictions;

366 — they give the delegation, or certain members thereof, the right to sign the Final Acts.

367 4. (1) A delegation whose credentials are found to be in order by the Plenary Meeting shall be entitled to exercise the right to vote of the Member concerned and to sign the Final Acts.

368 (2) A delegation whose credentials are found not to be in order by the Plenary Meeting shall not be entitled to exercise the right to vote or to sign the Final Acts until the situation has been rectified.

- 369** 5. Credentials shall be deposited with the secretariat of the conference as early as possible. A special committee shall be entrusted with the verification thereof and shall report on its conclusions to the Plenary Meeting within the time specified by the latter. Pending the decision of the Plenary Meeting thereon, a delegation of a Member of the Union shall be entitled to participate in the conference and to exercise the right to vote of the Member concerned.
- 370** 6. As a general rule, Members of the Union should endeavour to send their own delegations to conferences of the Union. However, if a Member is unable, for exceptional reasons, to send its own delegation, it may give the delegation of another Member powers to vote and sign on its behalf. Such powers must be conveyed by means of an instrument signed by one of the authorities mentioned in 360 or 361.
- 371** 7. A delegation with the right to vote may give to another delegation with the right to vote a mandate to exercise its vote at one or more meetings at which it is unable to be present. In such a case it shall, in good time, notify the Chairman of the conference in writing.
- 372** 8. A delegation may not exercise more than one proxy vote.
- 373** 9. Credentials and the transfer of powers sent by telegram shall not be accepted. Nevertheless, replies sent by telegram to requests by the Chairman or the secretariat of the conference for clarification of credentials shall be accepted.
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INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978

(Geneva, ~~1977~~)

Corrigendum No. 1 to

Document No. 4-E

25 November 1977

Original : English

PLENARY MEETING

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

(Concerns the French text only)



PLENARY MEETINGUnited States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

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PART I - INTRODUCTION

- 1.1 The United States of America reaffirms its intent to contribute, in cooperation with other nations, to the achievement of the purpose of the International Telecommunication Union, which is in a unique position to further the use of the telecommunications in the interests of mankind.
- 1.2 The Extraordinary Administrative Radio Conference, Geneva, 1966, drew up Appendix 27, "Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information". Subsequent requirements have resulted in a shortage of HF Aeronautical Mobile (R) assignments in many areas. The extension of MWARA requirements to cover the entire globe has resulted in additional demands. Finally, the International Civil Aviation Organization (ICAO) has noted an increasing need for a communication capability by which aircraft operating agencies can ensure safe and efficient movement of aircraft.
- 1.3 It has become apparent that HF communications will long remain the primary mode of long-distance communications in the Aeronautical Mobile (R) Service; indeed, they will be relied upon for an indefinite period in cases where use of satellites is not physically or economically feasible.
- 1.4 To meet these needs, the United States is proposing changes to the Radio Regulations, to:
 - a. Provide more HF channels for the aeronautical community through the use of single sideband techniques;
 - b. Establish a new world-wide HF SSB radio frequency allotment plan;
 - c. Accommodate world-wide operational control requirements.
- 1.5 The U.S. proposals generally are in accord with the report of the International Civil Aviation Organization (ICAO) Communications Divisional Meeting, Montreal, September 1976.

PART II - OBJECTIVES

It is the view of the United States that the 1978 Aeronautical Conference should revise Appendix 27 and the Radio Regulations to:

- o Provide for universal use of single sideband (A3J) in radio-telephony transmissions in the Aeronautical Mobile (R) Service;
- o Provide for automatic data (A7J/A9J) and selective calling (A2H);
- o Provide for families that can be used across MWARA and RDARA boundaries on a world-wide basis by aircraft-operating agencies for the purposes of safety and regulation of flight, on channels dedicated to purposes other than air-traffic control;
- o Provide families for additional foreseen operational requirements for MWARA, RDARA and VOLMET Areas;
- o Provide for smooth implementation of the above with minimum adverse impact.

PART III - METHOD OF PRESENTATION

The conventions of underlining or lining through existing text, as well as use of the symbols NOC, SUP, MOD, and ADD, have their customary meanings.

PART IV - PROPOSED AMENDMENTS TO APPENDIX 27

APPENDIX 27 (Revised)

to the Radio Regulations

Geneva, 1959

Frequency Allotment Plan for the Aeronautical Mobile (R) Service

and Related Information

(See Article 7)

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PART II

Plan for the Allotment of Frequencies for the Aeronautical Mobile (R)
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~~*--Certain errors which have been found in the plotting of the limits
of zones in the 1967 maps have been corrected.~~

Part I

General Provisions

Section I

Definitions

1. Frequency Allotment Plan

NOC 27/1 through 27/8

USA/4/1 MOD 27/9 A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different Aeronautical Mobile (R) bands and is intended to permit communication at any time and within ~~ever any distance~~ the authorized area of use (See Nos. 27/189 - 27/207 between aircraft ~~in-flight~~ stations and appropriate aeronautical stations.

Reason: In order to clarify the definition and to align it with ITU R.R. No. 33.

Section II

Technical and Operational Principles Used
for the Establishment of the Plan of Allotment
of Frequencies in the Aeronautical Mobile (R)
Service

USA/4/2 MOD of Title A. ~~Determination of Channel Width~~

A. Channel Characteristics

USA/4/3 MOD 27/10 ~~The A frequency separations~~ separation between carrier (reference) frequencies of 3 kHz ~~is indicated in the following table are~~ adequate to permit communications using the classes of emission referred to in Nos. 27/49-27/53 27/52 in the frequency bands between 2850 kHz and 17970 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.

Reason: It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channeling is based on 3 kHz separation in all bands.

USA/4/4 MOD 27/11

~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and ~~3000~~ 2700 Hz ~~eyeles-per-second~~ and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see ADD 27/66A and ADD 27/66B) [USA/4/32-33].

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

Reason: To define a audio bandwidth necessary for A3J operation consistent with 3kHz channel separation and to provide accommodation for other permitted classes of emission.

USA/4/5 ADD 27/11A aA) For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason: To reflect the Report of CCIR Study Group 8 Special Meeting.

USA/4/6 MOD 27/12 The use of channels, indicated in 27/16 ~~as derived from the above table (No. 27/10)~~, for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use fo the same channel for several classes of emission. ~~No inherent priority being given to any particular class of emission.~~ [USA/4/10].

Reason: Amended to be consistent with SSB operation.

USA/4/7 SUP 27/13

Reason: No longer applicable.

USA/4/8 SUP 27/14

Reason: No longer applicable.

USA/4/9 MOD 27/15 The arrangements contemplated in ~~Nos. 27/12 and 27/14~~ No. 27/12 should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled "Special Agreements" "Special Arrangements".

Reason: For clarification.

USA/4/10 MOD 27/16 The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10, will be found in the following table.

Reason: To clearly indicated that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing, and to provide band-edge protection.

		kHz					
USA/4/11		<u>2850 - 3025</u>	<u>3400 - 3500</u>	<u>4650 - 4700</u>	<u>5480 - 5680</u>	<u>6525 - 6685</u>	
2851	2953	3401	4651	5481	5583	6526	6628
2854	2956	3404	4654	5484	5586	6529	6631
2857	2959	3407	4657	5487	5589	6532	6634
2860	2962	3410	4660	5490	5592	6535	6637
2863	2965	3413	4663	5493	5595	6538	6640
2866	2968	3416	4666	5496	5598	6541	6643
2869	2971	3419	4669	5499	5601	6544	6646
2872	2974	3422	4672	5502	5604	6547	6649
2875	2977	3425	4675	5505	5607	6550	6652
2878	2980	3428	4678	5508	5610	6553	6655
2881	2983	3431	4681	5511	5613	6556	6658
2884	2986	3434	4684	5514	5616	6559	6661
2887	2989	3437	4687	5517	5619	6562	6664
2890	2992	3440	4690	5520	5622	6565	6667
2893	2995	3443	4693	5523	5625	6568	6670
2896	2998	3446	4696	5526	5628	6571	6673
2899	3001	3449	(16) CHNLS	5529	5631	6574	6676
2902	3004	3452	*4699	5532	5634	6577	6679
2905	3007	3455		5535	5637	6580	6682
2908	3010	3458		5538	5640	6583	
2911	3013	3461		5541	5643	6586	(53) CHNLS
2914	3016	3464	<u>5450 - 5480</u>	5544	5646	6589	
2917	3019	3467	REGION 2	5547	5649	6592	
2920	3023(R/OR)3470		5451	5550	5652	6595	
2923	3473		5454	5553	5655	6598	
2926	(58) CHNLS 3476		5457	5556	5658	6601	
2929	3479		5460	5559	5661	6604	
2932	3482		5463	5562	5664	6607	
2935	3485		5466	5565	5667	6610	
2938	3488		5469	5568	5670	6613	
2941	3491		5472	5571	5673	6616	
2944	3494		5475	5574	5676	6619	
2947	3497		(9) CHNLS	5577	5680(R/OR)6622		
2950			*5478	5580		6625	
		(33) CHNLS				(67) CHNLS	

<u>8815 - 8965</u>	<u>10005 - 10100</u>	<u>11275 - 11400</u>	<u>13260 - 13360</u>	<u>17900 - 17970</u>
8816 8921	10006	11276 11384	13261	17901
8819 8924	10009	11279 11387	13264	17904
8822 8927	10012	11282 11390	13267	17907
8825 8930	10015	11285 11393	13270	17910
8828 8933	10018	11288 11396	13273	17913
8831 8936	10021	11291	13276	17916
8834 3939	10024	(41) CHNLS 11294	13279	17919
8837 8942	10027	*11399 11297	13282	17922
8840 8945	10030	11300	13285	17925
8843	10033	11303	13288	17928
8846 8948	10036	11306	13291	17931
8849 8951	10039	11309	13294	17934
8852 8954	10042	11312	13297	17937
8855 8957	10045	11315	13300	17940
8858 8960	10048	11318	13303	17943
8861	10051	11321	13306	17946
(49) CHNLS	10054	11324	13309	17949
8864	*8963	11327	13312	17952
8867	10057	11330	13315	17955
8870	10060	11333	13318	17958
8873	10063	11336	13321	17961
8876	10066	11339	13324	17964
8879	10069	11342	13327	17967
8882	10072	11345	13330	
8885	10075	11348	13333	(23) CHNLS
8888	10078	11351	13336	
8891	10081	11354	13339	
8894	10084	11357	13342	
8897	10087	11360	13345	
8900	10090	11363	13348	
8903	10093	11366	13351	
8906	10096	11369	13354	
8909	(31) CHNLS	11372	13357	
8912	*10099	11375		
8915		11378	(33) CHNLS	
8918		11381		

* Guard Band

USA/4/12 MOD 27/17 The ~~channels~~ carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and ~~5680 ke/s~~ kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency ~~5680 ke/s~~ kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.

Reason: To reflect new carrier frequencies determined by frequency separation of 3 kHz.

USA/4/13 MOD 27/18 'All stations directly involved in co-ordinated search and rescue operations using 3024.5 3023 and 5680 ke/s kHz for ~~search-and-rescue-purposes-and-employing-single-sideband-(SSB) shall transmit a-carrier-at-a-level-sufficient-to permit-reception-on-a-double-sideband-(DSB)-receiver-and shall-be-able-to-receive-DSB-transmissions only in the upper sideband mode (See also MOD 27/73).~~

Reason: If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should, however, it be agreed that single sideband operation be introduced on these frequencies, the proceeding change to 27/18 would appear to be necessary.

USA/4/14 SUP 27/19

Reason: If it is agreed to accommodate equipment capable of operating only on whole kHz then the common (R) and (OR) channel 3023.5 kHz can be replaced by 3023 kHz and 27/19 would no longer be required.

USA/4/15 MOD 27/20 The International Civil Aviation Organization (~~I-C-A-O-~~) (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical ~~air~~ operations ~~for a large part of the world~~, and this Organization ~~should~~ shall be consulted ~~in appropriate cases, particularly~~ in any international aeronautical operational use of the frequencies in the Plan.

Reason: At the time (1959) 27/20 was originally drafted, all areas of the World were not covered by ICAO Regional Air Navigation Plans (ANP's). To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

NOC 27/21 through 27/22

USA/4/16 MOD 27/23 Resort to the co-ordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/22 are not satisfactory.

Reason: To clarify the intent.

B. Interference Range Contours

1. Definition of Contours

USA/4/17 MOD 27/24 The transparencies associated with this Appendix show for the frequencies stated, contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW ~~(for emissions such as A1, F1, F2, and unmodulated emission A3 and A3H)~~ producing a protection ratio of 15 dB of desired signal to interference signal on the same frequency at an aircraft operating at the limit of the service range of the desired aeronautical station transmitter. This limit is generally assumed to be at the boundary of the area concerned, and the service range is not included in the contour.

Reason: Consequential to MOD 27/50 and MOD 27/51.

NOC 27/25 through 27/31

USA/4/18 MOD 27/32 5. Method of Use

5.1 Take the MWARA, RDARA or VOLMET area maps associated with this Appendix and select the transparency for the frequency order and sharing conditions under consideration. (Note: MWARA and RDARA transparencies are equally applicable for world-wide use.)

Reason: To show that the interference range contours are equally applicable for world-wide use.

NOC 27/33 through 27/48

C. Classes of Emission and Power

NOC 27/49

USA/4/19 MOD 27/50 1.1 Telephony - Amplitude modulation:

- | | |
|---|------------------|
| - double sideband | (A3)* |
| - single sideband, reduced carrier | (A3A) |
| - single sideband, full carrier | (A3H)* |
| - single sideband, suppressed carrier | (A3J) |
| - two independent sidebands | (A3B) |

*A3 and A3H to be used only on 3023 kHz and 5680 kHz and in accordance with proposed ITU Resolution Aer2-(A), paragraph 4.4 [USA/4/63].

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of CCIR Study Group 8 Special Meeting.

1.2. Telegraphy (including automatic data transmissions)

USA/4/20 MOD 27/51 1.2.1 Amplitude modulation:

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission~~ (A2)
- telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling - single sideband - full carrier A2H
- ~~multichannel voice frequency telegraphy, - single sideband, - reduced carrier~~ (A7A)
- ~~multichannel voice frequency telegraphy, single sideband, - full carrier~~ (A7H)
- multichannel voice frequency telegraphy - single sideband - suppressed carrier A7J
- other transmissions such as automatic data transmission - single sideband - suppressed carrier. A9J

USA/4/21 MOD 27/52 1.2.2 Frequency modulation:

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- ~~telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission~~ (F2)

**A1 and F1 are permitted provided they do not cause harmful interference to the classes of emission A2H, A3J, A7J and A9J. In addition, A1 and F1 emissions shall be in accordance with the provisions in MOD 27/65 and MOD 27/66 and care should be taken not to place these emissions at or near the edges of the channel [USA/4/30-31].

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of the CCIR Study Group 8 Special Meeting.

USA/4/22 SUP 27/53

Reason: No requirement for this type of emission.

USA/4/23 MOD 27/54

2. Power

- 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

USA/4/24 Replace table by:

Class of emission	Stations	Maximum peak envelope power
A2H, A3J, A7J, A9J (100% modulation)	Aeronautical stations Aircraft stations	6 kW 400 W
A3* A3H* (100% modulation)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1	Aeronautical stations Aircrafts	1.5 kW 75 W

*A3 and A3H to be used only on 3023 kHz and 5680 kHz,
and in accordance with proposed ITU Resolution Aer2(A),
paragraph 4.4 [USA/4/63].

Reason: To remove classes of emission no longer applicable and to correct the value to reflect peak envelope power rather than "mean" power in order to align with MOD 27/65.

USA/4/25 MOD 27/55 2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1 and F1 ~~F2-and-unmodulated-A3-and-A3H-emissions~~) used as a basis for the interference range contours.

Reason: To be consistent with MOD 27/51 and MOD 27/52

USA/4/26 MOD 27/56 2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARA, ~~or~~ VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In each such case, the administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason: To make the same provision for aeronautical stations serving a world-wide function.

NOC 27/57 through 27/62

USA/4/27 MOD 27/63 3. Technical provisions relating to the use of single sideband emissions.

3.1 Definitions of carrier modes:

Carrier mode	Level N (dB) of the carrier with respect to peak envelope power
Full carrier (<u>for example</u> A3H A2H)	$0 > N > -6$
Reduced-carrier-(A3A)	--6--N--26
Suppressed carrier (<u>for example</u> A3J)	<u>Aircraft Stations - $26 > N$</u> <u>Aeronautical Stations - $40 > N$</u>

Reason: To align emission designators with MOD 27/50 and MOD 27/51 and to add provisions for carrier suppression for aeronautical stations in accordance with ICAO Annex 10 and the Report of CCIR Study Group 8 Special Meeting.

USA/4/28 SUP 27/64 3.2 Modes of operation:

Reason: To reflect that the new allotment plan will be based on single sideband operation.

USA/4/29 MOD to subtitle 3.3

Tolerance for levels of ~~56B~~ emission outside the necessary bandwidth.

Reason: To reflect applications to other classes of emission.

USA/4/30 MOD 27/65 3.3.1 In a ~~single-sideband-A3H~~, A2H, A3J, A7J or A9J ~~or A3A~~ transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (Pm) of the transmitter in accordance with the following table:

Reason: To align with MOD 27/50 and MOD 27/51.

USA/4/31 MOD 27/66 3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Frequency separation < from the assigned frequency <u>-ke/s kHz</u>	Minimum attenuation below mean Power(Pm) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40
	Aeronautical stations $43 + 10 \log_{10} P_m \text{ (Watts)}^*$

*attenuation need not exceed 60 dB

Reason: To accommodate airborne equipments currently in use which are capable of acceptable operation in a 3 kHz channel spaced environment.

USA/4/32 ADD 27/66A 3.3.3 In an A2H, A3J or A7J transmission, the peak envelope power (Pp) of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the peak envelope power (Pp) of the transmitter in accordance with the following table.

Reason: To accommodate classes of emission as set forth in MOD 27/50 and MOD 27/51 and to express power level in peak envelope power (Pp) to provide consistency in the Radio Regulations.

USA/4/33 ADD 27/66B 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983.

Frequency separation Δ from the assigned frequency <u>kHz</u>	Minimum attenuation below peak envelope power (Pp) dB
$1.5 \leq \Delta < 4.5$	30
$4.5 \leq \Delta < 7.5$	38
$7.5 \leq \Delta$	Aircraft stations 43
	Aeronautical stations $43 + 10 \log_{10} P_p \text{ (Watts)}(*)$

*attenuation need not exceed 60 dB

Reason: To reduce the bandwidth of unwanted emissions, to express power level in peak envelope power (Pp), to reflect the Report of CCIR Study Group 8 Special Meeting, paragraph 7.2.2, and to provide for the termination of use of aeronautical station transmitters not capable of operation in accordance with this plan.

USA/4/34 SUP 27/67-27/71 inclusive.

Reason: No longer applicable.

USA/4/35 MOD 27/72 4.1 ~~The assigned frequency~~ For single sideband radiotelephone-emissions, except class of emission A2H, the assigned frequency shall be at a value ~~1500 cycles~~ 1400 Hz above the carrier (reference) frequency.*

*Notes: 1. Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.

2. For classes of emission A1 and F1 the assigned frequency shall be chosen in accordance with the provisions of the footnote to MOD 27/51 and MOD 27/52.

Reason: To define the assigned frequency taking into account MOD 27/50, MOD 27/51, MOD 27/66 and the Report of the CCIR Study Group 8 Special Meeting / USA/4/19, 20 and 31 /.

USA/4/36 MOD 27/73 4.2 Stations employing double sideband emissions (A3) shall operate with an assigned ~~frequencies~~ frequency ~~at the values listed in the Allotment Plan~~ at 3023 kHz or 5680 kHz (see 27/50).

Reason: To take into account DSB operation on 3023 kHz and 5680 kHz.

PART II

Plan for the Allotment of Frequencies for the

Aeronautical Mobile (R) Service in the

Exclusive Bands between 2850 and 17 970 ~~ke/s~~ kHz

USA/4/37 ADD

Section 0

USA/4/38 ADD

Frequencies allotted for world-wide use

USA/4/39 ADD 27/73A Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area

Note: Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, to the extent possible, frequencies allotted to RDARAs and Sub-RDARAs should be used.

Reason: To define the purpose for which such frequencies may be used.

Section I

- USA/4/40 Description of the Boundaries of the MWARA, RDARA, Sub-RDARA and VOLMET Areas
- USA/4/41 MOD 27/74 through 27/185 (To be determined by the Conference)

Section II

Allotment of Frequencies to the Aeronautical Mobile (R) Service

Article 1

- USA/4/42 MOD 27/186 Frequency Allotment Plan by Areas
(~~by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas~~)-

Reason: To indicate that the title embraces all uses of the frequencies in the frequency allotment plan.

NOC 27/187

- USA/4/43 MOD 27/188 The following list does not include the world wide common (R) and (OR) frequencies of ~~3023.5, 3023 and 5680 kHz. or the world wide frequencies of 3499, 6526, 8963, 10-093 and 13-256 ke/s.~~ The allotment of these frequencies is shown in Article 2.

Reason: Consequent to inclusion of Aeronautical Operational Control frequencies in the new allotment table.

- USA/4/44 MOD 27/189

Bands Me/s- MHz	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18
Areas	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz	ke/s kHz
CAR										
CEP										
	~	~	~	~	~	~	~	~	~	~
CMN(R) & (OR)										
World-wide A										
World-wide B (etc.)										

(Note: Frequencies to be inserted in above table to be determined by the Conference).

Reason: To align with the Table in 27/195-27/207

(27/190-27/191 -- Not Used)

ARTICLE 2

Frequency Allotment Plan
(in numerical order of frequencies)

General Notes:

USA/4/45 MOD 27/192

1. Class of stations: FA.

Classes of emission: see Nos. 27/49-~~27/53~~ 27/52.

Power: Unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos 27/54-27/62.

Hours: H24 unless otherwise indicated.

Reason: Consequential (see Nos. 27/49-27/52.) USA/4/19-21

USA/4/46 MOD 27/193

2. A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or Aeronautical Operational Control which receive full protection during the twenty-four hours.

Reason: To add channels allotted for Aeronautical Operational Control use.

NOC 27/194

USA/4/47 ADD 27/194A

3A. The frequency allotment for aeronautical operational control use is for assignment by administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight, and are not to be assigned by administrations for MWARA, RDARA or VOLMET purposes.

Reason: To provide for operational control (flight regularity) communications between aircraft and associated aeronautical stations.

USA/4/48 MOD 27/195 through 27/207, as follows:

USA/4/49 Add new 3 kHz channels. (See MOD 27/16) USA/4/10

USA/4/50 In the table (Pages (45) thru (55)), it is recommended that frequencies allotted for world-wide use be designated as follows:

Column 1 - "Frequency ~~ke/s~~ kHz" - ()

Column 2 - "Authorized Area of Use" - World-wide

Column 3 - "Remarks" - Aeronautical Operational Control (AOC)

(See ADD 27/194A) USA/4/47

Reason: To clearly indicate frequencies allotted for world-wide operational control (flight regularity) communications and new channels made available by the plan.

USA/4/51 MOD 27/196 & 27/201 In the table, MOD Column 2 with regard to 27/196 and 27/201 to read: world-wide, (R) and (OR)

USA/4/52 In the table MOD Column 3 for both 27/196 and 27/201 as follows:

- 3) the specific application of this frequency for the above purposes may be decided at ICAO regional aeronautical conferences; air navigation meetings;
- 4) The use of this frequency is also authorized for inter-communication between stations in the aeronautical mobile service and mobile stations engaged in coordinated air-surface search and rescue operations including communication between these stations and participating land stations.

Reason: To indicate world-wide Aeronautical Mobile (R) and (OR) Services application and to clarify the intent for the use of these aeronautical frequencies by other mobile services.

PART V

PROPOSED AMENDMENTS TO THE RADIO REGULATIONS

Article 5

Frequency Allocations

10 kHz to 275 Ghz

NOC NOS. 125 through 201

USA/4/53 MOD 201A The frequencies 2182 kHz, ~~3023.5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC NOS. 202 through 205

USA/4/54 MOD 205A The carrier frequencies ~~3023.5~~ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.

Reason: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

NOC NOS. 206 through 429

Article 7

Special Rules Relating to Particular Services

Section II

Aeronautical Mobile Service

USA/4/55 ADD 429A Aeronautical Operational Control Communications in the aeronautical mobile (R) service are reserved for communications related to regularity of flight.

Reason: To provide clarification for the special use of spectrum for Operational Control Communications.

Article 9

NOC NOS. 430 through 432

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunication Stations

NOC NOS. 486 through 589

USA/4/56 MOD 590 (2) If the finding is favourable with respect to Nos. 554 to 557 the date of ~~29-April-1966~~ (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2a.

USA/4/57 MOD 591 (3) If the finding is favourable with respect to No. 558, the date of ~~29-April-1966~~ (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2b.

Reason: To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

NOC NOS. 592 through 639EX

Article 28

Conditions to be Observed by Mobile Services

Section II

Special Provisions Regarding Safety

NOC NOS. 955 through 969

USA/4/58 MOD 969A (3) The aeronautical frequencies ~~3023-5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communication between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A, 1326C.

NOC NOS. 970 through 999

Article 35

Use of Frequencies for Radiotelephony
in the Maritime Mobile Service

NOC NOS. 1319 through 1322AB

Section II

Bands Between 1605 and 4000 ~~ke/s~~ kHz

NOC NOS. 1322B through 1326B

C. Search and Rescue

USA/4/59 MOD 1326C 3A The aeronautical frequency ~~3023.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC NOS. 1327 through 1351

SECTION III. Bands between 4 000 and 23 000 kHz

NOC NOS. 1351A through 1353A

D. Search and Rescue

USA/4/60 MOD 1353B 15A. The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: To align with MOD 969A and MOD 1326C.

NOC NOS. 1354 through 1379

USA/4/61

APPENDIX 3

Mar Mar 2

Table of Frequency Tolerances*
(See Article 12)

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all trans- mitters after 1st January, 1966*
---	---	---

*1st January, 1970 in the case of all
tolerances marked with an asterisk.

Band: 1 605 to 4 000 kHz

3. Mobile Stations:

<u>MOD</u>	c) Aircraft Stations	200*	100* <u>r)</u>
<u>ADD</u>	4. <u>Aeronautical Stations:</u>	100	
	- power 500 W or less	50	100 <u>r)</u>
	- power above 500 W		50 <u>r)</u>
<u>MOD 5.</u>	-4 Radiodetermination Stations:		
	- power 200 W or less	100	100
	- power above 200 W	50	50
<u>MOD 6.</u>	-5 Broadcasting Stations:	50	20
	Band: 4 to 29.7 MHz		
	2. Land Stations:		
<u>MOD</u>	b) Aeronautical Stations:		
	- power 500 W or less	100	100 <u>r)</u>
	- power above 500 W	50	50 <u>r)</u>
	3. Mobile Stations:		
<u>MOD</u>	c) Aircraft Stations	200*	100* <u>r)</u>

Notes referring to the Table of Frequency Tolerances

After Note q) add the following new note:

USA/4/62 ADD

r) For single sideband transmitters operating in
the Aeronautical Mobile (R) Service, the
tolerance is:

- 1) In the band 1605 - 4000 kHz:
- | | |
|-----------------------|-------|
| Aeronautical stations | 10 Hz |
| Aircraft stations | 20 Hz |

- 2) In the band 4 to 29.7 MHz:
Aeronautical stations 10 Hz
Aircraft stations 20 Hz

Reason: To add Aeronautical stations in the band 1605 - 4000 kHz. With the introduction of single sideband equipment, particularly that using suppressed carrier (class A3J) emission, it is necessary that the carrier frequency be maintained within closer tolerance to avoid loss of intelligibility due to frequency instability. Equipment now available can meet the tolerance being proposed in the new footnote 4). Also to renumber paragraphs.

PART VI

RESOLUTIONS AND RECOMMENDATIONS

USA/4/63

ADD

RESOLUTION No. Aer2- (A)

Relating to the Implementation of the New Arrangement of High Frequency Bands Allocated Exclusively to the Aeronautical Mobile (R) Service Between 2850 and 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that each of the high frequency bands allocated exclusively to the aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this conference to provide for SSB techniques;
- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;
- f) that the Final Acts of this Conference will enter into force on 1 April 1979;
- g) that the revised Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on 1 February 1983;

recognizing

- a) that the aeronautical mobile (R) service is a safety service
- b) that some frequencies have been allotted for world-wide use

resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;
2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single sideband operation shall be made in accordance with the following provisions:
 - 2.1 that carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;
 - 2.2 that carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;
 - 2.3 that prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be co-ordinated with the International Civil Aviation Organization in accordance with No. (MOD) 27/20 of Appendix 27 to the Radio Regulations;
3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations shall be replaced by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);
4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2850 and 17970 kHz shall comply with the following conditions:
 - 4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operation at the earliest possible date; furthermore; they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3. until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized. Double sideband operations may, however, be continued in exceptional cases for domestic use until 1 February 1987, provided that harmful interference which may be caused to the International Aeronautical Mobile (R) Service operating in the single sideband mode be resolved by application of Article 15 of the ITU Radio Regulations, noting in particular RR 667 and RR 674. The Administrations requiring such an extension of the full implementation of single sideband are, nevertheless, urged to cease double sideband operations as soon as possible.

Reason: With the Appendix 27 (Rev.), an orderly transition to the new plan is required.

USA/4/64

ADD

RESOLUTION No. Aer2 - (B)

Relating to the Treatment of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands Allocated Exclusively to that Service Between 2850 and 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours G.M.T. on 1 February 1983;
- c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;
- d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:

1.1 that provisions of Nos. 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz;

1.2. all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B;

1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:

- a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
- b) if the finding is favourable with respect to Nos. 558, the date of 29th April 1966 shall be entered in Column 2b;
- c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;

1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register:

2. that on the date of coming into force of the new Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

2.1 assignments with double sideband emission (A3), mentioned in paragraph 4.4 of Resolution Aer 2-(A), and already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in column 2a or 2b as appropriate until 1 February 1983. A date in column 2a for a frequency assignment using double sideband (A3) as mentioned in paragraph 4.4 of proposed Resolution Aer 2-(A), shall be transferred to column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with Administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in column 2b.

2.2 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2b.

2.3 assignments found favourable with respect to No. 558 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2b;

2.4 all other assignments shall have (the day AFTER the date of signing the AWARC Agreement, Geneva, 1978) entered in column 2b;

3. that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the I.F.R.B. as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

Reason: With the revision of Appendix 27, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

USA/4/65

RESOLUTION No. 13

Relating to the Preparation of Revised Allotment Plans for the Aeronautical Mobile (R) Service;

Note: Although the World Administrative Radio Conference Aeronautical Mobile (R) Service 1978, will not be competent to address this resolution because of the interest of the (OR) service, the Resolution is no longer necessary in so far as the (R) service is concerned.

USA/4/66

SUP

RESOLUTION No. 14

Relating to the Use of Frequencies of the Aeronautical Mobile (R) Service

Reason:

This Resolution has been modified, to bring it up to date, and is shown as an ADD Resolution Aer2-(C).

USA/4/67

ADD

RESOLUTION No. Aer2 - (C)

Relating to the Use of Frequencies of the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the previous Allotment Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service Appendix 27 to the Radio Regulations, Geneva, edition of 1968) has been substantially revised by this conference;
- b) that air operations are subject to continuous changes;
- c) that these changes require attention by the administrations concerned, but
- d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the coordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;
- e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas and VOLMET areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;
- f) that it is essential to distributed the communication traffic load as uniformly as possible over frequencies of the same order available;
- g) that specific steps should be taken to ensure that the correct order of frequency is used;
- h) that frequencies have been allotted for world-wide use

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;
2. to make as great a use as possible of antennas of appropriate directivity and efficient in order to minimize possibilities of mutual interference within an area or between areas;
3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
5. to collect precise data on the operation of their high frequency communication systems particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: Represents an update of Resolution No. 14 which has been proposed for SUP.

USA/4/68

SUP

RESOLUTION No. Aer1

relating to the use of frequencies 3023.5 and
5680 kHz common to the aeronautical mobile (R)
and (OR) service

Reason: This Resolution has been modified to bring it up to date,
and is shown as an ADD Resolution Aer2 - (D) which follows.

USA/4/69

ADD

RESOLUTION No. Aer2 - (D)

[USA/4/69]

Relating to the Use of frequencies 3023 and 5680 kHz
common to the Aeronautical Mobile (R) and (OR) Services

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

having noted

that this conference in adopting a new Frequency Allotment Plan in,
Appendix 27 (Rev), has decided to use 3023 kHz instead of 3023.5 kHz;
and, additionally, has amended the provisions governing the use of
3023 and 5680 kHz,

considering

1. that, by this action some anomalies now exist in the conditions
prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for
the use of the frequencies 3023.5 and 5680 kHz;
2. that the coordination of search and rescue operations at the scene
of a disaster would be improved if the use of the frequencies 3023 and
5680 kHz in such operation, was extended to include communication
between mobile stations and participating land stations;
3. that it would be in the general interests of the aeronautical mobile
(R) service if the same provisions relating to the use of the
frequencies 3023 and 5680 kHz were applied to operations both in the
aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR)
service, as from the date of coming into force of the Final Acts of
the Conference, the provisions governing the use of the Frequencies
3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

Reason: Represents an up-date of Resolution No. Aer 1, which has been
proposed for SUP.

USA/4/70

SUP

RESOLUTION No. Aer 2

relating to the use of frequencies in the HF bands
allocated exclusively to the aeronautical mobile
(R) service.

Reason: This Resolution has been modified, to bring it up-to-date,
and is shown as an ADD Resolution No. Aer 2 - (E) below.

USA/4/71

ADD

RESOLUTION No. Aer2 - (E)

Relating to the Unauthorized Use of Frequencies
in the Bands allocated to the Aeronautical Mobile
(R) Service.

The World Aeronautical Administrative Radio Conference,
Geneva, 1978

considering

- a) that monitoring observations of the use of the frequencies in the bands between 2850 and 17970 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high powered broadcasting stations, some of which are operating in contravention of No. 422 of the Radio Regulations;
- b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;
- c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

- d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

- 1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the Aeronautical Mobile (R) Service bands other than under the conditions specified in Nos. 115 and 415;
- 2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;
- 3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;
- 4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No. 422 of the Radio Regulations;

requests the International Frequency Registration Board

- 1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

2. to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause harmful interference to the aeronautical mobile (R) service;

3. to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

Reason: Represents an up-date of Resolution No. Aer 2, which has been proposed for SUP.

USA/4/72

SUP

RESOLUTION No. Aer 3

relating to the introduction of single sideband techniques in the HF bands allocated to the aeronautical mobile (R) service

Reason: With the adoptment of an allotment plan based on single sideband techniques, this Resolution is no longer applicable.

USA/4/73

SUP

RESOLUTION No. Aer 4

relating to the use of VHF for communication in the aeronautical mobile (R) service

Reason: This Resolution has been modified to bring it up-to-date, and is shown as an ADD Resolution No. Aer 2 - (f) which follows.

USA/4/74

ADD

RESOLUTION No. Aer2 - (F)

Relating to the use of VHF for Communication in the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

a) that from an aeronautical viewpoint, VHF can provide a more reliable and more static-free communication system than HF;

b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;

c) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;

d) that, owing to development of aeronautical telecommunications in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

resolves

that administrations, to the maximum extent practicable, should employ VHF to meet their requirements in the aeronautical mobile (R) service.

Reason: Represents an up-date of Resolution No. Aer 4, which has been proposed for SUP.

USA/4/75 SUP

RESOLUTION No. Aer 5

relating to the use of VHF for meteorological
broadcasts in the aeronautical mobile (R) service

Reason: This Resolution has been modified, to bring it up-to-date,
and is shown as an ADD Resolution No. Aer 2 - (G) which
follows / USA/4/76 /.

USA/4/76 ADD

RESOLUTION No. Aer2 - (G)

Relating to the use of VHF for meteorological
Broadcasts in the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

considering

- a) that the number of channels available for the aeronautical mobile (R) service in the frequency bands between 2850 and 17970 kHz is limited;
- b) that the need for frequencies for aeronautical mobile (R) service communications and for meteorological broadcasts to aircraft is increasing;
- c) that the propagation characteristics of high frequencies make them essential for aviation communication requirements over long distances;
- d) that in Recommendation No. 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution No. 14 MOD (See Report on Agenda Item 3, first page of Appendix D) of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";
- e) that this conference has adopted a Resolution whereby administrations should, to the maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;
- f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;
- g) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

Reason: Represents an up-date of Resolution No. Aer 5, which has been proposed for SUP.

USA/4/77

SUP

RESOLUTION No. Aer 6

relating to the treatment of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17970 kHz.

Reason: This Resolution has been rewritten and is shown as Resolution No. Aer2-(B), and, therefore, needs to be suppressed / USA/4/64_7/.

USA/4/78

ADD

RESOLUTION No. Aer2 - (H)

Relating to the Implementation of the Frequency Allotment Plan in the High Frequency Bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17970 kHz

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between 2850 and 17970 kHz) to the aeronautical mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;
- b) that the 1966 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;
- c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a safety service;
- e) that the present conference has further modified the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to implement the modifications made by the present conference, with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows;

1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;

1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action;

2. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

Reason: To provide for transfer of assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

USA/4/79 ADD

RECOMMENDATION No. Aer2 - (A)

Relating to a Study of the Feasibility of
Creating new High Frequency Bands to be
Allocated exclusively to the Aeronautical
Mobile (R) Service

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

considering

a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all of the requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;

b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;

c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive allocations in the 20-24 MHz region of the spectrum when preparing their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the Aeronautical Mobile (R) Service at the next competent WARC.

USA/4/80

SUP

RECOMMENDATION No. Aer 1

Relating to the development of techniques which would help to reduce congestion in the high frequency bands allocated to the Aeronautical Mobile (R) Service

Reason: This Recommendation has been modified, to bring it up-to-date and is shown as an ADD Recommendation No. Aer 2 - (B) which follows.

USA/4/81

ADD

RECOMMENDATION No. Aer2 - (B)

Relating to the development of Techniques which would help to reduce congestion in the High Frequency bands allocated to the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva. 1978. considering

considering

a) that several administrations are actively engaged in the development of communication techniques the wider use of which in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high-powered VHF transmitters employing directional antennae, space radiocommunication techniques and automatic data transmission;

b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;

(c) that the International Civil Aviation Organization (I.C.A.O.) is actively engaged in coordinating the operational development of such techniques;

invites

administrations engaged in such developments to inform the I.F.R.B. periodically of the progress achieved;

requests

the I.F.R.B. periodically to circulate the information so obtained to administrations and to I.C.A.O.

Reason: Represents an up-date of Recommendation No. Aer 1, which has been proposed for SUP.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.1

1.

Proposed revision of the Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations) including the technical principles contained in Part I

Reason: Implementation of single sideband operation and frequency economy aspects.

A. Proposed Revisions to Part I of Appendix 27

Note 1: The following paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27. The following abbreviations are used in Documents Nos. 5 to 18.

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph.

NOC - no change to an existing paragraph

Note 2: Underlined words indicate new text; hyphenated words indicate deleted text.

PART I

General Provisions

Section I

Definitions

1. Frequency Allotment Plan

NOC 27/1 to 27/8



D/5/1 MOD 27/9 9. 'A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different Aeronautical Mobile (R) bands and is intended to permit communication at any time ~~and within ever-any-distance~~ the authorized

area of use (27/189 - 27/207) between aircraft ~~in flight~~ stations and appropriate aeronautical stations.'

Reason: In order to clarify the definition and to align it with ITU R.R. No. 33.

Section II

Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service

D/5/2 MOD of title A. ~~Determination-of-Channel-Width~~

A. Channel Characteristics

1. Frequency Separation

D/5/3 MOD 27/10 'The A frequency ~~separations~~ separation between carrier (reference) frequencies of 3 kHz is ~~indicated in the following table~~ are adequate to permit communications using the classes of emission referred to in Nos. 27/49-27/52 in the frequency bands between 2850 kHz and 17970 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.'

Reason: It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channeling is based on 3 kHz separation in all bands.

D/5/4 MOD 27/11 ~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and ~~3000~~ 2700 Hz ~~cycles-per-second~~ and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see Nos. 27/66A and 27/66B).

D/5/5 ADD 27/11A

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

Reason: To define an audio bandwidth necessary for A3J operation consistent with 3 kHz channel separation and to provide accommodation for other permitted classes of emission.

D/5/6 ADD 27/11B For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason: To reflect the Report of CCIR Study Group 8 Special Meeting .

D/5/7 MOD 27/12 'b) The use of channels, indicated in 27/16 ~~as derived from the above table (No. 27/10)~~, for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission. ~~no inherent priority being given to any particular class of emission.~~

Reason: Amended to be consistent with SSB operation.

D/5/8 SUP 27/13

D/5/9 SUP 27/14

Reason: No longer applicable.

D/5/10 MOD 27/15 'e) The arrangements contemplated in ~~Nes-27/42 and-27/44~~ No. 27/12 should be made under the Articles of the International Telecommunications Convention and the Radio Regulations entitled "~~Special Agreements~~" "Special Arrangements".'

Reason: For clarification.

2. Frequencies to be Allotted

D/5/11 MOD 27/16 'The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10, will be found in the following table.'

Reason: To clearly indicate that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing and to provide band-edge protection.

D/5/12

The following table is illustrative only. The final table will follow the format of the existing table and specify each channel carrier (reference) frequency. The final table will also include those channels which are near band edges and have less than 3 kHz bandwidth.

kHz

2850 - 3025	5450 - 5480	8815 - 8965	13260 - 13360
2851 to 3019 in steps of 3 kHz 3023*(R) & (OR) 58 CHANNELS	Region 2 5451 to 5475 in steps of 3 kHz 9 CHANNELS	8816 to 8960 in steps of 3 kHz 49 CHANNELS	13261 to 13357 in steps of 3 kHz 33 CHANNELS
3400 - 3500	5480 - 5620	10005 - 10100	17900 - 17970
3401 to 3497 in steps of 3 kHz 33 CHANNELS	5481 to 5676 in steps of 3 kHz 5680*(R)&(OR) 67 CHANNELS	10006 to 10096 in steps of 3 kHz 31 CHANNELS	17901 to 17967 in steps of 3 kHz 23 CHANNELS
4650 - 4700	6525 - 6685	11275 - 11400	
4651 to 4696 in steps of 3 kHz 16 CHANNELS	6526 to 6682 in steps of 3 kHz 53 CHANNELS	11276 to 11396 in steps of 3 kHz 41 CHANNELS	

* A3 and A3H emissions may also be used.

3. Channels common to (R) and (OR) Services

D/5/13

MOD 27/17 3.1 'The ~~channels~~ carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and 5680 ~~ke/s~~ kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency 5680 ~~ke/s~~ kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.'

Reason: To reflect new carrier frequencies determined by frequency separation of 3 kHz.

D/5/14 MOD 27/18 3.2 'All stations directly involved in co-ordinated search and rescue operations using 3023.5
3023 and 5680 kHz for search and rescue purposes
and employing single sideband (SSB) shall transmit
a carrier at a level sufficient to permit reception
on a double sideband (DSB) receiver and shall be able
to receive DSB transmissions only in the upper side-
band mode (See also No. 27/73)'.

Reason: If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should however it be agreed that single sideband operation be introduced on these frequencies, the preceding change to 27/18 would appear to be necessary.

Note to 27/17 and 27/18:

There is a need for the WARC AERO(R), Geneva 1978, to adopt a resolution similar to ITU Resolution Aer-1 as 3023 and 5680 kHz are common to the (R) and (OR) Services (See Resolution Aer-2D).

D/5/15 SUP 27/19

Reason: If it is agreed to accommodate equipment capable of operation only on whole kHz then the common (R) and (OR) channel 3023.5 kHz can be replaced by 3023 kHz, and 27/19 would no longer be required.

D/5/16 MOD 27/20 4. 'The International Civil Aviation Organization ~~(ICAO)~~ (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical ~~air~~ operations ~~for a large part of the world~~, and this Organization ~~should~~ shall be consulted ~~in appropriate cases, particularly~~ in any international aeronautical operational use of the frequencies in the Plan, including the coordination of the operational use of frequencies allotted for world-wide use. The ICAO shall effect the necessary coordination in collaboration with the IFRB with the view to facilitating the application of the notification and registration procedures described in Article 9 of the Radio Regulations.'

Reason: At the time (1959) 27/20 was originally drafted, all areas of the World were not covered by ICAO Regional Air Navigation Plans (ANP's). To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

5. Adaptation of Allotment Procedure

NOC 27/21 and 27/22

D/5/17 MOD 27/23 7. 'Resort to the co-ordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/22 are not satisfactory.'

Reason: To clarify the intent.

B. Interference Range Contours

1. Definition of Contours

D/5/18 MOD 27/24 1.1 'The transparencies associated with this Appendix show for the frequencies stated, contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW ~~{for emissions such as A1, F1 F2, and unmodulated emissions A3 and A3H}~~ producing a protection ratio of 15 dB of desired signal to interference signal on the same frequency at an aircraft operating at the limit of the service range of the desired aeronautical station transmitter. This limit is generally assumed to be at the boundary of the area concerned, and the service range is not included in the contour.'

Reason: Consequential to MOD 27/50 and MOD 27/51.

NOC 27/25 to 27/49

D/5/19 MOD 27/50 1.1 Telephony - Amplitude modulation:

- double sideband (A3)*
- ~~single sideband, reduced carrier~~ (A3A)
- single sideband, full carrier (A3H)*
- single sideband, suppressed carrier (A3J)
- ~~two independent sidebands~~ (A3B)

* A3 and A3H to be used only on 3023 kHz and 5680 kHz and in accordance with proposed ITU Resolution Aer2-(A) paragraph 4.4.

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of CCIR Study Group 8 Special Meeting.

1.2 Telegraphy (including automatic data transmissions)

D/5/20 MOD 27/51 1.2.1 Amplitude modulation:

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission~~ (A2)

- telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling - single sideband - full carrier A2H
- multichannel-voice-frequency-telegraphy, single sideband, reduced-carrier (A7A)
- multichannel-voice-frequency-telegraphy, single sideband, full-carrier (A7H)
- multichannel voice frequency telegraphy - single sideband - suppressed carrier A7J
- other transmissions such as automatic data transmission - single sideband - suppressed carrier. A9J

D/5/21 MOD 27/52 1.2.2 Frequency modulation:

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- telegraphy-by-the-on-off-keying-of-a-frequency modulating-audio-frequency-or-by-the-on-off keying-of-a-frequency-modulated-emission (F2)**

** A1 and F1 are permitted provided they do not cause harmful interference to the classes of emission A2H, A3J, A7J and A9J. In addition A1 and F1 emissions shall be in accordance with the provisions in Nos. 27/65 and 27/66 and care should be taken not to place these emissions at or near the edges of the channel.

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of the CCIR Study Group 8 Special Meeting.

D/5/22 SUP 27/53

Reason: No requirement for this type of emission.

2. Power

D/5/23 MOD 27/54 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:'

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100 % modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

D/5/24

Replace table by:

Class of emissions	Stations	Maximum peak envelope power
A2H, A3J, A7J, A9J (100 % modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
A3* A3H* (100 % modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1.	Aeronautical stations Aircraft stations	1.5 kW 75 W

"*A3 and *A3H to be used only on 3023 kHz and 5680 kHz, and in accordance with proposed ITU Resolution Aer2-(A), paragraph 4.4."

Reason: To align with the Report of CCIR Study Group 8 Special Meeting.

D/5/25 MOD 27/55 2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1 F2-and-unmodulated-A3-and-A3H emissions) used as a basis for the interference range contours.

Reason: To be consistent with MOD 27/51 and MOD 27/52

D/5/26 MOD 27/56 2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARA, VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In ~~each~~ such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason: To make the same provision for aeronautical stations serving a World-Wide function.

NOC 27/57 to 27/61

D/5/27 MOD 27/62 '2.4 It is recognized that the power employed by aircraft transmitters may, in practice, exceed the limits specified in No. 27/54. However, the use in exceptional cases of such increased power, (which should not exceed 600 W Pp) shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.'

Reason: To meet physical conditions of wide-bodied aircrafts.

3. Technical provisions relating to the use of single sideband emissions

D/5/28 MOD 27/63 3.1 Definitions of carrier modes:

Carrier mode	Level N (dB) of the carrier with respect to peak envelope power
Full carrier (for example A3H A2H)	$0 > N > -6$
Reduced-carrier-(A3A)	$6 > N > -26$
Suppressed carrier (for example A3J)	Aircraft Stations $-26 > N$ Aeronautical Stations $-40 > N$

Reason: To align emission designators with MOD 27/50 and MOD 27/51 and to add provisions for carrier suppression for aeronautical stations in accordance with the Report of CCIR Study Group 8 Special Meeting.

D/5/29 SUP 27/64

Reason: To reflect that the new allotment plan will be based on single sideband operation.

D/5/29A MOD to subtitle 3.3 Tolerance for levels of SSB emission outside the necessary bandwidth.

Reason: To reflect applications to other classes of emission.

D/5/30 MOD 27/65 3.3.1 In a single-sideband-A3H, A2H, A3J, A7J or A9J, A3A transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (Pm) of the transmitter in accordance with the following table:

Reason: To align with MOD 27/50 and MOD 27/51.

D/5/31 MOD 27/66 3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Frequency separation Δ from the assigned frequency ke/s kHz	Minimum attenuation below mean Power (Pm) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
	Aircraft stations:
	40
$10 \leq \Delta$	Aeronautical stations:
	$43 + 10 \log_{10} P_m(\text{Watts})^*$

*Attenuation need not exceed 60 dB

Reason: To accommodate airborne equipments currently in use which are capable of acceptable operation in a 3 kHz channel spaced environment.

D/5/32 ADD 27/66A 3.3.3 In an A2H, A3J or A7J or A9J transmission, the peak envelope power (Pp) of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the peak envelope power (Pp) of the transmitter in accordance with the following table.

Reason: To accommodate classes of emission as set forth in MOD 27/50 and MOD 27/51 and to express power level in peak envelope power (Pp) to provide consistency in the Radio Regulations.

D/5/33 ADD 27/66B 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983.

Frequency separation Δ from the assigned frequency <u>kHz</u>	Minimum attenuation below peak envelope power (Pp) <u>dB</u>
<u>$1.5 \leq \Delta < 4.5$</u>	<u>30</u>
<u>$4.5 \leq \Delta < 7.5$</u>	<u>38</u>
<u>$7.5 \leq \Delta$</u>	<u>Aircraft stations</u>
	<u>43</u>
	<u>Aeronautical stations</u>
	<u>$43 + 10 \log_{10} P_p \text{ (Watts)*}$</u>

*Attenuation need not exceed 60 dB

Reason: To reduce the bandwidth of unwanted emissions, to express power level in peak envelope power (Pp), to reflect the Report of CCIR Study Group 8 Special Meeting, paragraph 7.2.2, and to provide for the termination of use of aeronautical station transmitters not capable of operation in accordance with this plan.

D/5/34 SUP 27/67 - 27/71 inclusive.

Reason: No longer applicable.

4. Assigned frequencies

D/5/35 MOD 27/72 '4.1 ~~The assigned frequency~~ For single sideband radiotelephone emissions, except class of emissions A2H, the assigned frequency shall be at a value 1500 cycles 1400 Hz above the carrier (reference) frequency.

D/5/36 ADD 27/72A Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.

D/5/37 ADD 27/72B For classes of emission A1 and F1 the assigned frequency shall be chosen in accordance with the provisions of the footnote to Nos. 27/51 and 27/52.

Reason: To define the assigned frequency taking into account MOD 27/50, MOD 27/51, MOD 27/66 and the Report of the CCIR Study Group 8 Special Meeting.

D/5/38 MOD 27/73 '4.2 Stations employing double sideband emissions (A3) shall operate with assigned frequencies frequency at ~~the values listed in the Allotment Plan~~ 3023 kHz or 5680 kHz (see No. 27/50)

Reason: To take into account DSB operation on 3023 kHz and 5680 kHz.

B. Proposed Revisions to Part II of Appendix 27

PART II

Plan for the Allotment of Frequencies for the
Aeronautical Mobile (R) Service in the
Exclusive Bands between 2850 and 17 970 kc/s

D/5/39 ADD Section 0

D/5/40 ADD Frequencies allotted for world-wide use

D/5/41 ADD 27/73A Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area

Reason: To define the purpose for which such frequencies may be used.

D/5/42 ADD 27/73B Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, to the extent possible, frequencies allotted to RDARAs and Sub-RDARAs should be used.

Reason: To emphasize frequency economy.

Section I

Description of the Boundaries of the MWARA, RDARA, Sub-RDARA and VOLMET Areas

NOC 27/74 to 27/79

Section II

Allotment of Frequencies to the Aeronautical Mobile (R) Service

ARTICLE 1

D/5/43 MOD 27/186 Frequency Allotment Plan by Areas ~~(by-MWARAs,
RDARAs, Sub-RDARAs and VOLMET Areas)~~

Reason: To indicate that the title embraces all users of the frequencies in the frequency allotment plan.

Notes:

NOC 27/187

D/5/44 MOD 27/188 b) The following list does not include the world-wide common (R) and (OR) frequencies of ~~3023.5, 3023 and 5680 kHz. or the world-wide frequencies of 3499, 6526, 8963, 10,093 and 13,256 kHz.~~ The allotment of these frequencies is shown in Article 2.

Reason: Consequent to inclusion of Aeronautical Operational Control frequencies in the new allotment table.

D/5/45 MOD 27/189 Table to be established by the Conference including provision for the Aeronautical Operational Control frequencies.

ARTICLE 2

Frequency Allotment Plan (in numerical order of frequencies)

General Notes:

D/5/46 MOD 27/192 '1. Class of stations: FA.
Classes of emission: see Nos. 27/49 - 27/52.
Power: Unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos. 27/54 - 27/62.

Hours: H24 unless otherwise indicated.'

Reason: Consequential to proposals by the Administration.

D/5/47 MOD 27/193 2. A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or Aeronautical Operational Control which receive full protection during the twentyfour hours.

Reason: To add channels allotted for Aeronautical Operational Control use.

NOC 27/194

D/5/48 ADD 27/194A The frequency allotment for aeronautical operational control use is for assignment by administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.

Reason: To provide for operational control (flight regularity) communications between aircraft and associated aeronautical stations.

D/5/49 MOD 27/195 - 27/207 Table to be established by the Conference with a channelling based on 3 kHz separation. (See No. 27/16).

D/5/50 MOD 27/196 - 27/201 In the new plan MOD Column 3 for both 27/196 and 27/201 as follows:
3) the specific application of this frequency for the above purposes may be decided at ICAO regional ~~aeronautical-conferences~~ air navigation meetings;

Reason: To accommodate a new plan on 3 kHz channel spacing.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.1

1.1

Amendments proposed for the description of the Major World Air Route Areas (MWARAs) and frequency requirements as contained in Article 1, Part II, Appendix 27 to the Radio Regulations

ARTICLE 1

Description of the Boundaries of the Major
World Air Route Areas (MWARAs)

NOC 27/80 and 27/81

D/6/1 MOD 27/82 MWARA - Central East Pacific (MWARA-CEP)

Amend delineation to read:

From the point $50^{\circ}\text{N } 122^{\circ}\text{W}$ through the points $38^{\circ}\text{N } 120^{\circ}\text{W}$, $32^{\circ}\text{N } 147^{\circ}\text{W}$, $15^{\circ}\text{N } 110^{\circ}\text{W}$, $20^{\circ}\text{S } 145^{\circ}\text{W}$, $20^{\circ}\text{S } 152^{\circ}\text{W}$, $22^{\circ}\text{N } 159^{\circ}\text{W}$, $30^{\circ}\text{N } 165^{\circ}\text{W}$, to the point $50^{\circ}\text{N } 122^{\circ}\text{W}$.

D/6/2 ADD Frequency Allotment: One additional family required.

Reason: In accordance with the principle that the entire world should be covered by MWARAs, the boundaries of MWARA CEP to be modified to cover the gaps which resulted from modification of most of the MWARAs adjacent to it.

D/6/3 MOD 27/83 MWARA - Central West Pacific (MWARA-CWP)

Amend delineation to read:

From the point $40^{\circ}\text{N } 117^{\circ}\text{E}$ through the points $25^{\circ}\text{N } 155^{\circ}\text{W}$, $17^{\circ}\text{N } 155^{\circ}\text{W}$, $40^{\circ}\text{N } 160^{\circ}\text{E}$, $40^{\circ}\text{N } 147^{\circ}\text{E}$, $23^{\circ}\text{N } 144^{\circ}\text{E}$, $40^{\circ}\text{N } 147^{\circ}\text{E}$, $25^{\circ}\text{N } 155^{\circ}\text{W}$, to the point $17^{\circ}\text{N } 155^{\circ}\text{W}$, $00^{\circ} 165^{\circ}\text{W}$, $00^{\circ} 170^{\circ}\text{E}$, $12^{\circ}\text{S } 165^{\circ}\text{E}$, $12^{\circ}\text{S } 136^{\circ}\text{E}$, $09^{\circ}\text{N } 115^{\circ}\text{E}$, $22^{\circ}\text{N } 115^{\circ}\text{E}$, to the point $40^{\circ}\text{N } 117^{\circ}\text{E}$.

D/6/4 ADD Frequency Allotment: One additional family required.

Reason: The southern boundary to be moved to the south to cover the gap between the SEA, SP and old CWP MWARAs.

D/6/5 MOD 27/84 MWARA - Europe (MWARA-EU)

Amend designation to read: MWARA-EU EUR

Amend delineation to read:

From the point $33^{\circ}\text{N } 12^{\circ}\text{W}$ through the points $54^{\circ}\text{N } 12^{\circ}\text{W}$, $70^{\circ}\text{N } 00^{\circ}$, $74^{\circ}\text{N } 40^{\circ}\text{E}$, $40^{\circ}\text{N } 40^{\circ}\text{E}$, $74^{\circ}\text{N } 52^{\circ}\text{E}$, $60^{\circ}\text{N } 52^{\circ}\text{E}$, $40^{\circ}\text{N } 36^{\circ}\text{E}$, $29^{\circ}\text{N } 35^{\circ}$, 30°E , $32^{\circ}\text{N } 13^{\circ}\text{E}$, to the point $33^{\circ}\text{N } 12^{\circ}\text{W}$.

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include certain aerodromes alternates to Moscow and Leningrad.

D/6/6 SUP 27/85 MWARA-Far East (MWARA-FE)

Reason: Reconfiguration of the SEA MWARA

D/6/7 ADD 27/85A MWARA Indian Ocean (MWARA-IO)

Delineation:

From the South Pole through the points $30^{\circ}\text{S } 26^{\circ}\text{E}$, $20^{\circ}\text{N } 35^{\circ}\text{E}$, $30^{\circ}\text{N } 60^{\circ}\text{E}$, $30^{\circ}\text{N } 90^{\circ}\text{E}$, $30^{\circ}\text{S } 120^{\circ}\text{E}$, $40^{\circ}\text{S } 160^{\circ}\text{E}$ to the South Pole

D/6/8 ADD Frequency Allotment: One family is required.

Reason: To cover the routes between Australia/Asia and Africa.

D/6/9 MOD 27/86 MWARA-Middle East (MWARA-ME)

Amend designation to read: MWARA ~~ME~~ MID

Amend delineation to read:

From the point $50^{\circ}\text{N } 80^{\circ}\text{E}$, $51^{\circ}\text{N } 30^{\circ}\text{E}$ through the points $34^{\circ}\text{N } 80^{\circ}\text{E}$, $29^{\circ}\text{N } 85^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $57^{\circ}\text{N } 37^{\circ}\text{E}$, $50^{\circ}\text{N } 80^{\circ}\text{E}$, $44^{\circ}\text{N } 94^{\circ}\text{E}$, $08^{\circ}\text{N } 76^{\circ}\text{E}$, $22^{\circ}\text{N } 56^{\circ}\text{E}$, $16^{\circ}\text{N } 42^{\circ}\text{E}$, $30^{\circ}\text{N } 30^{\circ}\text{E}$ to the point $51^{\circ}\text{N } 30^{\circ}\text{E}$.

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include Urumchi.

D/6/10 MOD 27/87 MWARA - North Atlantic (MWARA-NA)

Amend designation to read: MWARA-NA NAT

Amend delineation to read:

From the North Pole through the points ~~49°N-100°W~~,
~~60°N 135°W~~, ~~49°N 120°W~~, ~~49°N 74°W~~, ~~39°N 78°W~~, ~~18°N~~
~~66°W~~, ~~05°N 55°W~~, ~~16°N 26°W~~, ~~32°N 08°W~~, ~~44°N 02°E~~,
~~60°N 20°E~~, to the North Pole.

D/6/11 MOD Frequency Allotment: Three additional families required.

Reason: To ensure consistency with ICAO designator.
 The western boundary to be moved to the west to include
 essentially all of Canada.

D/6/12 SUP 27/88-
93 inclusive

Reason: In view of the conclusion reached not to
 sectorize MWARAs.

D/6/13 MOD 27/94 MWARA-North Pacific (MWARA-NP)

Amend delineation to read:

~~From the point 50°N-166°E through the points 75°N-150°W,~~
~~75°N-90°W, 55°N-110°W, 46°N-122°W, 50°N-170°W, 33°N~~
~~138°E, 52°N-132°E to the point 50°N-166°E North Pole~~
~~through the points 60°N 135°W, 47°N 118°W, 30°N 165°W,~~
~~30°N 115°E, 41°N 116°E, 55°N 135°E to the North Pole.~~

ADD Frequency Allotment: One additional family required.

Reason: The eastern boundary to be moved to the west
 to exclude the most part of Canada from the allotment
 area and the western boundary to be moved to the west
 to include Peking and Shanghai.

D/6/14 MOD 27/95 MWARA - North South Africa-1 (MWARA-NSA-1)

Amend designation to read: MWARA-NSA-4 AFI.

Amend delineation to read:

~~From the point 05°N-03°W through the points 37°N-03°W~~
~~37°N-14°E, 00°-28°E, 14°S-28°E, 20°S-35°E, 31°S-35°E~~
~~31°S-17°E to the point 05°N-03°W.~~

~~From the point 40°N 35°W through the points 37°N 03°W,~~
~~37°N 35°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 35°S 30°E,~~
~~35°S 16°E, 05°N 03°W, 05°N 35°W, to the point 40°N~~
~~35°W~~

D/6/15 ADD Frequency Allotment: One additional family required.

Reason: To ensure consistency with ICAO designator and to revise 27/95 and 27/96 in order to create a new MWARA essentially encompassing all of Africa. In creating MWARA-AFI it was agreed that portions of the ICAO Sectors AFI-3 and AFI-5 might form part of the agreed MWARA Indian Ocean (see ADD 27/85).

D/6/16 SUP 27/96 MWARA - North- South-Africa-2 (MWARA-NSA-2)

Reason: Consequential change as a result of MOD 27/95 above.

D/6/17 SUP 27/97

Reason: Consequential change as a result of MOD 95 above.

D/6/18 MOD 27/98 MWARA - South Atlantic (MWARA-SA)

Amend designation to read: MWARA-SA SAT

Amend delineation to read:

~~From the point 40°N 03°W through the points 05°N 03°W, 20°S 20°W, 22°S 42°W, 15°S 50°W, 00° 38°W, 40°N 15°W to the point 40°N 03°W.~~

~~From the South Pole through the points 30°S 75°W, 10°S 40°W, 00° 60°W, 20°N 60°W, 25°N 25°W, 41°N 15°W, 41°N 03°W, 15°N 03°W, 20°S 32°E to the South Pole.~~

D/6/19 ADD Frequency Allotment: Two additional families required.

Reason: To ensure consistency with ICAO designator. The boundaries are adjusted to provide for: routes from Africa to the Caribbean and South America; routes between Europe and the eastern part of South America; polar routes between South America and Australasia.

D/6/20 SUP 27/99

Reason: Consequential change as a result of MOD 27/98 above

D/6/21 MOD 27/100 MWARA - South America-1 (MWARA-SAM-1)

Amend designation to read: MWARA-SAM-4

Amend delineation to read:

~~From the point 36°S 73°W through the points 00° 93°W, 15°N 106°W, 15°N 75°W, 05°N 75°W, 20°S 50°W, 36°S 52°W to the point 36°S 73°W.~~

~~From the South Pole through the points 15°N 125°W, 15°N 60°W, 10°N 60°W, 05°S 30°W, 36°S 52°W to the South Pole.~~

NOC Frequency Allotment

Reason: It was agreed to revise 27/100 and 27/101 in order to create a new MWARA encompassing all of South America, and to extend the western and southern boundaries of the area to include routes from South America to the South Pacific.

D/6/22 SUP 27/101 MWARA - South America-2 (MWARA-SAM-2)

Reason: Consequential change as a result of MOD 27/100 above.

D/6/23 MOD 27/102 MWARA - South East Asia (MWARA-SEA)

Amend delineation to read:

~~From the point 29°N 85°E through the points 45°N 105°E, 00° 435°E, 00° 468°E, 35°S 450°E, 35°S 446°E, 08°N 75°E to the point 29°N 85°E.~~

From the point 26°N 130°E, 00° 130°E, 00° 135°E, 12°S 145°E, 12°S 160°E, 25°S 155°E, 40°S 150°E, 35°S 115°E, 18°N 62°E, 26°N 65°E, to the point 26°N 130°E.

D/6/24 MOD Frequency Allotment: Three families are required.

Reason: Expansion of the existing SEA MWARA is required. In view of the high traffic density in and the vast size of the overall area it is decided that the boundaries considered therein be amended so as to create two separate MWARAs.

D/6/25 MOD 27/103 MWARA-South Pacific (MWARA-SP)

Amend delineation to read:

~~From the point 22°N 158°W through the points 22°N 156°W, 00° 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 38°S 145°E, 00° 167°E, 00° 175°W to the point 22°N 158°W.~~

From the South Pole through the points 38°S 145°E, 00° 167°E, 00° 175°W, 22°N 158°W, 22°N 156°W, 00° 120°W to the South Pole.

D/6/26 ADD Frequency Allotment: One additional family is required.

D/6/27 ADD 27/103A MWARA

Delineation: From the point 55°N 124°E, 37°N 145°E, 26°N 130°E, 00° 130°E, 00° 80°E, 18°N 62°E, 37°N 67°E, 55°N 80°E to the point 55°N 124°E.

D/6/28 ADD Frequency Allotment: Three families are required.

Reason: Consequential as a result of MOD 102 above.

D/6/29 ADD 27/103B MWARA - NORTH CENTRAL ASIA (MWARA - NCA)

Delineation: From the North Pole through the points
75°N 10°E, 60°N 25°E, 30°N 25°E, 30°N
73°E, 37°N 73°E, 49°N 85°E, 42°N 97°E,
42°N 110°E, 30°N 135°E, 65°N 170°W, to
the North Pole.

D/6/30 ADD Frequency Allotment: Three families are required.

Reason: In order to meet the requirements for HF
communications on international flights from the
USSR to Norway, Europe, the Near East, South and
South East Asia, the Far East and from the latter
locations to the USSR, as well as for HF communications
on international flights over North and Central Asia.

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.1

1.2

Amendments proposed for the description of the VOLMET Allotment Areas, VOLMET Reception Areas and frequency requirements as contained in Article 3, Part II, Appendix 27 to the Radio Regulations

ARTICLE 3

Description of the Boundaries of the VOLMET Allotment Areas and VOLMET Reception Areas

VOLMET area - AFRICA-INDIAN OCEAN (AFI-MET)

D/7/1 MOD 27/174. The AFI-MET allotment area is defined by a line drawn from the point $29^{\circ}\text{N } 20^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 03^{\circ}\text{W}$, $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, $22^{\circ}\text{S } 60^{\circ}\text{E}$, $35^{\circ}\text{S } 35^{\circ}\text{E}$, $35^{\circ}\text{S } 15^{\circ}\text{E}$, $08^{\circ}\text{S } 15^{\circ}\text{W}$, $12^{\circ}\text{N } 20^{\circ}\text{W}$ to the point $29^{\circ}\text{N } 20^{\circ}\text{W}$.

D/7/2 MOD 27/175 The AFI-MET reception area is defined by a line drawn from the point $37^{\circ}\text{N } 03^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, $10^{\circ}\text{N } 100^{\circ}\text{E}$, the South Pole, $29^{\circ}\text{N } 40^{\circ}\text{W}$, $29^{\circ}\text{N } 20^{\circ}\text{W}$, to the point $37^{\circ}\text{N } 03^{\circ}\text{W}$.

NOC Frequency Allotment

Reason: In order to provide VOLMET service for South America-South Africa and South Africa-Australia flights, the Allotment and Reception Areas be expanded and re-defined as delineated above.

VOLMET Area - ATLANTIC (AT-MET)

Note: It is proposed to change the nomenclature from ATLANTIC (AT-MET) to NORTH ATLANTIC (NAT-MET)

- D/7/3 MOD 27/176 The NAT-MET allotment area is defined by a line drawn from the point 41°N 78°W through the points 51°N 55°W, 24°N 50°W, 24°N 74°W to the point 41°N 78°W.
- D/7/4 MOD 27/177 The NAT-MET reception area is defined by a line drawn from the point 24°N 97°W through the points 24°N 85°W, 75°N 85°W, 75°N 20°W, 00° 20°W, 00° 95°W to the point 24°N 97°W.
- D/7/5 ADD Frequency Allotment: One frequency family is required.
- Reason: In consideration of establishment of CARIBBEAN (CAR-MET) and SOUTH AMERICAN (SAM-MET) allotment and reception areas, it is proposed to amend the allotment and reception areas as defined above.
- VOLMET Area - EUROPE (EU-MET)
- Note: It is proposed to change the nomenclature from EU-MET to EUR-MET.
- D/7/6 MOD 27/178 The EUR-MET allotment area is defined by a line drawn from the point 33°N 12°W, through the points 54°N 12°W, 70°N 00°, 74°N 40°E, 40°N 36°E, 29°N 35°30'E, 32°N 13°E, to the point 33°N 12°W.
- D/7/7 MOD 27/179 The EUR-MET reception area is defined by a line drawn from the point 15°N 20°W, through the points 40°N 50°W, 75°N 50°W, 75°N 45°E, 15°N 45°E, to the point 15°N 20°W.
- D/7/8 ADD Frequency Allotment: One additional family is required.
- Reason: In view of the impossibility of accommodating aircraft operating agency requirements for additional terminal area forecasts and surface observations on one of the present families in the time available, it is proposed that one additional family is required.
- VOLMET Area - MIDDLE EAST (MID-MET)
- Note: It is proposed to change the nomenclature from ME-MET to MID-MET.
- D/7/9 MOD 27/180 The MID-MET allotment area is defined by a line drawn from the point 50°N 80°E, through the points 29°N 80°E, 27°N 85°E, 16°N 78°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.
- D/7/10 MOD 27/181 The MID-MET reception area is defined by a line drawn from the point 50°N 80°E, through the points 50°N 90°E, 35°N 90°E, 27°N 85°E, 16°N 78°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

D/7/11 ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - PACIFIC (PAC-MET)

D/7/12 MOD 27/182 The PAC-MET allotment area is defined by a line drawn from the point $52^{\circ}\text{N } 132^{\circ}\text{E}$, through the points $63^{\circ}\text{N } 149^{\circ}\text{W}$, $38^{\circ}\text{N } 120^{\circ}\text{W}$, $50^{\circ}\text{S } 120^{\circ}\text{W}$, $50^{\circ}\text{S } 145^{\circ}\text{E}$, $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $22^{\circ}\text{N } 112^{\circ}\text{E}$ to the point $52^{\circ}\text{N } 132^{\circ}\text{E}$.

Reason: It is proposed to amend the definition of the PAC-MET allotment area, to include Christmas Island, Tahiti, and New Zealand, as indicated above.

D/7/13 MOD 27/183 The PAC-MET reception area is defined by a line drawn from the point $60^{\circ}\text{N } 100^{\circ}\text{E}$, through the points $80^{\circ}\text{N } 160^{\circ}\text{W}$, to the North Pole, to the South Pole along the 110°W meridian, to $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $05^{\circ}\text{N } 80^{\circ}\text{E}$, $40^{\circ}\text{N } 80^{\circ}\text{E}$, to the point $60^{\circ}\text{N } 100^{\circ}\text{E}$.

D/7/14 ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - SOUTH EAST ASIA (SEA-MET)

D/7/15 MOD 27/184 The SEA-MET allotment area is defined by a line drawn from the point $55^{\circ}\text{N } 75^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 135^{\circ}\text{E}$, $45^{\circ}\text{N } 135^{\circ}\text{E}$, $35^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 116^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $26^{\circ}\text{N } 65^{\circ}\text{E}$ to the point $55^{\circ}\text{N } 75^{\circ}\text{E}$.

D/7/16 MOD 27/185 The SEA-MET reception area is defined by a line drawn from the point $55^{\circ}\text{N } 50^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 180^{\circ}$, $50^{\circ}\text{S } 180^{\circ}$, $50^{\circ}\text{S } 70^{\circ}\text{E}$, $8^{\circ}\text{N } 70^{\circ}\text{E}$, $8^{\circ}\text{N } 50^{\circ}\text{E}$ to the point $55^{\circ}\text{N } 50^{\circ}\text{E}$.

D/7/17 ADD Frequency Allotment: Two additional frequency families are required.

Reason: To meet the needs of the South Africa - Australia services and international flights in the South-East Asia Region, it is proposed to amend the definition of the SEA-MET allotment and reception areas as indicated above.

VOLMET - CARIBBEAN (CAR-MET)

D/7/18 ADD 27/185A The CAR-MET allotment area is defined by a line drawn from the point $30^{\circ}\text{N } 110^{\circ}\text{W}$, through the points $30^{\circ}\text{N } 75^{\circ}\text{W}$, $00^{\circ} 50^{\circ}\text{W}$, following equator to $00^{\circ} 80^{\circ}\text{W}$ to the point $30^{\circ}\text{N } 110^{\circ}\text{W}$;

D/7/19 ADD 27/185B The CAR-MET reception area is defined by a line drawn from the point $40^{\circ}\text{N } 120^{\circ}\text{W}$, through the points $40^{\circ}\text{N } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 120^{\circ}\text{W}$, to the point $40^{\circ}\text{N } 120^{\circ}\text{W}$;

ADD - Frequency Allotment: One frequency family is required

Reason: Associated with the reduction of the AT-MET VOLMET Area now designated NAT-MET and to cater for eventual requirements, the Caribbean VOLMET Area is created with allotment and reception areas as indicated above.

VOLMET Area - SOUTH AMERICA (SAM-MET)

D/7/20 ADD 27/185C The SAM-MET allotment area is defined by a line drawn from the point 15°N 83°W through the points 15°N 60°W, 5°S 35°W, 55°S 60°W, 55°S 83°W to the point 15°N 83°W;

D/7/21 ADD 27/185D The SAM-MET reception area is defined by a line drawn from the point 30°N 120°W through the points 30°N 00°, the South Pole, to the point 30°N 120°W;

D/7/22 ADD Frequency Allotment: One frequency family is required.

Reason: To cater for eventual requirements, the South America VOLMET Area is created with allotment and reception areas as indicated above.

VOLMET Area - NORTH CENTRAL ASIA (NCA-MET)

D/7/23 ADD 27/185E The NCA-MET allotment area is defined by a line drawn from the point 76°N 32°E through the points 80°N 90°E, 75°N 168°W, 66°N 168°W, 48°N 160°E, 42°N 135°E, 50°N 130°E, 50°N 90°E, 35°N 70°E, 45°N 30°E, 60°N 20°E to the point 76°N 32°E;

D/7/24 ADD 27/185F The NCA-MET reception area is defined by a line drawn from the North Pole to the point 40°N 168°W, 30°N 140°E, 30°N 20°E, to the North Pole;

D/7/25 ADD Frequency Allotment: Two frequency families are required.

Reason: In order to meet the requirements for provision of meteorological information to flights over the territory of the Soviet Union the VOLMET North and Central Asia Area is created with allotment and reception areas as indicated above.

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

Proposed amendments to the ITU Radio Regulations resulting
from the revision of Appendix 27

Article 5

Frequency Allocations
10 kHz to 275 GHz

D/8/1 MOD 201A The frequencies 2182 kHz, ~~3023.5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

D/8/2 MOD 205A The carrier frequencies ~~3023.5~~ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in coordinated search and rescue operations.

Reason: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

Article 7

Special Rules Relating to
Particular Services

Section II

Aeronautical Mobile Service

D/8/3 MOD 429 §3.(1) Frequencies in any band allocated to the aeronautical mobile (R) service are reserved for



communications between any aircraft and those aeronautical stations primarily concerned with the safety and regularity of flight along national or international civil air routes.

(2) Aeronautical Operational Control Communications in the aeronautical mobile (R) service are intended to permit communications related to regularity of flight.

Reason: Required definition subsequent to the introduction of that application.

Article 9

Notification and recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunications stations.

NOC 589

D/8/4 MOD 590 (2) If the finding is favourable with respect to Nos. 554 to 557 the date of ~~29-April-1966~~ (the date of signing of the WARC AERO(R) Agreement, Geneva, 1978) shall be entered in Column 2a.

D/8/5 MOD 591 (3) If the finding is favourable with respect to No. 558, the date of ~~29-April-1966~~ (the date of signing of the WARC AERO(R) Agreement, Geneva, 1978) shall be entered in Column 2b.

Reason: To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

Article 28

Conditions to be Observed by
Mobile Services

Section II

Special Provisions Regarding
Safety

D/8/6 MOD 969A (3) The frequencies ~~3023-5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and

rescue scene-of-action coordination purposes, including communications between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A, 1326C.

Article 35

Use of Frequencies for Radio Telephony in the Maritime Mobile Service

Section II

Bands between 1605 and 4000 ~~ke/s~~ kHz

C. Search and Rescue

D/8/7 MOD 1326C 3A. The frequency ~~3023.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with-the-carrier-frequencies, classes-of-emission-and-conditions-of-operation-defined-in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

D/8/8 MOD 1353B 15A. The frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with-the-carrier-frequencies, classes of-emission-and-conditions-of-operation-defined-in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: To align with MOD 969A and MOD 1326C.

PLENARY MEETING

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (A)

The Administration proposes the addition of the following resolution:

D/9/1 ADD RESOLUTION No. Aer2 - (A)

RELATING TO THE IMPLEMENTATION OF THE NEW ARRANGEMENT
OF HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE
AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 AND
17 970 kHz

The world Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978,
considering

- a) that each of the high frequency bands allocated exclusively to the aeronautical (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this Conference to provide for SSB techniques;
- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;

f) that the Final Acts of this Conference will enter into force on 1 April 1979;

g) that the revised Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on 1 February 1983;

recognizing

a) that the aeronautical mobile (R) service is a safety service

b) that some frequencies have been allotted for world-wide use

resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;

2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single sideband operation shall be made in accordance with the following provisions:

2.1 the carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;

2.2 the carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;

2.3 that, prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be coordinated with the International Civil Aviation Organization in accordance with No. MOD 27/20 of Appendix 27 to the Radio Regulations;

3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations shall be re-

placed by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);

4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2850 and 17970 kHz shall comply with the following conditions:

4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operation at the earliest possible date; furthermore, they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3 until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized. Double sideband operations may, however, be continued in exceptional cases for domestic use until 1 February 1987, provided that harmful interference which may be caused to the International Aeronautical Mobile (R) Service operating in the single sideband mode be resolved by application of Article 15 of the ITU Radio Regulations, noting in particular RR 667 and RR 674. The Administrations requiring such an extension of the full implementation of single sideband are, nevertheless, urged to cease double sideband operations as soon as possible.

Reason: With the Appendix 27 (Rev), an orderly transition to the new plan is required.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (B)

The Administration proposes:

D/10/1

1. SUP RESOLUTION No. Aer 6
relating to the treatment of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17970 kHz.

Reason: This Resolution has been rewritten and is shown in Resolution No. Aer2-(B), and, therefore, needs to be suppressed.

D/10/2

2. ADD RESOLUTION No. Aer2 - (B)
RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kHz

The World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978,

considering

a) that the Final Acts of this Conference will enter into force in 1 April 1979;

b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours G.M.T. on 1 February 1983;

c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;

d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:

- 1.1 the provisions of Nos. 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz;
- 1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B.;
- 1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:
 - a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
 - b) if the finding is favourable with respect to No. 558, the date of 29th April 1966 shall be entered in Column 2b;
 - c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;
- 1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register.

2. that on the date of coming into force of the new Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz which are contained in the Master International Frequency Register from the point of

view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

- 2.1 assignments with double sideband emission (A3), mentioned in paragraph 4.4 of Resolution Aer 2-(A), and already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in column 2a or 2b as appropriate until 1 February 1983. A date in column 2a for a frequency assignment using double sideband (A3) as mentioned in paragraph 4.4 of proposed Resolution Aer 2-(A), shall be transferred to column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with Administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in column 2b.
- 2.2 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the WARC AERO(R) Agreement, Geneva, 1978) entered in column 2a;
- 2.3 assignments found favourable with respect to No. 558 shall have (the date of signing of the WARC AERO(R) Agreement, Geneva, 1978) entered in column 2b;
- 2.4 all other assignments shall have (the day AFTER the date of signing the WARC AERO(R) Agreement Geneva, 1978) entered in column 2b;

3. that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the I.F.R.B. as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

Reason: With the revision of Appendix 27, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (C)

The Administration proposes the addition of the following resolution.

D/11/1 ADD RESOLUTION No. Aer2 - (C)
Relating to the Implementation of the Frequency
Allotment Plan in the High Frequency Bands allocated
exclusively to the Aeronautical Mobile (R) Service
between 2850 and 17970 kHz.

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between
2850 and 17970 kHz) to the aeronautical mobile (R)
Service by the Administrative Radio Conference,
Geneva, 1959, were modified by the Extraordinary
Administrative Radio Conference, Geneva, 1966;
- b) that the 1966 Conference set up procedures to be
followed by administrations relating to the implemen-
tation of the modifications;
- c) that the necessary provisions were made for the
IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a
safety service;
- e) that the present conference has further modified
the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to
implement the modifications made by the present
conference, with a view to avoiding any harmful
interference to the services rendered by stations
operating in accordance with the Radio Regulations;

resolves

1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows;

1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;

1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action;

2. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

Reason: To provide for transfer of out-of-band assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (D)

The Administration proposes:

D/12/1

1. SUP RESOLUTION No. Aer1

relating to the use of frequencies 3023.5 and 5680 kHz common to the aeronautical mobile (R) and (OR) services.

Reason: This Resolution has been modified to bring it up-to-date and is shown as an ADD Resolution No. Aer2 - (D) which follows:

D/12/2

2. ADD RESOLUTION No. Aer2 - (D)

Relating to the use of frequencies 3023 and 5680 kHz common to the Aeronautical Mobile (R) and (OR) Services.

The World Administrative Radio Conference on the Aeronautical Mobile (R) Service, Geneva, 1978,

having noted

that this conference in adopting a new Frequency Allotment Plan in Appendix 27 (Rev), has decided to use 3023 kHz instead of 3023.5 kHz; and, additionally, has amended the provisions governing the use of 3023 and 5680 kHz,

considering

1. that, by this action some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;



2. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operation, was extended to include communication between mobile stations and participating land stations;

3. that it would be in the general interests of the aeronautical mobile (R) service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the Frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

Reason: Represents an up-date of Resolution No. Aer 1, which is proposed for SUP above.

Note: In this respect the treatment of notices concerning frequency assignments to aeronautical stations as given in the existing Resolution Aer6 will have to be modified and replaced by Resolution Aer2 - B. A process that will be proposed in a separate working paper.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (E)

The Administration proposes :

- D/13/1 1. SUP RESOLUTION No. Aer 2
relating to the use of frequencies in the HF bands
allocated exclusively to the aeronautical mobile
(R) service.

Reason: This Resolution has been modified, to bring
it up-to-date, and is shown as an ADD Resolution No.
Aer 2 - (E) below.

- D/13/2 2. ADD RESOLUTION No. Aer2- (E)
Relating to the Unauthorized Use of Frequencies in
the Bands allocated to the Aeronautical Mobile (R)
Service.

The World Administrative Radio Conference on the Aeronau-
tical Mobile (R) Service, Geneva, 1978,

considering

a) that monitoring observations of the use of the
frequencies in the bands between 2850 and 17970 kHz
allocated exclusively to the aeronautical mobile
(R) service show that a number of frequencies in these
bands are still being used by stations of services
other than the aeronautical mobile (R) service, notably
by high powered broadcasting stations, some of which
are operating in contravention of No. 422 of the Radio
Regulations;

b) that these stations are causing harmful interference to the
aeronautical mobile (R) service and that a considerable number of
emissions, the sources of which could not be positively identified,
were observed in these bands;

c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the Aeronautical Mobile (R) Service bands other than under the conditions specified in Nos. 115 and 415;

2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;

3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;

4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No. 422 of the Radio Regulations;

requests the International Frequency Registration Board

1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

2. to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause harmful interference to the aeronautical mobile (R) service;

3. to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

Reason: Represents an up-date of Resolution No. Aer 2, which has been proposed for SUP above.

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (F)

The Administration proposes :

- D/14/1 1. SUP RESOLUTION No. Aer 4
relating to the use of VHF for communication in the
aeronautical mobile (R) service

Reason: This Resolution has been modified to bring
it up-to-date, and is shown as an ADD Resolution No.
Aer 2 - (F) which follows.

- D/14/2 2. ADD RESOLUTION No. Aer 2 - (F)
Relating to the use of VHF for Communication in the
Aeronautical Mobile (R) Service

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978,
considering

- a) that from an aeronautical viewpoint, VHF can provide
a more reliable and more static-free communication
system than HF;
- b) that from a technical and operational viewpoint,
the use of VHF by aviation has progressed appreciably;
- c) that the use of VHF in its several modes could
appreciably reduce the use of HF in the aeronautical
mobile (R) service;
- d) that, owing to development of aeronautical tele-
communications in many areas of the world, the
possibilities of providing VHF coverage are rapidly
increasing;

resolves

that administrations, to the maximum extent practicable,
should employ VHF to meet their requirements in the
aeronautical mobile (R) service.

Reason: Represents an up-date of Resolution No. Aer
4, which has been proposed for SUP above.

PLENARY MEETING

Federal Republic of Germany

PROPOSALS FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RESOLUTION No. Aer2 - (G)

The Administration proposes:

- D/15/1 1. SUP RESOLUTION No. Aer 5
relating to the use of VHF for meteorological broadcasts
in the aeronautical mobile (R) service

Reason: This Resolution has been modified, to bring
it up-to-date, and is shown as an ADD Resolution No.
Aer 2 - (6) which follows.

- D/15/2 2. ADD RESOLUTION No. Aer2 - (G)

Relating to the use of VHF for meteorological
Broadcasts in the Aeronautical Mobile (R)
Service

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978,
considering

- a) that the number of channels available for the
aeronautical mobile (R) service in the frequency
bands between 2850 and 17970 kHz is limited;
- b) that the need for frequencies for aeronautical
mobile (R) service communications and for meteorolo-
gical broadcasts to aircraft is increasing;
- c) that the propagation characteristics of high fre-
quencies make them essential for aviation communication
requirements over long distances;
- d) that in Recommendation No. 13 of the International
Administrative Aeronautical Radio Conference, Geneva,
1949, and Resolution No. 14 MOD of the Ordinary Administra-
tive Radio Conference, Geneva, 1959, administrations

were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";

e) that this conference has adopted a Resolution whereby administrations should, to the maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;

f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;

g) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

Reason: Represents an up-date of Resolution No. Aer 5, which has been proposed for SUP above.

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

Proposed amendment of RESOLUTION 14

The Administration proposes the modification of the existing RESOLUTION 14 as follows:

D/16/1 MOD RESOLUTION 14
Relating to the Use of Frequencies of the Aeronautical
Mobile (R) Service

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978,

considering

a) that the previous Allotment Plan developed for the
use of high frequency channels for the Aeronautical
Mobile (R) Service (Appendix 27 to the Radio Regulations,
Geneva, edition of 1968) has been substantially
revised by this conference;

b) that air operations are subject to continuous
changes;

c) that these changes require attention by the
administrations concerned, but,

d) that, in seeking to satisfy new communication
requirements, no decision should be taken that will
prevent or handicap the coordinated utilization of
those high frequency (R) band allotments as prescribed
in the Plan;

e) that the families of high frequencies allotted to the
Major World Air Route Areas (MWARAs), Regional and
Domestic Air Route Areas (RDARAs) and Sub-Areas and
VOLMET areas have been chosen considering propagation
conditions which allow for the selection of the most
suitable frequencies for the distance involved;

f) that it is essential to distribute the communication
traffic load as uniformly as possible over frequencies
of-the-same-order available;

g) that specific steps should be taken to ensure that the correct order of frequency is used;

h) that frequencies have been allotted for world-wide use

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;
2. to make as great a use as possible of antennas of appropriate directivity and efficiency in order to minimize possibilities of mutual interference within an area or between areas;
3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
5. to collect precise data on the operation of their high frequency communication systems, particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: To include references to VOLMET Areas and to Aeronautical Operational Control Communication.

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 17-E
5 February 1977
Original : English

PLENARY MEETING

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

New RECOMMENDATION No. Aer 2(A)

The Administration proposes the addition of the following recommendation.

D/17/1 ADD RECOMMENDATION No. Aer 2(A)
Relating to a Study of the Feasibility of Creating
new High Frequency Bands to be Allocated exclusively
to the Aeronautical Mobile (R) Service.

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, 1978,

considering

- a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all of the requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive allocations in the 20-24 MHz region of the spectrum when preparing their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the Aeronautical Mobile (R) Service at the next competent WARC.



INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, ~~1977~~)

Document No. 18-E
5 February 1977
Original : English

PLENARY MEETING

Federal Republic of Germany

PROPOSAL FOR THE WORK OF THE CONFERENCE

ITEM 2.1.2

RESOLUTION No. Aer 3

The Administration proposes the suppression of the following resolution:

D/18/1 SUP

RESOLUTION No. Aer 3

relating to the introduction of single sideband techniques in the HF bands allocated to the aeronautical mobile (R) service

Reason: With the adoptment of an allotment plan based on single sideband techniques, this Resolution is no longer applicable.



PLENARY MEETING

German Democratic Republic

CHANGES OF THE PRESENT APPENDIX 27 TO THE RADIO REGULATIONS

DDR/19/1 No. 27/106 Sub-Area 1B

4th sentence : Thence along the border between the Czechoslovak Socialist Republic and the Federal Republic of Germany, then along the border between the Federal Republic of Germany and the German Democratic Republic towards the Baltic Sea.

DDR/19/2 No. 27/107 Sub-Area 1C

2nd and 3rd sentence :

..... Thence east along the 55°N parallel and the border between Denmark and the Federal Republic of Germany to the Baltic Sea, then along the Baltic Sea coast of the Federal Republic of Germany to the border between the Federal Republic of Germany and the German Democratic Republic. Along this border touching the western borders of the Czechoslovak Socialist Republic and Austria to the Swiss border. ...

DDR/19/3 Maps I to III

1. Application of the official name "German Democratic Republic".
2. Graphic representation of the border between the German Democratic Republic and the Federal Republic of Germany in the same way as between other countries.

PLENARY MEETING

Canada

PROPOSALS FOR THE WORK OF THE CONFERENCE

Foreword

Additions and amendments to the texts of the existing Radio Regulations have been underlined. Deletions are shown in the form of crossed-out texts. It should be noted that it will be necessary to change the frequency indicators kc/s and Mc/s to kHz and MHz respectively throughout the Radio Regulations dealing with the Aeronautical Mobile (R) Service.

ARTICLE 7

CAN/20/1 MOD 431 § 5. Frequencies in the bands allocated to the aeronautical mobile service between 2850 and ~~18030~~ 22000 kHz (see Article 5) shall be assigned in conformity with the provisions of Appendices 26 and 27 and the other relevant provisions of these Regulations.

Reason: Consequential to including the band between 21870 and 22000 kHz in the plan in accordance with Recommendation 6/2 of the ICAO Communications Divisional Meeting, 1976.

ARTICLE 9

CAN/20/2 MOD 552 § 21.(1) Examination of Notices concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands allocated exclusively to that Service between 2850 and ~~17970~~ 22000 kHz (see No.500).

CAN/20/3 MOD 589 § 30.(1) Frequency Bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and ~~17970~~ 22000 kHz.

Reason: Consequential to including the band between 21870 and 22000 kHz in the plan in accordance with Recommendation 6/2 of the ICAO Communications Divisional Meeting, 1976.

A P P E N D I X 3

TABLE OF FREQUENCY TOLERANCES*)

(see Article 12)

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all transmitters after 1st January, 1966*
	*) 1st January, 1970 in the case of all tolerances marked with an asterisk.	
.		
<i>Band: 1 605 to 4 000 kHz</i>		
.		
2. <i>Land Stations</i> — power 200 W or less — power above 200 W	100 50	100 h) l) <u>r)</u> 50 h) l) <u>r)</u>
3. <i>Mobile Stations</i> a) Ship Stations b) Survival Craft Stations b A) Emergency Position- Indicating Radiobeacons c) Aircraft Stations d) Land Mobile Stations	200 — — — 200 * 200	200 i) k) 300 300 100 * <u>r)</u> 200
.		
<i>Band: 4 to 29.7 MHz</i>		
.		
2. <i>Land Stations:</i>		
.		
b) <i>Aeronautical Stations:</i> — power 500 W or less — power above 500 W	100 50	100 <u>r)</u> 50 <u>r)</u>
.		
3. <i>Mobile Stations:</i>		
.		

*) Certain services may need tighter tolerances for technical and operational reasons.

CAN/20/4 MOD

CAN/20/5 MOD

CAN/20/6 MOD

CAN/20/7 MOD

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all transmitters after 1st January, 1966*
	* 1st January, 1970 in the case of all tolerances marked with an asterisk.	
c) Aircraft Stations	200 *	100 * r)
.		

Notes Referring to Table of Frequency Tolerances

CAN/20/8 ADD

- r) For aircraft and aeronautical single sideband radiotelephone transmitters the tolerance is 20 and 10 Hz respectively.

Reason: For technical and operational purposes, smaller frequency tolerances need to be adopted for HF SSB transmissions.

A P P E N D I X 27

Section I

Definitions

CAN/20/9 ADD

- 27/8A Aeronautical Operational Control Communications in the aeronautical mobile (R) service are intended to permit communications related to regularity of flight.

Reason: It is necessary to define Aeronautical Operational Control Communications as one of the operations included in the frequency allotment plan.

CAN/20/10 MOD

- 27/9 9. A Family of Frequencies in the Aeronautical Mobile Service ~~is a group~~ consists of frequencies selected from different aeronautical mobile bands and intended to permit communication at any time within the authorized area of use (27/189-27/207) ~~and over any distance~~ between aircraft ~~in-flight~~ stations and appropriate aeronautical stations.

Reason: Since "in flight" is not defined in the Radio Regulations these words may tend to be restrictive or lead to varying interpretations.

Section II

Technical and Operational Principles used for the
Establishment of the Plan of Allotment
of Frequencies in the Aeronautical Mobile (R) Service

CAN/20/11 MOD (Title)

- A. ~~Determination of Channel Width~~
Channel Characteristics

Reason: Sub-section A deals with the general characteristics of the channel.

1. Frequency Separation

CAN/20/12 MOD 27/10

The A frequency ~~separations~~ separation between carrier frequencies of 3 kHz is ~~indicated in the following table are~~ adequate to permit communications using the classes of emission referred to in Nos. 27/49-27/53 and 27/50 in the frequency bands between 2850 kHz and 22000 kHz allocated exclusively to the Aeronautical Mobile (R) service. The carrier frequency of the channels in the Plan should be on integral multiples of 1 kHz.

Band kc/s	Separation kc/s	Band kc/s	Separation kc/s
2850-3025	7	4815-4965	7
3400-3590	7	10 005-10 100	8
4650-4700	7	11 275-11 300	8
5450-5480 (Region 2)	7	13 260-13 360	8
5480-5680	7	17 900-17 970	8
6525-6685	7		

Reason:

It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channeling is based on 3 kHz separation in all bands.

CAN/20/13 MOD 27/11

'a) ~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and 3000 2700 Hz eyes-per second and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension is implied insofar as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met.

Reason:

To define an audio bandwidth necessary for A3J operation consistent with 3 kHz channel separation and to provide accommodation for other permitted classes of emission.

CAN/20/14 ADD 27/11A

For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmission.

Reason:

To reflect the Report of CCIR Study Group 8 Special Meeting and to ensure that provisions are made for data-link in the frequency allotment plan.

CAN/20/15 SUP 27/13

Reason:

Consequential to conversion to single sideband emissions.

CAN/20/16 SUP 27/14

Reason:

No longer applicable.

CAN/20/17 MOD 27/15

'e) The arrangements contemplated in ~~Nasr-27/12-and-27/14~~ No. 27/12 should be made under the Articles of the International Telecommunications Convention and the Radio Regulations entitled "Special Arrangements".

Reason:

For clarification.

The list of frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service on the basis of frequency separation provided for under ~~No. 27/10~~ No. MOD 27/10 will be found in the following table: / CAN/20/12 /

kc/s				
2850-3025	4650-4700	6525-6685	10 005-10 100	17 900-17 970
2854	4654	6526 **	10 009	17 909
2861	4661	6533	10 017	17 917
2868	4668	6540	10 025	17 925
2875	4675 7 channels	6547	10 033	17 933
2882	4682	6554	10 041	17 941
2889	4689	6561	10 049	17 949
2896	4696	6568	10 057	17 957
2903		6575	10 065	17 965
2910		6582	10 073	
2917	5450-5480	6589	10 081	
2924		6596	10 089	
2931	24 channels	6603	10 093 **	
2938	Region 2	6610		
2945	5454	6617		
2952	5461 4 channels	6624	11 275-11 400	
2959	5469	6631		
2966	5477	6638	11 279	
2973		6645	11 287	
2980	5480-5680	6652	11 295	
2987		6659	11 303	
2994		6666	11 311	
3001	5484	6673	11 319	
3008	5491	6680	11 327	
3015	5505		11 335	15 channels
3023.5 (R) & (OR)	5512	8815 8965	11 343	
	5519		11 351	
3400-3500	5526		11 359	
	5533	8819	11 367	
3404	5540	8826	11 375	
3411	5547	8833	11 383	
3418	5554	8840	11 391	
3425	5561	8847		
3432	5568	8854	13 260-13 360	
3439	5575	8861		
3446	5582	8868	13 261	
3453	5589	8875	13 272	
3460	5596	8882	13 280	
3467	5603	8889	13 288	
3474	5610	8896	13 296	
3481	5617	8903	13 304	
3488	5624	8910	13 312	13 channels
3495	5631	8917	13 320	
3499 *	5638	8924	13 328	
	5645	8931	13 336	
	5652	8938	13 344	
	5659	8945	13 352	
	5666	8952	13 356 **	
	5673	8959		
	5680 (R) & (OR)	8963 *		

~~Available for A-1-A~~

kHz							
2850-3025 (57 Channels)				3400-3500 (33 Channels)		4650-4700 (16 Channels)	
Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency
*2852.0	*2853.4	2951.0	2952.4	*3401.0	3402.4	*4651.0	4652.4
2855.0	2856.4	2954.0	2955.4	3404.0	3405.4	4654.0	4655.4
2858.0	2859.4	2957.0	2958.4	3407.0	3408.4	4657.0	4658.4
2861.0	2862.4	2960.0	2961.4	3410.0	3411.4	4660.0	4661.4
2864.0	2865.4	2963.0	2964.4	3413.0	3414.4	4663.0	4664.4
2867.0	2868.4	2966.0	2967.4	3416.0	3417.4	4666.0	4667.4
2870.0	2871.4	2969.0	2970.4	3419.0	3420.4	4669.0	4670.4
2873.0	2874.4	2972.0	2973.4	3422.0	3423.4	4672.0	4673.4
2876.0	2877.4	2975.0	2976.4	3425.0	3426.4	4675.0	4676.4
2879.0	2880.4	2978.0	2979.4	3428.0	3429.4	4678.0	4679.4
2882.0	2883.4	2981.0	2982.4	3431.0	3432.4	4681.0	4682.4
2885.0	2886.4	2984.0	2985.4	3434.0	3435.4	4684.0	4685.4
2888.0	2889.4	2987.0	2988.4	3437.0	3438.4	4687.0	4688.4
2891.0	2892.4	2990.0	2991.4	3440.0	3441.4	4690.0	4691.4
2894.0	2895.4	2993.0	2994.4	3443.0	3444.4	4693.0	4694.4
2897.0	2898.4	2996.0	2997.4	3446.0	3447.4	*4696.0	4697.4
2900.0	2901.4	2999.0	3000.4	3449.0	3450.4		
2903.0	2904.4	3002.0	3003.4	3452.0	3453.4		
2906.0	2907.4	3005.0	3006.4	3455.0	3456.4	5450-5480 (9 Channels)	
2909.0	2910.4	3008.0	3009.4	3458.0	3459.4	Region 2	
2912.0	2913.4	3011.0	3012.4	3461.0	3462.4		
2915.0	2916.4	3014.0	3015.4	3464.0	3465.4		
2918.0	2919.4	3017.0	3018.4	3467.0	3468.4		
2921.0	2922.4			3470.0	3471.4		
2924.0	2925.4	3023.0	3024.4	3473.0	3474.4		
2927.0	2928.4			3476.0	3477.4		
2930.0	2931.4			3479.0	3480.4		
2933.0	2934.4			3482.0	3483.4		
2936.0	2937.4			3485.0	3486.4		
2939.0	2940.4			3488.0	3489.4		
2942.0	2943.4			3491.0	3492.4		
2945.0	2946.4			3494.0	3495.4		
2948.0	2949.4			3497.0	3498.4		
						*5451.0	5452.4
						5454.0	5455.4
						5457.0	5458.4
						5460.0	5461.4
						5463.0	5464.4
						5466.0	5467.4
						5469.0	5470.4
						5472.0	5473.4
						*5475.0	5476.4

*These channels may be extended to the band edge, if required, to provide for wider emission. The assigned frequencies will then be 2852.5, 3402.0, 4652.0, 4698.0, 5452.0 and 5477.5 kHz.

5480-5680 (66 Channels)				6525-6685 (53 Channels)			
Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency
*5481.0	5482.4	5583.0	5584.4	*6526.0	6527.4	6628.0	6629.4
5484.0	5485.4	5586.0	5587.4	6529.0	6530.4	6631.0	6632.4
5487.0	5488.4	5589.0	5590.4	6532.0	6533.4	6634.0	6635.4
5490.0	5491.4	5592.0	5593.4	6535.0	6536.4	6637.0	6638.4
5493.0	5494.4	5595.0	5596.4	6538.0	6539.4	6640.0	6641.4
5496.0	5497.4	5598.0	5599.4	6541.0	6542.4	6643.0	6644.4
5499.0	5500.4	5601.0	5602.4	6544.0	6545.4	6646.0	6647.4
5502.0	5503.4	5604.0	5605.4	6547.0	6548.4	6649.0	6650.4
5505.0	5506.4	5607.0	5608.4	6550.0	6551.4	6652.0	6653.4
5508.0	5509.4	5610.0	5611.4	6553.0	6554.4	6655.0	6656.4
5511.0	5512.4	5613.0	5614.4	6556.0	6557.4	6658.0	6659.4
5514.0	5515.4	5616.0	5617.4	6559.0	6560.4	6661.0	6662.4
5517.0	5518.4	5619.0	5620.4	6562.0	6563.4	6664.0	6665.4
5520.0	5521.4	5622.0	5623.4	6565.0	6566.4	6667.0	6668.4
5523.0	5524.4	5625.0	5626.4	6568.0	6569.4	6670.0	6671.4
5526.0	5527.4	5628.0	5629.4	6571.0	6572.4	6673.0	6674.4
5529.0	5530.4	5631.0	5632.4	6574.0	6575.4	6676.0	6677.4
5532.0	5533.4	5634.0	5635.4	6577.0	6578.4	6679.0	6680.4
5535.0	5536.4	5637.0	5638.4	6580.0	6581.4	6682.0	6683.4
5538.0	5539.4	5640.0	5641.4	6583.0	6584.4		
5541.0	5542.4	5643.0	5644.4	6586.0	6587.4		
5544.0	5545.4	5646.0	5647.4	6589.0	6590.4		
5547.0	5548.4	5649.0	5650.4	6592.0	6593.4		
5550.0	5551.4	5652.0	5653.4	6595.0	6596.4		
5553.0	5554.4	5655.0	5656.4	6598.0	6599.4		
5556.0	5557.4	5658.0	5659.4	6601.0	6602.4		
5559.0	5560.4	5661.0	5662.4	6604.0	6605.4		
5562.0	5563.4	5664.0	5665.4	6607.0	6608.4		
5565.0	5566.4	5667.0	5668.4	6610.0	6611.4		
5568.0	5569.4	5670.0	5671.4	6613.0	6614.4		
5571.0	5572.4	5673.0	5674.4	6616.0	6617.4		
5574.0	5575.4			6619.0	6620.4		
5577.0	5578.4	5680.0	5681.4	6622.0	6623.4		
5580.0	5581.4			6625.0	6626.4		

*These channels may be extended to the band edge, if required, to provide for wider emission. The assigned frequencies will then be 5482.0 and 6527.0 kHz.

8815-8965 (50 Channels)				10005-10100 (31 Channels)		11275-1140 (41 Channels)	
Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency
*8816.0	8817.4	8924.0	8925.4	*10006.0	10007.4	*11276.0	11277.4
8819.0	8820.4	8927.0	8928.4	10009.0	10010.4	11279.0	11280.4
8822.0	8823.4	8930.0	8931.4	10012.0	10013.4	11282.0	11283.4
8825.0	8826.4	8933.0	8934.4	10015.0	10016.4	11285.0	11286.4
8828.0	8829.4	8936.0	8937.4	10018.0	10019.4	11288.0	11289.4
8831.0	8832.4	8939.0	8940.4	10021.0	10022.4	11291.0	11292.4
8834.0	8835.4	8942.0	8943.4	10024.0	10025.4	11294.0	11295.4
8837.0	8838.4	8945.0	8946.4	10027.0	10028.4	11297.0	11298.4
8840.0	8841.4	8948.0	8949.4	10030.0	10031.4	11300.0	11301.4
8843.0	8844.4	8951.0	8952.4	10033.0	10034.4	11303.0	11304.4
8846.0	8847.4	8954.0	8955.4	10036.0	10037.4	11306.0	11307.4
8849.0	8850.4	8957.0	8958.4	10039.0	10040.4	11309.0	11310.4
8852.0	8853.4	*8960.0	8961.4	10042.0	10043.4	11312.0	11313.4
8855.0	8856.4			10045.0	10046.4	11315.0	11316.4
8858.0	8859.4			10048.0	10049.4	11318.0	11319.4
8861.0	8862.4			10051.0	10052.4	11321.0	11322.4
8864.0	8865.4			10054.0	10055.4	11324.0	11325.4
8867.0	8868.4			10057.0	10058.4	11327.0	11328.4
8870.0	8871.4			10060.0	10061.4	11330.0	11331.4
8873.0	8874.4			10063.0	10064.4	11333.0	11334.4
8876.0	8877.4			10066.0	10067.0	11336.0	11337.4
8879.0	8880.4			10069.0	10070.4	11339.0	11340.4
8882.0	8883.4			10072.0	10073.4	11342.0	11343.4
8885.0	8886.4			10075.0	10076.4	11345.0	11346.4
8888.0	8889.4			10078.0	10079.4	11348.0	11349.4
8891.0	8892.4			10081.0	10082.4	11351.0	11352.4
8894.0	8895.4			10084.0	10085.4	11354.0	11355.4
8897.0	8898.4			10087.0	10088.4	11357.0	11358.4
8900.0	8901.4			10090.0	10091.4	11360.0	11361.4
8903.0	8904.4			10093.0	10094.4	11363.0	11364.4
8906.0	8907.4			*10096.0	10097.4	11366.0	11367.4
8909.0	8910.4					11369.0	11370.4
8912.0	8913.4					11372.0	11373.4
8915.0	8916.4					11375.0	11376.4
8918.0	8919.4					11378.0	11379.4
8921.0	8922.4					11381.0	11382.4
						11384.0	11385.4
						11387.0	11388.4
						11390.0	11391.4
						11393.0	11394.4
						*11396.0	11397.4

*These channels may be extended to the band edge, if required, to provide for wider emission. The assigned frequencies will then be 8817.0, 8962.5, 10007.0, 10098.0, 11277.0 and 11398.0 kHz.

13260-13360 (33 Channels)		17900-17970 (23 Channels)		21960-22000 (13 Channels)	
Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency	Carrier Frequency	Assigned Frequency
*13261.0	13262.4	*17901.0	17902.4	*21961.0	21962.4
13264.0	13265.4	17904.0	17905.4	21964.0	21965.4
13267.0	13268.4	17907.0	17908.4	21967.0	21968.4
13270.0	13271.4	17910.0	17911.4	21970.0	21971.4
13273.0	13274.4	17913.0	17914.4	21973.0	21974.4
13276.0	13277.4	17916.0	17917.4	21976.0	21977.4
13279.0	13280.4	17919.0	17920.4	21979.0	21980.4
13282.0	13283.4	17922.0	17923.4	21982.0	21983.4
13285.0	13286.4	17925.0	17926.4	21985.0	21986.4
13288.0	13289.4	17928.0	17929.4	21988.0	21989.4
13291.0	13292.4	17931.0	17932.4	21991.0	21992.4
13294.0	13295.4	17934.0	17935.4	21994.0	21995.4
13297.0	13298.4	17937.0	17938.4	21997.0	21998.4
13300.0	13301.4	17940.0	17941.4		
13303.0	13304.4	17943.0	17944.4		
13306.0	13307.4	17946.0	17947.4		
13309.0	13310.4	17949.0	17950.4		
13312.0	13313.4	17952.0	17953.4		
13315.0	13316.4	17955.0	17956.4		
13318.0	13319.4	17958.0	17959.4		
13321.0	13322.4	17961.0	17962.4		
13324.0	13325.4	17964.0	17965.4		
13327.0	13328.4	17967.0	17968.4		
13330.0	13331.4				
13333.0	13334.4				
13336.0	13337.4				
13339.0	13340.4				
13342.0	13343.4				
13345.0	13346.4				
13348.0	13349.4				
13351.0	13352.4				
13354.0	13355.4				
13357.0	13358.4				

*These channels may be extended to the band edge, if required, to provide for wider emission. The assigned frequencies will then be 13262.0, 17902.0 and 21962.0 kHz.

Reason: Table of frequencies amended to 3 kHz separation consequential to MOD 27/10. The format of the table is the same as Appendix 17 Rev.

CAN/20/19 MOD 27/17

3.1 The ~~channels~~ carrier frequencies common to the (R) and (OR) Services, ~~centred at 3023.5~~ 3023 and 5680 ~~ke/s~~ kHz are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier frequency 5680 ~~ke/s~~ kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.

Reason: To reflect new carrier frequencies determined by the frequency separation of 3 kHz.

CAN/20/20 SUP 27/18

CAN/20/21 SUP 27/19

Reason: Consequential to conversion to single sideband emissions. The provision for A3 and A3H on the common channels is covered in MOD 27/50. [CAN/20/26]

B. Interference Range Contours

CAN/20/22 SUP 27/24

CAN/20/23 ADD 27/24A

1.1 General Provisions

(a) Service Range - Due to factors such as the power of the transmitter, propagation loss, noise level, etc., there is a limit to the distance at which reliable communications can be effected between an aeronautical station and an aircraft station. This limiting distance, based on the weakest path, is the service range. Often, the boundary of the air route area is assumed to be the limiting distance.

(b) Interference Range - This is the minimum distance from the limit of the service range of a wanted station to an interfering station, needed to produce a protection ratio of 15 dB. This protection ratio is between the wanted signal at an aircraft station at the limit of the service range and the signal from an interfering aeronautical station operating on the same frequency. The interference range has been calculated for the orders of frequencies indicated on the data tables, for day and night conditions, for various latitudes, for conditions of median sunspot activity and for a mean effective radiated power of 1.0 kW at the aeronautical station.

(c) Repetition Distance - This is the distance at which a frequency may be successfully shared and is equal to the sum of the service range and the interference range.

(d) Figure 1 illustrates the use of the concept of interference range in frequency planning through the determination of repetition distance.

1.1A Transparencies

The transparencies associated with this Appendix show, for the frequencies stated, the interference range described in 1.1(b) which would be required between an interfering aeronautical station and an aircraft station operating at the limit of its service range. Because of the variability of propagation conditions not only from hour to hour within the day-time and night-time periods but also from day-to-day, with season, with solar activity level and geographic location the 15 dB protection ratio may be expected to have marked variations and accordingly a greater protection may be available much of the time especially when the aircraft is not operating at the limit of its service range.

CAN/20/24 MOD 27/30

4.1 The transparencies are constructed on the basis of the following sharing conditions:

Areas	Bands between: Mc/s	Sharing conditions
MWARA or VOLMET area to MWARA or VOLMET area	3- 6.6 9-11.3 13- 18 22	night propagation day propagation time separation (no transparencies) <i>Note: 6.6 Mc/s and 5.6 Mc/s sharing conditions are considered to be the same</i>
MWARA or VOLMET area to RDARA	3 - 5.6 6.6-11.3 13 - 18 22	night propagation day propagation time separation (no transparencies)
RDARA to RDARA	3 - 4.7 5.6-11.3 13 - 18 22	night propagation day propagation time separation (no transparencies)

Reason:

Consequential to adding 22 MHz band to the plan

CAN/20/25 MOD 27/34

5.3 Place the centre of the transparency (i.e. the intersection of the axis of symmetry and the latitude line) over the boundary of the area ~~at the location of the transmitter~~ at a point on the boundary nearest to the potentially interfering transmitter or at the location of the potentially interfering transmitter. Note the latitude of this point and select the contour corresponding to this latitude.

Reason for 27/24, 24A and 34:

To provide a clear description of the interference contours and their use.

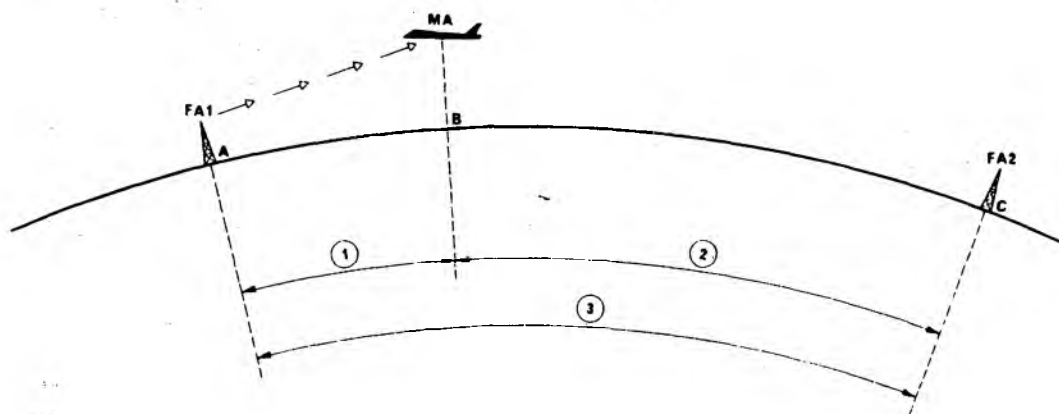


FIGURE 1

Service range, interference range, repetition distance

- FA1 : aeronautical station in communication with aircraft station MA
- FA2 : aeronautical station in communication with aircraft stations other than MA
- MA : aircraft station in communication with aeronautical station FA1
- ① : service range AB
- ② : interference range CB
- ③ : repetition distance AC

C. Classes of Emission and Power

CAN/20/26 MOD 27/50

1.1 Telephony - Amplitude Modulation:

- ~~double-sideband~~ (A3)
- ~~single-sideband, reduced-carrier~~ (A3A)
- ~~single-sideband, full-carrier~~ (A3H)
- single sideband, suppressed carrier (A3J)
- ~~two-independent-sidebands-~~ (A3B)

Classes of emission A3 and A3H should be retained only for stations directly involved in coordinated search and rescue operations using the frequencies 3 023 kHz and 5 680 kHz. See 27/17. / CAN/20/19_ /

1.2 Telegraphy (including automatic data transmissions)

CAN/20/27 MOD 27/51

1.2.1 Amplitude modulation:

- ~~telegraphy-without-the-use-of-a-modulating-audio frequency-(by-on-off-keying)~~ (A1)
- telegraphy by the on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by an on-off keying of the modulated emission and including selective calling - single sideband - full carrier (A2H)
- ~~multichannel-voice-frequency-telegraphy,-single sideband,-reduced-carrier~~ (A7A)
- ~~multichannel-voice-frequency-telegraphy,-single sideband,-full-carrier~~ (A7H)
- multichannel voice frequency telegraphy, single sideband, suppressed carrier (A7J)
- other transmissions such as automatic data transmission - single sideband, suppressed carrier (A9J)

Classes of emission such as the following should not be permitted unless appropriate precautions are taken to ensure that harmful interference is not caused to the classes of emission given above :

A1, A7A, A7H, and F1

CAN/20/28 SUP 27/52

CAN/20/29 SUP 27/53

Reason for 27/50, 51, 52 and 53: To provide for the classes of emission that will be used.

2. Power

CAN/20/30 MOD 27/54

2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

Station	Class of emission*	maximum Peak envelope power (P_p)
aeronautical	A3J, A2H, A7J, A9J	6 kW
aircraft	A3J, A2H, A7J, A9J	400 W

- * For other classes of emission the maximum P_p should not exceed
- 1.5 kW for aeronautical stations and
 - 75 W for aircraft stations

Reason:

To provide power levels for the classes of emission that will be used.

CAN/20/31 MOD 27/55

2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1 ~~F2~~ ~~and unmodulated~~ ~~A3~~ ~~and A3H emissions~~) used as a basis for the interference range contours.

Reason:

To be consistent with MOD 27/51 / CAN/20/27_7.

CAN/20/32 MOD 27/56

2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MVARAs or VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In each such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason:

To make the same provision for aeronautical stations serving a World-Wide function.

CAN/20/33 SUP 27/62

Reason:

To limit interference from aircraft stations.

3. Technical provisions relating to the use of single sideband emissions

CAN/20/34 MOD 27/63

3.1 Definitions of carrier modes :

Carrier mode	Level N (db) of the carrier with respect to peak envelope power
Full carrier (A3H) (A2H)	$-0 > N > -6$
Reduced carrier (A3A)	$-6 > N > -26$
Suppressed carrier (A3J)	$-26 > N$ for aircraft station $-40 > N$ for aeronautical stations

Reason: To align with CCIR Recommendation 326-2 and RR's 27/50 and 51.

CAN/20/35 SUP 27/64

Reason: Consequential to the implementation of 3 kHz channelling.

CAN/20/36 MOD 3.3 Tolerances for levels of SSB emissions outside the necessary bandwidth

Reason: To reflect applications to other classes of emission.

CAN/20/37 MOD 27/65 3.3.1. In a single sideband ~~A3H, A3A or A3J~~ transmission, the mean peak envelope power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power ~~(P_m)~~ (P_p) of the transmitter in accordance with the following table:

CAN/20/38 MOD 27/66 3.3.2

Frequency separation Δ from the assigned frequency kg/s kHz	Minimum attenuation below mean power (P_m) peak envelope power (P _p) db
$1.5 \leq \Delta < 4.5$	-25 30
$4.5 \leq \Delta < 7.5$	-35 38
$7.5 \leq \Delta$	Aircraft stations: -40 43 Aeronautical stations: $43 + 10 \log_{10} \frac{P_p}{P}$ (watts)

Reason: Since the useful audio information is contained within 300 - 2700 Hz, channeling can be reduced to 3 kHz and therefore 30 dB attenuation from 1.5 to 4.5 kHz is appropriate. Note that this separation provides for the use of the A2H mode of emission for selective calling. Similarly for a frequency separation of 4.5 - 7.5 kHz, 38 dB attenuation is appropriate and for a frequency separation greater than 7.5 kHz, 43 dB or $43 + 10 \log_{10} \frac{P_p}{P}$ (watts) is appropriate. Note that the equation $(43 + 10 \log_{10} \frac{P_p}{P})$ (watts) is a means of limiting the radiated power to 50 μ watts regardless of the transmitter power. Permitted radiated power = Transmitter power - $(43 + 10 \log_{10} \frac{P_p}{P})$ (watts)

$$\begin{aligned}
 &= 10 \log_{10} P_p \text{ (watts)} - 43 - 10 \log_{10} \frac{P_p}{P} \text{ (watts)} \\
 &= -43 \text{ dBW} \\
 &= 50 \mu \text{ watts}
 \end{aligned}$$

CAN/20/39 SUP 27/67
 CAN/20/40 SUP 27/68
 CAN/20/41 SUP 27/69
 CAN/20/42 SUP 27/70
 CAN/20/43 SUP 27/71

Reason: Consequential to the implementation of 3 kHz channeling, upper sideband emissions only are permitted and therefore all reference to lower sideband is suppressed.

CAN/20/44 MOD 27/72 4.1 ~~The assigned frequency~~ For single sideband radiotelephone emissions, except class of emission A2H, the assigned frequency shall be at a value 1500 cycles 1400 Hz above the carrier (reference) frequency.*

CAN/20/45 *Notes: 1. Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.

CAN/20/46 2. For classes of emission A1 and F1 care should be taken not to place these emissions at the edge of the channel.

Reason: While it is recognized that the adoption of a necessary bandwidth of 2700 Hz (see MOD 27/11) / CAN/20/13 / would normally place the assigned frequency 1350 Hz above the reference frequency in accordance with the technical characteristics (see RR 85-91), the figure 1400 Hz is suggested as a more convenient figure for notification purposes. A2H emissions should not be at the edge of the channel.

CAN/20/47 SUP 27/73

Reason: This applies only to 3023.5 and 5680 kHz and is covered in MOD 27/50. [CAN/20/26]

RESOLUTIONS AND RECOMMENDATIONS

CAN/20/48 SUP

Resolution No. 13

Relating to the Preparation of revised allotment plans for the Aeronautical Mobile Service

Reason: This resolution led to creation of AP27 which is now being revised. It is therefore obsolete.

CAN/20/49 ADD

Resolution No. A

Relating to the Use of Frequencies of the Aeronautical Mobile (R) Service

The World Administrative Radio Conference, Geneva, 1978, considering

- a) that the Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations, Geneva, 1971) has been substantially implemented;
- b) that air operations are subject to continuous changes;

- c) that these changes require attention by the administrations concerned, but
- d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the co-ordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;
- e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;
- f) that it is essential to distribute the communication traffic load as uniformly as possible over frequencies of the same order;
- g) that specific steps should be taken to ensure that the correct order of frequency is used;
- h) that from an aeronautical viewpoint, VHF can provide a more reliable and more noise-free communication system than HF;
- i) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;
- j) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;
- k) that, owing to development in the telecommunication networks in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

Resolves

that administrations, individually or in collaboration, take the necessary steps:

- 1. to employ, to the maximum extent practicable, VHF to meet their requirements in the aeronautical mobile (R) services to lessen the load on the high frequency (R) bands;
- 2. to make as great a use as possible of antennae of appropriate directivity and efficiency in order to minimize possibilities of mutual interference within an area or between areas;
- 3. to co-ordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
- 4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
- 5. to collect precise data on the operation of their high frequency communication systems, particularly those having a bearing on technical and operating standards, so as to facilitate re-examination of this Plan;

6. to establish, through regional agreements, the best method to provide the required communications for any new long-distance international or regional air operation which is not or cannot be accommodated within the system of MWARA and RDARA, in such a manner as not to cause harmful interference to the utilization of frequencies as prescribed in the Aeronautical Mobile (R) Frequency Plan.

Reason: Consolidation of Resolutions No. 14 and Aer 4.

CAN/20/50 SUP Resolution No. Aer 3

Reason: Consequential to introduction of single sideband, Resolution No. Aer 3 becomes obsolete.

CAN/20/51 SUP Resolution No Aer 4

CAN/20/52 SUP Resolution No. 14

Reason: Resolutions 14 and Aer 4 have been consolidated into new Resolution A. [CAN/20/49]

CAN/20/53 ADD Resolution No. B

Relating to the Adoption of a New Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 MOD)

The World Administrative Radio Conference, Geneva, 1978

considering

- a) that it has revised the frequency allotment plan for the aeronautical mobile (R) service based on new technical criteria;

resolves

1. that the Final Acts of this Conference will enter into force on April 1, 1979;
2. that the revised frequency allotment plan contained in Appendix 27 will enter into force on February 1, 1983.

CAN/20/54 ADD Resolution No. C

Relating to the use of Single Sideband Technique in the bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 - 22000 kHz

The World Administrative Radio Conference, Geneva, 1978

considering

- a) that the Extraordinary Administrative Radio Conference, Geneva, 1966 resolved that Administrations should effect, as soon as possible, a progressive conversion of their HF radiotelephone services in the Aeronautical Mobile (R) Service from double sideband to single sideband operations;
- b) that the Final Acts of this Conference will enter into force on April 1, 1979;
- c) that the revised Frequency Allotment Plan contained in Appendix 27 will enter into force on February 1, 1983;

resolves

that, unless otherwise specified in the Final Acts of this Conference, radiotelephone stations in the Aeronautical mobile service operating in the bands between 2850 and 22000 kHz shall comply with the following conditions:

1. as from April 1, 1979 any new installations of double sideband equipment in aeronautical and aircraft stations shall not be permitted; however, administrations shall endeavour to discontinue the use of double sideband equipment at the earliest possible date and in any case not later than February 1, 1983;
2. as from April 1, 1979, frequency assignments made in accordance with Appendix 27, Edition of 1968 may continue in force until February 1, 1983;
3. on the reference frequency 2182 kHz, the requirement for class A3H emissions will continue beyond February 3, 1983;
4. as from April 1, 1979 frequency assignments under the new frequency allotment plan may be implemented; however, the use of such frequencies must not interfere with frequency assignments made under the frequency allotment plan contained in Appendix 27, Edition of 1968;
5. As from April 1, 1979 any new installations of single sideband equipment at aeronautical and aircraft stations using frequencies from the new frequency allotment plan are not required to be compatible with double sideband systems;
6. as from April 1, 1979 any new installations of single sideband equipment in aircraft using frequencies from the present frequency allotment plan are not required to be compatible with double sideband systems if communication is required only with aeronautical and aircraft stations using single sideband systems;
7. As from April 1, 1979 any new installations of single sideband equipment at aeronautical stations using frequencies from the present allotment plan are required to be compatible with double sideband systems until February 1, 1983;
8. for aircraft station and aeronautical station transmitters not exceeding 400 W PEP first installed before April 1, 1979 and for aeronautical station transmitters exceeding 400 W PEP in use until January 1, 1989 the mean power of any A2H, A3H or A7J/A9J emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (Pm) of the transmitter in accordance with the following table:

Frequency separation Δ from the assigned frequency kHz	Minimum attenuation below mean Power (Pm) db
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40 Aeronautical stations: $43 + 10 \log_{10} P_m \text{ (watts)}$

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 21-E
6 April 1977
Original : English

PLENARY MEETING

Note by the Secretary-General

ICAO COMMUNICATIONS DIVISIONAL MEETING PREPARATORY TO THE
ITU WARC AERONAUTICAL MOBILE (R) SERVICE

1. By Resolution No. 764 of the ITU Administrative Council, the Secretary-General of the ITU was requested "to invite the International Civil Aviation Organisation (ICAO) to provide the necessary information to assist administrations in the formulation of an accurate assessment of the HF requirements for revision of Appendix 27 to the Radio Regulations."
2. Attached hereto I have the honour to transmit to the Conference the Report approved by the above-mentioned meeting (Montreal, 8 - 24 September, 1976) and issued by authority of the Secretary-General of the ICAO.
3. Since this Report has already been distributed by the ICAO, only a limited number is being diffused as a conference document and the delegates are requested to bring it with them to the Conference.

M. MILI

Secretary-General

Annex : as mentioned
(dispatched separately)



**INTERNATIONAL CIVIL
AVIATION ORGANIZATION**



COMMUNICATIONS DIVISIONAL MEETING

**Preparatory to the
ITU World Administrative Radio Conference,
Aeronautical Mobile (R) Service**

**Montreal,
8–24 September 1976**

REPORT

Approved by the Communications Divisional Meeting
Preparatory to the ITU World Administrative Radio
Conference, Aeronautical Mobile (R) Service and issued by
authority of the Secretary General.

MONTREAL

1976

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COMMUNICATIONS DIVISIONAL MEETING
PREPARATORY TO THE
ITU WORLD ADMINISTRATIVE RADIO CONFERENCE
AERONAUTICAL MOBILE (R) SERVICE

Montreal, 8 - 24 September 1976

SUPPLEMENT NO. 1

1. The Council, at the 19th Meeting of its 89th Session, on 13 December 1976, and the Air Navigation Commission at the 25th Meeting of its 83rd Session, on 6 December 1976, acting under delegated authority by the Council, took action on the recommendations of the Communications Divisional Meeting as indicated hereunder.

2. Guidance Material to be included in Annex 10, Volume I, Part II, Attachment C, Recommendation 6/1 (pages 6-3 and 6-4)

2.1 The Air Navigation Commission made a preliminary review of Recommendation 6/1 which is concerned with proposed new guidance material in Annex 10, and agreed that it should be referred for comments to Contracting States and appropriate International Organizations. Following receipt of comments the Commission will conduct a detailed review and will then present its recommendation for action by the Council.

3. Recommendations other than for International Standards and Recommended Practices

<u>Report Reference</u>		<u>Action by</u>	
<u>Rec No</u>	<u>Page</u>	<u>Council or</u>	<u>Action</u>
		<u>ANC</u>	
1/1	1-2	Council	Approved this recommendation
2/1	2-8	Council	Approved this recommendation
2/2	2-8	Council	Approved this recommendation
2/3	2-8	Council	Approved this recommendation and requested the Secretary General to notify the States concerned
2/4	2-9	Council	Approved this recommendation
2/5	2-9	Council	Approved this recommendation and requested the Secretary General to notify the States concerned
2/6	2-10	Council	Approved this recommendation
2/7	2-10	Council	Approved this recommendation
2/8	2-10	Council	Approved this recommendation
2/9	2-11	ANC	Approved this recommendation on the understanding that the Secretariat will provide potential requirements for HF allotments by mid-1977 in consultation with the OFIS Panel as necessary



<u>Report Reference</u>		Action by Council or ANC	Action
Rec No	Page		
2/10	2-12	Council	Approved this recommendation
2/11	2-12	Council	Approved this recommendation
2/12	2-12	Council	Approved this recommendation
2/13	2-13	Council	Approved this recommendation
3/1	3-1	Council	Approved this recommendation and requested the Secretary General to take appropriate action
3/2	3-2	Council	Approved this recommendation
3/3	3-4	Council	Approved this recommendation
3/4	3-5	Council	Approved this recommendation and requested States carrying out such studies to inform ICAO of the results in due time
3/5	3-10	Council	Approved this recommendation on the understanding that results achieved by States and International Organizations will be coordinated through the ICAO Secretariat
3/6	3-10	Council	Approved this recommendation on the understanding that results achieved by States and International Organizations will be coordinated through the ICAO Secretariat
3/7	3-10	Council	Approved this recommendation
3/8	3-11	Council	Approved this recommendation
3/9	3-11	Council	Approved this recommendation
4/1	4-2	Council	Approved this recommendation
5/1	5-2	Council	Approved this recommendation
5/2	5-3	Council	Approved this recommendation
6/2	6-5	ANC	Approved this recommendation and requested the Secretariat to prepare the plan and present it to the Air Navigation Commission for consideration in due course
6/3	6-6	ANC	Approved this recommendation and noted that any proposals following the WARC AM(R)S 1978 would be presented to the Air Navigation Commission for consideration
6/4	6-6	Council	Approved this recommendation
6/5	6-7	ANC	Approved this recommendation noting that the consolidation will be inserted into the Blue Cover edition of the Report



Doc 9187, COM/76
Corrigendum No. 2
11/1/77
English text only

COMMUNICATIONS DIVISIONAL MEETING
PREPARATORY TO THE
ITU WORLD ADMINISTRATIVE RADIO CONFERENCE
AERONAUTICAL MOBILE (R) SERVICE

Montreal, 8 - 24 September 1976

CORRIGENDUM No. 2

1. On page 6-46, in SUP RECOMMENDATION No. Aer 1, AMEND "Aer 2 - (B)" to read "Aer 1 - (A)" in second line of REASON; and AMEND the title "ADD RECOMMENDATION No. Aer2 - (B)" to read "ADD RECOMMENDATION No. Aer 1 - (A)".
2. On page 6-83, paragraph 2.1, in second and eighth line, AMEND "Aer 2 - (A)" to read "Aer 7".

- END -



Doc 9187, COM/76
Corrigendum and
Addendum
15/12/76
English text only

COMMUNICATIONS DIVISIONAL MEETING
PREPARATORY TO THE
ITU WORLD ADMINISTRATIVE RADIO CONFERENCE
AERONAUTICAL MOBILE (R) SERVICE

Montreal, 8 - 24 September 1976

CORRIGENDUM AND ADDENDUM

1. REPLACE on page i-2 under Agenda Item 6, Appendices C and E by the following:

"Appendix C - Consolidation of proposed amendments to Appendix 27 6-49
to the ITU Radio Regulations

Appendix E - Consolidation of proposed amendments to Resolutions 6-77
of the Radio Regulations"
2. On page 4-4, last line of paragraph 2.3, ADD "(Rev)" between "27" and "to".
3. On page 4-5, penultimate line of paragraph 4, REPLACE "17970" by "17 970".
4. On page 4-11, second line of MOD 27/65, DELETE "A3A".
5. On page 6-38, second paragraph of MOD 201A, REPLACE "10003 kHz, 14993 kHz and 19993 kHz" by "10 003 kHz, 14 993 kHz and 19 993 kHz".
6. On page 6-42, last line of REASON to Resolution No. Aer 2, REPLACE "(E)" by "(A)".
7. On page 6-60, UNDERLINE "Notes: 1." and "2.".
8. On page 6-62, in MOD 27/87, UNDERLINE "NAT" in second line; and AMEND "MOD Frequency Allotment" to read "ADD Frequency Allotment".
9. On page 6-63, in MOD 27/95, UNDERLINE "AFI" in second line.
10. On page 6-65, in MOD 27/102 AMEND "ADD Frequency Allotment" to read "MOD Frequency Allotment"; and in MOD 27/103, UNDERLINE the new delineation.
11. On page 6-67, third line from the top, AMEND "EU-MET" to read "EUR-MET" and in MOD 27/182, third line, UNDERLINE "50°S 120°W".
12. On page 6-73, second paragraph of MOD 201A, REPLACE "10003 kHz, 14993 kHz and 19993 kHz" by "10 003 kHz, 14 993 kHz and 19 993 kHz".

13. REPLACE page 6-82 by the attached REVISED page 6-82.
14. On page 6-88, paragraph 2.3, last line, INSERT "(Rev)" between "27" and "to"; and in paragraph 4, penultimate line, AMEND "17970" to read "17 970".

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering:

- a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours GMT on 1 February 1983;
- c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;
- d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:

- 1.1 the provisions of Nos. 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz;
- 1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B.;
- 1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:
 - a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
 - b) if the finding is favourable with respect to No. 558, the date of 29th April 1966 shall be entered in Column 2b;
 - c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;
- 1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

2. that on the date of coming into force of the new Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

LETTER OF TRANSMITTAL

To: The President, Air Navigation Commission

From: The Chairman, Communications Divisional Meeting Preparatory to the
ITU World Administrative Radio Conference, Aeronautical
Mobile (R) Service

I have the honour to submit the Report of the Communications Divisional Meeting Preparatory to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service, which was held in Montreal, from 8 to 24 September 1976.

A handwritten signature in black ink, appearing to be 'M. Chef', written in a cursive style.

M. Chef
Chairman

Montreal, 24 September 1976.

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HISTORY OF THE MEETING1. Duration

The Communications Divisional Meeting Preparatory to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service was opened by the President of the Council, Dr. Assad Kotaite, at 1115 hours on 8 September 1976. The Meeting was addressed, during the opening Plenary Meeting, by the President of the Air Navigation Commission, Mr. E.E. Grad. The closing Plenary Meeting was held on 24 September 1976.

2. Representation

The Communications Divisional Meeting Preparatory to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service, was attended by 95 Representatives from 36 Contracting States and 3 International Organizations. A list of the Representatives will be found starting at page iii-1.

3. Officers of the Meeting

3.1 The following officers were elected at the first Plenary Meeting:

Chairman:	Mr. M. Chef (France)
1st Vice-Chairman:	Mr. J. Soobarah (Mauritius)
2nd Vice-Chairman:	Mr. O.Sixta (Czechoslovak Socialist Republic)

4. Secretariat

4.1 The Secretary of the Meeting was Mr. J.H. Legere, Chief of the Communications Section. He was assisted by Officers of the Air Navigation Bureau and the North American and Caribbean Office as indicated in paragraph 6 below.

4.2 General administrative arrangements for the Meeting were made under the direction of Mr. A.O.A. Groven, Chief, Administrative Services Branch. Translation and interpretation services were provided by the Language Branch under the direction of its Chief, Mr. F. Dufau-Labeyrie, assisted by Messrs. F. Cordier (Interpretation), R. Bidmade (English translation), R.G. Laissy (French translation), V.I. Prokoshev (Russian translation) and S. Nuñez-Alonso, (Spanish translation). Miss A. Baranovsky acted as précis-writer for the Plenary Meetings.

4.3 The physical arrangements for the Conference were made by Messrs. D.B. Hall, Chief, Conferences and General Services Section; F.O. Novotny, Document Control Officer; S. de Blois, Chief, Printing Section, R.G. Faulkner, Supervisor Central Typing Unit, H. Vaage, Distribution and Records Management Officer and Miss A. Kennedy, Travel Officer.

5. Approval of the Agenda

5.1 The Agenda transmitted to the Meeting by the Air Navigation Commission was adopted without change. It is reproduced at page iv-1.

6. Working arrangements

6.1 At the first Plenary Meeting, the organization plan submitted to States in advance of the Meeting was approved with respect to Committees and assignment of Agenda Items. The plan called for consideration of Agenda Items 1 and 6 in full Plenary, but with the proceedings contained in appropriate parts of the Report of the Meeting, there being no minutes required for these Plenary Meetings. The plan also called for the establishment of two Committees.

6.2 The two Committees were constituted as shown below. Each Committee established Working Groups, as necessary, to facilitate progress.

Committee A - to consider Agenda Items 2 and 3

Chairman: Mr. W.M. Titus (United States)
Vice-Chairman: Mr. K. King (Australia)
Secretary: Mr. R.E. Malvido

Committee B - to consider Agenda Items 4 and 5

Chairman: Mr. W. Dammers (Kingdom of the Netherlands)
Vice-Chairman: Mr. G. Egwu (Nigeria)
Secretary: Mr. R.M. Shafer

6.3 A Co-ordinating Group was established in accordance with the Directives to Divisional-type Air Navigation Meetings and Rules of Procedure for their Conduct (Doc 8143-AN/873/2). The Group met regularly throughout the Meeting. The members were the Chairman and Vice-Chairmen of the Meeting, and the Chairmen and Vice-Chairman of the two Committees. The Secretary of the Meeting, and the Secretaries of the Committees attended all meetings of the Co-ordinating Group. The Co-ordinating Group was able to co-ordinate the activities of the Meeting, particularly those of the two Committees which occurred because of the close inter-relationships among the various Agenda Items, and to achieve optimum use of the services and accommodations available.

LIST OF REPRESENTATIVES OF CONTRACTING STATES AND
INTERNATIONAL ORGANIZATIONS PARTICIPATING IN THE MEETING

CONTRACTING STATES

<u>ARGENTINA</u>	E.J. Acosta J. Nasim	Delegate Alternate
<u>AUSTRALIA</u>	K.H. King R.W. Gross	Delegate Alternate
<u>BANGLADESH</u>	M.G.H. Khan	Delegate
<u>BELGIUM</u>	M. Reyniers G.V. Hap	Delegate Advisor
<u>CANADA</u>	W.G. Longman E.D. Ducharme H.F. Salisbury J. Bromley A.S. Carew D.C. Clyde H. Poirier R. Downey	Delegate Alternate Alternate Observer Observer Observer Observer Advisor
<u>CHINA</u>	Wang Yao-lin Hsian Feng-pu Hsu Ju-ming Hsu Yuan-lin	Delegate Alternate Alternate Alternate
<u>CZECHOSLOVAK SOCIALIST REPUBLIC</u>	O. Sixta	Delegate
<u>DENMARK</u>	E. Birch S.E. Andresen	Delegate Alternate
<u>FIJI</u>	A. Ali G.E. Myers	Delegate Alternate
<u>FRANCE</u>	M. Chef	Delegate

<u>GERMANY,</u> <u>FEDERAL REPUBLIC OF</u>	K. Witte H.J. Müller K.R. Binz W. Gruno J.S. Strick C. Moeller	Delegate Alternate Advisor Advisor Advisor Observer
<u>GHANA</u>	K.A. Buagbe	Delegate
<u>INDONESIA</u>	R. Gadjali F.E. Luntungan Soekohardjo	Delegate Alternate Alternate
<u>IRAN</u>	M.A. Nikbakhsh Tehrani E. Ertekai	Delegate Alternate
<u>IRELAND</u>	T.F. O'Dálaigh	Delegate
<u>ITALY</u>	A. Ruscio G. Paternò	Delegate Alternate
<u>JAPAN</u>	T. Matsumoto	Delegate
<u>KENYA</u>	I.N. Odundo S.W. Mwangu	Delegate Alternate
<u>LEBANON</u>	M. Abouchacra	Delegate
<u>MADAGASCAR</u>	R.J. Razafy	Delegate
<u>MALAWI</u>	C.W. Madise	Delegate
<u>MAURITIUS</u>	J. Soobarah	Delegate
<u>NETHERLANDS,</u> <u>KINGDOM OF THE</u>	W. Dammers A.R. Visser	Delegate Alternate
<u>NIGERIA</u>	G. Egwu A.T. Olley	Delegate Advisor

<u>NORWAY</u>	J.H. Edvardsen Ø. Hillestad	Delegate Alternate
<u>PAPUA NEW GUINEA</u>	D. Muap C.R. Emery A.G. Frugtniet	Delegate Alternate Alternate
<u>SENEGAL</u>	A.B. Diagne T. Hane	Delegate Advisor
<u>SPAIN</u>	J. Armijo	Delegate
<u>SOUTH AFRICA</u>	S.L.A. Huckwell	Delegate
<u>SWEDEN</u>	R.Y. Andersson J.K. Björnsjö	Delegate Alternate
<u>THAILAND</u>	C. Wacharasindhu	Delegate
<u>TUNISIA</u>	M. Châari	Delegate
<u>UNION OF SOVIET SOCIALIST REPUBLICS</u>	S. Kashirsky L. Spassenova E. Egorov	Delegate Alternate Alternate
<u>UNITED KINGDOM</u>	G.W. North G.V. Jeffery W.T. Young	Delegate Alternate Alternate
<u>UNITED STATES</u>	C.A. Keys H.J. Blaker B.R. Climie R.E. Hallowell L.M. Palmer H.S. Smith R. Sollien W.M. Titus F.K. Williams C.R. Hartley	Delegate Advisor Advisor Advisor Advisor Advisor Advisor Advisor Advisor Secretary
<u>VENEZUELA</u>	J.R. Blanco Villanueva N. Alcazar	Delegate Alternate

ZAIRE,
REPUBLIC OFKialeuka-s-Kinzimanga
Bokungu-is'EsangaDelegate
AlternateINTERNATIONAL ORGANIZATIONSIATAV.J. Adam
J.O. Clark
G. Ellis
L.S. Gallemore
A. Gautier
P.R. Ingleton
S. Krejcik
G. OliverObserver
Observer
Observer
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M. Maas

Observer

ITUF.G. Perrin
M.D. SantObserver
Observer

AGENDA

- Agenda Item 1 - Consideration of whether the basic concepts applying to Major World Air Route Areas (MWARAs), Regional and Domestic Air Route Areas (RDARAs) and VOLMET Allotment and Reception Areas are still valid.
- Agenda Item 2 - Consideration of proposals for revision of the description of the boundaries and frequency requirements of the MWARA, RDARA, sub-RDARA and VOLMET areas as defined in Appendix 27 to the ITU Radio Regulations, Part II, Section I, to make provision for changes in aircraft operations.
- Agenda Item 3 - Consideration of existing use of high frequencies for the Aeronautical Mobile (R) Service, and the determination of future requirements; including the determination of further information required from States and the manner in which the resulting information should be presented to the ITU WARC AM(R)S (1978).
- Agenda Item 4 - Preparation of an SSB implementation plan for transition from double sideband to single sideband radio telephony operation, with due consideration to its operational and economic impact.
- Agenda Item 5 - Review of Appendix 27 to the ITU Radio Regulations, including the technical principles contained in Part I, taking into account the Report of the CCIR Study Group 8 Special Meeting, with a view to formulating proposals to assist Administrations in the preparatory work for the ITU WARC AM(R)S (1978).
- Agenda Item 6 - Consideration of the continuing role of ICAO in the preparation of frequency assignment plans and co-ordination procedures to assist in the implementation of the decisions of the ITU WARC AM(R)S (1978).

Agenda Item 1: Consideration of whether the basic concepts applying to Major World Air Route Areas (MWARAs), Regional and Domestic Air Route Areas (RDARAs) and VOLMET allotment and reception areas are still valid

1. Introduction

1.1 The Meeting examined the basic concept of allotting frequencies to geographical areas encompassing Major World Air Route Areas (MWARAs), Regional and Domestic Air Route Areas (RDARAs) and VOLMET allotment and reception areas in the ITU HF Allotment Plan for the aeronautical mobile (R) service. Such examination was recognized to be necessary with a view to determining the basis on which detailed consideration would be given to subsequent agenda items associated with the Allotment Plan.

1.2 MWARA and RDARA concepts

1.2.1 It was noted that the existing HF Allotment Plan and assignments based on the MWARAs and RDARAs contained in this plan had been satisfactory prior to and since their adoption by the ICAO Special Communications Meeting (Montreal 1963). They were subsequently included by the ITU Extraordinary Administrative Radio Conference (Geneva 1966) in its Final Acts, which came into force on 10 April 1970, and are now known as Appendix 27 to the Radio Regulations.

1.2.2 The revision of MWARAs, which were incorporated into Appendix 27 did not change the basic concept of air route areas and was based upon the following:

- a) there had been a considerable number of changes in air route patterns;
- b) it was no longer necessary to minimize the number of required frequencies on account of aircraft equipment limitations;
- c) there was no longer a general requirement that aircraft should be able to use only the same frequency family between the points of departure and arrival (although it was recognized that this requirement might still be desirable on long distance route segments);
- d) the desirability of avoiding area overlaps and of reducing geographical areas, where feasible, was recognized;
- e) it was recognized that efforts should be made to improve frequency utilization by increasing the possibility of frequency repetition;

- f) the need for a station to guard a number of international frequency families should be avoided if possible.

1.3 VOLMET concept

1.3.1 It was recognized that the history of broadcasts for dissemination of meteorological information paralleled to some extent the history of the development of MWARAs and RDARAs. In preparing the existing frequency allotment plan noted in the preceding paragraph 1.2.1, a previous agreement was restated to the effect that the handling of large numbers of separate requests from aircraft for meteorological information substantially reduced the time available on air-ground channels, which otherwise might be employed to satisfy other communications requirements. For this and other reasons allotments to geographical areas continued to be provided in the Plan for the specific function of broadcasting meteorological information to aircraft.

1.4 General

1.4.1 It was noted that requirements of some States had not been taken into account when Appendix 27 to the Radio Regulations was developed. It was also pointed out that RDARA boundaries may be established on the basis either of regions, or where appropriate, of national boundaries. The Meeting was aware of these matters, and considered that in discussing the various Agenda Items full opportunity would be given to ensure that such points were taken into account in the new proposals for amendment of Appendix 27.

1.4.2 It was pointed out that newly developed additional requirements, notably those associated with operational control, which would be dealt with under another Agenda Item, cannot necessarily be accommodated by existing allotment area concepts, and it was also noted that it might be necessary in the future to agree on world-wide and smaller or "sectional" areas in the organization of HF assignment plans.

1.5 Conclusion

1.5.1 The Meeting agreed that the basic concepts applying to MWARA, RDARA and VOLMET allotment and reception areas in Appendix 27 to the ITU Radio Regulations continued to be responsive to the needs of international civil aviation and were consequently still valid.

RECOMMENDATION 1/1 - CONCEPTS APPLYING TO MWARA, RDARA AND VOLMET ALLOTMENT AND RECEPTION AREAS

The Meeting agreed that the following basic concepts applying to Major World Air Route Areas (MWARAs), Regional and Domestic Air Route Areas (RDARAs) and VOLMET allotment and reception areas were still valid and should therefore be retained:

RECOMMENDATION 1/1 - CONCEPTS APPLYING TO MWARA,
(cont'd) RDARA AND VOLMET ALLOTMENT
AND RECEPTION AREAS

- a) a Major World Air Route Area (MWARA) is an area embracing a certain number of Major World Air Routes, which generally follow the same traffic pattern and are so related geographically that the same frequency families may logically be applied;
- b) a Regional and Domestic Air Route Area (RDARA) is an area embracing a certain number of air routes of a Regional and National nature;
- c) a VOLMET Allotment Area is an area encompassing all points where HF broadcasts of meteorological information for aircraft in flight are made on a common family of frequencies;
- d) a VOLMET Reception Area is an area within which aircraft should be able to receive VOLMET broadcasts from one or more stations in the correspondent Allotment Area.

Agenda Item 2: Consideration of proposals for revision of the description of the boundaries and frequency requirements of the MWARA, RDARA, sub-RDARA and VOLMET areas as defined in Appendix 27 to the ITU Radio Regulations, Part II, Section I, to make provision for changes in aircraft operations

2.1 General

2.1.1 The Meeting having agreed, when dealing with Agenda Item 1, that the concepts of MWARAs, RDARAs and VOLMET allotment and reception areas were still valid and should, therefore, continue to be used in the development of a revised high frequency Allotment Plan for the aeronautical mobile (R) service, then undertook to study the question of required amendments to the boundaries and the frequency requirements of MWARAs.

2.1.2 It was recognized that since the last revision of MWARAs by the ITU Extraordinary Administrative Radio Conference in 1966 there had been considerable changes in aircraft operations and it was considered essential that these changes be accommodated in a revised HF Allotment Plan by the ITU WARC AM(R)S in 1978, on the basis of foreseen air route operation requirements until the year 2000.

2.1.3 The Meeting whilst studying MWARA boundary questions gave careful consideration to the need to determine at the outset whether there was a need to define the sectorization of MWARAs as, for example, the sectorization of the North Atlantic MWARA specifically referred to in Appendix 27 to the Radio Regulations. It recognized that the sectorization or further sectorization of MWARAs reflected the changing operational requirements that are likely to occur within the lifetime of any Frequency Allotment Plan and that, consequently, they should not be defined in Appendix 27 but determined on the basis of ICAO Regional Agreement under the provisions of RR 27/20 and reflected in the ICAO Air Navigation Plans.

2.1.4 Further, the Meeting adopted the principle that the entire world should be covered by MWARAs with a reasonable over-lapping of areas in order to minimize frequency changes during long haul flights.

2.1.5 The Meeting reiterated that every effort should be made to improve frequency utilization by increasing the possibility of frequency repetition and also that the need for a station to guard a number of international frequency families should be avoided if possible.

2.1.6 The Meeting recognized that ICAO could not make an accurate assessment of the total high frequency requirements of all States operating aircraft on RDARA routes. However, it noted that both Agenda Item 2 and Agenda Item 3 referred to the need to consider the frequency requirements of the MWARA, RDARA, sub-RDARA and VOLMET Areas. Accordingly under Agenda Item 2 it made an assessment of the additional families of frequencies which would be needed to meet MWARA and VOLMET Area requirements based essentially on statistical information which had been provided by States to ICAO prior to the Meeting. It was noted that ICAO in preparation for this Meeting, had requested States to provide information related to the existing and future RDARA requirements. In the light of the limited information available on the subject it was found necessary to base the Meeting's assessment of RDARA requirements also on complementary needs tabled by States at the time of the Meeting.

2.1.7 Whenever the requirements for new MWARA families are mentioned in Appendix B to this part of the Report, in general only 3 or 4 frequencies are considered to be necessary for each family allotment. However, for the larger MWARAs, more than this number of frequencies may be required to cover all propagation conditions. The number of channels used in existing MWARAs is considered sufficient but not excessive for the life of the present plan. However, some of the lower and higher order frequencies exclusively allocated to the AM(R)S are in fact often under-utilized in many areas of the world and could be rationalized by more extensive sharing between MWARAs.

2.1.8 It was agreed that the assessment of frequency requirements for flight regularity (operational control) would have to be considered under Agenda Item 3. However, initial consideration was given to this matter under Agenda Item 2 in view of its impact upon the frequency requirements for MWARA, RDARA, sub-RDARA and VOLMET Areas.

2.1.9 It was observed by the Meeting that there appeared to be a number of frequency requirements to satisfy immediate and long term needs. In this regard it was the opinion of the Meeting that it was of the utmost importance that the ITU WARC AM(R)S not again be deferred beyond the now established date of February 1978. The Meeting expressed concern that the AM(R)S, being a safety service, required satisfaction of its needs on an urgent basis. The Meeting agreed to establish Recommendation 2/7.

2.1.10 Unlike the MWARA and VOLMET frequency requirements the Meeting found the determination of frequency requirements for RDARAs more complex. In order to expedite matters it was decided to confine consideration under this item to RDARA boundaries only and leave the frequency requirements to be determined under Agenda Item 3.

2.1.11 The Meeting noted that the IFRB Circular-letter No. 354 of 14 June 1976, addressed to all ITU member States, made reference to the fact that the "International Civil Aviation Organization co-ordinates the use of frequencies in the MWARAs and VOLMET Areas in accordance with No. 27/20 of Appendix 27. The use of frequencies in the RDARAs, however, essentially depends upon bilateral and multilateral co-ordination among Administrations belonging to the same RDARA or sub-RDARA. As to the needs of Administrations concerning the revision of boundaries of RDARAs and the frequency requirements for communications in RDARAs, Administrations should assess their needs as soon as possible and submit the necessary proposals to the Secretary General of the ITU." Accordingly the Meeting agreed to establish Recommendation 2/8.

2.1.12 Regarding the determination of changes required to the boundaries of certain RDARAs or sub-RDARAs, the Meeting found it possible to avail itself of bilateral and multi-lateral co-ordination, where Administrations belonging to the same RDARA or sub-RDARA were represented at the Meeting.

2.1.12.1 A proposal by Denmark was presented for the establishment of a new Sub-Area 10F. Canada agreed to the proposal in question and the following solution was reached:

- a) Sub-Areas 10D and 10E remain unchanged;
- b) a new Sub-Area 10F should be established within the boundaries of Sondrestrom FIR in Greenland defined by a line drawn from the North Pole through the points $82^{\circ}\text{N } 30^{\circ}\text{E}$, $82^{\circ}\text{N } 00^{\circ}$, $73^{\circ}\text{N } 00^{\circ}$, $73^{\circ}\text{N } 20^{\circ}\text{W}$, $70^{\circ}\text{N } 20^{\circ}\text{W}$, $63^{\circ} 30'\text{N } 39^{\circ}\text{W}$, $58^{\circ} 30'\text{N } 43^{\circ}\text{W}$, $58^{\circ} 30'\text{N } 50^{\circ}\text{W}$, $63^{\circ} 30'\text{N } 55^{\circ} 44'\text{W}$, $65^{\circ} 30'\text{N } 58^{\circ} 39'\text{W}$, $74^{\circ}\text{N } 68^{\circ} 18'\text{W}$, $76^{\circ}\text{N } 76^{\circ}\text{W}$, $78^{\circ}\text{N } 75^{\circ}\text{W}$, $82^{\circ}\text{N } 60^{\circ}\text{W}$ to the North Pole.

2.1.12.2 Denmark, Federal Republic of Germany, Norway and the United Kingdom agreed to the following revision of Sub-Area 1B/1C:

On last line of 27/106 delete "Thence along the 04°E meridian to the North Pole" and insert "Thence to the points $56^{\circ}\text{N } 03^{\circ}\text{E}$, $59^{\circ}\text{N } 02^{\circ}\text{E}$, $62^{\circ}\text{N } 01^{\circ}\text{E}$. Thence to North Pole along the 1° line of longitude".

On the first line of 27/107 delete "From the North Pole along the meridian 04°E to the 55°N parallel" and insert "From the North Pole along the 1° line of longitude to the point $62^{\circ}\text{N } 01^{\circ}\text{E}$. Thence to $59^{\circ}\text{N } 02^{\circ}\text{E}$, $56^{\circ}\text{N } 03^{\circ}\text{E}$ and $55^{\circ}\text{N } 04^{\circ}\text{E}$."

2.1.12.3 Australia, Fiji, France and the United States accepted a proposal presented by New Zealand for an extension of Sub-Area 9B to include Rarotonga. The solution agreed with was that, whilst Sub-Area 9C would remain unchanged, the eastern boundary of Sub-Area 9B would be repositioned from 170°W to 157°W which resulted, therefore, in an overlap of Sub-Area 9B into Sub-Area 9C.

2.1.12.4 The Meeting accepted a proposal presented by Australia for the following revisions to Sub-Areas of RDARA 9:

Area 9A

From the point $24^{\circ}\text{S } 110^{\circ}\text{E}$ to the South Pole. Thence along the 131°E meridian to 24°S thence to $24^{\circ}\text{S } 110^{\circ}\text{E}$.

Area 9B

From the point $00^{\circ} 141^{\circ}\text{E}$ through points $10^{\circ}\text{S } 141^{\circ}\text{E}$, $10^{\circ}\text{S } 145^{\circ}\text{E}$, $27^{\circ}\text{S } 160^{\circ}\text{E}$, $27^{\circ}\text{S } 157^{\circ}\text{W}$, $03^{\circ} 30'\text{N } 157^{\circ}\text{W}$, $03^{\circ} 30'\text{N } 160^{\circ}\text{E}$, $00^{\circ} 160^{\circ}\text{E}$ to the point $00^{\circ} 141^{\circ}\text{E}$.

Area 9C

Unchanged.

Area 9D

From the South Pole along the 160°E meridian to 27°S thence through the point $27^{\circ}\text{S } 170^{\circ}\text{W}$ and along the 170°W meridian to the South Pole.

Area 9E

From the point $10^{\circ}\text{S } 139^{\circ}\text{E}$ through the points $24^{\circ}\text{S } 139^{\circ}\text{E}$, $19^{\circ}\text{S } 153^{\circ}\text{E}$, $10^{\circ}\text{S } 145^{\circ}\text{E}$ to $10^{\circ}\text{S } 139^{\circ}\text{E}$.

Area 9F

From the point $27^{\circ}\text{S } 139^{\circ}\text{E}$ through the points $27^{\circ}\text{S } 160^{\circ}\text{E}$, $19^{\circ}\text{S } 153^{\circ}\text{E}$, $24^{\circ}\text{S } 139^{\circ}\text{E}$ to $27^{\circ}\text{S } 139^{\circ}\text{E}$.

Area 9G

From the point $27^{\circ}\text{S } 139^{\circ}\text{E}$ to the South Pole thence along the 160°E meridian to 27°S thence to $27^{\circ}\text{S } 139^{\circ}\text{E}$.

Area 9H

From the point $24^{\circ}\text{S } 131^{\circ}\text{E}$ to the South Pole thence along the 139° meridian to 24°S thence to the point $24^{\circ}\text{S } 131^{\circ}\text{E}$.

Area 9I

From a point $10^{\circ}\text{S } 131^{\circ}\text{E}$ through the points $24^{\circ}\text{S } 131^{\circ}\text{E}$, $24^{\circ}\text{S } 139^{\circ}\text{E}$, $10^{\circ}\text{S } 139^{\circ}\text{E}$ to $10^{\circ}\text{S } 131^{\circ}\text{E}$.

Area 9J

From a point $10^{\circ}\text{S } 110^{\circ}\text{E}$ through the points $24^{\circ}\text{S } 110^{\circ}\text{E}$, $24^{\circ}\text{S } 131^{\circ}\text{E}$, $10^{\circ}\text{S } 131^{\circ}\text{E}$ to $10^{\circ}\text{S } 110^{\circ}\text{E}$.

2.1.12.5 The Meeting accepted a proposal by the United States to expand Sub-Area 10A by extending the eastern boundary at 130°W southward from 57°N to 50°N , thence westward to $50^{\circ}\text{N } 164^{\circ}\text{E}$.

2.1.12.6 Proposal for the creation of a new sub-area 6G

2.1.12.6.1 The People's Republic of China presented a proposal for the creation of a new sub-area 6G to encompass all their domestic air routes. Furthermore, it proposed the deletion of all the parts of the 6B, 6D and 6F sub-areas in Appendix 27

that cover the People's Republic of China. The proposed new sub-area 6G would be established from the point $21^{\circ}32'52''\text{N } 108^{\circ}\text{E}$, along the national boundary of the mainland of the People's Republic of China to the point $39^{\circ}49'41''\text{N } 124^{\circ}10'06''\text{E}$, then through the points $39^{\circ}31'51''\text{N } 124^{\circ}06'31''\text{E}$, $39^{\circ}\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 126^{\circ}50'\text{E}$, $26^{\circ}\text{N } 125^{\circ}\text{E}$, $25^{\circ}\text{N } 123^{\circ}\text{E}$, $21^{\circ}\text{N } 121^{\circ}30'\text{E}$, $18^{\circ}\text{N } 119^{\circ}\text{E}$, $14^{\circ}\text{N } 119^{\circ}\text{E}$, $10^{\circ}\text{N } 118^{\circ}\text{E}$, $08^{\circ}\text{N } 116^{\circ}\text{E}$, $04^{\circ}\text{N } 113^{\circ}\text{E}$, $03^{\circ}30'\text{N } 112^{\circ}\text{E}$, $06^{\circ}\text{N } 108^{\circ}\text{E}$, $10^{\circ}\text{N } 110^{\circ}\text{E}$, $15^{\circ}\text{N } 110^{\circ}\text{E}$, $18^{\circ}\text{N } 108^{\circ}\text{E}$, $18^{\circ}\text{N } 107^{\circ}\text{E}$, $20^{\circ}\text{N } 107^{\circ}\text{E}$, $20^{\circ}\text{N } 108^{\circ}\text{E}$, to the point $21^{\circ}32'52''\text{N } 108^{\circ}\text{E}$.

2.1.12.6.2 The Meeting noted that acceptance of the above proposal to include the area south of 20°N and extending southwards to $03^{\circ}30'\text{N}$ to the exclusion of 6B, 6D and 6F sub-areas was incompatible with the FIR structure and traffic movements in the area, principally between the Manila and Saigon FIRs. Consequently, it proposed acceptance of sub-area 6G as defined with the exception of the area south of 20°N but to include the island of Hainan. Consequential modifications of sub-areas 6B and 6F were then defined so as to move their western boundary essentially along the eastern boundary of the new sub-area 6G; 6D remaining unchanged.

2.1.12.6.3 In the light of the above the Meeting decided that the new sub-area 6G should be established from the point $21^{\circ}32'52''\text{N } 108^{\circ}\text{E}$, along the national boundary of the mainland of the People's Republic of China to the point $39^{\circ}49'41''\text{N } 124^{\circ}10'06''\text{E}$, then through the points $39^{\circ}31'51''\text{N } 124^{\circ}06'31''\text{E}$, $39^{\circ}\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 126^{\circ}50'\text{E}$, $26^{\circ}\text{N } 125^{\circ}\text{E}$, $25^{\circ}\text{N } 123^{\circ}\text{E}$, $21^{\circ}\text{N } 121^{\circ}30'\text{E}$, $20^{\circ}\text{N } 120^{\circ}\text{E}$, thence westward along 20°N latitude to the island of Hainan, south around the island of Hainan to $20^{\circ}\text{N } 107^{\circ}\text{E}$, $20^{\circ}\text{N } 108^{\circ}\text{E}$, to the point $21^{\circ}32'52''\text{N } 108^{\circ}\text{E}$.

2.1.12.6.4 Consequential changes to sub-areas 6B and 6F referred to in paragraph 2.1.12.6.2 are as follows:

- a) sub-area 6B is redefined from approximately $39^{\circ}50'\text{N } 124^{\circ}10'\text{E}$ through the points $39^{\circ}32'\text{N } 124^{\circ}07'\text{E}$, $39^{\circ}\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 126^{\circ}50'\text{E}$, $26^{\circ}\text{N } 125^{\circ}\text{E}$, $25^{\circ}\text{N } 123^{\circ}\text{E}$, $21^{\circ}\text{N } 121^{\circ}30'\text{E}$, $20^{\circ}\text{N } 120^{\circ}\text{E}$, $20^{\circ}\text{N } 176^{\circ}\text{W}$, $50^{\circ}\text{N } 164^{\circ}\text{E}$, $43^{\circ}\text{N } 147^{\circ}\text{E}$, thence west between the territorial waters of Japan and the USSR to $39^{\circ}50'\text{N } 124^{\circ}10'\text{E}$.
- b) sub-area 6F is redefined from approximately $39^{\circ}50'\text{N } 124^{\circ}10'\text{E}$ through the points $39^{\circ}32'\text{N } 124^{\circ}07'\text{E}$, $39^{\circ}\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 124^{\circ}\text{E}$, $32^{\circ}30'\text{N } 126^{\circ}50'\text{E}$, $26^{\circ}\text{N } 125^{\circ}\text{E}$, $25^{\circ}\text{N } 123^{\circ}\text{E}$, $21^{\circ}\text{N } 121^{\circ}30'\text{E}$, $20^{\circ}\text{N } 120^{\circ}\text{E}$, thence westward along 20°N latitude to the island of Hainan, south around the island of Hainan to $20^{\circ}\text{N } 107^{\circ}\text{E}$, $20^{\circ}\text{N } 108^{\circ}\text{E}$, $21^{\circ}33'\text{N } 108^{\circ}\text{E}$ along the southern national boundary of the People's Republic of China, northwestern boundary of Laos, western boundary of Thailand and thence in keeping with remaining Appendix 27 definition.

2.2 Adjustment of MWARA boundaries and frequency requirements

2.2.1 The Meeting adjusted the MWARA boundaries and frequency requirements based on the criteria and principles given in paragraph 2.1 above.

2.2.1.1 MWARA-EU

- a) To ensure consistency with ICAO nomenclature it was agreed to designate this MWARA as MWARA EUR.
- b) The eastern boundary to be moved to the east to include certain aerodromes alternates to Moscow and Leningrad.

2.2.1.2 MWARA-NA

- a) To ensure consistency with ICAO nomenclature and in view of the conclusion reached not to sectorize MWARAs in Appendix 27 (see para 2.1.3) it was agreed to designate MWARAs NA-1, NA-2 and NA-3 as MWARA NAT.
- b) The western boundary to be moved to the west to include essentially all of Canada.

2.2.1.3 MWARAs NSA-1 and NSA-2

- a) MWARAs NSA-1 and NSA-2 are combined essentially to provide a MWARA that encompasses all of Africa and their designation is changed to MWARA AFI.
- b) The boundaries are modified accordingly.

2.2.1.4 MWARA-SA

- a) To ensure consistency with ICAO nomenclature it was agreed to designate this MWARA as MWARA SAT.
- b) The boundaries are adjusted to provide for:
 - 1) routes from Africa to the Caribbean and South America;
 - 2) routes between Europe and the eastern part of South America;
 - 3) polar routes between South America and Australasia.

2.2.1.5 MWARAs SAM-1 and SAM-2

- a) MWARAs SAM-1 and SAM-2 are combined and their designation is changed to MWARA SAM essentially to provide for a MWARA that encompasses all of South America.
- b) To extend Western and Southern boundaries of the area to include routes from South America to the South Pacific.

2.2.1.6 MWARA-SP

The eastern and western boundaries are extended to the South Pole to include polar routes from Pacific Islands to South Africa.

2.2.1.7 MWARA CEP

2.2.1.7.1 In accordance with the principle that the entire world should be covered by MWARAs, the boundaries of MWARA CEP to be modified to cover the gaps which resulted from modification of most of the MWARAs adjacent to it.

2.2.1.8 MWARA CWP

2.2.1.8.1 The southern boundary to be moved to the south to cover the gap between the SEA, SP and old CWP MWARAs.

2.2.1.9 MWARA ME

- 2.2.1.9.1 a) The eastern boundary to be moved to the east to include Urumchi.
- b) To ensure consistency with ICAO nomenclature it was agreed to designate this MWARA as MWARA MID.

2.2.1.10 MWARA NP

2.2.1.10.1 The eastern boundary to be moved to the west to exclude the most part of Canada from the allotment area and the western boundary to be moved to the west to include Peking and Shanghai.

2.3 The adjustments mentioned above for the reasons given were incorporated in the map depicting the revised MWARA boundaries at Appendix A to this part of the Report and accompanying listing at Appendix B of revised co-ordinates and frequency allotments (the revised co-ordinates are shown as specific amendments to Article 1, Part II of Appendix 27 to the ITU Radio Regulations with their associated frequency allotment requirements).

2.4 Consequent upon the work of the Meeting on the question of a revision of MWARA boundaries and frequency requirements, the Meeting established Recommendation 2/1.

RECOMMENDATION 2/1 - MWARA BOUNDARIES AND FREQUENCY REQUIREMENTS

That the description of the Major World Air Route Area (MWARA) boundaries as given in the map at Appendix A and associated listing of revised co-ordinates and frequency requirements at Appendix B be adopted as proposed modifications to that now appearing in Appendix 27 to the ITU Radio Regulations.

2.5 The Meeting studied the question of frequency utilization in the Indian Ocean area in the light of present and foreseen air traffic, and the pattern of communications coverage in that area. It was agreed that a new MWARA covering the Indian Ocean area could, with advantage, be established to include routes between Australia/Asia and Africa and Recommendation 2/2 was formulated accordingly.

RECOMMENDATION 2/2 - ESTABLISHMENT OF A MWARA FOR THE INDIAN OCEAN AREA

That a MWARA be established for the Indian Ocean area to include within its boundaries the eastern coast of Africa, Addis-Ababa, Aden, Bombay, Madras, Singapore, Djakarta, Perth, Melbourne, and portion of the Tasman Sea extending to the South Pole.

2.6 The Meeting considered a proposal for expansion of the existing SEA MWARA. In view of the high traffic density in and the vast size of the overall area referred to in the proposal, it was decided that the boundaries considered therein be amended so as to create two separate MWARAs.

RECOMMENDATION 2/3 - RECONFIGURATION OF THE SEA MWARA

a) That the SEA MWARA be subdivided as follows:

- 1) SEA MWARA from the point 26°N 130°E, 00° 130°E, 00° 135°E, 12°S 145°E, 12°S 160°E, 25°S 155°E, 40°S 150°E, 35°S 115°E, 18°N 62°E, 26°N 65°E, to the point 26°N 130°E;

RECOMMENDATION 2/3 - RECONFIGURATION OF THE SEA MWARA
(cont'd)

- 2) a MWARA from the point $55^{\circ}\text{N } 124^{\circ}\text{E}$, $37^{\circ}\text{N } 145^{\circ}\text{E}$, $26^{\circ}\text{N } 130^{\circ}\text{E}$, $00^{\circ}\text{N } 130^{\circ}\text{E}$, $00^{\circ}\text{N } 80^{\circ}\text{E}$, $18^{\circ}\text{N } 62^{\circ}\text{E}$, $37^{\circ}\text{N } 67^{\circ}\text{E}$, $55^{\circ}\text{N } 80^{\circ}\text{E}$ to the point $55^{\circ}\text{N } 124^{\circ}\text{E}$;
- b) that the States concerned with the above MWARA under 2) resolve the boundaries and nomenclature by co-ordination with ICAO within six months of the date of approval by the Council; and
- c) that an allotment of three families of frequencies for each MWARA is required.

2.7 As a result of the reconfiguration of the SEA MWARA and its subsequent development into two distinct MWARAs, i.e., MWARA SEA to cover the southern portion and a MWARA to cover the northern portion, the need to continue MWARA FE as a separate MWARA will no longer exist.

RECOMMENDATION 2/4 - DELETION OF THE FE MWARA

That upon reconfiguration of the SEA MWARA in accordance with Recommendation 2/3, the requirement for MWARA FE be deleted from the ITU HF Allotment Plan.

2.8 In order to meet the requirements for HF communications on international flights from the USSR to Norway, Europe, the near East, South and Southeast Asia, the Far East and from the latter locations to the USSR, as well as for HF communications on international flights over North and Central Asia, there was tentative agreement for the establishment of a new MWARA-NCA. It was agreed that this MWARA required an HF allotment of three families.

RECOMMENDATION 2/5 - ESTABLISHMENT OF A MWARA FOR NORTH CENTRAL ASIA

- a) That a MWARA for North Central Asia (NCA) be established from the North Pole through the points $75^{\circ}\text{N } 10^{\circ}\text{E}$, $60^{\circ}\text{N } 25^{\circ}\text{E}$, $30^{\circ}\text{N } 25^{\circ}\text{E}$, $30^{\circ}\text{N } 73^{\circ}\text{E}$, $37^{\circ}\text{N } 73^{\circ}\text{E}$, $49^{\circ}\text{N } 85^{\circ}\text{E}$, $42^{\circ}\text{N } 97^{\circ}\text{E}$, $42^{\circ}\text{N } 110^{\circ}\text{E}$, $30^{\circ}\text{N } 135^{\circ}\text{E}$, $65^{\circ}\text{N } 170^{\circ}\text{W}$, to the North Pole;
- b) that the States concerned with the new MWARA NCA resolve the boundaries of this MWARA by co-ordination with ICAO within six months of the date of approval by Council; and
- c) that an allotment of three families of frequencies is required.

RECOMMENDATION 2/6 - CHANGE OF DESIGNATION
OF MWARAS

That the designation of MWARAs be changed as follows:

- a) MWARA EU to MWARA EUR
- b) MWARA NA to MWARA NAT
- c) MWARA SA to MWARA SAT
- d) MWARAs SAM-1 and SAM-2 to MWARA SAM
- e) MWARAs NSA-1 and NSA-2 to MWARA AFI
- f) MWARA ME to MWARA MID.

RECOMMENDATION 2/7 - NEED OF THE ITU WARC AM(R)S
MEETING TO BE CONVENED IN
FEBRUARY 1978

The ICAO COM Divisional Meeting 1976, in its consideration of the total frequency requirements to satisfy the needs of the AM(R)S from the present time to the year 2000, has determined that there is an urgent need to revise Appendix 27 to the ITU Radio Regulations to provide for SSB operations for this service through the provision of additional channels within the existing Appendix 27 allotments. It is therefore, further recommended that Administrations urge the Administrative Council of the ITU at its 1977 Meeting to confirm arrangements for convening of the WARC AM(R)S in February of 1978. Additionally, the Meeting requested that the Secretary General of ICAO apprise the Secretary General of the ITU of the text of this Recommendation prior to the next Meeting of the ITU Administrative Council.

RECOMMENDATION 2/8 - REPLY BY STATES TO ITU CIRCULAR LETTER 354

That States ensure that replies to IFRB Circular letter No. 354 concerning civil aviation matters are forwarded to the IFRB as soon as possible. States are requested to submit to the IFRB in response to its Circular letter No. 354 all statistics and factors which may be useful in the technical planning for the Conference. States are also urged to effect their frequency planning and establish their requirements in an objective manner to ensure the most efficient use of the spectrum with a view to enabling the WARC AM(R)S (1978) to incorporate them within the minimum amount of spectrum necessary to satisfy their needs taking into account the relevant provisions of the ITU Convention (e.g. No. 130) and the Radio Regulation (e.g. Nos. 413, 414, 670-674 and 695-697).

2.9 VOLMET

2.9.1 The Meeting reviewed the boundaries and frequency family requirements of VOLMET areas. It noted that discussions during the ICAO Ninth Air Navigation Conference (Montreal, April-May 1976) drew attention to the requirement for adequate air-ground communication channels to meet the possible further needs for Operational Flight Information Service (OFIS) Broadcasts, as well as the need for improved handling of aircraft meteorological observations transmitted as AIREPs. The Meeting was made aware of the fact that these matters were being studied by ICAO and, whilst no definitive action could be taken on the subject, it recognized that, should the additional information contained in the proposals be acceptable for inclusion either in VOLMET, OFIS or VOLMET/OFIS HF broadcasts, it might have the effect of increasing the demand for high frequency allotments.

2.9.2 The Meeting considered the uncertain position with regard to the allotment requirements for OFIS. It was unable to conclusively state allotment requirements for individual MET allotment areas. Some States were of the opinion that NAT-MET might require allotment of two additional families of frequencies and MID-MET, EUR-MET and PAC-MET might each require allotment of one family to fulfill future OFIS requirements. However, the extent to which the proposed VOLMET allotments would satisfy OFIS requirements in these and other MET allotment areas could not be ascertained. Because of the potential impact of OFIS requirements on the frequency allotment plan the Meeting considered it essential for ICAO to determine prior to the WARC AM(R)S 1978 the extent to which additional allotments will be needed to cater to OFIS requirements; and recommended accordingly:

RECOMMENDATION 2/9 - OFIS REQUIREMENTS FOR HF ALLOTMENTS

That ICAO take appropriate steps to ensure that the potential requirements for HF allotments which might arise from implementation of OFIS concepts are available by mid-1977 in time for incorporation into States' positions for ITU WARC AM(R)S 1978.
Note: Appendix E to this part of the Report contains information on OFIS.

2.9.3 Whenever requirements are defined for new VOLMET areas, the required frequency complements to be allotted shall be commensurate with the size of the applicable VOLMET reception area. Whenever requirements are defined relating to additional families for existing VOLMET areas, the number of frequencies to comprise such a family shall be the same as the other VOLMET families in the same area.

2.10 VOLMET area boundaries and frequency requirements

2.10.1 Consequent upon the work of the Meeting on the question of revision of VOLMET areas and frequency requirements, the Meeting established Recommendation 2/10.

RECOMMENDATION 2/10 - VOLMET AREA BOUNDARIES AND
FREQUENCY REQUIREMENTS

That the description of the VOLMET area boundaries as given in the map at Appendix C and associated listing of revised co-ordinates and frequency requirements at Appendix D be adopted as proposed modifications to that now appearing in Appendix 27 to the ITU Radio Regulations.

2.10.2 Consequential to a proposal for limiting the AT-MET VOLMET Area now designated NAT-MET and to cater for eventual requirements, the Meeting agreed that new CAR and SAM VOLMET areas should be established covering the Caribbean and South America with an extension to the South Pole, respectively.

RECOMMENDATION 2/11- ESTABLISHMENT OF A CAR VOLMET AREA

That a CAR VOLMET Area be established for the Caribbean area with:

- a) an allotment area from the point $30^{\circ}\text{N } 110^{\circ}\text{W}$, through the points $30^{\circ}\text{N } 75^{\circ}\text{W}$, $00^{\circ}\text{ } 50^{\circ}\text{W}$, following equator to $00^{\circ}\text{ } 80^{\circ}\text{W}$ to the point $30^{\circ}\text{N } 110^{\circ}\text{W}$;
- b) a reception area from the point $40^{\circ}\text{N } 120^{\circ}\text{W}$, through the points $40^{\circ}\text{N } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 120^{\circ}\text{W}$, to the point $40^{\circ}\text{N } 120^{\circ}\text{W}$;

and

- c) an HF allotment of one family of frequencies.

RECOMMENDATION 2/12- ESTABLISHMENT OF A SAM VOLMET AREA

That a SAM VOLMET Area be established for the South American area with:

- a) an allotment area from the point $15^{\circ}\text{N } 83^{\circ}\text{W}$ through the points $15^{\circ}\text{N } 60^{\circ}\text{W}$, $5^{\circ}\text{S } 35^{\circ}\text{W}$, $55^{\circ}\text{S } 60^{\circ}\text{W}$, $55^{\circ}\text{S } 83^{\circ}\text{W}$ to the point $15^{\circ}\text{N } 83^{\circ}\text{W}$;
- b) a reception area from the point $30^{\circ}\text{N } 120^{\circ}\text{W}$ through the points $30^{\circ}\text{N } 00^{\circ}$, the South Pole, to the point $30^{\circ}\text{N } 120^{\circ}\text{W}$;
- c) an HF allotment of one family of frequencies.

2.10.3 In order to meet the requirements for provision of meteorological information to flights over the territory of the Soviet Union it was agreed to create a new VOLMET North and Central Asia Area NCA-MET.

RECOMMENDATION 2/13 - ESTABLISHMENT OF A NORTH CENTRAL ASIA
VOLMET AREA

That an NCA VOLMET area be established with:

- a) an allotment area defined by a line drawn from the point $76^{\circ}\text{N } 32^{\circ}\text{E}$ through the points $80^{\circ}\text{N } 90^{\circ}\text{E}$, $75^{\circ}\text{N } 168^{\circ}\text{W}$, $66^{\circ}\text{N } 168^{\circ}\text{W}$, $48^{\circ}\text{N } 160^{\circ}\text{E}$, $42^{\circ}\text{N } 135^{\circ}\text{E}$, $50^{\circ}\text{N } 130^{\circ}\text{E}$, $50^{\circ}\text{N } 90^{\circ}\text{E}$, $35^{\circ}\text{N } 70^{\circ}\text{E}$, $45^{\circ}\text{N } 30^{\circ}\text{E}$, $60^{\circ}\text{N } 20^{\circ}\text{E}$ to the point $76^{\circ}\text{N } 32^{\circ}\text{E}$;
- b) a reception area defined by a line drawn from the North Pole to the point $40^{\circ}\text{N } 168^{\circ}\text{W}$, $30^{\circ}\text{N } 140^{\circ}\text{E}$, $30^{\circ}\text{N } 20^{\circ}\text{E}$, to the North Pole;
- c) an HF allotment of two families of frequencies.

2.11 Statement by the Delegation of the People's Republic of China

2.11.1 The Chinese Delegation holds that its proposal on the establishment of RDARA sub-area 6G is entirely reasonable. However, the principle stand of China on this issue has not been correctly reflected in the Draft Report on Agenda Item 2 in WP/45. And furthermore, the decision taken on revising the 6G sub-area proposed by China is unacceptable to us. The Chinese Delegation reiterates that the South China Sea islands have always been part of China's territory and the People's Republic of China alone has the sovereign right to establish and operate domestic air services to Tungsha Islands, Hsisha Islands, Nansha Islands and other islands in the South China Sea. Therefore, the South China Sea islands must be included in the RDARA sub-area 6G proposed by China. The Chinese Delegation invites the Meeting to take note of this stand of China, and the present statement be recorded in the Report and in the Minutes of the Plenary Meeting.

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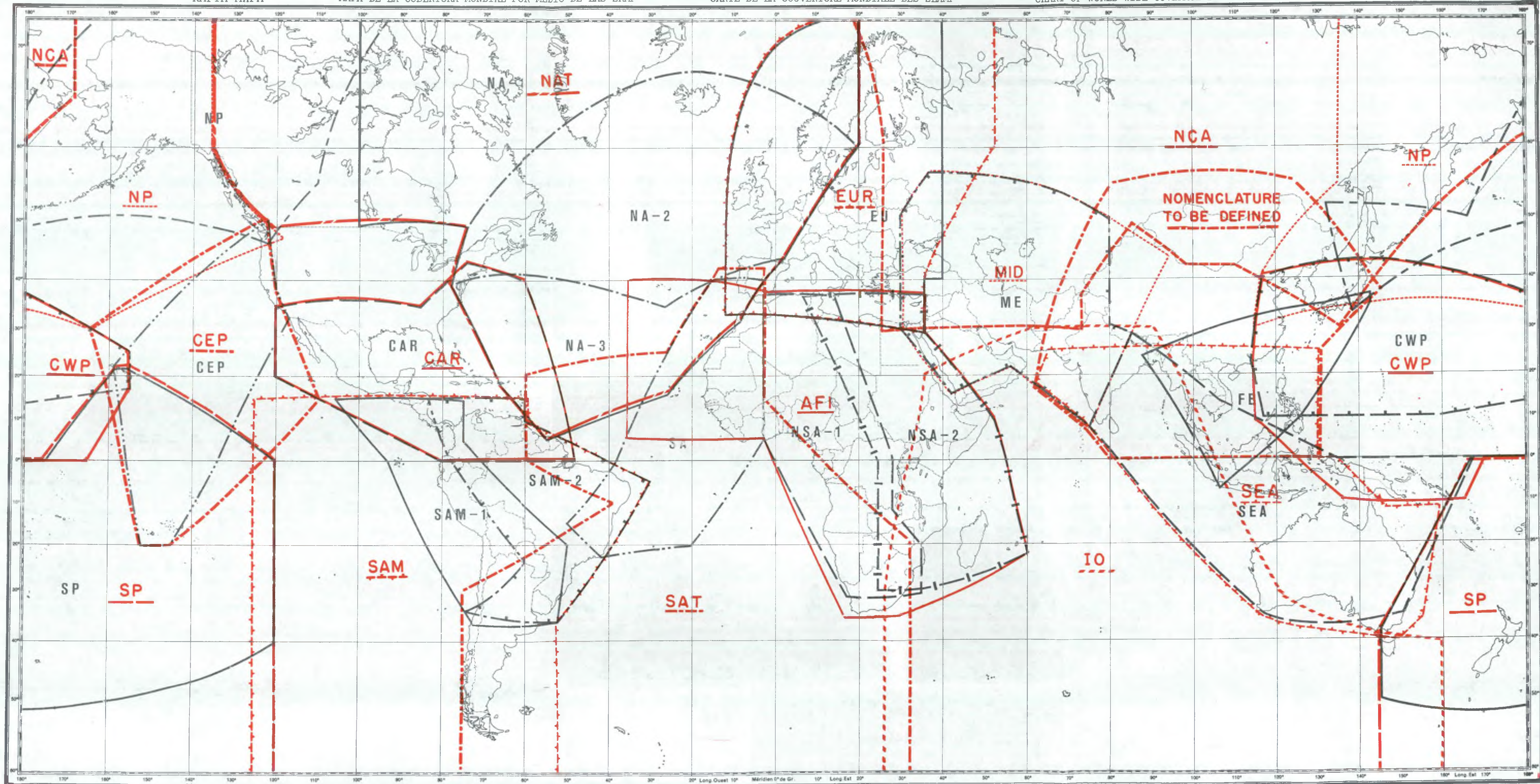
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КАРТА МИРА

MAPA DE LA COBERTURA MUNDIAL POR MEDIO DE LAS ZRMP

CARTE DE LA COUVERTURE MONDIALE DES ZIAMP

CHART OF WORLD-WIDE COVERAGE BY MWARA's



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APPENDIX B

Amendments recommended to the description of the Major World Air Route Area (MWARA) Boundaries and frequency requirements as contained in Article 1, Part II, Appendix 27 to the ITU Radio Regulations.

Note 1: See also Recommendation 2/1.

Note 2: The following paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27. The following abbreviations are used:

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph

NOC - no change to an existing paragraph

Note 3: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

NOC 27/80 MWARA - Caribbean (MWARA-CAR)

NOC 27/81 MWARA - Caribbean (MWARA-CAR)

NOC Frequency Allotment

MOD 27/82 MWARA - Central East Pacific (MWARA-CEP)

Amend delineation to read:

'From the point 50°N 122°W through the points 38°N 120°W, 32°N-117°W, 15°N 110°W, 20°S 145°W, 20°S 152°W, 22°N-159°W, 30°N 165°W, to the point 50°N 122°W.'

ADD Frequency Allotment: One additional family required.

Reason: In accordance with the principle that the entire world should be covered by MWARAs, the boundaries of MWARA CEP to be modified to cover the gaps which resulted from modification of most of the MWARAs adjacent to it.

MOD 27/83 MWARA - Central West Pacific (MWARA-CWP)

Amend delineation to read:

'From the point $40^{\circ}\text{N } 117^{\circ}\text{E}$ through the points $25^{\circ}\text{N } 155^{\circ}\text{W}$, $17^{\circ}\text{N } 155^{\circ}\text{W}$, $10^{\circ}\text{N } 160^{\circ}\text{E}$, $10^{\circ}\text{N } 117^{\circ}\text{E}$, $23^{\circ}\text{N } 114^{\circ}\text{E}$, $40^{\circ}\text{N } 117^{\circ}\text{E}$, $25^{\circ}\text{N } 155^{\circ}\text{W}$, ~~to the point $17^{\circ}\text{N } 155^{\circ}\text{W}$~~ , $00^{\circ} 165^{\circ}\text{W}$, $00^{\circ} 170^{\circ}\text{E}$, $12^{\circ}\text{S } 165^{\circ}\text{E}$, $12^{\circ}\text{S } 136^{\circ}\text{E}$, $09^{\circ}\text{N } 115^{\circ}\text{E}$, $22^{\circ}\text{N } 115^{\circ}\text{E}$, to the point $40^{\circ}\text{N } 117^{\circ}\text{E}$.'

ADD Frequency Allotment: One additional family required.

Reason: The southern boundary to be moved to the south to cover the gap between the SEA, SP and old CWP MWARAs.

MOD 27/84 MWARA - Europe (MWARA-EU)

Amend designation to read: MWARA-EU EUR

Amend delineation to read:

'From the point $33^{\circ}\text{N } 12^{\circ}\text{W}$ through the points $54^{\circ}\text{N } 12^{\circ}\text{W}$, $70^{\circ}\text{N } 00^{\circ}$, $74^{\circ}\text{N } 40^{\circ}\text{E}$, $40^{\circ}\text{N } 40^{\circ}\text{E}$, $74^{\circ}\text{N } 52^{\circ}\text{E}$, $60^{\circ}\text{N } 52^{\circ}\text{E}$, $40^{\circ}\text{N } 36^{\circ}\text{E}$, $29^{\circ}\text{N } 35^{\circ} 30'\text{E}$, $32^{\circ}\text{N } 13^{\circ}\text{E}$, to the point $33^{\circ}\text{N } 12^{\circ}\text{W}$.'

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include certain aerodromes alternates to Moscow and Leningrad.

SUP 27/85 MWARA-Far East (MWARA-FE)

Reason: Reconfiguration of the SEA MWARA

ADD 27/85 MWARA Indian Ocean (MWARA-IO)

Delineation:

From the South Pole through the points $30^{\circ}\text{S } 26^{\circ}\text{E}$, $20^{\circ}\text{N } 35^{\circ}\text{E}$, $30^{\circ}\text{N } 60^{\circ}\text{E}$, $30^{\circ}\text{N } 90^{\circ}\text{E}$, $30^{\circ}\text{S } 120^{\circ}\text{E}$, $40^{\circ}\text{S } 160^{\circ}\text{E}$ to the South Pole.

ADD Frequency Allotment: One family is required.

Reason: To cover the routes between Australia/Asia and Africa.

MOD 27/86 MWARA-Middle East (MWARA-ME)

Amend designation to read: MWARA-ME MID

Amend delineation to read:

'From the point ~~50°N 80°E~~ 51°N 30°E through the points ~~31°N 80°E~~, ~~29°N 85°E~~, ~~08°N 75°E~~, 57°N 37°E, 50°N 80°E, 44°N 94°E, 08°N 76°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, ~~51°N 30°E~~, ~~57°N 37°E~~ to the point 51°N 30°E, 50°N 80°E.'

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include Urumchi.

MOD 27/87 MWARA - North Atlantic (MWARA-NA)

Amend designation to read: MWARA-NA NAT

Amend delineation to read:

'From the North Pole through the points ~~49°N 100°W~~, 60°N 135°W, 49°N 120°W, 49°N 74°W, 39°N 78°W, 18°N 66°W, 05°N 55°W, 16°N 26°W, 32°N 08°W, 44°N 02°E, 60°N 20°E, to the North Pole.'

ADD Frequency Allotment: Three additional families required.

Reason: To ensure consistency with ICAO designator. The western boundary to be moved to the west to include essentially all of Canada.

SUP 27/88-
93 inclusive

Reason: In view of the conclusion reached not to sectorize MWARAs.

MOD 27/94 MWARA-North Pacific (MWARA-NP)

Amend delineation to read:

'From the point ~~50°N 166°E~~ 50°N 166°E through the points ~~75°N 150°W~~, ~~75°N 90°W~~, ~~55°N 110°W~~, ~~46°N 122°W~~, ~~50°N 170°W~~, ~~33°N 138°E~~, ~~52°N 132°E~~, to the point 50°N 166°E North Pole through the points 60°N 135°W, 47°N 118°W, 30°N 165°W, 30°N 115°E, 41°N 116°E, 55°N 135°E to the North Pole.'

ADD Frequency Allotment: One additional family required.

Reason: The eastern boundary to be moved to the west to exclude the most part of Canada from the allotment area and the western boundary to be moved to the west to include Peking and Shanghai.

MOD 27/95 MWARA - North South Africa-1 (MWARA-NSA-1)

Amend designation to read: MWARA-NSA-1 AFI.

Amend delineation to read:

~~' From the point 05°N 03°W through the points 37°N 03°W, 37°N 14°E, 00°28'E, 11°S 28°E, 20°S 35°E, 31°S 35°E, 31°S 17°E, to the point 05°N 03°W.'~~

From the point 40°N 35°W through the points 37°N 03°W, 37°N 35°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 35°S 30°E, 35°S 16°E, 05°N 03°W, 05°N 35°W, to the point 40°N 35°W

ADD Frequency Allotment: One additional family required.

Reason: To ensure consistency with ICAO designator. It was agreed to revise 27/95 and 27/96 in order to create a new MWARA essentially encompassing all of Africa. In creating MWARA-AFI it was agreed that portions of the ICAO Sectors AFI-3 and AFI-5 might form part of the agreed MWARA Indian Ocean (see ADD 27/85).

SUP 27/96 MWARA - North-South Africa-2 (MWARA-NSA-2)

Reason: Consequential change as a result of MOD 27/95 above.

SUP 27/97

Reason: Consequential change as a result of MOD 27/95 above.

MOD 27/98 MWARA - South Atlantic (MWARA-SA)

Amend designation to read: MWARA-SA SAT

Amend delineation to read:

~~' From the point 40°N 03°W through the points 05°N 03°W, 20°S 20°W, 22°30'S 42°W, 15°S 50°W, 00°38'W, 40°N 15°W to the point 40°N 03°W.'~~

From the South Pole through the points 30°S 75°W, 10°S 40°W, 00° 60°W, 20°N 60°W, 25°N 25°W, 41°N 15°W, 41°N 03°W, 15°N 03°W, 20°S 32°E to the South Pole.

ADD Frequency Allotment: Two additional families required.

Reason: To ensure consistency with ICAO designator. The boundaries are adjusted to provide for: routes from Africa to the Caribbean and South America; routes between Europe and the eastern part of South America; polar routes between South America and Australasia.

SUP 27/99

Reason: Consequential change as a result of MOD 27/98 above

MOD 27/100 MWARA - South America-1 (MWARA-SAM-1)

Amend designation to read: MWARA-SAM-1

Amend delineation to read:

~~'From the point 36°S 73°W through the points 00° 93°W, 15°N 106°W, 15°N 75°W, 05°N 75°W, 20°S 50°W, 36°S 52°W, to the point 36°S 73°W.'~~

From the South Pole through the points 15°N 125°W, 15°N 60°W, 10°N 60°W, 05°S 30°W, 36°S 52°W to the South Pole.

NOC Frequency Allotment

Reason: It was agreed to revise 27/100 and 27/101 in order to create a new MWARA encompassing all of South America, and to extend the western and southern boundaries of the area to include routes from South America to the South Pacific.

SUP 27/101 MWARA - South America-2 (MWARA-SAM-2)

Reason: Consequential change as a result of MOD 27/100 above.

MOD 27/102 MWARA - South East Asia (MWARA-SEA)

Amend delineation to read:

~~'From the point 29°N 85°E through the points 15°N 105°E, 00° 135°E, 00° 168°E, 35°S 150°E, 35°S 116°E, 08°N 75°E, to the point 29°N 85°E.'~~

From the point 26°N 130°E, 00° 130°E, 00° 135°E, 12°S 145°E, 12°S 160°E, 25°S 155°E, 40°S 150°E, 35°S 115°E, 18°N 62°E, 26°N 65°E, to the point 26°N 130°E.

MOD Frequency Allotment: Three families are required.

Reason: Expansion of the existing SEA MWARA was required. In view of the high traffic density in and the vast size of the overall area it was decided that the boundaries considered therein be amended so as to create two separate MWARAs.

MOD 27/103 MWARA-South Pacific (MWARA-SP)

Amend delineation to read:

~~'From the point 22°N 158°W through the points 22°N 156°W, 00° 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 38°S 145°E, 00° 167°E, 00° 175°W, to the point 22°N 158°W.'~~

From the South Pole through the points 38°S 145°E, 00° 167°E, 00° 175°W, 22°N 158°W, 22°N 156°W, 00° 120°W to the South Pole.

ADD Frequency Allotment: One additional family is required.

Reason: The eastern and western boundaries are extended to the South Pole to include polar routes from Pacific Islands to South Africa.

ADD 27/103A Add MWARA contained in Recommendation 2/3 subparagraph 2) once the States concerned take the action referred to in subparagraph b).

ADD 27/103B Add MWARA-NCA once the States concerned take the action referred to in Recommendation 2/5.

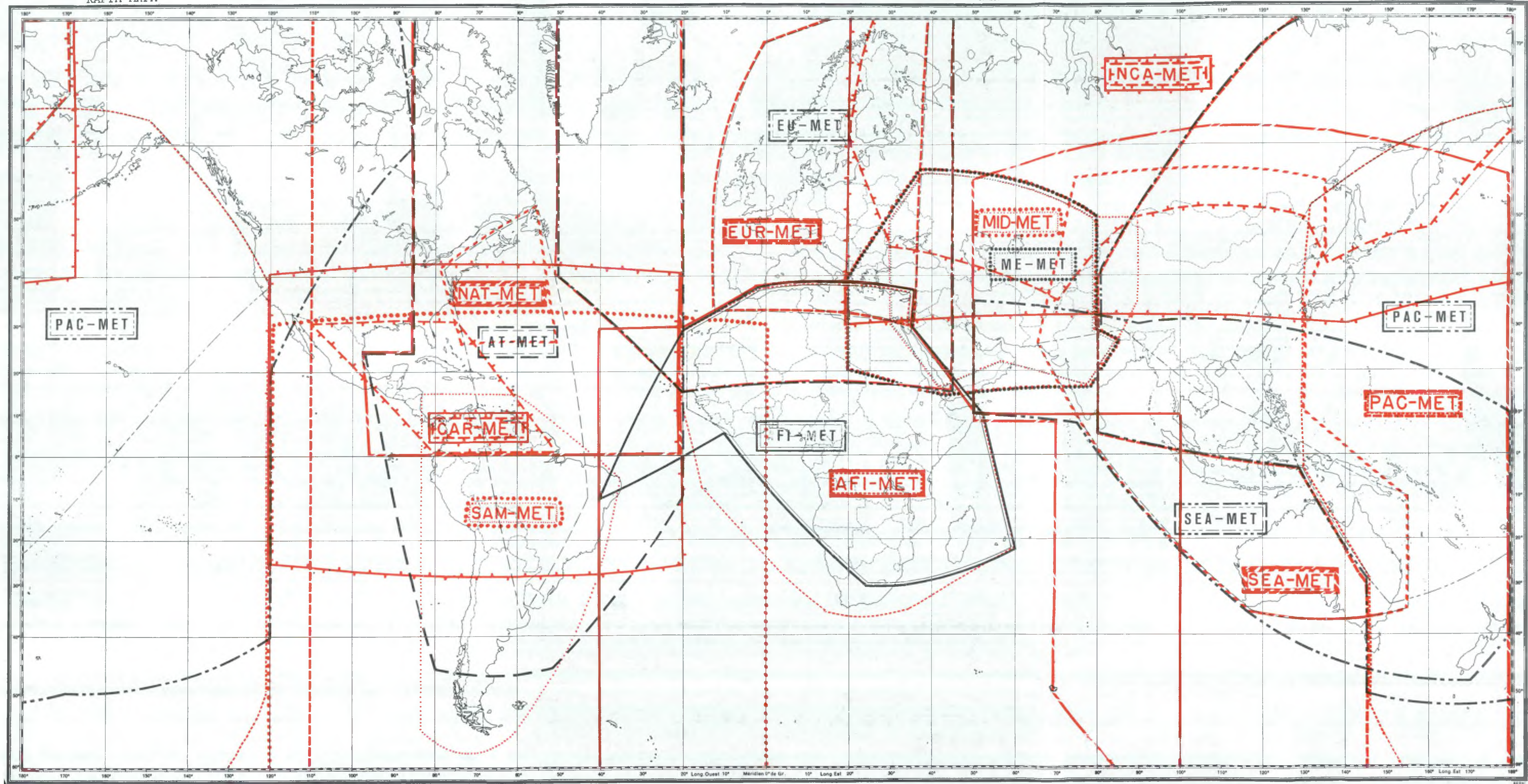
КАРТА МИРА

MAPA DE LA COBERTURA MUNDIAL POR MEDIO DE LAS ZONAS VOLMET

CARTE DE LA COUVERTURE MONDIALE ASSURÉE PAR LES ZONES VOLMET

CHART OF WORLD-WIDE COVERAGE BY VOLMET AREAS

2-23



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APPENDIX D

Amendments recommended to the description of the VOLMET Allotment and Reception Areas and frequency requirements as contained in Article 3, Part II, Appendix 27 to the ITU Radio Regulations. The paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27.

Note 1:- See also Recommendation 2/10

Note 2:- Note that the following abbreviations are used in revising Appendix 27:

ADD	-	the addition of a new paragraph
MOD	-	the modification of an existing paragraph
SUP	-	the suppression, i.e., deletion of an existing paragraph.

VOLMET area - AFRICA-INDIAN OCEAN (AFI-MET)

It was agreed that, in order to provide VOLMET service for South America-South Africa and South Africa-Australia flights, the Allotment and Reception Areas be expanded and re-defined as delineated below:

MOD 27/174 'The AFI-MET allotment area is defined by a line drawn from the point $29^{\circ}\text{N } 20^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 03^{\circ}\text{W}$, $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, $22^{\circ}\text{S } 60^{\circ}\text{E}$, ~~$30^{\circ}\text{S } 34^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 24^{\circ}\text{E}$~~ , $35^{\circ}\text{S } 35^{\circ}\text{E}$, $35^{\circ}\text{S } 15^{\circ}\text{E}$, $08^{\circ}\text{S } 15^{\circ}\text{W}$, $12^{\circ}\text{N } 20^{\circ}\text{W}$ to the point $29^{\circ}\text{N } 20^{\circ}\text{W}$.'

MOD 27/175 'The AFI-MET reception area is defined by a line drawn from the point $37^{\circ}\text{N } 03^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, ~~$22^{\circ}\text{S } 60^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 34^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 24^{\circ}\text{E}$~~ , ~~$05^{\circ}\text{N } 10^{\circ}\text{W}$~~ , ~~$10^{\circ}\text{S } 40^{\circ}\text{W}$~~ , $10^{\circ}\text{N } 100^{\circ}\text{E}$ the South Pole, $29^{\circ}\text{N } 40^{\circ}\text{W}$, $29^{\circ}\text{N } 20^{\circ}\text{W}$, to the point $37^{\circ}\text{N } 03^{\circ}\text{W}$.'

NOC Frequency Allotment

VOLMET area - ATLANTIC (AT-MET)

It was agreed to change the nomenclature from ATLANTIC (AT-MET) to NORTH ATLANTIC (NAT-MET).

In consideration of establishment of CARIBBEAN (CAR-MET) and SOUTH AMERICAN (SAM-MET) allotment and reception areas, it was agreed to amend the allotment and reception areas as defined below:

MOD 27/176 'The NAT-MET allotment area is defined by a line drawn from the point $41^{\circ}\text{N } 78^{\circ}\text{W}$ through the points $51^{\circ}\text{N } 55^{\circ}\text{W}$, ~~$10^{\circ}\text{S } 43^{\circ}\text{W}$~~ , ~~$37^{\circ}\text{S } 59^{\circ}\text{W}$~~ , $24^{\circ}\text{N } 50^{\circ}\text{W}$, $24^{\circ}\text{N } 74^{\circ}\text{W}$, to the point $41^{\circ}\text{N } 78^{\circ}\text{W}$.'

MOD 27/177 'The NAT-MET reception area is defined by a line drawn from the point $24^{\circ}\text{N } 97^{\circ}\text{W}$ through the points $24^{\circ}\text{N } 85^{\circ}\text{W}$, $75^{\circ}\text{N } 85^{\circ}\text{W}$, $75^{\circ}\text{N } 20^{\circ}\text{W}$, $10^{\circ}\text{S } 20^{\circ}\text{W}$, $46^{\circ}\text{S } 52^{\circ}\text{W}$, $46^{\circ}\text{S } 80^{\circ}\text{W}$, $00^{\circ} 20^{\circ}\text{W}$, $00^{\circ} 95^{\circ}\text{W}$ to the point $24^{\circ}\text{N } 97^{\circ}\text{W}$.'

ADD Frequency Allotment: One additional family required.

VOLMET Area - EUROPE (EU-MET)

It was agreed to change the nomenclature from EU-MET to EUR-MET.

It was agreed that no changes were necessary to the EUR-MET allotment and reception areas, therefore 27/178 and 27/179 remain unchanged.

ADD Frequency Allotment: In view of the impossibility of accommodating aircraft operating agency requirements for additional terminal area forecasts and surface observations on one of the present families in the time available, it was agreed that one additional family is required.

VOLMET Area - MIDDLE EAST (MID-MET)

It was agreed to change the nomenclature from ME-MET to MID-MET.

It was agreed that no change was necessary to the definition of the MID-MET allotment area, therefore 27/180 remains unchanged.

It was agreed to amend the definition of the MID-MET reception area eastern boundary to include Urumchi, resulting in modification of the definition of the MID-MET reception area as follows:

MOD 27/181 'The MID-MET reception area is defined by a line drawn from the point $50^{\circ}\text{N } 80^{\circ}\text{E}$, through the points $50^{\circ}\text{N } 90^{\circ}\text{E}$, $29^{\circ}\text{N } 80^{\circ}\text{E}$, $27^{\circ}\text{N } 85^{\circ}\text{E}$, $35^{\circ}\text{N } 90^{\circ}\text{E}$, $27^{\circ}\text{N } 85^{\circ}\text{E}$, $16^{\circ}\text{N } 78^{\circ}\text{E}$, $15^{\circ}\text{N } 42^{\circ}\text{E}$, $20^{\circ}\text{N } 20^{\circ}\text{E}$, $40^{\circ}\text{N } 20^{\circ}\text{E}$, $22^{\circ}\text{N } 56^{\circ}\text{E}$, $16^{\circ}\text{N } 42^{\circ}\text{E}$, $30^{\circ}\text{N } 30^{\circ}\text{E}$, $51^{\circ}\text{N } 30^{\circ}\text{E}$, $57^{\circ}\text{N } 37^{\circ}\text{E}$, to the point $50^{\circ}\text{N } 80^{\circ}\text{E}$.'

ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - PACIFIC (PAC-MET)

It was agreed to amend the definition of the PAC-MET allotment area, to include Christmas Island, Tahiti, and New Zealand, as follows:

MOD 27/182 'The PAC-MET allotment area is defined by a line drawn from the point $52^{\circ}\text{N } 132^{\circ}\text{E}$, through the points $63^{\circ}\text{N } 149^{\circ}\text{W}$, $38^{\circ}\text{N } 120^{\circ}\text{W}$, $23^{\circ}\text{S } 180^{\circ}$, $34^{\circ}\text{S } 150^{\circ}\text{E}$, $50^{\circ}\text{S } 120^{\circ}\text{W}$, $50^{\circ}\text{S } 145^{\circ}\text{E}$, $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $22^{\circ}\text{N } 112^{\circ}\text{E}$ to the point $52^{\circ}\text{N } 132^{\circ}\text{E}$.'

It was agreed to amend the definition of the PAC-MET reception area as follows:

MOD 27/183 'The PAC-MET reception area is defined by a line drawn from the point $60^{\circ}\text{N } 100^{\circ}\text{E}$, through the points $80^{\circ}\text{N } 160^{\circ}\text{W}$, $75^{\circ}\text{N } 90^{\circ}\text{W}$, $60^{\circ}\text{N } 85^{\circ}\text{W}$, $20^{\circ}\text{N } 120^{\circ}\text{W}$, $40^{\circ}\text{S } 120^{\circ}\text{W}$, $50^{\circ}\text{S } 170^{\circ}\text{W}$, $50^{\circ}\text{S } 145^{\circ}\text{E}$, to the North Pole, to the South Pole along the 110°W meridian, to $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $05^{\circ}\text{N } 80^{\circ}\text{E}$, $40^{\circ}\text{N } 80^{\circ}\text{E}$, to the point $60^{\circ}\text{N } 100^{\circ}\text{E}$.'

ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - SOUTH EAST ASIA (SEA-MET)

To meet the needs of the South Africa - Australia services and international flights in the South-East Asia Region, it was agreed to amend the definition of the SEA-MET allotment and reception areas as follows:

MOD 27/184 'The SEA-MET allotment area is defined by a line drawn from the point $29^{\circ}\text{N } 86^{\circ}\text{E}$, $55^{\circ}\text{N } 75^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 135^{\circ}\text{E}$, $45^{\circ}\text{N } 135^{\circ}\text{E}$, $35^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 116^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $26^{\circ}\text{N } 65^{\circ}\text{E}$, $15^{\circ}\text{N } 105^{\circ}\text{E}$, to the point $29^{\circ}\text{N } 86^{\circ}\text{E}$, $55^{\circ}\text{N } 75^{\circ}\text{E}$.'

MOD 27/185 '~~The SEA-MET reception area is defined by a line drawn from the point $35^{\circ}\text{N } 50^{\circ}\text{E}$, through the points $30^{\circ}\text{N } 90^{\circ}\text{E}$, $10^{\circ}\text{N } 180^{\circ}$, $40^{\circ}\text{S } 180^{\circ}$, $48^{\circ}\text{S } 170^{\circ}\text{E}$, $35^{\circ}\text{S } 116^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $10^{\circ}\text{N } 50^{\circ}\text{E}$, to the point $35^{\circ}\text{N } 50^{\circ}\text{E}$.~~

The SEA-MET reception area is defined by a line drawn from the point $55^{\circ}\text{N } 50^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 180^{\circ}$, $50^{\circ}\text{S } 180^{\circ}$, $50^{\circ}\text{S } 70^{\circ}\text{E}$, $08^{\circ}\text{N } 70^{\circ}\text{E}$, $08^{\circ}\text{N } 50^{\circ}\text{E}$, to the point $55^{\circ}\text{N } 50^{\circ}\text{E}$.

ADD Frequency Allotment: Two additional frequency families are required.

VOLMET - CARIBBEAN (CAR-MET)

Associated with the reduction of the AT-MET VOLMET Area now designated NAT-MET and to cater for eventual requirements, the Caribbean VOLMET Area was created with allotment and reception areas as follows:

ADD 27/185A The CAR-MET allotment area is defined by a line drawn from the point $30^{\circ}\text{N } 110^{\circ}\text{W}$, through the points $30^{\circ}\text{N } 75^{\circ}\text{W}$, $00^{\circ}\text{ } 50^{\circ}\text{W}$, following equator to $00^{\circ}\text{ } 80^{\circ}\text{W}$ to the point $30^{\circ}\text{N } 110^{\circ}\text{W}$.

ADD 27/185B The CAR-MET reception area is defined by a line drawn from the point $40^{\circ}\text{N } 120^{\circ}\text{W}$, through the points $40^{\circ}\text{N } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 120^{\circ}\text{W}$, to the point $40^{\circ}\text{N } 120^{\circ}\text{W}$.

ADD Frequency Allotment: One frequency family is required.

VOLMET Area - SOUTH AMERICA (SAM-MET)

To cater for eventual requirements, the South America VOLMET Area was created with allotment and reception areas as follows:

ADD 27/185C The SAM-MET allotment area is defined by a line drawn from the point $15^{\circ}\text{N } 83^{\circ}\text{W}$ through the points $15^{\circ}\text{N } 60^{\circ}\text{W}$, $5^{\circ}\text{S } 35^{\circ}\text{W}$, $55^{\circ}\text{S } 60^{\circ}\text{W}$, $55^{\circ}\text{S } 83^{\circ}\text{W}$ to the point $15^{\circ}\text{N } 83^{\circ}\text{W}$.

ADD 27/185D The SAM-MET reception area is defined by a line drawn from the point $30^{\circ}\text{N } 120^{\circ}\text{W}$ through the points $30^{\circ}\text{N } 00^{\circ}$, the South Pole, to the point $30^{\circ}\text{N } 120^{\circ}\text{W}$.

ADD Frequency Allotment: One frequency family is required.

VOLMET Area - NORTH CENTRAL ASIA (NCA-MET)

In order to meet the requirements for provision of meteorological information to flights over the territory of the Soviet Union the VOLMET North and Central Asia Area was created with allotment and reception areas as follows:

ADD 27/185E The NCA-MET allotment area is defined by a line drawn from the point $76^{\circ}\text{N } 32^{\circ}\text{E}$ through the points $80^{\circ}\text{N } 90^{\circ}\text{E}$, $75^{\circ}\text{N } 168^{\circ}\text{W}$, $66^{\circ}\text{N } 168^{\circ}\text{W}$, $48^{\circ}\text{N } 160^{\circ}\text{E}$, $42^{\circ}\text{N } 135^{\circ}\text{E}$, $50^{\circ}\text{N } 130^{\circ}\text{E}$, $50^{\circ}\text{N } 90^{\circ}\text{E}$, $35^{\circ}\text{N } 70^{\circ}\text{E}$, $45^{\circ}\text{N } 30^{\circ}\text{E}$, $60^{\circ}\text{N } 20^{\circ}\text{E}$ to the point $76^{\circ}\text{N } 32^{\circ}\text{E}$.

ADD 27/185F The NCA-MET reception area is defined by a line drawn from the North Pole to the point $40^{\circ}\text{N } 168^{\circ}\text{W}$, $30^{\circ}\text{N } 140^{\circ}\text{E}$, $30^{\circ}\text{N } 20^{\circ}\text{E}$, to the North Pole.

ADD Frequency Allotment: Two frequency families are required.

APPENDIX EBrief Notes on the History and Activities
of the Operational Flight Information Service
Panel (OFISP)

1. The need for operationally integrated flight information was first brought up by IFALPA during the ASIA/PAC Regional Air Navigation Meeting (Honolulu, 1973). IFALPA had pointed out that flight information was being transmitted to aircraft in various separate "packages" (MET, ATS, AIS, etc.), through different methods (VOLMET broadcasts, directed transmission, general call, etc.) and means (aeronautical channels, company channels). They were of the opinion that much operationally unnecessary information, e.g., on high cloud layers, was included in VOLMET broadcasts while, on the other hand, there was a lack of information in such broadcasts of what was operationally desirable, e.g., unserviceability of a runway. Flight information should be operationally integrated on the ground into a minimum of "packages" containing only what was needed in the cockpit at the time, and transmitted to aircraft through modern, preferably automated, methods.
2. As a result of Recommendation 2/1 of the ASIA/PAC RAN Meeting the Air Navigation Commission on 12 December 1974 included the subject of the provision of operationally integrated information to aircraft as Item 8 in the Agenda of the 9th AN Conference. On 6 and 11 February 1975 it established the Operational Flight Information Service (OFIS) Panel to prepare recommendations and appropriate documentation for consideration by the Conference.
3. The Terms of Reference established by the Air Navigation Commission for the OFISP were the following:

"To prepare recommendations for the 9th AN Conference with
the objective of providing aircraft in flight with operationally
integrated pertinent ATS, MET, AIS and other essential information
and ensuring the necessary ATS/MET co-ordination."
4. The OFISP held one Meeting, and prepared documentation which was discussed at the 9th Air Navigation Conference. The discussions are contained in the Report on Agenda Item 8 of the Conference.
5. In essence, the 9th Air Navigation Conference endorsed the general concept of providing operationally integrated information to aircraft as developed by the OFIS Panel. This concept involves the provision of operational information to the pilot during flight in a manner designed to improve efficiency of operations by means of:
 - a) the integration of AIS, ATS, MET and any other pertinent information into the smallest possible number of messages appropriate to the

operational needs of the particular phase of flight; and

- b) simplified and standardized contents of messages, where possible, without sacrificing essential elements but leaving the option for the pilot to request and obtain more information if he needs it;

in order to:

- a) ensure, where necessary, the compatibility of procedures used for preparing the information intended for transmission to aircraft in flight;
- b) avoid to the extent practicable the dissemination of repetitive information; and
- c) rationalize the use of existing air-ground telecommunication facilities and consider the use of future automated methods.

6. The need for further activity on the subject of providing operationally integrated information to aircraft is still under consideration by the Air Navigation Commission. However, it appears that further work may be required in the following areas:

- a) message content,
- b) message format,
- c) means of communication,
- d) initial and long term application of the concept, and
- e) development of ICAO specifications.

7. The machinery to complete this further work will be decided by the Air Navigation Commission in due course.

Agenda Item 3: Consideration of existing use of high frequencies for the Aeronautical Mobile (R) Service, and the determination of future requirements; including the determination of further information required from States and the manner in which the resulting information should be presented to the ITU WARC AM(R)S (1978)

3.1 RDARA frequency requirements

3.1.1 Consideration of the RDARA frequency requirements resulted in the following conclusions.

3.1.1.1 Lack of submission of requirements on the part of several States, and the absence of co-ordination between States sharing common RDARAs prevented development of a meaningful overall summary of requirements.

3.1.1.2 The absence of submission of States' requirements to ICAO might be interpreted that such States have no continuing requirements, or no change in requirements, but neither could be assumed.

3.1.1.3 It was noted that States have, or will have, stated requirements to ITU responsive to IFRB Circular letter No. 354, which may not be consistent with those indicated to ICAO.

3.1.1.4 The Meeting concluded that States' submissions to ICAO be summarized in the Report of this Meeting; such a summary is included in Appendix A to this part of the Report.

3.1.1.5 The Meeting also developed the following Recommendation to assist ICAO in completion of its work preparatory to the ITU WARC AM(R)S 1978:

RECOMMENDATION 3/1 - PLANNING FOR THE ITU WARC AM(R)S 1978

That the IFRB be asked to inform ICAO concerning the results of their technical planning for the ITU WARC AM(R)S 1978, taking into account the application of the information received in response to IFRB Circular letter No. 354.

3.2 Impact of developments in communications techniques on the HF AM(R)S requirements

3.2.1 The Meeting considered the potential impact that satellite communications and air/ground data link might have on the HF AM(R)S allotment areas and frequency requirements. It recognized that an operational satellite system might eventually evolve, but it did not appear that the associated time frame would have a significant impact on HF AM(R)S planning within the time scale under consideration by this Meeting. With respect to HF data transmission, provisions have been sought under ADD 27/11A, found in the Appendix to the Report on Agenda Item 5, to permit the development of HF data links.

3.3 Assessment of HF requirements3.3.1 States' preparation for the ITU WARC AM(R)S 1978

3.3.1.1 The Meeting took cognizance of ever-increasing demands upon the HF radio spectrum and considered it essential that States in their preparatory activity for the ITU WARC AM(R)S 1978 develop justification in support of their frequency requirements.

RECOMMENDATION 3/2 - JUSTIFICATION OF FREQUENCY REQUIREMENT
PROPOSALS TO THE ITU WARC AM(R)S 1978

That States when preparing for the ITU WARC AM(R)S 1978 ensure that their frequency requirements are fully substantiated in their proposals.

3.3.2 Frequency requirement taking into account frequency availability

3.3.2.1 The Meeting considered the need for satisfying present and future frequency requirements for the different categories of the HF aeronautical mobile (R) service. The establishment of new MWARAs as well as increased traffic demands and changes in operational requirements called for introduction of several new frequency families. Based on the planning principles applied in Appendix 27 and assuming complete introduction of SSB within the bands available, it was apparent that the requirements exceeded the availability of frequencies. For example, in the 11 and 13 MHz bands, assuming that each frequency family can only have one frequency in the 11 or one in the 13 MHz bands, the available frequencies to be allotted would be, with reference to the anticipated amendments to Appendix 27: $41 + 33 = 74$ frequencies.

3.3.2.2 Recognizing that a definitive determination of frequency requirements to be allotted to certain of the types of allotment areas was not possible during the course of the Meeting, but employing those which were indicated to the extent practicable and applying judgment factors to this information, the following tentative and approximate frequency requirements appeared necessary.

Note:- States must recognize that the following figures and methodology are useful only for the justification of the conclusions reached in paragraph 3.3.2.5. The figures and methodology in themselves were not adequately developed at the Meeting, and the application of Recommendations 3/3 and 3/4 will hopefully lead to the resolution of these uncertainties.

3.3.2.3 Present "sharing factors" applied in Appendix 27 for 11 and 13 MHz bands in MWARAs.

11 MHz:	43 allotments	13 MHz:	36 allotments
	15 channels		13 channels
	i.e. "sharing factor" $\frac{43}{15} = 2.86$		i.e. "sharing factor" $\frac{36}{13} = 2.76$

Average "sharing factor" based on above: 2.8

3.3.2.3.1 Whereas it has been assumed in paragraph 3.3.2.1 that each MWARA and RDARA will require either an 11 or 13 MHz order frequency, this may not always be justified in practice (see also paragraph 2.1.7).

3.3.2.3.2 Demands for frequency families in revised Appendix 27 based on stated requirements and estimates.

MWARA	}	58	stated requirements
VOLMET			
OPN		47*	stated requirements
RDARA		103(+)	estimates
xx OFIS		<u>5</u>	estimates
		213	requirements

(*) The Meeting recognized that this figure referred to families of channels which could not be translated into families of frequencies in the time available (refer to paragraph 3.4.8.6).

(+) Present Appendix 27 provides for 22 MWARA allotments.
 Revised Appendix 27 requires 42 MWARA allotments.
 "growth factor" $\frac{42}{22} = 1.9$

Present allotment of 11 and 13 MHz channels in RDARAs: 54.
 Assuming same "growth factor" as for MWARAs would call for
 $54 \times 1.9 = 103$ families in revised Appendix.

xx Note: The indicated number of possible requirements is 5, however reference is made to paragraph 2.9.2 and Recommendation 2/9.

3.3.2.3.3 "Sharing factor" in Appendix 27 (Rev) must be less than factor presently applied (2.8) for the following reasons:

- a) increase in MWARAs area size;
- b) introduction of new MWARAs;
- c) introduction of data links prohibits use of transparencies between different classes of emissions applying to the same channel thus making it necessary to provide for special "data link" channels;
- d) until 1987 mixed SSB/DSB environment will have to be applied reducing available number of SSB channels to be allotted;
- e) present Appendix allows for use of both 11 and 13 MHz channels in same frequency family contrary to assumed constraint suggested for application in revised Appendix.

3.3.2.4 Based on the above a "sharing factor" of 2.6 would seem reasonable. The number of channels to be allotted in 11 and 13 MHz bands in revised Appendix 27 assuming no reduction in (R) bands: 74. Disregarding any reduction in available channels elaborated on in c) and d) above, the following families can possibly be provided:

$$74 \times 2.6 = 192 \text{ families.}$$

i.e. approximately 90% of the stated 213 requirements can be met.

3.3.2.4.1 In the above calculation the satisfaction of IATA requirements has been based on the questionable assumption that OPN frequency families allotted for use in undefined "world wide areas" can be shared applying the same "sharing factor" as for the defined MWARAs and RDARAs.

3.3.2.5 As a result of the above considerations it might perhaps be possible to satisfy the stated requirements. However, taking into account the uncertainty in the estimation of requirements for some of the categories there is a risk that this will not be possible, and it would therefore be necessary to consider the relative priorities of the various categories of allotment areas. The priority for handling the various categories of messages defined in Annex 10, Volume II, Chapter 5, paragraph 5.1.8 was considered as possibly providing some guidelines in this regard.

3.3.2.6 Various theoretical approaches were presented directed to evaluating frequency requirements. It was concluded that, although the proposed methodologies and associated discussions were interesting and valuable, the Meeting was unable to arrive at a generally applicable approach. However, recognizing the desirability for such a management tool, it developed the following Recommendation.

RECOMMENDATION 3/3 - NEED FOR METHOD TO ESTABLISH INDIVIDUAL STATES' FREQUENCY REQUIREMENTS

That States are encouraged to continue their studies to establish criteria, including channel loading criteria, for the determination of their frequency requirements and submit appropriate proposals to the ITU WARC AM(R)S 1978 to assist in determination of frequency requirements on an equitable basis. It is recognized that in some cases channel loading is not the only determining factor in the establishment of frequency requirements.

3.3.2.7 The Meeting also recognized that there was a need for criteria to be developed to amalgamate individual frequency requirements into a total plan, which could relate total requirements to the total frequency availability, and recommended accordingly.

RECOMMENDATION 3/4 - NEED FOR METHOD TO ESTABLISH TOTAL
FREQUENCY REQUIREMENTS TAKING INTO
ACCOUNT FREQUENCY AVAILABILITY

That States in a position to do so be encouraged to study criteria for the determination of total frequency requirements, taking into account the available spectrum, and submit proposals to the ITU WARC AM(R)S 1978 to assist in preparation of a frequency allotment plan.

3.4 Operational Control (flight regularity) Communications

3.4.1 The Meeting recognized that aeronautical administrations were generally familiar with and recognized the requirement for operational control (flight regularity) communications. Nevertheless, consideration of the requirement for long range operational control (flight regularity) communications by the ITU WARC AM(R)S (1978) will require a clear understanding of the validity and nature of the requirement. Consequently the Meeting agreed to amplify these aspects in its Report.

3.4.2 The ICAO Council in December 1950 adopted the following definition for operational control which, together with the associated Standard, forms part of Annex 6, Part I, Chapters 1 and 3.

Definition Chapter 1 Operational Control - The exercise of authority over initiation, continuation, diversion or termination of flight.

Standard Chapter 3 3.3 An operator or his designated representative shall have responsibility for operational control.

Note: The rights and obligations of a State in respect to the operation of aeroplanes registered in that State are not affected by this provision.

3.4.3 Communications for flight regularity purposes are those non-public communications relating to the co-ordination by an aircraft operating agency, or its designated representative, of arrival and departure times, en-route position reports and flight plan revisions, in-flight engineering and maintenance reports, and other communications of a like nature as described in ICAO Circular 45-AN/40 and also in accordance with the provisions of Annex 10, Vol II, Part I, Chapter 5, paragraph 5.1.8.6. Flight regularity communications are often referred to as operational control communications which are defined as follows in ICAO Annex 10, Volume I, Part II, Chapter 1: "Operational Control Communications - Communications required for exercising authority over initiation, continuation, diversion or termination of a flight in accordance with the provisions of Annex 6."

3.4.4 The use of the VHF frequencies, which in certain areas include 128.825 MHz to 132.025 MHz for short-range operational control communications, does not alleviate the need for long-range operational control communications.

3.4.5 The existing HF RTF networks detailed in ICAO Regional Air Navigation Plans utilize frequency family assignments within the framework of the ITU Appendix 27 allotment principles. For direct RTF communications these networks are not always capable of meeting the requirements for operational control (flight regularity) communications for the following basic reasons:

- a) the technical principles on which the ITU allotment plans are based restrict the use of HF MWARA/RDARA frequencies to specific geographic areas generally catering to the structure of Air Traffic Services. Because of the application of interference range contours prescribed in Appendix 27, these frequencies cannot be used for aircraft operating agency RTF communications between the appropriate aircraft operating agency office (generally the home-base) and aircraft operating agency aircraft operating anywhere in the world.
- b) MWARA Stations forming part of HF RTF networks normally handle communications with aircraft within a defined geographic area (FIR/OCA). The mode and methods of operation, the frequencies employed and traffic loading are related to the provision of Air Traffic Service within such areas. With the exception of certain oceanic areas Air Traffic Service requirements are for communications over distances not greater than 1000 NM. Therefore frequencies of higher order (say above 13 MHz) are not deployed to the same extent as frequencies of lower order.
- c) ATS and other messages intended for addressees located outside the defined MWARA/RDARA boundaries have to be handled by relay in printed form over the circuits of the Aeronautical Fixed Service. Consequently, direct RTF exchange with such addressees is precluded.

3.4.6 The Meeting consequently agreed that there is a requirement for communications service, capable of providing direct voice communications between designated Aircraft Operating Agency Official(s) and the Agencies' aircraft operating anywhere on a global basis. However, as the Meeting noted that only very limited provision is made in Appendix 27 for frequencies capable of being used on a world-wide basis, it was further agreed that the revision of Appendix 27 will need to accommodate appropriate regulatory provisions and additional frequency allotments such as will be necessary to enable States to effect assignments to permit direct communications between aircraft operating agencies and their aircraft anywhere in the world.

3.4.7 Planning objectives

3.4.7.1 The Meeting expected that the lifetime of the revised Appendix 27 plan will span at least a few decades. This duration will encompass not only a period of significant growth in operational control (flight regularity) communications traffic and an increase in the deployment of aeronautical stations but also a number of sunspot cycles. Allotment planning will therefore need to accommodate the growth in communications traffic as well as the distribution of traffic according to useable frequencies at extremes of sunspot cycles.

3.4.7.2 In considering factors directly bearing on the projection of channel requirements for operational control (flight regularity) communications the Meeting highlighted the following as significant:

- | | |
|--|-----------------------------|
| - required area(s) of use | - route structure |
| - geographic deployment of aeronautical stations | - size of HF equipped fleet |
| - number of aeronautical stations | - channel availability |
| - number of aircraft operating agencies | - channel loading |
| | - sunspot cycle. |

3.4.7.3 The Meeting realized that the translation of channel requirements into the necessary frequencies will need to take into account the frequency family complement, interference range contours and channel loading (to determine sharing of frequencies and/or families deployed in the same area) and the deployment of stations (to determine the time/geographic frequency sharing possibilities). In this regard, the manner in which the Interference Range Contours would be applied for world-wide assignments to determine the extent of frequency sharing in specific circumstances needs further study. (See 5.1.9 and Recommendation 5/2 in the Report on Agenda Item 5.)

3.4.8 Operational Control (Flight Regularity) Channel Requirements

3.4.8.1 The Meeting was made aware of some requirements for Aeronautical Operational Control as submitted by some States. In addition, the Meeting was made aware of the coordinated requirements of the aircraft operating agencies as represented by IATA. It was understood that in some cases the State submissions were embraced within the coordinated IATA requirement where such submissions indicated the requirement as being of its flag carrier and it was further understood that some State submissions were for aircraft operating agencies not embraced within the IATA coordinated submission.

3.4.8.2 Whilst it is recognized that States, in reply to the IFRB Circular letter No. 354 will be responding in detail to their individual requirements for Aeronautical Operational Control the philosophy and derivation of the co-ordinated Aeronautical Operational Control requirements should eventually constitute the basis on which the ITU WARC AM(R)S 1978 will prepare its plan.

3.4.8.3 In arriving at the coordinated Aeronautical Operational Control requirements, the following approach was taken:

- a) There appear to be six principal geographic areas within which aeronautical ground stations for this type of application will be deployed within the lifetime of the revised Allotment Plan. The locations of these stations, each of which it is assumed will normally be related to the home base of an aircraft operating agency, can be predicted with some certainty. The density of deployment of ground stations will obviously vary by geographic area.
- b) For the moment the European and North American areas present the most demanding situation in terms both of density of station deployment and size of aircraft fleet operated from bases located within the area. The density of ground station deployment in the above areas is unlikely to increase significantly in the future. On the contrary the density of ground stations deployed in other geographic areas is expected to increase significantly.
- c) Studies have indicated separate and distinct communications requirements for operational control purposes. One such identifiable requirement is for aircraft operating agencies having extensive world-wide route structures to communicate with their aircraft anywhere on a global basis and other operations such as flight test and inspection, disaster relief, etc. A second basic group of requirements, including operations such as aircraft involved in special observation of severe meteorological phenomena, whilst having the same operational justification, could be considered as being limited to a geographical area that was not coincident with either the existing MWARA or RDARA area concepts. A third group of requirements, again having an identical operational justification concerns those operations that could be contained within the existing RDARA areas and typified by small commuter airlines or by support operations to offshore oil drilling installations, etc.

3.4.8.4 An IATA analysis of the coordinated current and projected aircraft operations for the expected life of the plan as embraced by those types of operation indicated in paragraph 3.4.8.3 c) above with the exception of the 'within RDARA area' requirements has revealed a requirement for 47 families of channels. These overall requirements have been derived by extrapolation of existing requirements, consideration of the factors outlined in paragraph 3.4.7.2, and the number and duration of communication contacts which have been determined by practical experience since 1966.

3.4.8.5 The provision of channels useable world-wide and available 24 hours a day under all propagation conditions necessitates a frequency family complement of a minimum of six frequencies ranging from 2850 kHz to 22 MHz. For some of the above world-wide families of channels, the projected channel loadings for worst case sunspot cycle indicate the possible need to augment the channel requirement by one channel in the upper (17 MHz or above) and by one channel in the mid (13 MHz - 6 MHz) order sub-bands.

3.4.8.6 Translation of the frequency family and channel requirements into frequency allotments, which is the prerogative of the ITU, will involve the application of interference range contours to service ranges and allotment areas to establish proper sharing criteria which can be administered by ICAO thus ensuring efficient spectrum utilization.

3.4.8.7 Time and information available to the Meeting did not permit a complete reconciliation between the aggregate of individual States' requirements on the one hand and the IATA consolidated requirements on the other. The Meeting therefore agreed to incorporate in its Report under Appendix B to this Agenda Item a summary of the indicated requirements submitted by States.

3.4.8.8 Consideration was given to the deployment of frequencies allotted for Operational Control (Flight Regularity) and to their areas of use. It was recognized that for purposes of optimum utilization of frequencies and also for certain of the requirements arising in areas less than world-wide, tentatively referred to as Sectional Areas, consideration of restricted geographical areas could present a practical means of economizing on frequencies. Certain States were in a position to permit definition of particular areas of interest, but in the general consideration of the application of such measures the Meeting agreed that the concept of "Sectional Areas" for Operational Control (Flight Regularity) Communications was insufficiently developed at this point in time. Nevertheless it was agreed that there was some merit in developing such a concept in a future work programme.



RECOMMENDATION 3/5 - PROPOSAL FOR POSSIBLE DEVELOPMENT OF
'SECTIONAL AREA' CONCEPTS FOR OPERATIONAL
CONTROL (FLIGHT REGULARITY) COMMUNICATIONS

That within the overall concept of Operational Control (Flight Regularity) communications, there may be a need that can be satisfied within restricted geographical areas that are not coincident with either RDARA or MWARA boundaries as at present defined. States and International Organizations in a position to do so are urged to study whether such sectional area concepts are useful with a view, if necessary, to presenting to future appropriate ICAO and international meetings proposals covering the description of rules pertaining to the allotment and use of frequencies in these areas.

RECOMMENDATION 3/6 - PROPOSAL FOR DEVELOPMENT OF A METHOD
TO DETERMINE THE FREQUENCIES TO BE
ALLOTTED ON A WORLD-WIDE BASIS FOR
OPERATIONAL CONTROL REQUIREMENTS

That States and International Organizations be urged to study and develop a method of determining the number of frequencies to be allotted on a world-wide basis for operational control requirements taking into account the contents of paragraphs 3.4.7 and 3.4.8 above.

3.4.9 The Meeting considered enabling clauses of Part I of Appendix 27 to the ITU Radio Regulations pertaining specifically to aeronautical operational control communications. These are summarized in Appendix C to this part of the Report.

RECOMMENDATION 3/7 - PROPOSAL FOR AMENDMENT OF PART I AND PART II
OF APPENDIX 27 TO THE ITU RADIO REGULATIONS

That the proposed amendments to Part I and Part II of Appendix 27 to the ITU Radio Regulations contained in Appendix C to this part of the Report, be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service in February 1978.

3.4.10 In addition to the amendments of Appendix 27, the Meeting considered it necessary to update Resolution 14 and to add a Recommendation reflecting that frequencies have been allotted for Aeronautical Operational Control Communications world-wide use and also to include reference to VOLMET areas in the modified Resolution 14. These are summarized in Appendix D to this part of the Report.

RECOMMENDATION 3/8 - PROPOSAL FOR AMENDMENT OF
RESOLUTION 14 OF THE RADIO
REGULATIONS AND ADDITION OF
A NEW RECOMMENDATION RELATING
TO AERONAUTICAL OPERATIONAL CONTROL
COMMUNICATIONS

That the proposed amendments to Resolution 14 of the ITU Radio Regulations and the addition of a new Recommendation (REC Aer 2(A)) as contained in Appendix D to this part of the Report, be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service in February 1978.

3.4.11 The Meeting considered the advisability of including in the revised Appendix 27, a definition for the term "Operational Control (Flight Regularity) Communications". It concluded however, that in as much as this constituted a generic term applicable equally to aeronautical mobile (R) bands other than those embraced in Appendix 27, such a definition would only be appropriate in the context of Article 7 of the Radio Regulations. The Meeting agreed to establish Recommendation 3/9.

RECOMMENDATION 3/9 - DEFINITION OF THE TERM "AERONAUTICAL
OPERATIONAL CONTROL COMMUNICATIONS"
FOR INCLUSION IN ARTICLE 7 OF THE RADIO
REGULATIONS

That States include the following in their proposals for amendment of the ITU Radio Regulations:

ADD 429A Aeronautical Operational Control Communications

Aeronautical Operational Control Communications
in the aeronautical mobile (R) service are intended
to permit communications related to regularity of
flight.

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APPENDIX ARDARA Frequency RequirementsAUSTRALIA

	3/3.5 MHz	4.7/5.6/6.6 MHz	9/10/11.3 MHz	13.3 MHz	18 MHz
9A	2	4	2	-	-
9E	2	4	2	-	-
9F	2	4	2	-	-
9G	2	4	2	-	-
9H	2	4	2	-	-
9I	2	4	2	-	-
9J	2	4	2	-	-
Common to all RDARAs	3	3	3	3	3

Alternatively, the Federal Republic of Germany requires one domestic family for exclusive use with one frequency in the 2850-3025 kHz band and one frequency in the 3400-3500 kHz band.

India In addition to existing RDARA frequency requirements, India requires 3 frequencies in the 2000-2065 kHz band for domestic services only. (See para 6.5 of Agenda Item 6 of this Report.)

New Zealand In the light of the boundary changes agreed for 9D under paragraph 2.1.12.4 of Part 2 of this Report, it will be required that New Zealand submit revised frequency requirements for this RDARA to the IFRB.

	MHz	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
Papua, New Guinea	9B	4			4		4					
People's Republic of China	*	22	15	5	32	24	16	10	9	10	4	3

* New RDARA 6G in lieu of existing sub-areas.

	MHz	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
United Kingdom	RDARA 1+1B		2		2			1	1	1		

Note: Sub-RDARA - 1B frequency requirements de-commonized from other RDARA sub-areas.

U.S.A.	6C	1			1		1		1			
	9B		1		1							
	10A	6	5	3	6	6	4	2	3			
	11	6	8	6	9	7	3	1	2	1	2	
	12A	1	1	1	1							
	12D	1			1	1	1					

		3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
U.S.S.R.	2							3	6	2	1	
	2A	8	7	4	7	7	5	3				
	2B	6	5	3	8	7	3					
	2C	9	6	3	6	7	3	2				
	3							3	4	1	1	1
	3A	6	5	2	5	7	6					
	3B	8	5	2	8	6	10	2				
	3C	8	6	3	7	6	3	3				
<hr/>												
Venezuela	RDARA 12+12G	4	3	1	3	2	1		1			

APPENDIX BOperational Control (Flight Regularity)
Frequency Requirements

- 1) Australia requires one world-wide family of frequencies comprising one each in bands 5-6, 10, 13, 18 MHz, and possibly others depending on final conclusions as to how the service is to be operated.
- 2) Canada foresees that it will require two world-wide families of frequencies.
- 3) Denmark requires one frequency in the 4.7 MHz band and one frequency in the 5.6 MHz (Greenland) band.
- 4) Denmark, Norway and Sweden require one world-wide family of frequencies shared between the three States to serve all airline operators with home address in Denmark, Norway and Sweden.
- 5) France requires two world-wide families of frequencies (currently one full family is in operation, including 21945 kHz in France and some frequencies overseas).
- 6) Germany, Federal Republic of, requires one world-wide family of frequencies comprised of 1 channel in the 4.6/6.6/10/13/18 and 22 MHz bands and a further regional frequency family in the 3.5, 4.6 and 6.6 MHz band.
- 7) Ireland requires two frequencies in the 3 or 3.5 MHz band, two frequencies in the 4.7 or 5.6 MHz band, and one frequency in the 8.8 MHz band.
- 8) The Netherlands, Kingdom of the, requires one family of frequencies to be used in their part of the existing RDARA. One complete frequency family (including the 21 MHz band) is required to cover the needs of the Netherlands aircraft operating agencies for world-wide operational control.
- 9) New Zealand will meet its requirements by implementing in 1977 HF SSB facilities on 6526, 10093, 13356, 17933 and 21886. Additionally it requires a frequency in the 3.5 MHz band.
- 10) Papua New Guinea requires 6 frequencies as follows:
 - a) 1 in the 3 MHz band
 - b) 1 in the 4 MHz band
 - c) 3 in the 5 MHz band
 - d) 1 in the 6 MHz band.
- 11) The United Kingdom requires two world-wide families of frequencies and two frequencies in the 3 or 3.5 MHz band and two frequencies in the 4.7 or 5.6 MHz band.

12) Frequency requirements of the United States:

MHz	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
	3	6	3	6	8	4	8	6	6	8	

13) Frequency requirements of the U.S.S.R:

MHz	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
		1		2	3	2	1	3	3	3	2

14) Venezuela requires one frequency in the 10, 11, 13, 17 and 22 MHz bands.

APPENDIX CProposed Revisions to Part I and Part II of Appendix 27

Note 1: The following paragraphs are numbered in accordance to the corresponding paragraphs in Appendix 27. The following abbreviations are used:

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph

NOC - no change to an existing paragraph

Note 2: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

PART II

ADD

Section O

ADD

Frequencies allotted for world-wide use

ADD 27/73A Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area

Note: Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, to the extent possible, frequencies allotted to RDARAs and Sub-RDARAs should be used.

Reason: To define the purpose for which such frequencies may be used.

NOC 27/32

Note: The studies referred to in para 5.1.9 and Recommendation 5/2 of the Report on Agenda Item 5 should also consider provisions concerning the method of using transparencies for world-wide use.

MOD 27/56 2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARA, VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In ~~each~~ such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason: To make the same provision for aeronautical stations serving a World-Wide function.

NOC 27/57 to 27/61

MOD 27/186 Frequency Allotment Plan by Areas
(by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas)-

Reason: To indicate that the title embraces all uses of the frequencies in the frequency allotment plan.

MOD 27/188 The following list does not include the world wide common (R) and (OR) frequencies of 3023.5, 3023 and 5680 kHz. ~~or the world wide frequencies of 3499, 6526, 8963, 10.093 and 13.256-kHz.~~ The allotment of these frequencies is shown in Article 2.

Reason: Consequent to inclusion of Aeronautical Operational Control frequencies in the new allotment table.

MOD 27/189 Note: The Table will need to include provision for Aeronautical Operational Control frequencies.

MOD 27/193 2. A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or Aeronautical Operational Control which receive full protection during the twenty-four hours.

Reason: To add channels allotted for Aeronautical Operational Control use.

ADD 27/194A The frequency allotment for aeronautical operational control use is for assignment by administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.

Reason: To provide for operational control (flight regularity) communications between aircraft and associated aeronautical stations.

MOD 27/195 - 27/207, as follows:

Add new 3 kHz channels. (See MOD 27/16)
In the table (Pages (45) thru (55)), it is recommended that frequencies allotted for world-wide use be designated as follows:

Column 1 - "Frequency ~~ke/s~~ kHz" - ()
Column 2 - "Authorized Area of Use" - World-wide
Column 3 - "Remarks" - Aeronautical Operational Control (AOC)
See ADD 27/194A.

Reason: To clearly indicate frequencies allotted for world-wide operational control (flight regularity) communications and new channels made available by the plan.

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APPENDIX DProposed Amendment to Resolution 14 and Addition of new Recommendation

Note 1: The following paragraphs are numbered in accordance to the corresponding paragraphs in Appendix 27. The following abbreviations are used:

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph

NOC - no change to an existing paragraph

Note 2: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

The following changes to Resolutions and Recommendations are considered necessary.

MOD

RESOLUTION No. 14

RELATING TO THE USE OF FREQUENCIES OF THE AERONAUTICAL
MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

a) that the previous Allotment Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations, Geneva, edition of 1968) has been substantially revised by this Conference;

b) that air operations are subject to continuous changes;

c) that these changes require attention by the administrations concerned,
but

d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the coordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;

e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas and VOLMET areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;

f) that it is essential to distribute the communication traffic load as uniformly as possible over frequencies of the same order available.

g) that specific steps should be taken to ensure that the correct order of frequency is used;

h) that frequencies have been allotted for world-wide use

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;

2. to make as great a use as possible of antennas of appropriate directivity and efficiency in order to minimise possibilities of mutual interference within an area or between areas;

3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;

4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;

5. to collect precise data on the operation of their high frequency communication systems, particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: To include references to VOLMET Areas and to Aeronautical Operational Control Communications.

ADD

RECOMMENDATION Aer 3

RELATING TO A STUDY OF THE FEASIBILITY OF CREATING
NEW HIGH FREQUENCY BANDS TO BE ALLOCATED EXCLUSIVELY
TO THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all of the requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive allocations in the 20-24 MHz region of the spectrum when preparing their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the aeronautical mobile (R) service at the next competent WARC.

Agenda Item 4: Preparation of an SSB implementation plan for transition from double sideband to single sideband radio telephony operation, with due consideration to its operational and economic impact

4.1 General

4.1.1 The Meeting reviewed all working papers submitted under this Agenda Item as well as those parts of other working papers which were identified as being helpful to the discussions.

4.1.2 At the outset the Meeting recognized that the transition from double sideband to single sideband had already commenced on the date of entry into force of the Final Acts of the ITU Extraordinary Administrative Radio Conference for the Aeronautical Mobile (R) Service (Geneva, 1966). Discussions of the Meeting centred on the commencement and completion dates of the final phase of the transition plan, technical provisions necessary during the transition period, and method of transition.

4.1.3 Commencement and Completion Dates

4.1.3.1 After considerable discussion, the Meeting decided that the transition should commence on 1 April 1979, that is the date of coming into force of the Final Acts of the World Administrative Radio Conference for the Aeronautical Mobile (R) Service (1978), and should be completed on 1 February 1983, the date of entry into force of the revised Frequency Allotment Plan contained in Appendix 27 (Rev) to the ITU Radio Regulations. Notwithstanding the commencement and completion dates noted above, it was also recognized that the economic impact and logistic factors involved in phasing out double sideband usage for domestic purposes necessitated the provision of the possibility of extending the completion date in exceptional cases to 1 February 1987.

4.1.4 Technical Provisions

4.1.4.1 The Meeting recognized that during the phasing out of double sideband emissions and the phasing in of single sideband emissions suitable technical provisions must be provided to accommodate the transition to the new channelling and allotment plans of Appendix 27 (Rev) to the ITU Radio Regulations.

4.1.4.2 The Meeting noted that the term "aircraft station transmitter types" had been used in certain cases to provide for exchange of existing aircraft transmitters in connection with maintenance, without this being regarded as an installation. It was, however, agreed that transmitters manufactured after 1 February 1983 should comply with the proposed new specifications.

4.1.4.3 The Meeting considered all aspects related to the definition of the bandwidth of unwanted emissions, and agreed to a continuation of present figures and a new set of figures, shown in the Appendix to this part of the Report indicating proposed changes to Appendix 27 to the ITU Radio Regulations. It was considered that these figures are representative of results obtainable with equipment fitted in modern aircraft, but it was also realized that an adequate period of time would be required to obtain world-wide implementation in aircraft, and an appropriate transition time was agreed.

4.1.5 Requirement to provide compatibility between DSB emissions and SSB emissions during transition plan

4.1.5.1 The Meeting recognized that there would exist the simultaneous use of double sideband and single sideband during the transition period. Agreement was reached for the use of A3H in addition to A3J where aeronautical and aircraft stations are equipped for A3H single sideband operation. Compatibility would, thus, be afforded between double sideband and single sideband use.

4.1.6 In the light of the foregoing considerations and conclusions the Meeting made the following recommendation:

RECOMMENDATION 4/1 - PROPOSAL FOR A TRANSITION PLAN
TO SINGLE SIDEBAND OPERATION

That the proposed time frame and provisions for the transition to single sideband operation as contained in the Appendix to this part of the Report be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service in February 1978.

APPENDIX1. Resolutions

1.1 The Meeting agreed that the following three draft resolutions are necessary for a successful conversion plan to SSB operation:

ADDRESOLUTION No. Aer 7

RELATING TO THE IMPLEMENTATION OF THE NEW ARRANGEMENT
OF HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE
AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 AND 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that each of the high frequency bands allocated exclusively to the aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this conference to provide for SSB techniques;
- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;
- f) that the Final Acts of this Conference will enter into force on 1 April 1979:

g) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on 1 February 1983;
recognizing

a) that the aeronautical mobile (R) service is a safety service

b) that some frequencies have been allotted for world-wide use
resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;

2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single sideband operation shall be made in accordance with the following provisions:

2.1 the carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;

2.2 the carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;

2.3 that, prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be co-ordinated with the International Civil Aviation Organization in accordance with No. (MOD) 27/20 of Appendix 27 (Rev) to the Radio Regulations;

3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations shall be replaced by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);

4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2850 and 17970 kHz shall comply with the following conditions:

4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operation at the earliest possible date; furthermore; they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3 until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized. Double sideband operations may, however, be continued in exceptional cases for domestic use until 1 February 1987, provided that harmful interference which may be caused to the International Aeronautical Mobile (R) Service operating in the single sideband mode be resolved by application of Article 15 of the ITU Radio Regulations, noting in particular RR 667 and RR 674. The Administrations requiring such an extension of the full implementation of single sideband are, nevertheless, urged to cease double sideband operations as soon as possible.

Reason: With the Appendix 27 (Rev), an orderly transition to the new plan is required.

ADDRESOLUTION No. Aer 6 - (A)

RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours G.M.T. on 1 February 1983;
- c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;
- d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

- 1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:
 - 1.1 the provisions of Nos. 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz;
 - 1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the I.F.R.B;

1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:

- a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
- b) if the finding is favourable with respect to No. 558, the date of 29th April 1966 shall be entered in Column 2b;
- c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B. shall be entered in Column 2b;

1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

2. that on the date of coming into force of the new Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 kHz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

2.1 assignments with double sideband emission (A3), mentioned in paragraph 4.4 of Resolution Aer 7, and already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in column 2a or 2b as appropriate until 1 February 1983. A date in column 2a for a frequency assignment using double sideband (A3) as mentioned in paragraph 4.4 of proposed Resolution Aer 7, shall be transferred to column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with Administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in column 2b.

- 2.2 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2a;
- 2.3 assignments found favourable with respect to No. 558 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2b;
- 2.4 all other assignments shall have (the day AFTER the date of signing the AWARC Agreement, Geneva, 1978) entered in column 2b;

3. that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the I.F.R.B. as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

REASON: With the revision of Appendix 27, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

ADD

RESOLUTION No. Aer 6 - (B)

RELATING TO THE IMPLEMENTATION OF THE FREQUENCY ALLOTMENT
PLAN IN THE HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO
THE AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 AND 17 970 KHZ

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between 2850 and 17 970 kHz) to the aeronautical mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;
- b) that the 1966 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;

- c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a safety service;
- e) that the present conference has further modified the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to implement the modifications made by the present conference, with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows:
 - 1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;
 - 1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action;
2. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

REASON: To provide for transfer of out-of-band assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

2. Addition to Appendix 27

- 2.1 The following additional draft provisions to Part I of Appendix 27 to the ITU Radio Regulations are considered necessary:

MOD 27/11

- 'a) ~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and ~~3000~~ 2700 Hz ~~cycles-per-second~~ and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3 A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see ADD 27/66A and ADD 27/66B).

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

REASON: To define an audio bandwidth necessary for A3J operation consistent with 3kHz channel separation and to provide accommodation for other permitted classes of emission.

MOD 27/50

1.1 Telephony - Amplitude modulation:

- | | |
|---|------------------|
| - double sideband | (A3)* |
| - single sideband, reduced-carrier | (A3A) |
| - single sideband, full carrier | (A3H)* |
| - single sideband, suppressed carrier | (A3J) |
| - two independent sidebands | (A3B) |

*A3 and A3H to be used only on 3023 kHz and 5680 kHz and in accordance with proposed ITU Resolution Aer2-(A) paragraph 4.4.

REASON: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of CCIR Study Group 8 Special Meeting.

MOD 27/54

Add to revised table on Page 5-9 of the Report on Agenda Item 5 the following:

- a) Asterisks (*) beside A3 and A3H in the Table
- b) The following note beneath the Table:

"*A3 and A3H to be used only on 3023 kHz and 5680 kHz, and in accordance with proposed ITU Resolution Aer2-(A), paragraph 4.4."

MOD 27/65

- 3.3.1 In an ~~single-sideband-A3H, -A3A, A2H, A3J, A7J or A9J, A3A~~ transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (P_m) of the transmitter in accordance with the following table:

REASON:

To align with MOD 27/50 and MOD 27/51.

MOD 27/66

- 3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Frequency separation Δ from the assigned frequency ke/s kHz	Minimum attenuation below mean Power (P_m) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40 Aeronautical stations: $43 + 10 \log_{10} P_m \text{ (Watts)*}$

*attenuation need not exceed 60dB

REASON:

To accommodate airborne equipments currently in use which are capable of acceptable operation in a 3 kHz channel spaced environment.

ADD 27/66A

- 3.3.3 In an A2H, A3J, A7J or A9J transmission, the peak envelope power (P_p) of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the peak envelope power (P_p) of the transmitter in accordance with the following table.

REASON:To accommodate classes of emission as set forth in MOD 27/50 and MOD 27/51 and to express power level in peak envelope power (P_p) to provide consistency in the Radio Regulations.

ADD 27/66B

- 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983

Frequency separation Δ from the assigned frequency kHz	Minimum attenuation below peak envelope power (P_p) dB
$1.5 \leq \Delta < 4.5$	30
$4.5 \leq \Delta < 7.5$	38
$7.5 \leq \Delta$	Aircraft stations 43 Aeronautical stations $43 + 10 \log_{10} P_p$ (Watts)*

*attenuation need not exceed 60 dB

REASON:

To reduce the bandwidth of unwanted emissions, to express power level in peak envelope power (P_p), to reflect the Report of CCIR Study Group 8 Special Meeting, paragraph 7.2.2, and to provide for the termination of use of aeronautical station transmitters not capable of operation in accordance with this plan.

Agenda Item 5: Review of Appendix 27 to the ITU Radio Regulations, including the technical principles contained in Part I, taking into account the Report of the CCIR Study Group 8 Special Meeting, with a view to formulating proposals to assist Administrations in the preparatory work for the WARC AM(R)S (1978)

5.1 General

5.1.1 The Meeting briefly reviewed all Working Papers submitted under this Item, and examined those areas where further discussion appeared necessary to arrive at a consensus.

5.1.2 Classes of Emissions

5.1.2.1 Following a brief review, concerning the need to retain emissions such as A1, F1, it was agreed that these classes of emissions should be retained in Appendix 27 to the ITU Radio Regulations, but with specified conditions regarding usage.

5.1.3 Maximum peak envelope power

5.1.3.1 Discussion on this item centred on the power requirements of aircraft transmitters. The Meeting agreed that the maximum peak envelope power for aircraft transmitters contained in Appendix 27 to the ITU Radio Regulations should be 400 Watts. However, bearing in mind SSB equipment now installed in civil aircraft, the Meeting considered that an absolute maximum of 400 Watts could be too restrictive. It therefore proposed an amendment to 27/62 indicating that in exceptional cases, an increased power which should not exceed 600 W P_p could be used, provided no harmful interference results.

5.1.4 Frequency tolerance

5.1.4.1 The Meeting considered frequency tolerance requirements of both aeronautical and, particularly, aircraft stations. It was agreed not to propose inclusion of frequency tolerance provisions in Appendix 27 to the ITU Radio Regulations and not to propose changes to ICAO Annex 10 pertaining to frequency tolerance of equipment for strictly

national use; however, this matter could be dealt with by an appropriate amendment to Appendix 3 to the ITU Radio Regulations. It was also noted that the CCIR Study Group 8 had considered this subject, and that its conclusions are contained in the Report by Study Group 8 to the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, 1977 (Special Meeting held in Geneva, 22 to 26 March 1976).

5.1.5 Frequency separation

5.1.5.1 For supersonic aircraft operation, the Meeting considered the possible requirement for frequency separation larger than 3 kHz. It came to the conclusion, however, that the Doppler shift due to supersonic speeds is not sufficiently large to demand a need to accommodate frequency separation larger than 3 kHz.

5.1.6 Carrier (reference) frequency

5.1.6.1 The Meeting considered the anomaly of using the words "carrier (reference) frequency" and decided, for the present, to retain the terms.

5.1.7 Retention of A3A

5.1.7.1 Consideration was given to the retention of A3A type of emission for communication purposes with supersonic aircraft. The Meeting took note that the level of carrier suppression in aircraft equipment working in the A3J type of emission is sufficient in the majority of cases to provide for communications with aircraft flying at supersonic speeds.

5.1.8 Having established agreement on other items in Part I of Appendix 27 to the ITU Radio Regulations, the Meeting made the following Recommendation:

RECOMMENDATION 5/1 - PROPOSAL FOR AMENDMENT OF
PART I OF APPENDIX 27 TO
THE ITU RADIO REGULATIONS

That the proposed amendments to Part I of Appendix 27 to the ITU Radio Regulations contained in the Appendix to this part of the Report, be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service in February 1978.

5.1.9 The Meeting noted that there are unresolved questions which require further study regarding the use of transparencies to establish interference range contours including their application to frequencies for world-wide use. It was unable in the time available to deal with these questions, but it agreed to the following Recommendation:

RECOMMENDATION 5/2 - USE OF TRANSPARENCIES TO ESTABLISH
INTERFERENCE RANGE CONTOURS IN THE HF BANDS

That States in a position to do so consider the Report of the Special Meeting of CCIR Study Group 8 (Geneva, 1976) with the view to making appropriate amendments to clarify the provisions relating to the use of interference range contours, particularly 27/24 and 27/34.

Note:- In clarifying the provisions relating to the use of transparencies to establish interference range contours, consideration should also be given to their application to frequencies for world-wide use.

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APPENDIXProposed Revisions to Part I of Appendix 27

Note 1: The following paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27. The following abbreviations are used:

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph.

NOC - no change to an existing paragraph

Note 2: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

NOC 27/1 - 27/8 inclusive

MOD 27/9 'A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different aeronautical mobile (R) bands and is intended to permit communication at any time ~~and within ever-any-distance~~ the authorized area of use (27/189 - 27/207) between aircraft ~~in-flight~~ stations and appropriate aeronautical stations.'

Reason: In order to clarify the definition and to align it with ITU R.R. No. 33.

MOD of title ~~A. Determination of Channel Width~~ A. Channel Characteristics

Reason: For clarification

MOD 27/10 'The A frequency ~~separations~~ separation between carrier (reference) frequencies of 3 kHz ~~is indicated in the following table are~~ adequate to permit communications using the classes of emission referred to in Nos 27/49-27/52 in the frequency bands between 2850 kHz and 17 970 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.'

Reason:

It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channelling is based on 3 kHz separation in all bands.

ADD 27/11A

For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason: To reflect the Report of CCIR Study Group 8 Special Meeting.

MOD 27/12

- 'b) The use of channels, indicated in 27/16-as-derived-from-the-above-table-(No.-27/10), for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission. no inherent-priority-being-given-to-any-particular-class-of-emission.'

Reason: Amended to be consistent with SSB operation.

SUP 27/13

Reason: No longer applicable.

SUP 27/14

Reason: No longer applicable

MOD 27/15

- 'e) The arrangements contemplated in Wes-27/12-and-27/14- No. 27/12 should be made under the Articles of the International Telecommunications Convention and the Radio Regulations entitled "Special-Agreements".'
"Special Arrangements".'

Reason: For clarification.

MOD 27/16

'The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10, will be found in the following table.'

Reason: To clearly indicate that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing and to provide band-edge protection.

Note: The following table is illustrative only. The final table will follow the format of the existing table in Appendix 27 to the ITU Radio Regulations and specify each channel carrier (reference) frequency. The final table will also include those channels which are near band edges and have less than 3 kHz bandwidth.

MOD 27/16

kHz			
2850 - 3025	5450 - 5480	8815 - 8965	13 260 - 13 360
2851 to 3019 in steps of 3 kHz 3023*(R) & (OR) 58 CHANNELS	Region 2 5451 to 5475 in steps of 3 kHz 9 CHANNELS	8816 to 8960 in steps of 3 kHz 49 CHANNELS	13 261 to 13 357 in steps of 3 kHz 33 CHANNELS
3400 - 3500	5480 - 5680	10 005 - 10 100	17 900 - 17 970
3401 to 3497 in steps of 3 kHz 33 CHANNELS	5481 to 5676 in steps of 3 kHz 5680*(R) & (OR) 67 CHANNELS	10 006 to 10 096 in steps of 3 kHz 31 CHANNELS	17 901 to 17 967 in steps of 3 kHz 23 CHANNELS
4650 - 4700	6525 - 6685	11 275 - 11 400	
4651 to 4696 in steps of 3 kHz 16 CHANNELS	6526 to 6682 in steps of 3 kHz 53 CHANNELS	11 276 to 11 396 in steps of 3 kHz 41 CHANNELS	

* A3 and A3H emissions may also be used.

MOD 27/17

'The ~~channels~~ carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and 5680 ~~ke/s~~ kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency 5680 ~~ke/s~~ kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.'

Reason: To reflect new carrier frequencies determined by frequency separation of 3 kHz.

MOD 27/18

'All stations directly involved in co-ordinated search and rescue operations using ~~3023.5~~ 3023 and 5680 ~~ke/s~~ kHz ~~for search and rescue purposes and employing single sideband (SSB)~~ shall transmit ~~a carrier at a level sufficient to permit reception on a double sideband (DSB) receiver and shall be able to receive DSB transmissions only in the upper sideband mode (See also MOD 27/73)'~~.

Reason: If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should however it be agreed that single sideband operation be introduced on these frequencies, the preceeding change to 27/18 would appear to be necessary.

Note to 27/17 and 27/18 :

There is a need for the WARC AM(R)S (1978) to adopt a resolution similar to ITU Resolution Aer-1 as 3023 and 5680 kHz are common to the (R) and (OR) Services (See Resolution Aer2-(D)).

SUP 27/19

Reason: If it is agreed to accommodate equipment capable of operating only on whole kHz then the common (R) and (OR) channel 3023.5 kHz can be replaced by 3023 kHz, and 27/19 would no longer be required.

NOC 27/21

NOC 27/22

MOD 27/23

'Resort to the co-ordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/22 are not satisfactory.'

Reason: To clarify the intent.

MOD 27/24

'The transparencies associated with this Appendix show for the frequencies stated, contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW ~~(for emissions such as A1, F1, F2, and unmodulated emissions A3 and A3H)~~ producing a protection ratio of 15 dB of desired signal to interference signal on the same frequency as an aircraft operating at the limit of the service range of the desired aeronautical station transmitter. This limit is generally assumed to be at the boundary of the area concerned, and the service range is not included in the contour.'

Reason: Consequential to MOD 27/50 and MOD 27/51.

Note: See Recommendation 5/2.

NOC 27/49

MON 27/51

1.2.1 Amplitude modulation:

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission~~ (A2)
- telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling - single sideband - full carrier A2H
- ~~multichannel voice frequency telegraphy, single sideband, reduced carrier~~ (A7A)
- ~~multichannel voice frequency telegraphy, single sideband, full carrier~~ (A7H)
- multichannel voice frequency telegraphy - single sideband - suppressed carrier A7J
- other transmissions such as automatic data transmission - single sideband - suppressed carrier. A9J

MOD 27/52

1.2.2 Frequency modulation:

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- ~~telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission~~ (F2)

** A1 and F1 are permitted provided they do not cause harmful interference to the classes of emission A2H, A3J, A7J and A9J. In addition A1 and F1 emissions shall be in accordance with the provisions in ADD 27/66A and ADD 27/66B and care should be taken not to place these emissions at or near the edges of the channel.

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of the CCIR Study Group 8 Special Meeting.

SUP 27/53

Reason: No requirement for this type of emission.

MOD 27/54

2. Power

- 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

Replace table by:

Class of emission	Stations	Maximum peak envelope power
A2H, A3J, A7J, A9J (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
A3 * A3H * (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1.	Aeronautical stations Aircraft stations	1.5 kW 75 W

*A3 and A3H to be used only on 3023 kHz and 5680 kHz, and in accordance with proposed ITU Resolution Aer2-(A), paragraph 4.4.

Reason: To reflect the view of the Meeting. See also MOD 27/62.

MOD 27/55 '2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1 and F1 F2 ~~and unmodulated A3 and A3H emissions~~) used as a basis for the interference range contours.'

Reason: To be consistent with MOD 27/51 and MOD 27/52

MOD 27/62 '2.4 It is recognized that the power employed by aircraft transmitters may, in practice exceed the limits specified in No 27/54. However, the use in exceptional cases of such increased power, (which should not exceed 600 W P_e) shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.'

Reason: To reflect the view of the Meeting.

MOD 27/63

Carrier mode	Level N (dB) of the carrier with respect to peak envelope power
Full carrier (for example (A3H) A2H)	$0 > N > -6$
Reduced carrier (A3A)	$-6 > N > -26$
Suppressed carrier (for example A3J)	<u>Aircraft Stations - $26 > N$</u> <u>Aeronautical Stations - $40 > N$</u>

Reason: To align emission designators with MOD 27/50 and MOD 27/51 and to add provisions for carrier suppression for aeronautical stations in accordance with ICAO Annex 10 and the Report of CCIR Study Group 8 Special Meeting.

SUP 27/64

Reason: To reflect that the new allotment plan will be based on single sideband operation.

MOD to subtitle 3.3

'Tolerance for levels of SSB emission outside the necessary bandwidth.'

Reason: To reflect applications to other classes of emission.

SUP 27/67-27/71 inclusive.

Reason: No longer applicable.

MOD 27/72

'4.1 ~~The assigned frequency~~ For single sideband radiotelephone emissions, except class of emission A2H, the assigned frequency shall be at a value ~~1500 cycles~~ 1400 Hz above the carrier (reference) frequency.*'

*Notes: 1. Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.

2. For classes of emission A1 and F1 the assigned frequency shall be chosen in accordance with the provisions of the footnote to MOD 27/51 and MOD 27/52.

Reason: To define the assigned frequency taking into account MOD 27/50, MOD 27/51, MOD 27/66 and the Report of the CCIR Study Group 8 Special Meeting.

MOD 27/73 '4.2 Stations employing double sideband emissions (A3) shall operate with assigned ~~frequencies~~ frequency at ~~the values listed in the Allotment Plan~~ 3023 kHz or 5680 kHz (see 27/50).'

Reason: To take into account DSB operation on 3023 kHz and 5680 kHz.

Agenda Item 6: Consideration of the continuing role of ICAO in the preparation of frequency assignment plans and co-ordination procedures to assist in the implementation of the decisions of the ITU WARC AM(R)S (1978)

6.1 General

6.1.1 The Meeting reviewed all Working Papers identified as being applicable to Agenda Item 6. The Meeting then further considered the following topics and agreed on the Recommendations contained in this part of the Report.

6.2 Continuing role of ICAO

6.2.1 The Meeting agreed to the continuation of the traditional ICAO co-ordination activities in the preparation of allotment plans and the operational utilization of the assignments within MWARA, RDARA and VOLMET areas.

6.3 Role of ICAO in assignment of long distance operational control communication frequencies

6.3.1 Discussions centred on the steps necessary to achieve assignment of long distance operational control communication frequencies. It was revealed that administrative functions are in a very broad and general sense similar to those involved in the administration of the aeronautical VHF band. In order to more clearly analyze the process, an attempt was made to identify functions of the organizations involved in the process. The following functions were identified:

- a) the aircraft operating agency - is normally responsible for establishing operational control requirements. An aircraft operating agency, as defined in Annex 10, Volume II, Chapter 1, could be a State, private aircraft operator, subsidiary air carrier, flag air carrier, etc.
- b) Agent responsible for the aeronautical station - proposes the technical requirements.
- c) Civil Aviation Authority - co-ordinates other operational requirements.
- d) ICAO - co-ordinates international operational requirements.
- e) Telecommunications authority - examines regulatory aspects of the intended application and carries out the necessary notification of frequency assignments to the IFRB.
- f) ITU/IFRB - performs examination, registration and publication.

6.3.2 The Meeting then considered the sequential steps necessary in the co-ordination process:

- a) the determination of specific operational requirements by the aircraft operating agency;
- b) the submission to the State aeronautical authority, in whose territory the aeronautical station is to be located, of a specific proposal and associated detailed operational and technical description of the facilities proposed to be established (including inter alia location of station, complement and order of frequencies required, transmitter power, area of service expected in each frequency order, hours of operation, number of aircraft to be served, expected channel loadings, etc., including, as appropriate, specifically requested assignments);
- c) liaison between the State aeronautical authority concerned and ICAO Headquarters in the light of b) above for the latter to determine the suitability or otherwise of frequencies to be assigned thus resulting in appropriate advice from ICAO to the State concerned. This process could be done in collaboration with the IFRB under the terms of paragraph 27/20 of Appendix 27 (Rev) to the ITU Radio Regulations and the State telecommunication authorities as appropriate;
- d) established notification action by the State concerned with regard to registration of the assignments with the IFRB, etc.;
- e) subsequent to the establishment of assignments, State authorities concerned should take action to determine that frequencies are not used in an unauthorized manner nor subject to harmful interference.

6.3.3 The Meeting also took notice that long distance operational control communications had been discussed in ICAO in 1973. After assessing States' comments, the ICAO Council approved certain interim guiding principles for operational control communications and State letter AN 7/6.6 - 74/43 of 10 April 1974 was subsequently sent to all ICAO member States as policy guidance material. The Meeting decided to consider at further meetings the set of controlling principles contained in the ICAO State letter. The Meeting observed that although the aforementioned guiding principles were originally intended for an interim measure under the constrained circumstances of only limited Appendix 27 world-wide frequencies being at that time available, the principles could be refined for a more permanent application.

6.3.4 Using as a basis the interim guiding principles contained in State letter AN 7/6.6 - 74/43, the Meeting developed a set of basic principles, noting that it may be necessary to further develop and add to these principles as time progresses. It agreed that these principles should be included in Annex 10 for the guidance of States, and formulated the following Recommendation accordingly.

RSPP

RECOMMENDATION 6/1 - AMENDMENT OF ANNEX 10, - GUIDING
PRINCIPLES FOR LONG DISTANCE
OPERATIONAL CONTROL COMMUNICATIONS

That Annex 10, Volume I be amended as follows:

ADD a new Attachment C to Part II:

ATTACHMENT C TO PART II - GUIDING PRINCIPLES FOR LONG
DISTANCE OPERATIONAL CONTROL COMMUNICATIONS

Note (1) These principles are intended primarily for the guidance of States during the period pending a suitable revision of the Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 to the ITU Radio Regulations).

Note (2) The numerical sequence of the clauses below does not signify any order of relative importance.

- 1) Aeronautical Operational Control HF Stations should be authorized where no other means for the exercise of long distance operational control are available or where the use of the normal communication services provided for safety and regularity of flights are unsuitable or inadequate;
- 2) the total number of ground stations on the world-wide channels should be kept to a minimum consistent with economic and operational efficiency;
- 3) thus, if possible, and practicable, one station should serve aircraft operating agencies in two (or more) adjacent States and there should not normally be more than one station per State;
- 4) aeronautical stations could be operated by States on behalf of one or more aircraft operating agencies providing the agencies' requirements for flexibility and direct communication to their aircraft can be met, or aeronautical stations could be operated by an aircraft operating agency or a communication agency serving the interests of one or more airlines and operating under licence issued by the State or States concerned;
- 5) the licences should be issued on a regular renewal basis to permit their withdrawal or amendment, if necessary, to meet ICAO requirements, and pursuant to RR 415 and 432 should prohibit "public correspondence" or point-to-point type traffic;

RECOMMENDATION 6/1 - AMENDMENT OF ANNEX 10, - GUIDING
(cont'd) PRINCIPLES FOR LONG DISTANCE
OPERATIONAL CONTROL COMMUNICATIONS

RSPP

- 6) VHF (GP or OPC channels) and not HF should be used when an aircraft is within the coverage of an appropriate VHF aeronautical station.

Note:- The specific categories of messages that may be handled on Aeronautical Mobile (R) Service channels are prescribed in Annex 10, Volume II, Chapter 5, para 5.1.8. The same Chapter defines the Standard communications procedures for the Service including the requirements for maintaining watch in para 5.2.2. In accordance with RR 730, Article 18 of the ITU Radio Regulations, licences should define the purpose of the station for Operational Control (as defined in Annex 6, Part I of ICAO) and should specify the general characteristics in accordance with Appendix 27 of the Radio Regulations.

6.3.5 The Meeting expressed the view that frequencies cannot normally be assigned for exclusive use by one aircraft operating agency, but that frequency sharing techniques should be employed.

6.4 Draft plan for use of the existing shared band 21 870 - 22 000 kHz

6.4.1 The Meeting recognized that, while the band 21 870 - 22 000 kHz is beyond the scope of Appendix 27, there exists a need to use this band to provide frequencies that propagate world-wide and to reduce traffic congestion on the present bands allocated to the aeronautical mobile (R) service. In this connection it was felt that ICAO should be directed to prepare a draft plan, as feasible, for the possible use, on an exclusive basis, of part of all of this band similar to the plans in Appendix 27 for the other aeronautical mobile (R) service bands.

6.4.2 In the light of the foregoing considerations and conclusion, the Meeting made the following recommendation:

RECOMMENDATION 6/2 - DRAFT PLAN FOR USE OF EXISTING SHARED BAND 21 870 - 22 000 kHz

That ICAO draft a plan, for use on an exclusive basis, of all or part of the existing shared band 21 870 - 22 000 kHz, similar to those provided for the existing exclusive bands of the aeronautical mobile (R) service in Appendix 27. This draft plan should be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service in February 1978 with a view to forwarding the agreed plan to an appropriate ITU World Administrative Radio Conference competent to deal with the matter.

6.5 Proposal to utilize frequencies in the band 2000 - 2065 kHz

6.5.1 The Meeting considered a proposal to utilize, in certain cases, frequencies of a lower MHz order in the 2000 - 2065 kHz band for short range aeronautical mobile (R) service communications. This proposal was intended to overcome difficulties experienced in the absence of VHF coverage during late night/early morning hours, particularly in years of very low sun spot activity. The Meeting noted that important technical problems exist in the utilization of frequencies of this order in many existing aircraft. It appeared that the use of frequencies in this band is therefore inappropriate for the aeronautical mobile (R) service. It noted, however, that States encountering such difficulty may find the temporary use of such lower frequencies appropriate for domestic purposes in the aeronautical mobile (R) service within the framework of the existing ITU Radio Regulations.

6.6 Advance preparation for amendment of Annex 10

6.6.1 The Meeting considered that advance planning is believed to be advisable within ICAO to ensure a timely revision of the appropriate Annexes to the Convention on International Civil Aviation following the Final Acts of the ITU World Administrative Conference, Aeronautical Mobile (R) Service in February 1978. It noted that any work done by the Meeting in this regard could not be examined in detail in the time available, and therefore could have no status other than to stimulate thinking on the part of States regarding a possible course of action by ICAO in the future. The Meeting thereupon developed the material contained in Appendix A to the Report on Agenda Item 6, and made the following recommendation:



RECOMMENDATION 6/3 - ADVANCE PREPARATION FOR AMENDMENT OF ANNEX 10
PURSUANT TO THE FINAL ACTS OF THE ITU WARC
AM(R)S IN 1978

That the material in Appendix A to this part of the Report be used by ICAO as the basis for proposals for amendment of Annex 10, subject to such changes as may be necessary, pursuant to the ITU WARC AM(R)S (1978).

6.7 Consideration of additional draft proposals for amendment of Appendix 27
to the Radio Regulations and consequential proposals for amendment of the
Radio Regulations

6.7.1 The Meeting noted that a number of necessary proposals for amendment of Appendix 27 to the Radio Regulations had not been included in proposals emanating from the Reports on other Agenda Items. Consequent to these proposals, a number of amendments to the ITU Radio Regulations would also be required. It therefore developed the necessary proposals, which are included in Appendix B to the Report on this Agenda Item.

6.7.2 The Meeting also noted that the relatively large number of separate recommendations relating to proposed amendments to Appendix 27, necessitated by the need for progressive preparation of the Report, made it difficult to assimilate readily the total effect of all the proposed amendments. It was of the opinion that the advantage to States of having a consolidated proposal for amendment of Appendix 27 justified the effort of preparing such a consolidation. Since it was not possible in the time available to achieve this consolidation at the Meeting, it was agreed that the ICAO Secretariat should be assigned the task of preparing, as an editorial matter, a consolidation of all proposals for amendment of Appendix 27 to the Radio Regulations for use by States in their preparation for the ITU World Administrative Radio Conference in 1978.

6.7.3 In view of the above considerations, the following Recommendations were agreed:

RECOMMENDATION 6/4 - PROPOSAL FOR AMENDMENT OF APPENDIX 27
TO THE RADIO REGULATIONS AND CONSEQUENTIAL
AMENDMENTS TO THE RADIO REGULATIONS

That the proposed amendments to Appendix 27 to the ITU Radio Regulations and consequential amendments to the Radio Regulations contained in Appendix B to this part of the Report, be utilized by States as a basis for further consideration and submission of appropriate proposals to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service, in February, 1978.

RECOMMENDATION 6/5 - CONSOLIDATION OF PROPOSALS FOR
AMENDMENT OF APPENDIX 27 TO THE
ITU RADIO REGULATIONS

That the ICAO Secretariat, as an editorial matter, prepare a consolidation of all proposals of the Meeting for amendment of Appendix 27 to the ITU Radio Regulations, and consequential amendments to the ITU Radio Regulations, and that ICAO transmit this consolidation to States and the ITU for their use in preparing for the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service, in February 1978.

Secretariat Note:- See Appendices C, D, E and F to the Report on Agenda Item 6.

6.8 Further topics

6.8.1 The Meeting noted that a number of topics, some of which had been discussed only briefly, and some of which had not been discussed at all, would require further consideration. These topics were:

1. The feasibility of noting in the IFRB International Frequency List in column 13 note of "ICAO coordination".
2. The role of ICAO in the transition to SSB operation.
3. Role of ICAO in monitoring operational statistics to ensure that utilization continues to justify frequency assignments.
4. Subjective and objective assessment criteria to be used by ICAO in examining the utilization of allotments. A procedure needs to be determined for ICAO to respond to assignment applications in the event of these being unacceptable. ICAO should be in the position to offer alternate solutions for assignment requests.

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APPENDIX A

PROVISIONAL SUGGESTIONS FOR AMENDMENT OF

ANNEX 10

PART I

(To be used by ICAO as a basis for consequential proposals for amendment of Annex 10, following the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service, in February 1978.)

Relevant Text of Annex 10, Volume I Part I	Proposed Amendment
4.11.—Single Side-Band (SSB) HF Radiotelephone Communication System Characteristics for Use in the Aeronautical Mobile Service	4.11.— Single Side-Band (SSB) HF Communication System Characteristics for Use in the Aeronautical Mobile Service
4.11.1 The characteristics of the air-ground HF SSB system, where used in the Aeronautical Mobile Service, shall be in conformity with the following specification:	
4.11.1.1 <i>Frequency range.</i>	
4.11.1.1.1 HF SSB installations shall be capable of operation at any SSB reference frequency available to the Aeronautical Mobile (R) Service in the band 2 MHz to 22 MHz and necessary to meet the approved assignment plan for the Region(s) in which the system is intended to operate, and in compliance with the relevant provisions of the ITU Radio Regulations.	4.11.1.1.1 HF SSB installations shall be capable of operation at any SSB carrier (reference) frequency available to the Aeronautical Mobile (R) Service in the band 2.8 MHz to 24 MHz and necessary to meet the approved assignment plan for the Region(s) in which the system is intended to operate, and in compliance with the relevant provisions of the ITU Radio Regulations.
<i>Note 1.—See Introduction to Chapter 3, Part II and Fig. 4-1.</i>	Note 1. - See Introduction to Chapter 3, Part II and Figs. 4-1 and 4-2.
<i>Note 2.—The Extraordinary Administrative Radio-Conference (EARC), Geneva, 1966, established a new Allotment Plan (Appendix 27 to the ITU Radio Regulations) which provides for the following channel utilization:</i>	Note 2. - The World Administrative Radio Conference for the Aeronautical Mobile (R) Service (AWARC), Geneva, 1977, established a new Allotment Plan (Appendix 27 - (Rev) - to the ITU Radio Regulations)
3.4 Channel utilization.	DELETE
27/67 3.4.1 A station using single side-band emissions shall be considered to be operating in accordance with the Allotment Plan if the necessary bandwidth is confined within either the upper or the lower half of the channel provided for double side-band emissions;	DELETE
27/68 3.4.2 Subject to the provisions of No. 27.12* and to the following conditions, a station using single side-band emissions may operate either in the upper half or in the lower half of a double side-band channel designated by its centre frequency in the Allotment Plan:	DELETE

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

27/69 a) when operating in the upper half of the channel, the station shall use upper side-band emissions with the carrier at the channel centre frequency listed in the Allotment Plan;

DELETE

27/70 b) equipment capable of operating only on integral multiples of 1 kHz shall be restricted to the upper halves of the channels listed in the Allotment Plan, when operated in channels having a width of 7 kHz;

4.11.1.1.2 equipment need be capable of operating only on integral multiples of 1 kHz.

27/71 c) when operating in the lower half of the channel, the station shall use upper side-band emissions with the carrier at the following value below the channel centre frequency listed in the Allotment Plan:

DELETE

Band	Carrier (reference) frequency relative to centre frequency of channel
2, 3, 4, 5, 6 and 8 MHz	3 500 Hz below
10, 11, 13 and 17 MHz	4 000 Hz below

DELETE

Note 3.—It is recognized that Regions may assign the lower half of the channels allowed by the ITU Allotment Plan (Appendix 27 to the ITU Radio Regulations). Accordingly, ground and airborne installations operating in such a Region would be required to have 500 Hz channeling capability below 10 MHz. However, those ground and airborne installations which had no requirement to operate in such a Region, or no requirement to operate below 10 MHz, would require only a 1 000 Hz channeling capability.

DELETE

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

Note 4.—It is also recognized that, during the currency of the HF Allotment Plan contained in Appendix 26 to the ITU Radio Regulations, and pending the bringing into force of the revised Plan contained in Appendix 27, equipment having only a 1000 Hz channeling capability may operate on frequencies 0.5 kHz below the channel frequencies when these end in half kilohertz.

DELETE

* Provision 27/12 stipulates that the use of channels for the various authorized classes of emission will be subject to specific arrangements by the Administrations concerned.

DELETE

Relevant Text of
Annex 10, Volume I
Part I

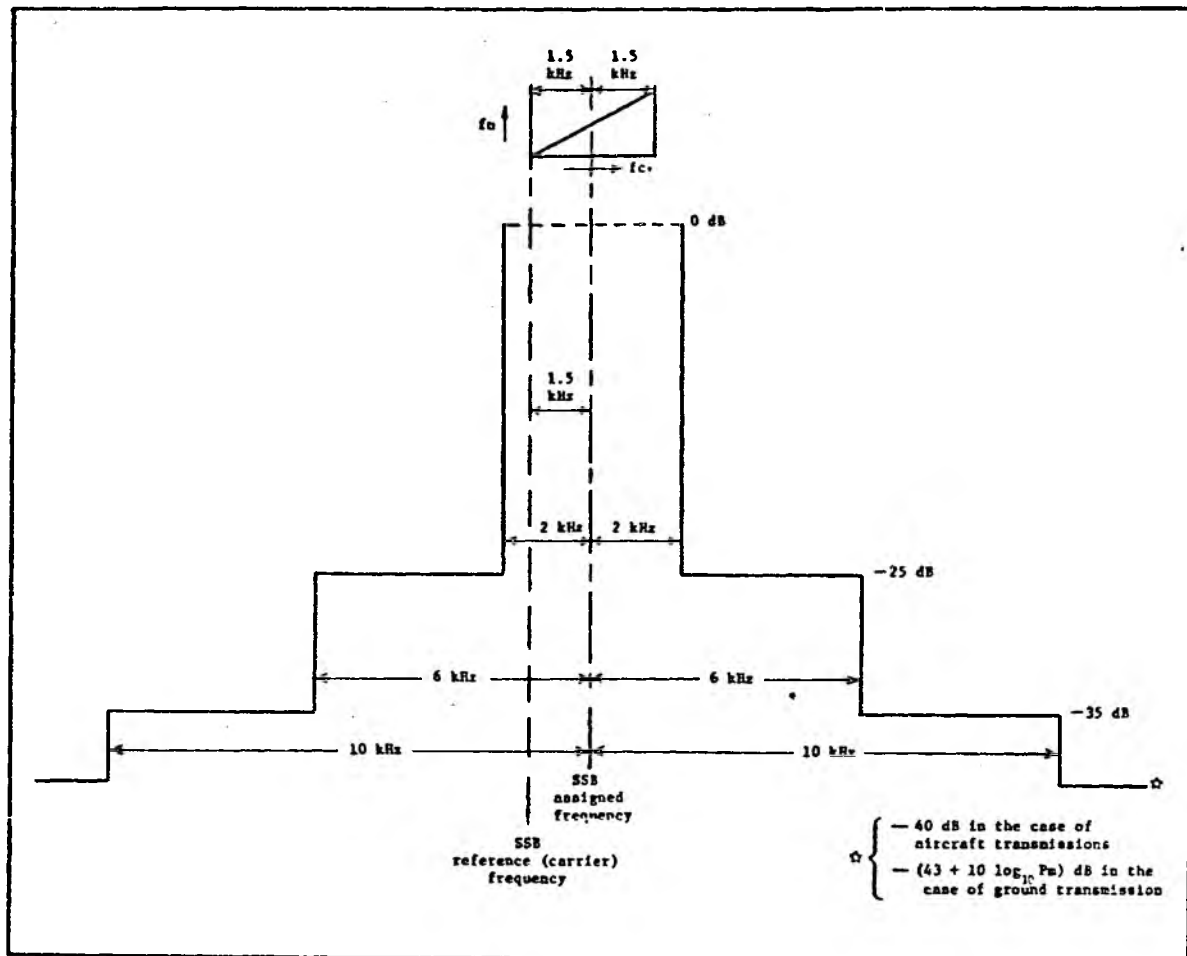


Fig. 4-1. — Required side-band attenuation characteristic

Proposed Amendment

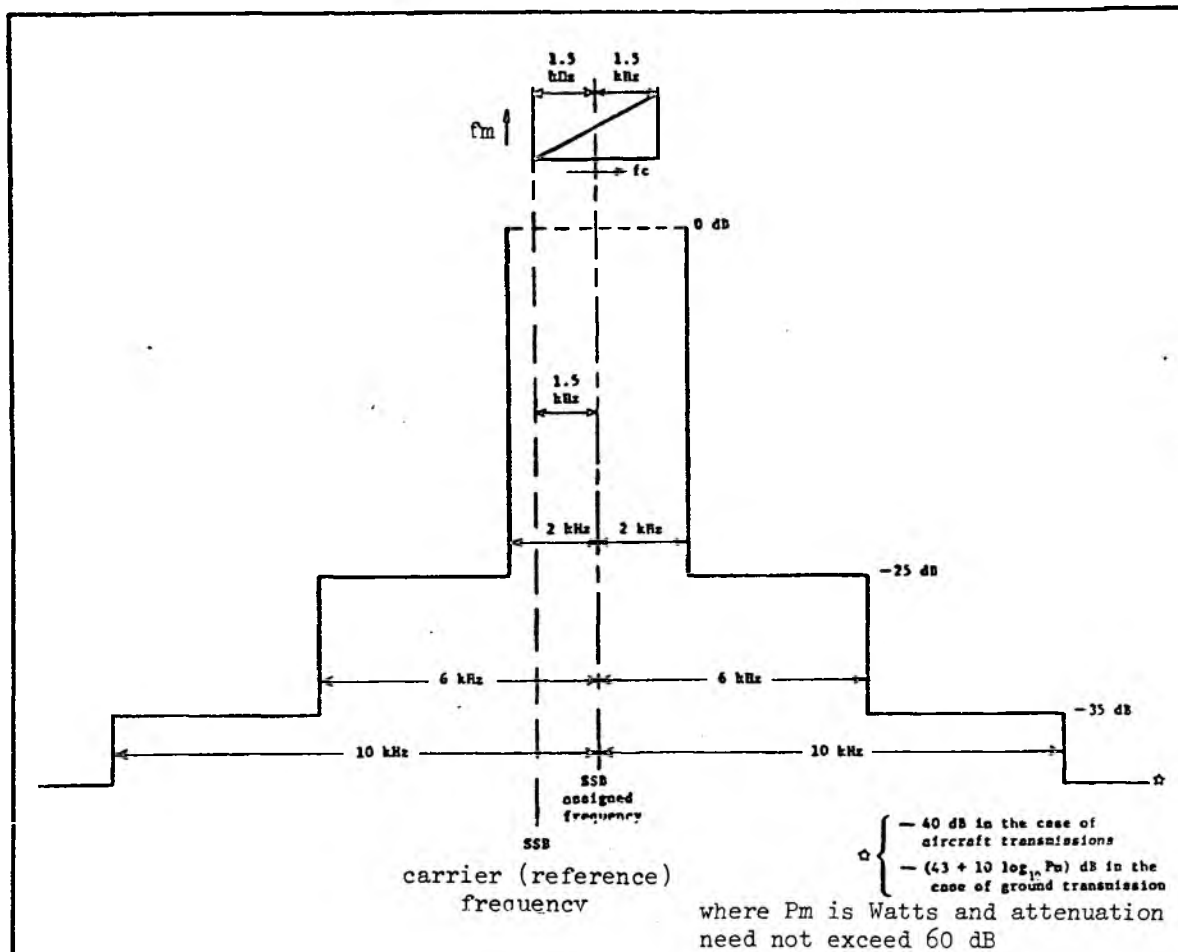


Fig. 4-1.--Required spectrum limits (in terms of mean power) for aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Proposed Amendment

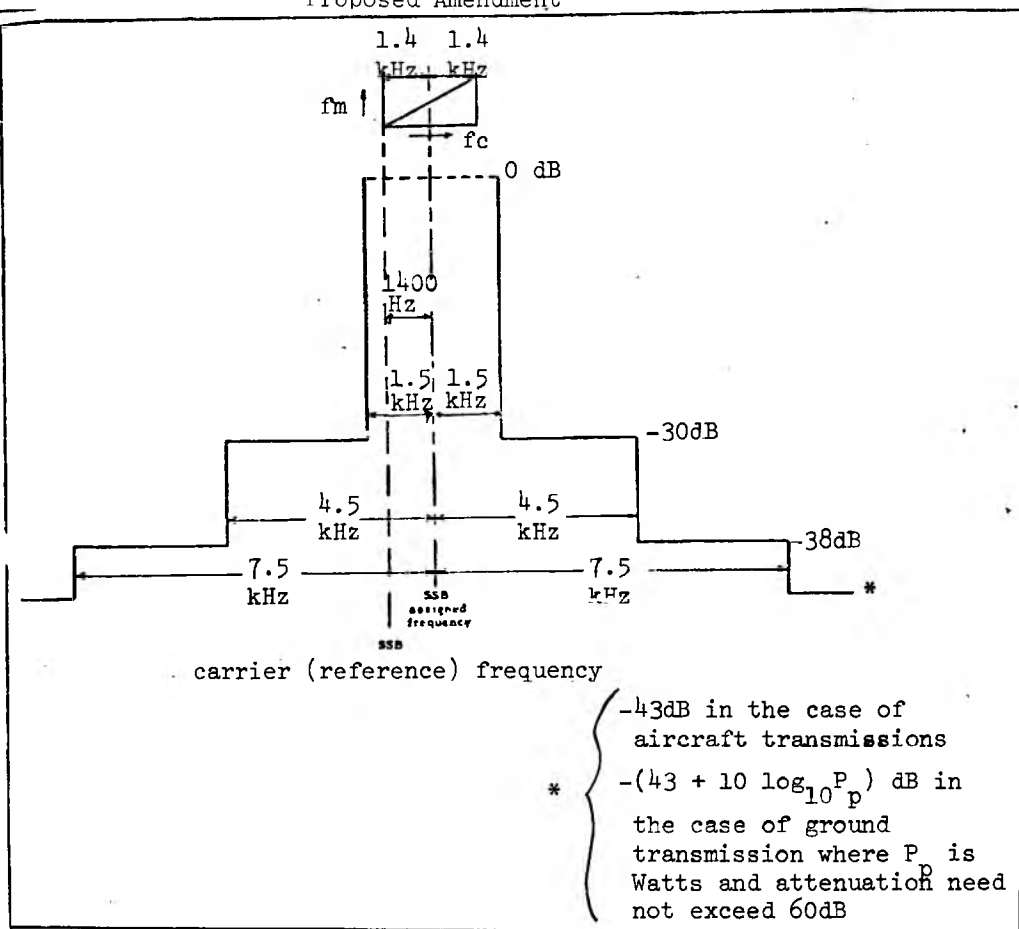


Fig 4-2 Required spectrum limits (in terms of peak power) for aircraft station transmitters first installed after 1 February 1983 and aeronautical station transmitters in use after 1 February 1983.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

4.11.1.2 *Side-band selection.*

4.11.1.2.1 The side-band transmitted shall be that on the higher frequency side of its reference frequency.

DELETE

4.11.1.3 *Reference frequency.*

4.11.1.3.1 The SSB reference frequency:

4.11.1.3 Carrier (reference) frequency.

X (a) until 1 February 1983,

a) in the higher frequency half of a DSB channel, shall be that of the DSB carrier;

(i) in the higher frequency half of a DSB channel, shall be that of the DSB carrier.

b) in the lower frequency half of a DSB channel, shall be:

(ii) in the lower frequency half of a DSB channel shall be 3.0 kHz lower than the DSB carrier.

i) 3.5 kHz lower than the DSB carrier where the latter are spaced at 7 kHz;

DELETE

ii) 4 kHz lower than the DSB carrier where the latter are spaced at 8 kHz.

DELETE

X (b) after 1 February 1983, shall be that of the carrier (reference) frequency indicated in Appendix 27 (Rev) to the ITU Radio Regulations.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

X

Note 1.- For promulgation purposes and entries in appropriate Regional Plans the frequency to be used and published shall be the SSB carrier (reference) frequency. Prior to 1 February 1983, for specific purposes related to IFRB registration which, according to ITU Regulations, must be stated in terms of the "assigned frequency" this must be a frequency equal to the SSB carrier (reference) frequency plus 1500 Hz. After 1 February 1983, this must be a frequency equal to the SSB carrier (reference) frequency plus 1400 Hz. For further guidance see Figures D-1 and D-2 of Attachment D to Part 1.

Note.- See also Attachment D to Part I.

Renumber to Note 2.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

4.11.1.4 *Carrier mode.*

4.11.1.4.1 The system shall operate in the suppressed carrier mode (A3J). Where communication is necessary with installations designed only for DSB reception, or where SELCAL is employed as specified in 4.8 of Part I, and when DSB emission is not provided, the installation shall be capable of operation in the full carrier mode (A3H) in addition to A3J.

4.11.1.4 Carrier mode and suppression.

4.11.1.4.1 The system shall operate in the suppressed carrier mode (A3J, A7J or A9J). When SELCAL is employed as specified in 4.8 of Part I, the installation shall operate in mode A2H.

4.11.1.4.2 Until 1 February 1983, aeronautical stations and aircraft stations equipped for single sideband operation shall also be equipped to transmit in the A3H mode compatible for reception by double sideband equipment. As of 1 February 1983 the A3H mode need not be provided.

4.11.1.4.3 RECOMMENDATION.- For stations directly involved in co-ordinated search and rescue operations using the frequencies 3023 kHz and 5680 kHz, the modes A3 or A3H should be used, noting that the Aeronautical Mobile (OR), Maritime Mobile and Land Mobile Services may be involved (See Radio Regulation 969 A).

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

X	4.11.1.4.4 Aircraft installations shall be capable of 26 dB carrier suppression with respect to peak envelope power (Pp) in Modes A3J, A7J or A9J.
<p><i>Note.—Current ITC Radio Regulations require a minimum of 26 dB carrier suppression with respect to peak envelope power in Mode A3J.</i></p>	DELETE
<p>4.11.1.4.2 RECOMMENDATION.— Ground installations should be capable of 40 dB carrier suppression with respect to peak envelope power.</p>	4.11.1.4.5 RECOMMENDATION.— Until 1 February 1983 ground installations should be capable of 40 dB carrier suppression with respect to peak envelope power (Pp).
X	4.11.1.4.6 As of 1 February 1983 ground installations shall be capable of 40 dB carrier suppression with respect to peak envelope power (Pp).
X	<p>4.11.1.5 Audio Frequency Bandwidth</p> <p>4.11.1.5.1 RECOMMENDATION.— For the class of emission A3J, the audio frequency band from 350 to 2700 Hz should normally be used. For SELCAL (A2H), the lower limit of the audio frequency band should be extended to 300 Hz.</p> <p>Note 1: The above limits may be extended as advances in technology make it possible to meet the spurious emission limits described in 4.11.1.7.2.</p> <p>Note 2: For aircraft station transmitter types first installed before 1 January 1983 the audio frequencies normally will be limited to 3000 Hz.</p>
X	4.11.1.5.2 For other authorized classes of emission the modulation frequencies shall be such that the required spectrum limits of 4.11.1.7.2 will be met.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

4.11.1.5 *Frequency tolerance.*

Re-number to 4.11.1.6

4.11.1.5.1 The basic frequency stability of the transmitting function in the A3J mode shall be such that the difference between the virtual carrier of the transmission and the SSB reference frequency shall not exceed:

4.11.1.6.1 The basic frequency stability of the transmitting function in the A3J, A7J or A9J modes shall be such that the difference between the virtual carrier of the transmission and the SSB reference frequency shall not exceed:

— 20 Hz for airborne installations;

— 10 Hz for ground installations.

4.11.1.5.2 The basic frequency stability of the receiving function shall be such that, with the transmitting function stabilities specified in 4.11.1.5.1, the overall frequency difference between ground and airborne functions achieved in service and including Doppler shift, does not exceed 45 Hz. However, a greater frequency difference shall be permitted in the case of supersonic aircraft.

4.11.1.6.2 The basic frequency stability of the receiving function shall be such that, with the transmitting function stabilities specified in 4.11.1.6.1, the overall frequency difference between ground and airborne functions achieved in service and including Doppler shift, does not exceed 45 Hz. However, a greater frequency difference shall be permitted in the case of supersonic aircraft.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

X — 4.11.1.7 Spectrum limits.

4.11.1.6 *Spectrum limits.* In a single side-band A3H or A3J transmission, the mean power of any emission on any discrete frequency shall be less than the mean power (P_m) of the transmitter in accordance with the following:

— on any frequency removed by 2 kHz or more up to 6 kHz from the assigned frequency: at least 25 dB;

— on any frequency removed by 6 kHz or more up to 10 kHz from the assigned frequency: at least 35 dB;

— on any frequency removed from the assigned frequency by 10 kHz or more:

a) aircraft stations: 40 dB;

b) aeronautical stations:
 $43 + 10 \log_{10} P_m$ (watts) dB.

4.11.1.7.1 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983 in a single sideband A2H, A3J, A7J or A9J transmission, the mean power of any emission on any discrete frequency shall be less than the mean power (P_m) of the transmitter in accordance with the following:

b) aeronautical stations:

$$43 + 10 \log_{10} P_m \text{ (watts) dB}^*$$

* attenuation need not exceed 60 dB.

4.11.1.7.2 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use as of 1 February 1983 in a single sideband A2H, A3J, A7J or A9J transmission, the peak envelope power (P_p) of any emission shall be less than the peak envelope power (P_p) of the transmitter in accordance with the following:

- on any frequency removed by 1.5 kHz or more up to 4.5 kHz from the assigned frequency: at least 30 dB;

- on any frequency removed by 4.5 kHz or more up to 7.5 kHz from the assigned frequency: at least 35 dB;

- on any frequency removed from the assigned frequency by 7.5 kHz or more:

a) aircraft stations: 43 dB;

b) aeronautical stations:

$$43 + 10 \log_{10} P_p \text{ (Watts) dB}^*$$

* attenuation need not exceed 60 dB.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

Note 1.—See Fig. 4-1.

Note 1. - See Figs. 4-1 and 4-2.

Note 2.—For promulgation purposes and entries in appropriate Regional Plans, the frequency to be used and published shall be the SSB reference frequency. For specific purposes related to IFRB registration which, according to ITU regulations, must be stated in terms of the "assigned frequency", this must be a frequency equal to the SSB reference frequency plus 1500 Hz. For further guidance, see Fig. D-1 of Attachment D to Part I.

DELETE

4.11.17 *Power.*

Re-number to 4.11.1.8

4.11.1.7.1 *Ground installations.* Except as permitted by the relevant provisions of Appendix 27 to the Radio Regulations of the ITU, the peak envelope power (PEP) supplied to the antenna transmission line of a ground installation for A3H and A3J emissions shall not exceed a maximum value of 6 kilowatts.

4.11.1.8.1 Ground installations. Except as permitted by the relevant provisions of Appendix 27 (Rev) to the Radio Regulations of the ITU, the peak envelope power (P_p) supplied to the antenna transmission line of a ground installation for A2H, A3J, A7J or A9J emissions shall not exceed a maximum value of 6 kilowatts.

4.11.1.7.2 *Airborne installations.* The peak envelope power, supplied to the antenna transmission line of an airborne installation for A3H and A3J emissions, shall be limited to a value that will not cause harmful interference to other stations using frequencies in accordance with the technical principles on which the ITU Allotment Plan (Appendix 27 to the ITU Radio Regulations) is based.

4.11.1.8.2 Airborne installations. The peak envelope power supplied to the antenna transmission line of an airborne installation for A2H, A3J, A7J or A9J emissions, shall be limited to a value that will not cause harmful interference to other stations using frequencies in accordance with the technical principles on which the ITU Allotment Plan Appendix 27, (Rev), to the ITU Radio Regulations is based.

Relevant Text of
Annex 10, Volume I
Part I

Proposed Amendment

Note.—It is intended that, in the application of 4.11.1.7.2, the maximum peak envelope power of an airborne installation would not exceed a nominal figure of twice the value of 300 watts specified in Appendix 27 to the ITU Radio Regulations.

Note.— It is intended that, in the application of 4.11.1.8.2, the peak envelope power (P_p) delivered by an airborne transmitter to the antenna transmission line normally would not exceed the value of 400 Watts specified in Appendix 27 (Rev) to the ITU Radio Regulations. However, it is recognized that the aircraft transmitter power may, in practice, exceed 400 Watts. Such exceptional installations where increased power (which should not exceed 600 Watts P_p) is used should not cause harmful interference to other stations using frequencies in accordance with the technical principles on which the ITU Allotment Plan Appendix 27, (Rev), to the ITU Radio Regulations is based.

4.11.1.8 *Method of operation.*
Single channel simplex shall be employed.

Renumber to 4.11.1.9

RELEVANT TEXT OF ANNEX 10, VOLUME I, PART II FOLLOWS

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

**2.2.—Search and Rescue
Frequencies**

2.2.1 RECOMMENDATION.—

Where there is a requirement for the use of high frequencies for search and rescue scene of action co-ordination purposes, the frequencies 3 023.5 kHz and 5 680 kHz should be employed.

2.2.1

Where there is a requirement for the use of high frequencies for search and rescue scene of action co-ordination purposes, the frequencies 3023 kHz and 5680 kHz shall be employed.

2.2.2

Where there is a requirement for the use of high frequencies for communication between search and rescue aircraft and merchant ships involved in a search and rescue operation, the frequency 2 182 kHz shall be employed.

Delete

2.2.3 RECOMMENDATION.—

Where specific frequencies are required for communication between rescue co-ordination centres and aircraft engaged in search and rescue operations, they should be selected regionally from the appropriate aeronautical mobile frequency bands in the light of the nature of the provisions made for the establishment of search and rescue aircraft.

Note.—Where civil commercial aircraft take part in search and rescue operations, they will normally communicate on the appropriate en-route channels with the flight information centre associated with the rescue co-ordination centre concerned.

**Chapter 3.—Utilization
of Frequencies below 30 MHz**

Introduction

High Frequency Bands Allocated to the Aeronautical Mobile (R) Service

The frequency bands between 2 850 kHz and 22 000 kHz allocated to the Aeronautical Mobile (R) Service are given in Article 5 of the ITU Radio Regulations. The utilization of these bands must be in accordance with the relevant current provisions of the ITU Radio Regulations. Prior to 1 July 1967, the provisions included Article 7 (Section II) and Appendix 26 to the Regulations. Subsequent to 1 July 1967, revised provisions came into force, details of which are contained in the Final Acts of the ITU Extraordinary Administrative Radio Conference (Geneva, 1966), and Appendix 27 to the ITU Radio Regulations.

The frequency bands between 2850 kHz and 22 000 kHz allocated to the Aeronautical Mobile (R) Service are given in Article 5 of the ITU Radio Regulations. The utilization of these bands must be in accordance with the relevant current provisions of the ITU Radio Regulations. Prior to 1 February 1983, the provisions are contained in the Final Acts of the ITU Extraordinary Administrative Radio Conference (Geneva 1966). On 1 February 1983, revised provisions will come into force, details of which are contained in the Final Acts of the World Administrative Radio Conference for the Aeronautical Mobile (R) Service (Geneva 1978) and Appendix 27 (Rev) to the ITU Radio Regulations.

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

	<div>X</div> <div>Appendix 27 (Rev) to the ITU Radio Regulations, in addition to the of families of frequencies for MWARA, VOLMET use, has also provided families quencies for world-wide use to meet t of aircraft operating agencies for Aer Operational Control communications.</div>
3.1.—Method of Operations	
3.1.1 RECOMMENDATION.— <i>In the Aeronautical Mobile Service, single channel simplex should be used in communications utilizing radio frequencies below 30 MHz in the bands allotted exclusively to the Aeronautical Mobile (R) Service, except that:</i>	<div>3.1.1 In the Aeronautical Mobile Service, s simplex shall be used in communicati radio frequencies below 30 MHz in the allotted exclusively to the Aeronauti (R) Service.</div>
<div>a) offset frequency simplex may be used when agreed for use within a region;</div>	<div>DELETE</div>
<div>b) double channel simplex may be used in communications between aircraft and ocean station vessels, and between aircraft and aeronautical stations that utilize the voice feature of a radio navigational aid being used by the aircraft concerned;</div>	<div>DELETE</div>
<div>c) any method may be used in aerodrome and approach control communications.</div>	<div>DELETE</div>
3.1.2.—PROVISIONS CONCERNING THE UTILIZATION OF OFFSET FREQUENCY SIMPLEX	
<div>3.1.2.1 When offset frequency simplex is used for radiotelegraph (A1 emission), the aircraft station shall transmit on the centre frequency* of the portion of the spectrum allotted for the operation; the frequencies of the aeronautical stations shall be displaced on either side of the centre frequency.</div> <div>*Note.—The "centre frequency" is the numerical expression which identifies a frequency channel established for an operation.</div>	<div>DELETE</div>

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

3.1.2.2 RECOMMENDATION.—

When using offset frequency simplex, the magnitude of the offset in frequency at aeronautical stations should be limited so that:

a) the emission is confined within the portion of the spectrum allotted for the operation;

b) the possibility of interference between the emissions of the aircraft stations and those of aeronautical stations is kept to a minimum.

DELETE

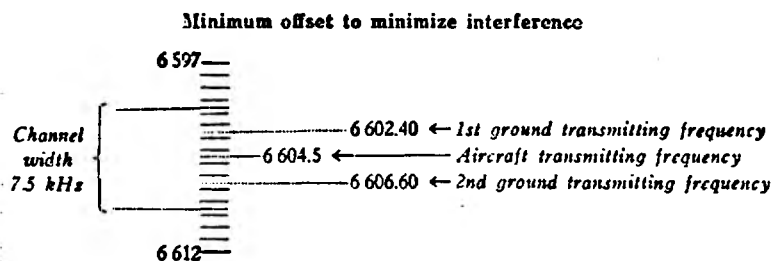
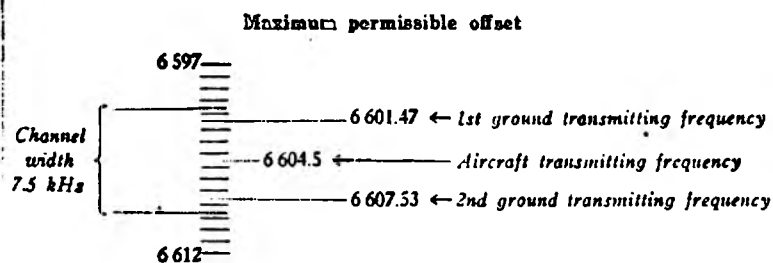
Note.—Where the portion of the spectrum allotted for the operation is equivalent to the bandwidths specified for the Aeronautical Mobile (R) Bands in the Frequency Allotment Plan for the Aeronautical Mobile Service, Appendix 27 to the Radio Regulations, the limits on either side of the centre frequency recommended in the above recommendation will be satisfied by the following:

DELETE

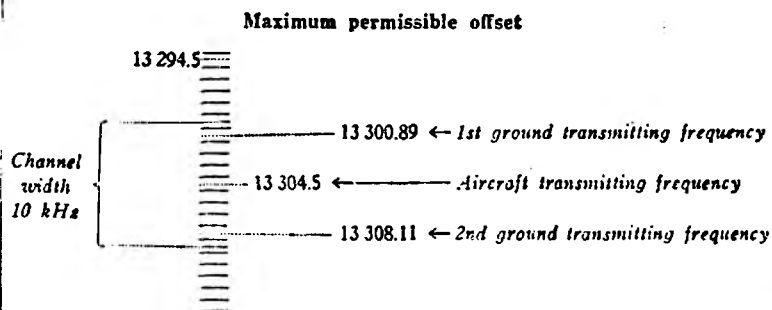
ITU Aero- nautical Mobile (R) Bands (kHz)	Minimum offset so. as to minimize interference between aeronautical stations and aircraft stations	Maximum permissible offset to ensure that the emission is contained within available bandwidth
2 850 - 3 025	1.00	3.14
3 400 - 3 500	1.14	3.10
4 650 - 4 700	1.50	2.98
5 840 - 5 680	1.80	3.13
6 525 - 6 685	2.10	3.03
8 820 - 8 965	2.78	3.30
10 005 - 10 100	3.12	3.44
11 275 - 11 400	3.51	3.56
13 260 - 13 360	4.10	3.61
17 900 - 17 970	5.49	3.15

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

Example No. 1

DELETE

Example No. 2**Minimum offset to minimize interference**

Note 1.—In the case of the 13 MHz and 17 MHz bands, the minimum offset frequencies specified in the table cannot be used since the assigned frequency would be outside the frequency channels allotted by the ITU.

Note 2.—Although adjacent channels are not normally assigned within the same geographical area, in those instances where it is done it will be necessary to avoid assigning offset ground station frequencies in the direction towards the adjacent channel beyond a point where harmful interference may occur.

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

**3.1.3.—ASSIGNMENT
OF SINGLE SIDE-BAND CHANNELS**

3.1.3.1 RECOMMENDATION.—
The higher frequency halves of available DSB channels in a region should preferentially be fully assigned as SSB channels before the lower frequency halves are subject to assignment.

3.1.3.1

Until 1 February 1983, the higher frequency halves of available DSB channels in a region shall preferentially be fully assigned as SSB channels before the lower frequency halves are subject to assignment.

Note: It is recognized that, during the currency of the HF Allotment Plan (Geneva, 1966) Regions may assign the lower frequency half of the DSB channel allowed by the ITU Allotment Plan (Appendix 27 to the ITU Radio Regulations). Accordingly, ground and airborne installations operating in such a Region shall operate on frequencies 3000 Hz below the DSB channel centre (Reference) frequency indicated in the Allotment Plan, pending the bringing into force of the Plan contained in Appendix 27 (Rev) on 1 February 1983.

3.1.3.2 RECOMMENDATION.— Prior to February 1983, as an alternative to 3.1.3.1, a channel from the Appendix 27 (Rev) frequency plan may be assigned on a non-interference basis to existing users of channels in the Appendix 27 frequency plan.

3.1.3.3 After 1 February 1983, DSB shall no longer be permitted. As from this date all assignments shall be in accordance with the 3 kHz channel spaced Allotment Plan contained in Appendix 27 (Rev) to the ITU Radio Regulations.

Note 1: The relation between the carrier (reference) frequency and the assigned frequency is described in Note 1 at paragraph 4.11.1.3.1.

Note 2: The Allotment Plan (Appendix 27, Rev) to the ITU Radio Regulations provides for the co-ordination of frequencies in the Aeronautical Mobile (R) Service as follows:

Relevant Text of
Annex 10, Volume I
Part II

Proposed Amendment

X	<p><u>27/20</u> The International Civil Aviation Organization (ICAO) co-ordinates communications in the Aeronautical Mobile (R) Service with international aeronautical operations and this Organization shall be consulted in any international aeronautical operational use of the frequencies in the Plan, <u>including the co-ordination of the operational use of frequencies allotted for world-wide use. The ICAO shall effect the necessary co-ordination in collaboration with the IFRB with the view to facilitating the application of the notification and registration procedures described in Article 9 of the Radio Regulations.</u></p>
X	<p>3.1.3.4 Assignment of frequencies for Aeronautical Operational Control communications.</p> <p>3.1.3.4.1 World-wide frequencies for Aeronautical Operational Control communications are required to enable aircraft operating agencies to meet the obligations prescribed in Annex 6, Part I. Appendix 27 (Rev) to the ITU Radio Regulations provides the following with respect to the assignment of frequencies for world-wide use:</p>
X	<p><u>27/73A</u> <u>Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area.</u></p> <p><u>27/194A</u> <u>The frequency allotment for Aeronautical Operational Control use is for assignment by administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.</u></p> <p>Note: Guidance material on the assignment of world-wide frequencies is contained in Attachment C to Part II to this Annex.</p>

Relevant text of Annex 10,
Volume I, Part II

Proposed Amendment

3.1.3.5 Use of channels for other classes of emission is subject to Appendix 27 (Rev) as follows:

27/12

- b) The use of channels, indicated in 27/16 for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid harmful interference which may result from the simultaneous use of the same channel for several classes of emission.

3.2.—Tolerances

Note.—Frequency tolerances to which transmitters for different services and purposes must conform are contained in Appendix 3 to the ITU Radio Regulations. Tolerances for transmitters used for aeronautical services are not mentioned in Annex 10, except in those cases where tighter tolerances than those contained in the ITU Radio Regulations are required (e.g. the equipment specifications in Part I contain several such instances).

RELEVANT TEXT OF ANNEX 10, VOLUME I,
ATTACHMENT D TO PART I, FOLLOWS

Relevant Text of
Annex 10, Volume I
Attachment D to Part I

Proposed Amendment

**4.—Single Side-Band (SSB)
HF Radiotelephone Communication**

**4.— Single Side-Band (SSB)
HF Communication**

4.1 When reviewing the HF en-route communication element of ICAO Regional Plans, careful consideration should be given to ensuring that the standard of the existing service is not degraded during the transition period, during which the two types of modulation, DSB and SSB, will coexist.

4.2 It is recognized that a sudden universal change to SSB from DSB HF/RTF is impracticable and that uniform progress towards SSB operation is as unlikely between Regions and within Regions as between international and national HF/RTF systems. However, because all HF operations in the Aeronautical Mobile (R) Service must be contained within the one frequency allotment plan in the current Appendix to the ITU Radio Regulations, the coexistence of both DSB and SSB systems must be accepted for some time. As, in practice, this will result in stations equipped for SSB being required to operate in an environment of stations equipped for DSB, or vice versa, a problem of compatibility arises.

4.2 It is recognized that a sudden universal change to SSB from DSB HF/RTF is impracticable and that uniform progress towards SSB operation is as unlikely between Regions and within Regions as between international and national HF/RTF systems. However, because all HF operations in the Aeronautical Mobile (R) Service must be contained within the one frequency allotment plan in the current Appendix 27 to the ITU Radio Regulations, the coexistence of both DSB and SSB systems must be accepted until the bringing into force of the new Appendix on 1 February 1983. As, in practice, this will result in stations equipped for SSB to operate in an environment of stations equipped for DSB, or vice versa, a problem of compatibility exists.

4.3 The compatibility problem can be overcome, in any particular Region, by at least two methods. The first, which amounts to its avoidance, consists of segregating the systems by frequency planning and, wherever possible, specific channels should be reassigned to SSB. Alternatively, and recognizing that aircraft can seldom be restricted in their operations to any specific area or route, full carrier SSB (A3H) could be used as an interim arrangement capable of affording compatibility. The second sentence of 4.11.1.4.1 of Part I is included for this purpose only, as it is recognized that the full advantages of SSB operation will not accrue until conversion to the Standard mode (A3F) is completed.

4.3 The compatibility problem can be overcome, in any particular Region, by at least two methods. The first, which amounts to its avoidance, consists of segregating the systems by frequency planning and, wherever possible, specific channels (families) should be progressively reassigned to SSB. Recognizing, however, that aircraft can seldom be restricted in their operations to any specific area or route, full carrier SSB (A3H) should be used as the preferred interim arrangement capable of affording compatibility pending the coming into force of the revised Appendix 27.

Relevant Text of
Annex 10, Volume I
Attachment D to Part I

Proposed Amendment

4.4 The following considerations are intended to assist planning for the introduction of SSB:

a) To comply with the regulatory requirements to avoid interference, the necessary bandwidth of a SSB emission has to be confined within either the upper or lower half of the channel provided for DSB.

b) A station using single side-band may operate either in the upper half or in the lower half of a DSB channel designated by the centre frequency listed in the ITU Allotment Plan.

c) The simultaneous use of channels in the Aeronautical Mobile (R) Service for SSB and DSB has to be the subject of regional agreement.

d) When operating in the upper half of a DSB channel, the SSB station has to use as its reference frequency the DSB channel centre frequency listed in the Allotment Plan, except as set forth in Note 4 to 4.11.1.1.1 of Part I.

e) All stations using 3023.5 kHz and 5680 kHz for search and rescue purposes and equipped for SSB, have also to radiate a signal capable of reception on a DSB receiver and be able to receive DSB transmissions.

f) As an exception to the provisions in Part I, 4.11.1.7, relating to power, aeronautical stations serving MVARAs or VOLMET areas may exceed the limits specified, subject to compliance with the relevant clauses of Appendix 27 to the ITU Regulations.

g) Airborne installations should, as far as possible, incorporate equipment providing more than 25 dB carrier suppression in the A3J mode.

h) So as to permit aircraft having A3J receiving capability to benefit from the improved signal-to-noise and intelligibility attainable thereby, ground stations transmitting DSB should, already in the interim period, have the improved frequency stability required for SSB transmission.

4.4 Pending the bringing into force of the revised Allotment Plan (Geneva 1978) on 1 February 1983, the following considerations are intended to assist planning for the introduction of SSB:

b) A station using single-side band may operate either in the upper half or in the lower half of a DSB channel designated by the centre frequency listed in the current ITU Allotment Plan.

d) When operating in the upper half of a DSB channel, the SSB station has to use as its carrier (reference) frequency the DSB channel centre (assigned) frequency listed in the Allotment Plan

e) When operating in the lower half of a DSB channel, the SSB station shall operate on the frequency 3000 Hz below the DSB channel centre (assigned) frequency indicated in the Allotment Plan.

DELETE

Renumber to f)

Renumber to g)

Relevant Text of
Annex 10, Volume I
Attachment D to Part I

Proposed Amendment

s) The spectrum limits defined in Part I, 4.11.1.6, which are attainable in the present conditions, may not be sufficiently stringent to permit the use of both upper and lower halves of a DSB channel in the same air route area.

h) The spectrum limits defined in Part I, 4.11.1.7, which are attainable in the present conditions, may not be sufficiently stringent to permit the use of adjacent channels in the same air route area.

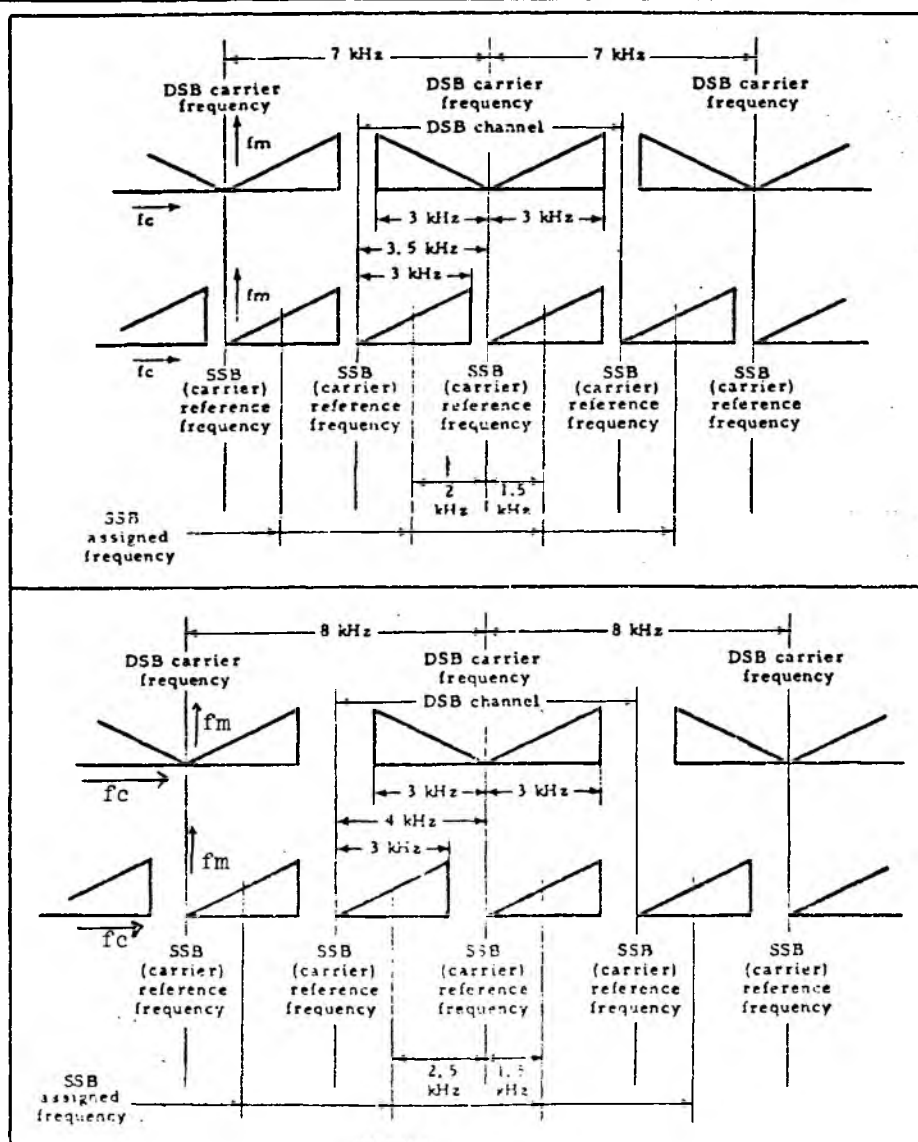


Fig D-1.- DSB and SSB channelling with 7 kHz and 8 kHz DSB channel spacings, as defined in the Final Act of the ITU EARC

Relevant Text of
Annex 10, Volume I
Attachment D to Part I

Proposed Amendment

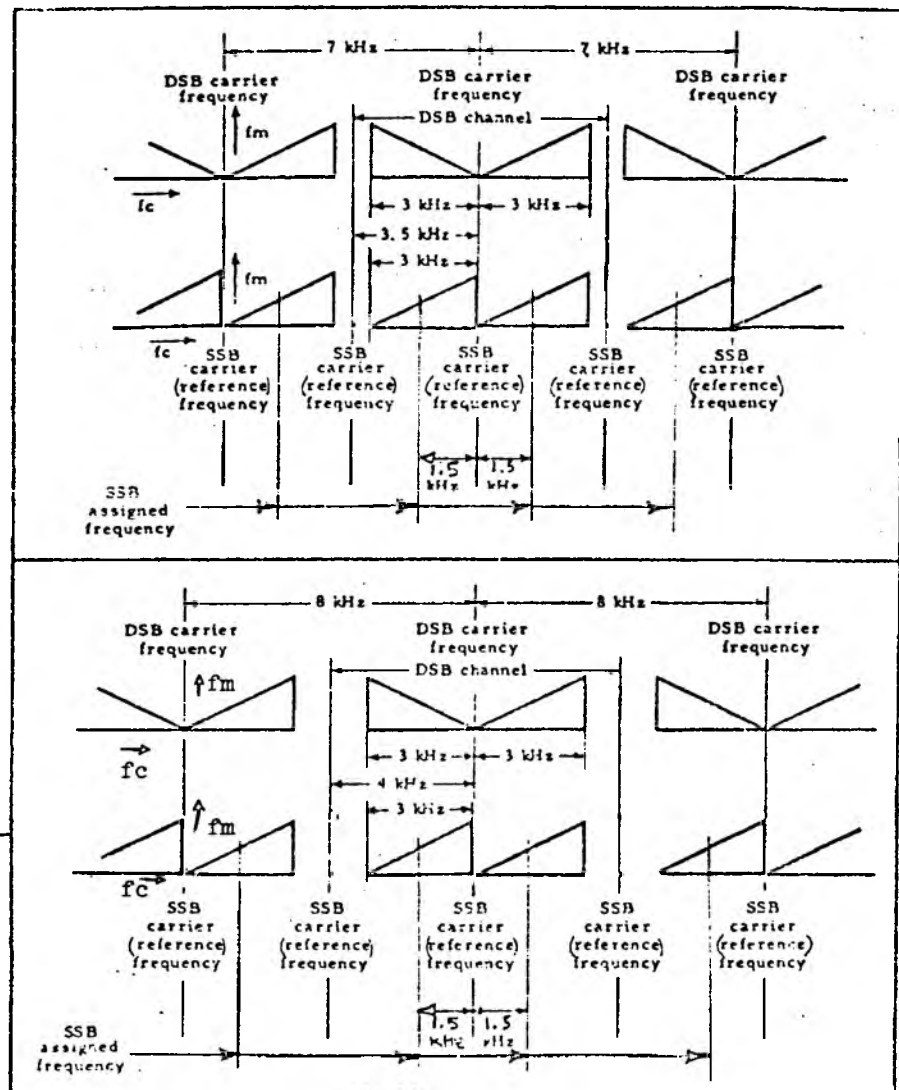


Fig D-1.- DSB and SSB channelling with 7 kHz and 8 kHz DSB channel spacings, as defined in the Final Acts of the ITU AWARC (Geneva 1978)

Note: The above figure is no longer applicable after 1 February 1983.

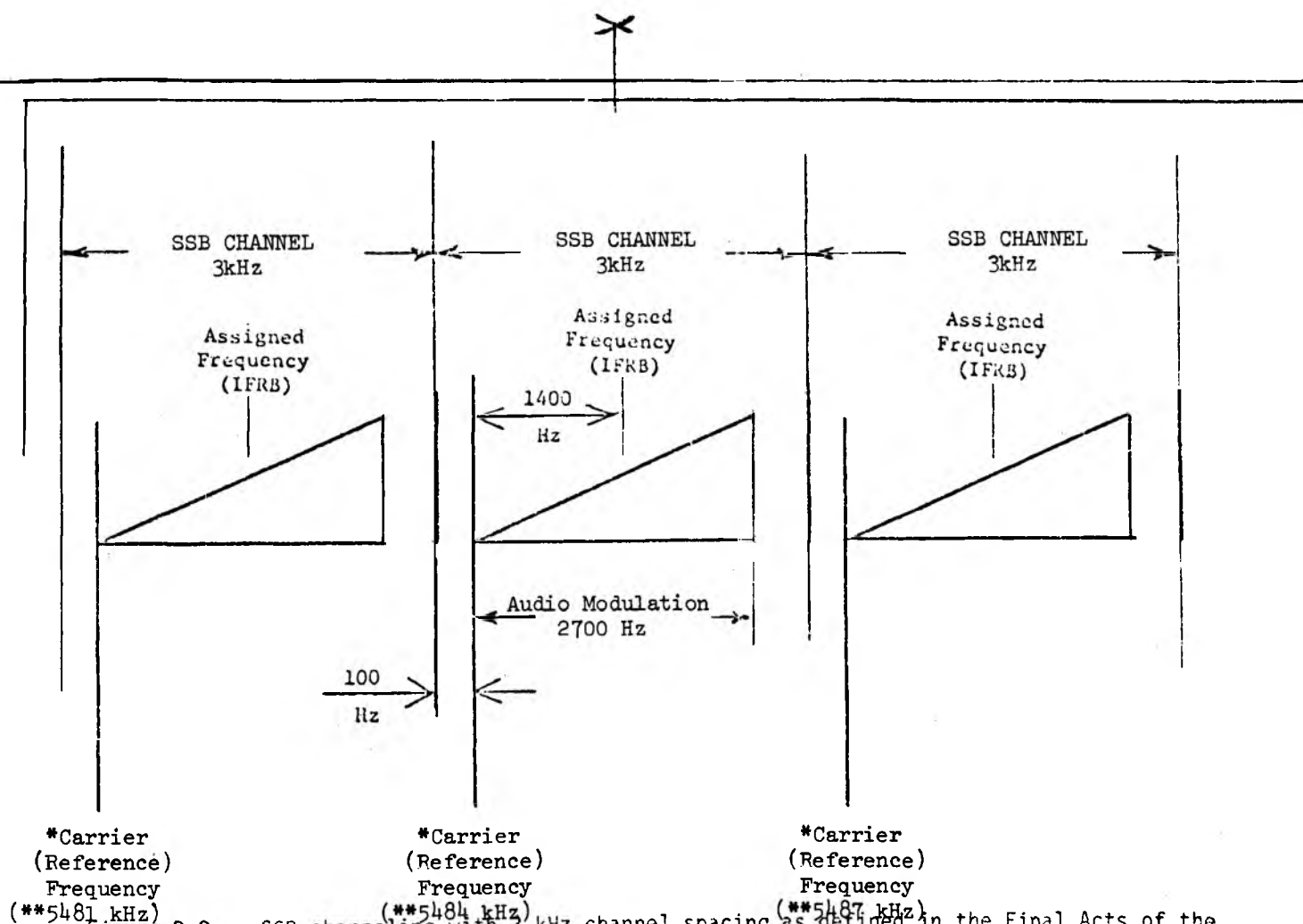


Figure D-2. - SSB channeling with 3 kHz channel spacing as defined in the Final Acts of the ITU World Administrative Radio Conference - Aeronautical Mobile (R) Service, Geneva, 1978. (Effective 1 February 1983)

NOTE - *Carrier Frequencies shall be integral multiples of 1 kHz

**Three Typical Carrier (Reference) Frequencies are shown as examples only.

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APPENDIX BAMENDMENTS TO APPENDIX 27

MOD 27/20 'The International Civil Aviation Organization (~~I.C.A.O.~~) (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical ~~air~~ ~~operations for a large part of the world~~, and this Organization ~~should~~ shall be consulted in appropriate cases, particularly in the any international aeronautical operational use of the frequencies in the Plan, including the coordination of the operational use of frequencies allotted for world-wide use. The ICAO shall effect the necessary coordination in collaboration with the IFRB with the view to facilitating the application of the notification and registration procedures described in Article 9 of the Radio Regulations.'

Reason: At the time (1959) 27/20 was originally drafted, all areas of the World were not covered by ICAO Regional Air Navigation Plans (ANP's). To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

NOC 27/187

MOD 27/192 '1. Class of stations: FA.

Classes of emission: see Nos. ~~27/49-27/53~~ 27/49-27/52.

Power: Unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos. 27/54-27/62.

Hours: H24 unless otherwise indicated.'

Reason: Consequential to proposals by the Meeting.

NOC 27/194

MOD 27/196 & 27/201 'In the table, MOD Column 2 with regard to 27/196 and 27/201 to read: world-wide, (R) and (OR)

In the table MOD Column 3 for both 27/196 and 27/201 as follows:

- 3) the specific application of this frequency for the above purposes may be decided at ICAO regional aeronautical conferences; air navigation meetings;

- 4) the use of this frequency is also authorized for inter-communication between stations in the aeronautical mobile service and mobile stations engaged in coordinated air-surface search and rescue operations including communication between these stations and participating land stations.'

REASON: To indicate world-wide Aeronautical Mobile (R) and (OR) Services application and to clarify the intent for the use of these aeronautical frequencies by other mobile services.

CONSEQUENTIAL AMENDMENTS TO ITU RADIO REGULATIONS

Article 5

Frequency Allocations

10 kHz to 275 GHz

MOD 201A 'The frequencies 2182 kHz, ~~3023-5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of + 3 kHz about the frequency.'

REASON: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

MOD 205 A 'The carrier frequencies ~~3023-5~~ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.'

REASON: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

Article 7

Special Rules Relating to Particular Services

Section II

Aeronautical Mobile Service

NOC 429

Article 9

Notification and recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunications stations.

NOC 486 through 589

Frequency bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17 970 kHz.

MOD 590

'(2) If the finding is favourable with respect to Nos. 554 to 557 the date of ~~29-April-1966~~ (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2a.'

MOD 591

'(3) If the finding is favourable with respect to No. 558, the date of ~~29-April 1966~~ (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2b.'

REASON:

To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

Article 28

Conditions to be Observed by Mobile Services

Section II

Special Provisions Regarding Safety

MOD 969 A '(3) The aeronautical frequencies ~~3023.5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communication between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).'

REASON: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A, 1326C.

Article 35

Use of Frequencies for Radio Telephony
in the Maritime Mobile Service

Section II

Bands Between 1605 and 4000 ~~ke/s~~ kHz

C. Search and Rescue

MOD 1326C '3A The aeronautical frequency ~~3023.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).'

REASON: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

MOD 1353B '15A. The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).'

REASON: To align with MOD 969A and MOD 1326C.

SUPRESOLUTION No. 13

RELATING TO THE PREPARATION OF REVISED

ALLOTMENT PLANS FOR THE AERONAUTICAL MOBILE SERVICE

Note: Although the World Administrative Radio Conference Aeronautical Mobile (R) Service 1978, will not be competent to address this resolution because of the interest of the (OR) service, the Resolution is no longer necessary in so far as the (R) service is concerned.

SUPRESOLUTION No. Aer1

RELATING TO THE USE OF FREQUENCIES 3023.5 and 5680 kHz
COMMON TO THE AERONAUTICAL MOBILE (R) AND (OR) SERVICES

REASON:

This Resolution has been modified to bring it
up-to-date and is shown as an ADD Resolution
No. Aer1-(A) which follows:

ADDRESOLUTION No. Aer1-(A)

RELATING TO THE USE OF FREQUENCIES 3023 and 5680 kHz
COMMON TO THE AERONAUTICAL MOBILE (R) AND (OR) SERVICES

The Aeronautical World Administrative Radio Conference,

Geneva, 1978,

having noted,

that this conference in adopting a new Frequency Allotment Plan in,
Appendix 27 (Rev), has decided to use 3023 kHz instead
of 3023.5 kHz; and, additionally, has amended the provisions governing
the use of 3023 and 5680 kHz,

considering

1. that, by this action some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;

2. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operation was extended to include communication between mobile stations and participating land stations;

3. that it would be in the general interests of the aeronautical mobile (R) service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the Frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

REASON: Represents an up-date of Resolution No. Aer 1, which has been proposed for SUP.

SUP

RESOLUTION No. Aer 2

RELATING TO THE USE OF FREQUENCIES IN THE HF BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE

REASON: This Resolution has been modified, to bring it up-to-date, and is shown as an ADD Resolution No. Aer 2 - (E) below.

ADD

RESOLUTION No. Aer2-(A)

RELATING TO THE UNAUTHORIZED USE OF FREQUENCIES IN THE BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The World Aeronautical Administrative Radio Conference,

Geneva, 1978,

considering

a) that monitoring observations of the use of the frequencies in the bands between 2850 and 17 970 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of

frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high powered broadcasting stations, some of which are operating in contravention of No. 422 of the Radio Regulations;

b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;

c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the aeronautical mobile (R) service bands other than under the conditions specified in Nos. 115 and 415;

2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;

3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;

4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No. 422 of the Radio Regulations;

requests the International Frequency Registration Board

1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

2. to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause harmful interference to the aeronautical mobile (R) service;

3. to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

REASON: Represents an up-date of Resolution No. Aer 2, which has been proposed for SUP.

SUP

RESOLUTION No. Aer 3

RELATING TO THE INTRODUCTION OF SINGLE SIDEBAND TECHNIQUES IN THE HF BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

REASON: With the adoptment of an allotment plan based on single side-band techniques, this Resolution is no longer applicable.

SUP

RESOLUTION No. Aer 4

RELATING TO THE USE OF VHF FOR COMMUNICATION IN THE AERONAUTICAL MOBILE (R) SERVICE

REASON: This Resolution has been modified to bring it up-to-date, and is shown as an ADD Resolution No. Aer 4 - (A) which follows.

ADD

RESOLUTION No. Aer⁴ - (A)

RELATING TO THE USE OF VHF FOR COMMUNICATION IN THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

a) that from an aeronautical viewpoint, VHF can provide a more reliable and more static-free communication system than HF;

b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;

- c) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;
- d) that, owing to development of aeronautical telecommunications in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

resolves

that administrations, to the maximum extent practicable, should employ VHF to meet their requirements in the aeronautical mobile (R) service.

REASON: Represents an up-date of Resolution No. Aer 4, which has been proposed for SUP,

SUP

RESOLUTION No. Aer 5

RELATING TO THE USE OF VHF FOR METEOROLOGICAL
BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

REASON: This Resolution has been modified, to bring it up-to-date, and is shown as an ADD Resolution No. Aer 5 - (A) which follows.

ADD

RESOLUTION No. Aer5 - (A)

RELATING TO THE USE OF VHF FOR METEOROLOGICAL
BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,
considering

- a) that the number of channels available for the aeronautical mobile (R) service in the frequency bands between 2850 and 17970 kHz is limited;
- b) that the need for frequencies for aeronautical mobile (R) service communications and for meteorological broadcasts to aircraft is increasing;
- c) that the propagation characteristics of high frequencies make them essential for aviation communication requirements over long distances;
- d) that in Recommendation No. 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution No. 14 MOD (See Report on Agenda Item 3, first page of Appendix D) of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";

e) that this conference has adopted a Resolution whereby administrations should, to the maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;

f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;

g) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

REASON: Represents an up-date of Resolution No. Aer 5, which has been proposed for SUP.

SUP

RESOLUTION No. Aer 6

RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kHz.

REASON: This Resolution has been rewritten and is shown as Resolution No. Aer6-(A), and, therefore, needs to be suppressed.

SUP

RECOMMENDATION No. Aer 1

RELATING TO THE DEVELOPMENT OF TECHNIQUES WHICH WOULD HELP TO REDUCE CONGESTION IN THE HIGH FREQUENCY BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

REASON: This Recommendation has been modified, to bring it up-to-date and is shown as an ADD Recommendation No. Aer 2 - (B) which follows.

ADD

RECOMMENDATION No. Aer2 - (B)

RELATING TO THE DEVELOPMENT OF TECHNIQUES WHICH WOULD HELP TO REDUCE CONGESTION IN THE HIGH FREQUENCY BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,
considering

- a) that several administrations are actively engaged in the development of communication techniques the wider use of which in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high-powered VHF transmitters employing directional antennae, space radiocommunication techniques and automated data transmission;
- b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;
- c) that the International Civil Aviation Organization (I.C.A.O.) is actively engaged in coordinating the operational development of such techniques;

invites

administrations engaged in such developments to inform the I.F.R.B. periodically of the progress achieved;

requests

the I.F.R.B. periodically to circulate the information so obtained to administrations and to I.C.A.O.

REASON: Represents an up-date of Recommendation No. Aer 1, which has been proposed for SUP.

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APPENDIX CCONSOLIDATION OF
PROPOSED AMENDMENTS TO APPENDIX 27
TO THE ITU RADIO REGULATIONS

(taken from the various recommendations of the Meeting,
and reproduced in numerical order)

Note 1: The following paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27. The following abbreviations are used:

ADD - the addition of a new paragraph

MOD - the modification of an existing paragraph

SUP - the suppression, i.e., deletion of an existing paragraph

NOC - no change to an existing paragraph

Note 2: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

PART I

General Provisions

Section I

Definitions

NOC 27/1 - 27/8 inclusive

MOD 27/9 'A Family of Frequencies in the aeronautical mobile (R) service ~~is a-~~
~~group of~~ contains two or more frequencies selected from different aeronautical mobile
(R) bands and is intended to permit communication at any time and within ever-any-distance
the authorized area of use (27/189 - 27/207) between aircraft ~~in-flight~~ stations and
appropriate aeronautical stations.'

Reason: In order to clarify the definition and to align it with ITU R.R. No. 33,

Section II

Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service

MOD of title A. ~~Determination-of-Channel-Width~~ A. Channel Characteristics

Reason: For clarification.

MOD 27/10 'The ~~A frequency separations~~ separation between carrier (reference) frequencies of 3 kHz is ~~indicated in the following table are~~ adequate to permit communications using the classes of emission referred to in Nos 27/49-27/52 in the frequency bands between 2850 kHz and 17 970 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.'

Reason:

It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channelling is based on 3 kHz separation in all bands.

MOD 27/11 'a) ~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and ~~3000~~ 2700 Hz ~~cycles-per-second~~ and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3 A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see ADD 27/66A and ADD 27/66B).'

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

REASON: To define an audio bandwidth necessary for A3J operation consistent with 3kHz channel separation and to provide accommodation for other permitted classes of emission.

ADD 27/11A For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason: To reflect the Report of CCIR Study Group 8 Special Meeting.

MOD 27/12

- 'b) The use of channels, indicated in 27/16-as-derived-from-the-above-table-(No.-27/10), for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission. ~~no inherent priority being given to any particular class of emission.~~'

Reason: Amended to be consistent with SSB operation.

SUP 27/13

Reason: No longer applicable.

SUP 27/14

Reason: No longer applicable.

MOD 27/15

- 'e) The arrangements contemplated in ~~No. 27/12 and 27/14~~ No. 27/12 should be made under the Articles of the International Telecommunications Convention and the Radio Regulations entitled "~~Special Agreements~~" "Special Arrangements".'

Reason: For clarification.

MOD 27/16

'The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10, will be found in the following table.'

Reason: To clearly indicate that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing and to provide band-edge protection.

Note: The following table is illustrative only. The final table will follow the format of the existing table in Appendix 27 to the ITU Radio Regulations and specify each channel carrier (reference) frequency. The final table will also include those channels which are near band edges and have less than 3 kHz bandwidth.

MOD 27/16

kHz			
2850 - 3025	5450 - 5480	8815 - 8965	13 260 - 13 360
2851 to 3019 in steps of 3 kHz 3023*(R) & (OR) 58 CHANNELS	Region 2 5451 to 5475 in steps of 3 kHz 9 CHANNELS	8816 to 8960 in steps of 3 kHz 49 CHANNELS	13 261 to 13 357 in steps of 3 kHz 33 CHANNELS
3400 - 3500	5480 - 5680	10 005 - 10 100	17 900 - 17 970
3401 to 3497 in steps of 3 kHz 33 CHANNELS	5481 to 5676 in steps of 3 kHz 5680*(R) & (OR) 67 CHANNELS	10 006 to 10 096 in steps of 3 kHz 31 CHANNELS	17 901 to 17 967 in steps of 3 kHz 23 CHANNELS
4650 - 4700	6525 - 6685	11 275 - 11 400	
4651 to 4696 in steps of 3 kHz 16 CHANNELS	6526 to 6682 in steps of 3 kHz 53 CHANNELS	11 276 to 11 396 in steps of 3 kHz 41 CHANNELS	

* A3 and A3H emissions may also be used.

MOD 27/17

'The ~~channels~~ carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and 5680 ~~ke/s~~ kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency 5680 ke/s kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.'

Reason: To reflect new carrier frequencies determined by frequency separation of 3 kHz.

MOD 27/18

'All stations directly involved in co-ordinated search and rescue operations using 3023.5 3023 and 5680 ~~ke/s~~ kHz ~~for search and rescue purposes and employing single-sideband (SSB)~~ shall transmit ~~a carrier at a level sufficient to permit reception on a double-sideband (DSB) receiver and shall be able to receive DSB transmissions~~ only in the upper sideband mode (See also MOD 27/73).'

Reason: If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should however it be agreed that single sideband operation be introduced on these frequencies, the preceding change to 27/18 would appear to be necessary.

Note to 27/17 and 27/18 :

There is a need for the WARC AM(R)S (1978) to adopt a resolution similar to ITU Resolution Aer-1 as 3023 and 5680 kHz are common to the (R) and (OR) Services (See Resolution Aer 2-(D))

SUP 27/19

Reason: If it is agreed to accommodate equipment capable of operating only on whole kHz then the common (R) and (OR) channel 3023.5 kHz can be replaced by 3023 kHz, and 27/19 would no longer be required.

MOD 27/20 'The International Civil Aviation Organization (~~I-C-A-O~~) (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical ~~air~~ operations ~~for a large part of the world~~, and this Organization ~~should~~ shall be consulted ~~in appropriate cases, particularly in the~~ any international aeronautical operational use of the frequencies in the Plan, including the coordination of the operational use of frequencies allotted for world-wide use. The ICAO shall effect the necessary coordination in collaboration with the IFRB with the view to facilitating the application of the notification and registration procedures described in Article 9 of the Radio Regulations.

Reason: At the time (1959) 27/20 was originally drafted, all areas of the World were not covered by ICAO Regional Air Navigation Plans (ANP's). To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

NOC 27/21NOC 27/22MOD 27/23

'Resort to the co-ordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/22 are not satisfactory.'

Reason: To clarify the intent.

B. Interference Range Contours

MOD 27/24

'The transparencies associated with this Appendix show for the frequencies stated, contours which indicate the minimum acceptable distance separating two aeronautical stations each having a mean effective radiated power of 1.0 kW (~~for emissions such as A1, F1, F2, and unmodulated emissions A3 and A3H~~) producing a protection ratio of 15 dB of desired signal to interference signal on the same frequency at an aircraft operating at the limit of the service range of the desired aeronautical station transmitter. This limit is generally assumed to be at the boundary of the area concerned, and the service range is not included in the contour.'

Reason: Consequential to MOD 27/50 and MOD 27/51.

Note: See Recommendation 5/2.

NOC 27/32

Note: The studies referred to in paragraph 5.19 and Recommendation 5/2 of the Report on Agenda Item 5 should also consider provisions concerning the method of using transparencies for world-wide use.

C. Classes of Emission and Power

NOC 27/49MOD 27/50

1.1 Telephony - Amplitude modulation:

- | | |
|---|------------------|
| - double sideband | (A3)* |
| - single sideband, reduced carrier | (A3A) |
| - single sideband, full carrier | (A3H)* |
| - single sideband, suppressed carrier | (A3J) |
| - two independent sidebands | (A3B) |

*A3 and A3H to be used only on 3023 kHz and 5680 kHz
and in accordance with proposed ITU Resolution Aer2-(A)
paragraph 4.4.

REASON: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of CCIR Study Group 8 Special Meeting.

MOD 27/51 '1.2.1 Amplitude modulation:

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission~~ (A2)
- telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies or by the on-off keying of the modulated emission and including selective calling - single sideband - full carrier A2H
- ~~multichannel voice frequency telegraphy - single sideband - suppressed carrier~~ (A7A)
- ~~multichannel voice frequency telegraphy - single sideband - full carrier~~ (A7B)
- multichannel voice frequency telegraphy - single sideband - suppressed carrier A7J
- other transmissions such as automatic data transmission - single sideband - suppressed carrier. A9J'

MOD 27/52 '1.2.2 Frequency modulation:

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- ~~telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission~~ (F2)

** A1 and F1 are permitted provided they do not cause harmful interference to the classes of emission A2H, A3J, A7J and A9J. In addition A1 and F1 emissions shall be in accordance with the provisions in ADD 27/66A and ADD 27/66B and care should be taken not to place these emissions at or near the edges of the channel.

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of the CCIR Study Group 8 Special Meeting.



SUP 27/53

Reason: No requirement for this type of emission.

MOD 27/54

2. Power

- 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

Replace table by:

Class of emission	Stations	Maximum peak envelope power
A2H, A3J, A7J, A9J (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
A3 * A3H * (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1.	Aeronautical stations Aircraft stations	1.5 kW 75 W

*A3 and A3H to be used only on 3023 kHz and 5680 kHz, and in accordance with proposed ITU Resolution Aer2-(A), paragraph 4.4

Reason: To reflect the view of the Meeting. See also MOD 27/62.

MOD 27/55 '2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1 and F1 ~~F2-and-unmodulated-A3-and-A3H-emissions~~) used as a basis for the interference range contours.'

Reason: To be consistent with MOD 27/51 and MOD 27/52.

MOD 27/56 2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARA, VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In ~~each~~ such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason: To make the same provision for aeronautical stations serving a World-Wide function.

NOC 27/57 to 27/61

MOD 27/62 '2.4 It is recognized that the power employed by aircraft transmitters may, in practice exceed the limits specified in No 27/54. However, the use in exceptional cases of such increased power, (which should not exceed 600 W P_e) shall not cause harmful interference to stations using frequencies in accordance with the technical principles on which the Allotment Plan is based.'

Reason: To reflect the view of the Meeting.

MOD 27/63

Carrier mode	Level Π (dB) of the carrier with respect to peak envelope power
Full carrier (for example (A3H) <u>A2H</u>)	$0 > N > -6$
Reduced carrier (A3A)	26 > N > -26
Suppressed carrier (for example A3J)	<u>Aircraft Stations - 26 > N</u> <u>Aeronautical Stations - 40 > N</u>

Reason: To align emission designators with MOD 27/50 and MOD 27/51 and to add provisions for carrier suppression for aeronautical stations in accordance with ICAO Annex 10 and the Report of CCIR Study Group 8 Special Meeting.

SUP 27/64

Reason: To reflect that the new allotment plan will be based on single sideband operation.

MCD to subtitle 3.3

'Tolerance for levels of SSB emission outside the necessary bandwidth.'

Reason: To reflect applications to other classes of emission.

MOD 27/65

3.3.1 In an ~~single-sideband-A3A-A3H~~, A2H, A3J, A7J or A9J, A3A transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (P_m) of the transmitter in accordance with the following table:

REASON: To align with MOD 27/50 and MOD 27/51.

MOD 27/66

3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Frequency separation Δ from the assigned frequency. -ke/s- kHz	Minimum attenuation below mean Power (P_m) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40 Aeronautical stations: $43 + 10 \log_{10} P_m(\text{Watts})^*$

*attenuation need not exceed 60dB

REASON: To accommodate airborne equipments currently in use which are capable of acceptable operation in a 3 kHz channel spaced environment.

ADD 27/66A 3.3.3 In an A2H, A3J, A7J or A9J transmission, the peak envelope power (Pp) of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the peak envelope power (Pp) of the transmitter in accordance with the following table.

REASON: To accommodate classes of emission as set forth in MOD 27/50 and MOD 27/51 and to express power level in peak envelope power (Pp) to provide consistency in the Radio Regulations.

ADD 27/66B 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983

Frequency separation Δ from the assigned frequency kHz	Minimum attenuation below peak envelope power (Pp) dB
$1.5 \leq \Delta < 4.5$	30
$4.5 \leq \Delta < 7.5$	38
$7.5 \leq \Delta$	Aircraft stations 43 Aeronautical stations $43 + 10 \log_{10} P_p \text{ (Watts)}^{(*)}$

*attenuation need not exceed 60 dB

Reason: To reduce the bandwidth of unwanted emissions, to express power level in peak envelope power (Pp), to reflect the Report of CCIR Study Group 8 Special Meeting, paragraph 7.2.2, and to provide for the termination of use of aeronautical station transmitters not capable of operation in accordance with this plan.

SUP 27/67-27/71 inclusive.

Reason: No longer applicable.

MOD 27/72 '4.1 ~~The assigned frequency~~ For single sideband radiotelephone emissions, except class of emission A2H, the assigned frequency shall be at a value ~~1500 cycles~~ 1400 Hz above the carrier (reference) frequency.*'

- *Notes: 1. Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.
2. For classes of emission A1 and F1 the assigned frequency shall be chosen in accordance with the provisions of the footnote to MOD 27/51 and MOD 27/52.

Reason: To define the assigned frequency taking into account MOD 27/50, MOD 27/51, MOD 27/66 and the Report of the CCIR Study Group 8. Special Meeting.

MOD 27/73 '4.2 Stations employing double sideband emissions (A3) shall operate with assigned ~~frequencies~~ frequency at ~~the values listed in the Allotment Plan~~ 3023 kHz or 5680 kHz (see 27/50).'

Reason: To take into account DSB operation on 3023 kHz and 5680 kHz.

PART II

Plan for the Allotment of Frequencies for the Aeronautical Mobile (R)
Service in the Exclusive Bands between 2850 and 17 970 kc/s

ADD Section 0
ADD Frequencies allotted for world-wide use

ADD 27/73A Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area

Note: Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, to the extent possible, frequencies allotted to RDARAs and Sub-RDARAs should be used.

Reason: To define the purpose for which such frequencies may be used.

ARTICLE I

Description of the Boundaries of the Major World Air Route Areas (MWARAs)

NOC 27/80 MWARA - Caribbean (MWARA-CAR)

NOC 27/81 MWARA - Caribbean (MWARA-CAR)

NOC Frequency Allotment

MOD 27/82 MWARA - Central East Pacific (MWARA-CEP)

Amend delineation to read:

'From the point 50°N 122°W through the points 38°N 120°W, ~~32°N 117°W~~, 15°N 110°W, 20°S 145°W, 20°S 152°W, ~~22°N 159°W~~, 30°N 165°W, to the point 50°N 122°W.'

ADD Frequency Allotment: One additional family required.

Reason: In accordance with the principle that the entire world should be covered by MWARAs, the boundaries of MWARA CEP to be modified to cover the gaps which resulted from modification of most of the MWARAs adjacent to it.

MOD 27/83 MWARA - Central West Pacific (MWARA-CWP)

Amend delineation to read:

'From the point 40°N 117°E through the points 25°N 155°W, 17°N 155°W, ~~10°N 160°E~~, ~~10°N 117°E~~, ~~23°N 114°E~~, ~~40°N 117°E~~, ~~25°N 155°W~~, ~~to the point 17°N 155°W~~, 00° 165°W, 00° 170°E, 12°S 165°E, 12°S 136°E, 09°N 115°E, 22°N 115°E, to the point 40°N 117°E.'

ADD Frequency Allotment: One additional family required.

Reason: The southern boundary to be moved to the south to cover the gap between the SEA, SP and old CWP MWARAs.

MOD 27/84 MWARA - Europe (MWARA-EU)

Amend designation to read: MWARA-EU EUR

Amend delineation to read:

'From the point 33°N 12°W through the points 54°N 12°W, 70°N 00°, 74°N 40°E, ~~40°N 40°E~~, 74°N 52°E, 60°N 52°E, 40°N 36°E, 29°N 35° 30'E, 32°N 13°E, to the point 33°N 12°W.'

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include certain aerodromes alternates to Moscow and Leningrad.

SUP 27/85 MWARA-Far East (MWARA-FE)

Reason: Reconfiguration of the SEA MWARA

ADD 27/85 MWARA Indian Ocean (MWARA-IO)

Delineation:

From the South Pole through the points $30^{\circ}\text{S } 26^{\circ}\text{E}$, $20^{\circ}\text{N } 35^{\circ}\text{E}$, $30^{\circ}\text{N } 60^{\circ}\text{E}$, $30^{\circ}\text{N } 90^{\circ}\text{E}$, $30^{\circ}\text{S } 120^{\circ}\text{E}$, $40^{\circ}\text{S } 160^{\circ}\text{E}$ to the South Pole

ADD Frequency Allotment: One family is required.

Reason: To cover the routes between Australia/Asia and Africa.

MOD 27/86 MWARA-Middle East (MWARA-ME)

Amend designation to read: MWARA ME MID

Amend delineation to read:

'From the point $50^{\circ}\text{N } 80^{\circ}\text{E}$ $51^{\circ}\text{N } 30^{\circ}\text{E}$ through the points $31^{\circ}\text{N } 80^{\circ}\text{E}$, $29^{\circ}\text{N } 85^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $57^{\circ}\text{N } 37^{\circ}\text{E}$, $50^{\circ}\text{N } 80^{\circ}\text{E}$, $44^{\circ}\text{N } 94^{\circ}\text{E}$, $08^{\circ}\text{N } 76^{\circ}\text{E}$, $22^{\circ}\text{N } 56^{\circ}\text{E}$, $16^{\circ}\text{N } 42^{\circ}\text{E}$, $30^{\circ}\text{N } 30^{\circ}\text{E}$, $51^{\circ}\text{N } 30^{\circ}\text{E}$, $57^{\circ}\text{N } 37^{\circ}\text{E}$ to the point $51^{\circ}\text{N } 30^{\circ}\text{E}$, $50^{\circ}\text{N } 80^{\circ}\text{E}$.'

NOC Frequency Allotment

Reason: To ensure consistency with ICAO designator. The eastern boundary to be moved to the east to include Urumchi.

MOD 27/87 MWARA - North Atlantic (MWARA-NA)

Amend designation to read: MWARA-NA NAT

Amend delineation to read:

'From the North Pole through the points $49^{\circ}\text{N } 100^{\circ}\text{W}$, $60^{\circ}\text{N } 135^{\circ}\text{W}$, $49^{\circ}\text{N } 120^{\circ}\text{W}$, $49^{\circ}\text{N } 74^{\circ}\text{W}$, $39^{\circ}\text{N } 78^{\circ}\text{W}$, $18^{\circ}\text{N } 66^{\circ}\text{W}$, $05^{\circ}\text{N } 55^{\circ}\text{W}$, $16^{\circ}\text{N } 26^{\circ}\text{W}$, $32^{\circ}\text{N } 08^{\circ}\text{W}$, $44^{\circ}\text{N } 02^{\circ}\text{E}$, $60^{\circ}\text{N } 20^{\circ}\text{E}$, to the North Pole.'

MOD Frequency Allotment: Three additional families required.

Reason: To ensure consistency with ICAO designator. The western boundary to be moved to the west to include essentially all of Canada.

SUP 27/88-
93 inclusive

Reason: In view of the conclusion reached not to sectorize MWARAs.

MOD 27/94 MWARA-North Pacific (MWARA-NP)

Amend delineation to read:

'From the point 50°N 166°E through the points 75°N 150°W, 75°N 90°W, 55°N 110°W, 46°N 122°W, 50°N 170°W, 33°N 138°E, 52°N 132°E, to the point 50°N 166°E North Pole through the points 60°N 135°W, 47°N 118°W, 30°N 165°W, 30°N 115°E, 41°N 116°E, 55°N 135°E to the North Pole.'

ADD Frequency Allotment: One additional family required.

Reason: The eastern boundary to be moved to the west to exclude the most part of Canada from the allotment area and the western boundary to be moved to the west to include Peking and Shanghai.

MOD 27/95 MWARA - North South Africa-1 (MWARA-NSA-1)

Amend designation to read: MWARA-NSA-1 AFI.

Amend delineation to read:

'From the point 05°N 03°W through the points 37°N 03°W, 37°N 14°E, 00° 28°E, 11°S 28°E, 20°S 35°E, 31°S 35°E, 31°S 17°E, to the point 05°N 03°W.'

From the point 40°N 35°W through the points 37°N 03°W, 37°N 35°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 35°S 30°E, 35°S 16°E, 05°N 03°W, 05°N 35°W, to the point 40°N 35°W

ADD Frequency Allotment: One additional family required.

Reason: To ensure consistency with ICAO designator. It was agreed to revise 27/95 and 27/96 in order to create a new MWARA essentially encompassing all of Africa. In creating MWARA-AFI it was agreed that portions of the ICAO Sectors AFI-3 and AFI-5 might form part of the agreed MWARA Indian Ocean (see ADD 27/85).

SUP 27/96 MWARA - North- South-Africa-2 (MWARA-NSA-2)

Reason: Consequential change as a result of MOD 27/95 above.

SUP 27/97

Reason: Consequential change as a result of MOD 27/95 above.

MOD 27/98 MWARA - South Atlantic (MWARA-SA)

Amend designation to read: MWARA-SA SAT

Amend delineation to read:

~~'From the point 40°N 03°W through the points 05°N 03°W, 20°S 20°W, 22°30'S 42°W, 15°S 50°W, 00° 38'W, 40°N 15°W to the point 40°N 03°W.'~~

From the South Pole through the points 30°S 75°W, 10°S 40°W, 00° 60'W, 20°N 60°W, 25°N 25°W, 41°N 15°W, 41°N 03°W, 15°N 03°W, 20°S 32°E to the South Pole.

ADD Frequency Allotment: Two additional families required.

Reason: To ensure consistency with ICAO designator. The boundaries are adjusted to provide for: routes from Africa to the Caribbean and South America; routes between Europe and the eastern part of South America; polar routes between South America and Australasia.

SUP 27/99

Reason: Consequential change as a result of MOD 27/98 above

MOD 27/100 MWARA - South America-1 (MWARA-SAM-1)

Amend designation to read: MWARA-SAM-1

Amend delineation to read:

~~'From the point 36°S 73°W through the points 00° 03'W, 15°N 106°W, 15°N 75°W, 05°N 75°W, 20°S 50°W, 36°S 52°W, to the point 36°S 73°W.'~~

From the South Pole through the points 15°N 125°W, 15°N 60°W, 10°N 60°W, 05°S 30°W, 36°S 52°W to the South Pole.

NOC Frequency Allotment

Reason: It was agreed to revise 27/100 and 27/101 in order to create a new MWARA encompassing all of South America, and to extend the western and southern boundaries of the area to include routes from South America to the South Pacific.

SUP 27/101 MWARA - South America-2 (MWARA-SAM-2)

Reason: Consequential change as a result of MOD 27/100 above.

MOD 27/102 MWARA - South East Asia (MWARA-SEA)

Amend delineation to read:

~~'From the point 29°N 85°E through the points 15°N 105°E, 00° 135°E, 00° 168°E, 35°S 150°E, 35°S 116°E, 08°N 75°E, to the point 29°N 85°E.'~~

From the point 26°N 130°E, 00° 130°E, 00° 135°E, 12°S 145°E, 12°S 160°E, 25°S 155°E, 40°S 150°E, 35°S 115°E, 18°N 62°E, 26°N 65°E, to the point 26°N 130°E.

ADD Frequency Allotment: Three families are required.

Reason: Expansion of the existing SEA MWARA was required. In view of the high traffic density in and the vast size of the overall area it was decided that the boundaries considered therein be amended so as to create two separate MWARAs.

MOD 27/103 MWARA-South Pacific (MWARA-SP)

Amend delineation to read:

~~'From the point 22°N 158°W through the points 22°N 156°W, 00° 120°W, 40°S 120°W, 50°S 170°W, 50°S 145°E, 38°S 145°E, 00° 167°E, 00° 175°W, to the point 22°N 158°W.'~~

From the South Pole through the points 38°S 145°E, 00° 167°E, 00° 175°W, 22°N 158°W, 22°N 156°W, 00° 120°W to the South Pole.

ADD Frequency Allotment: One additional family is required.

Reason: The eastern and western boundaries are extended to the South Pole to include polar routes from Pacific Islands to South Africa.

ADD 27/103A Add MWARA contained in Recommendation 2/3 subparagraph 2) once the States concerned take the action referred to in subparagraph b).

ADD 27/103B Add MWARA-NCA once the States concerned take the action referred to in Recommendation 2/5.

ARTICLE 3

Description of the Boundaries of the VOLMET Allotment Areas
and VOLMET Reception Areas

VOLMET area - AFRICA-INDIAN OCEAN (AFI-MET)

It was agreed that, in order to provide VOLMET service for South America-South Africa and South Africa-Australia flights, the Allotment and Reception Areas be expanded and re-defined as delineated below:

MOD 27/174 'The AFI-MET allotment area is defined by a line drawn from the point $29^{\circ}\text{N } 20^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 03^{\circ}\text{W}$, $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, $22^{\circ}\text{S } 60^{\circ}\text{E}$, ~~$30^{\circ}\text{S } 34^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 24^{\circ}\text{E}$~~ , $35^{\circ}\text{S } 35^{\circ}\text{E}$, $35^{\circ}\text{S } 15^{\circ}\text{E}$, $08^{\circ}\text{S } 15^{\circ}\text{W}$, $12^{\circ}\text{N } 20^{\circ}\text{W}$ to the point $29^{\circ}\text{N } 20^{\circ}\text{W}$.'

MOD 27/175 'The AFI-MET reception area is defined by a line drawn from the point $37^{\circ}\text{N } 03^{\circ}\text{W}$ through the points $37^{\circ}\text{N } 36^{\circ}\text{E}$, $30^{\circ}\text{N } 35^{\circ}\text{E}$, $10^{\circ}\text{N } 52^{\circ}\text{E}$, ~~$22^{\circ}\text{S } 60^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 34^{\circ}\text{E}$~~ , ~~$30^{\circ}\text{S } 24^{\circ}\text{E}$~~ , ~~$05^{\circ}\text{N } 10^{\circ}\text{W}$~~ , ~~$10^{\circ}\text{S } 40^{\circ}\text{W}$~~ , $10^{\circ}\text{N } 100^{\circ}\text{E}$ the South Pole, $29^{\circ}\text{N } 40^{\circ}\text{W}$, $29^{\circ}\text{N } 20^{\circ}\text{W}$, to the point $37^{\circ}\text{N } 03^{\circ}\text{W}$.'

NOC Frequency Allotment

VOLMET area - ATLANTIC (AT-MET)

It was agreed to change the nomenclature from ATLANTIC (AT-MET) to NORTH ATLANTIC (NAT-MET).

In consideration of establishment of CARIBBEAN (CAR-MET) and SOUTH AMERICAN (SAM-MET) allotment and reception areas, it was agreed to amend the allotment and reception areas as defined below:

MOD 27/176 'The NAT-MET allotment area is defined by a line drawn from the point $41^{\circ}\text{N } 78^{\circ}\text{W}$ through the points $51^{\circ}\text{N } 55^{\circ}\text{W}$, ~~$10^{\circ}\text{S } 43^{\circ}\text{W}$~~ , ~~$37^{\circ}\text{S } 59^{\circ}\text{W}$~~ , $24^{\circ}\text{N } 50^{\circ}\text{W}$, $24^{\circ}\text{N } 74^{\circ}\text{W}$ to the point $41^{\circ}\text{N } 78^{\circ}\text{W}$.'

MOD 27/177 'The NAT-MET reception area is defined by a line drawn from the point $24^{\circ}\text{N } 97^{\circ}\text{W}$ through the points $24^{\circ}\text{N } 85^{\circ}\text{W}$, $75^{\circ}\text{N } 85^{\circ}\text{W}$, $75^{\circ}\text{N } 20^{\circ}\text{W}$, ~~$10^{\circ}\text{S } 20^{\circ}\text{W}$~~ , ~~$46^{\circ}\text{S } 52^{\circ}\text{W}$~~ , ~~$46^{\circ}\text{S } 80^{\circ}\text{W}$~~ , $00^{\circ} 20^{\circ}\text{W}$, $00^{\circ} 95^{\circ}\text{W}$ to the point $24^{\circ}\text{N } 97^{\circ}\text{W}$.'

ADD Frequency Allotment: One additional family required.

VOLMET Area - EUROPE (EU-MET)

It was agreed to change the nomenclature from EU-MET to EUR-MET.

It was agreed that no changes were necessary to the EU-MET allotment and reception areas, therefore 27/178 and 27/179 remain unchanged.

ADD Frequency Allotment: In view of the impossibility of accommodating aircraft operating agency requirements for additional terminal area forecasts and surface observations on one of the present families in the time available, it was agreed that one additional family is required.

VOLMET Area - MIDDLE EAST (MID-MET)

It was agreed to change the nomenclature from ME-MET to MID-MET.

It was agreed that no change was necessary to the definition of the MID-MET allotment area, therefore 27/180 remains unchanged.

It was agreed to amend the definition of the MID-MET reception area eastern boundary to include Urumchi, resulting in modification of the definition of the MID-MET reception area as follows:

MOD 27/181

'The MID-MET reception area is defined by a line drawn from the point 50° N 80° E, through the points 50° N 20° E, 29° N 80° E, 27° N 85° E, 35° N 90° E, 27° N 85° E, 16° N 78° E, 15° N 42° E, 20° N 20° E, 40° N 20° E, 22° N 56° E, 16° N 42° E, 30° N 30° E, 51° N 30° E, 57° N 37° E, to the point 50° N 80° E.'

ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - PACIFIC (PAC-MET)

It was agreed to amend the definition of the PAC-MET allotment area, to include Christmas Island, Tahiti, and New Zealand, as follows:

MOD 27/182

'The PAC-MET allotment area is defined by a line drawn from the point 52° N 132° E, through the points 63° N 149° W, 38° N 120° W, 23° S 180°, 34° S 150° E, 50° S 120° W, 50° S 145° E, 28° S 145° E, 03° S 129° E, 22° N 112° E to the point 52° N 132° E.'

It was agreed to amend the definition of the PAC-MET reception area as follows:

MOD 27/183

'The PAC-MET reception area is defined by a line drawn from the point 60° N 100° E, through the points 80° N 160° W, 75° N 90° W, 60° N 85° W, 20° N 120° W, 40° S 120° W, 50° S 170° W, 50° S 145° E to the North Pole, to the South Pole along the 110° W meridian, to 28° S 145° E, 03° S 129° E, 05° N 80° E, 40° N 80° E, to the point 60° N 100° E.'

ADD Frequency Allotment: One additional frequency family is required.

VOLMET Area - SOUTH EAST ASIA (SEA-MET)

To meet the needs of the South Africa - Australia services and international flights in the South-East Asia Region, it was agreed to amend the definition of the SEA-MET allotment and reception areas as follows:

MOD 27/184

'The SEA-MET allotment area is defined by a line drawn from the point $29^{\circ}\text{N } 86^{\circ}\text{E}$ $55^{\circ}\text{N } 75^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 135^{\circ}\text{E}$, $45^{\circ}\text{N } 135^{\circ}\text{E}$, $35^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{N } 130^{\circ}\text{E}$, $10^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 155^{\circ}\text{E}$, $35^{\circ}\text{S } 116^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $26^{\circ}\text{N } 65^{\circ}\text{E}$, $15^{\circ}\text{N } 105^{\circ}\text{E}$, to the point $29^{\circ}\text{N } 86^{\circ}\text{E}$, $55^{\circ}\text{N } 75^{\circ}\text{E}$.'

MOD 27/185

~~'The SEA-MET reception area is defined by a line drawn from the point $35^{\circ}\text{N } 50^{\circ}\text{E}$ through the points $30^{\circ}\text{N } 90^{\circ}\text{E}$, $10^{\circ}\text{N } 180^{\circ}$, $40^{\circ}\text{S } 180^{\circ}$, $48^{\circ}\text{S } 170^{\circ}\text{E}$, $35^{\circ}\text{S } 116^{\circ}\text{E}$, $08^{\circ}\text{N } 75^{\circ}\text{E}$, $10^{\circ}\text{N } 50^{\circ}\text{E}$, to the point $35^{\circ}\text{N } 50^{\circ}\text{E}$.'~~

The SEA-MET reception area is defined by a line drawn from the point $55^{\circ}\text{N } 50^{\circ}\text{E}$, through the points $55^{\circ}\text{N } 180^{\circ}$, $50^{\circ}\text{S } 180^{\circ}$, $50^{\circ}\text{S } 70^{\circ}\text{E}$, $08^{\circ}\text{N } 70^{\circ}\text{E}$, $08^{\circ}\text{N } 50^{\circ}\text{E}$, to the point $55^{\circ}\text{N } 50^{\circ}\text{E}$.

ADD Frequency Allotment: Two additional frequency families are required.

VOLMET - CARIBBEAN (CAR-MET)

Associated with the reduction of the AT-MET VOLMET Area now designated NAT-MET and to cater for eventual requirements, the Caribbean VOLMET Area was created with allotment and reception areas as follows:

ADD 27/185A

The CAR-MET allotment area is defined by a line drawn from the point $30^{\circ}\text{N } 110^{\circ}\text{W}$, through the points $30^{\circ}\text{N } 75^{\circ}\text{W}$, $00^{\circ}\text{ } 50^{\circ}\text{W}$, following equator to $00^{\circ}\text{ } 80^{\circ}\text{W}$ to the point $30^{\circ}\text{N } 110^{\circ}\text{W}$;

ADD 27/185B

The CAR-MET reception area is defined by a line drawn from the point $40^{\circ}\text{N } 120^{\circ}\text{W}$, through the points $40^{\circ}\text{N } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 20^{\circ}\text{W}$, $25^{\circ}\text{S } 120^{\circ}\text{W}$, to the point $40^{\circ}\text{N } 120^{\circ}\text{W}$;

ADD Frequency Allotment: One frequency family is required.

VOLMET Area - SOUTH AMERICA (SAM-MET)

To cater for eventual requirements, the South America VOLMET Area was created with allotment and reception areas as follows:

ADD 27/185C

The SAM-MET allotment area is defined by a line drawn from the point $15^{\circ}\text{N } 83^{\circ}\text{W}$ through the points $15^{\circ}\text{N } 60^{\circ}\text{W}$, $5^{\circ}\text{S } 35^{\circ}\text{W}$, $55^{\circ}\text{S } 60^{\circ}\text{W}$, $55^{\circ}\text{S } 83^{\circ}\text{W}$ to the point $15^{\circ}\text{N } 83^{\circ}\text{W}$;

ADD 27/185D The SAM-MET reception area is defined by a line drawn from the point 30°N 120°W through the points 30°N 00°, the South Pole, to the point 30°N 120°W;

ADD Frequency Allotment: One frequency family is required.

VOLMET Area - NORTH CENTRAL ASIA (NCA-MET)

In order to meet the requirements for provision of meteorological information to flights over the territory of the Soviet Union the VOLMET North and Central Asia Area was created with allotment and reception areas as follows:

ADD 27/185E The NCA-MET allotment area is defined by a line drawn from the point 76°N 32°E through the points 80°N 90°E, 75°N 168°W, 66°N 168°W, 48°N 160°E, 42°N 135°E, 50°N 130°E, 50°N 90°E, 35°N 70°E, 45°N 30°E, 60°N 20°E to the point 76°N 32°E;

ADD 27/185F The NCA-MET reception area is defined by a line drawn from the North Pole to the point 40°N 168°W, 30°N 140°E, 30°N 20°E, to the North Pole;

ADD Frequency Allotment: Two frequency families are required.

Section II

Allotment of Frequencies to the Aeronautical Mobile (R) Service

ARTICLE 1

MOD 27/186 Frequency Allotment Plan by Areas
(~~by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas~~)

Reason: To indicate that the title embraces all uses of the frequencies in the frequency allotment plan.

NOC 27/187

MOD 27/188 The following list does not include the world wide common (R) and (OR) frequencies of 3023.5, 3023 and 5680 kHz. or the world wide frequencies of 3499, 6526, 8963, 10,093 and 13,256 ke/s. The allotment of these frequencies is shown in Article 2.

Reason: Consequent to inclusion of Aeronautical Operational Control frequencies in the new allotment table.

MOD 27/189 Note: The Table will need to include provision for Aeronautical Operational Control frequencies.

ARTICLE 2

Frequency Allotment Plan (in numerical order of frequencies)

General Notes:

MOD 27/192 '1. Class of stations: FA.

Classes of emission: see Nos. ~~27/49-27/53~~ 27/49-27/52.

Power: Unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos. 27/54-27/62.

Hours: H24 unless otherwise indicated.'

Reason: Consequential to proposals by the Meeting.

MOD 27/193 2. A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or Aeronautical Operational Control which receive full protection during the twenty-four hours.

Reason: To add channels allotted for Aeronautical Operational Control use.

NOC 27/194

ADD 27/194A The frequency allotment for aeronautical operational control use is for assignment by administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.

Reason: To provide for operational control (flight regularity) communications between aircraft and associated aeronautical stations.

MOD 27/195 - 27/207, as follows:

Add new 3 kHz channels. (See MOD 27/16)
In the table (Pages (45) thru (55)), it is recommended that frequencies allotted for world-wide use be designated as follows:

Column 1 - "Frequency ~~kw/s~~ kHz" - ()
Column 2 - "Authorized Area of Use" - World-wide
Column 3 - "Remarks" - Aeronautical Operational Control (AOC)
See ADD 27/194A.

Reason: To clearly indicate frequencies allotted for world-wide operational control (flight regularity) communications and new channels made available by the plan.

MOD 27/196 & 27/201 In the table, MOD Column 2 with regard to 27/196 and 27/201 to read:
world-wide, (R) and (OR)

In the table MOD Column 3 for both 27/196 and 27/201 as follows:

- 3) the specific application of this frequency for the above purposes may be decided at ICAO regional aeronautical conferences; air navigation meetings;
- 4) the use of this frequency is also authorized for inter-communication between stations in the aeronautical mobile service and mobile stations engaged in coordinated air-surface search and rescue operations including communication between these stations and participating land stations.

REASON: To indicate world-wide Aeronautical Mobile (R) and (OR) Services application and to clarify the intent for the use of these aeronautical frequencies by other mobile services.

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APPENDIX DCONSOLIDATION OFPROPOSED AMENDMENTS TO THE RADIO REGULATIONS

(taken from the various recommendations of the Meeting,
and reproduced in numerical order)

Article 5

Frequency Allocations

10 kHz to 275 Ghz

MOD 201A

'The frequencies 2182 kHz, ~~3023.5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.'

REASON:

Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

MOD 205 A

'The carrier frequencies ~~3023.5~~ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.'

REASON:

Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

Article 7

Special Rules Relating to Particular Services

Section II

Aeronautical Mobile Service

NOC 429ADD 429A Aeronautical Operational Control Communications

Aeronautical Operational Control Communications in the aeronautical mobile (R) service are intended to permit communications related to regularity of flight.

Article 9

Notification and recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunications stations.

NOC 486 through 589

Frequency bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17 970 kHz.

MOD 590

'(2) If the finding is favourable with respect to Nos. 554 to 557 the date of 29-April-1966 (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2a.'

MOD 591

'(3) If the finding is favourable with respect to No. 558, the date of 29-April 1966 (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2b.'

REASON:

To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

Article 28

Conditions to be Observed by Mobile Services

Section II

Special Provisions Regarding Safety

MOD 969 A '(3) The aeronautical frequencies ~~3023.5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communication between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).'

REASON: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A, 1326C.

Article 35

Use of Frequencies for Radio Telephony
in the Maritime Mobile Service

Section II

Band Between 1605 and 4000 ~~ke/s~~ kHz

C. Search and Rescue

MOD 1326C '3A The aeronautical frequency ~~3023.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).'

REASON: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

MOD 1353B '15A. The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).'

REASON: To align with MOD 969A and MOD 1326C.

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APPENDIX ECONSOLIDATION OFPROPOSED AMENDMENTS TO RESOLUTIONS OF THE RADIO REGULATIONS

(taken from the various recommendations of the Meeting,
and reproduced in numerical order)

SUPRESOLUTION No. Aer 1

relating to the use of frequencies 3023.5 and 5680 kHz common to the aeronautical mobile (R) and (OR) services.

REASON:

This Resolution has been modified to bring it up-to-date and is shown as an ADD Resolution No. Aer 1 - (A) which follows:

ADDRESOLUTION No. Aer 1- (A)

RELATING TO THE USE OF FREQUENCIES 3023 AND 5680 kHz COMMON
TO THE AERONAUTICAL MOBILE (R) AND (OR) SERVICES

The Aeronautical World Administrative Radio Conference,
Geneva, 1978

having noted,

that this conference in adopting a new Frequency Allotment Plan in, Appendix 27 (Rev), has decided to use 3023 kHz instead of 3023.5 kHz; and, additionally, has amended the provisions governing the use of 3023 and 5680 kHz,

considering

1. that, by this action some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;
2. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operation, was extended to include communication between mobile stations and participating land stations;
3. that it would be in the general interests of the aeronautical mobile (R) service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the Frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

REASON: Represents an up-date of Resolution No. Aer 1, which has been proposed for SUP.

SUPRESOLUTION No. Aer 2

RELATING TO THE USE OF FREQUENCIES IN THE HF BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE.

REASON: This Resolution has been modified, to bring it up-to-date, and is shown as an ADD Resolution No. Aer 2 - (A) below.

ADDRESOLUTION No. Aer 2 - (A)

RELATING TO THE UNAUTHORIZED USE OF FREQUENCIES IN THE BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,

Geneva, 1978

considering

a) that monitoring observations of the use of the frequencies in the bands between 2850 and 17 970 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high powered broadcasting stations, some of which are operating in contravention of No. 422 of the Radio Regulations:

b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;

c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the aeronautical mobile (R) service bands other than under the conditions specified in Nos. 115 and 415;
2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;
3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;
4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No. 422 of the Radio Regulations;

requests the International Frequency Registration Board

1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;
2. to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause harmful interference to the aeronautical mobile (R) service;
3. to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

Reason: Represents an up-date of Resolution No. Aer 2, which has been proposed for SUP.

SUP

RESOLUTION No. Aer 3

RELATING TO THE INTRODUCTION OF SINGLE SIDEBAND TECHNIQUES IN THE HF BANDS ALLOCATED TO THE AERONAUTICAL MOBILE (R) SERVICE

Reason: With the adoptment of an allotment plan based on single sideband techniques, this Resolution is no longer applicable.

SUP

RESOLUTION No. Aer 4

RELATING TO THE USE OF VHF FOR COMMUNICATION IN THE AERONAUTICAL MOBILE (R) SERVICE.

Reason: This Resolution has been modified to bring it up-to-date, and is shown as an ADD Resolution No. Aer 4 - (A) which follows.

ADD RESOLUTION No. Aer 4 - (A)

RELATING TO THE USE OF VHF FOR COMMUNICATION IN THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that from an aeronautical viewpoint, VHF can provide a more reliable and more static-free communication system than HF;
- b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;
- c) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;
- d) that, owing to development of aeronautical telecommunications in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

resolves

that administrations, to the maximum extent practicable, should employ VHF to meet their requirements in the aeronautical mobile (R) service.

Reason: Represents an up-date of Resolution No. Aer 4, which has been proposed for SUP.

SUP RESOLUTION No. Aer 5

RELATING TO THE USE OF VHF FOR METEOROLOGICAL BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

REASON: This Resolution has been modified to bring it up-to-date, and is shown as an ADD Resolution No. Aer5-(A) which follows.

ADD RESOLUTION No. Aer5-(A)

RELATING TO THE USE OF VHF FOR METEOROLOGICAL BROADCASTS IN THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the number of channels available for the aeronautical mobile (R) service in the frequency bands between 2850 and 17 970 kHz is limited;

- b) that the need for frequencies for aeronautical mobile (R) service communications and for meteorological broadcasts to aircraft is increasing;
- c) that the propagation characteristics of high frequencies make them essential for aviation communication requirements over long distances;
- d) that in Recommendation No. 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution No. 14 MOD (See Report on Agenda Item 3, first page of Appendix D) of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";
- e) that this conference has adopted a Resolution whereby administrations should, to the maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;
- f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;
- g) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

Reason: Represents an up-date of Resolution No. Aer 5, which has been proposed for SUP.

SUP

RESOLUTION No. Aer 6

RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kHz

Reason: This Resolution has been rewritten and is shown as Resolution No. Aer6-(A), and, therefore, needs to be suppressed.

ADD

RESOLUTION No. Aer 6 - (A)

RELATING TO THE TREATMENT OF NOTICES CONCERNING FREQUENCY ASSIGNMENTS TO AERONAUTICAL STATIONS IN THE AERONAUTICAL MOBILE (R) SERVICE IN THE BANDS ALLOCATED EXCLUSIVELY TO THAT SERVICE BETWEEN 2850 AND 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering:

- a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours G.M.T. on 1 February 1983;
- c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;

1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:

- a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
- b) if the finding is favourable with respect to No. 558, the date of 29th April 1966 shall be entered in Column 2b;
- c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the I.F.R.B shall be entered in Column 2b;

1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the I.F.R.B. of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

2. that on the date of coming into force of the new Frequency Allotment Plan, the I.F.R.B. shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2850 and 17 970 Hz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

- 2.1 assignments with double sideband emission (A3), mentioned in paragraph 4.4 of Resolution Aer 2-(A), and already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in column 2a or 2b as appropriate until 1 February 1983. A date in column 2a for a frequency assignment using double sideband (A3) as mentioned in paragraph 4.4 of proposed Resolution Aer 2-(A), shall be transferred to column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with Administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in column 2b.
- 2.2 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2a;
- 2.3 assignments found favourable with respect to No. 558 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2b;
- 2.4 all other assignments shall have (the day AFTER the date of signing the AWARC Agreement, Geneva, 1978) entered in column 2b;
3. that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the I.F.R.B. as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

REASON: With the revision of Appendix 27, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

ADD

RESOLUTION No. Aer 6 - (B)

RELATING TO THE IMPLEMENTATION OF THE FREQUENCY ALLOTMENT PLAN IN THE HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 AND 17 970 KHZ

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between 2850 and 17 970 kHz) to the aeronautical mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;
- b) that the 1966 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;
- c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a safety service;
- e) that the present conference has further modified the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to implement the modifications made by the present conference, with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

- 1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows:
 - 1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;
 - 1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action;
- 2. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

Reason To provide for transfer of out-of-band assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

SUPRESOLUTION No. 13

RELATING TO THE PREPARATION OF REVISED ALLOTMENT PLANS
FOR THE AERONAUTICAL MOBILE SERVICE

NOTE:

Although the World Administrative Radio Conference, Aeronautical Mobile (R) Service 1978, will not be competent to address this Resolution because of the interest of the (OR) Service, the Resolution is no longer necessary in so far as the (R) Service is concerned.

MODRESOLUTION No. 14

RELATING TO THE USE OF FREQUENCIES OF THE AERONAUTICAL MOBILE
(R) SERVICE

The Aeronautical World Administration Radio Conference,
Geneva, 1978,

considering

- a) that the previous Allotment Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations, Geneva, edition of 1968) has been substantially revised by this conference;
- b) that air operations are subject to continuous changes;
- c) that these changes require attention by the administrations concerned, but
- d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the coordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;
- e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas and VOLMET areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;
- f) that it is essential to distribute the communication traffic load as uniformly as possible over frequencies ~~of the same order~~ available;
- g) that specific steps should be taken to ensure that the correct order of frequency is used;

b) that frequencies have been allotted for world-wide use

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;
2. to make as great a use as possible of antennas of appropriate directivity and efficiency in order to minimise possibilities of mutual interference within an area or between areas;
3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
5. to collect precise data on the operation of their high frequency communication systems, particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: To include references to VOLMET Areas and to Aeronautical Operational Control Communications.

ADD

RESOLUTION No. Aer 7

RELATING TO THE IMPLEMENTATION OF THE NEW ARRANGEMENT
OF HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE
AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2850 AND 17 970 kHz

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that each of the high frequency bands allocated exclusively to the - aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this conference to provide for SSB techniques;

- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;
- f) that the Final Acts of this Conference will enter into force on 1 April 1979;
- g) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on 1 February 1983;

recognizing

- a) that the aeronautical mobile (R) service is a safety service
- b) that some frequencies have been allotted for world-wide use

resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;
2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single sideband operation shall be made in accordance with the following provisions:
 - 2.1 the carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;
 - 2.2 the carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;

2.3 that, prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be co-ordinated with the International Civil Aviation Organization in accordance with No. (MOD) 27/20 of Appendix 27 to the Radio Regulations;

3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations, shall be replaced by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);

4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2850 and 17970 kHz shall comply with the following conditions:

4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operation at the earliest possible date; furthermore, they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3 until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized. Double sideband operations may, however, be continued in exceptional cases for domestic use until 1 February 1987, provided that harmful interference which may be caused to the International Aeronautical Mobile (R) Service operating in the single sideband mode be resolved by application of Article 15 of the ITU Radio Regulations, noting in particular RR 667 and RR 674. The Administrations requiring such an extension of the full implementation of single sideband are, nevertheless, urged to cease double sideband operations as soon as possible.

Reason: With the Appendix 27 (Rev), an orderly transition to the new plan is required.

APPENDIX FCONSOLIDATION OFPROPOSED AMENDMENTS TO
RECOMMENDATIONS OF THE RADIO REGULATIONS

(taken from the various recommendations of the Meeting,
and reproduced in numerical order)

SUPRECOMMENDATION No. Aer 1

RELATING TO THE DEVELOPMENT OF TECHNIQUES WHICH WOULD HELP
TO REDUCE CONGESTION IN THE HIGH FREQUENCY BANDS ALLOCATED
TO THE AERONAUTICAL MOBILE (R) SERVICE

Reason:

This Recommendation has been modified, to bring it up-to-date and is shown as an ADD Recommendation No. Aer 1 - (A) which follows.

ADDRECOMMENDATION No. Aer 1 - (A)

RELATING TO THE DEVELOPMENT OF TECHNIQUES WHICH WOULD HELP
TO REDUCE CONGESTION IN THE HIGH FREQUENCY BANDS ALLOCATED
TO THE AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that several administrations are actively engaged in the development of communication techniques the wider use of which in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high-powered VHF transmitters employing directional antennae, space radiocommunication techniques and automatic data transmission;
- b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;
- c) that the International Civil Aviation Organization (I.C.A.O.) is actively engaged in coordinating the operational development of such techniques;

invites

administrations engaged in such developments to inform the I.F.R.B. periodically of the progress achieved;

requests

the I.F.R.B. periodically to circulate the information so obtained to administrations and to I.C.A.O.

REASON:

Represents an up-date of Recommendation No. Aer 1, which has been proposed for SUP.

ADDRECOMMENDATION No. Aer 3

RELATING TO A STUDY OF THE FEASIBILITY OF CREATING
NEW HIGH FREQUENCY BANDS TO BE ALLOCATED EXCLUSIVELY TO THE
AERONAUTICAL MOBILE (R) SERVICE

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all of the requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive allocations in the 20-24 MHz region of the spectrum when preparing their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the Aeronautical Mobile (R) Service at the next competent WARC.

Statement of the International Telecommunication Union

While the representatives of the ITU agree, in principle, with the contents of the Report of the ICAO Communications Divisional Meeting, Montreal, September 1976, there are many details in the Report which need study by the IFRB and also careful consideration by the Administrations, Members of the International Telecommunication Union, in preparing their proposals for consideration by the forthcoming World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva 1978, within the framework of the purposes of the Union and other provisions of the International Telecommunication Convention as well as the provisions of the Radio Regulations annexed thereto.

- END -

ICAO TECHNICAL PUBLICATIONS

The following summary gives the status, and also describes in general terms the contents of the various series of technical publications issued by the International Civil Aviation Organization. It does not include specialized publications that do not fall specifically within one of the series, such as the Aeronautical Chart Catalogue or the Meteorological Tables for International Air Navigation.

International Standards and Recommended Practices are adopted by the Council in accordance with Articles 54, 37 and 90 of the Convention on International Civil Aviation and are designated, for convenience, as Annexes to the Convention. The uniform application by Contracting States of the specifications contained in the International Standards is recognized as necessary for the safety or regularity of international air navigation while the uniform application of the specifications in the Recommended Practices is regarded as desirable in the interest of safety, regularity or efficiency of international air navigation. Knowledge of any differences between the national regulations or practices of a State and those established by an International Standard is essential to the safety or regularity of international air navigation. In the event of non-compliance with an International Standard, a State has, in fact, an obligation, under Article 38 of the Convention, to notify the Council of any differences. Knowledge of differences from Recommended Practices may also be important for the safety of air navigation and, although the Convention does not impose any obligation with regard thereto, the Council has invited Contracting States to notify such differences in addition to those relating to International Standards.

Procedures for Air Navigation Services (PANS) are approved by the Council for world-wide application. They contain, for the most part, operating procedures

regarded as not yet having attained a sufficient degree of maturity for adoption as International Standards and Recommended Practices, as well as material of a more permanent character which is considered too detailed for incorporation in an Annex, or is susceptible to frequent amendment, for which the processes of the Convention would be too cumbersome.

Regional Supplementary Procedures (SUPPS) have a status similar to that of PANS in that they are approved by the Council, but only for application in the respective regions. They are prepared in consolidated form, since certain of the procedures apply to overlapping regions or are common to two or more regions.

The following publications are prepared by authority of the Secretary General in accordance with the principles and policies approved by the Council.

Technical Manuals provide guidance and information in amplification of the International Standards, Recommended Practices and PANS, the implementation of which they are designed to facilitate.

Air Navigation Plans detail requirements for facilities and services for international air navigation in the respective ICAO Air Navigation Regions. They are prepared on the authority of the Secretary General on the basis of recommendations of regional air navigation meetings and of the Council action thereon. The plans are amended periodically to reflect changes in requirements and in the status of implementation of the recommended facilities and services.

ICAO Circulars make available specialized information of interest to Contracting States. This includes studies on technical subjects.

PRICE: U.S.\$6.00
(or equivalent in other currencies)
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PLENARY MEETING

France

PROPOSAL FOR THE WORK OF THE CONFERENCE

F/22/1 The French Administration endorses the proposals prepared by the International Civil Aviation Organization at its meeting of 8-24 September 1976 at MONTREAL and reproduced in the report approved at that meeting (Document 9187, COM/76), page 6-49 (1st part, General Provisions) to page 6-90 inclusive, with the exception of the proposal relating to No. 27/20 on page 6-53.

For this number the proposal of the French Administration is as follows :

F/22/2 MOD 27/20 "The International Civil Aviation Organization (~~I.C.A.O.~~) (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical air operations in matters of air navigational safety ~~for a large part of the world~~, and this Organization should shall be consulted ~~in appropriate cases~~, particularly in the operational use of the frequencies in the Plan".

Reason :

- 1) Drafting changes.
- 2) To take into account the extension of the Plan to new navigational regions.
- 3) To take into account a new use of certain frequencies of the Plan for aeronautical operational control communications.

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 23-E

21 April 1977

Original : French

PLENARY MEETING

France

PROPOSAL FOR THE WORK OF THE CONFERENCE

NOC 27/104

NOC 27/109

NOC 27/125

NOC 27/137

NOC 27/144

NOC 27/150

NOC 27/159

NOC 27/160

F/23/1 MOD 27/143 Sub-area 9B

The Eastern limit should be moved from 170° W to 157° W.

Reason :

For all areas in which it is directly interested, France desires to see no change made to the limits of the RDARAs referred to in the above numbers, except in the case of RDARA 9B.

PLENARY MEETINGFrance

PROPOSAL FOR THE WORK OF THE CONFERENCE

APPENDIX 3

Mar Mar2

Table of frequency tolerances

(see Article 12)

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all transmitters after 1st January, 1966*
	* 1st January, 1970 in the case of all tolerances marked with an asterisk.	

<i>Band: 1605 to 4000 kHz</i>		
1. <i>Fixed Stations :</i>		
— power 200 W or less	100	100
— power above 200 W	50	50
2. <i>Land Stations</i>		
— power 200 W or less	100	100 h) <u>r)</u>
— power above 200 W	50	50 h) <u>r)</u>
3. <i>Mobile Stations</i>		
a) <i>Ship Stations</i>	200	200 i) <u>k)</u>
b) <i>Survival Craft Stations</i>	—	300
b A) <i>Emergency Position- Indicating Radiobeacons</i>	—	300
c) <i>Aircraft Stations</i>	200 *	100 * <u>r)</u>
d) <i>Land Mobile Stations</i>	200	200
4. <i>Radiodetermination Stations :</i>		
— power 200 W or less	100	100
— power above 200 W	50	50
5. <i>Broadcasting Stations</i>		
	50	20

F/24/1 MODF/24/2 MOD

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all transmitters after 1st January, 1966*
	* 1st January, 1970 in the case of all tolerances marked with an asterisk.	

Band: 4 to 29.7 MHz

F/24/3

MOD

b) Aeronautical Stations: — power 500 W or less — power above 500 W	100 50	100 $\frac{r}{r}$ 50 $\frac{r}{r}$
c) Base Stations: — power 500 W or less — power above 500 W	100 50	100 50
3. Mobile Stations:		
a) Ship Stations:		
1) Class A1 emissions	200	50 p) q)
2) Emissions other than Class A1	50	50 i) k)
— power 50 W or less	50 c)	50 c) i) k)
— power above 50 W	50	50 i) k)
b) Survival Craft Stations	200	200
c) Aircraft Stations	200 *	100 * $\frac{r}{r}$
d) Land Mobile Stations	200	200
4. Broadcasting Stations	30	15

F/24/4

Note to Appendix 3

ADD

r) For single sideband transmitting stations in the Aeronautical Mobile (R) Service, the tolerance is :

- 1) aeronautical stations : 10 Hz
- 2) aircraft stations :
 - a) on board high-speed aircraft (above 400 km/h) : 20 Hz
 - b) on board aircraft of a speed of 400 km/h or less : 40 Hz

Reason : To take into account an increased stability requirement in the only cases where the DOPPLER effect warrants it for air to ground communications.

PLENARY MEETING

United States of America

A SUGGESTED METHOD FOR THE TRANSITION TO UNIVERSAL SINGLE
SIDEBAND OPERATION IN THE AERONAUTICAL MOBILE (R) SERVICE

1. BACKGROUND

1.1 The United States is of the opinion that the transition to single sideband operation with 3 kHz spacing, based upon Appendix 27 to the Radio Regulations as revised by the 1978 World Administrative Radio Conference on the Aeronautical Mobile (R) Service, may be effected with minimal impact upon existing allotments. Additionally, it is possible to derive needed channels within the framework of the current Appendix 27 and the revised Appendix 27 prior to the coming into force of the latter.

1.2 This document contains suggestions relating to the derivation of allotments in a revised Appendix 27 and a methodology by which additional channels may be utilized during the transition period between the current Appendix 27 and the revised Appendix 27. It does not consider possible changes in the delineation of existing MWARA, RDARA or VOLMET boundaries, or the establishment of any new such areas.

2. INITIAL TRANSITION STAGE

2.1 Currently, without disturbing the frequency allotments contained in Appendix 27 to the Radio Regulations, additional HF families for areas other than those in which the allotments now appear, can be achieved by the judicious use of either half channel of selected shared MWARA/RDARA frequencies. The channels arrived at were based upon the same parameters used in allotting the original channels, i.e., geographical separation and propagation characteristics, assuring minimal interference to current users. For example, using the lower half channels, certain allotment areas can be supplied additional families as follows:

<u>REGION</u>	<u>CURRENT FAMILIES</u>	<u>ADDITIONAL</u>	<u>TOTAL ULTIMATE</u>	<u>ESTIMATED SATURATION DATE</u>
NA	5 *)	1	6	1981
CEP	2	2	4	1985

2.2 Also see attached other sharing possibilities with current Appendix 27 allotments.

3. TRANSITION PERIOD AND FINAL IMPLEMENTATION

3.1 Prior to the obligatory implementation of the 3 kHz channeling plan for Appendix 27 single sideband operation, during the continuing period where both double and single sideband operations are permitted, the following method may be used to achieve single sideband operation, based upon agreement between concerned Administrations.

*) Includes EUM "B".

3.2 Using the same parameters in allotting the original channels, i.e., geographical separation and propagation characteristics, reference can be made to the attached 3 kHz order of channels which shows:

- a. Current allotments under Appendix 27, which remain unchanged (NOC) under the new plan;
- b. Those frequencies requiring a one or two kilohertz change from the original allotment to arrive at the channels becoming available using the 3 kHz plan.

3.3 Lower channels of current allotments may still be used (see Initial Transition Stage) or 3 kHz channels can be selected as long as the earlier mentioned parameters are used. In this regard, such use of the new 3 kHz channels will bear the constraint of use on a non-interference basis to frequencies currently allotted under Appendix 27.

3.4 The final plan (and allotments) will be predicated on 3 kHz separation with an orderly progression based upon Attachment 2 wherein current allotments will remain unchanged (NOC) or will increase up or down in no more than 2 kHz increments.

3.5 The resulting additional channels can then be applied to new requirements in the aeronautical mobile (R) service.

3.6 To recapitulate :

In the band:

USA/25/1 2850-3025 kHz, 33 additional channels will become available
 3400-3500 kHz, 18 additional channels will become available
 4650-4700 kHz, 10 additional channels will become available
 5450-5480 (Region 2), 5 additional channels will become available
 plus A1 channel 5478 kHz worldwide
 5480-5680 kHz, 38 additional channels will become available
 6525-6685 kHz, 30 additional channels will become available
 8815-8965 kHz, 28 additional channels will become available
 plus 8963-A1 worldwide
 10005-10100 kHz, 18 additional channels plus 10099 - A1 worldwide
 11275-11400 kHz, 26 additional channels plus 11399 - A1 worldwide
 13260-13360 kHz, 19 plus raising 13356 to 13357 kHz (1 kHz) to
 worldwide - giving total of 20 channels
 17900-17970 kHz, 15 additional channels will become available

USA/25/2

The current Appendix 27 world wide frequencies (6526, 10093, 13356 kHz) are an option for any country. Frequencies available for SSB lower channel use are listed below and are predicated on ~~Geographical~~ Separation and Propagation considerations of Shared MWARA/RDARA frequencies in Appendix 27.

<u>NP</u>	<u>NA-2</u>	<u>NA-3</u>	<u>EU</u>	<u>ME</u>	<u>CEP</u>	<u>CWP</u>	<u>SP</u>	<u>CAR</u>	<u>SAM-1</u>	<u>SAM-2</u>	<u>SA</u>	<u>NSA-1</u>	<u>NSA-2</u>	<u>FE</u>	<u>SEA</u>
8882	4696	5645			2868	2889	8882	5645			6582	5484	2896	5589	2875
8910	5519				2931	2910	8938				6631		2931	5638	2931
8959	5554	6666			5484	2931	10009				10009		5484	6561	4675
10009	5589				5610	4689	11343				10049		5568	8854	4696
10049	8826				5645	5484	11367				13296		8889	13320	5519
11343	10009				6680	5568									5582
11367	10017				8840	5582									5589
	10049				8882	5610									5638
	11327				8910	6540									8847
	11367				8959	6624									10009
	13280				10009	6680									10049
					11327	8938									11343
					11367	10009									11367
					13328	10017									13320
		EUM B			13352	10049									13352
		3467													
		5554				11327									
		6568				11367									
		8931				13264									
		11303													

USA/25/3

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Band 2850-3025 ~~ke/s~~ kHz

FREQUENCY ke/s - kHz	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
2851		
2854 NOC	RDARA: 2B,3B,3C,4A,10C,13C	In 2B, use limited to North of 40° North and East of 60° East. Common channel to 2B,3B and 3C.
2857		
2861 2860	RDARA: 1E,3A,6E,9B,9C,10A,12D,13H	Common channel to 9B and 9C.
2863		
2866		
2868 2869	MWARA: FE, NA-1, NA-2 RDARA: 2B,7A,7B,7C,7D,13D	Common channel to NA-1 and NA-2. In 2B, limited to use on a day-time basis. Common channel to 7A,7B,7C and 7D.
2872		
2875 NOC	MWARA: SA RDARA: 2A,2B,3A,10A,12C	In SA, use limited to South of 30° North. Common channel to 2A,2B and 3A. In 10A, limited to use on a day-time basis.
2878		
2882 2881	RDARA: 2A,2C,3C,10E,13J	Common channel to 2A,2C and 3C.
2884		
2887		
2889 2890	MWARA: SAM-1 RDARA: 6B,10C VOLMET: EU-MET	In EU-MET, use limited to North of 50° North.
2893		
2896 NOC	MWARA: CWP RDARA: 1D,10B,13K	
2899		
2903 2902	RDARA: 2A,2C,3B,10D,13J	Common channel to 2A,2C and 3B.
2905		
2908		
2910 2911	MWARA: EU, NP, SAM-2 RDARA: 6A	Common channel to EU and 6A.
2914		
2917 NOC	RDARA: 2C,3C,7E,9D,10B,13E,13F	Common channel to 2C and 3C. Common channel to 13E and 13F.
2920		
2924 2923	RDARA: 2B,2C,3A,4B,6C,10A,10E,13D	Common channel to 2B,2C and 3A.
2926		

Band 2850-3025 ke/s kHz

1	2	3
2929		
2931 2932	MWARA: NA-2, NA-3 RDARA: 3B, 6A, 6E, 13I	Common channel to NA-2 and NA-3. Common channel to 6A and 6E.
2935		
2938 NOC	RDARA: 2B, 2C, 3B, 9D, 10E, 13G	Common channel to 2B, 2C and 3B.
2941		
2945 2944	MWARA: NA-2, SP RDARA: 6A, 13K	
2947		
2950		
2952 2953	MWARA: CAR RDARA: 2B, 2C, 6B, 13F	Common channel to 2B and 2C. In 6B, use limited to East of 125° East.
2956		
2959 NOC	RDARA: 2C, 3B, 9B, 12E, 12F, 12G, 12H	Common channel to 2C and 3B. Common channel to 12E, 12F, 12G and 12H.
2962		
2966 2965	MWARA: CAR, NSA-2 RDARA: 3B, 5B, 13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti.
2968		
2971		
2973 2974	RDARA: 2A, 6F, 9C, 9D, 10B, 13J	Common channel to 9C and 9D.
2977		
2980 NOC	RDARA: 2B, 12G, 13G VOLMET: EU-MET, PAC-MET	In 2B, limited to use on a day-time basis. In 12G, power limited to 500 W mean power during night-time. In 12G, night-time protection 12 db.
2983		
2987 2986	MWARA: FE, NA-2, SEA RDARA: 2C, 10A, 13C	Common channel to FE and SEA. In 2C, limited to use on a day-time basis. In 10A, use limited to East of 180°.
2989		
2992		
2994 2995	RDARA: 1C, 3C, 13G	
2998		
3001 NOC	RDARA: 6F, CEP-5 VOLMET: AT-MET, ME-MET	In 6F, use limited to East of 120° East.

Band 2850-3025 ke/s kHz (end)

1	2	3
3004		
3008 <u>3007</u>	RDARA: 2A,2C,3C,9B,9D, 10D,13G	Common channel to 2A,2C and 3C. Common channel to 9B and 9D.
3010		
3013		
3015 <u>3016</u>	RDARA: 6C,10B,12E,12F, 12G,12H	Common channel to 12E,12F,12G and 12H.
3019		
3023-5 <u>3023</u>	Worldwide R & OR.	Authorized for worldwide use: 1. aboard aircraft for: a) communications with approach and aerodrome control; b) communications with an aero- nautical station when other frequencies of the station are either unavailable or un- known; 2. at aeronautical stations for aerodrome and approach control under the following conditions: a) with mean power limited to a value of not more than 20 watts in the antenna circuit; b) special attention must be given in each case to the type of antenna used in order to avoid harmful inter- ference; c) the power of aeronautical stations which use this fre- quency in accordance with the above conditions, may be in- creased to the extent necessary to meet certain operational requirements subject to co- ordination between the Adminis- trations directly concerned and those whose services may be adversely affected; 3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences. 4. the use of this frequency is also authorized for inter- communication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations; 5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.

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USA/25/5 27/197

Band 3400-3500 kc/s kHz

1	2	3
3401		
3404 NOC	MWARA: ME RDARA: 3B, 9A, 12C	
3407		
3411 3410	MWARA: NSA-1 RDARA: 3A, 6A, 6D, 6E, 10A, 13D	In 3A, limited to use on a day-time basis. In 6A, reduced to 250 W mean power during night-time operation. In 6E, use limited to West of 82°30' East and reduced to 250 W mean power during night-time operation.
3413		
3416		
3418 3419	RDARA: 1D, 2C, 6B, 9A, 10B, 13J	In 1D, use limited to East of 21° East. In 6B, use limited to East of 120° East.
3422		
3425 NOC	RDARA: 2A, 2B, 2C, 3C, 7E, 9B, 9C, 10D, 12E, 12F, 12G, 12H, 13H	Common channel to 2A, 2B, 2C and 3C. Common channel to 9B and 9C. Common channel to 12E, 12F, 12G and 12H.
3428		
3432 3431	MWARA: SA RDARA: 3A, 10B, 10D VOLMET: SEA-MET	SA: use extended on air route to Buenos Aires. In 3A, reduced to 250 W mean power during night-time operation.
3434		
3437		
3439 3440	RDARA: 2A, 2B, 2C, 3A, 6C, 10D, 13F	Common channel to 2A, 2B, 2C and 3A.
3443		
3446 NOC	MWARA: ME RDARA: 9B, 9C, 10A, 12E, 12F, 12G, 12H	Common channel to 9B and 9C. Common channel to 12E, 12F, 12G and 12H.
3449		
3453 3452	RDARA: 1B, 1C, 3C, 5A, 9A, 10B, 12C	Common channel for use only in the North Sea area of 1B and 1C.
3455		
3458		
3460 3461	RDARA: 2A, 2B, 2C, 6B, 9B, 9C, 10E, 12C, 13K	Common channel to 2A, 2B and 2C. In 6B, use limited to East of 120° East. Common channel to 9B and 9C.
3464		

Band 3400-3500 ke/s kHz (end)

1	2	3
3467 NOC	MWARA: CEP, EU RDARA: 6E,9D,12F	In 9D, use limited to West of 160° East
3470		
3473	RDARA: 1C,2C,3C,6D,10C,13C	Common channel to 1C and 2C. In 3C, limited to use on a day-time basis.
3476		
3479		
3481 3482	MWARA: NSA-2 RDARA: 3A,6F,9D,10A,13K	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to 6F and the extension of NSA-2. In 6F, use limited to South of 25° North and to 250 W mean power during night-time operation. In 9D, use limited to East of 160° East.
3485		
3488 NOC	RDARA: 2B,6D,10D,13E VOLMET: AFI-MET	In AFI-MET, use limited to West of 10° East and South of 20° North.
3491		
3494	RDARA: 2A,2C,3B,6D,10D, 10E,13D VOLMET: AFI-MET	Common channel to 2A and 2C. Common channel to 10D and 10E. In AFI-MET, use limited to South of the Equator.
3499 3497	Worldwide	At-only-

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Band 4650-4700 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
4651		
4654 NOC	RDARA: 1E,2B,2C,3C,10B,13E, 13F	In 1E, limited to use on a day-time basis. Common channel to 2B,2C and 3C. Common channel to 13E and 13F.
4657		
4661 4660	RDARA: 2A,2B,2C,3A,3B,3C, 9D,10D,12C,13K	Common channel to 2A,2B,2C,3A,3B and 3C.
4663		
4666		
4668 4669	RDARA: 1D,2B,6D,10A,13G	In 2B, limited to use on a day-time basis.
4672		
4675 NOC	MWARA: CWP RDARA: 2C,3A,7E,10D,10E,13J	In 3A, limited to use on a day-time basis. Common channel to 10D and 10E.

Band 4650-4700 ke/s kHz (end)

1	2	3
4678		
4682 4681	RDARA: 3C,5B,5C,5D,9D,10B, 10E,13J	In 3C, limited to use on a day-time basis. Common channel to 5B,5C and 5D.
4684		
4687		
4689 4690	MWARA: EU RDARA: 3B,6D,10C,12C	In 3B and 10C, limited to use on a day-time basis.
4693		
4696 NOC	MWARA: SAM-1 RDARA: 2A,2B,2C,3C,10A	Common channel to 2A,2B,2C and 3C. In 10A, limited to use on a day- time basis.
4699	Worldwide	A1 only

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Band 5450-5480 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
5451		
5454 NOC	RDARA: 10A, 10E, 12C, 13D	
5457		
5461 5460	RDARA: 10B, 12D, 13J	
5463		
5466		
5469 NOC	RDARA: 10B, 13D	
5472		
5477 5475	RDARA: 10D, 12G, 13H	
5478	Worldwide	A1 only

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Band 5480-5680 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
5481		
5484 NOC	MWARA: CAR RDARA: 2B, 3B	Common channel to 2B and 3B.
5487		
5491 5490	RDARA: 2C, 6B, 7E, 10B, 12F, 13G	
5493		
5496		
5498 5499	RDARA: 2B, 3C, 7, 9B, 9C, 9D, 10C, 13H	Common channel to 2B and 3C. Common channel to 9B, 9C and 9D.
5502		
5505 NOC	MWARA: CWP, NSA-2 RDARA: 10E, 13K	In 10E, use limited to East of 60° West and to 250 W mean power.
5508		
5512 5511	RDARA: 2A, 6A, 10C, 12G	
5514		
5517		
5519 5520	MWARA: NSA-1 VOLMET: PAC-MET	
5523		
5526 NOC	RDARA: 3C, 5A, 6D, 9B, 9C, 9D, 10B, 13J	Common channel to 9B, 9C and 9D.
5529		
5533 5532	RDARA: 3B, 6D, 12C VOLMET: EU-MET	
5535		
5538		
5541	RDARA: 2B, 3B, 10D, 13C	Common channel to 2B and 3B.
5544		
5547 NOC	RDARA: 2C, 6A, 6E, 10A, 13H	Common channel to 6A and 6E.
5550		
5554 5553	MWARA: CEP, EU RDARA: 3C	In 3C, limited to use on a day-time basis.
5556		
5559		
5561 5562	RDARA: 10D VOLMET: ME-MET	

Band 5480-5680 kcs kHz

1	2	3
5565		
5568 NOC	MWARA: CAR RDARA: 1D, 2A, 3C, 6A	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. In 1D, limited to use on a day-time basis. Common channel to 2A and 3C.
5571		
5575 5574	RDARA: 3B, 10C, 12E VOLMET: EU-MET	
5577		
5580		
5582 5583	MWARA: SAM-2 RDARA: 2C, 6A	
5586		
5589 NOC	MWARA: NP RDARA: 2C, 12F, 12H	Common channel to 12F and 12H.
5592		
5596 5595	RDARA: 2A, 2B, 2C, 6D, 10D, 13K	Common channel to 2A, 2B and 2C.
5598		
5601		
5603 5604	MWARA: CEP, ME	
5607		
5610 NOC	MWARA: NA-2, NA-3 RDARA: 6B	Common channel to NA-2 and NA-3. In 6B, use limited to East of 100° East.
5613		
5617 5616	RDARA: 2C, 6E, 10D, 12C, 13C	
5619		
5622		
5624 5625	MWARA: FE, NA-1, NA-2	Common channel to NA-1 and NA-2.
5628		
5631 NOC	RDARA: 2C, 3A, 6B, 10A, 10E, 12E, 12F	Common channel to 2C and 3A. In 6B, use limited to East of 100° East and South of 40° North. Common channel to 12E and 12F.
5634		
5638 5637	MWARA: NA-2, SP RDARA: 2B	In 2B, limited to use on a day-time basis.

Band 5480-5680 ke/s kHz

1	2	3
5640		
5643		
5645 5646	MWARA: FE RDARA: 1B, 1C, 2B, 10D	Common channel for use only in the North Sea area of 1B and 1C. in 2B, limited to use on a day-time basis.
5649		
5652 NOC	RDARA: 2C, 6D VOLMET: AT-MET	In 2C, limited to use on a day-time basis.
5655		
5659 5658	RDARA: 1C, 3A, 5B, 5C, 5D, 6C, 10B, 13I	Common channel to 5B, 5C and 5D.
5661		
5664		
5666 5667	RDARA: 2A, 2B, 2C, 9B, 9C, 10D, 12C, 13F	Common channel to 2A, 2B and 2C. Common channel to 9B and 9C.
5670		
5673 NOC	MWARA: NA-2, SEA	
5676		
5680 NOC	Worldwide-- (R & OR)	Authorized for worldwide use, 1. aboard aircraft for: a) communications with approach and aerodrome control; b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2. at aeronautical stations for aerodrome and approach control under the following conditions: a) with mean power limited to a value of not more than 20 watts in the antenna circuit; b) special attention must be given in each case to the type of antenna used in order to avoid harmful interference; c) the power of aeronautical stations which use this frequency in accordance with the above conditions may be increased to the extent necessary to meet certain operational requirements subject to coordination between the administrations directly concerned and those whose services may be adversely affected;

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Band 5480-5680 ke/s kHz (end)

1	2	3
		<p>3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;</p> <p>4. the use of this frequency is also authorized for inter-communication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations;</p> <p>5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.</p>

USA/25/10

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Band 6525-6685 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
6526 NOC	Worldwide	A1,A3A,A3H and A3J only.
6529		
6533 6532	RDARA: 1C,2B,3B,6E,9B,9C, 10C,12E,12F,12H	Common channel to 9B and 9C.
6535		
6538		
6540 6541	MWARA: CAR, NSA-2 RDARA: 2A, 6B, 9B	
6544		
6547 NOC	RDARA: 1E,3A,5B,5C,5D, 12C,13J	Common channel to 5B,5C and 5D.
6550		
6554 6553	RDARA: 2C, 6C, 10D, 13G	
6556		
6559		
6561 6562	MWARA: CAR, NSA-2 RDARA: 2A, 9D	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. NSA-2: use extended to Western Australia and the Cocos Islands.
6565		
6568 NOC	MWARA: EU W/CAR RDARA: 6F, 10A, 13J	

Band 6525-6685 kefs kHz

1	2	3
6571		
<u>6575</u> <u>6574</u>	RDARA: 2A,6B,9B,12D VOLMET: AFI-MET	
6577		
6580		
<u>6582</u> <u>6583</u>	MWARA: EU RDARA: 6F,10C,13J	
6586		
6589 NOC	RDARA: 2A,2B,3A,3B,4B,6D 12C	Common channel to 2A,2B,3A and 3B.
6592		
<u>6596</u> <u>6595</u>	RDARA: 10B, 12G VOLMET: ME-MET	
6598		
6601		
<u>6603</u> <u>6604</u>	RDARA: 2B,2C,3C,7E,12C,13C	Common channel to 2B,2C and 3C.
6607		
6610 NOC	MWARA: SA RDARA: 2A,5A,9A,10D VOLMET: PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
6613		
<u>6617</u> <u>6616</u>	RDARA: 2C,3A,6C,6D,10A,13D VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator. Common channel to 2C and 3A. Common channel to 6C and 6D.
6619		
6622		
<u>6624</u> <u>6625</u>	MWARA: ME RDARA: 3B, 10C, 13F	
6628		
<u>6631</u> NOC	MWARA: CWP RDARA: 1D, 3A, 10E, 13K	
6634		
<u>6638</u> <u>6637</u>	RDARA: 2B,4A,4B,9A,10C,13D	Common channel to 4A and 4B.
6640		
6643		
<u>6645</u> <u>6646</u>	RDARA: 2B,2C,5D,9B,10B,13G	Common channel to 2B and 2C.
6649		

Band 6525-6685 ke/s kHz (end)

1	2	3
6652 NOC	RDARA: 2C,3C,9A,12C,13C	Common channel to 2C and 3C.
6655		
6659 6658	RDARA: 2C,3B,6D,10D,13K	
6661		
6664		
6666 6667	MWARA: SAM-1 RDARA: 2C,3C,9B,10D	Common channel to 2C and 3C.
6670		
6673 NOC	RDARA: 2B,3A,6F,10C,12F	Common channel to 2B and 3A. In 6F, use limited to East of 120° East and South of 43° North.
6676		
6680 6679	MWARA: SA RDARA: 3A, 10D VOLMET: SEA-MET	SA: use extended on the air route to Buenos Aires.
6682		

USA/25/11 27/203

Band 8815-8965 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
8816		
8819 NOC	RDARA: 3B, 6C, 13C VOLMET: ME-MET	In 3B, use limited to East of 140° East.
8822		
8826 8825	MWARA: NSA-1, SAM-1 RDARA: 3B,6D,9D,10C	In 3B, use limited to East of 130° East.
8828		
8831		
8833 8834	RDARA: 3B,6C,6D,13K VOLMET: EU-MET	In 3B, use limited to North of 50° North. Common channel to 6C and 6D.
8837		
8840 NOC	MWARA: CAR, FE RDARA: 2A,2C,3A,7A,7B,7C,7D, 9D,13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A,2C and 3A. Common channel to 7A,7B,7C and 7D.
8843		
8847 8846	MWARA: ME, SAM-2, SP RDARA: 3B	In 3B, use limited to East of 140° East

Band 8815-8965 ke/s kHz (end)

1	2	3
<u>8917</u> <u>8918</u>	RDARA: 2A,2B,2C,3A,6E,9B,9C, 10A,13D	Common channel to 2A,2B,2C and 3A. In 2C, use limited to West of 40° East. Common channel to 9B and 9C.
8921		
8924 NOC	RDARA: 4B,6A,9B,9C,10A,12D, 13I	Common channel to 9B and 9C.
8927		
<u>8931</u> <u>8930</u>	MWARA: CEP, EU RDARA: 3B,6D,9D,13J	In 3B, use limited to West of 180° In 9D, use limited to West of 160° East.
8933		
8936		
<u>8938</u> <u>8939</u>	MWARA: NP RDARA: 1C,6A,9A,12E,12F,13H	Common channel to 12E and 12F.
8942		
8945 NOC	MWARA: NA-2, NA-3 RDARA: 3B,3C,6C,13E,13F	Common channel to NA-2 and NA-3. In 3B and 3C, use limited to North of 50° North. Common channel to 3B and 3C. Common channel to 13E and 13F.
8948		
<u>8952</u> <u>8951</u>	RDARA: 1D,6B,9A,9C,9D,10B,13G	Common channel to 9A,9C and 9D.
8954		
<u>8959</u> <u>8957</u>	MWARA: CAR, NSA-2 RDARA: 3A,6D,9C,9D	In 3A, use limited to East of 80° East. Common channel to 9C and 9D.
8960		
8963	Worldwide	A1 only

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Band 10 005-10 100 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
10 006		
10 009 NOC	MWARA: ME RDARA: 13J	
10 012		
10 015		
10-017 <u>10 018</u>	MWARA: CAR RDARA: 2A, 2C VOLMET: SEA-MET	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A and 2C with use of directional antennae to protect SEA-MET.

Band 8815-8965 ke/s kHz

1	2	3
8849		
8852		
8854 8855	MWARA: CWP, NA-2 RDARA: 5B, 13K	
8858		
8861 NOC	RDARA: 2A,2B,2C,3A,3B,3C,5D, 6D,10E,12C,12F,13F	Common channel to 2A,2B,2C,3A,3B and 3C. In 6D, use limited to South of 10° North. In 12F, use limited to North of 04° North and to 300 W mean power.
8864		
8868 8867	MWARA: FE, SEA RDARA: 2A, 3A, 10A VOLMET: AT-MET	Common channel to FE and SEA. Common channel to 2A and 3A. In 3A, use limited to North of 60° North.
8870		
8873		
8875 8876	MWARA: CEP, EU RDARA: 3B, 6D, 7E, 12E, 12F	In 3B, use limited to East of 120° East. Common channel to 12E and 12F.
8879		
8882 NOC	MWARA: SA, SEA RDARA: 3A, 3B	SA: use extended on the air route to Buenos Aires. Use outside the SEA boundaries is authorized in India and Pakistan. Common channel to 3A and 3B.
8885		
8889 8888	MWARA: NA-2 RDARA: 3B,6A,6E,9B,9D,13J	Common channel to 6A and 6E. Common channel to 9B and 9D.
8891		
8894		
8896 8897	RDARA: 3B,3C,4A,5A,5B,5C,9B, 9C,10B,13F	Common channel to 3B and 3C. Common channel to 4A,5A,5B and 5C. Common channel to 9B and 9C.
8900		
8903 NOC	RDARA: 2A,2C,10E,13G VOLMET: PAC-MET	Common channel to 2A and 2C.
8906		
8910 8909	MWARA: NA-1, NA-2 RDARA: 3B,3C,9B,9C,13D	Common channel to NA-1 and NA-2. Common channel to 3B and 3C. Common channel to 9B and 9C.
8912		
8915		

Band 10 005-10 100 kefs kHz (end)

1	2	3
10 021		
10-025 10 024	MWARA: NSA-2 RDARA: 3B,3C,12C,13G	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to 3B and 3C.
10 027		
10 030		
10 033 NOC.	RDARA: 2,3,13D	Common channel to 2 and 3.
10 036		
10 039		
10-041 10 042	RDARA: 2,7,10,13G	
10 045		
10-049 10 048	MWARA: SA RDARA: 2A, 6	SA: use extended on the air route to Buenos Aires.
10 051		
10 054		
10 057 NOC	RDARA: 2,10,13J	
10 060		
10 063		
10-065 10 066	RDARA: 1B,1C,1E,6A,6F,13D	Common channel to 1B,1C and 1E. Common channel to 6A and 6F.
10 069		
10-073 10 072	RDARA: 3, 12C VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator.
10 075		
10 078		
10 081 NOC	RDARA: 1D,4A,6F,13G	Common channel to 1D and 4A.
10 084		
10 087		
10-089 10 090	RDARA: 2,3,12C,13K	Common channel to 2 and 3.
10 093 NOC	Worldwide	A1, A3A, A3H and A3J only.
10 096		
10 099	Worldwide	A1

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Band 11 275-11 400 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
11 276		
11 279 NOC	VOLMET: AFI-MET, PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
11 282		
11 285		
11-287 11 288	RDARA: 2, 13H	
11 291		
11-295 11 294	RDARA: 5, 10, 13C	
11 297		
11 300		
11 303 NOC	MWARA: CWP, EU	
11 306		
11 309		
11-311 11 312	RDARA: 6, 10B, 10C, 10 D, 10E	Common channel to 10B,10C,10D and 10E.
11 315		
11-319 11 318	RDARA: 2,9A,9B,9D,10,13H	Common channel to 9A,9B and 9D.
11 321		
11 324		
11 327 NOC	MWARA: SAM-2 RDARA: 3	
11 330		
11 333		
11-335 11 336	RDARA: 2, 7, 9	
11 339		
11-343 11 342	MWARA: CAR, SAM-1 VOLMET: ME-MET	Common channel to CAR and SAM-1.
11 345		
11 348		
11 351 NOC	RDARA: 2, 12	
11 354		
11 357		

Band 11 275-11 400 ke/s kHz (end)

1	2	3
11-359 <u>11 360</u>	RDARA: 1, 6D, 10, 13F	
<u>11 363</u>		
11-367 <u>11 366</u>	MWARA: CAR RDARA: 2	
<u>11 369</u>		
<u>11 372</u>		
<u>11 375</u> NOC	RDARA: 3, 4	
<u>11 378</u>		
<u>11 381</u>		
11-383 <u>11 384</u>	RDARA: 2, 9, 10	
<u>11 387</u>		
11-391 <u>11 390</u>	RDARA: 3 VOLMET: EU-MET	In 3, use limited to East of 90° East.
<u>11 393</u>		
<u>11 396</u>		
<u>11 399</u>	Worldwide	A1

USA/25/14 27/206

Band 13 260-13 360 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
<u>13.261</u>		
<u>13 264</u> NOC	MWARA: NP RDARA: 7A,7B,7C,7D	Common channel to 7A,7B,7C and 7D.
<u>13 267</u>		
<u>13 270</u>		
13-272- <u>13 273</u>	RDARA: 3 VOLMET: AT-MET	
<u>13 276</u>		
13-280 <u>13 279</u>	MWARA: NSA-2 RDARA: 6F, 10, 13	
<u>13 282</u>		
<u>13 285</u>		
<u>13 288</u> NOC	MWARA: FE, NA-2, SEA	Common channel to FE and SEA. Use outside the SEA boundaries is authorized in India and Pakistan, provided that adequate protection is ensured between 300° and 340° (clockwise) from True North.

Band 13 260-13 360 ke/s kHz (end)

1	2	3
13 291		
13 294		
13-296 13 297	MWARA: CWP RDARA: 1	
13 300		
13-304 13 303	MWARA: NSA-1, SP	
13 306		
13 309		
13 312 NOC	MWARA: FE RDARA: 13H VOLMET: EU-MET	
13 315		
13 318		
13-320 13 321	MWARA: CAR, SAM-2 RDARA: 2, 6C	Common channel to CAR and SAM-2.
13 324		
13-328 13 327	MWARA: NA-1, NA-2, NA-3 RDARA: 6	Common channel to NA-1, NA-2, NA-3.
13 330		
13 333		
13 336 NOC	MWARA: CEP, ME, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to ME and NSA-2.
13 339		
13 342		
13-344 13 345	MWARA: SA, AFI-2 VOLMET: PAC-MET	
13 348		
13-352 13 351	MWARA: NA-2 RDARA: 6	
13 354		
13-356 13 357	Worldwide	*A1, A3A, A3H and A3J only.

USA/25/15 27/207

Band 17 900-17 970 *kefs kHz*

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS 3
17 901		
17 904		
17 907		
17-909 17 910	MWARA: CWP, NP VOLMET: AFI-MET	Common channel to CWP and NP. In AFI-MET, use limited to South of the Equator.
17 913		
17-917 17 916	MWARA: CAR, ME SAM-1, SAM-2	Common channel to CAR, SAM and SAM-2. CAR: use extended to the mid-point on the air route between Mexico City and Tahiti.
17 919		
17 922		
17 925 NOC	MWARA: CEP, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands.
17 928		
17 931		
17-933 17 934	RDARA: 4,5,9B,9C,9D	Common channel to 4 and 5. Common channel to 9B,9C,9D.
17,937		
17-941 17 940	MWARA: EU, NA-1, NA-2, NA-3 RDARA: 3	Common channel to EU, NA-1, NA-2 and NA-3. In 3, use limited to East of 100° East.
17 943		
17 946		
17 949 NOC	MWARA: NSA-1, SA, SP	Common channel to NSA-1 and SA.
17 952		
17 955		
17-957 17 958	RDARA: 2, 3, 13	Common channel to 2 and 3.
17 961		
17-965 17 964	MWARA: FE, SEA	Common channel to FE and SEA.
17 967		

PLENARY MEETING

United States of America

REQUIREMENTS FOR "WORLDWIDE" FREQUENCY ALLOTMENTS TO
ACCOMMODATE LONG-RANGE AERONAUTICAL OPERATIONAL
CONTROL COMMUNICATIONS¹⁾

BACKGROUND

1. The Communications Divisional Meeting, Montreal, 1976, of the International Civil Aviation Organization (ICAO), preparatory to the International Telecommunication Union World Administrative Radio Conference on the Aeronautical Mobile (R) Service, adopted Recommendation 3/6 urging Administrations and International Organizations to study and develop a method of determining the number of frequencies to be allotted on a worldwide basis for aeronautical operational control requirements.

2. This paper augments information presented by the United States in its proposals to the Conference. It addresses paragraphs 3.4.8.4, 3.4.8.5 and 3.4.8.6 of the Report of the ICAO Communications Divisional Meeting^{1 bis)} and utilizes data made available by members of the ICAO Frequency Management Study Group.

1) See ADD 429A, US Proposals (Document No. 4)

1 bis) Document No. 21

INTRODUCTION

3. The basic approach to the derivation of communications and, hence, frequency requirements presented herein is regarded as potentially suitable for general application for this type of service. Specific application of the methodology for the purposes of this study has, however, been limited to establishing frequency requirements for long range aeronautical operational control communications.

NATURE AND SCOPE OF REQUIREMENTS

4. The requirement is for a service capable of providing direct communications between designated officials of an aircraft operating agency and its aircraft operating anywhere in the world.

5. A frequency family complement of six frequencies ranging from 3 to 17/21 MHz is required to provide a 24 hour communications service under all propagation conditions.

6. An overview of the operations of current and potential airline users of worldwide allotments is presented at Appendix A and serves as a basis for extrapolation to all users. Reference to the matrices enables an appreciation to be obtained of:

- i) the deployment of aircraft operating agency home bases by regions;
- ii) the geographic extent, by regions, of the route structure currently served by international aircraft operations.

7. Appendix A, while based on international air carrier data, offers insight into the requirements for operational control communications within the lifetime of Appendix 27 (Rev.).

AERONAUTICAL STATIONS

8. Some 46 aeronautical stations now exist and a further 7 are presently planned. Locations are Africa (14), Asia (3), Europe (8), Middle East (7), North America (6), South America (8).

9. It is envisaged that a more extensive deployment of aeronautical stations will evolve within the lifetime of Appendix 27 (Rev.). It is further envisaged that shared use of facilities will be encouraged such that the eventual deployment of aeronautical stations will not necessarily be on the basis of exclusive use.²⁾

10. The following tabulation (Table 1) has been derived from detailed information on the fleet of HF equipped aircraft currently operated by the scheduled international air carriers presented in Appendix B.

11. Number of HF equipped aircraft (N) currently operated by air carriers with home base in:

Table 1

<u>Region</u>	<u>N</u>
EUM	516
NAM	626
SEA	159
SAM	127
MID	121
AFI	133
CAR	54
PAC	<u>108</u>
TOTAL	1844

COMMUNICATIONS REQUIREMENT

12. Individual philosophies and policies in respect to the exercise of operational control differ and in certain instances are widely divergent. Some aircraft operating agencies are obligated to fulfill a regulatory requirement established by their State of Registry; others, while not similarly constrained, nevertheless incur obligations emerging from Chapter 4 of Annex 6 to the Chicago Convention,³⁾ and display marked differences in their conduct of operational control which impacts directly on the communications requirements. However, aeronautical stations providing operational control service will invariably be called upon to accommodate all categories of users (see Paragraph 9).

2) ICAO Communications Divisional Report, paragraph 6.3.5

3) ICAO Annex 6, Chapter 4, paragraph 4.2

13. In view of the foregoing, it has been necessary for the purpose of this study to develop the following set of parameters which in themselves are valid for all cases, but which in terms of their assigned values are representative of typical industry practice:

N = the number of aircraft.

C = the number of contacts/aircraft/day.

T = the average transmission time per contact in minutes.

$N \times C \times T$ = average transmission time per day.

a) C has been established as 2.0 contacts per day, based on aeronautical station log entries.

b) T has been established as 3.0 minutes, based upon measured observations.

Hence: $6 N$ is total average transmission time per day in minutes for a fleet of N aircraft.

14. Typical annual growth rates of between 10% and 40% in the communications traffic handled have been experienced in the past following the establishment of long distance aeronautical operational control communications service. This growth has taken place against a background of almost constant fleet size. However, based on present forecasts, an overall continuing annual growth of 4.75% has been selected.

This figure comprises:

i) 2.25% growth in aircraft fleet.

ii) 2.5% growth in communications traffic.

The net effect of 4.75% annual growth over 25 years is a 319% growth ($1.0475^{25} = 3.19$).

Based on Table 1 and the foregoing, Table 2 has been developed to indicate the total average transmission time per day by Region (T_D):

Table 2

<u>Region</u>	<u>T_D (minutes/day)</u>	
	<u>1975</u>	<u>2000*)</u>
EUM	3096	9876
NAM	3756	11982
SEA	954	3043
SAM	762	2431
MID	726	2316
AFI	798	2546
CAR	324	1034
PAC	648	2067

15. From experience with the operation of aeronautical stations in North America, the following pro rata distribution by sub-band of total traffic (Table 3) has been established (See Appendix D for source data).

Table 3

PERCENTAGE OF TOTAL TRAFFIC BY SUB-BAND

<u>Sub-Band</u>	<u>% of Total Traffic</u>						
<u>(MHz)</u>	<u>EUM</u>	<u>NAM</u>	<u>SEA</u>	<u>SAM</u>	<u>MID</u>	<u>AFI</u>	<u>CAR</u> <u>PAC</u>
2.8 - 3.5		14					
4.6 - 6.6		28					
8.8 - 11.3		32					
13		12					
17/21		14					

*) 1975 figures x 3.19.

16. Due to the diurnal variation in propagation conditions the usage time during which a given frequency is optimum for a specified circuit path and distance is considerably less than 24 hours a day. For planning purposes, based on Appendix E, the average usable time per day by sub-band is 10 hours irrespective of propagation variables. An occupancy factor of 0.4 has been adopted for optimum frequency utilization consistent with an acceptable queue. Consequently 4 hours/day (240 minutes/day) is the transmission time for each frequency. Tables 2 and 3 can now be merged to give Table 4 from which, after application of the occupancy factor, Table 5 is derived.

Table 4
Year 2000 Projection

Distribution of Transmission Time (minutes/day) by Sub-band

<u>Sub-band</u>	<u>EUM</u>	<u>NAM</u>	<u>SEA</u>	<u>SAM</u>	<u>MID</u>	<u>AFI</u>	<u>CAR</u>	<u>PAC</u>
2.8 - 3.5		1677						
4.6 - 6.6		3355						
8.8 - 11.3		3834						
13		1438						
17/21		1677						

Table 5
Year 2000 Projection

Number of Channels in each Sub-band at 0.4 occupancy factor

<u>Sub-band</u>	<u>EUM</u>	<u>NAM</u>	<u>SEA</u>	<u>SAM</u>	<u>MID</u>	<u>AFI</u>	<u>CAR</u>	<u>PAC</u>
2.8 - 3.5		7						
4.6 - 6.6		14						
8.8 - 11.3		16						
13		6						
17/21		7						

The above frequency requirements represent those of scheduled international air carrier operators. In addition, there are requirements for other separate and distinct communications for operational control purposes. These include such operations as corporate operators, flight test and inspection, disaster relief and aircraft involved in special observation of severe meteorological phenomena. To satisfy these requirements, the following frequencies by sub-band (Table 6) are required in the NAM Region in addition to those indicated in Table 5, and have been determined by application of the foregoing methodology (See Appendix F).

<u>Sub-band</u>	<u>Channels</u>
2.8 - 3.5	4
4.6 - 6.6	5
8.8 - 11.3	4
13	2
17/21	3

Accordingly, the total NAM requirement would be:

Table 6

<u>Sub-band</u>	<u>EUM</u>	<u>NAM</u>	<u>SEA</u>	<u>SAM</u>	<u>MID</u>	<u>AFI</u>	<u>CAR</u>	<u>PAC</u>
2.8 - 3.5		11						
4.6 - 6.6		19						
8.8 - 11.3		20						
13		8						
17/21		10						

17. The methodology used for the NAM Region appears equally applicable to other Regions. Other Regions may determine the number of frequencies required in each sub-band to accommodate the projected communications traffic using the above procedure.

18. At the ICAO Communications Divisional Meeting, it was recognized that the total number of frequencies needed to satisfy MWARA, RDARA, VOLMET and operational control requirements would exceed the available spectrum if exclusive assignments were made. Accordingly, it was believed it might be possible to satisfy all requirements through the application of a sharing factor. A sharing factor of 2.6 was proposed, based upon existing Appendix 27 allotments. However, the lack of a recognized methodology supporting the requirements might lead to the situation wherein all stated requirements could not be fulfilled by application of the tentatively developed sharing factor. It would then be necessary to consider the relative priorities of the various categories of allotment areas. While considering the discussion valuable, the meeting was unable to arrive at a generally acceptable methodology (1976 Communications Divisional Report: paragraph 3.3.2 through 3.3.2.6).

19. Considering the sharing conditions imposed by propagation and time separation, a sharing factor of 2.6 does not appear unreasonable for frequencies of the order of 13 MHz and below. Therefore, if a sharing factor of 2.6 is applied to the total channel requirements in Table 6, when completed for all Regions, the total number of discrete frequencies required to be allotted may be determined for those sub-bands of 13 MHz and below.

20. Above 13 MHz propagation conditions will create greater problems in sharing. Sharing, therefore, is not desirable at above 13 MHz. However, given the finite nature of the spectrum, exclusivity is probably unrealistic. Therefore, it appears that some sharing will be required in accommodating all requirements. A sharing factor of less than 2.6 appears very desirable at these frequencies.

A P P E N D I X A

AIRCRAFT DISTRIBUTION BY REGION

The attached matrices indicate for each Region (e.g. EUM) the number of airlines with home-bases located in that Region (e.g. EUM 24) and of these the number of airlines whose present operations extend into the other Regions identified in the matrix i.e. of 24 EUM based airlines 17 operate to MID, 13 to SEA, 17 to NAM, etc.

Also attached is a list to facilitate the identification of airline designators extracted from the February 1977 edition, "Official Airline Guide".

EUM (*516)

EUM	MID	SEA	NAM
<u>24</u> AF AY AZ BA BR CY EI FI IB JU KL LH LO MA OA OK OS SK SN SR SU TK TP UT	<u>17</u> AF AZ BA BR CY JU KL LH LO MA OA OK OS SK SN SR TK	<u>13</u> AF AZ BA KL LH OA OK OS SK SN SR SU UT	<u>17</u> AF AY AZ BA EI IB KL LH LO OA AK SK SN SR SU TP UT
AFI	CAR	PAC	SAM
<u>18</u> AF AZ BA BR IB JU KL KM LO MA OA OK SK SN SR SU TP UT	<u>10</u> AF BA IB KL OA OK SK SN SR SU	<u>6</u> AZ BA KL LH OA UT	<u>12</u> AF AZ BA BR IB KL OA SK SN SR SU TP

NAM (*626)

EUM	MID	SEA	NAM
<u>6</u> AC CP NA PA SB TW	<u>3</u> PA SB TW	<u>5</u> CP FT NW SB TW	<u>15</u> AA AC BN CP CO DL DA FT NA NW PA SB TW UA WA
AFI	CAR	PAC	SAM
<u>3</u> PA SB TW	<u>11</u> AA AC BN CP DL EA NA PA SB UA WA	<u>9</u> AA BN CP CO NW PA SB TW UA	<u>5</u> BN CP DL PA SB

SEA (*159)

EUM	MID	SEA	NAM
<u>12</u> AE AI CA FG GA MH PK PR SQ TG VG	<u>7</u> AI CA FG MH PK PR TG	<u>14</u> AE AI CA CX FG GA KE MH PK PR SQ TG VG	<u>5</u> AI KE PK PR VG
AFI	CAR	PAC	SAM
<u>2</u> MH PK	<u>1</u> JL	<u>9</u> AI CA CX KE MH PR SQ TG VG	

SAM (*127)

EUM	MID	SEA	NAM
<u>6</u> AR AV LA RG VA VP	<u>4</u> AV EU LA VA	<u>1</u> RG	<u>8</u> AR AV EU LA PL RG VA VP
AFI	CAR	PAC	SAM
<u>2</u> RG UC	<u>4</u> AR EU RG VP	<u>1</u> LA	<u>11</u> AR AV EU LA PL QD RG SC UC VA VP

*number of HF equipped aircraft based in Region.

MID (*121)

EUM	MID	SEA	NAM
<u>10</u> AI IR KU LY ME MS RB RJ SV TL	<u>10</u> IA IR KU LY ME MS RB RJ SV TL	<u>9</u> IA IR KU ME MS RB RJ SV TL	<u>2</u> LY TL
AFI	CAR	PAC	SAM
<u>6</u> LY ME MS RB RJ SV	<u>1</u> LY		<u>1</u> RJ

AFI (*133)

EUM	MID	SEA	NAM
<u>16</u> AH AT EC ET GH LN MY QC QM QZ RK SA SD TU UY WT	<u>9</u> AT EC ET GH LN QM SD TU WT	<u>3</u> EC ET GH	<u>4</u> AT RK SA WT
AFI	CAR	PAC	SAM
<u>17</u> AH AT DT EC ET GH LN MY QC QM QZ RK SA SD TU UY WT	<u>1</u> WT	<u>1</u> SA	<u>2</u> AT SA

CAR (*54)

EUM	MID	SEA	NAM
<u>4</u> AM BW CU JM	<u>3</u> AM CU OP		<u>5</u> AM BW CU JM OP
AFI	CAR	PAC	SAM
	<u>5</u> AM BW CU JM OP		<u>3</u> AM CU OP

PAC (*108)

EUM	MID	SEA	NAM
<u>3</u> JL QF TE	<u>3</u> JL QF TE	<u>3</u> JL QF TE	<u>3</u> JL QF TE
AFI	CAR	PAC	SAM
<u>1</u> QF		<u>3</u> JL QF TE	

<u>CODE</u>	<u>AIRLINE</u>	<u>CODE</u>	<u>AIRLINE</u>
AA	American Airlines	DA	Dan-Air Services, Ltd.
AC	Air Canada	DJ	Air Djibouti
AE	Air Ceylon	DL	Delta Air Lines, Inc.
AF	Air France	DO	Dominicana De Aviacion
AH	Air Algerie	DR	Advance Airlines
AI	Air India	DS	Air Senegal
AL	Allegheny Airlines	DT	Taag Angola Airlines
AM	Aeromexico	DW	DLT Luftverkehrsgesellschaft
AN	Ansett Airlines of Australia		Ostfriessische Lufttransport GMBH
AO	Aviaco	DX	Danair
AQ	Air Anglia Ltd.	DY	Alyemda, Democratic Yemen Airlines
AR	Aerolineas Argentinas	DZ	Douglas Airways Pty. Ltd.
AS	Alaska Airlines		
AT	Royal Air Maroc	EA	Eastern Air Lines
AU	Austral Lineas Aereas S.A.	EC	East African Airways
AV	Avianca	EF	Far Eastern Air Transport Corp.
AW	Air Niger	EG	Japan Asia Airways Co., Ltd.
AY	Finnair	EI	Aerlingus (Irish)-Aerlinde Eireann (IN)
AZ	Alitalia	EK	Masling Commuter Services Pty. Ltd.
		EO	Europ Air-Air Aquitaine
BA	British Airways (Overseas Div.)	EP	Tropic Air Services Pty. Ltd.
BD	British Midland Airways	EQ	Tame C.A.
BE	British Airways (European Div.)	ET	Ethiopian Airlines
BG	Bangladesh Biman	EU	Empresa Ecuatoriana De Aviacion
BI	Royal Brunei Airlines	EW	East-West Airlines
BJ	Bakhtar Afghan Airlines	EY	Europe Aero Service
BM	Aero Transporti Italiani		
BN	Braniff International Airways	FG	Ariana Afghan Airlines
BO	Bouraq Indonesia Airlines	FI	Flugfelag-Icelandair
BP	Air Botswana Pty. Ltd.	FJ	Air Pacific
BQ	Business Jets Pty. Ltd.	FL	Frontier Airlines
BR	British Caledonian Airways	FU	Air Littoral
BU	Braathens S.A.F.E. Airtransport		
BW	B.W.I.A. International	GA	Garuda Indonesian Airways
BZ	British Airways (Regional Div.)	GB	Air Inter Gabon
		BC	Linacongo
CA	CAAC	GD	Air North Ltd.
CE	Central Australian Airways Pty. Ltd.	GF	Gulf Air
CF	Faucett	GH	Ghana Airways
CI	China Airlines	GJ	Ansett Airlines of South Australia
CK	Connair Pty. Ltd.	GL	Greenlandair
CM	COPA	GN	Air Gabon
CO	Continental Airlines	GP	Hadag Air Seebaederflug Ombh & Co.
	(Air Micronesia)	GR	Aurigny Air Services Ltd.
CP	CP Air	GT	Gibraltar Airways
CU	Cubana Airlines	GU	Aviateca
CX	Cathay Pacific Airways	GV	Talair Pty. Ltd.
CY	Cyprus Airways	GX	Great Lakes Airline, Ltd.
		GY	Guyana Airways

<u>CODE</u>	<u>AIRLINE</u>	<u>CODE</u>	<u>AIRLINE</u>
HA	Hawaiian Airlines	LA	Lan Chile
HB	Air Melanesiae	LB	Lloyd Aereo Boliviano
HH	Somali Airlines	LC	Loganair, Ltd.
HM	Air Mahe Ltd.	LE	Air Lowveld(Pty.) Ltd.
HN	NLM-Dutch Airlines	LF	Linjeflyg
HS	Hooker Air Service, Ltd.	LG	Luxair-Luxembourg Airlines
HT	Air Tchad	LH	Lufthansa German Airlines
HZ	Henebery Aviation Co.	LJ	Sierra Leone Airways
IA	Iraqi Airways	LL	Icelandic Airlines
IB	Iberia	LM	ALM-Dutch Antillean Airlines
IC	Indian Airlines	LN	Libyan Arab Airlines
IE	Solomon Islands Airways Ltd.	LO	LOT-Polish Airlines
IF	Interflug	LP	Air Alpes
IG	Alisarda	LR	Lacsa
IH	Itavia	LU	Saeta
IJ	Touraine Air Transport	LV	LAV-Linea Aeropostal Venezolana
IN	Aerlinte Eireann - Aer Lingus (EI)	LW	Baron Air AB
IO	Air Paris	LX	Air Languedoc
IP	Executive Airlines	LY	El Al Israel Airlines
IQ	Caribbean Airways	LZ	Bulgarian Airlines Balkan
IR	Iran National Airlines	MA	Malev-Hungarian Airlines
IS	Luxavia	MC	Emric Air Services (Pty.) Ltd.
IT	Air Inter	MD	Air Madagascar
IV	Lineas Aereas Guinea Ecuatorial	ME	Middle East Airlines-Airliban
IW	International Air Bahama	MH	Malaysian Airline System
IY	Yemen Airways Corp.	MK	Air Mauritius
IZ	Arkia-Israel Inland Airlines Ltd.	MM	Sociedad Aeronautica Medellin
JD	Toa Domestic Airlines Co., Ltd.	MN	Commercial Airways Ltd. (COMAIR)
JH	Nordeste-Linhas Aereas Regionais S.A.	MR	Air Mauritanie
JL	Japan Air Lines Co. Ltd.	MS	Egyptair
JM	Air Jamaica (1968) Ltd.	MT	Macknight Airlines
JP	Inex Adria Airways	MU	Misrair
JR	Pleuger Flugdienst	MV	Macrobertson-Miller Airline Services
JU	Yugoslav Airlines -JAT	MW	Maya Airways
JV	Pilbara Air Services	MX	Mexicana de Aviacion
JX	Bougair	MY	Air Mali
JY	Intra Airways Ltd.	MZ	Merpati Nusantara Airlines
KD	Kendell Airlines	NA	National Airlines
KE	Korean Air Lines	NC	North Central Airlines
KH	Cook Island Airways	ND	Nordair
KI	Time Air Ltd.	NH	All Nippon
KL	KLM-Royal Dutch Airlines	NI	Lanica
KM	Air Malta Co. Ltd.-Air Malta	NJ	Namakwaland Lugdiens
KR	Air-Air	NL	Air Liberia, Inc.
KU	Kuwait Airways	NM	Mt. Cook Airlines
		NO	North Coast Airlines
		NU	Southwest Airlines Co., Inc.
		NV	Nantes Aviation
		NW	Northwest Orient Airlines, Inc.
		NY	New York Airways
		NZ	New Zealand National Airways

<u>CODE</u>	<u>AIRLINE</u>	<u>CODE</u>	<u>AIRLINE</u>
OA	Olympic Airways	SA	South African Airways
OB	Opal Air Pty. Ltd.	SC	Cruzeiro
OD	Aerocondor	SD	Sudan Airways
OI	Transportes Aereos Nacionales Ltda.-Tana	SH	Sahsa-Servicio Aereo de Honduras, S.A.
OJ	Margate Air Services	SI	Skyway Airlines Pty. Ltd.
OK	Czechoslovak Airlines	SK	SAS-Scandinavian Airlines
OL	OLT-Ostfriesische Lufttransport BmbH	SL	RIO-SUL
OM	Air Mongol	SN	Sabena-Belgian Airlines
ON	Air Nauru	SO	Southern Airways
OP	Air Panama Internacional	SP	SATA
OR	Air Comores	SQ	Singapore Airlines
OS	Austrian Airlines	SR	Swissair
OZ	Ozark Airlines	SU	Aeroflot Soviet Airlines
PA	Pan American World Airways	SV	Saudi Arabian Airlines
PB	Air Burundi	SW	Suidwes Lugdiens
PC	Fiji Air	SY	Air Alsace
PH	Polynesian Airlines	TA	TACA International
PI	Piedmont Aviation	TE	Air New Zealand Ltd.
PK	Pakistan International	TG	Thai Airways International
PL	Aeroperu	TH	Thai Airways Co.
PO	Aeropelican Intercity Commuter Air Services Pty. Ltd.	TI	Texas International Airlines, Inc
PR	Philippine Airlines	TK	Turk Hava Yllari
PU	Pluna	TM	Deta
PV	Eastern Provincial Airways, Ltd.	TN	Trans-Australia Airlines
PW	Pacific Western Airlines	TP	TAP
PX	Air Niugini	TU	Tunis Air
PY	Surinam Airways	TW	Trans World Airlines
PZ	LAP-Lineas Aereas Paraguayas	TX	Transportes Aereos Nacionales
QB	Quebecair Inc.	TY	Air Caledonie
QC	Air Zaire	TZ	Transair Limited
QD	Transbrasil S/A Linhas Aereas	UA	United Airlines
QE	Air Tahiti	UB	Burma Airways Corp.
QF	Qantas Airways Ltd.	UC	Ladeco-Linea Del Cobre
QM	Air Malawi	UE	United Air
QN	Bush Pilots Airways	UG	Norfolk Island Airlines
QP	Caspair Ltd.	UI	Flugfelag Nordurlands H.F.
QQ	Aerovias Quisqueyana	UK	British Island Airways, Ltd.
QZ	Zambia Airways	UL	Lansa Airlines of Honduras
RA	Royal Nepal Airlines	UN	New England Aviation Pty. Ltd.
RB	Syrian Arab Airlines	UP	Bahamasair (OIA)
RE	Aer Arann Teo.	UT	UTA-Union de Transports Aeriens
RF	Air Samoa Ltd.	UY	Cameroon Airlines
RG	Varig, S.A.	UZ	Air Rouergue
RH	Air Rhodesia		
RJ	Alia-Royal Jordanian Airlines		
RK	Air Afrique		
RN	Royal Air Inter		
RO	TAROM-Romanian Air Transport		
RS	Aeropesca		
RW	Hughes Airwest		

<u>CODE</u>	<u>AIRLINE</u>
VA	Viasa
VC	TAC (Transportes Aereos Del Cesar)
VE	Avensa
VF	British Air Ferries Ltd.
VG	Air Siam
VH	Air Volta
VK	Panga Airways Ltd.
VP	Vasp
VT	Air Polynesie
VU	Air Ivoire
VX	Aces
WA	Western Airlines
WB	San (Servicios Aereos Nacionales S.A.)
WC	Wien Air Alaska, Inc.
WF	Wideroes Flyveselskap
WG	ALAG-Alpine Luft Transport A.G.
WK	Westkuestenflug
WT	Nigeria Airways Ltd.
WU	Avna Air Lines
WW	Trans-West
WX	Ansett Airlines of New South Wales
WZ	Swazi Air Ltd.
XY	Munz Northern Airlines, Inc.
XZ	Air Tasmania Pty. Ltd.
YK	Cyprus Turkish Airways
YP	Pagas Airlines
YT	Civil Flying Services
ZI	Lucas Air Transport
ZL	Hazelton Air Services Pty. Ltd.
ZT	Satena
ZV	Air Midwest

A P P E N D I X B

FLEET OF HF - EQUIPPED AIRCRAFT

<u>EUR</u>	<u>NAM</u>	<u>SEA</u>	<u>SAM</u>	<u>MID</u>	<u>AFI</u>	<u>CAR</u>	<u>PAC</u>
AF 70	AA 40	AE 2	AR 22	IA 8	AH 15	AM 23	JL 76
AY 5	AC 56	AI 14	AV 16	IR 18	AT 9	BW 10	QF 20
AZ 34	BN 22	CA 15	EU 4	KU	DT 6	CU 9	TE <u>12</u>
BA 60	CP 16	CX 16	LA 10	LY 14	EC 7	JM 10	<u>108</u>
BR 11	CO 22	FG 3	PL 3	ME 22	ET 5	OP <u>2</u>	
CY 2	DL 33	GA 13	QD 8	MS 11	GH 1	<u>54</u>	
EI 5	EA 54	KE 27	RG 36	RB 11	LN 7		
FI	FT 20	MH 11	SC 19	RJ 7	MY 2		
IB 46	NA 4	PK 16	UC 1	SV 22	QC 7		
JU 9	NW 26	PR 9	VA 8	TL <u>8</u>	QM 3		
KL 34	PA 155	SQ 17	VP <u> </u>	<u>121</u>	QZ 5		
LH 76	SB 21	TG 11	<u>127</u>	excl. KU	RK 10		
LO 23	TW 81	VG <u>5</u>			SA 25		
MA 15	UA 61	<u>159</u>			SD 9		
OA 23	WA <u>15</u>				TU 11		
OS(12xDC9)	<u>626</u>				UY 3		
SK 19					WT <u>8</u>		
SN 18					<u>133</u>		
SR 18							
SU							
TK 11							
TP 24							
UT <u>13</u>							
<u>516</u>							
excl. OS							
SU							

Approximate Total Fleet - 1,844
(excl. OS SU KU FI VP)

A P P E N D I X CCONTACT DURATION

1. Aeronautical Operational Control Communications while serving routine needs for air ground company communications, (such as enroute position report, fuel remaining and ETA at destination or a routine status report on the serviceability of the airframe, engines, airborne systems, etc., to facilitate aircraft maintenance and refurbishment on arrival) will also be called upon to handle non-routine communications. By their very nature, these latter communications are of greater duration than those of the routine type.
2. The proportion of routine communications to non-routine communications varies significantly between airlines and reflects different individual philosophies and policies toward the exercise of operational control.
3. One major airline with extensive experience with long distance operational control communications has, based on communications logs augmented by representative samples of communications contacts, determined that the average transmission time required to complete a transaction with an aircraft is 3.25 minutes.
4. On the basis of the foregoing, an average contact duration of 3 minutes is considered reasonable as a basis for the planning of a communications service of this type as it may be expected to evolve within the lifetime of Appendix 27 (Rev.).

A P P E N D I X D

DISTRIBUTION OF AIR CARRIER TRAFFIC BY SUB-BAND

	<u>1976</u>	<u>%</u>
3 - 3.6	37,988	14
4 - 6.6	77,342	28
8 - 11.3	86,635	32
13	33,889	12
17/21	<u>37,441</u>	<u>14</u>
	273,295	100

The above statistics were derived from traffic
logged in 1976 by US aeronautical stations.

A P P E N D I X E

EXTRACT FROM DOCUMENT NO. 6/76-E

IFRB SEMINAR

September 1976

Limits of the use of the working frequency for the different categories of circuits

It can therefore be stated that the use of a working frequency for a particular circuit in a given hour is doubly limited in relation to the median MUF. The upper limit will be the standard median MUF itself, or the FOT. This normally depends on the type of service to be provided. The median MUF as maximum working frequency will make it possible to set up a call with at least a 50% probability of ionospheric reflection, whereas if the working frequency is limited by the FOT, this probability will be increased up to at least 90%. The lower limit of frequency use may normally be fixed at 0.6 times the median MUF, with the exception of circuits whose characteristics are vulnerable to the effects of multipath propagation.

The usage time of a given frequency or the range of working frequencies which can be used in a given hour may vary according to the limits selected, as is shown by Figures 4a and 4b.

The limits will depend on the service quality required. Radio circuits can be divided up into two categories according to whether they require:

- 1) high reliability, or only
- 2) moderate reliability.

For the first category, it is necessary to ensure a greater traffic continuity (probability of communication for at least 90% of the days in a month). This category includes circuits which are used for data transmission, automatic telegraphy, facsimile, multichannel telephony with connections to the public telephone network, and circuits used to safeguard human life which need to be available at any time although in general the traffic is not continuous.

However, there are very many radio circuits which cannot be considered as requiring maximum reliability. They are moderate-reliability circuits with a probability of communication during at least 50% of the days in a month. This category generally includes radiotelephone circuits without connection to the public telephone network and those whose transmitting and receiving equipment is not capable of ensuring maximum continuity. In this second case, in which traffic continuity is not a paramount factor, the usage time of the working frequencies will be restricted by the curve of the standard median MUF (points 1 and 1' on Figure 4) which ensure a reflection probability for at least 50% of the days in a month.

On the other hand, the working frequencies and the usage time of each frequency for the circuits in the first category will be determined by the FOT curve (points 2 and 2') providing a greater communication probability (at least 90% of the days in a month).

On the basis of multipath propagation effects, a further distinction can be drawn between:

- a) circuits in which the type of transmission is not very vulnerable to multipath propagation effects, and
- b) circuits in which the type of transmission is vulnerable to such effects.

The first category includes telephony (with or without connection to the public telephone network), auditory reception telegraphy (and automatic telegraphy with equipment specially designed to offset multipath effects). In the second group, we can include automatic telegraphy (except for the example given in the foregoing group), facsimile transmission, phototelegraphy and complex transmissions.

This distinction determines the lower limit of the utilization of a frequency (see Figure 4). For group a) this limit may be fixed as being equal to 0.6 times the median MUF (point 4 in Figure 4) while for transmissions of the group b) type the limit is calculated using Figure 3 according to the admissible delay and length of the circuit (see points 3 and 3' in Figure 4).

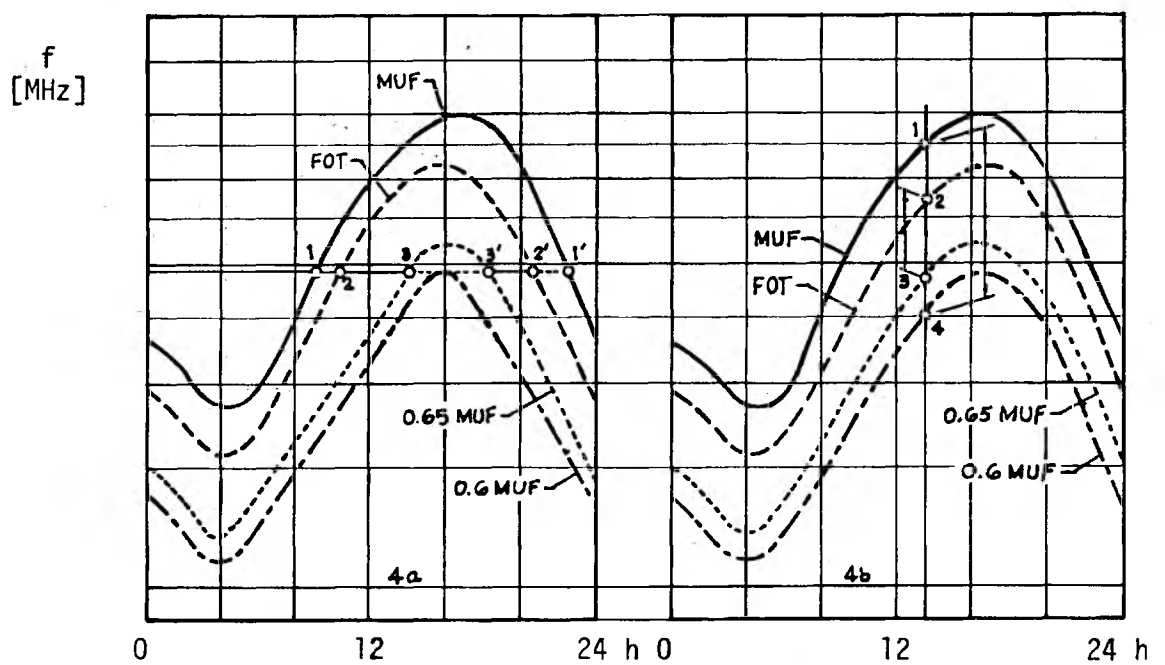


Figure 4 - Limits of the useful frequencies

A P P E N D I X F

FREQUENCY REQUIREMENTS
FOR OTHER THAN
INTERNATIONAL SCHEDULED AIR CARRIERS

In addition to the NAM scheduled international air carrier fleet given in Appendix A, the following aircraft operating agencies, having NAM-based HF-equipped aircraft as indicated, were considered in this Appendix:

Supplemental Air Carriers and Others

Airlift International	7
Capitol International	13
Evergreen International	4
McCulloch International	11
Overseas International	15
Trans International	11
World Airways	9
U.S. Government (Commerce, ERDA, FAA, NASA)	59
Aircraft Manufacturers	43
Corporate and individual aircraft	<u>45</u>
	217

Distribution of Traffic by Sub-band

1976

<u>Sub-band</u>	<u>No. Contacts</u>	<u>%</u>
2.8 - 3.5	36,310	22
4.6 - 6.6	45,252	28
8.8 - 11.3	36,169	22
13	18,847	11
17/21	<u>27,265</u>	<u>17</u>
	163,843	100

Year 2000 Projection
Distribution of Transmission Time
(minutes/day) by sub-band

<u>Sub-band</u>	<u>NAM</u>
2.8 - 3.5	914
4.6 - 6.6	1163
8.8 - 11.3	914
13	457
17/21	706

Thus, the following frequencies by sub-band are needed to satisfy the requirement of the above aircraft operators for long distance operational control communications:

<u>Sub-band</u>	<u>Channels</u>
2.8 - 3.5	4
4.6 - 6.6	5
8.8 - 11.3	4
13	2
17/21	3

PLENARY MEETING

United States of America

WORLDWIDE AERONAUTICAL OPERATIONAL CONTROL

1. BACKGROUND

1.1 Annex 6 (International Standards and Recommended Practices - Operation of Aircraft) to the Convention on International Civil Aviation defines operational control as the exercise of authority over initiation, continuation, diversion or termination of a flight and makes the operator or his designated representative responsible therefor.

1.2 The requirement for operational control has come into prominence due to increases in the size and range of commercial aircraft, operation at greater heights and in adverse weather conditions, increased traffic density and intensified competition.

1.3 In the early days of civil air transport, the operator was responsible for operational planning and exercised such supervision as was possible through his local representatives at main terminals who in turn acted in consultation with the appropriate air traffic control and meteorological staffs. Size, range and altitude limitations made operations largely dependent upon prevailing weather conditions. Restricted point-to-point communications and lack of aids to air navigation further limited the amount of supervision that was possible and much was left to the initiative of the pilot in command to commence, complete or discontinue flights.

1.4 With a far lower volume of air traffic than prevails today, the air traffic controller was able to maintain surveillance over aircraft leaving or approaching the aerodrome for which he was responsible, giving each aircraft individual attention and informing the operator or his representative of

aircraft movements. This method of operation had many drawbacks. It was uncertain and, in many cases, resulted in delays which were costly to the operator and inconvenient to the passengers. It became increasingly obvious that last minute decisions were to be avoided if the operation was to provide reasonable services and at the same time show a profit.

1.5 As a result of the demand for better services, and improved aeronautical facilities operators sought means of providing better planning for the purpose of increasing regularity of service and of improving the quality of information exchanged between departments within their organization. In many cases, it was found that it was not adequate to await the decisions of the pilot in command concerning the feasibility of operations. Also, while enroute, the pilot in command did not always possess sufficient information in the cockpit to assess changing circumstances. This situation became further complicated by the advent of faster and more complex aircraft and accompanying requirements for greater pilot attention to the flying technique.

1.6 As the frequency and complexity of operations increased, so did the factors that had to be considered. Eventually, it became either impracticable or impossible for the pilot in command to assess alone all the various factors requiring consideration prior to and during a flight operation. This resulted in advice being given to the pilot by qualified personnel on the ground. This system of advice increased the efficiency of flight operations by relieving the pilot of a considerable burden and allowing consultation and decision on critical issues with personnel who had available to them all factors bearing on an operation and who were able to keep under constant review and analyze a whole network of operations of which any particular flight was only a part. Thus, teamwork between the pilot, who is ultimately responsible for the safety of the aircraft, and personnel on the ground having a broader view of the operation, contributed considerably to the safety and regularity of aircraft operations. The advent of improved air-ground communications allowed ground personnel to relay additional information received after the aircraft was airborne, thereby increasing the value of in-flight assistance.

1.7 The situation throughout the world, therefore, has developed into a concept of shared advice and responsibilities between the pilot and ground personnel - the extent of cooperation depending upon many factors such as the size of the operation, the facilities available and the system of operation established by the

aircraft operating agency. The aircraft operating agency, no matter what its size, is primarily responsible for conducting his operations with safety and efficiency. The corollary of the operator's responsibility is his inherent right to conduct his operations in a manner which he deems best so long as he conforms to the laws and regulations of the State of Registry of his aircraft and those of other States in which he operates. Factors affecting the exercise of responsibility by the aircraft operating agency include utilization of aircraft and flight crews, complexity and density of flight operations, proper passenger accommodations and protection, necessity for advance planning, operational maturity, geographical scope of operations, unlawful interference with flight operations, in-flight maintenance and medical advice.

2. THE REQUIREMENT FOR LONG RANGE AERONAUTICAL OPERATIONAL CONTROL

2.1 Today, aeronautical operational control communications are considered aeronautical mobile (R) service communications related to regularity of flight. These non-public communications are prerequisite to the discharge by aircraft operating agencies of their obligation to exercise authority over the initiation, continuation, diversion or termination of flight. While aircraft operating agencies regard the term "regularity of flight" in the above context as entirely acceptable and useful to distinguish this type of communications from "safety of flight" communications, in the context of air traffic control, operators interpret the term "flight regularity" in a broader sense, looking upon aeronautical operational control as non-public communications related to the safe, efficient and economic operation of their aircraft. The associated requirement for communications is for a service capable of providing direct voice communications between designated officials of the aircraft operating agency and its aircraft operating anywhere on a global basis.

2.2 The situation that has now emerged seems quite clear. Aeronautical operational control is recognized by the International Civil Aviation Organization (ICAO) and regional requirements state that means should be provided to permit aircraft operating agencies to exercise such control. Many Administrations have provided or permitted such means to the extent possible except in the area of long range communications. Only a few aircraft operating agencies have the means whereby they can communicate with their aircraft beyond the ranges of VHF facilities. The only means at present available for communicating with aircraft beyond VHF "line of sight" is by radio using high frequencies between 3 and 30 MHz. The competition

between generic radio services for these high frequencies for long range communication purposes is such that international civil aviation has been allocated only a limited portion of the available high frequency spectrum. To meet the demands of civil aviation, the available frequencies have been allotted to designated geographical areas in Appendix 27 to the Radio Regulations. Basically, the world is divided into precise geographical areas known as Major World Air Route Areas (MWARA's). Each MWARA is allotted a number of frequencies for assignment to any ground station within the MWARA in accordance with ICAO Regional Plans. Thus, aircraft in flight within the MWARAS are assured of communications with any ground station serving the area. This arrangement works well and interfaces effectively with the ICAO principles of areas of responsibility for air traffic control. However, because the universal demand for frequencies is so great and the allotments to each MWARA so great, the allotments to each MWARA have to be repeated in other parts of the world, either for other MWARAS or for the smaller Regional and Domestic Air Route Areas. For this reason, while the plans have been calculated in such a manner as to ensure, within any MWARA or RDARA, freedom from interference emanating from any other area, this ceases to apply once beyond the areas in question. This then poses the problem concerned with operational control, which must afford the aircraft operating agency access to its aircraft when the operational control ground station is well outside the area in which the aircraft is flying.

2.3 The existing high frequency radiotelephone networks operated in accordance with ICAO recommended practices cannot in all cases provide long distance aeronautical operational control communications for the following reasons:

- 1) Frequencies used in these networks are allotted to specific geographical areas (MWARA and RDARA) and cannot be used worldwide to accommodate communications between aircraft operating agencies and their aircraft operating anywhere in the world.
- 2) Each station forming part of a network normally only handles communications with aircraft within a defined geographical area (Flight Information Region/Oceanic Control Area) which, as a general rule, is smaller in extent than that described by a MWARA or RDARA.
- 3) The mode and methods of operation, the frequencies employed and traffic loading are related to the provision of air traffic

services within coverage of a Flight Information Region which is, in general, for distances not greater than 1000 nautical miles.

- 4) Frequencies of an order higher than 19 MHz are not employed, thereby limiting the capability for communications over very long distances under certain propagation conditions.
- 5) There is a dependence upon point-to-point relay of messages for delivery beyond the defined MWARA/RDARA boundaries over the Aeronautical Fixed Telecommunications Network (AFTN). Consequently, direct communication between the aircraft operating agency and its aircraft are precluded except on a low priority, depending upon common carrier provided landline communications arrangements between Administrations concerned. This can result in an unacceptable delay, or even non-delivery, of messages affecting the viability of aircraft operations.

2.4 It becomes obvious that a new and unique requirement now exists for aircraft operating agencies to be able to communicate to their aircraft for aeronautical operational control purposes beyond the scope of the existing infrastructure provided primarily for the air traffic service. Existing principles of the aeronautical mobile (R) service and the associated allotments to MWARA's and RDARA's are indicative of the fact that there are not sufficient frequencies to permit random long distance contact between aircraft operating agencies and their aircraft on a worldwide basis in the same manner as is possible with ocean vessels. It is expected that the 1978 World Administrative Radio Conference on the Aeronautical Mobile (R) Service will effect revision to ITU Appendix 27 to provide additional frequencies to the aeronautical mobile (R) service based upon reduced channel spacing and the mandatory introduction of single sideband techniques. This action is expected to provide additional channels for increased requirements for MWARA, RDARA and VOLMET, as well as aeronautical operational control.

3. FUTURE CONCEPT FOR AERONAUTICAL OPERATIONAL CONTROL

3.1 At the present time, approximately 44 aeronautical operational control ground stations have been implemented with numerous other stations planned for implementation in the near future. Predicated upon the outcome of the 1978 World Administrative Radio Conference on the Aeronautical Mobile (R) Service, it is

envisaged that numerous private aeronautical stations will be authorized under the cognizance of the various Administrations to permit aircraft operating agencies to communicate from the home base of such aircraft operating agency to its aircraft anywhere on the globe. These private aeronautical stations are intended to provide aeronautical operational control services to one or more aircraft operating agencies within a centralized geographic location and should not normally comprise more than one operational control aeronautical station per Administration except in those cases where the area concerned is such that more than one station is required to provide a viable service.

3.2 While recognizing that worldwide aeronautical control is intended to provide an aircraft operating agency access to its aircraft anywhere in the world, beyond the boundaries of existing world air route areas, the frequencies allotted for such purpose must, of necessity, be shared to the extent practicable between aeronautical stations providing such a service. This may be accomplished by time sharing between different geographic areas and by sharing of the same families or frequencies within a given geographical area dependent upon channel loading and the distribution of the aircraft traffic of the aircraft operating agencies concerned. Operational use of the frequencies concerned, in accordance with past practice for the HF aeronautical mobile (R) service, will require coordination with the International Civil Aviation Organization (ICAO) in compliance with number MOD 27/20 of Appendix 27 to the Radio Regulations (see U.S. Proposals, Document No. 4).

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 28-E
13 May 1977
Original : English

PLENARY MEETING

Note by the Secretary-General

DEVELOPMENT OF COMPUTER PROGRAM

I have the honour to transmit to the Conference the
attached copy of Document No. 211 of CCIR Study Group 8.

M. MILI

Secretary-General

Annex : 1



A N N E X

Documents
C.C.I.R. Study Groups
Period 1974 - 1978

Doc. 3/211-E
20 April 1977

C.C.I.R. SECRETARIAT

(original language : English)

Note by the Director

During the Special Meeting of C.C.I.R. Study Group 8 to prepare the technical bases for the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, it was decided that the C.C.I.R. Secretariat should investigate the possibility of developing a computer program for the calculation of 3rd order intermodulation-free channels.

The Administration of Switzerland made a computer program*) and a catalogue of intermodulation-free channels available to us.

This computer program was adapted by the C.C.I.R. Secretariat to be used on the I.T.U. computer, and the catalogue was expanded. This computer program was transmitted, with the agreement of the Chairman of Study Group 8, to the I.F.R.B. for use by the Board in its preparatory planning work and during the planning stage of the WARC AER (R), 1978.

*) Research Report No. F 31.1096 of the Swiss PTT.
Calculation of intermodulation-free channel series of the 3rd order and of their spectra of interference for the mobile radio telephones (in German language).

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 29-E
13 June 1977
Original : Russian

PLENARY MEETING

Union of Soviet Socialist Republics

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Frequency Allotment Plan for the Aeronautical Mobile (R) Service which was adopted in 1966 and entered into force in April 1970 was based on requirements in the HF band and the state of the art in radiocommunications for the period in which the Plan was established.

Over the intervening years, civil aviation has expanded considerably in many parts of the world and air traffic density on international and domestic air routes has greatly increased. In recent years, the need for additional radio channels has become apparent, including those required for the transmission and reception of meteorological signals for long-distance flight control.

On the other hand, advances in radio technology make it possible to impose stricter demands on the Aeronautical Mobile (R) Service with a view to the more efficient use of the frequency spectrum and increasing the range and reliability of communications for enhanced flight safety.

A review of the Frequency Allotment Plan for the Aeronautical Mobile (R) Service from the angle of the single sideband operation will more than double the number of available frequencies.

The basic proposals of the USSR Telecommunication Administration for the review of the existing Appendix 27 are given below.

URS/29/1 1. Modification of the present MWARAs, RDARAs and VOLMET areas

Since the adoption of Appendix 27 to the Radio Regulations, considerable changes have taken place in the structure of the international and domestic routes of aircraft of Aeroflot and other airlines and new airports have been opened.

To take these changes into account, the USSR Administration proposes :

- 1.1 to extend the MWARA-EU area eastwards;
- 1.2 to extend the MWARA-ME area eastwards;
- 1.3 to extend the MWARA-NP area westwards;
- 1.4 to establish a new area, MWARA-CEA, for international flights in the central part of East Asia;
- 1.5 to establish a new area, Northern and Central Asia, MWARA-NCA, for international flights over the territory of the Soviet Union;
- 1.6 to keep unchanged the boundaries of areas RDARA 2 and 3 and sub-areas 2A, 2B, 2C, 3A, 3B and 3C which cover the territory of the Soviet Union;
- 1.7 to define the ME-MET reception area more accurately in order to obtain the necessary meteorological information for international flights over the Middle East and Central Asia;



1.8 to define the boundaries of the SEA-MET transmission and reception areas more accurately in order to improve the meteorological data service for international flights in the South East Asian region;

1.9 to establish a new transmission and reception area - NCA-MET, Northern and Central Asia - in order to provide meteorological data for air crews of international flights over the territory of the Soviet Union.

The USSR Telecommunication Administration's specific proposals for fixing the boundaries of these areas are given in Annex 1 (cf. Nos. 27/84, 27/85, 27/93A, 27/94, 27/102, 27/102A, 27/110-27/117, 27/181, 27/181A, 27/181B, 27/184 and 27/185).

URS/29/2 2. Method of determining frequency requirements

Modification of the boundaries of existing areas, the establishment of new areas and the steady growth of civil aviation traffic on international and regional air routes have given rise to additional frequency requirements to ensure the safety, regularity and efficiency of flights.

The USSR Telecommunication Administration considers that the method of determining frequency requirements and planning frequency allotments used by WARC-66 in preparing the present Appendix 27 to the Radio Regulations was sufficiently objective. It will be recalled that this method consists in basing calculations on the total flying time of all aircraft travelling on all routes (MWARA and RDARA) within the boundaries of the areas in question, applying a coefficient of prospective growth in air traffic in these areas. Estimates of the required number of HF frequencies carried out by this method since 1964 show a perfectly satisfactory correspondence between the calculated data and actual operational requirements.

URS/29/3 3. Frequency requirements for MWARA, RDARA and VOLMET areas

Annex 2 shows the frequency requirements for MWARAs (EUR, MID, NP, CEA, NCA), RDARAs (2A, 2B, 2C, 3A, 3B, 3C) and VOLMET areas (EUR-MET, MID-MET, PAC-MET, SEA-MET, NCA-MET), calculated by the method used at WARC-66. The calculations are based on data for a representative week in August 1975 (0001 hours GMT, Sunday, 15 August 1975 to 2400 hours GMT, Saturday, 21 August 1975) within the frequency areas of the USSR.

The number of frequencies for RDARAs 2 and 3 and for flight operational control (OPN) was determined from an analysis of air traffic on long routes and the actual requirements in long-distance HF communications of aircraft flying on these routes.

URS/29/4 4. Characteristics of single sideband equipment

The growing needs of the Aeronautical Mobile (R) Service for additional frequency channels make it essential to use the single sideband radiotelephony technique and at the same time to upgrade the transmission and reception parameters of radio equipment so as to reduce separation between adjacent channels.

For reduced adjacent channel separation, an audio frequency band between 300 and 2 700 Hz must be established on newly-developed single sideband transmitters and the out-of-band and spurious emissions must be reduced to the following levels :

- 30 dB for deviations of 1.5 to 4.5 kHz from the assigned frequency;
- 38 dB for deviations of 4.5 to 7.5 kHz from the assigned frequency.

At deviations of over 7.5 kHz, suppression of unwanted emissions should amount to $-43 \text{ dB} + 10 \log P(W)$ at a transmitter power below 50 W and 60 dB at a transmitter power above 50 W.

The USSR Administration considers that single sideband transmitters in the Aeronautical Mobile (R) Service should have the following classes of emission in addition to the basic class of emission A3J :

- A3H - for the period of transition to the Plan in Appendix 27 MOD and for communications on search and rescue frequencies 3 023 (3 023.5) kHz and 5 680 kHz;
- A3A - for supersonic aircraft;
- A2H - for selective calling systems and, if the Administration so wishes, classes of emission AI, FI, A7J and A9J for telegraphy and data transmission.

In view of the introduction of the single sideband technique, coupled with the possibility of using other classes of emission (e.g. F1) on the frequency channels given in Appendix 27, it would be convenient, for purposes of radio station operation and registration, to list in the frequency tables of the revised Appendix 27 both the nominal (reference) carrier frequency and the assigned frequency, which under the single sideband system is separated by 1 400 Hz from the carrier.

URS/29/5 5. Procedure for reviewing the Frequency Allotment Plan

The switchover to a new frequency grid with reduced channel spacing, as distinct from the 7 kHz and 8 kHz separation specified in the present Appendix 27, will mean changing the nominal frequencies in the Table under No. 27/16 and at the same time transferring all stations in the Aeronautical Mobile (R) Service to new channels. To retain the use of the channels in the present Appendix 27 which has evolved in the course of joint operation and to simplify the task of preparing a new Frequency Allotment Plan for the Aeronautical Mobile (R) Service, the USSR Administration considers that the following revision procedure should be applied :

- URS/29/6 5.1 to establish a frequency grid divided up according to frequency range with a channel separation of 6 kHz, keeping in each band the nominal carrier of the first (lowest frequency) channel;
- URS/29/7 5.2 to transfer the allotments of the present Plan (Nos. 27/195 - 27/207) to new nominal frequencies by shifting them all towards the lower frequencies in each band. However, to ensure reliable communications during the transition period, the switchover to new nominal frequencies should not be made simultaneously on all frequency ranges;
- URS/29/8 5.3 to stipulate that by the end of the transition period all the allotments referred to in point 5.2 should be transferred to the single sideband system, using the upper sideband;
- URS/29/9 5.4 to provide for the establishment of additional single sideband channels :
- 5.4.1 with a carrier frequency situated 3 kHz below the carrier of the channels referred to in point 5.1;
- 5.4.2 formed, with a 3 kHz spacing, in the bands released from double sideband operation by the reduction of the channel separation specified in the present Appendix 27 to 6 kHz;
- 5.4.3 created in the 21 960 - 22 000 kHz band.

The channels referred to in points 5.4.2 and 5.4.3 will continue to be available for use during the transition period after the completion of the stage referred to in point 5.2, i.e., until the date of the entry into force of the new Appendix 27 (as an illustration, see Annex 3, Chart modifying the Table of Frequencies in the 17 900 - 17 970 kHz band).

URS/29/10 5.5 to allot the frequencies of the additional single sideband channels to newly-formed areas, to establish nominal frequencies for the flight control service and to allot additional frequencies to the existing areas;

URS/29/11 5.6 if necessary, to allot additional frequencies to areas in the channels referred to in point 5.2, taking into account the provisions of Section II.B of Appendix 27;

URS/29/12 5.6.1 since the theoretical and experimental data have shown that it is possible to use a signal-to-noise protection ratio of 15 dB for class of emission A3J adopted by WARC-66, it would also be advisable to retain the contours adopted by that Conference as a technical basis for planning frequency allotments.

URS/29/13 6. Review of text of Appendix 27 to the Radio Regulations

A review of the Frequency Allotment Plan has indicated the need for a number of amendments to Appendix 27 to the Radio Regulations. In particular, a definition of the term "communications for flight control in the Aeronautical Service" should be included in Appendix 27.

Specific proposals are given in Annex 1 (cf. Nos. 27/8A, 27/9, 27/9A, 27/16, 27/50, 27/50.1, 27/188, 27/190, 27/194).

A N N E X 1

AMENDMENTS AND ADDITIONS TO APPENDIX 27 TO THE RADIO REGULATIONS

- | | | | | |
|-----------|-----|---------|-----|---|
| URS/29/14 | ADD | 27/8A | | Communications for flight control in the Aeronautical Service are communications used in the Aeronautical Mobile (R) Service for all flight control operations from take-off to landing. |
| URS/29/15 | MOD | 27/9 | | A Family of Frequencies in the Aeronautical Mobile (<u>R</u>) Service is a group of <u>2 to 5</u> frequencies selected from different bands of the Aeronautical Mobile (R) Service and intended to permit communication between aircraft stations and appropriate aeronautical stations <u>within the boundaries of an established operational area</u> (cf. Nos. 27/189 - 27/207). |
| URS/29/16 | ADD | 27/9A | | A "common channel" is a channel allotted in common to <u>two or more</u> areas within interference distance of each other and its use is subject to agreement between the administrations concerned.

Note : Transfer of No. 27/194 to the section on definitions. |
| URS/29/17 | MOD | 27/16 | | The list of (reference) carrier and assigned frequencies <u>allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service</u> , on the basis of the frequency separation provided for under No. 27/10, will be found in the following table : |
| URS/29/18 | MOD | 27/50 | 1.1 | Telephony - Amplitude modulation :

- double sideband (A3) <u>1)</u>

- single sideband, reduced carrier (A3A)

- single sideband, full carrier (A3H) <u>1)</u>

- single sideband, suppressed carrier (A3J)

- two-independent-sidebands {A3B} |
| URS/29/19 | ADD | 27/50.1 | 1) | Classes of emission A3 and A3H may be used only on frequencies 3 023 (3 023.5) kHz and 5 680 kHz and on working channels of RDARAs until 1 February 1987 for domestic purposes, provided no harmful interference is caused to the operation of MWARA channels. |
| URS/29/20 | MOD | 27/84 | | Major World Air Route Area - EUROPE (MWARA-EU <u>EUR</u>)

From the point 33°N 12°W through the points 54°N 12°W, 70°N 00°, 74°N 40°E, 48°N-48°E, <u>74°N 52°E</u> , <u>60°N 52°E</u> , 40°N 36°E, 29°N 35°30'E, 32°N 13°E, to the point 33°N 12°W. |
| URS/29/21 | SUP | 27/85 | | |
| URS/29/22 | ADD | 27/93A | | Major World Air Route Area - NORTHERN CENTRAL ASIA (MWARA-NCA)

From the North Pole through the points 75°N 10°E, 60°N 25°E, 30°N 25°E, 30°N 73°E, 37°N 73°E, 49°N 85°E, 42°N 97°E, 42°N 110°E, 30°N 135°E, 65°N 170°W, to the North Pole. |

URS/29/23 MOD 27/94 Major World Air Route Area - NORTH PACIFIC (MWARA-NP)

From the North Pole through the points 60°N 135°W, 47°N 118°W, 30°N 165°W, 30°N 115°E, 41°N 116°E, 55°N 135°E to the North Pole.

URS/29/24 ADD 27/102A Major World Air Route Area - CENTRAL EAST ASIA (MWARA-CEA)

From the point 55°N 124°E through the points 37°N 145°E, 26°N 130°E, 0°130°E, 0°80°E, 18°N 62°E, 37°N 67°E, 55°N 80°E, to the point 55°N 124°E.

NOC 27/110
- 27/117

URS/29/25 MOD 27/181 VOLMET area - MIDDLE EAST

The ME MID-MET reception area is defined by a line drawn from the point 50°N 80°E through the points 29°N-80°E, 50°N 90°E, 35°N 90°E, 27°N 85°E, 16°N 78°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 15°N-42°E, 20°N-20°E, 40°N-20°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

URS/29/26 ADD 27/181A VOLMET area - NORTH CENTRAL ASIA

The NCA-MET allotment area is defined by a line drawn from the point 76°N 32°E through the points 80°N 90°E, 75°N 168°W, 66°N 168°W, 48°N 160°E, 42°N 135°E, 50°N 130°E, 50°N 90°E, 35°N 70°E, 45°N 30°E, 60°N 20°E, to the point 76°N 32°E.

URS/29/27 ADD 27/181B The NCA-MET reception area is defined by a line drawn from the North Pole through the points 40°N 168°W, 30°N 140°E, 30°N 20°E, to the North Pole.

URS/29/28 MOD 27/184 VOLMET area - SOUTH EAST ASIA (SEA-MET)

The SEA-MET allotment area is defined by a line drawn from the point 29°N-86°E 55°N 75°E through the points 15°N-105°E 55°N 135°E, 45°N 135°E, 35°N 155°E, 10°N 130°E, 10°S 155°E, 35°S 155°E, 35°S 116°E, 8°N 75°E, 26°N 65°E to the point 55°N 75°E.

URS/29/29 MOD 27/185 The SEA-MET reception area is defined by a line drawn from the point 35°N-50°E 55°N 50°E through the points 55°N 180°, 50°S 180°, 50°S 70°E, 8°N 70°E, 8°N 50°E, to the point 55°N 50°E.

URS/29/30 MOD 27/188 The following plan for frequency allotment by areas does not include frequencies allotted on a world-wide basis (cf. Nos. 27/190 and 27/195-27/207).

URS/29/31 ADD 27/190 A list of frequencies allotted on a world-wide basis is given below.

URS/29/32 SUP 27/194

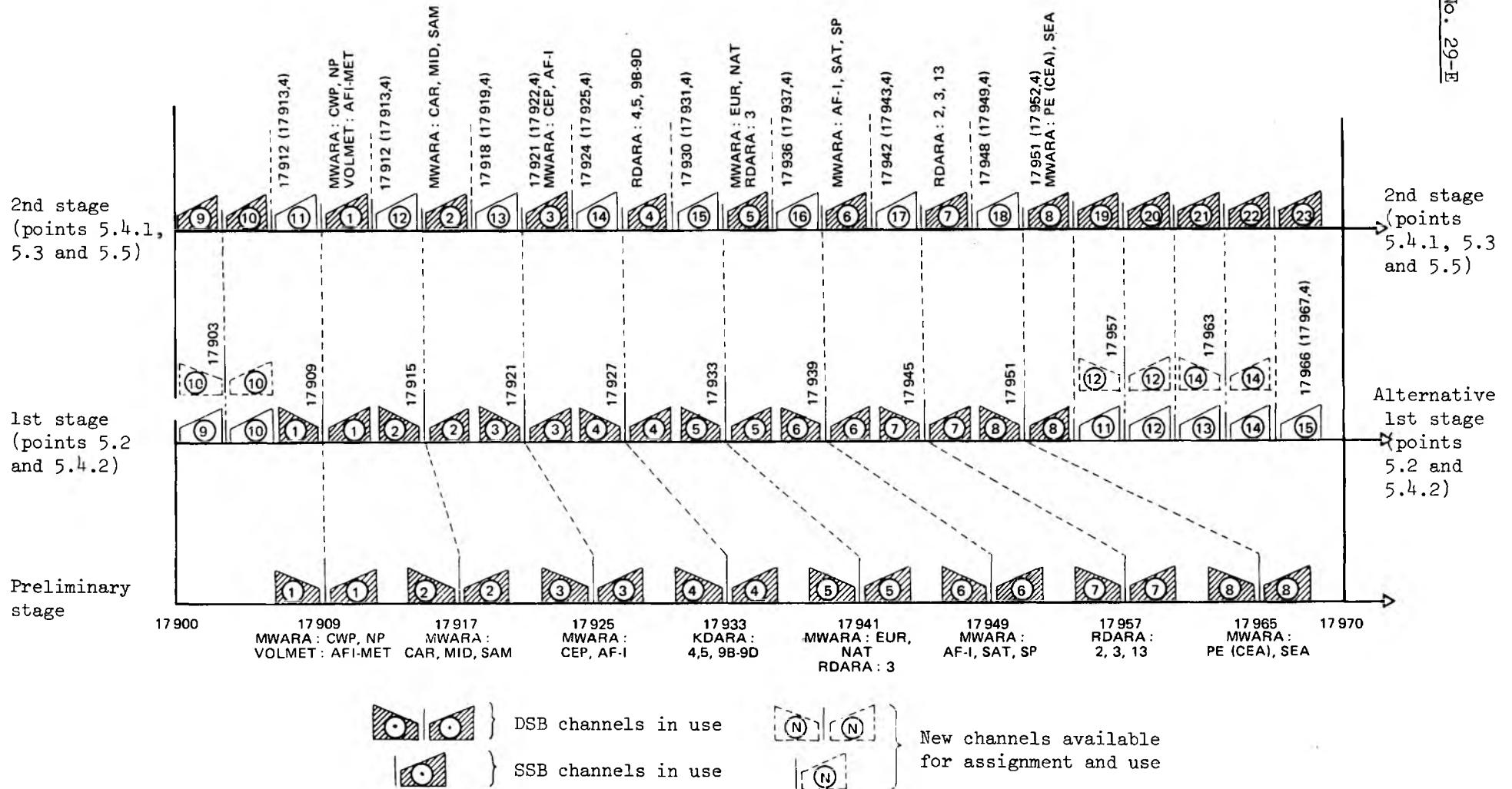
ANNEX 2

REQUIREMENTS FOR HF CHANNELS IN THE AERONAUTICAL MOBILE (R) SERVICE

BY MWARAs, RDARAs AND VOLMET AREAS

Frequency band, MHz	3.0		3.5		4.7		5.6		6.6		9.0		10		11.3		13.3		18.0		22.0		Total	
Number of channels Area	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements	Used under the Plan in Appendix 27	Additional requirements
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
2A	5	10	4	7	2	8	4	8	5	8	5	2	2	1									27	44
2B	7	4	4	4	4	3	7	6	6	6	2	1											30	24
2C	9	8	6	3	4	4	9	2	7	5	4		1	1									40	23
2													4		6		1	1	1				12	1
3A	3	8	4	4	2	2	2	7	6	6	6	1											23	28
3B	6	10	2	5	2	4	4	10	4	6	12	1	1	1									31	37
3C	5	10	3	5	4	4	4	8	3	8	4	1	1	2									24	38
3													3		3	1	1		2			1	9	2
OPN (flight operations control)				1			2			3		2		1		3		3		3		2		20
MWARA - EUR	1		1		1		1		2		2				1				1				10	
MWARA - MID			2				1		1		1		1				1		1				8	
MWARA - CEA		2		1				2		1		2		1			2		1					13
MWARA - NP	1					1	1			2	1						1		1				5	4
MWARA - NCA		1		2				1		3		2		1			1			1		1		12
EUR - MET	2			1		1	2				1	1			1	1	1						7	4
MID - MET	2			1			1		1	2	1	2			1	1							6	6
PAC - MET	1					1	1		1	1	1				1	1	1	1					6	4
SEA - MET		1	1	1				1	1	2		2	1										3	7
NCA - MET				1		1		2		1		1				1		1						8

CHART MODIFYING THE TABLE OF FREQUENCIES IN THE 17 900 - 17 970 kHz BAND



INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
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PLENARY MEETING

Federal Republic of Germany

FREQUENCY REQUIREMENTS

See Annex..

Annex : 1



A N N E X

FREQUENCY REQUIREMENTS

D/30/1

Frequency band (kHz)	Frequency requirements for RDARA communications		Remarks (including the frequencies in use for "long-distance operational control" and the areas of operation)
	Number of frequencies in use Appendix 27 allotments	Number of allotments required in revised Appendix 27	
1. 2850 - 3025	-	-	Frequency requirements for RDARA 1/1B remain unchanged
2. 3400 - 3500	2	2	1 Freq. for Domestic-FIS, 1 Freq. for OPC in EUR-Region
3. 4650 - 4700	-	2	for OPC in EUR-Region
4. 5450 - 5480 (Reg. 2)	-	-	
5. 5480 - 5680	4	1	for Domestic-FIS
6. 6525 - 6685	3	2	for OPC in MWARA EUR, NAT, MID, AFI and in RDARA 2B and 3A
7. 8815 - 8965	2	-	
8. 10005 - 10100	4	1	for OPC world-wide use
9. 11275 - 11400	4	-	
10. 13260 - 13360	3	1	for OPC world-wide use
11. 17900 - 17970	2	1	for OPC world-wide use

Frequency requirements for MWARAs and VOLMETs

MWARA EUR and Volmet area EUR-MET: No changes of the frequency requirements

MWARA NAT: Three additional families required

Volmet area NAT-MET: One additional family required

(The above abbreviations are in conformity with those proposed in Doc No. 6 and 7)

PLENARY MEETING

Australia

PROPOSALS FOR THE WORK OF THE CONFERENCE

Frequency tolerances

1. Introduction

1.1 The existing tolerance in Appendix 3 of the Radio Regulations for the HF aeronautical mobile (R) bands should be amended to reflect the requirements of SSB operations. The present tolerances with a maximum of 100 parts in 10^6 will not allow the efficient operation of an SSB service. With tolerances of this magnitude the translation errors can be large enough to cause a severe loss of intelligibility. The tolerance should be set at ± 75 Hz for aircraft stations and ± 10 Hz for aeronautical stations; these tolerances will only cause a small degradation of intelligibility but will allow the maximum flexibility for national administrations to set tolerances which best suit their conditions. If circumstances require a tighter tolerance this can be set by the responsible body. This has been carried out in Annex 10 of the Convention on International Civil Aviation which sets tolerances of ± 20 Hz for international aircraft stations and ± 10 Hz for aeronautical stations.

1.2 The proposed modification of the Radio Regulations for the incorporation of this proposal is shown in Appendix 3.

2. Discussion

2.1 It is the general aviation operators who will derive the advantages from a national tolerance of ± 75 Hz. With this tolerance and the nature of operations carried out by general aviation the maximum possible translation error will still be less than 100 Hz. An examination of the intelligibility versus translation errors contours published in CCIR Report 590 shows that a frequency shift of 100 Hz is equivalent to a system loss of 1 dB in the worst case.

2.1.1 For a tolerance of ± 75 Hz a maximum translation error of 97 Hz would occur and is made up of the following tolerances :

75 Hz Aircraft equipment tolerance
10 Hz Ground equipment tolerance
12 Hz Doppler shift

2.1.2 The maximum doppler frequency shift is only 12 Hz because the aircraft travel at less than 1,100 km/hr and when operating within national boundaries do not use frequency bands above the 11 MHz band. In fact few RDARAs have frequency allocations higher than the 11 MHz band.

2.2 It is in the area of equipment maintenance that a wider frequency tolerance of ± 75 Hz will give the general aviation operators their cost saving potential. With this tolerance there will not be a frequent maintenance requirement to compensate for the inherent frequency errors of transceivers.

The major factors affecting frequency stability are :

- a) The long-term drift.
- b) The short-term stability.
- c) The initial alignment accuracy.

When the cumulative effect of these inaccuracies takes the frequency outside tolerance the transceiver will require re-adjustment. The effect of these factors is considered in more detail and an estimation of the maintenance period is made.

2.2.1 The long-term stability of a crystal oscillator is largely dependent upon the aging characteristics of the crystal. The maximum stability that can be guaranteed by crystal manufacturers for cold weld crystals is $+2 \times 10^{-6}$ per year. [1] This is after the crystals have been pre-aged. In the 11 MHz band this crystal aging can cause a maximum frequency shift of $+23$ Hz per year.

2.2.2 The problems of short-term stability of crystal oscillators are well known and will not be discussed in detail. A typical short-term stability for an aircraft SSB transceiver is of the order of 5×10^{-7} .

2.2.3 The initial alignment errors can be caused by either a lack of expertise in the adjustment or insufficiently accurate test equipment.

2.2.3.1 The required accuracy of the test equipment is directly related to the initial setting up accuracy. If a tight frequency tolerance is used an initial alignment accuracy of ± 2 Hz will probably be required. To set this accuracy the test equipment should be one order of accuracy better than the 2 Hz tolerance. This would be an accuracy of 2×10^{-8} when adjusting an 11 MHz frequency. Accuracy of this order will require test equipment of the quality of a rubidium frequency standard. An example would be a Hewlett Packard model 506A rubidium frequency standard which costs \$US 8,910.

2.2.3.2 With a tolerance of ± 75 Hz an initial error of ± 10 Hz would be acceptable. With this error the test equipment accuracy required would be 1×10^{-7} , at 11 MHz. This accuracy is usually achievable from standard frequency broadcasts (such as WWV) even allowing for the frequency shift of the signal by the ionosphere. This standard signal can be used to calibrate general purpose test instruments. An example would be a Hewlett Packard model HP 5328A counter which costs \$US 1,430.

2.2.3.3 The factors affecting the expertise required to adjust a transceiver to the exact centre frequency are many and it is not possible to express them in quantitative terms but it is a factor which can have a significant effect.

2.2.3.4 The graph in Appendix 1 shows the relationship between frequency tolerance and the maintenance period required to guarantee that the equipment will at all times be operating within tolerance, assuming that the crystal has an aging rate of $+2 \times 10^{-6}$ parts per year.

2.2.3.5 Using the example of a transceiver operating with a maximum frequency range of 12 MHz and having a short-term frequency tolerance of 5×10^{-7} . This set could be operating outside a tolerance of ± 20 Hz approximately six months after the initial alignment. This is because at 12 MHz, 6 Hz of the tolerance is accounted for by the short-term frequency stability, 2 Hz is the initial setting up error which leaves 12 Hz for the long-term aging of the crystal; at 23 Hz per year this can occur in six months.

2.2.3.6 If the tolerance were ± 75 Hz the period before the transceiver can be operating outside tolerance is extended to 30 months. This is with a ± 10 Hz initial tolerance.

2.3 It is Australia's experience that HF transceivers used by general aviation aircraft are generally serviced at intervals of between 18 months to 2 years. If for example a tolerance of ± 20 Hz is introduced, this maintenance period will have to be reduced to mandatory intervals of 6 months to ensure that the transceivers are operating within the radio regulations.

Appendix 2 shows the relationship between frequency tolerance and the cost of maintaining a receiver in a light aircraft.

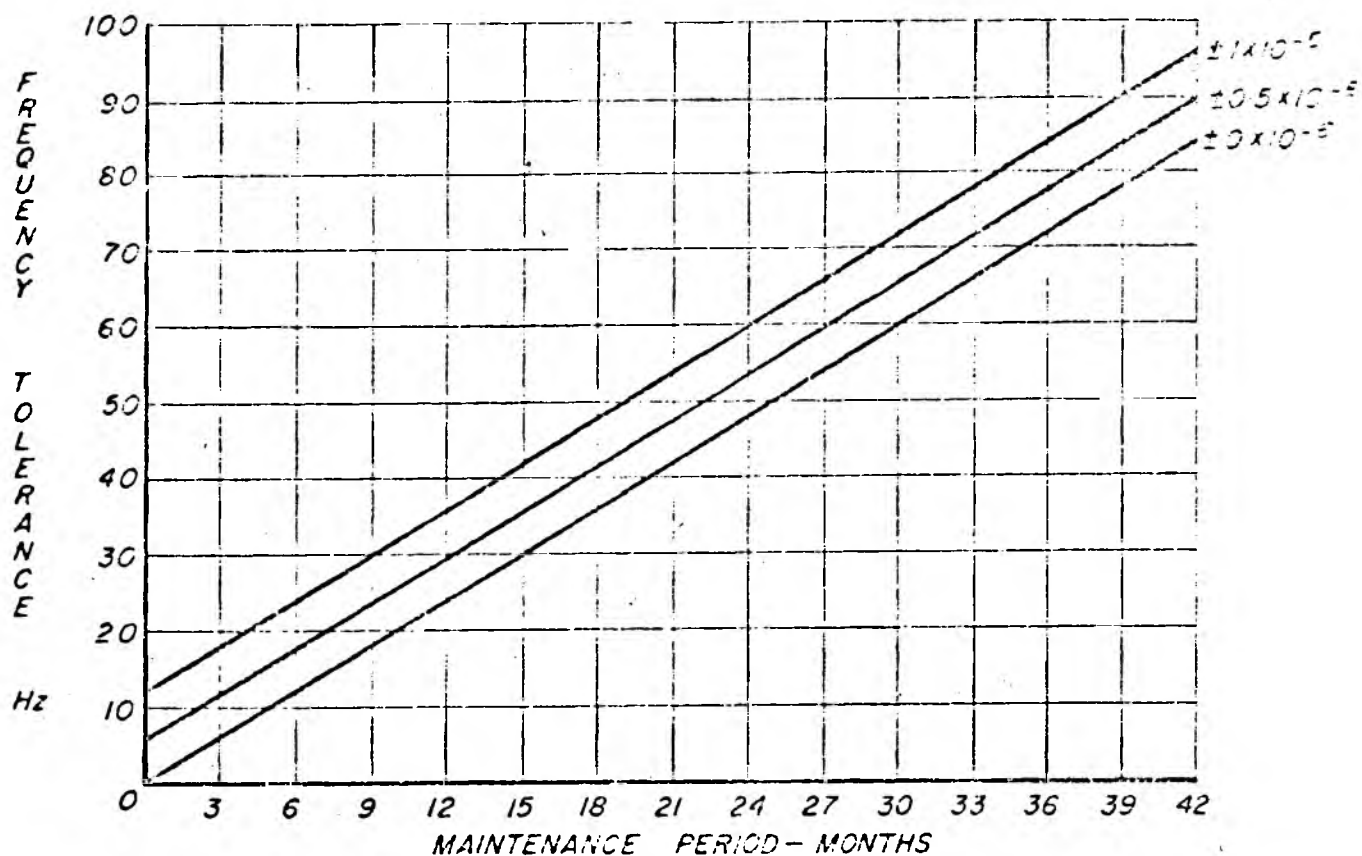
REFERENCE

Draft Report / December 1976 /

International Electrotechnical Commission,
Technical Committee No. 49. (Secretariat) 101,
Piezoelectric Devices for Frequency Control
& Selection.

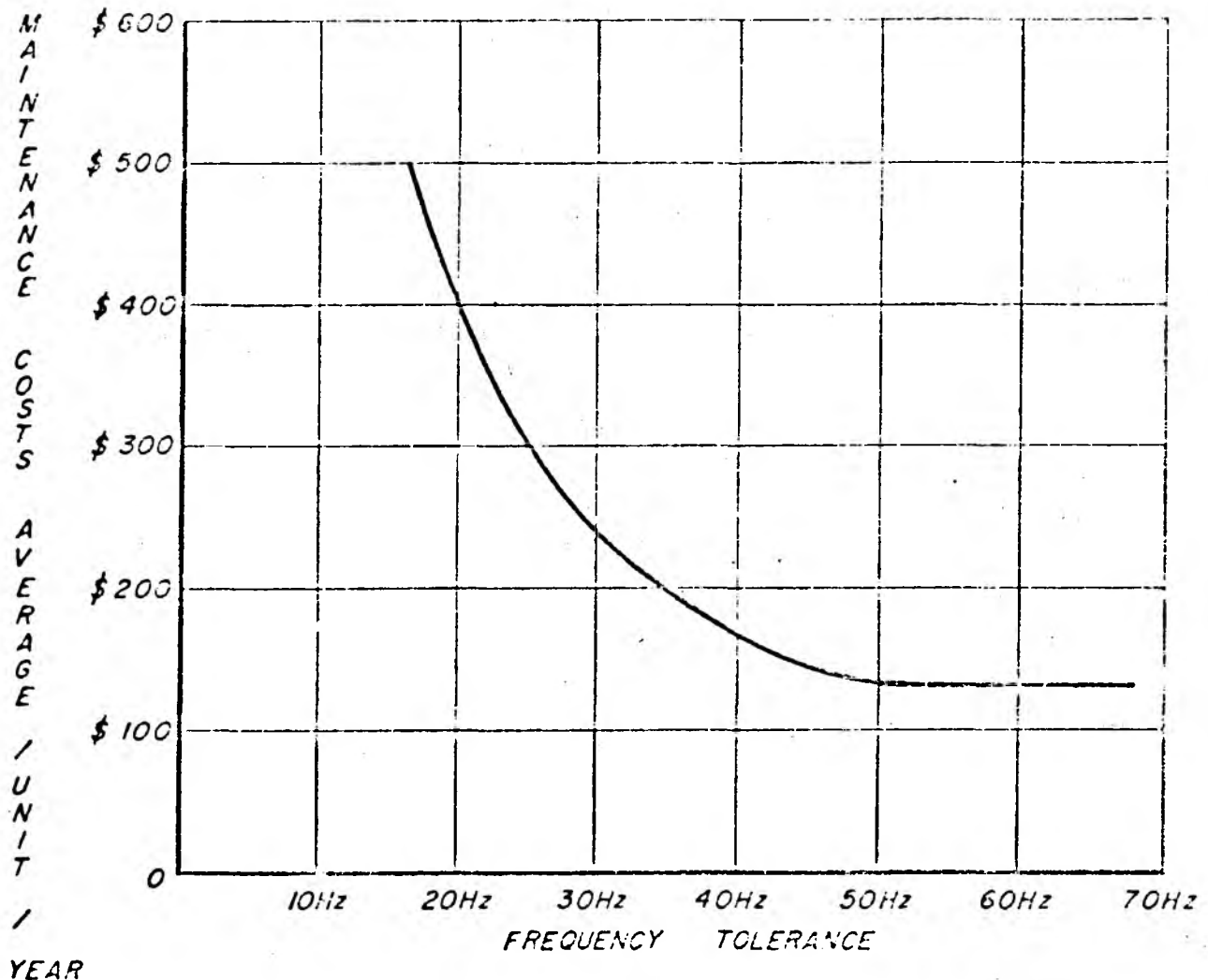
APPENDIX 1

GRAPH OF FREQUENCY TOLERANCE VERSUS MAINTENANCE PERIODS FOR
VARIOUS SHORT-TERM OSCILLATOR STABILITIES



NOTES

1. THE TRANSCEIVER HAS A 12MHz UPPER FREQUENCY LIMIT.
2. THE CRYSTAL IS ASSUMED TO HAVE AN AGING RATE OF $+2$ PARTS IN 10^6 PER YEAR.

APPENDIX 2GRAPH OF MAINTENANCE COSTS VERSUS FREQUENCY TOLERANCE**NOTES :**

1. IT IS ASSUMED THAT THE TRANSCEIVER IS MAINTAINED ONCE EVERY TWO YEARS FOR REASONS OTHER THAN RESTORING THE FREQUENCY TO WITHIN TOLERANCE.
2. THE TRANSCEIVER HAS A SHORT TERM STABILITY OF 5 PARTS IN 10^7 .

A P P E N D I X 3

APPENDIX 3 OF THE RADIO REGULATIONS

Notes referring to the Table of Frequency Tolerances

After note q) add the following new note :

AUS/31/1	ADD	r)	For single sideband transmitters operating in the aeronautical mobile (R) service the tolerance is	
		1)	In the band 1 605-4 000 kHz	
			Aeronautical stations	± 10 Hz
			Aircraft stations	± 75 Hz
		2)	In the band 4 to 29.7 MHz	
			Aeronautical stations	± 10 Hz
			Aircraft stations	± 75 Hz

ITEM 2.1.1

PLENARY MEETINGAustraliaPROPOSALS FOR THE WORK OF THE CONFERENCEAPPENDIX 27 - FREQUENCY ALLOTMENT PLAN FOR THE AM(R)SDescription of the boundaries of the regional and domestic air route areas

Note : This working paper varies in two aspects from that accepted by the ICAO Communications Divisional Meeting, 8-24 September 1976 at Montreal and reproduced in the Report approved at that meeting (Document 9187, COM/76), viz.

- i) It is suggested that a new NDARA-14 be created to satisfy Australian requirements rather than merely revising the sub-areas of NDARA-9.
- ii) Some of the suggested sub-divisional boundaries have been varied to more accurately reflect Australia's requirements.

AUS/32/1 MOD 27/141

Regional and Domestic Air Route Area - 9 (RDARA-9)

From the South Pole along the ~~110°~~ 160° meridian to ~~10°S~~ 27°S. Then through the points 19°S 153°E, 10°S 145°E, 10°S 141°E, 00° 141°E, 00° 160°E, 03° 30'N 160°E, 03° 30'N 120°W. Then along the 120°W meridian to the South Pole.

Reason : Regional services between Australia and neighbouring States are conducted in the main by large international type of aircraft using MWARA frequencies in order to avoid the possibility of aircraft operating on the same route communicating on different frequency families. Hence there is no requirement for RDARAs to be common to Australia and adjoining States. This proposed modification removes the Australian area of interest from RDARA-9.

AUS/32/2 SUP 27/142

Sub-Area 9A

Reason : Consequential change as a result of MOD 27/141 above, (AUS/32/1).

AUS/32/3 MOD 27/143

Sub-Area 9B

The southern and western limits between the points 27°S 160°E and 10°S 141°E should be moved to 27°S 160°E, 19°S 153°E, 10°S 145°E, 10°S 141°E.

Reason : Consequential change as a result of MOD 27/141 above.



AUS/32/4 MOD 27/145

Sub-Area 9D

The western limit should be moved from 139°E to 160°E.

Reason : Consequential change as a result of MOD 27/141 above. (AUS/32/1).

AUS/32/5 ADD 27/173A

Regional and Domestic Air Route Area - 14 (RDARA-14)

From the South Pole along the 110°E meridian to 10°S. Then through the points 10°S 145°E, 19°S 153°E, 27°S 160°E. Then along the 160°E meridian to the South Pole.

Reason : Regional services between Australia and neighbouring States are conducted in the main by large international type of aircraft using MWARA frequencies in order to avoid the possibility of aircraft operating on the same route communicating on different frequency families. Hence there is no requirement for RDARAs to be common to Australia and adjoining States. This proposed modification introduces a new Regional and Domestic Air Route Area - 14 (RDARA-14).

AUS/32/6 ADD 27/173B

Sub-Area 14A

From the South Pole along the 110°E meridian to 19°S. Then through the points 19°S 118°E, 24°S 120°E, 24°S 131°E. Then along the 131°E meridian to the South Pole.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/7 ADD 27/173C

Sub-Area 14B

From the point 19°S 110°E to the point 10°S 110°E thence to 10°S 131°E, 24°S 131°E, 24°S 120°E, 19°S 118°E to the point 19°S 110°E.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/8 ADD 27/173D

Sub-Area 14C

From the point 24°S 131°E to the point 10°S 131°E thence to 10°S 139°E, 24°S 139°E to the point 24°S 131°E.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/9 ADD 27/173E

Sub-Area 14D

From the South Pole along the 131°E meridian to 24°S then through the points 24°S 139°E, 27°S 139°E, 27°S 142°E, 34°S 142°E, 34°S 139°E. Then along the 139°E meridian to the South Pole.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/10 ADD 27/173F

Sub-Area 14E

From the point 24°S 139°E along the 139°E meridian to 10°S then through the points 10°S 145°E, 19°S 153°E to the point 24°S 139°E.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/11 ADD 27/173G

Sub-Area 14F

From the point 27°S 139°E along the 139°E meridian to 24°S then through the points 19°S 153°E, 27°S 160°E to the point 27°S 139°E.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

AUS/32/12 ADD 27/173H

Sub-Area 14G

From the South Pole along the 139°E meridian to 34°S then through the points 34°S 142°E, 27°S 142°E, 27°S 160°E. Then along the 160°E meridian to the South Pole.

Reason : The creation of a number of smaller sub-areas within a RDARA provides greater potential for sharing between Allotment Areas without increasing the number of channels required to handle the total traffic.

PLENARY MEETING

Mauritius

PROPOSALS FOR THE WORK OF THE CONFERENCE

MAU/33/1

The Government of Mauritius supports the proposals, except as indicated herein, for amendments to Appendix 27 of the ITU Radio Regulations, and to the other provisions of the Radio Regulations governing the provisions of the Aeronautical Mobile (R) Service, and contained in the Report of the Communications Divisional Meeting, ICAO September 1976, which Report reflects the CCIR Study Group 8 Report.

MAU/33/2

A. As regards the proposed amendment under Appendix 27, Part II, Section I, Article 1, creation of new MWARA (ADD 27/85) to cover the routes between Australia/Asia and Africa, Mauritius proposes the alternative designator MWARA INO instead of MWARA IO, proposed by ICAO.

MAU/33/3 MOD 27/137

Sub-Area 7D

From the border of Tanzania and Mozambique on Lake Nyasa, south along the west border of Mozambique to the African east coast, then through the points 27°S 33°E, 40°S 33°E, 40°S 60°E, 40°S 65°E, 11°S 60°E, 11°S 65°E, to 11°S 41°E. Thence along the northern border of Mozambique to Lake Nyasa.

Reason : To extend the eastern boundary of Sub-Area 7D to include Rodrigues Island within it, thereby enabling Mauritius to utilize the Sub-Area 7D allotments over its domestic flights to Rodrigues.

MAU/33/4

Note : Mauritius requires one frequency in the 4.7 MHz band in addition to the existing number of frequencies allotted to 7D.

The Conference may wish to propose consequent amendments to the boundaries of Sub-Area 8A.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 34(Rev.1)-E

8 February 1978

Original : English

COMMITTEE 5

Switzerland

PROPOSAL FOR THE WORK OF THE CONFERENCE

In revising Appendix 27 of the Radio Regulations in accordance with item 2.1.1 of the agenda, the Conference should :

- SUI/34/1 1. draw up the new frequency allotment plans for the Aeronautical Mobile (R) Service, i.e., for MWARA, RDARA and VOLMET, in integral single sideband operation;
2. following the doubling of the number of channels available within the bands,
- SUI/34/2 2.1 provide channels to accommodate the world-wide long-range operational control service;
- SUI/34/3 2.2 as far as possible reserve part of each band for the future introduction of an aeronautical mobile service for public correspondence with aircraft,
- (see annexed draft Resolution).
- SUI/34/4 3. The Conference could base its discussions mainly on ICAO Report Doc. 9187, COM/76, which we broadly endorse.

Annex : 1



A N N E X

DRAFT RESOLUTION

relating to the future introduction of an aeronautical mobile service
for public correspondence with aircraft

SUI/34/5

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978

considering

- a) that the use of VHF in their various applications could bring about a marked reduction in the use of HF by the Aeronautical Mobile (R) Service;
- b) that in Resolution No. 14 (1959), Administrations are asked to take the necessary steps to make as great a use of very high frequencies in order to lessen the load on the high frequency (R) bands;
- c) that a wish has been expressed to set up long-range public correspondence links with aircraft in the HF band;
- d) that provisions of No. 432 of the Radio Regulations envisage the possibility of the use of the frequency bands allocated exclusively to the aeronautical mobile service for public correspondence on a planned basis;

resolves

1. that Administrations should consider the future frequency requirements for long distance communications with aircraft to provide public correspondence;
2. that in making such proposals, Administrations take into account the increasing use of very high frequencies and corresponding reduction in the use of high frequencies in the Aeronautical Mobile (R) Service;

requests the Secretary-General

to bring this Resolution to the attention of the World Administrative Radio Conference 1979.

Reasons : The introduction of single sideband operation and the ensuing doubling of the number of channels should make it possible to use certain channels for additional applications in the Aeronautical Mobile Service, namely :

- the operational control service;
- the future aeronautical mobile service public correspondence.

PLENARY MEETING

Switzerland

PROPOSAL FOR THE WORK OF THE CONFERENCE

In revising Appendix 27 of the Radio Regulations in accordance with item 2.1.1 of the agenda, the Conference should :

- SUI/34/1 1. draw up the new frequency allotment plans for the Aeronautical Mobile (R) Service, i.e., for MWARA, RDARA and VOLMET, in universal single sideband operation;
2. following the doubling of the number of channels available within the bands,
- SUI/34/2 2.1 provide channels to accommodate the world-wide long-range operational control service;
- SUI/34/3 2.2 as far as possible reserve part of each band for the future introduction of an aeronautical mobile service for public correspondence with aircraft,
- (see annexed draft Resolution).
- SUI/34/4 3. The Conference could base its discussions mainly on ICAO Report Doc. 9187, COM/76, which we broadly endorse.

Annex : 1



A N N E X

DRAFT RESOLUTION

relating to the future introduction of an aeronautical mobile service
for public correspondence with aircraft

SUI/34/5

The World Administrative Radio Conference on the Aeronautical
Mobile (R) Service, Geneva, 1978

considering

- a) that the use of VHF in their various applications could bring about a marked reduction in the use of HF by the Aeronautical Mobile (R) Service;
- b) that a wish has been expressed to set up long-range public correspondence links with aircraft in the HF band;
- c) that those parts of the spectrum currently allocated to the Aeronautical Mobile (R) Service which are no longer needed by the Service following the revision of Appendix 27 of the Radio Regulations could be used to accommodate public correspondence with aircraft without recourse to the frequencies of other services;

resolves

to request the World Administrative Radio Conference, 1979,
to reserve for other applications in the Aeronautical Mobile Service, such
as a future service of public correspondence with aircraft, those parts of
the spectrum which are no longer used by the Aeronautical Mobile (R) Service.

Reasons : The introduction of single sideband operation and the ensuing
doubling of the number of channels should make it possible to
use certain channels for additional applications in the
Aeronautical Mobile Service, namely :

- the operational control service
 - the future aeronautical mobile service public correspondence.
-

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 35-E

10 October 1977

Original : French

BUDGET CONTROL

COMMITTEE

Note by the Secretary-General

BUDGET OF THE CONFERENCE

For the information of the Budget Control Committee, the annex to this document contains the budget of the Conference as approved by the Administrative Council of the Union at its 30th (1975) and 32nd (1977) Sessions.

It is stressed that the expenditure provided for the Conference is part of the ordinary budget of the Union and that it is covered by the annual contributions of Members, for 1976 with respect to the preparatory work and for 1978 with respect to the actual Conference.

On the other hand, in accordance with Nos. 547 and 548 of the International Telecommunication Convention, Malaga-Torremolinos 1973, recognized private operating agencies and international organizations participating in the work of the Conference are required to share in defraying its expenses, except for those international organizations which are exempted from contributing by Resolution No. 574 of the Administrative Council.

M. MILI

Secretary-General

Annex : 1



A N N E XWORLD ADMINISTRATIVE RADIO CONFERENCE ON THE AERONAUTICAL MOBILE (R) SERVICE

	Budget 1976 Preparatory work	Budget 1978 Conference
<u>Staff for meetings</u>		
Salaries and related expenses	162,000	520,000
Travel	9,000	86,000
Insurance	4,000	11,000
	175,000	617,000
<u>Premises and equipment</u>		
Premises, furniture, machines	-	283,000
Computer	-	5,000
Document production	140,000	60,000
Office supplies and overheads	-	15,000
Postage	35,000	10,000
Technical equipment	-	3,000
Sundry and unforeseen	-	5,000
	175,000	381,000
<u>Other expenses</u>		
Final Acts	-	75,000
	350,000	1,073,000

Total

General total

1,423,000

=====

Section 1 - Preparatory work charged to the 1976 budget1.1 Salaries and related expenses for supernumerary staff

- executive secretariat	8,600	
- Personnel Department	3,300	
- additional staff for the IFRB	18,000	
- translation	76,400	
- typing	34,200	
- reproduction	17,700	
- distribution	3,800	
	<u>162,000</u>	
- travel of non-local staff		9,000
- insurance		4,000
		<u>175,000</u>
	<u>total 1.1</u>	<u>175,000</u>

1.2 Production of preparatory documents

- preparatory documents	47,000	
- report of the CCIR	73,000	
- IFRB work	20,000	
		<u>140,000</u>

1.3 Postage of documents to participants 35,000

total 1.2 175,000

Total credits entered in the 1976 budget for
the preparatory work of the Conference 350,000
=====

Section 2 - The actual Conference charged to the 1978 budget2.1 Staff

The following supernumerary staff is foreseen for the work of the Conference :

2.1.1 <u>Salaries and related expenses for supernumerary staff</u>	Number of staff	Days	Swiss francs
Interpretation (French, English, Spanish, Russian, Chinese, Arabic)	51	1,340	520,000
2.1.2 <u>Travel</u>			86,000
2.1.3 <u>Insurance</u> (accident insurance, health insurance, etc.)			11,000
<u>Total</u>			617,000 =====

2,2 Premises and equipment2.2.1 Premises, furniture, machines

It is proposed to rent the International Conference Centre, without the main hall, as follows :

- the rental envisaged covers 26 days of meeting, plus 2 days before and 2 days after the Conference for installation and removal, i.e. a total of 30 days, at a daily rental of 8,600 Swiss francs.	258,000
- maintenance expenses for simultaneous interpretation equipment	10,000
- cleaning	6,000
- supervision of the building at night and weekends	4,000
	278,000
It is also expected that typewriters, photocopying machines etc. will have to be rented, for which the proposed credit amounts to	5,000
	283,000 =====

2.2.2 Computer expenses

Provision should be made for the additional ITU computer time that may be required for the work of the Aeronautical Conference. The credit proposed for this item amounts to .

5,000

=====

2.2.3 Document production

Arrangements were made for most of the documents to be produced in 1977 so that they could be circulated to participants in good time; credits were entered for this purpose in the 1976 budget and were transferred to the 1976 account for credits granted for previous years, to remain available until the end of 1977.

Accordingly, the 1978 budget contains only the credit required for the documents produced during the Conference itself (e.g., summary records and agenda)

60,000

=====

2.2.4 Office supplies and overheads

The budget estimates comprise :

- office supplies and equipment 10,000
- local transport and internal removal costs 5,000

15,000

=====

2.2.5 Postage, telephone charges, telegrams

It is proposed to provide the following credits :

- postage 6,000
- telephone charges 3,000
- telegrams 1,000

10,000

=====

2.2.6 Technical equipment

Rental of the CICG includes the use of the technical installations for simultaneous interpretation, telex machines, etc. with which the building is equipped. Provision should be made, however, for additional expenses (e.g. magnetic tapes)

3,000

=====

2.2.7 Sundry and unforeseen

It is proposed to provide a credit of

5,000

=====

Total 2.2

381,000

=====

2.3 Other expenses

2.3.1 Final Acts of the Conference

It is estimated that the new Appendix 27 to the Radio Regulations will comprise 120 pages each in the English, French and Spanish versions, to be produced by the Union workshops. On the other hand, the maps and graphs annexed to the Final Acts will be prepared by outside printers. As typesetting of the texts, maps and graphs making up the Final Acts which will be signed by delegations will be used for the sales edition of the Final Acts, the provisions of Annex 2, paragraph 20, to the Financial Regulations apply and it will be for the plenary meeting of the Conference to determine the proportion of typesetting costs to be charged to the Conference budget and to the supplementary publications budget. On the basis of decisions taken by former conferences, it may be estimated that one-third of the typesetting costs will be covered by the Conference budget and two-thirds by the supplementary publications budget.

On this basis, the credits to be included under this item in the Conference budget are as follows :

- one-third of the typesetting costs	15,000
- paper	5,000
- printing and finishing	15,000
- supplies	3,000
- work done outside the Union	12,000
	<u>50,000</u>
- translation into Chinese	12,500
- translation into Russian	12,500
	<u>12,500</u>
Total 2.3	<u>75,000</u>
	=====

Total credits entered in the 1978 budget for the
expenses of the actual Conference

1,073,000
=====

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 36-E

20 October 1977

Original : French

BUDGET CONTROL COMMITTEE

Note by the General Secretariat

CONTRIBUTIONS OF RECOGNIZED PRIVATE OPERATING AGENCIES AND
NON-EXEMPT INTERNATIONAL ORGANIZATIONS

In accordance with No. 554 of Article 79 of the International Telecommunication Convention, Malaga-Torremolinos, 1973,

..."the amount of the contribution per unit payable towards the expenses of administrative conferences by recognized private operating agencies which participate in accordance with 338 and by participating international organizations shall be fixed by dividing the total amount of the budget of the Conference in question by the total number of units contributed by Members as their share of Union expenses. The contributions shall be considered as Union income. They shall bear interest from the sixtieth day following the day on which accounts are sent out, at the rates fixed in 546."

The total amount of the budget of the Aeronautical Conference, including a share for the common services, is 1,876,000 Swiss francs and the total number of units contributed by Members is 426, so that the amount of the contributory unit for recognized private operating agencies and international organizations which are not exempt by virtue of Administrative Council Resolution No. 574 is 4,400 Swiss francs.

A list of the recognized private operating agencies and non-exempt international organizations taking part in the work of the Conference, with the number of contributory units each has chosen, will be issued in due course.

M. MILI

Secretary-General



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 37-E
20 October 1977
Original : English

PLENARY MEETING

Denmark

PROPOSALS FOR THE WORK OF THE CONFERENCE

The following are the Danish proposals for changes of boundaries of RDARA 1, Sub-Areas 1B and 1C as defined in Appendix 27 of the Radio Regulations :

DNK/37/1 MOD 27/106 Sub-Area 1B

Change the last sentence to read : "... Thence to the points 56°N 03°E, 59°N 02°E, 62°N 01°E. Thence to the North Pole along the 1° line of longitude."

DNK/37/2 MOD 27/107 Sub-Area 1C

Change the first sentence to read : "From the North Pole along the 1° line of longitude to the point 62°N 01°E. Thence to 59°N 02°E, 56°N 03°E and 55°N 04°E.

After successful coordination with the Canadian Administration it is hereby proposed to establish a new Sub-Area 10F within the boundaries of Sondrestrom FIR in Greenland with the following boundaries :

DNK/37/3 ADD 27/150A Sub-Area 10F

From the North Pole through the points 82°N 30°E, 82°N 00°, 73°N 00°, 73°N 20°W, 70°N 20°W, 63°30'N 39°W, 58°30'N 43°W, 58°30'N 50°W, 63°30'N 55°44'W, 65°30'N 58°39'W, 74°N 68°18'W, 76°N 76°W, 78°N 75°W, 82°N 60°W to the North Pole.

DNK/37/4

Furthermore I enclose the Danish frequency requirements for RDARAs and for Long Distance Operational Control as submitted to the IFRB for its preparatory work of the conference.

The Danish Administration has no further frequency requirements for MWARA and VOLMET areas other than those already recorded in the Master Frequency Register.

Annexes : 2



A N N E X 1

DNK/37/4-1

Annex 2 to IFRB Circular-letter No. 386

1 <u>DNK</u> Administration	2 <u>DNK</u> Country Symbol
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Form of frequency requirements for the Aeronautical Mobile (R) Service ⁴⁾

(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____ Reference No.	4 _____ Date
--------------------------	-----------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u>1C</u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	World-wide Symbol(s) ²⁾	
2 850 – 3 025					1	Common family
3 400 – 3 500			2		1	for DNK, NOR
4 650 – 4 700			1		1	and S.
5 450 – 5 480 (Reg. 2)						
5 480 – 5 680			2		1	
6 525 – 6 685					1	
8 815 – 8 965					1	
10,005 – 10,100					1	
11,275 – 11,400					1	
13,260 – 13,360					1	
17,900 – 17,970					1 + 1 ²²	MHz + 1 ²³ MHz

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

A N N E X 2

DNK/37/4-2

Annex 2 to IFRB Circular-letter No. 386

1 <u>DNK</u> Administration	2 <u>GRL</u> Country Symbol
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Form of frequency requirements for the Aeronautical Mobile (R) Service ⁴⁾

(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____ Reference No.	4 _____ Date
--------------------------	-----------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u>10F</u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u>NA 1-2</u> Symbol(s) ²⁾	
2 850 – 3 025			1		1	
3 400 – 3 500			1		1	
4 650 – 4 700			1		1	
5 450 – 5 480 (Reg. 2)			1		1	
5 480 – 5 680			1		1	
6 525 – 6 685			1		1	
8 815 – 8 965			1			
10,005 – 10,100						
11,275 – 11,400						
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

PLENARY MEETING

Note by the Secretary-General

CONVENING OF THE CONFERENCE

Summary : This document describes the measures taken by the Plenipotentiary Conference (Malaga-Torremolinos, 1973) and by the Administrative Council for the convening of the World Administrative Radio Conference on the Aeronautical Mobile (R) Service. It is published for information; the Conference will probably wish to take note of it.

1. The Plenipotentiary Conference (Malaga-Torremolinos, 1973) approved the principle of convening a World Administrative Radio Conference on the Aeronautical Mobile (R) Service when a sufficient number of requests from administrations of Members of the Union had been received.

2. The Administrative Council

2.1 At its 29th Session (1974) the Council examined requests to convene the Conference from four countries Members of the ITU. It also took note of a letter from the Secretary-General of the International Civil Aviation Organization (ICAO) on this question. The Council instructed the Secretary-General of the Union to request Members to inform him of their views.

2.2 At the 30th Session (1975) the Council examined the Secretary-General's report on the enquiry mentioned in 2.1 and, after consulting the Members of the Union, adopted Resolution No. 763 (see Document No. 1 of the Conference) in which it was decided to convene the Conference in Geneva on 7 March 1977 for a maximum duration of four weeks.

2.3 At its 31st Session (1976), having examined the budget and in view of financial difficulties, the Council proposed to Members that the Conference be postponed until 6 February 1978 and that its duration should not exceed four weeks. That proposal was approved by the Members of the Union.

M. MILI

Secretary-General



PLENARY MEETING

United States of America

RDARA REQUIREMENTS

- USA/39/1 1. US RDARA requirements are forwarded herewith, subject to the following :
- a) A separate summary sheet (Annexes 1-6) is provided for each RDARA in which the United States has requirements.
 - b) The requirements for the bands 5 450-5 480 kHz and 5 480-5 680 kHz have been combined.
 - c) Since the world-wide Long Distance Operational Control frequencies in use do not apply to just one RDARA and cannot be described solely in terms of MWARAs, they are again listed separately (Annex 7).
 - d) Requirements for world-wide Long Distance Operational Control are included with frequencies now in use for this function.

- USA/39/2 2. With regard to MWARA and VOLMET areas, the United States has no unique frequency requirements. All our requirements are shared by other users of these families. The United States generally supports the recommendations of the 1976 ICAO Communications Divisional Meeting to provide collectively for the MWARA and VOLMET area requirements of all user administrations.

3. In its preparations for the Conference the United States would find it helpful to have the attachments distributed as a conference document at an early date.

Annexes : 7

Annex 2 to IFRB Circular-letter No. 386

1 <u>USA</u> Administration	2 <u>USA</u> Country Symbol
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**Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____ Reference No.	4 <u>9/30/77</u> Date
--------------------------	--------------------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u>11</u> RDARA Symbol ¹⁾	<u> </u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u> </u> Symbol(s) ²⁾	
2 850 – 3 025		6				
3 400 – 3 500		8				
4 650 – 4 700		6				
5 450 – 5 480 (Reg. 2))	*				* Combined with 5480 – 5680
5 480 – 5 680		9				
6 525 – 6 685		7				
8 815 – 8 965		3				
10,005 – 10,100		1				
11,275 – 11,400		2				
13,260 – 13,360		1				
17,900 – 17,970		2				

- 1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.
- 2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.
- 3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.
- 4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

Box 2 : CAR, GUM, MRA, MRL, WAK

Annex 2 to IFRB Circular-letter No. 386

1 <u>USA</u> Administration	2 <u>See above.</u> Country Symbol
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**Form of frequency requirements
for the Aeronautical Mobile (R) Service⁴⁾**
(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____ Reference No.	4 <u>9/30/77</u> Date
--------------------------	--------------------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u>6C</u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u> </u> Symbol(s) ²⁾	
2 850 – 3 025						
3 400 – 3 500			1			
4 650 – 4 700						
5 450 – 5 480 (Reg. 2)						
5 480 – 5 680			1			
6 525 – 6 685						
8 815 – 8 965			1			
10,005 – 10,100						
11,275 – 11,400			1			
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

Annex 2 to IFRB Circular-letter No. 386

1 <u>USA</u>	2 <u>SMA PHX HWL</u>
Administration	Country Symbol

**Form of frequency requirements
for the Aeronautical Mobile (R) Service⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____	4 <u>9/30/77</u>
Reference No.	Date

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u>9B</u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u> </u> Symbol(s) ²⁾	
2 850 – 3 025						
3 400 – 3 500			1			
4 650 – 4 700						
5 450 – 5 480 (Reg. 2)						
5 480 – 5 680			1			
6 525 – 6 685						
8 815 – 8 965						
10,005 – 10,100						
11,275 – 11,400						
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

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Annex 2 to IFRB Circular-letter No. 386

Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾

(See paragraph 5 of IFRB Circular-letter No. 386)

1 <u>USA</u> Administration	2 <u>ALS</u> Country Symbol
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3 _____ Reference No.	4 <u>9/30/77</u> Date
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Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u>10A</u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u> </u> Symbol(s) ²⁾	
2 850 – 3 025			6			
3 400 – 3 500			5			
4 650 – 4 700			3			
5 450 – 5 480 (Reg. 2)			*			*Combined with 5480 – 5680
5 480 – 5 680			6			
6 525 – 6 685			6			
8 815 – 8 965			4			
10,005 – 10,100			2			
11,275 – 11,400			3			
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

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Annex 2 to IFRB Circular-letter No. 386

1 USA Administration	2 HWA, MDW, JON, PLM Country Symbol
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**Form of frequency requirements
for the Aeronautical Mobile (R) Service⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

3 Reference No.	4 9/30/77 Date
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Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	MWARA Symbol ¹⁾	RDARA Symbol ¹⁾	12A Sub-RDARA Symbol ¹⁾	VOLMET Symbol ¹⁾	Symbol(s) ²⁾	
2 850 – 3 025			1			
3 400 – 3 500			1			
4 650 – 4 700			1			
5 450 – 5 480 (Reg. 2)			*			* Combined with 5480 – 5680
5 480 – 5 680			1			
6 525 – 6 685						
8 815 – 8 965						
10,005 – 10,100						
11,275 – 11,400						
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

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Annex 2 to IFRB Circular-letter No. 386

Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾

(See paragraph 5 of IFRB Circular-letter No. 386)

1 <u>USA</u> Administration	2 <u>PTR, SWN, VIR</u> Country Symbol
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3 _____ Reference No.	4 <u>9/30/77</u> Date
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Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	MWARA Symbol ¹⁾	RDARA Symbol ¹⁾	^{12D} Sub-RDARA Symbol ¹⁾	VOLMET Symbol ¹⁾	Symbol(s) ²⁾	
2 850 – 3 025			1			
3 400 – 3 500						
4 650 – 4 700						
5 450 – 5 480 (Reg. 2)			*			* Combined with 5480 – 5680
5 480 – 5 680			1			
6 525 – 6 685			1			
8 815 – 8 965			1			
10,005 – 10,100						
11,275 – 11,400						
13,260 – 13,360						
17,900 – 17,970						

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

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Box 2 : USA, HWA, PTR, PLM, SMA, ALS, GUM, PHX,
WAK, MDW, MRL, MRA, CAR, HWL, JON, VIR,
SWN.

Annex 2 to IFRB Circular-letter No. 386

**Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

1 <u>USA</u> Administration	2 <u>See above.</u> Country Symbol
--------------------------------	---------------------------------------

3 _____ Reference No.	4 <u>9/30/77</u> Date
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Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	MWARA Symbol ¹⁾	RDARA Symbol ¹⁾	Sub-RDARA Symbol ¹⁾	VOLMET Symbol ¹⁾	Symbol(s) ²⁾	
2 850 – 3 025					3	See proposal USA/4/39 (ADD 27/73A)
3 400 – 3 500					6	
4 650 – 4 700					3	"
5 450 – 5 480 (Reg. 2)					–	"
5 480 – 5 680					6	"
6 525 – 6 685					8	"
8 815 – 8 965					4	"
10,005 – 10,100					8	"
11,275 – 11,400					6	"
13,260 – 13,360					6	"
17,900 – 17,970					8	"

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

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AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Addendum No. 1 to
Document No. 40-E
30 January 1978
Original : French

PLENARY MEETING

Note by the Secretary-General

ADMISSION OF INTERNATIONAL ORGANIZATIONS

1. Since the publication of Document No. 40, the Agency for the Safety of Air Navigation in Africa and Madagascar (ASECNA) has expressed the wish to participate in the work of the Conference as an observer.
2. The Telecommunication Administration of Senegal has confirmed that ASECNA is an international organization with observer status in ICAO and WMO.
3. The name of this organization should therefore be added to the list of names published in annex to Document No. 40.

M. MILI

Secretary-General



INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 40-E

2 November 1977

Original: French

PLENARY MEETING

Note by the Secretary-General

NOTIFICATIONS TO INTERNATIONAL ORGANIZATIONS

1. By agreement with the Administrative Council and in accordance with Number 330 of the Convention, notifications of the convening of the Conference were sent to those international organizations which seemed likely to be interested in the work of the Conference.
2. Formal requests for admission to the Conference were received from the organizations listed in the Annex.
3. In pursuance of Number 332 of the Convention, the Conference is invited to decide whether these organizations are to be admitted.

M. MILI

Secretary-General

Annex: 1



A N N E X

INTERNATIONAL ORGANIZATIONS
WHICH HAVE REQUESTED ADMISSION TO THE CONFERENCE

International Air Transport Association (IATA)*)

International Amateur Radio Union*)

*) Excused from any contribution to defrayal of the expenses of the conferences in which they take part (Administrative Council Resolution No. 574).

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 41-E

31 January 1978

Original: French

PLENARY MEETING

Note by the Secretary-General

INVITATIONS TO THE CONFERENCE

1. Members of the Union

1.1 On 5 March 1976 invitations were sent to all the Members of the Union (except the Republic of South Africa).

1.2 After their accession, invitations were sent to the following new Members:

- Angola (People's Republic of)
- Cape Verde (Republic of)
- Djibouti (Republic of)
- San Marino (Republic of)
- Sao Tome and Principe (Democratic Republic of)
- Surinam (Republic of).

1.3 A summary of the replies so far received to these invitations is annexed to this document.

2. Recognized private operating agencies

2.1 The letters of invitation specified that Members of the Union could transmit invitations to private operating agencies recognized by them.

2.2 No private operating agency has yet notified its participation.

3. United Nations and specialized agencies of the United Nations

3.1 The following organizations were invited:

- United Nations
- International Civil Aviation Organization (ICAO)
- Intergovernmental Maritime Consultative Organization (IMCO)
- International Labour Organization (ILO)
- World Meteorological Organization (WMO)



3.2 So far, the invitation has been accepted by:

- the International Civil Aviation Organization (ICAO) and
- the Intergovernmental Maritime Consultative Organization (IMCO).

4. Regional organizations referred to in Article 32 of the Convention

4.1 In accordance with Number 335 of the Convention, invitations were sent to the following regional organizations:

- Inter-American Telecommunications Conference (CITEL)
- African Postal and Telecommunications Union (APTU)
- Arab Telecommunications Union (ATU)

4.2 None of these organizations has so far accepted the invitation.

M. MILI

Secretary-General

A N N E X

PARTICIPATION IN THE AERONAUTICAL
CONFERENCE (R)

Country	Yes	No
Afghanistan (Republic of)	X	
Albania (Socialist People's Republic)		
Algeria (Algerian Democratic and Popular Republic)	X	
Germany (Federal Republic of)	X	
Angola (People's Republic of)	X	
Saudi Arabia (Kingdom of)	X	
Argentine Republic	X	
Australia	X	
Austria		X
Bahamas (Commonwealth of the)	X	
Bahrain (State of)		X
Bangladesh (People's Republic of)	X	
Barbados	X	
Belgium	X	
Benin (People's Republic of)	X	
Byelorussian Soviet Socialist Republic		
Burma (Socialist Republic of the Union of)		X

Country	Yes	No
Bolivia (Republic of)	X	
Botswana (Republic of)		X
Brazil (Federative Republic of)	X	
Bulgaria (People's Republic of)	X	
Burundi (Republic of)		
Cameroon (United Republic of)	X	
Canada	X	
Cape Verde (Republic of)	X	
Central African Empire	X	
Chile	X	
China (People's Republic of)	X	
Cyprus (Republic of)		X
Vatican City State		X
Colombia (Republic of)	X	
Comoros (State of the)	X	
Congo (People's Republic of the)	X	
Korea (Republic of)	X	
Costa Rica		X
Ivory Coast (Republic of the)	X	
Cuba	X	
Denmark	X	
Djibouti (Republic of)		

Country	Yes	No
Dominican Republic		
Egypt (Arab Republic of)	X	
El Salvador (Republic of)		
United Arab Emirates	X	
Ecuador	X	
Spain	X	
United States of America	X	
Ethiopia	X	
Fiji	X	
Finland	X	
France	X	
Gabon Republic	X	
Gambia (Republic of the)		X
Ghana	X	
Greece	X	
Guatemala (Republic of)	X	
Guinea (Republic of)	X	
Guinea - Bissau (Republic of)		
Equatorial Guinea (Republic of)		
Guyana		
Haiti (Republic of)	X	
Upper Volta (Republic of)	X	

Country	Yes	No
Honduras (Republic of)		
Hungarian People's Republic	X	
India (Republic of)	X	
Indonesia (Republic of)	X	
Iran	X	
Iraq (Republic of)	X	
Ireland	X	
Iceland		X
Israel (State of)		
Italy	X	
Jamaica	X	
Japan	X	
Jordan (Hashemite Kingdom of)		
Democratic Kampuchea		
Kenya (Republic of)	X	
Kuwait (State of)	X	
Lao People's Democratic Republic		
Lesotho (Kingdom of)		
Lebanon		
Liberia (Republic of)	X	

Country	Yes	No
Libia (Socialist People's Libyan Arab Jamahiriya)	X	
Liechtenstein (Principality of)		X
Luxembourg		X
Madagascar (Democratic Republic of)	X	
Malaysia	X	
Malawi		
Maldives (Republic of)		X
Mali (Republic of)		
Malta (Republic of)		X
Morocco (Kingdom of)	X	
Mauritius	X	
Mauritania (Islamic Republic of)	X	
Mexico	X	
Monaco	X	
Mongolian People's Republic		
Mozambique (People's Republic of)	X	
Nauru (Republic of)		X
Nepal		
Nicaragua		
Niger (Republic of the)	X	
Nigeria (Federal Republic of)	X	

Country	Yes	No
Norway	X	
New Zealand	X	
Oman (Sultanate of)		X
Uganda (Republic of)	X	
Pakistan (Islamic Republic of)	X	
Panama (Republic of)	X	
Papua New Guinea	X	
Paraguay (Republic of)	X	
Netherlands (Kingdom of the)	X	
Peru		X
Philippines (Republic of the)	X	
Poland (People's Republic of)	X	
Portugal	X	
Qatar (State of)	X	
Syrian Arab Republic		
German Democratic Republic	X	
Democratic People's Republic of Korea	X	
Ukrainian Soviet Socialist Republic	X	
Roumania (Socialist Republic of)	X	
United Kingdom of Great Britain and Northern Ireland	X	
Rwanda (Republic of)		X

Country	Yes	No
San Marino (Republic of)		
Sao Tome and Principe (Democratic Republic of)	X	
Senegal (Republic of the)	X	
Sierra Leone	X	
Singapore (Republic of)	X	
Somali Democratic Republic		
Sudan (Democratic Republic of the)		
Sri Lanka (Ceylon) (Republic of)		
Sweden	X	
Switzerland (Confederation of)	X	
Surinam (Republic of)	X	
Swaziland (Kingdom of)		X
Tanzania (United Republic of)	X	
Chad (Republic of the)	X	
Czechoslovak Socialist Republic	X	
Thailand	X	
Togolese Republic	X	
Tonga (Kingdom of)		X
Trinidad and Tobago		X
Tunisia	X	
Turkey	X	

Country	Yes	No
Union of Soviet Socialist Republics	X	
Uruguay (Oriental Republic of)	X	
Venezuela (Republic of)	X	
Viet Nam (Socialist Republic of)		
Yemen Arab Republic	X	
Yemen (People's Democratic Republic of)	X	
Yugoslavia (Socialist Federal Republic of)	X	
Zaire (Republic of)	X	
Zambia (Republic of)		X

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 42-E
4 November 1977
Original : English

PLENARY MEETING

Australia

PROPOSALS FOR THE WORK OF THE CONFERENCE

AUS/42/1

The attached document addresses itself to the problems of adjacent channel interference and is submitted to this conference for consideration.

The document has also been submitted to the CCIR Study Group 8.

Annex : 1



A N N E X

DRAFT NEW REPORT

ADJACENT CHANNEL PROTECTION CRITERIA FOR

THE HF AERONAUTICAL MOBILE (R) SERVICE

1. Introduction

1.1 Good frequency management requires that attention be given to the potential for adjacent channel interference in frequency allotment and assignment. The purpose of this report is to examine how criteria can be developed for adjacent channel protection in a 3 kHz channelling SSB environment. The utility of any frequency allotment plan could be compromised if attention to this point is neglected. The objective is to produce some generally applicable rules which will assist the formulation of a new frequency allotment plan. The rules could be based on geographical spacing required between stations operating on adjacent channels.

2. Technical Criteria

2.1 Two approaches may be taken for production of adjacent channel protection criteria :

- (a) signal to interference protection ratios could be set, from which geographical spacing could be calculated ; or
- (b) a criterion could be set for a level of interference which does not significantly degrade the signal to noise ratio of the wanted signal at the receiver.

In this report the latter approach is taken. It is assumed that minimum usable signals are determined by atmospheric noise. Levels of atmospheric noise have been assessed and geographical spacing calculated based on permitting adjacent channel interference which will just equal this noise. This could result in a degradation of wanted signal to noise ratio of 3dB.

2.2 The study has assumed that the spurious response characteristics of ground and airborne transmitters will be the determining factor in creating adjacent channel interference. This is justified because selectivity of receivers in the adjacent channel can be made significantly superior to the spurious response characteristics of transmitters. Adjacent channel radiation has been taken as 30 dB below the effective radiated power (ICAO 1976).

3. Interference Cases which need Protection

3.1 The situation where interference could be experienced is where an aircraft or ground station is receiving a sky wave desired signal and an adjacent channel can be propagated by direct wave or free space from a nearby ground station or aircraft. Sky wave borne interference has not been considered because the attenuation of both the wanted and interfering channel would be similar. There is 30 dB of protection available from the respective transmitter characteristics. Although some such cases may occur it is likely that the protection criteria developed on the basis of direct wave propagation will be more stringent.

3.2 Four possibilities of direct wave interference exist

- (i) Aircraft to Aircraft
- (ii) Ground to Aircraft
- (iii) Aircraft to Ground
- (iv) Ground to Ground

Because of the higher power used at ground stations the direct wave distances propagated by case (ii) above will be greater than the distances propagated by case (iii). Also the altitude of the aircraft in case (ii) will allow a greater direct wave distance than the two ground stations that are shown in case (iv). Therefore cases (iii) and (iv) are not given any further consideration.

4. Selection of Appropriate Noise Levels

4.1 Examination of CCIR Rep 322, giving world-wide noise levels, shows substantial variation with season, time and geography. Since the Aeronautical Mobile (R) Service is a safety service it might be argued that protection should be provided for the minimum receivable signals and thus minimum noise levels should be selected, for the various frequency bands of interest. However in some areas, notably over some large land masses, high noise levels are not infrequent. These seldom, if ever, fall to the values noted elsewhere in the world, particularly those at high latitudes. Some compromise therefore seems appropriate. Appendix 1 gives the values of noise level, obtained by inspection of the contour charts, which seem reasonable to give protection over a large part of the world. It should be noted that these figures are somewhat arbitrary selections. It may be argued that areas experiencing noise below the chosen values could receive weaker signals and would obtain inadequate protection ; conversely areas having higher noise levels would require larger signals to provide a given signal to noise ratio in the wanted channel, and thus would be given greater adjacent channel protection than needed. Despite these limitations it is instructive to continue the calculations to gain an insight into the order of magnitude of geographical spacing needed to ensure protection.

4.2 The contour maps of CCIR Report 322 provide the median noise levels, F_{50} in dB above KTB for 1 Hz bandwidth at 1 MHz. The report 322 also provides curves to extrapolate these values to other frequencies. For this study 3 frequencies have been selected which could typify the Aeronautical Mobile (R) Service ; 3 MHz, 7 MHz and 15 MHz. Winter and summer contours over all time blocks have been examined.

5. Calculation of Protection Distances

5.1 The procedure used to obtain an estimation of the required protection distance is to calculate the path loss between the interfering transmitter and an interfered receiver receiving a signal equal to the atmospheric noise level and then convert this path loss to a distance.

$$\text{Path loss} = \text{Radiated power (dBW)} - \text{Received power (dBW)} (= \text{atmospheric noise})$$

5.2 Radiated Power EIRP

To calculate the mean EIRP on the adjacent channel, allowance must be made for :

- (a) adjacent channel suppression ; -30 dB
- (b) ratio mean power to p.e.p ; - 6 dB
(some speech processing assumed)
- (c) the fact that ICAO recommends that the ERP is two thirds of the maximum power available as input to the antenna transmission line ; -1.8 dB
(ICAO 1976)
- (d) the antenna gain over an isotropic is taken in each case as 2 dbi.

The respective EIRP on the adjacent channel is therefore :

Ground transmitter +2 dBW

Aircraft transmitter -10 dBW

5.3 Received Interference Signal Power

The maximum interference signals used in this paper are the Fam values shown in Appendix 1. To convert these Fam figures to dBW

$$\text{dBW} = \text{Fam} + 10\log B(\text{Hz}) - 204$$

B = bandwidth of channel

5.4' Path Loss

The calculated path losses using these parameters are tabulated in Appendix 1.

5.5 Case (i) Air to Air Interference

Assume that both aircraft are at an altitude of 12,000 metres.

It can be assumed that free space propagation will prevail between the aircraft while there is at least 0.6 fresnel zone clearance over the path. Beyond this point the path attenuation of the direct wave will increase rapidly with an increase in distance. Intuitively it would appear that there will be very little direct wave propagation beyond the optical line of sight. In Appendix 1 an attempt has been made to theoretically calculate

the distance aircraft need to be separated to be outside the interference range. The distances shown in the last column of Appendix 1 have been calculated using smooth earth theory to predict the losses caused by diffraction (K. Bullington May 1957).

From a study of the interfering distances calculated in Appendix 1 it would be reasonable to take the interfering range for all frequencies as being equal to the optical line of sight which is 900 km.

5.6 Case (ii) Ground to Air Interference

Assume: that the aircraft is at an altitude of 12,000 metres, that propagation is by ground wave and it is vertical polarisation over good ground.

Unfortunately CCIR have not published ground wave propagation curves for elevated antennas and recourse has been made to information originally published by the Bell Telephone Laboratories in 1944 (2). The distances obtained from these curves are shown in Appendix 1.

The use of vertical polarisation is usually confined to MWARA, VOLMET and LDOCC applications. Because of the shorter distances involved in RDARA applications horizontal polarisation is much more commonly used. The ground wave propagation of horizontal polarisation is considerably less than for vertical polarisation and therefore the interference range will be less.

Because of the shorter distances involved in the ground to air interference ranges the most critical form of interference is case (i), the air to air condition.

6. Discussion of Results

Despite the fact that the above treatment has used average values for noise which varies substantially with time, season and geography some clear indications are available. For the air to air interference case it seems reasonable to assume that adjacent channels should be separated by at least 900 km at all frequencies. This is the most critical case and could well become the controlling one. If the highest average values of noise were selected as determining the protection required then the air to air protection distances would be:-

	3 MHz	7 MHz	15 MHz
Winter	320 km	750 km	1500 km
Summer	110 km	460 km	1900 km

As noted previously distances in excess of the line of sight are not valid. However selecting maximum values of noise assumes that very high wanted signal levels are required to operate the service, which from experience is not true. In addition, protection criteria on this basis would not protect large areas of the world.

7. Conclusions

7.1 From the foregoing it is evident that adjacent channels should not be assigned in any one geographical area and it is also preferable that they are not assigned to adjacent geographical areas.

7.2 Ideally an interference range criterion of 900 km should be adopted for the geographical spacing of adjacent channels on all frequency bands, both within and between RDARA and MWARA allotment areas.

7.3 To obtain an indication of the effect of this criterion on a frequency allotment plan it was applied to sub RDARA 9B in the existing Appendix 27 table. Some variations of the criterion were also considered as follows:-

- (a) The criterion as specified in paragraph 7.2.
- (b) That adjacent channels should not be allotted in adjacent geographical areas (including RDARAs and MWARAs).
- (c) That adjacent channels should not be allotted in adjacent RDARAs only (neglecting MWARA).
- (d) That adjacent channels should not be allotted in the same RDARA, neglecting adjacent RDARAs.

It was found impossible to apply the criteria (a), (b) or (c) above and still accommodate the existing number of channels in sub-RDARA 9B. However if the relaxed criterion of (d) above were used all bands could accommodate the required channels except the 9 MHz band. (Note: In existing Appendix 27 adjacent channels have only been allotted in the 6.6 and 9 MHz bands - sub-RDARA 9B).

7.4 If any of the various criteria are to be strictly applied to the new SSB allotment plan it will be necessary to create a smaller sharing factor of frequencies than exists now in the Appendix 27. It is clear that if the total additional frequency requirements of Member Administrations increase by the same amount as the channels available it will not be possible to satisfy the criterion in all frequency bands.

7.5 While the application of the least stringent of the above criteria will create difficulties in compiling the new frequency allotment table Australia is of the opinion that the problem cannot be ignored. The adjacent channel allocations that already exist in the present allotment plan have caused difficulties in the frequency management of RDARA 9.

As there are already many interests competing for the total available HF frequency spectrum it is not likely that any extra spectrum could be made available to solve the adjacent channel problems in the Aeronautical Mobile (R) bands.

The proposed solution to this problem is to utilise the criterion (d) above wherever possible when formulating the new frequency plan. In the frequency bands where adjacent channels cannot be avoided the resulting degradation of service will have to be tolerated. If this attitude is adopted the incidence of adjacent channel interference should be kept to a minimum.

References

- (1) Radio Propagation Fundamentals by Kenneth Bullington
The Bell System Technical Journal, May 1957.
- (2) NDRC Div 15, Propagation Curves, Issue 3, Report 966-6C,
October 1944, Bell Telephone Laboratories US.
Department of Commerce, No PB-14326.
- (3) CCIR Report 322

Appendix 1

NOISE PERIOD	NOISE CCIR REPORT 322		MINIMUM PATH LOSS AIR TO AIR AS PER PARA 5.5 dB	GROUND TO AIR RANGE AS PER PARA 5.6 km	AIR TO AIR RANGE AS PER PARA 5.5 km
	Fam	dBW in 3 kHz Bandwidth			
Winter Day (0800-1600) 3 MHz	40	-129	119	640	960
Winter Day (0800-1600) 7 MHz	33	-136	126	560	960
Winter Day (0800-1600) 15 MHz	31	-138	128	450	900
Winter Night (1600-0800) 3 MHz	49	-120	110	560	860
Winter Night (1600-0800) 7 MHz	39	-130	120	510	880
Winter Night (1600-0800) 15 MHz	26.5	-142.5	133	510	910
Summer Day (0400-2000) 3 MHz	32	-139	129	720	1000
Summer Day (0400-2000) 7 MHz	40.5	-128.5	119	500	880
Summer Day (0400-2000) 15 MHz	31	-138	128	450	900
Summer Night (2000-0400) 3 MHz	66	-103	93	340	670
Summer Night (2000-0400) 7 MHz	55	-114	104	340	860
Summer Night (2000-0400) 15 MHz	32	-137	127	430	900

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PROPOSALS FOR THE WORK OF THE CONFERENCE

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PART I INTRODUCTION

The need for a World Wide Administrative Radio Conference, Aeronautical Mobile (R) Service, has been consistently supported by the United Kingdom and in the formulation of proposals account has been taken of:

- (a) the agenda approved by the Administrative Council of the ITU particularly with regard to the need to revise, on the basis of SSB operation, the frequency allotment plan for the Aeromobile (R) Service (Appendix 27 to the Radio Regulations) and to satisfy the needs of the service within the minimum amount of spectrum necessary,
- (b) the instruction by the Secretary General of the ITU to the Director, CCIR to arrange for the technical bases to be studied for a revision of Part I of Appendix 27 to the Radio Regulations,
- (c) the invitation of the Secretary General ITU to the International Civil Aviation Organisation (ICAO) to provide the necessary information to assist administrations in the formulation of an accurate assessment of the HF requirements for the revision of Appendix 27 to the Radio Regulations.

In the formulation of specific proposals for the Amendment of Appendix 27 and the Radio Regulations account has been taken of:

- (a) the Report by CCIR Study Group 8 to the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, 1978 (Special Meeting held in Geneva, 22 to 26 March 1976),
- (b) the Report of the ICAO Communications Divisional Meeting preparatory to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service (Montreal, 8 to 24 September 1976).

PART II OBJECTIVES OF THE CONFERENCE

The United Kingdom considers that the objectives of the conference be:

- (a) to prepare a revised Appendix 27 based on the use of SSB (A3J) for telephony transmissions in the Aeronautical Mobile (R) Service,
- (b) to additionally provide for selective calling (A2H) and A7J/A9J,
- (c) to provide for the use of A1, A3 and F1 under limited conditions,
- (d) to review the boundaries of the Major World Air Route Areas, Regional and Domestic Air Route Areas and VOLMET Allotment Areas and VOLMET Reception Areas,
- (e) to review and update the frequency allotment plan in respect of the Major World Air Route Areas particularly with regard to changing operational requirements,
- (f) to review and update the frequency allotment plan in respect of the Regional and Domestic Air Route Areas with regard to changing operational requirements, taking into account all available documentation regarding promulgation for use,
- (g) to review and update the frequency allotment plan in respect of VOLMET Allotment Areas and VOLMET Reception Areas,
- (h) to increase to the minimum extent necessary the provision of further world wide frequencies

to cater primarily for flight regularity operations for which RDARA and Sub-RDARA frequencies are unsuitable,

- (i) to determine the date the new frequency allotment plan will come into force,
- (j) to examine the extent to which the exclusive frequency bands allocated to the Aeronautical Mobile (R) Service are utilised by other services and to examine the resulting harmful interference.

The United Kingdom further considers that an essential condition in the achievement of the foregoing objectives is to satisfy the operational needs of the Aeronautical Mobile (R) Service in the minimum amount of spectrum necessary in accordance with the terms of reference of the Conference. In the discharge of this task it is believed that the Conference will need to address itself to those measures which will lead to a realization of this basic objective, and in particular in the formulation of the new allotment plan to pay cognizance to the following points:

- (a) a full appraisal of the frequency complements required to satisfy each particular operational requirement taking full account of the cover provided by VHF communications, reducing to the minimum necessary that frequency complement required over the full period of one sunspot cycle,
- (b) where more than one family of frequencies is determined to be necessary to satisfy an operational need, full regard be paid to the possibility of the sharing between families those lower and higher order frequencies which may only be used during suitable propagation conditions,
- (c) in the devising of the allotment plan for each sub-band to contain the operational needs within the minimum number of frequencies using all permissible sharing possibilities, reserving any un-allotted frequencies, as may be decided by the Conference, to one or other of the band edges of that particular sub-band,
- (d) in regard to the two lower frequency sub-bands preference be given to the use of the higher frequency sub-band in those situations where either band will satisfy the operational requirement.

PROPOSALS

The following proposals are accordingly submitted.

PART III PROPOSAL FOR AMENDMENT OF APPENDIX 27

Note 1: The following paragraphs are numbered in accordance with the corresponding paragraphs in Appendix 27. The following abbreviations are used:

- ADD** – the addition of a new paragraph
MOD – the modification of an existing paragraph
SUP – the suppression, ie deletion of, an existing paragraph
NOC – no change to an existing paragraph

Note 2: Underlined words indicate new text; ~~hyphenated~~ words indicate deleted text.

PART I GENERAL PROVISIONS

Section I Definitions

NOC 27/1 – 27/8 inclusive

G/43/1 **MOD 27/9** A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different aeronautical mobile (R) bands and is intended to permit communication at any time and within ~~over any distance~~ the authorised area of use (27/189 – 27/207) between aircraft ~~in-flight~~ stations and appropriate aeronautical stations.

Reason: In order to clarify the definition and to align it with ITU RR No. 33.

Section II

Technical and Operational Principles used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service

G/43/2 **MOD of title A** ~~Determination of Channel Width~~ A. Channel Characteristics

Reason: For clarification.

G/43/3 **MOD 27/10** ~~The A frequency separations~~ separation between carrier (reference) frequencies of 3 kHz ~~is indicated in the following table~~ are adequate to permit communications using the classes of emission referred to in Nos 27/49–27/52 in the frequency bands between 2850 kHz and 17 970 kHz allocated exclusive- ly to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.

Reason: It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channelling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channelling is based on 3 kHz separation in all bands.

G/43/4 MOD 27/11

- (a) ~~It is assumed that~~ For radiotelephone emissions the ~~modulating audio~~ frequencies will be limited to between 300 and ~~3000~~ 2700 Hz ~~cycles per second and that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of ~~A3~~ A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see ADD 27/66A and ADD 27/66B).

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

Reason: To define an audio bandwidth necessary for A3J operation consistent with 3 kHz channel separation and to provide accommodation for other permitted classes of emission (see Report of the CCIR Study Group 8 Special Meeting – 5. Necessary Bandwidth).

G/43/5 ADD 27/11A

For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason: To reflect the Report of CCIR Study Group 8 Special Meeting (2. Classes of Emission).

G/43/6 MOD 27/12

- (b) The use of channels, indicated in 27/16 ~~as derived from the above table (No. 27/10),~~ for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned and affected in order to avoid harmful interference which may result from the simultaneous use of the same channel for several classes of emission. ~~no inherent priority being given to any particular class of emission.~~

Reason: Amended to be consistent with SSB operation.

G/43/7 SUP 27/13

Reason: No longer applicable.

G/43/8 MOD 27/14

- (d) ~~The grouping of adjacent channels derived from the above table (No. 27/10), to permit the satisfaction of particular requirements will be subject to special arrangements by the administrations concerned. For the avoidance of potential interference, adjacent frequencies in the list of frequencies at 27/16 should not be allotted to the same Major World Air Route, Volmet or RDARA areas or to adjoining Major World Air Route, Volmet or RDARA areas where a particular potential interference problem may arise.~~

Reason: Because of the limited attenuation of sideband energy in the adjacent frequency channel provided by MOD 66A.

G/43/9 SUP 27/15

Reason: Unnecessary. Any special arrangements necessary already provided for in MOD 27/12.

G/43/10 MOD 27/16

'The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10, will be found in the following table.

kHz			
2850–3025	5450–5480	8815–8965	13 260–13 360
2851 to 3019 in steps of 3 kHz 3023* (R) and (OR) 58 CHANNELS	Region 2 5451 to 5475 in steps of 3 kHz 9 CHANNELS	8816 to 8960 in steps of 3 kHz 49 CHANNELS	13 261 to 13 357 in steps of 3 kHz 33 CHANNELS
3400–3500	5480–5680	10 005–10 100	17 900–17 970
3401 to 3497 in steps of 3 kHz 33 CHANNELS	5481 to 5676 in steps of 3 kHz 5680* (R) and (OR) 67 CHANNELS	10 006 to 10 096 in steps of 3 kHz 31 CHANNELS	17 901 to 17 967 in steps of 3 kHz 23 CHANNELS
4650–4700	6525–6685	11 275–11 400	
4651 to 4696 in steps of 3 kHz 16 CHANNELS	6526 to 6682 in steps of 3 kHz 53 CHANNELS	11 276 to 11 396 in steps of 3 kHz 41 CHANNELS	

* A3 and A3H emissions may also be used

Reason: To clearly indicate that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing and to provide band-edge protection.

Note: The table is illustrative only. The final table will follow the format of the existing table in Appendix 27 to the ITU Radio Regulations and specify each channel carrier (reference) frequency. The final table will also include those channels which are near band edges and have less than 3 kHz bandwidth.

G/43/11 **MOD 27/17** The channels carrier (reference) frequencies common to the (R) and (OR) Services, entered at 3023.5 3023 and 5680 kc/s kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the frequency 5680 kc/s may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical service.

Reason: To reflect new carrier frequencies determined by frequency separation of 3 kHz and to delete material contained elsewhere.

G/43/12 **MOD 27/18** All stations directly involved in co-ordinated search and rescue operations using 3023.5 3023 and 5680 kc/s kHz for search and rescue purposes and employing single sideband (SSB) shall transmit a carrier at a level sufficient to permit reception on a double sideband (DSB) receiver and shall be able to receive DSB transmissions only in the upper sideband mode (see also MOD 27/73).

Reason: If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should however it be agreed that single sideband operation be introduced on these frequencies, the proposed change to 27/18 would appear to be necessary.

Note to 27/17 and 27/18: There is a need for the WARC AM(R)S (1978) to adopt a resolution similar to ITU Resolution Aer-1 as 3023 and 5680 kHz are common to the (R) and (OR) Services (see Resolution Aer-2-(C)).

G/43/13 **SUP 27/19**

Reason: If it is agreed to accommodate equipment capable of operating only on whole kHz then the common (R) and (OR) channel 3023.5 kHz can be replaced by 3023 kHz, and 27/19 would no longer be required.

G/43/14 **MOD 27/20**

The International Civil Aviation Organization (~~I.C.A.O.~~) (ICAO) co-ordinates communications in the Aeronautical Mobile (R) Service ~~with for international aeronautical air operations for a large part of the world~~, and this Organization ~~should shall~~ be consulted in appropriate cases, particularly in the any international aeronautical operational use of the frequencies in the Plan, including the co-ordination of the operational use of frequencies allotted for world-wide use.

Reason: At the time (1959) 27/20 was originally drafted, all areas of the World were not covered by ICAO Regional Air Navigation Plans (ANPs). To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

NOC 27/21

NOC 27/22

G/43/15 **MOD 27/23**

Resort to the co-ordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of No. 27/22 are not satisfactory.

Reason: To clarify the intent.

B. Interference Range Contours

G/43/16 **MOD to heading 1 ~~Definition of Contours~~ General**

G/43/17 **SUP 27/24**

G/43/18 **ADD 27/24A**

- 1.1 (a) Service Range – Due to factors such as the power of the transmitters, propagation loss, noise level, etc, there is a limit to the distances at which reliable communications can be effected between an aeronautical station and an aircraft station. This limiting distance is the service range.
- (b) Interference Range – This is the minimum separation distance needed to produce a protection ratio of 15 dB between the wanted signal at an aircraft station and an interfering signal from an aeronautical station operating on the same frequency. This interfering range has been calculated for the orders of frequencies indicated on the data tables, for day and night conditions and conditions of median sunspot activity corresponding to a latitude of about 40° N, for average values of service range and for a mean effective radiated power of 1.0 kW at the aeronautical station.

- (c) Repetition Distance – This is the distance at which a frequency may be successfully shared and is equal to the sum of service range and interference range in the direction of interest.
- (d) Transparencies – The transparencies associated with this Appendix show, for the frequencies stated, the interference range between a potentially interfering aeronautical station and an aircraft station operating at the limit of its service range. This is normally assumed to be at the boundary of the Area in question nearest to the potentially interfering aeronautical station.

Reason: To define the terms 'Service Range', 'Interference Range', 'Repetition Distance', to describe the purpose of the transparencies and to replace 27/24.

1.2 The following table shows the values of the service ranges, interference ranges and repetition distances corresponding to the allotment plans for the (R) Service.

Frequency Band MHz	Service Range km		Interference Range km		Repetition Distance km	
	Day	Night	Day	Night	Day	Night
3	100	500	700	3500	800	4000
3-5	100	800	700	3500	800	4300
4-7	350	1400	1200	5500	1550	6900
5-6	450	1800	1500	6500	1950	8300
6-6	650	2200	1900	8000	2550	10200
9	1000	3400	3800	11000	4800	14400
10	1250	—	5500	—	6750	—
11-3	1500	—	6000	—	7500	—
13-3	1900	—	7700	—	9600	—
18-0	2600	—	10000	—	12600	—

Reason: To provide information on typical day and night service ranges, interference ranges and repetition distances.

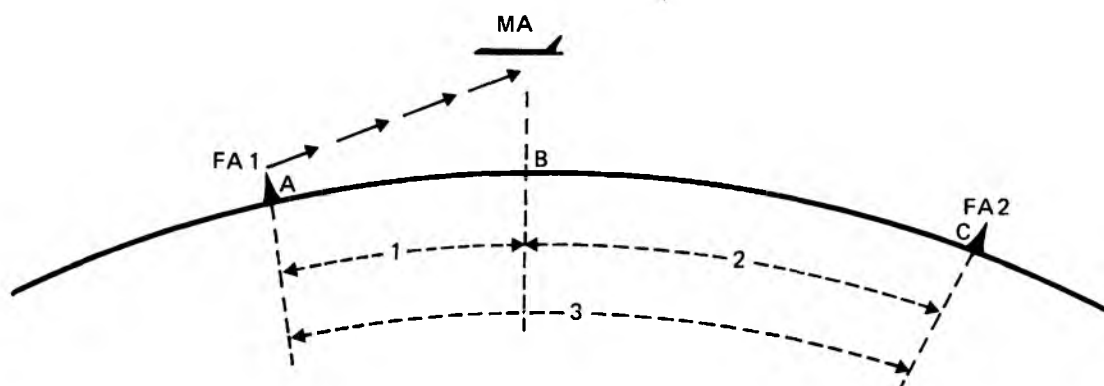
NOC 27/25 – 27/33 inclusive

G/43/19

MOD 27/34

5.3 Place the centre of the transparency (ie the intersection of the axis of symmetry and the latitude line) over the boundary of the area ~~or at the location of the transmitter~~ at the point on the boundary nearest to the interfering transmitter or at the location of the interfering transmitter. Note the latitude of this point ~~the selected point~~ and select use the interference range contour corresponding to this latitude.

Reason: To clarify the existing provision.



- FA1 = aeronautical station in communication with aircraft station MA
 FA2 = aeronautical station in communication with aircraft stations other than MA
 MA = aircraft station in communication with aeronautical station FA1
 1 = service range AB
 2 = interference range CB
 3 = repetition distance AC

Fig. 1 Service Range, Interference Range, Repetition Distance

Reason: To illustrate the terms defined in ADD 27/24A.

NOC 27/35 – 27/48 inclusive

C. Classes of Emission and Power

NOC 27/49

G/43/20 MOD 27/50

1.1 Telephony – Amplitude modulation:

- double sideband (A3)*
- ~~single sideband, reduced carrier~~ (A3A)
- single sideband, full carrier (A3H)*
- single sideband, suppressed carrier (A3J)
- ~~two independent sidebands~~ (A3B)

* A3 and A3H to be used only on 3023 kHz and 5680 kHz

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of CCIR Study Group 8 Special Meeting (2. Classes of Emission).

G/43/21 MOD 27/51

1.2.1 Amplitude modulation:

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission~~ (A2)
- telegraphy by the on-off keying of an amplitude modulating audio frequency or audio frequencies, or by the on-off keying of the modulated emission

- and including selective calling, single sideband, full carrier A2H
- ~~multichannel voice frequency telegraphy, single sideband, reduced carrier~~ ~~(A7A)~~
- ~~multichannel voice frequency telegraphy, single sideband, full carrier~~ ~~(A7H)~~
- multichannel voice frequency telegraphy, single sideband, suppressed carrier A7J
- other transmissions such as automatic data transmission, single sideband, suppressed carrier A9J

G/43/22 MOD 27/52

1.2.2 Frequency modulation:

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- ~~telegraphy by the on-off keying of a frequency modulating audio frequency or by the on-off keying of a frequency modulated emission~~ ~~(F2)~~

** A1 and F1 are permitted provided they do not cause harmful interference to the classes of emission A2H, A3J, A7J and A9J. In addition A1 and F1 emissions shall be in accordance with the provisions in ADD 27/66A and ADD 27/66B and care should be taken not to place these emissions at or near the edges of the channel.

Reason: To reflect that the new allotment plan will be based on single sideband suppressed carrier operation and the Report of the CCIR Study Group 8 Special Meeting (2. Classes of Emission).

G/43/23 SUP 27/53

Reason: No requirement for this type of emission.

G/43/24 MOD 27/54

2 Power

2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values.

<i>Class of emission</i>	<i>Stations</i>	<i>Maximum peak envelope power</i>
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

Replace table by:

<i>Class of emission</i>	<i>Stations</i>	<i>Maximum peak envelope power</i>
A2H, A3J, A7J, A9J (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
A3* A3H* (100% modulated)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1	Aeronautical stations Aircraft stations	1.5 kW 75 W

* A3 and A3H to be used only on 3023 kHz and 5680 kHz

Reason: To reflect the Report of the CCIR Study Group 8 Special Meeting (3. Power Limits).

G/43/25 MOD 27/55

2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1 and F1 ~~F2 and unmodulated A3 and A3H emissions~~) used as a basis for the interference range contours.

Reason: To be consistent with MOD 27/51 and MOD 27/52.

G/43/26 MOD 27/56

2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARA, VOLMET and world-wide areas may exceed the power limits specified in No. 27/54. In each such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason: To make the same provision for aeronautical stations serving a world-wide function.

NOC 27/57 – 27/62 inclusive

G/43/27 MOD 27/63

3.1 Definitions of carrier modes:

<i>Carrier mode</i>	<i>Level N (dB) of the carrier with respect to peak envelope power</i>
Full carrier (for example (A3H) A2H)	$0 \geq N \geq -6$
Reduced carrier (A3A)	$-6 > N \geq -26$
Suppressed carrier (for example A3J)	Aircraft stations – $26 > N$ Aeronautical stations – $40 > N$

Reason: To align emission designators with MOD 27/50 and MOD 27/51 and to add provision for carrier suppression for aeronautical stations in accordance with the Report of the CCIR Study Group 8 Special Meeting (8.1 Level of Suppressed Carrier).

G/43/28 SUP 27/64

Reason: To reflect that the new allotment plan will be based on single sideband operation.

G/43/29 **MOD to subtitle 3.3** Tolerance for levels of ~~SSB~~ emission outside the necessary bandwidth

Reason: To reflect applications to other classes of emission.

G/43/30 **MOD 27/65** 3.3.1 In an ~~single-sideband A3A-A3H~~, A2H, A3J, A7J or A9J, ~~A3A~~ transmission, the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, shall be less than the mean power (Pm) of the transmitter in accordance with the following table:

Reason: To align with MOD 27/50 and MOD 27/51.

G/43/31 **MOD 27/66** 3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983

<i>Frequency separation Δ from the assigned frequency</i> <i>-ke/s- kHz</i>	<i>Minimum attenuation below mean Power (Pm)</i> <i>dB</i>
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40 Aeronautical stations: $43 + 10 \log_{10} P_m$ (watts)*

* attenuation need not exceed 60 dB

Reason: To accommodate airborne equipments currently in use which are capable of acceptable operation in a 3 kHz channel spaced environment.

G/43/32 **ADD 27/66A** 3.3.3 In an A2H, A3J, A7J or A9J transmission, the peak envelope power (Pp) of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency shall be less than the peak envelope power (Pp) of the transmitter in accordance with the following table.

Reason: To accommodate classes of emission as set forth in MOD 27/50 and MOD 27/51 and to express power level in peak envelope power (Pp) to provide consistency in the Radio Regulations.

G/43/33 **ADD 27/66B** 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983.

<i>Frequency separation Δ from the assigned frequency</i> <i>kHz</i>	<i>Minimum attenuation below peak envelope power (Pp)</i> <i>dB</i>
$1.5 \leq \Delta < 4.5$	30
$4.5 \leq \Delta < 7.5$	38
$7.5 \leq \Delta$	Aircraft stations: 43 Aeronautical stations: $43 + 10 \log_{10} P_p$ (watts) *

* attenuation need not exceed 60 dB

Reason: To reduce the bandwidth of unwanted emissions, to express power level in peak envelope power (Pp), to reflect the Report of the CCIR Study Group 8 Special Meeting, paragraph 7.2.2, and to provide for the termination of use of aeronautical station transmitters not capable of operation in accordance with this plan.

G/43/34 **SUP 27/67 – 27/71 inclusive**

Reason: No longer applicable.

G/43/35 **MOD 27/72** 4.1 ~~The assigned frequency~~ For single sideband radiotelephone emissions, except class of emission A2H, the assigned frequency shall be at a value ~~+500 cycles~~ 1400 Hz above the carrier (reference) frequency.*

* **Note 1:** Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.

Note 2: For classes of emission A1 and FI the assigned frequency shall be chosen in accordance with the provisions of the footnote to MOD 27/51 and MOD 27/52.

Reason: To define the assigned frequency taking into account MOD 27/50, MOD 27/51, MOD 27/66 and the Report of the CCIR Study Group 8 Special Meeting. (8.2 Assigned Frequency).

G/43/36 **MOD 27/73** 4.2 Stations employing double sideband emissions (A3) shall operate with assigned frequencies frequency at the values listed in the ~~Allotment Plan~~ 3023 kHz or 5680 kHz (see 27/50).

Reason: To take into account DSB operation on 3023 kHz and 5680 kHz.

PART II

PLAN FOR THE ALLOTMENT OF FREQUENCIES FOR THE AERONAUTICAL MOBILE (R) SERVICE IN THE EXCLUSIVE BANDS BETWEEN 2850 AND 17 970 ~~ke/s~~ kHz

Section I

Article 1

Description of the Boundaries of the Major World Air Route Areas (MWARAs).

To be determined by the Conference taking account of the Report of the ICAO Communications Divisional Meeting Preparatory to the ITU World Administration Radio Conference, Aeronautical Mobile (R) Service (Montreal 8 – 24 September 1976).

Article 2

Description of the Boundaries of the Regional and Domestic Air Route Areas (RDARAs).

G/43/37 MOD 27/106 Sub-Area 1B

From the North Pole along the 15°W meridian to the point 72°N 15°W, then through the points 65°N 26°W, 60°N 26°W, 60°N 13°W to the point 50°N 13°W; thence east along the territorial waters between the Channel Islands and the French coastline, reaching the latter at the meridian 03°W. Thence following the north east border of France, touching Belgium, Luxembourg and the Federal Republic of Germany. Thence along the border between Switzerland and the Federal Republic of Germany, and along the border between the latter and Austria. Thence along the border between Czechoslovakia and the Federal Republic of Germany, then along the line between the Federal Republic of Germany and Eastern Germany towards the Baltic Sea. Then west along the coastline of the Federal Republic of Germany to the border between the latter and Denmark. Along this border to the North Sea. Thence along the 55°N parallel to a point 55°N 04°E, then through the points 56°N 03°E, 59°N 02°E, 62°N 01°E. Thence along the ~~04°E~~ 01°E meridian to the North Pole.

Reason: To ensure that the boundary between the contiguous sub-RDARAs 1B and 1C are in accord with existing agreements.

G/43/38 MOD 27/107 Sub-Area 1C

From the North Pole along the meridian ~~04°E~~ 01°E to the ~~55°N parallel~~ point 62°N 01°E. Thence through the points 59°N 02°E, 56°N 03°E, 55°N 04°E and then east along the 55°N parallel and the border between Denmark and the Federal Republic of Germany to the Baltic Sea, then along the Baltic Sea coast of the Federal Republic of Germany to the line between the Federal Republic of Germany and Eastern Germany. Along this line touching the Western borders of Czechoslovakia and Austria to the Swiss border. Thence eastward along the southern borders of Austria and Hungary, thence along the border between Hungary and Roumania, thence along the border between the USSR and the following countries: Hungary, Czechoslovakia and Poland. Thence to the Baltic Sea along the USSR Baltic Sea coast, to the border between Finland and the USSR at 70°N 32°E, then along the 32°E meridian to the North Pole.

Reason: Consequential to MOD 27/106.

Article 3

Description of the Boundaries of the VOLMET Allotment Areas and the VOLMET Reception Areas.

To be determined by the Conference taking account of the Report of the ICAO Communications Divisional Meeting preparatory to the ITU World Administrative Radio Conference, Aeronautical Mobile (R) Service (Montreal September 1976).

Section II**Allotment of Frequencies to the Aeronautical Mobile (R) Service***Article 1*

G/43/39 MOD 27/186

Frequency Allotment Plan by Areas
(~~by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas~~)

Reason: To indicate that the table embraces all uses of the frequencies in the frequency allotment plan.

G/43/40 **MOD 27/188** The following list does not include the world-wide common (R) and (OR) frequencies ~~3023-5~~ 3023 and 5680 kHz ~~or the world-wide frequencies of 3499, 6526, 8963, 10 093 and 13-256 kc/s.~~ The allotment of these frequencies is shown in Article 2.

Reason: Consequent to the inclusion of world-wide frequencies in the table.

G/43/41 **MOD 27/189** Revised table to be determined by the Conference.

Reason: To align with 27/195 – 27/207 inclusive.

Article 2
Frequency Allotment Plan

G/43/42 **MOD 27/192** 1. Class of Stations: FA
Classes of Emission: see Nos ~~27/49-27/53~~ 27/49 – 27/52
Power: Unless otherwise indicated in the Plan, the power values for aeronautical and aircraft stations are those shown in Nos 27/54 – 27/62.
Hours: H24 unless otherwise indicated.

Reason: Consequential to SUP 27/53.

G/43/43 **MOD 27/193** 2. A frequency allotted on a 'day-time basis' may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET areas or world-wide which receive full protection during the twenty-four hours.

Reason: To add channels allotted for world-wide use.

NOC 27/194

G/43/44 **ADD 27/194A** The frequency allotment for world-wide use except for the frequencies 3023 kHz and 5680 kHz is for assignment by administrations for the purpose of serving one or more aircraft operating agencies operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.

Reason: To define the purpose for which such frequencies can be used.

G/43/45 **ADD 27/194B** Frequencies designated World-Wide in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area which does not lie wholly within a RDARA or Sub-RDARA boundary.

Reason: To define the areas in which such frequencies can be used.

G/43/46 **MOD 27/196 and 27/201** In the table MOD Column 2 with regard to 27/196 and 27/201 to read World-Wide, (R) and (OR).

In the table MOD Column 3 for both 27/196 and 27/201 as follows:

- 3 the specific application of this frequency for the above purposes may be decided at ICAO regional aeronautical conferences air navigation meetings.
- 4 the use of this frequency is also authorized for inter-communication between stations in the Aeronautical Mobile Service and mobile stations engaged in co-ordinated air-surface search and rescue operations including communication between these stations and participating land stations.

Reason: To indicate world-wide Aeronautical Mobile (R) and (OR) Services application and to clarify the intent for the use of these aeronautical frequencies by other mobile services.

G/43/47 **MOD 27/195–
27/207
inclusive** As follows:

Add new 3 kHz channels (see MOD 27/16). In the table (pages 45 to 55), it is proposed that the frequencies allotted for world-wide use be designated as follows:

Column 1	Frequency kHz <u>kHz</u>
Column 2	Authorized Area of Use – <u>World-Wide</u>
Column 3	Remarks – see ADD 194A and ADD 194B

Reason: To include the new 3 kHz channels.

PART IV PROPOSAL FOR AMENDMENT OF THE RADIO REGULATIONS

Article 5

Frequency Allocations

10 kHz to 275 GHz

NOC Nos 125 to 201

G/43/48 **MOD 201A** The frequencies 2182 kHz, ~~3023–5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10 003 kHz, 14 993 kHz and 19 993 kHz, but in each of these cases emissions must be confined in a band of ± 3 kHz about the frequency.

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC Nos 202 to 205

G/43/49 **MOD 205A** The carrier frequencies ~~3023–5~~ 3023 and 5680 kHz may also be used, in accordance with Nos 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.

Reason: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

NOC Nos 206 to 412K

Article 9

*Notification and Recording in the Master International Frequency Register of
Frequency Assignments to Terrestrial Radiocommunication Stations*

NOC Nos 486 to 589

- G/43/50 **MOD 590** (2) If the finding is favourable with respect to Nos 554 to 557 the date of ~~29 April 1966~~ (the date of signing of the Final Acts of the WARC, Geneva, 1978) shall be entered in Column 2a.
- G/43/51 **MOD 591** (3) If the finding is favourable with respect to No 558, the date of ~~29 April 1966~~ (the date of signing of the Final Acts of the WARC, Geneva, 1978) shall be entered in Column 2b.

Reason: To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

NOC Nos 592 to 639EX

Article 28

Conditions to be Observed by Mobile Services

Section II

Special Provisions Regarding Safety

NOC Nos 955 to 969

- G/43/52 **MOD 969A** (3) The aeronautical frequencies ~~3023-5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communications between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos 1326C and 1353B).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to 1326C and 1353B.

NOC Nos 970 to 999N

Article 35

*Use of Frequencies for Radiotelephony
in the Maritime Mobile Service*

NOC Nos 1319 to 1322AB

Section II

Bands Between 1605 and 4000 ~~ke/s~~ kHz

NOC Nos 1322B to 1326B

C. Search and Rescue

- G/43/53 **MOD 1326C** 3A The aeronautical frequency ~~3023-5~~ 3023 kHz may be used for inter-communication between mobile stations when engaged in co-ordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC Nos 1327 to 1351

Section III

Bands Between 4000 and 23 000 kHz

NOC Nos 1351A to 1353A

D. Search and Rescue

G/43/54 **MOD 1353B** 15A The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: To align with MOD 969A and MOD 1326C.

NOC Nos 1354 to 1379

PART V PROPOSAL FOR RESOLUTIONS

Resolution No 13

Relating to the preparation of Revised Allotment Plans for the Aeronautical Mobile Service.

Note: Although the World Administrative Radio Conference Aeronautical Mobile (R) Service 1978 will not be competent to address this Resolution because of the interest of the (OR) service, the Resolution is no longer necessary in so far as the (R) service is concerned.

G/43/55 **SUP** **Resolution No 14**

Relating to the use of frequencies of the Aeronautical Mobile (R) Service.

Reason: This Resolution has been modified, to bring it up to date, and is shown as ADD Resolution Aer 2—(B).

G/43/56 **SUP** **Resolution No Aer 1**

Relating to the use of frequencies 3023.5 and 5680 kHz common to the Aeronautical Mobile (R) and (OR) Services.

Reason: This Resolution has been modified, to bring it up to date, and is shown as ADD Resolution Aer 2—(C).

G/43/57 **SUP** **Resolution No Aer 2**

Relating to the use of frequencies in the HF bands allocated exclusively to the Aeronautical Mobile (R) Service.

Reason: This Resolution has been modified, to bring it up to date, and is shown as ADD Resolution Aer 2—(D).

G/43/58 ADD

Resolution No Aer 2—(A)

Relating to the treatment of notices concerning frequency assignments to aeronautical stations in the Aeronautical Mobile (R) Service in the bands allocated exclusively to that service between 2850 and 17 970 kHz.

The Aeronautical World Administrative Radio Conference, Geneva, 1978, considering

- (a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- (b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours GMT on 1 February 1983;
- (c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;
- (d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

- 1 that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:
 - 1.1 that provisions of Nos 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the Aeronautical Mobile (R) Service in the bands allocated exclusively to that service between 2850 and 17 970 kHz;
 - 1.2 all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the IFRB;
 - 1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:
 - (a) if the finding is favourable with respect to Nos 554 to 557, the date of 29 April 1966 shall be entered in Column 2a;
 - (b) if the finding is favourable with respect to No 558, the date of 29 April 1966 shall be entered in Column 2b;
 - (c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the IFRB shall be entered in Column 2b;
 - 1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the IFRB of an appropriate symbol in the Remarks Column of the Master International Frequency Register;

- 2 that on the date of coming into force of the new Frequency Allotment Plan, the IFRB shall examine those frequency assignments to aeronautical stations in the Aeronautical Mobile (R) Service in the bands allocated exclusively to that service between 2850 and 17 970 kHz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:
 - 2.1 assignments with double sideband emission (A3), already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in Column 2a or 2b as appropriate until 1 February 1983. A date in Column 2a for a frequency assignment using double sideband (A3) shall be transferred to Column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with the administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in Column 2b;
 - 2.2 assignments found favourable with respect to Nos 554 to 557, shall have (the date of signing of the Final Acts of the WARC, Geneva, 1978) entered in Column 2a;
 - 2.3 assignments found favourable with respect to No 558, shall have
(the date of signing of the Final Acts of the WARC, Geneva, 1978) entered in Column 2b;
 - 2.4 all other assignments shall have (the day AFTER the date of signing of the Final Acts of the WARC, Geneva, 1978) entered in Column 2b;
- 3 that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the IFRB as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

Reason:

With the revision of Appendix 27, it will be necessary to provide a means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

G/43/59 ADD

Resolution No Aer 2-(B)

Relating to the use of frequencies of the Aeronautical Mobile (R) Service.

The Aeronautical World Administrative Radio Conference, Geneva, 1978, considering

- (a) that the previous Allotment Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations, Geneva, edition of 1968) has been substantially revised by this conference;

- (b) that air operations are subject to continuous changes;
- (c) that these changes require attention by the administrations concerned, but
- (d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the co-ordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;
- (e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas and VOLMET Areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;
- (f) that it is essential to distribute the communication traffic load as uniformly as possible over frequencies available;
- (g) that specific steps should be taken to ensure that the correct order of frequency is used;
- (h) that frequencies have been allotted for world-wide use;

resolves

that administrations, individually or in collaboration, take the necessary steps:

- 1 to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;
- 2 to make as great a use as possible of antennas of appropriate directivity and efficiency in order to minimize possibilities of mutual interference within an area or between areas;
- 3 to co-ordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
- 4 to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
- 5 to collect precise data on the operation of their high frequency communication systems particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: Represents an update of Resolution No 14 which has been proposed for SUP.

G/43/60 **ADD**

Resolution No Aer 2—(C)

Relating to the use of frequencies 3023 and 5680 kHz common to the Aeronautical Mobile (R) and (OR) Services.

The Aeronautical World Administrative Radio Conference, Geneva, 1978, having noted

that this conference in adopting a new Frequency Allotment Plan in Appendix 27 (Rev) has decided to use 3023 kHz instead of 3023.5 kHz; and, additionally, has amended the provisions governing the use of 3023 and 5680 kHz,

considering

- 1 that, by this action, some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;
- 2 that the co-ordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operations, was extended to include communication between mobile stations and participating land stations;
- 3 that it would be in the general interests of the Aeronautical Mobile (R) Service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the Aeronautical Mobile (R) Service and in the Aeronautical Mobile (OR) Service:

resolves

to invite administrations to apply in the Aeronautical Mobile (OR) Service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

Reason: Represents an update of Resolution No Aer 1, which has been proposed for SUP.

G/43/61

ADD

Resolution No Aer 2—(D)

Relating to the unauthorized use of frequencies in the bands allocated to the Aeronautical Mobile (R) Service.

The World Aeronautical Administrative Radio Conference, Geneva, 1978, considering

- (a) that monitoring observations of the use of the frequencies in the bands between 2850 and 17 970 kHz allocated exclusively to the Aeronautical Mobile (R) Service show that a number of frequencies in these bands are still being used by stations of services other than the Aeronautical Mobile (R) Service, notably by high powered broadcasting stations, some of which are operating in contravention of No 422 of the Radio Regulations;
- (b) that these stations are causing harmful interference to the Aeronautical Mobile (R) Service and that a considerable number of emissions, the sources of which could not positively be identified, were observed in these bands;
- (c) that radio is the sole means of communication of the Aeronautical Mobile (R) Service and that this service is a safety service;

considering, in particular

- (d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property:

resolves to urge administrations

- 1 to ensure that stations of services other than the Aeronautical Mobile (R) Service abstain from using frequencies in the Aeronautical Mobile (R) Service bands other than under the conditions specified in Nos 115 and 415;

- 2 to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the Aeronautical Mobile (R) Service and thereby endangering this safety service and to communicate their findings to the IFRB;
- 3 to participate in the monitoring programmes that the IFRB may organize pursuant to this resolution;
- 4 to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No 422 of the Radio Regulations:

requests the International Frequency Registration Board

- 1 to continue to organize monitoring programs in the bands exclusively allocated to the Aeronautical Mobile (R) Service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the Aeronautical Mobile (R) Service;
- 2 to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the Aeronautical Mobile (R) Service;
- 3 to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

Reason:

Represents an update of Resolution No Aer 2, which has been proposed for SUP.

G/43/62 ADD

Resolution No Aer 2--(E)

Relating to the implementation of the Frequency Allotment Plan in the high frequency bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17 970 kHz.

The Aeronautical World Administrative Radio Conference, Geneva, 1978, considering

- (a) that the bands allocated exclusively (between 2850 and 17 970 kHz) to the Aeronautical Mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;
- (b) that the 1966 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;
- (c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- (d) that the Aeronautical Mobile (R) Service is a safety service;
- (e) that the present conference has further modified the said bands to provide for SSB techniques;
- (f) that there is a need for all administrations to implement the modifications made by the present Conference, with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations:

resolves

- 1 that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows:
 - 1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present Resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;
 - 1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks Column. The administrations shall be advised of this action;
- 2 that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos 629 to 633 of the Radio Regulations.

Reason: To provide for transfer of assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

G/43/63 SUP

Resolution No Aer 3

Relating to the introduction of single sideband techniques in the HF bands allocated to the Aeronautical Mobile (R) Service.

Reason: With the adoption of an allotment plan based on single sideband techniques, this Resolution is no longer applicable.

G/43/64 SUP

Resolution No Aer 4

Relating to the use of VHF for communication in the Aeronautical Mobile (R) Service.

Reason: No longer considered to be necessary.

G/43/65 SUP

Resolution No Aer 5

Relating to the use of VHF for meteorological broadcasts in the Aeronautical Mobile (R) Service.

Reason: No longer considered to be necessary.

G/43/66 SUP

Resolution No Aer 6

Relating to the treatment of notices concerning frequency assignments to aeronautical stations in the Aeronautical Mobile (R) Service in the bands allocated exclusively to that service between 2850 and 17 970 kHz.

Reason: This Resolution has been rewritten and is shown as Resolution No Aer 2--(A) and, therefore, needs to be suppressed.

PART VI PROPOSAL FOR RECOMMENDATIONS

G/43/67 SUP

Recommendation No Aer 1

Relating to the development of techniques which would help to reduce congestion in the high frequency bands allocated to the Aeronautical Mobile (R) Service.

Reason:

This recommendation has been modified, to bring it up to date, and is shown as an ADD Recommendation No Aer 2-(A).

G/43/68 ADD

Recommendation No Aer 2-(A)

Relating to the development of techniques which would help to reduce congestion in the high frequency bands allocated to the Aeronautical Mobile (R) Service.

The Aeronautical World Administrative Radio Conference, Geneva, 1978, considering

- (a) that several administrations are actively engaged in the development of communication techniques, the wider use of which in the Aeronautical Mobile (R) Service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high-powered VHF transmitters employing directional antennae, space radiocommunication techniques and automatic data transmission;
- (b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;
- (c) that the International Civil Aviation Organization (ICAO) is actively engaged in co-ordinating the operational development of such techniques:

invites

administrations engaged in such developments to inform the IFRB periodically of the progress achieved:

requests

the IFRB periodically to circulate the information so obtained to administrations and to ICAO.

Reason:

Represents an update of Recommendation No Aer 1, which has been proposed for SUP.

**WORLD ADMINISTRATIVE RADIO CONFERENCE FOR THE
AERONAUTICAL MOBILE (R) SERVICE**

**UNITED KINGDOM
PROPOSAL FOR THE WORK OF THE CONFERENCE**

G/43/69 **Dates of coming into force of the Final Acts of the Conference and of the revised Frequency Allotment Plan (Appendix 27 to the Radio Regulations).**

The United Kingdom Administration proposes that the Final Acts of the Conference shall enter into force on 1 January 1980.

The United Kingdom further proposes that in order to enable Administrations to carry out the necessary changes which will arise from the revision of Appendix 27 (Edition 1968) the revised Frequency Allotment Plan to be prepared by the Conference shall enter into force on 1 February 1983.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum No. 1 to

Document No. 44-E

9 February 1978

Original : English

COMMITTEE 5

Japan

PROPOSALS FOR THE WORK OF THE CONFERENCE

Page 7, replace J/44/10 by the following :

J/44/10 ADD 27/93A MWARA - North Central Asia (MWARA-NCA)

From the North Pole through the points 75°N 10°E,
60°N 25°E, 30°N 25°E, 30°N 73°E, 37°N 73°E, 49°N 85°E,
42°N 97°E, 42°N 110°E, 25°N 135°E, 65°N 170°W, to the North
Pole;

ADD

Frequency Allotment

At least two additional families required

Reasons : Through Moscow, seven airlines operate forty flights
per week on the route between Tokyo and the main
cities in European countries.

In order to cover the above air route, it is
necessary to establish a new MWARA and to provide
at least two frequency families to cater for ATS
needs.



AERONAUTICAL (R) CONFERENCE

1978
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PLENARY MEETING

Japan

PROPOSALS FOR THE WORK OF THE CONFERENCE FOR AERONAUTICAL MOBILE (R) SERVICE

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1. Introduction
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1. Introduction

The Japanese Administration, considering that the allotment of frequencies in the aeronautical mobile (R) band should be limited to the necessary minimum to cope with the recent situation of air traffic, submits its proposals on the revision of the Frequency Allotment Plan adopted at the Extraordinary Administrative Radio Conference in 1966 and the related provisions of the Radio Regulations.

The underlying principles of the proposals are as follows:

- (1) Radio telephony on the single side band basis in the aeronautical mobile (R) service should be established as soon as possible;
- (2) In order to meet the changed communication requirements of the air traffic, the boundaries of MWARA, RDARA and VOLMET Allotment Areas should be newly established or modified, and allotment of frequencies should be made as appropriate;
- (3) New provisions should be established for "Operational Control Communications" in the aeronautical mobile (R) service in order to enable the aircraft operating agencies to conduct radiocommunication on the world-wide basis related to the regularity of flight, and Operational Control Communications Areas be newly established and allotment of frequencies be made to these Areas.

2. Technical Standards

The Japanese Administration proposes the modification or addition of the provisions No. 27/54, No. 27/66, No. 27/66B and No. 27/73A of the Appendix 27 of the Radio Regulations as follows.

J/44/1 With respect to the provision No. 27/20, this Administration is of the opinion that that provision should be retained as it is.

J/44/2 With regards to the other provisions in the Section 1 of the part 1 of the Appendix 27, this Administration endorses the proposals included in the Report of the Communications Divisional Meeting of ICAO held at Montreal from 8 to 24 September 1976 (Doc 9187, COM/76 page 6-49 - page 6-60).

J/44/3 MOD 27/54

2. Power

2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class of emission	Stations	Maximum peak envelope power
A1 F1 F2	Aeronautical stations Aircraft stations	1.5 kW 75 W
A3 A3H (100% modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
Other emissions such as A2 A3A A3B A3J A4 A7A A7H A7J	Aeronautical stations Aircraft stations	6 kW 300 W

Replace table by:

Class of emission	Stations	Maximum peak envelope power
A2H, A3J, A7J, A9J (100% modulation)	Aeronautical stations Aircraft stations	6 kW 400 W
A3* A3H* (100% modulation)	Aeronautical stations Aircraft stations	6 kW 400 W
Other emissions such as A1, F1	Aeronautical stations Aircrafts	1.5 kW 100 W

*A3 and A3H to be used only on 3023 kHz and 5680 kHz, and in accordance with proposed ITU Resolution Aer2(A), paragraph 4.4.

Reason: To remove classes of emission no longer applicable and to introduce new classes A2H and A9J.

In addition, in case where classes of emission A3J and A1 are used alternatively by use of a single transmitter on an aircraft station, the power ratio of the A1 and A3J emission should be 1:4.

No. 27/66

J/44/4

MOD 27/66 3.3.2 For aircraft station transmitter types and for aeronautical station transmitters first installed before 1 February 1983.

Frequency separation < from the assigned frequency -ke/s kHz	Minimum attenuation below mean Power(Pm) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	Aircraft stations: 40
	Aeronautical stations: 43 *

*Without exceeding the power of 50mW

J/44/5

ADD 27/66B 3.3.4 For aircraft station transmitters first installed after 1 February 1983 and for aeronautical station transmitters in use after 1 February 1983.

Frequency separation Δ from the assigned frequency kHz	Minimum attenuation below peak envelope power (Pp) dB
$1.5 \leq \Delta < 4.5$	30
$4.5 \leq \Delta < 7.5$	38
$7.5 \leq \Delta$	43 *

*Without exceeding the power of 50mW

Reason: To align with the values set forth in the Appendix 4 of the Radio Regulations,

J/44/6 ADD 27/73A 5. The receiver rejection characteristics

The receiver should satisfy the characteristics of the following table.

Frequency range (Hz)	Attenuation (dB)
from 300 to 2,500	less than 6
below -500 and above 3,300	more than 60

Note - The frequencies specified above are relative to the carrier response frequency of the receiver.

Reason: To establish the usage of the 3kHz channel separation in the aeronautical mobile (R) service, the receiver characteristics should also be specified.

J/44/7 MOD

APPENDIX 3

Mar Mar2

Table of Frequency Tolerances*

(See Article 12)

Frequency bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all transmitters after 1st January, 1966*
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* 1st January, 1970 in the case of all tolerances marked with an asterisk.

MOD Band: 1605 to 4000kHz

2. Land Stations

- power 200W or less	100	100 h)1) <u>r)</u>
- power above 200W	50	50 h)1) <u>r)</u>

3. Mobile Stations

c) Aircraft Stations	200*	100* <u>r)</u>
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Band: 4 to 29.7MHz

2. Land Stations

b) Aeronautical
Stations:

- power 500W or less	100	100 <u>r)</u>
- power above 500W	50	50 <u>r)</u>

3. Mobile Stations

c) Aircraft Stations	200*	100* <u>r)</u>
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Notes referring to the Table of Frequency Tolerances After Note q)
add the following new note:

J/44/8 ADD r) For single sideband transmitter operating in the frequency bands
allocated exclusively to the Aeronautical Mobile (R) service,

the tolerance is:

Aeronautical Station 10 Hz

Aircraft Station 20 Hz

Reason: To maintain the quality of SSB telephony (A3J), it is necessary
that the tolerance of carrier frequency is kept within these
limits.

3. The boundary of MWARA and allotment of frequencies

The delineation of MWARA-CWP shall be amended as follows:

J/44/9 MOD 27/83 MWARA - Central West Pacific (MWARA-CWP)

From the point 40°N 117°E through the points 25°N 155°W,
17°N 155°W, 00° 165°W, 00° 170°E, 12°S 165°E, 12°S
136°E, 09°N 115°E, 22°N 115°E, to the point 40°N 117°E.

ADD Frequency Allotment: One additional family required.

Reason: The southern boundary to be moved to the south to cover
the gap between the SEA, SP and old CWP MWARA. One
additional family is required to meet the recent
increase in the air traffic and also in consequence of
the extension of the area.

After 27/93, add the following new MWARA:

J/44/10 ADD 27/93A MWARA - North Central Asia (MWARA-NCA)

From the North Pole through the points 75°N 10°E, 60°N 25°E, 30°N 25°E, 30°N 73°E, 37°N 73°E, 49°N 85°E, 42°N 97°E, 42°N 110°E, 30°N 135°E, 65°N 170°W, to the North Pole;

ADD Frequency Allotment: At least two additional families required.

Reason: Through Moscow, seven airlines operate forty flights per week on the route between Tokyo and the main cities in European countries.

In order to cover the above air-route, it is necessary to establish a new MWARA and to provide at least two frequency families to cater for ATS needs.

The delineation of MWARA-NP shall be amended as follows:

J/44/11 MOD 27/94 MWARA - North Pacific (MWARA-NP)

From the North Pole through the points 60°N 135°W, 47°N 118°W, 30°N 165°W, 30°N 115°E, 41°N 116°E, 55°N 135°E to the North Pole.

ADD Frequency Allotment: One additional family required.

Reason: In recent years, air traffic density of the international flights over the MWARA-NP area has greatly increased (there exist, 13 airlines, 172 flights per week). Therefore, it is unavoidable to carry out the air-ground communication in this area by the method of dividing the existing route into two sectors.

In order to cater for the growth in air traffic in this area, there shall be necessity for extending the MWARA-NP area both to northward and to southward and for providing one additional frequency family.

4. Long-distance Aeronautical Operational Control Communications

4.1 Basic Principles of the Frequency Allotment to Accommodate Long-distance Aeronautical Operational Control Communications

The frequencies used for long-distance operational control communications are to be allotted at the present Conference.

This Administration is of the opinion that the allotment plan for this purpose should be prepared on the basis of the following principles:

J/44/12 Frequency Allotment

- 4.1.1 a) Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, those frequencies allotted to the RDARA or Sub-RDARA should be used as far as possible;
- b) Frequency family for long-distance operational control communications between designated Aircraft Operating Agency Official(s) and the Agencies' aircraft operating anywhere on a global basis should be allotted to the following 5 principal geographic areas which are based on the ICAO air navigation regions.

REGION	AREA *
AF/MID	RDARA (4, 5, 7)
E U R	RDARA (1, 2, 3)
N A M	RDARA (10, 11)
S A M	RDARA (12, 13)
S E A	RDARA (6, 8, 9)

* The areas of each region cover the boundaries of RDARA in question specified in the present Appendix 27 (cf. Nos. 27/104 - 27/173).

- 4.1.2 In the light of the fact that the frequency families for long-distance operational control communications may be used by the aircraft operating anywhere in the world, and in order to avoid interference with the operation on the frequency families allotted to MWARA, RDARA and VOIMET areas generally catering to the needs of Air Traffic Services, the frequency families for long-distance operational control communications should, in general, be allotted on the basis of an exclusive use for that propose.

J/44/13 Utilization of Frequency

- 4.1.3 With a view to providing for a practical means of economizing on frequencies usage the total number of ground stations to be established on these long-distance operational control channels should be kept to a necessary minimum.

Thus, if practical, one station might be intended for serving airline operating agencies in two or more States; there should not be more than one station per State.

- 4.1.4 Aircraft stations operating anywhere in the world may contact with their operating agency office (generally the home-base) located within a defined geographic area.

4.2 Proposals

After 27/8, add the following new provision

J/44/14 ADD 27/8A 8a A Long-distance Operational Control Communications (OPECON) Area is an area where long-distance communication facilities are required to permit aeronautical operational control communications with aircraft in flight at any time and over any distance on one or more families of frequencies common to the area.

Reason: Required definition subsequent to the establishment of the new OPECON Areas.

The title of Section 1, Part 2 shall be amended as follows:

Section I

J/44/15 MOD Description of the Boundaries of the MWARA, RDARA, Sub-RDARA, VOLMET and OPECON Areas

No. 27/77 shall be amended as follows:

J/44/16 MOD 27/77 In the description of the Major World Air Route Areas (MWARAs), VOLMET areas and Long-distance Operational Control Communications (OPECON) Areas all lines between points not otherwise specified are defined as great circles.

Reason: Consequential to introduction of OPECON Areas.

J/44/17 SUP 27/79

Reason: To align with MOD 27/77.

After 27/185, add the following article.

J/44/18 ADD Article 3A

Description of the Boundaries of the Long-distance Operational Control Communications Areas (OPECON Areas)

J/44/19 ADD 27/185A OPECON Area - AFRICA/MIDDLE EAST (OPECON-AF/MID)

OPECON AF/MID area is an area embracing RDARA-4, 5 and 7 areas defined in Nos. 27/118 to 27/125 and 27/133 to 27/138.

J/44/20 ADD 27/185B OPECON Area - EUROPE (OPECON-EUR)

OPECON-EUR area is an area embracing RDARA-1, 2 and 3 areas defined in Nos. 27/104 to 27/117.

J/44/23 ADD 27/185E OPECON Area - SOUTH EAST ASIA (OPECON-SEA)

OPECON-SEA area is an area embracing RDARA-6, 8 and 9 areas defined in Nos. 27/126 to 27/132 and 27/139 to 27/145.

The title of 27/186 shall be amended as follows:

Reason: Consequential to inclusion of frequencies for OPECON in the new allotment table.

No. 27/188 shall be amended as follows:

Reason: Consequent to inclusion of frequencies for OPECON in the new allotment table.

After 27/191, add the following new Table.

J/44/26 ADD 27/191A

[illegible]

- Note: 1) Frequencies to be inserted in above table are to be determined by the Conference.
- 2) This Administration requires 10 world-wide frequencies.
- 3) According to the data made available by members of the ICAO Frequency Study Group, the following fleet of HF equipped aircraft currently operates in each regions listed above:

AF/MID	- 27	airlines	-257	aircrafts
EUR	20	"	516	"
NAM	15	"	626	"
SAM	15	"	181	"
SEA	15	"	264	"

No. 27/193 shall be amended as follows:

J/44/27 MOD 27/193 A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or OPECON Areas which receive full protection during the twenty-four hours.

Reason: Consequent to inclusion of frequencies for OPECON in the new allotment table.

After 27/194, add the following new text.

J/44/28 ADD 27/194A 4. Frequencies designated for Long-distance Operational Control Communications in the Frequency Allotment Plan (see No. 27/191A) are intended to be used by the aircraft in flight anywhere in the world.

J/44/29 ADD note: Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, those frequencies allotted to RDARAs and Sub-RDARAs should be used to the extent possible.

Reason: To define the purpose for which such frequencies may be used.

27/195 shall be amended as follows:

J/44/30 MOD 27/195 (Insert the appropriate frequencies, remarks, etc. in each column)

Revision of Radio Regulations

After Regulations No. 429, add the following new text.

J/44/31 ADD 429A Aeronautical Operational Control Communications in the aeronautical mobile (R) service are intended to permit communications related to regularity of Flight.

Reason: It is necessary to define Aeronautical Operational Control Communications and to provide for the use of frequencies in the bands allocated to the aeronautical mobile (R) service.

5. Resolutions and Recommendations

J/44/32 With regard to suppression and modification of the Resolutions No. 14, No. Aer 1, No. Aer 2, No. Aer 3, No. Aer 4, No. Aer 5, No. Aer 6 and Recommendation No. Aer 1, the Japanese Administration endorses the proposals of the International Civil Aviation Organization which are prepared as Resolutions No. 14, No. Aer 1-(A), No. Aer 2-(A), No. Aer 4-(A), No. Aer 5-(A), No. Aer 6-(A), No. Aer 6-(B), No. Aer 7 Recommendations No. Aer 1-(A), No. Aer 3 in the report of its Communications Divisional Meeting of 1976 at Montreal.

AERONAUTICAL (R) CONFERENCE

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Corrigendum No. 1 to

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New Zealand

PROPOSALS FOR THE WORK OF THE CONFERENCE

AMENDMENTS PROPOSED FOR THE DESCRIPTION OF THE BOUNDARIES OF
THE MWARA, RDARA, SUB-RDARA AND VOLMET AREAS CONTAINED IN
PART II, SECTION I, APPENDIX 27 TO THE RADIO REGULATIONS

In Document No 45, Page 8, read:

NZL/45/9 MOD 27/183

The PAC-MET reception area is defined by a line drawn from the point 60°N 100°E, through the points 80°N 160°W, 75°N-90°W, 60°N-85°W, 20°N-120°W, 40°S-120°W, 50°S-170°W, 50°S-145°E, to the North Pole, to the South Pole along the 110° meridian, to 28°S 145°E, 03°S 129°E, 05°N 80°E, 40°N 80°E, to the point 60°N 100°E.



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New Zealand

PROPOSALS FOR THE WORK OF THE CONFERENCE

AMENDMENTS PROPOSED FOR THE DESCRIPTION OF THE BOUNDARIES OF THE MWARA, RDARA, SUB-RDARA AND VOLMET AREAS CONTAINED IN PART II, SECTION I, APPENDIX 27 TO THE RADIO REGULATIONS

ARTICLE 1

Description of the Boundaries of the Major World Air Route Areas (MWARAS)

NZL/45/1 MOD 27/103 MWARA-South Pacific (MWARA-SP)

Amend delineation to read:

~~From the point 22°N-158°W through the points
22°N-156°W, 00°-120°W, 40°S-120°W, 50°S-170°W,
50°S-145°E, 38°S-145°E, 00°-167°E, 00°-175°W,
to the point 22°N-158°W.~~

From the South Pole through the points 38°S 145°E,
00° 167°E, 00° 175°W, 22°N 158°W, 22°N 156°W,
00° 120°W to the South Pole.

Reason:

The eastern and western boundaries are extended to the South Pole to include polar air routes between Pacific Islands and South Africa, between Australasia and the South Pole and between Australasia and South America.

MWARA-South Pacific (MWARA-SP) : ADDITIONAL FREQUENCY FAMILY

1. Practical experience at the Auckland regular network station shows that loadings on the SP-MWARA frequency family are excessively high at times with delays occurring to the receipt and transmission of flight safety information.
2. While the planned introduction at Auckland in January 1978 of HF VOLMET broadcasts will effect some relief, this will be partially offset by the intended coincidental transfer of New Zealand/Antarctic aircraft operations, now conducted on OR channels, to SP-MWARA frequencies.
3. As aircraft movements in the SP area will undoubtedly increase, at some future date it will be essential that action be taken to relieve congestion on the existing frequency family.



4. Because the majority of communications are conducted on the 5, 8 and 13 MHz channels of the existing family, these channels are where the relief will be required. It is considered that the lower and higher frequency channels (presently 2945 and 17909 kHz) should be able to cope with requirements in the South Pacific area during the foreseeable future.

NZL/45/2

5. New Zealand therefore proposes that two frequency families be allocated to SP-MWARA with channels of the frequency orders listed below: -

2.9 MHz*	5.6 MHz	8.8 MHz	13.3 MHz	17.9 MHz*
2.9 MHz	5.4-5.6 MHz	8.8-8.9 MHz	13.2-13.3 MHz	17.9 MHz*

* Common to both families.

ARTICLE 2

Description of the Boundaries of the Regional and Domestic Air Route Areas (RDARAs)

Regional and Domestic Air Route Area-9 (RDARA-9)

NZL/45/3 MOD 27/143

Sub Area 9B

Amend delineation to read:

~~From the point 00°-144°E to the point 10°S-144°E
thence to 10°S-134°E, 24°S-134°E, 24°S-139°E,
27°S-139°E, 27°S-170°W, 03°30'N-170°W, 03°30'N-160°E,
00°-160°E to the point 00°-144°E.~~

From the point 00° 141°E through points 10°S 141°E,
10°S 145°E, 27°S 160°E, 27°S 157°W, 03°30'N 157°W,
03°30'N 160°E, 00° 160°E to the point 00° 141°E.

Reason:

To provide for air routes between Rarotonga and other Islands in the Sub-Area 9B.

RDARA Sub-Area 9D : Channel requirements

1. Although the use of VHF within New Zealand is planned to be extended, the mountainous terrain particularly in the South Island of our country, the considerable oceanic distance to Chatham Islands and economic considerations will necessitate the continued use for the foreseeable future of HF channels for some domestic services.

NZL/45/4 2. Having considered existing and anticipated future requirements for HF channels for regional and domestic operations, New Zealand proposes that the following channels be allocated for use in RDARA Sub-Area 9D: -

Band 2850-3025	1 channel
Band 3400-3500	1 channel
Band 6525-6685	1 channel
Band 8815-8965	1 channel
Band 11275-11400	1 channel *

* It is envisaged that this channel could be common to at least RDARA Sub-Areas 9B and 9D.

RDARA Sub-Areas 9B/9C : Channel requirements for COOK ISLANDS, NIUE ISLAND and WESTERN SAMOA

1. Because of the oceanic distances involved, the use of VHF channels exclusively for regional and domestic aircraft operations concerning the Cook Islands, Niue Island and Western Samoa is not practicable and the use of HF channels will be necessary for the foreseeable future.

NZL/45/5 2. To cater for the requirements of Niue Island, Cook Islands and Western Samoa, New Zealand proposes that the following channels be allocated to RDARA Sub-Areas 9B/9C: -

Band 3400-3500	1 channel	(replacement for existing channel 3460 kHz*)
Band 6525-6685	1 channel	(replacement for existing channel 6575 kHz*)
Band 8815-8965	1 channel	(replacement for existing channel 8924 kHz*)
Band 11275-11400	1 channel +	(replacement for existing channel 11319 kHz*)

3. New Zealand has proposed, that the Eastern boundary of RDARA Sub-Area 9B be extended to include the Cook Islands and Niue Island. If approved, the channels listed in paragraph 2 above will be required in Sub-Area 9B only.

+ It is envisaged that this channel could be common to at least RDARA Sub-Areas 9B and 9D.

* This family of frequencies is at present common to a large number of States throughout the 9B Sub-Area.

REQUIREMENTS FOR HF CHANNELS TO ACCOMMODATE "DOMESTIC"
OPERATIONAL CONTROL COMMUNICATIONS

1. A recent feature of the national development of aviation in New Zealand has been the establishment of a number of additional aircraft operating agencies which are conducting regular flights to lesser populated and mountainous areas where VHF coverage will not be economically viable in the foreseeable future. Some of these operators are in the process of establishing aeronautical stations using HF channels for operational control purposes and others are expected to take similar action in the future.

NZL/45/6 2. Having considered existing and anticipated future requirements for HF channels for "domestic" operational control purposes, New Zealand proposes that the following channels be allocated for this purpose in RDARA Sub-Area 9D: -

Band 4650-4700	1 channel
Band 6525-6685	1 channel

REQUIREMENTS FOR HF CHANNELS TO ACCOMMODATE OPERATIONAL
CONTROL COMMUNICATIONS IN THE RDARA 9B SUB-AREA

1. Western Samoa's international operator is expected to soon have a requirement for HF channels to communicate with its aircraft for operational control purposes in the RDARA 9B Sub-Area.

2. Because of the oceanic distances involved, the use of VHF for the above purpose will not be practicable in the foreseeable future.

NZL/45/7 3. To cater for operational control communications, New Zealand proposes that the following channels be allocated for this purpose in the RDARA Sub-Area 9B: -

Band 3400- 3500	1 channel
Band 6525- 6685	1 channel
Band 8815- 8965	1 channel
Band 11275-11400	1 channel

ARTICLE 3Description of the Boundaries of the VOLMET
Allotment Areas and VOLMET Reception Areas

VOLMET Area - PACIFIC (PAC-MET)

NZL/45/8 MOD 27/182

Amend definition to read:

The PAC-MET allotment area is defined by a line drawn from the point $52^{\circ}\text{N } 132^{\circ}\text{E}$, through the points $63^{\circ}\text{N } 149^{\circ}\text{W}$, $38^{\circ}\text{N } 120^{\circ}\text{W}$, $23^{\circ}\text{S } 180^{\circ}$, $34^{\circ}\text{S } 150^{\circ}\text{E}$, $50^{\circ}\text{S } 120^{\circ}\text{W}$, $50^{\circ}\text{S } 145^{\circ}\text{E}$, $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $22^{\circ}\text{N } 112^{\circ}\text{E}$ to the point $52^{\circ}\text{N } 132^{\circ}\text{E}$.

Reason:

To include Christmas Island, Tahiti and New Zealand.

NZL/45/9 MOD 27/183

Amend definition to read:

The PAC-MET reception area is defined by a line drawn from the point $60^{\circ}\text{N } 100^{\circ}\text{E}$, through the points $80^{\circ}\text{N } 180^{\circ}\text{W}$, $75^{\circ}\text{N } 90^{\circ}\text{W}$, $60^{\circ}\text{N } 85^{\circ}\text{W}$, $20^{\circ}\text{N } 420^{\circ}\text{W}$, $40^{\circ}\text{S } 420^{\circ}\text{W}$, $50^{\circ}\text{S } 470^{\circ}\text{W}$, $50^{\circ}\text{S } 445^{\circ}\text{E}$, to the North Pole, to the South Pole along the 110°W meridian, to $28^{\circ}\text{S } 145^{\circ}\text{E}$, $03^{\circ}\text{S } 129^{\circ}\text{E}$, $05^{\circ}\text{N } 80^{\circ}\text{E}$, $40^{\circ}\text{N } 80^{\circ}\text{E}$, to the point $60^{\circ}\text{N } 100^{\circ}\text{E}$.

PAC-MET ALLOTMENT AREA : ADDITIONAL FREQUENCY FAMILY

1. VOLMET broadcasts from Auckland (New Zealand) are planned to commence in January 1978 and these will occupy the last time slots available to the existing PAC-MET frequency family of 2980, 5519, 8903 and 13344 kHz.
2. New Zealand is proposing amendments to both the PAC-MET allotment area and the PAC-MET reception area with the effect of significantly enlarging both areas.
3. Aircraft movements necessitating the use of HF channels for enroute communications within the proposed enlarged PAC-MET reception area have markedly increased during the last few years and a further increase in the future is anticipated. The need to introduce additional HF VOLMET broadcasts in the near future is considered to be inevitable.

NZL/45/10 4. Accordingly, New Zealand proposes that two frequency families be allocated to the PAC-MET allotment area with channels of the frequency orders listed below: -

Band 2850- 3025	2 channels	(replacement for existing 2980 kHz plus a new channel)
Band 5480- 5680	2 channels	(replacement for existing 5519 kHz plus a new channel)
Band 8815- 8965	2 channels	(replacement for existing 8903 kHz plus a new channel)
Band 13260-13360	2 channels	(replacement for existing 13344 kHz plus a new channel)

REQUIREMENTS FOR "WORLD-WIDE" FREQUENCY ALLOTMENTS TO ACCOMMODATE LONG-RANGE AERONAUTICAL OPERATIONAL CONTROL COMMUNICATIONS

1. In order to meet a requirement of New Zealand's international airline operator to communicate with its aircraft on a world-wide basis, it is intended to implement at Auckland (New Zealand) in December 1977 HF SSB (A3J) facilities using the existing world-wide allocations 6526 10093 and 13356 kHz plus 17933 and 21886 kHz. Practical experience is expected to confirm a need for a channel of the order of 3.5 MHz to supplement those listed above.

2. The New Zealand service will be operated by the Civil Aviation Authority and will be available to all international airline operators.

3. Only very limited provision is made in existing Appendix 27 for frequencies capable of being used on a world-wide basis. It is believed that some 40 odd aeronautical stations now exist and it is envisaged that a more extensive deployment of aeronautical stations will evolve within the lifetime of Appendix 27 (revised).

NZL/45/11 4. The revision of Appendix 27 will need to accommodate appropriate regulatory provisions and additional frequency allotments as necessary to enable States to effect assignments to permit direct communications between aircraft operating agencies and their aircraft anywhere in the world. In the latter regard, New Zealand has a requirement for frequencies as listed below:

Band 3400- 3500	1 channel
Band 6525- 6685	1 channel
Band 10005-10100	1 channel
Band 13260-13360	1 channel
Band 17900-17970	1 channel
Band 21870-22000	1 channel

AERONAUTICAL (R) CONFERENCE

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PLENARY MEETING

Canada

PROPOSAL FOR THE WORK OF THE CONFERENCE

ALLOTMENT OF FREQUENCIES FROM THE BAND 21 870-22 000 kHz
FOR INCLUSION IN APPENDIX 27

1. In its preparation for the Conference, the Canadian Administration has considered necessary and appropriate to propose for inclusion in Appendix 27, a number of channels from the band 21870-22000 kHz which, under existing Radio Regulations, is allocated to the Aeronautical Mobile (R) service and the Aeronautical Fixed service on a primary basis.
2. Further to the submission of the Canadian proposals to the ITU (refer Conference Document No. 20), comments have been received by this Administration suggesting that the agenda of the Conference does not provide for the inclusion of channels, derived from the band mentioned above, within Appendix 27.
3. This Administration has reviewed the Conference agenda (Resolution No. 763, amended by the 31st Session of the Administrative Council) and has come to the conclusion that the Conference has the competence to revise Appendix 27 in a manner deemed most suitable and that it is the prerogative of the Conference to decide whether or not the inclusion of channels in the 21870-22000 kHz band would benefit and enhance the Appendix 27 Allotment Plan.
4. The position outlined in paragraph 3 above is based on the following observations:
 - a) While it is recognized that the frequency band under question does not at present form part of Appendix 27, the Conference agenda does not specifically restrict any revision of this Appendix to the bands listed under 27/10 of Section II.
 - b) If it had been the intention of the Administrative Council and of ITU Members to restrict the revision of Appendix 27 to the bands mentioned in 27/10, then the wording of the agenda would have clearly stated this restriction or frequency band limitations by wording agenda item 2.1.1 along the following lines: to revise, on the basis of single sideband operation, the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 27 (provided that such revisions are confined to the bands referred to in 27/10 of the Appendix) to satisfy within.....etc.



- c) It should be noted that item 2.1 of the agenda for the 1979 WARC provides for the review, and where necessary, for the revision of the allocation of frequency bands contained in the Radio Regulations and it is Canada's interpretation of this agenda item that the 1979 Conference is quite competent to include in the Table new bands below 10 kHz or above 275 GHz; in other words, that any such revisions are not confined within the present frequency limits of the Table of Frequency Allocations. If this interpretation is correct, then the provisions of the Aeronautical Conference agenda item 2.1.1 should be viewed under the same light. It follows also that any necessary consequential review of the Radio Regulations, and in particular RR 431, is well within the competence of the Conference.
- d) While too broad an interpretation of any conference agenda may lead to the setting of undesirable precedents and perhaps unsatisfactory results, this Administration also believes that too narrow an interpretation of an agenda may also lead to similar undesirable consequences and the latter, in the view of this Administration, is the case in point. We are convinced that the Conference has all the necessary competence to settle this question in a way which will enhance its work and benefit ITU Members.

- CAN/46/1 5. In view of the interest of many Administrations and of ICAO to include all or part of the 21870-22000 kHz band within Appendix 27 and considering the benefits to the Plan that would be derived from such an inclusion, this Administration is of the view that it would be desirable and appropriate for the Conference to interpret the agenda in its broad sense and to conclude that the inclusion, as necessary, of the band in question under the revised Appendix 27, falls within the competence of the Conference.

Note by the General Secretariat

In its letter of transmission the Canadian Administration states :

"We would appreciate if the Conference Plenary could consider this document at its very earliest convenience in order that the matter be resolved without delay and that the work of the Committees involved may proceed in accordance with the decision of the Conference."

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 47-E
8 December 1977
Original : English
French
Spanish

PLENARY MEETING

Note by the Secretary-General

REPORT OF THE INTERNATIONAL FREQUENCY REGISTRATION BOARD (IFRB)
ON THE IMPLEMENTATION OF THE DECISIONS OF
THE EXTRAORDINARY ADMINISTRATIVE RADIO CONFERENCE
FOR THE AERONAUTICAL MOBILE (R) SERVICE, GENEVA, 1966

The Conference will find attached hereto the Report of the IFRB.

M. MILI
Secretary-General

Annex : 1



A N N E X

REPORT BY THE INTERNATIONAL FREQUENCY REGISTRATION BOARD (I.F.R.B.)

IMPLEMENTATION OF THE FINAL ACTS OF THE EARC, 1966, AND THE
FREQUENCY ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R)
SERVICE IN THE FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO
THAT SERVICE BETWEEN 2850 kHz AND 17,970 kHz
(APPENDIX 27 TO THE RADIO REGULATIONS)

1. Introduction

1.1 The Frequency Allotment Plan for the Aeronautical Mobile (R) Service was originally drawn up by the International Administrative Aeronautical Radio Conference (I.A.A.R.C.), Geneva, 1948/49, and adopted by the Extraordinary Administrative Radio Conference, Geneva, 1951. The Plan was revised by the Administrative Radio Conferences, Geneva, 1959 and 1966.

2. Entry into force of the Final Acts of the Extraordinary Administrative Aeronautical Radio Conference, Geneva, 1966

2.1 The Final Acts of the 1966 Conference entered into force on 1 July 1967; however, it was provided that the Frequency Allotment Plan would not enter into force until 10 April 1970.

2.2 In accordance with Resolution No. Aer 6, certain provisions of the Plan could be implemented prior to 10 April 1970 without causing harmful interference to stations working in accordance with the Plan in Appendix 26. I.F.R.B. Circular-letter No. 173 of 2 June 1967 outlined certain decisions of the 1966 Conference.

3. Implementation of the Frequency Allotment Plan for the Aeronautical Mobile (R) Service, Appendix 27 to the Radio Regulations

3.1 With a view to securing the orderly implementation of the Allotment Plan appearing in Appendix 27 to the Radio Regulations, the I.F.R.B. sent detailed explanations to Administrations, as from August 1966. A list of these communications appears in the Annex to the present Report.

3.2 By the end of 1972, the I.F.R.B. had received, in accordance with Resolution No. Aer 6, notices of the cancellation of about 95 per cent. of the assignments previously recorded in the Master Register for the bands in question which had been replaced by other assignments in accordance with the Plan. Pursuant to paragraph 2 of Resolution No. Aer 6, the I.F.R.B. examined the remaining assignments still recorded in the Master Register and, according to the Finding reached, amended the Master Register.

3.3 When the Administrative Council adopted in 1975 Resolution No. 763 to convene the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, the Board, as part of its preparatory work, proceeded to a review of all entries in the Master Register in the bands allocated exclusively to the high frequency Aeronautical Mobile (R) Service and consequently, with I.F.R.B. Circular-letter No. 354, sent to all Administrations extracts of the Master Register with a request to bring them up to date. As a result of this action 1,550 entries were modified, 1,350 were cancelled and 12,700 were confirmed.

3.4 By 1 October 1977 the situation in the Master Register was as follows:

Total number of assignments recorded in the Master Register
in the bands allocated exclusively to the Aeronautical
Mobile (R) Service between 2850 kHz and 17,970 kHz approx. 13,300 (100%)

3.4.1 Number of assignments in channels conforming
to allotments in the Plan (see para. 4.1 below).... " 9,900 (74.5%)

3.4.2 Number of assignments in channels not allotted
to the aeronautical area concerned but where
the protection ratio assured to stations operating
in accordance with the Plan is at least 15 dB
(see para. 4.2.1 below) " 750 (5.7%)

3.4.3 Number of assignments in channels not allotted to
the aeronautical area concerned and where the
protection ratio with respect to other stations
is below 15 dB (see para. 4.2.2 below) " 2,000 (15%)

3.4.4 Number of assignments to stations other than the
Aeronautical Mobile (R) Service " 640 (4.8%)

- number of these assignments notified with a
reference to No. 115 of the Radio
Regulations, i.e. on the express condition that
harmful interference shall not be caused to
stations in the Aeronautical Mobile (R) Service. 550 (4.2%)

- number of these assignments recorded without
any reference to No. 115 of the Radio
Regulations (RR530 RR531) 90 (0.6%)

3.5 Subsequent to 1 October 1977, the Board has further reviewed the entries in the Master Register and has detected anomalies which it has brought to the attention of the Administrations concerned.

4. Treatment by the I.F.R.B. of notices relating to frequency assignments to stations in the Aeronautical Mobile (R) Service

4.1 Under the provisions of Article 9, frequency assignments in conformity with the Plan have the date of 29 April 1966 entered in Column 2a of the Master Register (No. 590 of the Radio Regulations) and thereby have the right to international protection from harmful interference under the terms of No. 607 of the Radio Regulations.

4.2 Assignments which are not in conformity with the allotments in the Plan are examined by the Board with respect to No. 558 of the Radio Regulations.

4.2.1 Where the protection prescribed in Appendix 27 (Part I, Section IIA, point 5) is ensured for the allotments in the Plan (i.e. 15 dB for stations in the Aeronautical Mobile (R) Service) and providing the notice is in conformity with the technical principles of the Plan, the date of 29 April 1966 is entered for the assignment in Column 2b of the Master Register (No. 591 of the Radio Regulations).

4.2.2 Where the frequency assignment does not fulfil the required protection conditions or the assignment is not in conformity with the technical principles of the Plan, the date of receipt of the notice by the I.F.R.B. is entered in Column 2b of the Master Register (No. 592 of the Radio Regulations).

5. Assistance provided to Administrations by the I.F.R.B.

At various stages of the implementation of the Plan, the I.F.R.B. provided assistance to Administrations concerning the coordination and use of frequencies. The various stages of the implementation of the Plan were completed without a case of interference between assignments operating in accordance with the Plan being brought to the attention of the Board. The Board also provided assistance to Administrations in resolving cases of harmful interference caused by stations of other services.

Annex

List of communications sent by the IFRB to administrations

Reference and date	Subject
Multi-address letter 19k(R)/0.45562 of 20 August 1966	Revised Allotment Plan for the Aeronautical Mobile (R) Service in its exclusive frequency bands between 2850 kHz and 18,030 kHz. Decisions taken by the Aeronautical Conference, Geneva, 1966 - Countries which have not participated in the Conference.
Multi-address letter 19k(R)/0.45563 of 20 August 1966	Revised Allotment Plan for the Aeronautical Mobile (R) Service in its exclusive frequency bands between 2850 kHz and 18,030 kHz. Decisions taken by the Aeronautical Conference, Geneva, 1966 - Countries which have participated in the Conference.
I.F.R.B. Circular-letter No. 170 of 7 April 1967	Implementation of the Revised Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). Consultation of the Administrations on the programme of implementation of the Plan recommended by I.C.A.O.
I.F.R.B. Circular-letter No. 173 of 2 June 1967	Coming into force of the Final Acts of the Aeronautical Extraordinary Administrative Radio Conference, Geneva, 1966. - 1 July 1967.
I.F.R.B. Circular-letter No. 176 of 10 August 1967	Implementation of the Revised Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). Replies and comments from the Administrations to Circular-letter No. 170 dated 7 April 1967.
Multi-address letter 19k/0.5251/68 of 28 June 1968	Implementation of the Revised Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). Preliminary action: 19 September 1968.

Reference and date	Subject
Multi-address letter 19k/O.8357/69 of 30 May 1969	Implementation of the Revised Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). First stage: 18 September 1969.
Multi-address letter 19k/O.1278/70 of 15 June 1970	Implementation of the Revised Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). Second stage: 17 September 1970.
Multi-address letter 19k/O.8619/72 of 25 July 1972	Implementation of the Allotment Plan for the Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 8965 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations). Multi-address letter for the Administrations which had not yet implemented the Plan appearing in Appendix 27.
I.F.R.B. Circular-letter No. 354 of 14 June 1976	Technical planning for the World Administrative Radio Conference for Aeronautical Mobile (R) Service in the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to that service (Appendix 27 to the Radio Regulations) - Geneva, March - April 1977.
Multi-address letter 19k/O.4603/77 of 2 November 1977	Review of entries in the Master International Frequency Register in preparation for the Aeronautical (R) Conference, Geneva, 1978 (Nos. 476 and 482 of the Radio Regulations).

Note du Secrétaire général

BESOINS DE FREQUENCES

J'ai l'honneur de transmettre à la Conférence l'addendum à la lettre-circulaire de l'IFRB N° 400 joint en annexe.

Annexe : 1

Note by the Secretary-General

FREQUENCY REQUIREMENTS

I have the honour to transmit to the Conference the attached addendum to IFRB circular letter No. 400.

Annex : 1

Nota del Secretario General

NECESIDADES EN FRECUENCIAS

Tengo el honor de transmitir a la Conferencia el Addéndum a la Carta circular de la IFRB N° 400 la cual figura en Anexo.

M. MILI

Secrétaire général - Secretary-General

Secretario General

Anexo : 1



COMITE INTERNATIONAL
D'ENREGISTREMENT DES FREQUENCES
I.F.R.B.



JUNTA INTERNACIONAL
DE REGISTRO DE FRECUENCIAS
I.F.R.B.

INTERNATIONAL
FREQUENCY REGISTRATION BOARD
I.F.R.B.

② National (022) 34 60 21
International + 41 22 34 60 21
Tg Burinterne Genève
Tx 23 000/23 000 a uit ch

1211 GENÈVE 20. LE 2 février 1978
2 RUE DE VAREMBÉ

Addendum à la
Lettre-circulaire de l'I.F.R.B. N° 400 du 24 novembre 1977

Depuis la publication de la Lettre-circulaire de l'I.F.R.B. N° 400, le Comité a reçu les informations au sujet des besoins de fréquences contenues dans la présente Annexe.

Annexe

Addendum to
I.F.R.B. Circular-letter No. 400 of 24 November 1977

Since the publication of I.F.R.B. Circular-letter No. 400, the Board has received the information on frequency requirements contained in the attachment.

Attachment

Addendum a la
Carta circular de la I.F.R.B. N.° 400 de 24 de noviembre de 1977

Desde la publicación de la Carta circular de la I.F.R.B. N.° 400, la Junta ha recibido la siguiente información sobre las necesidades en frecuencias, las cuales aparecen en Anexo.

Anexo

C.W. Sowton
Président - Chairman - Presidente

Prière d'adresser toute correspondance officielle à
Please address all official correspondence to
Toda correspondencia oficial debe dirigirse a

Monsieur le Président de l'I.F.R.B.
The Chairman of the I.F.R.B.
Señor Presidente de la I.F.R.B.
Union internationale des télécommunications
1211 GENÈVE 20
Suisse - Switzerland - Suiza

	No de la page ¹⁾ Page No. 1) N.º de la página 1)	Zone aéronautique Aeronautical Area Zona aeronáutica	Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations Remarks Observaciones
				3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
MOD	11	CAR	CUB	2	1	1		1	1	2	1	1	1	1			A058
MOD	11	CEP	OCE (P)		2			4		4			2	2			
ADD	12	CWP	KRE		1	1		1	2	2		2					
ADD	12	EU	DDR	1	1	1		1	2	2		1		1			
ADD	12	EU	I	1		1			1	1							
ADD	13	FE	INS	1*				1*		2*			1*	1*		SEA	
ADD	13	ME	BGD		2			1	1		1		1				B022
ADD	13	ME	QAT		1			1		1	1		1	1			
MOD	13	NA1	CAN	7*				7*		7*		2*	5*	5*		NA2	A008
MOD	13	NA2	CAN	7*				7*		7*		2*	5*	5*		NA1	A008
ADD	14	NSA1	NIG														A063
ADD	15	NSA2	COM							1			1				
ADD	15	NSA2	ZMB					1			1		1				
MOD	15	SA	GUI			2		2	2	1	1	1	1	1	1		
ADD	15	SAM1	BOL			1			1								
				2*						2*		2*		1*		SAM2	
ADD	15	SAM1	CHL			1			1	1		1	1	1			
ADD	16	SAM2	BOL					1					1				
				2*						2*		2*		1*		SAM1	
ADD	16	SAM2	CHL	1				1		1		1		1			
MOD	16	SEA	BGD	2				2		2			2	1			
MOD	16	SEA	INS	1*				1*		2*			1*	1*		FE	
ADD	17	CEA	KRE						2	2		2					
ADD	18	NCA	KRE					2		2	2	2	2				
MOD	19	1	DDR	1	1	1			1	1	1	2	2				
ADD	19	1	G										1				
ADD	19	1	I									1	1	1			
MOD	19	1B	G	1	5	1		2	1		1						A046 A047
ADD	20	1C	DDR	1	2	1		2	1	1	1	1	1				
SUP	20	1C	S														
MOD	20	1D	I		1				1	1							
MOD	23	4B	GUI		2	1		2	4	1	1	1	1	1	1		
ADD	23	4B	NIG	1					1	1							
ADD	24	5A	EGY		1			1	1	1							
ADD	24	5A	QAT		1*			1*	1*	1*						5C	B023
ADD	24	5C	QAT		1*			1*	1*	1*						5A	
MOD	25	6	INS								2	2	2	1			
ADD	25	6	KRE					2		2		2	1	1			
ADD	25	6A	BGD					1	1	1	1						
ADD	25	6B	KRE	1*	2*	3*		3*	2*	2*	2*	2*	2*	1*		6F	
ADD	25	6C	INS		2	2		3	3	3			2	1			
ADD	26	6D	INS		2	2		2	3	3			1				
ADD	26	6F	INS											1			
ADD	26	6F	KRE	1*	2*	3*		3*	2*	2*	2*	2*	2*	1*		6B	
ADD	26	6G	CHN														A062
ADD	26 bis	7	BDI					1									
MOD	26 bis	7C	KEN					3		3		3					
ADD	26 bis	7D	COM	1		1											
MOD	30	10	SPM (F)								2	4	1				
SUP	33	12	CUB														
ADD	34	12D	CUB	1			1	1	1	1	1						
ADD	36	13D	BOL	1	1		1		1	1	1						
MOD	41	AFI-MET	GUI		1	1		2	1	1	1	2	1	1	1		
MOD	41	AFI-MET	ISR	1				1				1					suite - cont.

	N° de la page 1) Page No. 1) N° de la página 1)	Zone aéronautique Aeronautical Area Zona aeronáutica	Symbole designant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations Remarks Observaciones
				3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
ADD	41	AFI-MET	NIG														A063
ADD	41	AT-MET	CHL		1	1			1	1		1		1			B021
MOD	42	EU-MET	ISR	1				1				1					
MOD	42	ME-MET	ISR	1				1				1					
ADD	43	SEA-MET	BGD		1				1	1							
ADD	43	SEA-MET	INS					3		3			3				
ADD	43	SEA-MET	KRE						1	1			1				B012
ADD	44	CAR-MET	CUB	1			1	1	1	1	1						
ADD	63		CHL			1 A382			1 A382	1 A383		1 A382	1 A384	1 A384			
MOD	64		CUB	1		1				1		1		1	1		
ADD	64		I			2			1	1	2	1	2	1			A301
ADD	64		INS							2	2	2	2	2			A354
MOD	64		ISR	2 A339	1 A339			2 A339	1 A339	2 A340		2 A340	2 A340	2 A340	1 A340		
ADD	65		KEN	1					1	1			1		1		
ADD	65		KRE		1	1		1		1		1	1				
ADD	65		QAT		1					1		1	1	1			A311
ADD	67		ZMB						1	1	1	1	1				
SUP	52	A059	CUB	Supprimer.				Delete.				Suprimir.					
ADD	53	A062	CHN	Dans la nouvelle sous-zone 6G proposée pour la subdivision de ZLARN (voir A020), la Chine utilise depuis longtemps 105 fréquences.				In proposed new Sub-RDARA 6G (see A020), 105 frequencies have been used for a long time by China.				En la nueva subzona 6G propuesta para la subzona ZRRN (véase A020), China viene utilizando 105 frecuencias desde hace mucho tiempo.					
ADD	53	A063	NIG	Le Nigeria appuie les recommandations contenues dans le Document N° 21 de la Conférence, en ce qui concerne les demandes de fréquences dans les ZLAMP et les zones VOLMET.				For MWARA and VOLMET requirements, Nigeria supports recommendations contained in Conference Document No. 21.				Nigeria apoya las recomendaciones contenidas en el Documento N.° 21 de la Conferencia para las solicitudes de frecuencias en las zonas ZRMP y VOLMET.					
SUP	53	B002	INS	Supprimer.				Delete.				Suprimir.					
SUP	53	B003	CUB	Supprimer.				Delete.				Suprimir.					
ADD	54	B012	-	Ajouter KRE.				Add KRE.				Añadir KRE.					
ADD	55	B021	CHL	Le Chili n'est pas dans la zone d'allotissement AT-MET.				Chile is not in AT-MET allotment area.				Chile no se encuentra en la zona de adjudicación AT-MET.					
ADD	55	B022	BGD	Le Bangladesh n'est pas dans la zone d'allotissement ZLAMP-ME.				Bangladesh is not in MWARA-ME allotment area.				Bangladesh no se encuentra en la zona de adjudicación ZRMP ME.					
ADD	55	B023	QAT	Le Qatar n'est pas dans la sous-zone d'allotissement ZLARN 5C.				Qatar is not in Sub-RDARA 5C allotment area.				Qatar no se encuentra en la subzona de adjudicación ZRRN 5C.					
ADD	55	B024	KRE	Nouvelle zone, nomenclature à définir.				New area, nomenclature to be defined.				Nueva zona, nomenclatura por definir.					
ADD	63-67	-	-	Ajouter au renvoi : page 69.				In the foot-note add: page 69.				En la Nota de pie de página, añadir: página 69.					
ADD	69	A301	-	Ajouter I.				Add I.				Añadir I.					
ADD	69	A311	-	Ajouter QAT.				Add QAT.				Añadir QAT.					
ADD	70	A354	-	Ajouter INS.				Add INS.				Añadir INS.					
ADD	71	A382	CHL	SAM1	SAM2			SAM1	SAM2			SAM1	SAM2				
ADD	71	A383	CHL	SAM1	SAM2	CAR	SP	SA	EU			SAM1	SAM2	CAR	SP	SA	EU
ADD	71	A384	CHL	CAR	SP	SA	EU					CAR	SP	SA	EU		

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à".

* Indicates a requirement also common to area shown in column headed "Common channel to".

* Indica una solicitud también común a la zona indicada en la columna "Canal común a".

1) Numéro de la page dans la lettre-circulaire de l'I.F.R.B. N° 400 et du Document N° 48 de la Conférence.

1) Number of the page in I.F.R.B. Circular-letter No. 400 and Conference Document No. 48.

1) Número de página de la carta circular de la I.F.R.B. N.º 400 y del Documento N.º 48 de la Conferencia.

Note: Voir Documents de la Conférence N° 56, N° 59 et N° 65 pour tout renseignement complémentaire ainsi que tout autre document ultérieur qui contiendrait des renseignements concernant les besoins de fréquences.

Note: See Conference Documents No. 56, No. 59 and No. 65 for sources of additional information and any subsequent document containing information concerning frequency requirements.

Nota: Véanse los Documentos N.º 56, N.º 59 y N.º 65 de la Conferencia para informaciones adicionales y demás documentos subsiguientes que contengan información relativa a solicitudes de frecuencias.

CONFERENCE AERONAUTIQUE (R)

(Genève, 1978)

Document No 48-F/E/S ✓
8 décembre 1977

Original : français
anglais
espagnol

SEANCE PLENIERE

Note du Secrétaire général

RASSEMBLEMENT ET ANALYSE DES INFORMATIONS RECUES

AU SUJET DES BESOINS DE FREQUENCES

J'ai l'honneur de transmettre à la Conférence, ci-annexée, la lettre-circulaire de l'IFRB N° 400 portant sur le sujet ci-dessus.

Les symboles de pays ou de zone géographique utilisés dans l'Appendice A à cette lettre-circulaire sont tirés du Tableau N° 1 de la Préface à la Liste internationale des fréquences. Les indications figurant entre parenthèses portent sur l'origine de l'information fournie aux fins de planification.

PLENARY MEETING

Note by the Secretary-General

COLLATION AND ANALYSIS OF INFORMATION RECEIVED

CONCERNING FREQUENCY REQUIREMENTS

I have the honour to transmit to the Conference herewith IFRB Circular-letter No. 400 on the above subject.

The symbols of countries or geographical areas used in Appendix A to the Circular-letter are taken from Table No. 1 of the Preface to the International Frequency List. The indications given in brackets refer to the origin of the information supplied for planning purposes.

SESIÓN PLENARIA

Nota del Secretario General

COTEJO Y ANÁLISIS DE LA INFORMACIÓN RECIBIDA SOBRE

LAS NECESIDADES DE FRECUENCIAS

Tengo el honor de transmitir adjunta a la Conferencia la carta circular N.º 400 de la IFRB sobre el asunto de referencia.

Los símbolos de país o de zona geográfica que se utilizan en el Apéndice A a esta carta circular proceden del Cuadro N.º 1 del prefacio a la Lista Internacional de Frecuencias. Las indicaciones entre paréntesis se refieren al origen de la información facilitada para fines de planificación.

M. MILI

Secrétaire général

Annexe : 1

Pour des raisons d'économie, ce document n'a été tiré qu'en nombre restreint. Les participants sont donc priés de bien vouloir apporter à la conférence leurs documents avec eux, car il n'y aura que fort peu d'exemplaires supplémentaires disponibles.





INTERNATIONAL
FREQUENCY REGISTRATION BOARD
I.F.R.B.

① National (022) 34 60 21
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1211 GENÈVE 20. LE
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24 novembre 1977

Lettre-circulaire de l'I.F.R.B. N° 400

Objet : Préparation technique de la Conférence administrative mondiale des radiocommunications chargée de traiter de questions relatives au service mobile aéronautique (R), Genève, 1978.
Rassemblement et analyse des informations reçues au sujet des besoins de fréquences.

Références : Appendice 27 au Règlement des radiocommunications
Lettre-circulaire de l'I.F.R.B. N° 354, en date du 14 juin 1976
Lettre-circulaire de l'I.F.R.B. N° 386, en date du 28 juillet 1977
Résolution N° 802 du Conseil d'administration

I.F.R.B. Circular-letter No. 400

24 November 1977

Subject: Technical planning for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978.
Collation and analysis of information received concerning frequency requirements.

References: Appendix 27 to Radio Regulations
I.F.R.B. Circular-letter No. 354 of 14 June 1976
I.F.R.B. Circular-letter No. 386 of 28 July 1977
Administrative Council Resolution No. 802

Carta circular de la I.F.R.B. N.º 400

24 de noviembre de 1977

Asunto: Planificación técnica de la Conferencia Administrativa Mundial de Radiocomunicaciones para el servicio móvil aeronáutico (R), Ginebra, 1978.
Cotejo y análisis de la información recibida sobre las necesidades en frecuencias.

Referencias: Apéndice 27 al Reglamento de Radiocomunicaciones
Carta circular de la I.F.R.B. N.º 354, de 14 de junio de 1976
Carta circular de la I.F.R.B. N.º 386, de 28 de julio de 1977
Resolución N.º 802 del Consejo de Administración

Prrière d'adresser toute correspondance officielle à
Please address all official correspondence to
Toda correspondencia oficial debe dirigirse a

Monsieur le Président de l'I.F.R.B.
The Chairman of the I.F.R.B.
Señor Presidente de la I.F.R.B.
Union internationale des télécommunications
1211 GENÈVE 20
Suisse - Switzerland - Suiza

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Lettre-circulaire de l'I.F.R.B. N° 400

24 novembre 1977

Objet : Préparation technique de la Conférence administrative mondiale des radiocommunications chargée de traiter de questions relatives au service mobile aéronautique (R), Genève, 1978.
Rassemblement et analyse des informations reçues au sujet des besoins de fréquences.

Références : Appendice 27 au Règlement des radiocommunications

Lettre-circulaire de l'I.F.R.B. N° 354, en date du 14 juin 1976

Lettre-circulaire de l'I.F.R.B. N° 386, en date du 28 juillet 1977

Résolution N° 802 du Conseil d'administration

Monsieur le Directeur général,

Au nom du Comité international d'enregistrement des fréquences, j'ai l'honneur d'attirer votre attention sur les textes susmentionnés et de vous communiquer les résultats établis d'après les réponses aux lettres-circulaires de l'I.F.R.B. Nos 354 et 386, conformément aux dispositions de la Résolution N° 802 du Conseil d'administration. Quelques administrations n'ont pas répondu à la lettre-circulaire de l'I.F.R.B. N° 386; toutefois, le Comité a eu des consultations avec ces administrations et on trouvera dans les appendices ci-joints les renseignements fournis par celles-ci en réponse à la lettre-circulaire de l'I.F.R.B. N° 354.

2. L'I.F.R.B. a reçu des réponses de 103 administrations au total; 11 de celles-ci n'ont formulé aucun besoin de fréquences.

2.1 La récapitulation des besoins de fréquences formulés par les administrations pour les ZIAMP, les ZIARN et les zones VOLMET figure dans l'Appendice A. Cet appendice est présenté de la même façon que l'Article 1, Section II, Partie II de l'Appendice 27, c'est-à-dire par ZIAMP, ZIARN, subdivisions de ZIARN et zones VOLMET. Chacune des zones est indiquée séparément et les besoins de fréquences relatifs à chacune d'elles sont inscrits dans l'ordre alphabétique des symboles désignant les pays. Les commentaires des administrations accompagnant les demandes de fréquences sont inscrits dans la colonne réservée aux observations, au moyen de symboles de la Série A, suivis de trois chiffres. Cette colonne contient également quelques observations de l'I.F.R.B. (symboles de la Série B, suivis de trois chiffres). Tous les symboles sont expliqués dans l'annexe à l'Appendice A. Les besoins de fréquences dans chaque bande, pour la zone aéronautique intéressée, sont représentés par le chiffre le plus élevé figurant dans la colonne correspondante. Ils sont inscrits sous chaque zone aéronautique.

2.2 La récapitulation des besoins de fréquences globaux, par zone aéronautique, et les observations pertinentes concernant la zone aéronautique intéressée, figurent dans l'Appendice B. Les observations de l'Appendice B ont le même sens que celles formulées dans l'annexe à l'Appendice A.

2.3 La récapitulation des besoins de fréquences pour les communications du contrôle d'exploitation à grande distance figure dans l'Appendice C. Les observations que l'on trouve dans l'Appendice C sont expliquées dans l'annexe à ce même appendice.

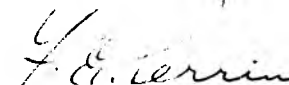
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3. Le Comité a effectué une analyse des besoins par comparaison avec les allotissements indiqués dans l'Appendice 27. Cette analyse figure à l'Appendice D. De prime abord, le Comité est d'avis que les besoins de fréquences dépassent la capacité du spectre qui serait disponible, sur la base de l'utilisation de la bande latérale unique. Le Comité étudie actuellement les méthodes qui pourraient permettre de réviser le Plan d'allotissement de fréquences dès que la Conférence aura pris des décisions concernant les limites des diverses zones aéronautiques et les besoins de fréquences pour chaque zone. Le Comité communiquera aux administrations les résultats de ses études dès qu'elles seront achevées.

4. Dans l'intervalle, le Comité prie les administrations de bien vouloir examiner d'une part les besoins de fréquences tels qu'ils sont présentés dans les Appendices A, B et C, d'autre part l'analyse du Comité qui figure à l'Appendice D. Le Comité saurait gré aux administrations de lui communiquer dans les plus brefs délais, de préférence par télex ou par télégramme, toute erreur relevée ou tout changement souhaité. Si une administration, lorsqu'elle examinera les besoins de fréquences pour une zone aéronautique déterminée, constate qu'elle pourrait modifier ses propres besoins de fréquences pour les harmoniser avec ceux présentés par d'autres pays situés dans la même zone, elle peut en informer le Comité en donnant la référence précise à la zone en question. Par exemple, si un pays a demandé une fréquence dans la bande des 3 MHz, et constate que sept autres pays, situés dans la même zone aéronautique, ont demandé une fréquence dans la bande des 3,5 MHz, ce pays souhaitera peut-être annuler sa demande d'une fréquence de l'ordre de 3 MHz et accepter une fréquence de l'ordre de 3,5 MHz. De même, si un pays a demandé deux fréquences dans la bande des 3,5 MHz alors que sept pays ont demandé chacun une seule fréquence dans cette bande, l'administration de ce pays souhaitera peut-être modifier sa demande (une seule fréquence au lieu de deux).

5. Le Comité m'a prié de vous faire parvenir deux exemplaires de la présente lettre-circulaire et de ses appendices, afin que vous puissiez en communiquer un, si nécessaire, à toutes autres autorités concernées de votre pays. Des exemplaires supplémentaires peuvent être obtenus sur demande.

Veillez agréer, Monsieur le Directeur général, l'assurance de ma haute considération.


F.G. Perrin
Président

Appendices : 4

I.F.R.B. Circular-letter No. 400

24 November 1977

Subject: Technical planning for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978. Collation and analysis of information received concerning frequency requirements

References: Appendix 27 to the Radio Regulations
I.F.R.B. Circular-letter No. 354 of 14 June 1976
I.F.R.B. Circular-letter No. 386 of 28 July 1977
Administrative Council Resolution No. 802

To the Director-General

Dear Sir,

On behalf of the International Frequency Registration Board, I wish to draw your attention to the references listed above and to communicate to you the results of the replies received by the I.F.R.B. to its Circular-letters Nos. 354 and 386 in conformity with Administrative Council Resolution No. 802. Some administrations did not reply to I.F.R.B. Circular-letter No. 386. However, the Board has consulted with the administrations concerned and has included the information they supplied in reply to I.F.R.B. Circular-letter No. 354.

2. The I.F.R.B. received replies from a total of 103 administrations, eleven of which presented no requirements.

2.1 The summary of frequency requirements received from administrations for MWARAs, RDARAs and VOLMET Areas is contained in Appendix A. This Appendix is arranged in the same order as in Part II, Section II, Article 1 of Appendix 27, that is by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas. Each Area is shown separately and the frequency requirements relating to each Area are shown in alphabetical order of the country symbol. Comments made by administrations in presenting their requirements are shown in the Remarks column by symbols in Series A, followed by three digits. The Remarks column also contains a few remarks by the I.F.R.B. which are in symbols in Series B, followed by three digits. All symbols are explained in the Annex to Appendix A. Frequency requirements for the Aeronautical Area concerned for each band are the highest figure appearing in the corresponding column. These are shown at the bottom of each Aeronautical Area.

2.2 The summary of overall frequency requirements by Aeronautical Area, along with relevant remarks applying to the Aeronautical Area concerned, is contained in Appendix B. The remarks appearing in Appendix B have the same significance as that given in the Annex to Appendix A.

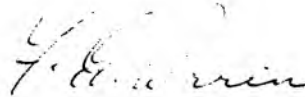
2.3 The summary of frequency requirements for long-distance operational control communications is contained in Appendix C. The remarks appearing in Appendix C are explained in the Annex to Appendix C.

3. The Board has made an analysis of the requirements vis-à-vis the allotments in Appendix 27. This analysis is given in Appendix D. Prima facie the Board is of the view that the requirements are in excess of the capacity of the spectrum that would be available on the basis of the use of single sideband. The Board is at present studying possible methods of revising the Frequency Allotment Plan as soon as decisions concerning the boundaries of the various Aeronautical Areas and the frequency requirements for each area are taken by the Conference. The Board will inform administrations of the results of its studies as soon as they are completed.

4. In the meantime, the Board would request administrations to examine the requirements as presented in Appendices A, B and C and the Board's analysis in Appendix D. If any errors are detected or changes desired, the Board would be grateful if they could be communicated as soon as possible, preferably by telex or telegram. If any administration in its examination of the requirements for a particular Aeronautical Area finds that it could modify its own requirements to align them with those indicated by other countries in the same Area, it may so indicate to the Board with specific reference to the Area concerned. For example, if a country has indicated a requirement for one frequency in the 3 MHz band and it finds that seven other countries in the same Aeronautical Area have indicated a requirement for one frequency in the 3.5 MHz band, it may wish to cancel its requirement for a 3 MHz frequency and accept a 3.5 MHz frequency. Similarly, if one country has presented a requirement for two frequencies in the 3.5 MHz band and seven other countries have presented a requirement for only one frequency in that band, the administration concerned may wish to modify its requirement to one instead of two frequencies.

5. The Board has asked me to send two copies of the present Circular-letter with its Appendices so that, if necessary, one copy can be furnished to any other authority in your country which may be involved. Additional copies may be obtained upon request.

Yours faithfully,


F.G. Perrin
Chairman

Appendices: 4

Carta circular de la I.F.R.B. N.º 400

24 de noviembre de 1977

Asunto: Planificación técnica de la Conferencia Administrativa Mundial de Radiocomunicaciones para el servicio móvil aeronáutico (R), Ginebra, 1978. Cotejo y análisis de la información recibida sobre las necesidades en frecuencias.

Referencias: Apéndice 27 al Reglamento de Radiocomunicaciones
Carta circular de la I.F.R.B. N.º 354, de 14 de junio de 1976
Carta circular de la I.F.R.B. N.º 386, de 28 de julio de 1977
Resolución N.º 802 del Consejo de Administración

Señor Director General:

En nombre de la Junta Internacional de Registro de Frecuencias, y a propósito de las referencias citadas, tengo el honor de comunicarle los resultados de las respuestas recibidas por la I.F.R.B. a sus cartas circulares N.ºs 354 y 386, de conformidad con la Resolución N.º 802 del Consejo de Administración. Aunque algunas Administraciones no hayan contestado a la carta circular N.º 386, la Junta las ha consultado y ha incluido la información que han suministrado en respuesta a la carta circular N.º 354.

2. La I.F.R.B. ha recibido, en total, respuestas procedentes de 103 Administraciones, 11 de las cuales no contenían ninguna solicitud.

2.1 En el Apéndice A figura el compendio de las solicitudes de frecuencias recibidas de las Administraciones para las zonas ZRMP, ZRRN y VOLMET. La disposición de este Apéndice es idéntica a la de la Parte II, Sección II, Artículo 1 del Apéndice 27, es decir, por ZRMP, ZRRN, subzonas ZRRN y zonas VOLMET. Cada zona figura por separado, y las necesidades en frecuencias relativas a cada una de las zonas están consignadas por orden alfabético de los símbolos de país. Los comentarios que las Administraciones han formulado al someter sus necesidades figuran en la columna de Observaciones, ordenados mediante símbolos de la serie A, seguidos de tres cifras. Figuran asimismo en esta columna algunas Observaciones formuladas por la I.F.R.B., identificadas por medio de símbolos de la serie B, seguidos de tres cifras. Las explicaciones relativas a todos los símbolos figuran en el Anexo al Apéndice A. Las necesidades en frecuencias dentro de cada banda para la zona aeronáutica interesada corresponden a la mayor de las cifras que figuran en la columna correspondiente. Estas cifras se han indicado en la parte inferior de cada una de las zonas aeronáuticas.

2.2 En el Apéndice B figura el compendio de todas las necesidades en frecuencias, por zona aeronáutica, junto con las observaciones pertinentes aplicables a dicha zona. Las Observaciones del Apéndice B tienen el mismo significado que las del Anexo al Apéndice A.

2.3 En el Apéndice C figura el compendio de las necesidades en frecuencias para las comunicaciones de control de operaciones a larga distancia. Las explicaciones relativas a las Observaciones del Apéndice C figuran en el Anexo al mismo.

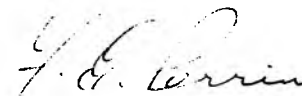
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3. La Junta ha procedido a analizar las necesidades con relación a las adjudicaciones del Apéndice 27. El resultado de este análisis figura en el Apéndice D. A primera vista, la Junta considera que las necesidades rebasan la capacidad del espectro que estaría disponible si se utilizara la banda lateral única. La Junta estudia en la actualidad diversos métodos para revisar el Plan de adjudicación de frecuencias, una vez que la Conferencia haya tomado decisiones relativas a los límites de las diversas zonas aeronáuticas y sobre las necesidades en frecuencias para cada zona. Una vez finalizados los estudios, la Junta comunicará sus resultados a las administraciones.

4. Entre tanto, la Junta agradecería que su Administración examinase las solicitudes presentados en los Apéndices A, B y C y el análisis de la Junta contenido en el Apéndice D. La Junta agradecería que se le comunicaran cuanto antes, de preferencia por télex o telegrama, los eventuales errores o modificaciones. Si una administración, al examinar sus necesidades para una determinada zona aeronáutica, comprueba que podría modificar sus propias necesidades para armonizarlas con las comunicadas por otros países de la misma zona, podrá ponerlo en conocimiento de la Junta refiriéndose específicamente a la zona de que se trate. Por ejemplo, si un país ha indicado que requiere una frecuencia en la banda de 3 MHz y comprueba que otros siete países de la misma zona aeronáutica han solicitado una frecuencia en la banda de 3,5 MHz, tal vez desee anular su solicitud relativa a una frecuencia de 3 MHz y aceptar una frecuencia de 3,5 MHz. De manera similar, si un país ha presentado una solicitud relativa a dos frecuencias en la banda de 3,5 MHz y otros siete países han solicitado una sola frecuencia en dicha banda, es posible que la Administración interesada se avenga a modificar su solicitud en una sola frecuencia en vez de dos.

5. Siguiendo instrucciones de la Junta le envío dos ejemplares de la presente carta circular, con sus Apéndices, a fin de que pueda, en su caso, remitir uno a otras eventuales autoridades interesadas de su país. Podrán enviarse ejemplares adicionales a cuantos lo soliciten.

Aprovecha esta oportunidad para reiterarle el testimonio de su alta consideración,



F.G. Perrin
Presidente

Apéndices: 4

[illegible]

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45
 * Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"
 * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 - ZLAMP

APPENDIX A to IFRB Circular-letter No. 400
Section 1 - MWARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 1 - ZRMP

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)

CWP

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

CWP

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

CWP

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
GUM (USA)														A025
HKG (G)														A045 A050
HWA (USA)														A025
HWL (USA)														A025
J														A057
JON (USA)														A025
KOR	2	1	2		2	1	2	1	1	2	2			A025
MDW (USA)														A025
MRA (USA)														A025
MRL (USA)														A025
PHL	1				1	1	1			1	1			A016
RYU (J)														A025
WAK (USA)														A003 B006
PNG	1				1		1			1				
ZLAMP														A025
MWARA CWP	2	1	2		2	1	2	1	1	2	2			A026 A032 A045
ZRMP														A050 A057

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)

EU

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

EU

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

EU

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
BLR														A034
BUL	3	3	3		3	3	3	3	3	3	3			
D	1	1	1		1	2	2		1			1		
F														A026
G														A045
GIB (G)														A045
GRC	1		1			1	1		1	1	1			
HNG	1	1				1			1		1			
ISR	1		1			1	1		1					
MRC					1									
POL	1	1	1		1	2	2		1			1		
ROU	1	1	1		1	1	1	1	1	1	1	1		
TCH		1	1			1	1		1			1		
TUN	1		1			1	1		1					
UKR														A034
URS	1	1	1		1	2	2		1			1		A034
YUG	1		1			1	1							
ZLAMP														
MWARA EU	3	3	3		3	3	3	3	3	3	3			A025 A026 A032
ZRMP														A045

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 – ZLAMP

APPENDIX A to IFRB Circular-letter No. 400
Section 1 – MWARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 1 – ZRMP

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
BRM	1									1*			SEA	A045 A045 A050 A051
BRU (G)														
HKG (G)														
MLA	1				1		1			1			SEA	
SNG	1*				2*		3*			1*				
ZLAMP	1				1		1			1				A025 A026 A032 A045 A051
MWARA														
ZRMP	1*				2*		3*			1*			SEA	

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AFG			1		1		1							A034 A054
BHR		1			1	1	1			1				
BLR														
IND	1	1			1	1	1	1	1	1	1			
ISR	1		1			1	1		1					A042 A034 A034
PAK	2	2	2		2	2	2	2	2	2	2	2		
UKR														
URS		2			1	1	1	1		1	1			
ZLAMP	2	2	2		2	2	2	2	2	2	2	2		A025 A026 A032 A042 A045
MWARA														
ZRMP														

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
CAN	3*	4*			7*		7*		2*	5*	5*		NA2	A008
GRL (DNK)	1				1		1			1				
NOR	1				1		1		1	1				
ZLAMP	3*	4*			7*		7*		2*	5*	5*		NA2	A025 A026 A032 A045
MWARA														
ZRMP														

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
CAN	3*	4*			7*		7*		2*	5*	5*		NA1	A008
D	4	3			4	3	4	3		3	2			
E	1				1		1			1				
F														A026 A039 A045 A049 A004 A013
G														
IRL	8				7		8		5					
ISL	3				3		3		1	2	1			
SPM (F)														A026 A025
USA														
ZLAMP	5				3	1	3	3						A025 A026 A032 A039 A045 A049
MWARA														
ZRMP	3*	4*			7*		7*		2*	5*	5*		NA1	

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 – ZLAMP

APPENDIX A to IFRB Circular-letter No. 400
Section 1 – MWARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 1 – ZRMP

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
NA3

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
NA3

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
NA3

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
BER (G) F GDL (F) GIB (G) GUF (F) IOB (G) MRT (F) PTR (USA) USA VIR (USA)													AO45 AO26 AO26 AO45 AO26 AO45 AO26 AO25 AO25 AO25
ZLAMP MWARA ZRMP	NA3												AO25 AO26 AO32 AO45

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
NP

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
NP

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
NP

ALS (USA) J URS USA													AO25 AO56 AO25
ZLAMP MWARA ZRMP	NP	1	1	1	1	2	1	1	1	1	1	1	AO25 AO26 AO32 AO45 AO56

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
NSA1

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
NSA1

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
NSA1

AGL GHA MRC NMB STP TCD TUN ZMB ZAI		2			2		2		2	2			AO11 AO11 B019
ZLAMP MWARA ZRMP	NSA1	2			2	1	2		2	2			AO11 AO25 AO26 AO32 AO45

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 – ZLAMP

APPENDIX A to IFRB Circular-letter No. 400
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APÉNDICE A a la carta circular de la IFRB N.º 400
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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

NSA2

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

NSA2

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

NSA2

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AFI (F)														A061
BDI					1		1							
ETH	1	1	1		2	2	2	1	1	2	2			
ISR	1		1			1	1		1					
KEN	1				1		1	1		1				
MAU		1			1			1		1				A019
MOZ		1			1	1		1		1	1			
MYT (F)														A026
REU (F)														A026
TCD								1						
ZAI								1	1	1	1			B019
ZLAMP MWARA ZRMP	1	1	1		2	2	2	1	1	2	2			A025 A026 A032 A045

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

SA

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SA

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

SA

ASC (G)														A045
CNR (E)		1				1	1			1				
CPV	1					1		1			1			
E		1				1	1			1				
GIB (G)														A045
GUI			2		2	3	1	1	1	1	1			
LBR		1			2	2	1			1				A011
MRC		1				1	1			1				A011
MTN						1	1							
SEN		2			2	2	2	2		2				
AFS					1		1			1	1	1		A010 B007
URG		1				1	1	1		1	1			A007 A012 B007
ZLAMP MWARA ZRMP	1	2	2		2	3	2	2	1	2	1	1		A010 A012 A025 A026 A032 A045

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

SAM1

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SAM1

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

SAM1

ARG	1		1			1	1		2		1			
CLM	1		1			1	1							A002
EQA			1			1	1		1					
PRG	1		1			1	1		1		1			
URG	1		1			1	1		1		1			
ZLAMP MWARA ZRMP	1		1			1	1		2		1			A002 A025 A026 A032 A045

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE (Ap.27)

SAM2

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SAM2

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

SAM2

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											.Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
ARG	1				1		1		1		1		A002 A026 A045 A026 A025
B	1				1		2		2	1	1		
CLM					1		1		1	1			
GUF (F)													
IOB (G)													
MRT (F)													
PNZ (USA)													
PRG	1				1		1		1		1		
URG	1				1		1		1	1	1		A002 A025 A026 A032 A045
ZLAMP													
MWARA													
ZRMP													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)

SEA

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SEA

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

SEA

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											.Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
AUS													A032
BGD	1				1		1		1				
BRM					1		1						
BRU (G)									1*			FE	A045 A054
IND	1				1		1		1	1			
INS	1				1		2		1	1			
MLA	1				1		2		1				A045
SLM (G)													
SNG	1*				2*		3*		1*			FE	
HKG (G)													A051 A050 A051 B008 A043 B008 A027 B008
PAK	1	1	1		1	1	2	2	2	2	2	3	
PHL	1				1		2		1	1			
ZLAMP	1	1	1		1	1	2	2	2	2	2	3	A025 A026 A032 A045 A052
MWARA													
ZRMP	1*				2*		3*		1*			FE	

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 – ZLAMP

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Section 1 – MWARA

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Sección 1 – ZRMP

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

SP

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SP

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

SP

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AUS														A032
FJI	1				1		1			1	1			A045
GIL (G)														A025
HWA (USA)														A025
JAR (USA)														A026
NCL (F)														A045
NHB (G)														
NRU					1		1			2	1			
NZL	1				2		2			2	1			
OCE (F)														A026
PHX (USA)														A025
PLM (USA)														A025
PTC (G)														A045
SLM (G)														A045
SMA (USA)														A025
TON	1				1		1			1				
TUV (G)														A045
WAL (F)														A026
ZLAMP MWARA ZRMP	1				2		2			2	1			A025 A026 A032 A045

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)

CEA²⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)

CEA²⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)

CEA²⁾

CHN														A052
PAK	1	1	1		1	2	2	2	2	2	1	1		A037
URS	2	1			2	1	2	1	1	2	1			A038
ZLAMP MWARA ZRMP	2	1	1		2	2	2	2	2	2	1	1		A025 A026 A032 A045 A052

- 2) B009 Nouvelle zone recommandée dans le Document N° 21 de la Conférence. Nomenclature a définir (CEA).
2) B009 New area recommended in Conference Document No. 21. Nomenclature to be defined (CEA).
2) B009 Nueva zona recomendada en el Documento N.º 21 de la Conferencia. Nomenclatura por definir (CEA).

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

IO³⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

IO³⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

IO³⁾

AUS														A032
IND														A048
PAK	1	1	1		2	2	2	3	2	1	1	1		
ZLARN MWARA ZRMP	1	1	1		2	2	2	3	2	1	1	1		A025 A026 A032 A045 A052

- 3) B010 Nouvelle zone recommandée dans le Document N° 21 de la Conférence. (IO)
3) B010 New area recommended in Conference Document No. 21. (IO)
3) B010 Nueva zona recomendada en el Documento N.º 21 de la Conferencia. (IO)

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 1 – ZLAMP

APPENDIX A to IFRB Circular-letter No. 400
Section 1 – MWARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 1 – ZRMP

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)
NCA²⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
NCA²⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
NCA²⁾

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg 2)	5.6	6.6	9	10	11.3	13.3	18	22	
BLR													A034
J													A055
PAK	1	1	1		1	1	2	2	2	2	2	2	A034
UKR													A034
URS	1	2			1	3	2	1	1	1	1	1	A034
ZLAMP MWARA ZRMP	1	2	1		1	3	2	2	2	2	2	2	A025 A026 A032 A045 A052 A055

2) BO10 Nouvelle zone recommandée dans le Document N° 21 de la Conférence.
2) BO10 New area recommended in Conference Document No. 21.
2) BO10 Nueva zona recomendada en el Documento N.º 21 de la Conferencia.

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)
XXX³⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
XXX³⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)
XXX³⁾

URG	1				1		1		1	1	1		A012
ZLAMP MWARA ZRMP	1				1		1		1	1	1		A012

3) Voir A012 URG
3) See A012 URG
3) Véase A012 URG

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

1

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

1

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

1

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
BUL	2	2	2			1	1		1	1				
D									1	1				
DDR	5	10	1		8	6	2	2	3	2				
F									1	1				
GRC									2	2	2			
POL									1	1				
ROU									1	1	1			
TCH									1	1				
YUG			1			1								
ZLARN RDARA 1 ZRRN	5	10	2		8	6	2	2	3	2	2			

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

1A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

1A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

1A

ZLARN RDARA 1A ZRRN	NEANT	NIL	NADA
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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

1B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

1B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

1B

D		1		1				1						
G	1	5	1	2	1									A046 A047
HOL		1	1	1	1									A004
IRL	2			2										
ZLARN RDARA 1B ZRRN	2	5	1	2	1			1						A046 A047

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

ZONA (AP.27)

ZONA (AP.27)

ZONA (AP.27)

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 2 Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 2 Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 2

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
URS								3 1*	6	2	1		3	A034
ZLARN RDARA 2 ZRRN								3 1*	6	2	1		3	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 2A Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 2A Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 2A

URS	13 2*	9 2*	7 2* 1*		10 2*	10 2*	4 2* 1*	1 2*					2C 2B 2C 3A 3B 3C	A035
ZLARN RDARA 2A ZRRN	13 2*	9 2*	7 2* 1*		10 2*	10 2* 1*	4 2* 1*	1 2*					2C 2B 2C 3A 3B 3C	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 2B Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 2B Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 2B

URS	9 2*	6 2*	4 2* 1*		11 2*	9 2*	2* 1*						2C 2A 2C 3A 3B 3C	
ZLARN RDARA 2B ZRRN	9 2*	6 2*	4 2* 1*		11 2*	9 2* 1*	2* 1*						2C 2A 2C 3A 3B 3C	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 2C Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 2C Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 2C

URS	13 2* 2*	5 2* 2*	3 2* 2* 1*		7 2* 2*	7 2* 2*	2* 1* 1*	2*					2A 2B 2A 2B 3A 3B 3C	A034
ZLARN RDARA 2C ZRRN	13 2* 2*	5 2* 2*	3 2* 2* 1*		7 2* 2*	7 2* 2*	2* 1* 1*	2*					2A 2B 2A 2B 3A 3B 3C	

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45
* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"
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APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 3 Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 3 Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 3

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
URS								2 1*	4	1	2	1	2	
ZLARN RDARA 3 ZRRN								2 1*	4	1	2	1	2	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 3A Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 3A Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 3A

URS	9 2*	6 2*	1 2* 1*		7 2*	9 2* 1*	4 2* 1*						3C 2A 2B 2C 3B 3C	
ZLARN RDARA 3A ZRRN	9 2*	6 2*	1 2* 1*		7 2*	9 2* 1*	4 2* 1*						3C 2A 2B 2C 3B 3C	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 3B Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 3B Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 3B

URS	14 2*	5 2*	3 2* 1*		12 2*	7 2* 1*	10 2* 1*	2*					3C 2A 2B 2C 3A 3C	
ZLARN RDARA 3B ZRRN	14 2*	5 2*	3 2* 1*		12 2*	7 2* 1*	10 2* 1*	2*					3C 2A 2B 2C 3A 3C	

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 3C Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 3C Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 3C

URS	11 2* 2*	4 2* 2*	3 2* 2* 1*		8 2* 2*	6 2* 2* 1*	2* 2* 2* 1*	1* 2* 2*					3B 3A 2A 2B 2C 3A 3B	
ZLARN RDARA 3C ZRRN	11 2* 2*	4 2* 2*	3 2* 2* 1*		8 2* 2*	6 2* 2* 1*	2* 2* 2* 1*	1* 2* 2*					3B 3A 2A 2B 2C 3A 3B	

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45
* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"
* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

4

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

4

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

4

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
STP		1	1			1	1							
ZLARN RDARA 4 ZRRN		1	1			1	1							

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

4A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

4A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

4A

CNR (E)		1*											1E	
MTN			2*				2*						4B	
TUN						1								
ZLARN RDARA 4A ZRRN		1*	2*			1	2*						1E 4B	

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

4B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

4B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

4B

CME						1	1							
GHA						1								
GUI	5	10	4		10	15	10	5	3	5	2			
HVO						1								
LBR	1		1		1	1	1							
MTN			2*				2*						4A	
SEN			1			1								
STP						1	1							
TCD							1							
TGO					1	1								
ZLARN RDARA 4B ZRRN	5	10	4 2*		10	15	10 2*	5	3	5	2		4A	

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à"

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APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A à la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 5 Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 5 Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 5

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AFI (F)									1		1			A061
ARS		1				1								
BHR		1			1		1			1				
ETH								2	2	1	1			
IND														A015
PAK										1	1	1		B004
ZLARN RDARA 5 ZRRN		1			1	1	1	2	2	1	1	1		A015 B004

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 5A Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 5A Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 5A

BHR			1			1			1					
ZLARN RDARA 5A ZRRN			1			1			1					

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 5B Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 5B Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 5B

AFG			1				1							
IND														A015
PAK	2	2	2		2	2	2	1	1	1				A041 B004 A044 B004
ZLARN RDARA 5B ZRRN	2	2	2		2	2	2	1	1	1				A015 A041 A044 B004

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 5C Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 5C Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 5C

IND														A015
ZLARN RDARA 5C ZRRN														A015

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 5D Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 5D Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 5D

AFI (F)			1		1	2	1							A061
ETH	2	2	3		6	3	3							
ZLARN RDARA 5D ZRRN	2	2	3		6	3	3							

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
IND	3	5	2		3	4	4	4	1	1				A014 A015
INS		4	4		5	6	6	1	1	4	1			B002
MLA										1				
PAK										1	1	1		B004
PHL									1	1				
ZLARN RDARA 6 ZRRN	3	5	2		5	6	6	4	1	4	1	1		A015 B004

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6A

BHM	1													
IND	2	3	2		1	3	2	3	1	1				A015
NPL	2				1									
PAK	2	2	2		2	2	2	1	1	1				A041 B004 A044 B004
	2	2	2		2	2	2	1	1	1				
ZLARN RDARA 6A ZRRN	2	3	2		2	3	2	3	1	1				A015 A041 A044 B004

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6B

J	4*	2*			4*	3*	2*			2*	1*		6F	
KOR	1	1	1		3		2		1		1			
RYU (J)														A016
ZLARN RDARA 6B ZRRN	1 4*	1 2*	1		3 4*	3*	2 2*		1		1 1*		6F	

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6C

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6C

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6C

CAR (USA)		1			1		1		1					A021
GUM (USA)		1			1		1		1					A021
MRA (USA)		1			1		1		1					A021
MRL (USA)		1			1		1		1					A021
WAK (USA)		1			1		1		1					A021
ZLARN RDARA 6C ZRRB		1			1		1		1					

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

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APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6D

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6D

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6D

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
BRM					2	2							
MLA		1			1		1		1				
PHL		3			3	4							
THA		1	1		1	1	1		1				
ZLARN RDARA 6D ZRRN		3	1		3	4	1		1				

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6E

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6E

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6E

IND	1	2			2	1	2	1					A015
ZLARN RDARA 6E ZRRN	1	2			2	1	2	1					A015

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

6F

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

6F

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

6F

BRM	1												
J	4*	2*			4*	3*	2*			2*	1*		6B
KOR		2				2		1		1			
PHL	2				1	1							
RYU (J)													A016
THA	1	1				2		2		1			
ZLARN RDARA 6F ZRRN	2 4*	2 2*			1 4*	2 3*	2*	2		1 2*	1*		6B

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)

6G 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)

6G 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)

6G 2)

CHN	22	15	5		32	24	16	10	9	10	4	3	A020
ZLARN RDARA 6G ²⁾ ZRRN	22	15	5		32	24	16	10	9	10	4	3	A020
2) B014 Nouvelle zone proposée par CHN 2) B014 New area proposed by CHN 2) B014 Nueva zona propuesta por CHN													

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

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APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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APÉNDICE A a la carta circular de la IFRB N.º 400
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Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 7 Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 7 Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 7

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
AGL					1			1	1		1		
KEN					1								
MAU			1										
MOZ					1								
REU (F)					1			1	1				
ZAI			1		1		1	1			1		BO19
ZLARN			1										
RDARA 7					1		1	1			1		
ZRRN													
ZLARN													
RDARA 7A													
ZRRN													
NEANT NIL NADA													

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 7B Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 7B Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 7B

AGL	2	1			2		1						
BDI							1						
ZAI	1	1			2		1	1					BO19
ZLARN													
RDARA 7B	2	1			2		1	1					
ZRRN													

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 7C Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 7C Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 7C

KEN							1						
ZLARN													
RDARA 7C							1						
ZRRN													

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 7D Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 7D Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 7D

MAU	1						1						
MOZ							1						
REU (F)	1		1				1			1			
ZLARN													
RDARA 7D	1		1				1			1			
ZRRN													

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (Ap.27) 7E Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 7E Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (Ap.27) 7E

AFS	1	1			1	1	1						
MWI		1			1	1							
NMB	1				1	1	1						
ZMB		1			2		1	1		1			
ZLARN													
RDARA 7E	1	1			2	1	1	1		1			
ZRRN													

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

Résumé des demandes de fréquences reçues des administrations par zone aéronautique		ZONE (AP.27) 8A		Summary of frequency requirements received from Administrations by aeronautical area		AREA (Ap.27) 8A		Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica		ZONA (AP.27) 8A	
ROD (MAU)		1		1		1				A018	
ZLARN RDARA 8A ZRRN		1		1		1				A018	

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45
 * Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"
 * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

9

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

9

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

9

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ²⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
GIL (G)									1					
NCL (F)									2					
NHB (G)/(F)									1/2					
OCE (F)									2					
SLM (G)									1					
TUV (G)									1					
WAL (F)									2					
ZLARN RDARA 9 ZRRN									2					

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

9A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

9A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

9A

ZLARN RDARA 9A ZRRN	NEANT	NIL	NADA
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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

9B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

9B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

9B

FJI		1				2	1		1					
GIL (G)		1				1	1		1					
HWL (USA)		1			1									A022
NCL (F)	3	3			3	5	5		1		1			
NHB (G)/(F)	-/3	1/3			-/3	1/5	1/5		1/1		-/1			
NRU	1	1			1	1	2		1					
PHX (USA)		1			1									A022
PNG	5		5				5							A004 A005 A006
SLM (G)		1				1	1		1					
SMA (USA)		1			1									A022
SMO (NZL)		1				1	1							
TON		1			1	1	1		1*				9D	
TUV (G)		1				1	1		1					
WAL (F)	3	3			3	5	5		1		1			
ZLARN RDARA 9B ZRRN	5	3	5		3	5	5		1 1*		1		9D	A004 A005 A006

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

ZONA (AP.27)

ZONA (AP.27)

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à". * Indicates a requirement also common to area shown in column headed "Common channel to"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 10 Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 10 Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 10

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
CAN SPM (F)			2		1	1	1	2	4	1	1	1		A008
ZLARN RDARA 10 ZRRN			2		1	1	1	2	5	1	1	1		A008

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 10A Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 10A Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 10A

ALS (USA)	6	5	3		6	6	4	2	3					A008
CAN	4	3	2		3	2	3							A008
ZLARN RDARA 10A ZRRN	6	5	3		6	6	4	2	3					A008

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 10B Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 10B Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 10B

CAN	2	3	5		5	3	3							A008
ZLARN RDARA 10B ZRRN	2	3	5		5	3	3							A008

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 10C Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 10C Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 10C

CAN	2	1	3		5	3	2							A008
ZLARN RDARA 10C ZRRN	2	1	3		5	3	2							A008

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 10D Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 10D Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 10D

CAN	2	3	5		6	3	2							A008
ZLARN RDARA 10D ZRRN	2	3	5		6	3	2							A008

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45
* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"
* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

Résumé des demandes de fréquences reçues des administrations par zone aéronautique		ZONE (Nouvelle) 10F 2)		Summary of frequency requirements received from Administrations by aeronautical area		AREA (New) 10F 2)		Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica		ZONA (Nueva) 10F 2)	
GRL (DNK)	1	1	1	1	1	1	1				A060
ZLARN RDARA 10F 2) ZRRN	1	1	1	1	1	1	1				A060
2) B015 Nouvelle zone proposée par DNK 2) B015 New area proposed by DNK 2) B015 Nueva zona propuesta por DNK											

1) Para la explicación de las Observaciones véase página 45

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

• Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" • Indicates a requirement also common to area shown in column headed "Common channel to"

• Indica una solicitud también común a la zona indicada en la columna "Canal común a"

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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
12

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
12

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
B									1					
CUB	4	3	2	2	5	6	4	5	3	2	1			B003
EQA	3	3	2	2	2	3	3	2	1	1	1			B001
GDL (F)									1					
GUF (F)									1					
MRT (F)									1					
ZLARN RDARA 12 ZRRN	4	3	2	2	5	6	4	5	3	2	1			B001 B003

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
12A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
12A

HWA (USA)	1	1	1		1									A008 A023
JON (USA)	1	1	1		1									A008 A023
MDW (USA)	1	1	1		1									A008 A023
PLM (USA)	1	1	1		1									A008 A023
ZLARN RDARA 12A ZRRN	1	1	1		1									A008

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
12B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
12B

ZLARN RDARA 12B ZRRN	NEANT													NIL NADA
----------------------------	-------	--	--	--	--	--	--	--	--	--	--	--	--	-------------

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
12C

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12C

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
12C

MEX	2	3	4	1	4	5	1	4	1					
ZLARN RDARA 12C ZRRN	2	3	4	1	4	5	1	4	1					

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)
12D

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12D

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)
12D

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
ATN (HOL)	1			1		1	1						
BRB		5		1	1	4	1						
GDL (F)	1				1	1	1						
MRT (F)	1				1	1	1						
PTR (USA)	1				1	1	1						A024 A008
SWN (USA)	1				1	1	1						A024 A008
TRD	1		1					1					
VIR (USA)	1				1	1	1						A024 A008
ZLARN RDARA 12D ZRRN	1	5	1	1	1	4	1	1					

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)
12E

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12E

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)
12E

NCG	1	1			6	5	1	1	1	1			
ZLARN RDARA 12E ZRRN	1	1			6	5	1	1	1	1			

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)
12F

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12F

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)
12F

B	2	3			3	2	3						
CLM		2			3	2	1						
ZLARN RDARA 12F ZRRN	2	3			3	2	3						

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)
12G

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
12G

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)
12G

B	3	2		1	1	1							
VEN	3	2			4	1							
ZLARN RDARA 12G ZRRN	3	2		1	4	1							

¹⁾ Pour l'explication des Observations, voir page 45

¹⁾ For explanation of Remarks see page 45

¹⁾ Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

* Indicates a requirement also common to area shown in column headed "Common channel to"

ZLARN	RDARA 12I	NEANT	NIL	NADA
ZREN				

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

• Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" • Indicates a requirement also common to area shown in column headed "Common channel to"

• Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

13

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

13

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

13

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
B										1	1		
CHL										1	1		
URC										1	1		
ZLARN RDARA 13 ZRRN										1	1		

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

13A

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

13A

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

13A

PAQ (CHL)								1*			1*		13B 13B 13E 13F
ZLARN RDARA 13A ZRRN								1*			1*		13B 13B 13E 13F

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

13B

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

13B

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

13B

PAQ (CHL)								1*			1*		13A 13A 13E 13F
ZLARN RDARA 13B ZRRN								1*			1*		13A 13A 13E 13F

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

13C

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

13C

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

13C

B	3	3			4	4	3	2	3	1	1		
ZLARN RDARA 13C ZRRN	3	3			4	4	3	2	3	1	1		

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

13D

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

13D

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

13D

PRG	1	1			1			1	1	1	1		
ZLARN RDARA 13D ZRRN	1	1			1			1	1	1	1		

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

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Section 2 – ZLARN

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Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
13E

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
13E

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
13E

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
CHL	1*	1	2*		3*	1*	1*		1	1*	1*		13F 13A 13B 13F	
ZLARN RDARA 13E ZRRN	1*	1	2*		3*	1*	1*		1	1*	1*		13F 13A 13B 13F	

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
13F

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
13F

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
13F

CHL	2 1*	2	2*	1	3*	1	2 1*	1	2	1*	1*		13E 13A 13B 13E	
ZLARN RDARA 13F ZRRN	2 1*	2	2*	1	3*	1	2 1*	1	2	1*	1*		13E 13A 13B 13E	

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
13G

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
13G

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
13G

ARG URG	4 1		1	1		2	2	3	1					AO30 BO16
ZLARN RDARA 13G ZRRN	4		1	1		2	2	3	1					

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
13H

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
13H

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
13H

ARG	2	1	1	1	2		2	1	2					
ZLARN RDARA 13H ZRRN	2	1	1	1	2		2	1	2					

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)
13I

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)
13I

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)
13I

URG	2		2		2	1	2							
ZLARN RDARA 13I ZRRN	2		2		2	1	2							

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones vease página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à"

* Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 – ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 – RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 – ZRRN

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 13J Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 13J Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 13J

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
B URG	4 1	2	4	2	3 1	4	4 1	4 1	2	1	1			A031 B017
ZLARN RDARA 13J ZRRN	4	2	4	2	3	4	4	4	2	1	1			

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 13K Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 13K Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 13K

B	3	3	3		3	3	3	4	3	1				
ZLARN RDARA 13K ZRRN	3	3	3		3	3	3	4	3	1				

Résumé des demandes de fréquences reçues des administrations par zone aéronautique ZONE (AP.27) 13L Summary of frequency requirements received from Administrations by aeronautical area AREA (Ap.27) 13L Resumen de las solicitudes de frecuencias recibidas de las administraciones, por zona aeronáutica ZONA (AP.27) 13L

ZLARN RDARA 13L ZRRN	NEANT													NIL			NADA
----------------------------	-------	--	--	--	--	--	--	--	--	--	--	--	--	-----	--	--	------

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 - ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 - RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 - ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE(Nouvelle)
14 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
14 2)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
AUS	3	3			4	1	4	1	3		3		A033
ZLARN RDARA 14 2) ZRRN	3	3			4	1	4	1	3		3		A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14A 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14A 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA(Nueva)
14A 2)

AUS	1	1	1		2	2	3						A033
ZLARN RDARA 14A 2) ZRRN	1	1	1		2	2	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14B 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14B 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Area)
14B 2)

AUS	1	1	1		1	3	3						A033
ZLARN RDARA 14B 2) ZRRN	1	1	1		1	3	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14C 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14C 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA(Nueva)
14C 2)

AUS	1	1	1		1	3	3						A033
ZLARN RDARA 14C 2) ZRRN	1	1	1		1	3	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 2 - ZLARN

APPENDIX A to IFRB Circular-letter No. 400
Section 2 - RDARA

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 2 - ZRRN

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE(Nouvelle)
14D 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14D 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
14D 2)

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
AUS	1	1	1		2	2	3						A033
ZLARN RDARA 14D 2) ZRRN	1	1	1		2	2	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14E 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14E 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
14E 2)

AUS	1	1	1		1	3	3						A033
ZLARN RDARA 14E 2) ZRRN	1	1	1		1	3	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14F 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14F 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
14F 2)

AUS		2	1		1	3	3						A033
ZLARN RDARA 14F 2) ZRRN		2	1		1	3	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautiques

ZONE(Nouvelle)
14G 2)

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
14G 2)

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
14G 2)

AUS	2		1		3	1	3						A033
ZLARN RDARA 14G 2) ZRRN	2		1		3	1	3						A033
2) B018 Nouvelle zone proposée par AUS 2) B018 New area proposed by AUS 2) B018 Nueva zona propuesta por AUS													

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 3 – Zone VOLMET

APPENDIX A to IFRB Circular-letter No. 400
Section 3 – VOLMET Area

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 3 – Zona VOLMET

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

AFI-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

AFI-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

AFI-MET

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AGL		2				2		1	1		1			
ETH	1	1	1		1	1	1	1	1	1	1			A045
GIB (G)														
GUI		2	1		2	1	1	1	2	1	3			
ISR	1								1					
KEN		1				1		1			1			A026
MYT (F)														A026
REU (F)														
SEN			1			1	1		1					
Zone Area Zona VOLMET AFI-MET	1	2	1		2	2	1	1	2	1	3			A025 A026 A045

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

AT-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

AT-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

AT-MET

B	2				2		2		1	2	1			A045
BER (G)														A008 A009
CAN	3	1			4		4			4				
CLM	1				1		1			1				A026
GDL (F)														A026
GUF (F)														A045
IOB (G)														A026
MRT (F)														A025
PTR (USA)														A026
SPM (F)														
TRD					1									
URG	1				1		1			1				A025
USA														A025
VIR (USA)														
Zone Area Zona VOLMET AT-MET	3	1			4		4		1	4	1			A009 A025 A026 A045

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 3 – Zone VOLMET

APPENDIX A to IFRB Circular-letter No. 400
Section 3 – VOLMET Area

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 3 – Zona VOLMET

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)

EU-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

EU-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

EU-MET

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
BLR														A034
BUL					1									
D	2				2		1		1	1				A026
F														A045 A050
G														A045
GIB (G)														A009
GRC	2		2			2	2		2	2	2			
HNG							1							
IRL	3				3		3			3				A004
ISR	1								1					
POL	2				2		1		1	1				
TCH	1				1				1					
UKR														A034
URS	2	1	1		2		2		2	1				A034
Zone Area Zona VOLMET EU-MET	3	1	2		3	2	3		2	3	2			A009 A025 A026 A045 A050

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Ap.27)

ME-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

ME-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Ap.27)

ME-MET

AFG			1		1			1		1				
CHN														A053
ISR	1								1					
PAK	2				1	1	1		1					B005
UKR														
URS	2	1			1	3	3		2					A036
Zone Area Zona VOLMET ME-MET	2	1	1		1	3	3	1	2	1				A025 A026 A045 A053

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 3 – Zone VOLMET

APPENDIX A to IFRB Circular-letter No. 400
Section 3 – VOLMET Area

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 3 – Zona VOLMET

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

PAC-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

PAC-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

PAC-MET

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
ALS (USA)														A025
CAR (USA)														A025
CHN														A053
GIL (G)														A045
GUM (USA)														A025
HKG (G)														A045 A050
HWA (USA)														A025
HWL (USA)														A025
JAR (USA)														A025
JON (USA)														A025
MDW (USA)														A025
MRA (USA)														A025
MRL (USA)														A025
NCL (F)														A026
NHB (G)														A045
PHX (USA)														A025
PLM (USA)														A025
PNG	1				1		1			1				
SLM (G)														A045
SMA (USA)														A025
TUV (G)														A045
URS	1		1		1	2	1		2	2				
USA														A025
WAK (USA)														A025
WAL (F)														A026
NZL	2				2		2			2				A029 B011
Zone Area Zona VOLMET PAC-MET	2		1		2	2	2		2	2				A025 A026 A045 A050 A053

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (AP.27)

SEA-MET

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (Ap.27)

SEA-MET

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (AP.27)

SEA-MET

BRU (G)														A045
CHN														A053
PAK		1			1	1		1						B005
SNG						1		1						
URS	1	2			1	3	2	1	1					A028 B012
Zone Area Zona VOLMET SEA-MET	1	2			1	3	2	1	1					A025 A026 A045 A053

1) Pour l'explication des Observations, voir page 45

1) For explanation of Remarks see page 45

1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

APPENDICE A à la lettre-circulaire de l'IFRB N° 400
Section 3 — Zone VOLMET

APPENDIX A to IFRB Circular-letter No. 400
Section 3 — VOLMET Area

APÉNDICE A a la carta circular de la IFRB N.º 400
Sección 3 — Zona VOLMET

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)
CAR-MET²⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
CAR-MET²⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
CAR-MET²⁾

Symbole désignant le pays Country symbol Símbolo designativo del país	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
Zone Area Zona	2) B020 Nouvelle zone recommandée dans le Document N° 21 de la Conférence. 2) B020 New area recommended in Conference Document No. 21. VOLMET CAR-MET ²⁾ 2) B020 Nueva zona recomendada en el Documento N.° 21 de la Conferencia.													A025 A026 A045

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE
NCA-MET²⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA
NCA-MET²⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA
NCA-MET²⁾

Administrations by aeronautical area													Administrations, per zone aeronautical	
BLR														A034
CHN														A053
UKR														A034
URS		1	1		2	1	1		1	1				A034
Zone Area Zona														
VOLMET NCA-MET ²⁾		1	1		2	1	1		1	1				A025 A026 A045 A053
2) B020 Nouvelle zone recommandée dans le Document N° 21 de la Conférence.														
2) B020 New area recommended in Conference Document No. 21.														
2) B020 Nueva zona recomendada en el Documento N.° 21 de la Conferencia.														

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)
SAM-MET²⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
SAM-MET²⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
SAM-MET²⁾

ARG	2		2		2	1	1					A040
Zone Area Zona VOLMET SAM-MET ²⁾	2		2		2	1	1					A025 A026 A040 A045
2) B020 Nouvelle zone recommandée dans le Document N° 21 de la Conférence. 2) B020 New area recommended in Conference Document No. 21. 2) B020 Nueva zona recomendada en el Documento N.° 21 de la Conferencia.												

Résumé des demandes de
fréquences reçues des administrations
par zone aéronautique

ZONE (Nouvelle)
SAT-MET³⁾

Summary of frequency
requirements received from
Administrations by aeronautical area

AREA (New)
SAT-MET³⁾

Resumen de las solicitudes de
frecuencias recibidas de las
administraciones, por zona aeronáutica

ZONA (Nueva)
SAT-MET³⁾

ARG			1		1			1		1			A017
Zone Area Zona													A017
VOLMET SAT-MET ³⁾			1		1			1		1			
3) B013 Nouvelle zone proposée par ARG. 3) B013 New area proposed by ARG. 3) B013 Nueva zona propuesta por ARG.													

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones véase página 45

* Indique une demande, également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

Annexe à l'Appendice A
Explications des Observations

Annex to Appendix A
Explanation of Remarks

Anexo al Apéndice A
Explicación de las Observaciones

A001 CKH	NZL a proposé d'étendre la limite NIU orientale de la subdivision 9B pour (NZL) couvrir CKH et NIU. Si la proposition est approuvée, les fréquences allouées à la subdivision 9C ne seront nécessaires que dans la subdivision 9B.	NZL has proposed the Eastern boundary of 9B to be extended to include CKH and NIU. If approved, the frequencies for 9C will be required in 9B only.	NZL ha propuesto que el límite oriental de 9B se amplíe para abarcar CKH y NIU. De aprobarse, las frecuencias para 9C se necesitarán solamente en 9B.
A002 CLM	Demandé pour la ZLAMP SAM (voir Document N° 21 de la Conférence).	Required for MWARA SAM (See Document No. 21 of the Conference).	Necesario para la ZRMP SAM (recomendado por el Documento N.º 21 de la Conferencia).
A003 PNG	1 demande pour PNG dans les bandes des 3, 5,6, 9 et 13 MHz.	1 requirement for PNG in 3, 5.6, 9 and 13 MHz.	Una frecuencia para PNG en 3, 5,6, 9 y 13 MHz.
A004 IRL PNG	Bandes de fréquences des 3 ou des 3,5 MHz.	3 or 3.5 MHz frequency bands.	Bandas de frecuencias 3 ó 3,5 MHz.
A005 PNG	Bandes de fréquences des 4,7, 5,6 ou 6,6 MHz.	4.7, 5.6 or 6.6 MHz frequency bands.	Bandas de frecuencias 4,7, 5,6 ó 6,6 MHz.
A006 PNG	Bandes de fréquences des 9, 10 ou 11,3 MHz.	9, 10 or 11.3 MHz frequency bands.	Bandas de frecuencias 9, 10 u 11,3 MHz.
A007 URG	1 demande pour URG dans les bandes des 3,5, 6,6, 9, 10, 13,3 et 18 MHz (voir A012).	1 requirement for URG in 3.5, 6.6, 9, 10, 13.3 and 18 MHz (see A012).	Una frecuencia para URG en 3,5, 6,6, 9, 10, 13,3 y 18 MHz (véase A012).
A008 CAN USA	Nombre de demandes de fréquences inscrites sous 5,4 MHz ou 5,6 MHz portant sur des fréquences comprises entre 5450 et 5680 kHz.	Number of frequency requirements under 5.4 MHz or 5.6 MHz means between 5450 and 5680 kHz.	El número de frecuencias necesarias que figura en 5,4 MHz o en 5,6 MHz significa entre 5450 y 5680 kHz.
A009 CAN GRC	Y compris les demandes pour le trafic du service d'information de vol pour l'exploitation (OFIS).	OFIS - Operational Flight Information Service - traffic requirements are included.	Se incluyen las necesidades de tráfico OFIS - Servicio de información de vuelo para las operaciones.
A010 AFS	Demandé pour la ZLAMP SAT (voir Document N° 21 de la Conférence).	Required for MWARA SAT (see Document No. 21 of the Conference).	Necesario para la ZRMP SAT recomendado por el Documento N.º 21 de la Conferencia.

AO11 LBR Demandé pour la ZLAMP AFI (voir
MRC Document N° 21 de la Conférence).
NMB

AO12 URG L'Uruguay estime que, à moins de modifier les limites de la ZLAMP-SA, il faudra créer dans l'Atlantique Sud une nouvelle ZLAMP pour le trafic aérien entre Montevideo et la ville de Johannesburg en Afrique du Sud. Une famille de fréquences, dans les bandes énumérées dans le formulaire ci-joint (formulaire MWARA-XXX), devrait être allouée à cette fin. Etant donné le trafic réduit prévisible dans la ZLAMP-XXX concernant le contrôle d'exploitation à grande distance, et au cas où il serait permis d'utiliser les fréquences de la ZLAMP-XXX à cette fin, on pourrait renoncer à utiliser la famille de fréquences indiquée pour ce contrôle d'exploitation.

AO13 IRL Bandes de fréquences des 11,3, 13,3 ou 18 MHz.

AO14 IND De plus, 7 demandes de fréquences (activité solaire minimale) de la bande 2000 - 2065 kHz, uniquement pour IND.

AO15 IND Proposition de fondre la partie indienne des subdivisions 5B et 5C avec les subdivisions 6A et 6E et de créer une nouvelle subdivision de ZLARN pour couvrir la totalité de IND.

AO16 RYU Mêmes fréquences que pour J.
(J)

Required for MWARA AFI (see Document No. 21 of the Conference).

URG considers that unless the boundaries of MWARA-SA are modified, a new MWARA should be created in the South Atlantic in order to cater for air traffic between Montevideo and the city of Johannesburg in South Africa. A family of frequencies in the bands listed in the attached form (From MWARA-XXX) would have to be allotted for this purpose. Given the low estimated traffic requirements for long-distance operational control in MWARA-XXX, the family of frequencies listed for that purpose may be dispensed with if the MWARA-XXX frequencies are authorized for such operational control.

11.3, 13.3 or 18 MHz frequency bands.

In addition, 7 frequency requirements (minimum sunspot activity) in 2000 - 2065 kHz band, for IND only.

Proposal to merge 5B and 5C Indian part with 6A and 6E, and create a new Sub-RDARA to cover whole of IND.

Same frequencies as for J.

Necesario para la ZRMP AFI recomendada por el Documento N.º 21 de la Conferencia.

URG estima necesario - salvo que se ajusten los límites de la ZRMP-SA - crear una nueva ZRMP en el Océano Atlántico Sur, con la finalidad de atender el tránsito aéreo entre Montevideo y la ciudad de Johannesburg en África del Sur, para lo cual se requeriría la adjudicación de una familia de frecuencias en las bandas que se detallan en el formulario que se acompaña (Formulario ZRMP-XXX). Dado el reducido tráfico que se estima cursar en Control operacional a larga distancia en la ZRMP-XXX, se prescinde de la familia de frecuencias que se detalla para esa finalidad, en el caso de que se permita utilizar las frecuencias de la ZRMP-XXX para dicho control operacional.

Bandas de frecuencias 11,3, 13,3 ó 18 MHz.

Además, se necesitan 7 frecuencias (mínima actividad solar) en la banda 2000 - 2065 kHz, para IND solamente.

Proposición de combinar la parte india 5B y 5C con 6A y 6E, y crear una nueva subzona ZRRN para abarcar IND en su totalidad.

Las mismas frecuencias que para J.

<p>AO17 URG Service VOLMET pour les zones 13G 13I SAT, à délimiter selon rapport à présenter à la conférence.</p> <p>AO18 MAU Demande fondée sur le fait que l'île Rodrigues (Gouvernement du territoire de Maurice) se trouve dans la subdivision de ZLARN 8A. La demande pourrait cependant être couverte par la subdivision de ZLARN 7D, sous réserve de permettre l'exploitation d'une ligne aérienne nationale Maurice - Rodrigues</p> <p>AO19 MAU Maintenir (sauf si la Conférence adopte d'autres dispositions) les conditions actuellement applicables aux fréquences allouées à la ZLAMP pour le service aéronautique de Maurice : possibilité d'extension aux îles Cocos et à l'Australie de l'ouest; prévoir en outre une extension à Bombay. Les dispositions devraient assurer la sécurité du trafic aérien sur les lignes Maurice - Australie et Maurice - Bombay.</p> <p>AO20 CHN La sous-zone 6G que nous proposons pour la subdivision de ZLARN remplacera les parties de notre pays que couvrent les subdivisions de ZLARN 6B, 6B/F et 6D/F dans l'appendice 27 au Règlement des radiocommunications.</p> <p>AO21 USA Mêmes fréquences pour CAR, GUM, MRA, MRL, WAK (6C).</p> <p>AO22 USA Mêmes fréquences pour SMA, PHX, HWL (9B).</p>	<p>VOLMET service for areas SAT 13G 13I to be described in a report which will be presented at the meeting.</p> <p>The requirement exists because Rodrigues Island (Government of Mauritius territory) is situated in Sub-RDARA 8A. However, this requirement could be included in Sub-RDARA 7D with a proviso for availability on the Mauritius - Rodrigues domestic air route.</p> <p>The existing proviso relating to Mauritius aeronautical service's present MWARA frequency allotments, viz: availability for extension to Cocos Island and Western Australia to be maintained (unless alternative arrangements are worked out at the Conference); and additionally to provide for extension to Bombay. The arrangements would provide for air safety over the Mauritius - Australia, and Mauritius - Bombay air routes.</p> <p>Our proposed Sub-area 6G of Sub-RDARA will replace those parts of our country covered by Sub-areas 6B, 6B/F and 6D/F of RDARA in Appendix 27 to the Radio Regulations.</p> <p>Same frequencies for CAR, GUM, MRA, MRL, WAK (6C).</p> <p>Same frequencies for SMA, PHX, HWL (9B).</p>	<p>Servicio VOLMET para zonas 13G 13I SAT a describir según informe a presentar en la reunión.</p> <p>Existe la necesidad, porque la Isla Rodrigues (territorio dependiente de Mauricio) está situada en la subzona ZRRN 8A. Sin embargo, esa frecuencia puede incluirse en la subzona ZRRN 7D, con sujeción a la disponibilidad en la ruta nacional aérea Mauricio - Rodrigues.</p> <p>Se mantiene la condición relativa a las adjudicaciones de frecuencias de la ZRMP actuales del servicio aeronáutico de Mauricio; es decir disponibilidad con vista a la prolongación a la isla Cocos y Australia occidental (a menos que la Conferencia tome otras disposiciones); y prever, además, la prolongación hasta Bombay. Las medidas facilitarían seguridad aérea en las rutas Mauricio - Australia y Mauricio - Bombay.</p> <p>La proyección subzona 6G dentro de la subzona ZRRN englobará las partes de nuestro país incluidas en las subzonas 6B, 6B/F y 6D/F de la ZRRN, que figuran en el Apéndice 27 al Reglamento de Radiocomunicaciones.</p> <p>Las mismas frecuencias para CAR, GUM, MRA, MRL, WAK (6C).</p> <p>Las mismas frecuencias para SMA, PHX, HWL (9B).</p>
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A023 USA	Mêmes fréquences pour HWA, MDW, JON, PLM (12A).	Same frequencies for HWA, MDW, JON, PLM (12A).	Las mismas frecuencias para HWA, MDW, JON, PLM (12A).
A024 USA	Mêmes fréquences pour PTR, SWN, VIR (12D).	Same frequencies for PTR, SWN, VIR (12D).	Las mismas frecuencias para PTR, SWN, VIR (12D).
A025 USA	En ce qui concerne les ZLAMP et les zones VOLMET, les demandes des Etats-Unis ne sont pas exclusives. Elles portent toutes sur des familles de fréquences utilisées en partage avec d'autres usagers. Les Etats-Unis appuient dans l'ensemble les recommandations contenues dans le Document N° 21 de la Conférence visant à satisfaire collectivement aux besoins de toutes les administrations utilisatrices des fréquences alloties aux ZLAMP et aux zones VOLMET.	With regard to MWARA and VOLMET areas, The United States has no unique frequency requirements. All our requirements are shared by other users of these families. The United States generally supports the recommendations contained in Document No. 21 of the Conference to provide collectively for the MWARA and VOLMET Area requirements of all user administrations.	Con respecto a las zonas ZRMP y VOLMET, Estados Unidos no solicita frecuencias con carácter exclusivo. Todas nuestras solicitudes son comunes a otros usuarios de estas familias. Estados Unidos apoya generalmente las recomendaciones contenidas en el Documento N.º 21 de la Conferencia de prever colectivamente las necesidades en las zonas ZRMP y VOLMET de todas las administraciones usuarias.
A026 F	En ce qui concerne les ZLAMP et les zones VOLMET, la France ne présente pas de demandes de familles exclusives. Toutes les voies qui lui sont alloties sont partagées par d'autres utilisateurs de ces familles. (Voir Doc. N° 21)	With regard to MWARA and VOLMET areas, France has no unique frequency requirements. All our requirements are shared by other users of these families. (See Doc. No. 21)	Con respecto a las zonas ZRMP y VOLMET, Francia no solicita frecuencias con carácter exclusivo. Todas nuestras solicitudes son comunes a otros usuarios de esas familias. (Véase Doc. N.º 21)
A027 PHL	1 demande pour PHL dans les bandes des 3, 5,6, 13,3 et 18 MHz et 2 demandes dans la bande des 9 MHz.	1 requirement for PHL in 3, 5.6, 13.3, 18 MHz and 2 requirements in 9 MHz band.	1 frecuencia para PHL en 3, 5,6, 13,3 y 18 MHz, y 2 frecuencias en la banda de 9 MHz.
A028 URS	1 demande dans les bandes des 3, 5,6, 10 et 11,3 MHz. 2 demandes dans les bandes des 3,5 et 9 MHz. 3 demandes dans la bande des 6,6 MHz.	1 requirement in 3, 5.6, 10 and 11.3 MHz. 2 requirements in 3.5 and 9 MHz. 3 requirements in 6.6 MHz.	1 frecuencia en 3, 5,6, 10 y 11,3 MHz. 2 frecuencias en 3,5 y 9 MHz. 3 frecuencias en 6,6 MHz.
A029 NZL	2 demandes pour NZL dans les bandes des 3, 5,6, 9 et 13,3 MHz.	2 requirements for NZL in 3, 5.6, 9 and 13.3 MHz.	2 frecuencias para NZL en 3, 5,6, 9 y 13,3 MHz.

AO30 URG	1 demande pour URG dans la bande des 3 MHz.	1 requirement for URG in 3 MHz.	1 frecuencia para URG en 3 MHz.
AO31 URG	1 demande pour URG dans les bandes des 3, 5,6, 9 et 10 MHz.	1 requirement for URG in 3, 5.6, 9 and 10 MHz.	1 frecuencia para URG en 3, 5,6, 9 y 10 MHz.
AO32 AUS	Les demandes de fréquences pour les ZLAMP sont exposées dans le document N° 21 de la Conférence. L'Australie appuie les demandes indiquées dans ce document.	The frequency requirements for MWARA are stated in Document No 21 of the Conference. AUS supports the requirements shown in this document.	Las necesidades de frecuencias en cuanto a la ZRMP figuran en el Documento N.º 21 de la Conferencia. AUS apoya las necesidades contenidas en ese documento.
AO33 AUS	Les besoins nationaux de AUS sont énumérés sous 7 nouvelles subdivisions de ZLARN. On a proposé de désigner ces subdivisions par les symboles 14A, 14B, 14C, 14D, 14E, 14F, et 14G. Un document a été envoyé à l'U.I.T au sujet de la CAMR du service mobile aéronautique (R), afin de justifier la proposition de désigner par ZLARN 14 la partie australienne de la ZLARN 9.	The AUS domestic frequency requirements are listed under 7 new Sub-RDARAS. It has been proposed that these new Sub-RDARAS will be titled 14A, 14B, 14C, 14D, 14E, 14F and 14G. A working paper has been submitted to the I.T.U. for the World Administrative Radio Conference on the Aeronautical Mobile (R) Service to support the proposed change for the Australian portion of RDARA 9 to be redesignated RDARA 14.	Las necesidades en frecuencias de AUS se enumeran con referencia a 7 nuevas subzonas ZRRN. Se ha propuesto que esas nuevas subzonas se denominen 14A, 14B, 14C, 14D, 14E, 14F y 14G. Se ha sometido un documento de trabajo a la U.I.T. con miras a la Conferencia Administrativa Mundial de Radiocomunicaciones para el servicio móvil aeronáutico (R), con el fin de apoyar el cambio propuesto en el sentido de que la parte australiana de la ZRRN 9 pase a la ZRRN 14.
AO34 URS	Mêmes fréquences BLR, UKR, URS.	Same frequencies BLR, UKR, URS.	Las mismas frecuencias BLR, UKR, URS.
AO35 URS	Mêmes fréquences BLR, URS.	Same frequencies BLR, URS.	Las mismas frecuencias BLR, URS.
AO36 URS	Mêmes fréquences UKR, URS.	Same frequencies UKR, URS.	Las mismas frecuencias UKR, URS.
AO37 PAK	Demande de PAK pour ZLAMP, nomenclature à définir,	PAK requirement for MWARA, nomenclature of which is to be defined.	Necesidades de PAK en cuanto a la ZRMP, cuya denominación ha de definirse.

AO38 URS	Demande URS pour nouvelle ZLAMP CEA.	URS requirement for new MWARA CEA.	Necesidades de URS en cuanto a la nueva ZRMP CEA.
AO39 G	Demandé pour la ZLAMP NAT (voir Document N° 21 de la Conférence).	Required for MWARA NAT (see Document No. 21 of the Conference)	Necesario para la ZRMP NAT (recomendado por el Doc. N.º 21).
AO40 ARG	VOLMET SAM, selon zone à délimiter conformément au Plan régional SAM (13/5-2/12). Il faudrait deux familles de fréquences à répartir pour les stations de la zone (au maximum 3 ou 4 stations par famille).	VOLMET SAM according to area to be described, conforming to SAM Regional Plan (13/5-2/12). There will be two families of frequencies to be shared by the stations in the area. (Maximum 3-4 stations per family).	VOLMET SAM según zona a describir, conforme al plan regional SAM (13/5-2/12). Serían dos familias de frecuencias a compartir por las estaciones de la zona (Máximo 3-4 estaciones por familia).
AO41 PAK	Demandes pour subdivision de ZLARN "Nord".	Requirements for Sub-RDARA "North".	Necesidades en cuanto a subzona ZRRN "Norte".
AO42 PAK	Demandé pour ZLAMP MID (voir Document N° 21 de la Conférence).	Required for MWARA MID (see Document No. 21 of the Conference).	Necesario para la ZRMP MID (recomendado por el Documento N.º 21).
AO43 PAK	1 demande pour PAK dans les bandes des 3, 3,5, 4,7, 5,6 et 6,6 MHz. 2 demandes dans les bandes des 9, 10, 11,3, 13,3 et 18 MHz. 3 demandes dans la bande des 22 MHz.	1 requirement for PAK in 3, 3.5, 4.7, 5.6 and 6.6. MHz. 2 requirements in 9, 10, 11.3, 13.3, and 18 MHz. 3 requirements in 22 MHz.	1 frecuencia para PAK en 3, 3,5, 4,7, 5,6 y 6,6 Mhz. 2 frecuencias en 9, 10, 11,3, 13,3 y 18 MHz. 3 frecuencias en 22 MHz.
AO44 PAK	Demandes pour la subdivision de ZLARN "Sud".	Requirements for Sub-RDARA "South".	Necesidades en cuanto a la subzona ZRRN "Sur".
AO45 G	Le Royaume-Uni a limité les demandes ZLAMP et VOLMET aux ZLAMP et zones VOLMET où il constitue l'Etat pourvoyeur. Pour toutes les autres ZLAMP et zones VOLMET, le Royaume-Uni, à titre d'usager, appuie les données auxquelles renvoie le Document N° 21 de la Conférence.	The UK has confined the MWARA and VOLMET requirements to those MWARA and VOLMET areas where the UK is concerned as a provider State. For all other MWARA and VOLMET areas the UK has a user interest, and supports the material referenced in Document No. 21 of the Conference.	El Reino Unido ha limitado las necesidades de las zonas ZRMP y VOLMET a las zonas ZRMP y VOLMET que interesan al Reino Unido como estado suministrador del servicio. En cuanto a las demás zonas ZRMP y VOLMET, el interés del Reino Unido es de usuario, y apoya el contenido del Documento N.º 21 de la Conferencia.
AO46 G	Deux des cinq fréquences de la bande des 3,5 MHz sont demandées à titre exclusif pour les services du Royaume-Uni.	Two of the five 3.5 MHz frequencies are required on a basis of exclusive availability by UK services.	Se necesitan dos de las cinco frecuencias de 3,5 MHz, sobre la base de disponibilidad exclusiva para los servicios del Reino Unido.

AO47 G	Les deux fréquences de la bande des 5,6 MHz sont demandées à titre exclusif pour les services du Royaume-Uni.	The two 5.6 MHz frequencies are required on a basis of exclusive availability by UK services.	Se necesitan las dos frecuencias de 5,6 MHz, sobre la base de disponibilidad exclusiva para los servicios del Reino Unido.
AO48 IND	La zone IO (Océan Indien) est une nouvelle ZLAMP dans laquelle figure IND; une nouvelle famille de fréquences sera donc nécessaire.	Indian Ocean (IO) is a new MWARA in which IND figures and a new family of frequencies will therefore be necessary.	El Océano Índico (IO) es una nueva ZRMP que abarca IND, por lo que se necesitará una nueva familia de frecuencias.
AO49 G	Complément de fréquences approprié, à décider par la Conférence en vue d'allotir 7 familles.	Suitable frequency complement to be decided by the Conference to provide 7 families.	El complemento de frecuencias apropiadas que decida la Conferencia, para proporcionar 7 familias.
AO50 G	Complément de fréquences approprié, à décider par la Conférence en vue d'allotir 2 familles.	Suitable frequency complement to be decided by the Conference to provide 2 families.	El complemento de frecuencias apropiadas que decida la Conferencia, para proporcionar 2 familias.
AO51 HKG (G)	Demandé pour la ZLAMP SEA.	Required for MWARA SEA.	Necesario para la ZRMP SEA.
AO52 CHN	Les demandes de fréquences pour les ZLAMP seront étudiées et déterminées lors de la Conférence aéronautique.	Frequency requirements for MWARA will be discussed and fixed at the Aeronautical Conference.	Las necesidades en frecuencias en cuanto a la ZRMP se discutirán y determinarán en la Conferencia Aeronáutica.
AO53 CHN	Les demandes de fréquences pour la zone VOLMET seront étudiées et déterminées lors de la Conférence aéronautique.	Frequency requirements for VOLMET area will be discussed and fixed at the Aeronautical Conference.	Las necesidades de frecuencias en cuanto a la zona VOLMET se discutirán y determinarán en la Conferencia Aeronáutica.
AO54 IND	Concernant les besoins en fréquences pour les ZLAMP et pour le contrôle d'exploitation international à grande distance, les renseignements fournis sont basés sur la répartition actuelle et sur les prévisions qu'il est possible de faire.	As regards frequency requirement for MWARA and international long-distance operation control, the information included is based on existing allocation and whatever could be foreseen.	En lo que respecta a las necesidades de frecuencias para la ZRMP y para el control operacional internacional a larga distancia, la información incluida se ha basado en las adjudicaciones existentes y en las previsiones que se han formulado.

AO55 J	Demande d'établissement d'une ZLAMP pour une ligne internationale de l'aviation civile allant des principales villes des zones européennes à Tokyo en passant par Moscou; demande de deux familles de fréquences pour cette zone.	It is requested that a MWARA be established for the international civil air route via Moscow between Tokyo and the principal cities in European areas and two families of frequency be provided for this area.	Se solicita el establecimiento de una ZRMP para la ruta aérea civil internacional, vía Moscú, entre Tokio y las principales ciudades de las zonas europeas, y que se prevean dos familias de frecuencias para esta zona.
AO56 J	Demande d'étendre vers le sud et vers le nord les limites de la ZLAMP NP (Nord Pacifique) pour couvrir le pôle nord; demande d'une famille de fréquences supplémentaire pour cette zone.	It is requested that the boundary of MWARA NP (North Pacific) be expanded southward as well as northward to include the North Pole, and one family of frequency be added over this area.	Se solicita que el límite de la ZRMP NP (Pacífico Norte) se extienda hacia el Sur y hacia el Norte, para comprender el Polo Norte, y que se agregue una familia de frecuencias a esta zona.
AO57 J	Demande d'étendre la limite de la ZLAMP CWP (Centre ouest Pacifique) pour qu'elle soit ainsi proche de la zone SEA (Sud-est asiatique); demande d'une famille de fréquences supplémentaire pour la zone intéressée.	It is requested that the boundary of MWARA CWP (Central and West Pacific) be expanded to be so close to SEA (South East Asia) and one family of frequency be added over this area.	Se solicita que el límite de la ZRMP CWP (Pacífico central y occidental) se extienda para aproximarse a la zona SEA (Asia Sudoriental), y que se agregue una familia de frecuencias a esta zona.
AO58 CUB	La fréquence 6568 kHz remplace, le cas échéant, la fréquence 6540 kHz.	Frequency 6568 kHz is being used as an alternative to 6540 kHz.	La frecuencia 6568 kHz se está utilizando como alternativa de 6540 kHz.
AO59 CUB	Pour la ZLAMP CAR, le nombre actuel des fréquences nécessaires doit être maintenu.	The number of frequency requirements for MWARA CAR should be maintained as at present.	El número de necesidades de frecuencias para la ZRMP CAR debe mantenerse conforme figura en la actualidad.
AO60 DNK	Le Canada et le Danemark ont conclu un accord concernant l'établissement d'une nouvelle zone 10F.	Canada and Danemark have reached an agreement concerning the establishment of a new Sub-Area 10F.	Canadá y Dinamarca han llegado a un acuerdo relativo al establecimiento de una nueva sub-zona 10F.

A061 F Une fiche sur laquelle figurent les besoins que l'Administration de la France avait estimé nécessaires pour l'Ex. Territoire des Afars et des Issas vous est adressée. Ce territoire a accédé à l'indépendance le 27 juin 1977. L'Administration française s'est proposée de régler, vis-à-vis de l'Union, certains problèmes concernant les fréquences en attendant que la République de Djibouti ait sollicité son adhésion à la Convention, et suggère de tenir compte de cette estimation afin de sauvegarder les intérêts du nouvel état lors de la préparation technique de la Conférence.

BO01 EQA Les demandes de fréquences présentées par l'Administration de l'Equateur n'indiquent pas clairement la ou les subdivision(s) de ZLARN sur laquelle elles portent.

BO02 INS Les demandes de fréquences présentées par INS n'indiquent pas clairement la (ou les) subdivision(s) de ZLARN sur laquelle elles portent.

BO03 CUB Les demandes de fréquences présentées par CUB n'indiquent pas clairement la (ou les) subdivision(s) de ZLARN sur laquelle elles portent.

BO04 PAK Les demandes de fréquences présentées par PAK n'indiquent pas clairement la ZLARN et la (ou les) subdivision(s) de ZLARN sur lesquelles elles portent.

We send you a sheet showing the estimated requirements of the ex-territory of Afars and Issas. This territory has become independent on 27 June 1977.

French Administration proposes to settle with the Union certain problems concerning the use of radio frequencies by the Republic of Djibouti, before that Administration is in a position to request for its adherence to the Convention. In order to safeguard the interests of his new State during the technical preparation of the Conference we suggest that its requirements as estimated may be taken into account.

The frequency requirements presented by the Administration of EQA do not indicate clearly the Sub-RDARA for which they are required.

The frequency requirements presented by INS do not indicate clearly the Sub-RDARA for which they are required.

The frequency requirements presented by CUB do not indicate clearly the Sub-RDARA for which they are required.

The frequency requirements presented by PAK do not indicate clearly the RDARA and Sub-RDARA for which they are required.

Comunicamos las necesidades estimadas del antiguo territorio de los Afares e Isos. Este territorio ha adquirido la independencia el 27 de junio de 1977.

La Administración francesa propone resolver con la Union ciertos problemas relativos a la utilización de las frecuencias radioeléctricas por la República de Yibuti, antes de que esa Administración se encuentre en condiciones de solicitar su adhesión al Convenio. Para proteger los intereses del nuevo Estado durante la preparación técnica de la Conferencia, sugerimos que se tome en cuenta la estimación de sus necesidades.

Las solicitudes de frecuencias presentadas por la Administración de EQA no indican claramente la (o las) subzona (s) ZRRN correspondientes.

Las solicitudes de frecuencias presentadas por INS no indican claramente la (o las) subzona(s) ZRRN correspondientes.

Las solicitudes de frecuencias presentadas por CUB no indican claramente la (o las) subzona(s) ZRRN correspondientes.

Las solicitudes de frecuencias presentadas por PAK no indican claramente la ZRRN y la (o las) subzona(s) ZRRN correspondientes.

BO05 PAK	Les demandes de fréquences présentées par PAK n'indiquent pas clairement la zone d'allotissement VOLMET sur laquelle elles portent. Le Comité s'est fondé sur les renseignements communiqués en réponse à la lettre-circulaire N° 354 de l'I.F.R.B.	The frequency requirements presented by PAK do not indicate clearly the VOLMET-Allotment Area for which they are required. The Board has taken the the figures indicated in reply to I.F.R.B. Circular-letter No. 354.	Las solicitudes de frecuencias presentadas por PAK no indican claramente la zona correspondiente de adjudicación VOLMET. La Junta ha tomado las cifras indicadas en la respuesta a la carta circular de la I.F.R.B. N.º 354.
BO06 PNG	Actuellement pas dans la ZLAMP CWP.	At present not in MWARA CWP.	En la actualidad no se encuentra en la ZRMP CWP.
BO07 AFS URG	Actuellement pas dans la ZLAMP SA.	At present not in MWARA SA.	En la actualidad no se encuentra en la ZRMP SA.
BO08 HKG (G) PAK PHL	Actuellement pas dans la ZLAMP SEA.	At present not in MWARA SEA.	En la actualidad no se encuentra en la ZRMP SEA.
BO09 PAK URS	Nouvelle zone recommandée dans le Document N° 21 de la Conférence. Nomenclature à définir (CEA).	New area recommended in Conference Document No. 21. Nomenclature to be defined (CEA).	Nueva zona recomendada en el Documento N.º 21 de la Conferencia. Nomenclatura por definir (CEA).
BO10 IND PAK URS	Nouvelle zone recommandée dans le Document N° 21 de la Conférence (IO).	New area recommended in Conference Document No. 21 (IO).	Nueva zona recomendada en el Documento N.º 21 de la Conferencia (IO).
BO11 NZL	Actuellement pas dans la zone d'allotissement PAC-MET.	At present not in PAC-MET allotment area.	En la actualidad no se encuentra en la zona de adjudicación PAC-MET.
BO12 URS	Actuellement pas dans la zone SEA-MET.	At present not in SEA-MET area.	En la actualidad no se encuentra en la zona SEA-MET.
BO13 ARG	Nouvelle zone proposée par ARG.	New area proposed by ARG.	Nueva zona propuesta por ARG.
BO14 CHN	Nouvelle zone proposée par CHN.	New area proposed by CHN.	Nueva zona propuesta por CHN.
BO15 GRL DNK	Nouvelle zone proposée par DNK.	New area proposed by DNK.	Nueva zona propuesta por DNK.

BO16 URG	Actuellement pas dans la subdivision de ZLARN 13G.	At present not in sub-RDARA 13G.	En la actualidad no se encuentra en la sub-ZRRN 13G.
BO17 URG	Actuellement pas dans la subdivision de ZLARN 13J.	At present not in sub-RDARA 13J.	En la actualidad no se encuentra en la sub-ZRRN 13J.
BO18 AUS	Nouvelle zone proposée par AUS.	New area proposed by AUS.	Nueva zona propuesta por AUS.
BO19 ZAI	Les demandes de fréquences présentées par l'Administration du Zaïre n'indiquent pas clairement la ZLAMP, ou la ZLARN et la subdivision de ZLARN sur lesquelles elles portent.	The frequency requirements presented by the Administration of Zaire do not indicate clearly the MWARA, or RDARA or sub-RDARA for which they are required.	Las solicitudes de frecuencias presentadas por la Administración de Zaire no indican claramente la ZRMP, o la ZRRN y la sub-ZRRN a que se refieren.
BO20 -	Nouvelle Zone VOLMET recommandée dans le Document N° 21 de la Conférence	New VOLMET-Area recommended in Conference Document No. 21.	Nueva Zona VOLMET recomendada en el Documento N.º 21 de la Conferencia.

APPENDICE B A LA LETTRE CIRCULAIRE DE L'IFRB N° 400

APPENDIX B TO IFRB CIRCULAR LETTER No. 400

APÉNDICE B A LA CARTA CIRCULAR DE LA IFRB N.º 400

NOMBRE LE PLUS ÉLEVÉ DES FRÉQUENCES DEMANDÉES PAR ZONE AÉRONAUTIQUE
SUMMARY OF OVERALL FREQUENCY REQUIREMENTS BY AERONAUTICAL AREA
NÚMERO MÁS ELEVADO DE FRECUENCIAS SOLICITADAS, POR ZONA AERONÁUTICA

ZIAMP

MWA RA

ZRMP

Zone Area Zona	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
CAR	2	1	1		2	2	2	1	2	1	1			A025 A026 A032 A045
CEP														A025 A026 A032 A045
CWP	2	1	2		2	1	2	1	1	2	2			A025 A026 A032 A045 A050 A057
EU	3	3	3		3	3	3	3	3	3	3			A025 A026 A032 A045
FE	1				1		1			1				A025 A026 A032 A045 A051
	1*				2*		3*			1*			SEA	
ME	2	2	2		2	2	2	2	2	2	2	2		A025 A026 A032 A042 A045
NA1	3*	4*			7*		7*		2*	5*	5*		NA2	A025 A026 A032 A045
NA2	5					3	1	3	3					A025 A026 A032 A039 A045 A049
	3*	4*			7*		7*		2*	5*	5*		NA1	
NA3														A025 A026 A032 A045
NP	1		1		1	2	1		1	1	1			A025 A026 A032 A045 A056
NSA1		2			2	1	2			2	2			A011 A025 A026 A032 A045
NSA2	1	1	1		2	2	2	1	1	2	2			A025 A026 A032 A045
SA	1	2	2		2	3	2	2	1	2	1	1		A010 A012 A025 A026 A032 A045
SAM1	1		1			1	1		2		1			A002 A025 A026 A032 A045
SAM2	1				1		2		2	1	1			A002 A025 A026 A032 A045
SEA	1	1	1		1	1	2	2	2	2	2	3		A025 A026 A032 A045 A052
	1*				2*		3*			1*			FE	
SP	1				2		2			2	1			A025 A026 A032 A045
Nouvelles zones New areas Nuevas zonas														
CEA	2	1	1		2	2	2	2	2	2	1	1		A025 A026 A032 A045 A052
IO	1	1	1		2	2	2	3	2	1	1	1		A025 A026 A032 A045 A052
NCA	1	2	1		1	3	2	2	2	2	2	2		A025 A026 A032 A045 A052 A055
XXX	1				1		1		1	1	1			A012

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones, véase página 45

* Indique une demande également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

NOMBRE LE PLUS ÉLEVÉ DES FRÉQUENCES DEMANDÉES PAR ZONE AÉRONAUTIQUE
SUMMARY OF OVERALL FREQUENCY REQUIREMENTS BY AERONAUTICAL AREA
NÚMERO MÁS ELEVADO DE FRECUENCIAS SOLICITADAS, POR ZONA AERONÁUTICA

ZLARN

RDARA

ZRRN

Zone Area Zona	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)											Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22	
1	5	10	2		8	6	2	2	3	2	2		
1A	NEANT				NIL				NADA				
1B	2	5	1		2	1		1					AO46 AO47
1C	20	6	2		5	5	3	1	2	1	1		
1D	3	3	3		3	3	3	3	1		2		
1E	1		1			1		1					
		1*										4A	
2								3	6	2	1		
								1*				3	
2A	13	9	7		10	10	4	1					
	2*	2*	2*		2*	2*	2*	2*					
			1*			1*	1*						2C
													2B 2C 3A 3B 3C
2B	9	6	4		11	9							
	2*	2*	2*		2*	2*	2*						
			1*			1*	1*						2C
													2A 2C 3A 3B 3C
2C	13	5	3		7	7							
	2*	2*	2*		2*	2*	2*	2*					
	2*	2*	2*		2*	2*	1*						2A
			1*			1*	1*						2B
													2A 2B 3A 3B 3C
3								2	4	1	2	1	
								1*					2
3A	9	6	1		7	9	4						
	2*	2*	2*		2*	2*	2*						3C
			1*			1*	1*						2A 2B 2C 3B 3C
3B	14	5	3		12	7	10						
	2*	2*	2*		2*	2*	2*	2*					3C
			1*			1*	1*						2A 2B 2C 3A 3C
3C	11	4	3		8	6							
	2*	2*	2*		2*	2*	2*	1*					3B
	2*	2*	2*		2*	2*	2*	2*					3A
			1*			1*	1*						2A 2B 2C 3A 3B
4		1	1			1	1						
4A						1							
		1*											1E
			2*				2*						4B
4B	5	10	4		10	15	10	5	3	5	2		
			2*				2*						4A
5		1			1	1	1	2	2	1	1	1	
5A			1			1			1				AO15 BO04
5B	2	2	2		2	2	2	1	1	1			AO15 AO41 AO44 BO04
5C	NEANT				NIL				NADA				AO15
5D	2	2	3		6	3	3						
6	3	5	2		5	6	6	4	1	4	1	1	AO15 BO04
6A	2	3	2		2	3	2	3	1	1			AO15 AO41 AO44 BO04

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45

* Indique une demande également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to"

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

1) Para la explicación de las Observaciones, véase página 45

* Indica una solicitud también común a la zona indicada en la columna "Canal común a"

NOMBRE LE PLUS ÉLEVÉ DES FRÉQUENCES DEMANDÉES PAR ZONE AÉRONAUTIQUE
SUMMARY OF OVERALL FREQUENCY REQUIREMENTS BY AERONAUTICAL AREA
NÚMERO MÁS ELEVADO DE FRECUENCIAS SOLICITADAS, POR ZONA AERONÁUTICA

ZLARN (suite)

EDARA (cont.)

ZREN (cont.)

Zone Area Zona	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
6B	1 4*	1 2*	1		3 4*	3*	2 2*		1	2*	1 1*		6F	
6C		1			1		1		1					
6D		3	1		3	4	1		1					
6E	1	2			2	1	2	1						A015
6F	2 4*	2 2*			1 4*	2 3*	2*	2		1 2*	1*		6B	
Nouvelle zone New area Nueva zona														
6G	22	15	5		32	24	16	10	9	10	4	3		A020
7			1		1		1	1	1		1			
7A		NEANT				NIL				NADA				
7B	2	1			2		1	1						
7C							1							
7D	1		1				1			1				
7E	1	1			2	1	1	1		1				
8		NEANT				NIL				NADA				
8A			1				1			1				A018
9									2					
9A		NEANT				NIL				NADA				
9B	5	3	5		3	5	5		1 1*		1		9D	A004 A005 A006
9C	2	3			3	1	6		1*		1		9D	A001
9D	1	1				1	1		1* 1*				9B 9C	
10			2		1	1	1	2	5	1	1	1		A008
10A	6	5	3		6	6	4	2	3					A008
10B	2	3	5		5	3	3							A008
10C	2	1	3		5	3	2							A008
10D	2	3	5		6	3	2							A008
10E	3	2	4	1	3	2	3		1					A008
Nouvelle zone New area Nueva zona														
10F	1	1	1	1	1	1	1							A060
11	6	8	6		9	7	3	1	2	1	2			A008
11A		NEANT				NIL				NADA				
11B		NEANT				NIL				NADA				

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones, véase página 45

- Indique une demande également commune à une zone inscrite dans la colonne "Voie commune à" • Indicates a requirement also common to area shown in column headed "Common channel to"
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NOMBRE LE PLUS ÉLEVÉ DES FRÉQUENCES DEMANDÉES PAR ZONE AÉRONAUTIQUE
SUMMARY OF OVERALL FREQUENCY REQUIREMENTS BY AERONAUTICAL AREA
NÚMERO MÁS ELEVADO DE FRECUENCIAS SOLICITADAS, POR ZONA AERONÁUTICA

ZLARN (suite)

FDARA (cont.)

ZRFN (cont.)

Zone Area Zona	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
12	4	3	2	2	5	6	4	5	3	2	1			B001 B003 A008
12A	1	1	1		1									
12B		NEANT				NIL				NADA				
12C	2	3	4	1	4	5	1	4	1					
12D	1	5	1	1	1	4	1	1						
12E	1	1			6	5	1	1	1	1				
12F	2	3			3	2	3							
12G	3	2		1	4	1								
12H	2	2	2		1	5								
12I		NEANT				NIL				NADA				
13										1	1			
13A								1*					13B 13B 13E 13F	
13B								1*			1*		13A 13A 13E 13F	
13C	3	3			4	4	3	2	3	1	1			
13D	1	1			1			1	1	1	1			
13E		1				1			1					
	1*		2*		3*	1*	1*			1*			13F 13A 13B 13F	
13F	2	2		1		1	2	1	2					
	1*		2*		3*	1*	1*			1*			13E 13A 13B 13E	
13G	4		1	1		2	2	3	1					
13H	2	1	1	1	2		2	1	2					
13I	2		2		2	1	2							
13J	4	2	4	2	3	4	4	4	2	1	1			
13K	3	3	3		3	3	3	4	3	1				
13L		NEANT				NIL				NADA				
Nouvelles zones New areas Nuevas zonas														
14	3	3			4	1	4	1	3		3			A033
14A	1	1	1		2	2	3							A033
14B	1	1	1		1	3	3							A033
14C	1	1	1		1	3	3							A033
14D	1	1	1		2	2	3							A033
14E	1	1	1		1	3	3							A033
14F		2	1		1	3	3							A033
14G	2		1		3	1	3							A033

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones, véase página 45

* Indique une demande également commune à une zone inscrite dans la colonne "Voie commune à" * Indicates a requirement also common to area shown in column headed "Common channel to" * Indica una solicitud también común a la zona indicada en la columna "Canal común a"

NOMBRE LE PLUS ÉLEVÉ DES FRÉQUENCES DEMANDÉES PAR ZONE AÉRONAUTIQUE
SUMMARY OF OVERALL FREQUENCY REQUIREMENTS BY AERONAUTICAL AREA
NÚMERO MÁS ELEVADO DE FRECUENCIAS SOLICITADAS, POR ZONA AERONAUTICA

ZONE VOLMET
VOLMET AREA
ZONA VOLMET

Zone Area Zona	Nombre de fréquences par bande (MHz) Number of frequencies by band (MHz) Número de frecuencias por banda (MHz)												Voie commune à Common channel to Canal común a	Observations ¹⁾ Remarks ¹⁾ Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18	22		
AFI-MET	1	2	1		2	2	1	1	2	1	3			A025 A026 A045
AT-MET	3	1			4		4		1	4	1			A009 A025 A026 A045
EU-MET	3	1	2		3	2	3		2	3	2			A009 A025 A026 A045 A050
ME-MET	2	1	1		1	3	3	1	2	1				A025 A026 A045 A053
PAC-MET	2		1		2	2	2		2	2				A025 A026 A045 A050 A053
SEA-MET	1	2			1	3	2	1	1					A025 A026 A045 A053
Nouvelles zones New areas Nuevas zonas														
CAR-MET		NEANT				NIL				NADA				A025 A026 A045
NCA-MET		1	1		2	1	1		1	1				A025 A026 A045 A053
SAM-MET		2			2		2	1	1					A025 A026 A040 A045
SAT-MET			1		1			1		1				A017

1) Pour l'explication des Observations, voir page 45 1) For explanation of Remarks see page 45 1) Para la explicación de las Observaciones, véase página 45
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APPENDICE C A LA LETTRE CIRCULAIRE DE L'IFRB N° 400

APPENDIX C TO IFRB CIRCULAR-LETTER No. 400

APÉNDICE C A LA CARTA CIRCULAR DE LA IFRB N.º 400

Récapitulation des besoins en matière de contrôle
d'exploitation à grande distance (LDOC)

Summary of long-distance operational control requirements (LDOC)

Resumen de las necesidades relativas al control operacional
a larga distancia (LDOC)

Symbole designant le pays Country symbol Símbolo designativo del país	BANDES DE FRÉQUENCES (MHz)												Observations ¹⁾
	FREQUENCY BANDS (MHz)												Remarks ¹⁾
	BANDAS DE FRECUENCIAS (MHz)												Observaciones ¹⁾
	3	3.5	4.7	5.4 (Reg. 2)	5.6	6.6	9	10	11.3	13.3	18	22	
AFG		1 A304			1 A304	1 A304							A362 A375
AFS						1 A302	1 A302		1 A302		1 A302	1 A302	
		1 A303			1 A303	1 A303	1 A303						
AGL		1 A305			1 A305		1 A305		1 A305	1 A305	1 A305		
ALS (USA)													
ARG			1 A306			1 A306	1 A306			1 A306	1 A306		
			1 A307			1 A307	1 A307		1 A307	1 A307	1 A307		
ATN (HOL)					1 A334	1 A335		1 A335		1 A335	1 A335	1 A335	
AUS	1 A309	1 A309	1 A309		1 A309	2 A309	1 A309	1 A309	2 A309	3 A309	3 A309		
B							1 A310	1 A310	1 A310	1 A310	1 A310	1 A301	A308 A360 A362
BEL			1 A301			1 A301		1 A301		1 A301	1 A301	1 A301	
BHR		1 A311				1 A311	1 A311	1 A311		1 A311	1 A311	1 A311	
BLR													
CAN		2 A301	2 A301		2 A301	2 A301	2 A301	2 A301	2 A301	2 A301	2 A301	2 A301	
CAR (USA)													
CHN		2			2		2		1	2	2	1	
CME								1	1				
CPV	1 A312					1 A312		1 A312			1 A312		

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

APPENDICE C (suite) - APPENDIX C (cont.) - APÉNDICE C (cont.)

Récapitulation des besoins en matière de contrôle
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a larga distancia (LDOC)

	3	3.5	4.7	5.4 (Reg. 2)	5.6	6.6	9	10	11.3	13.3	18	22	
CUB			1				1		1	1			
D		1 A313	2 A313		1 A315	1 A315		1 A301		1 A301	1 A301		
DDR		1 A317	1 A318		1 A318	1 A318	1 A319		1 A319	1 A320	1 A320		
DNK	1 A301	1 A301	1 A301		1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	2 A301	A321
E		1 A317	1 A323		3 A324	1 A324	1 A324		2 A325	2 A325	1 A325		
ETH						2 A326	2 A326	2 A326	2 A326	2 A326	2 A326		
F	2 A301					2 A301		2 A301		2 A301	2 A301	2 A301	A365
FJI			1 A367		1 A367	1 A368	1 A368		1 A368	1 A368	1 A368		
FNL	1 A327		1 A327		1 A328	1 A328	1 A329		1 A329	1 A329	1 A329		
G	1 A369	1 A370 1 A371			1 A371	1 A372 1 A373	1 A372 1 A373	2 A301		2 A301	1 A301		A374
GRC	1 A301		1 A301			1 A301	1 A301		1 A301	1 A301	1 A301		
GRL (DNK)	1 A322	1 A322	1 A322	1 A322	1 A322	1 A322							
GUI							1 A330	1 A331	1 A304	2 A332	1 A333		
GUM (USA)													A362
HOL			1 A317		1 A301		1 A301			1 A301	1 A301	1 A301	
HWA (USA)													A362
HWL (USA)													A362
IND	1 A336				1 A336		1 A336		1 A336	1 A336			A376
		1 A301				1 A301		1 A301		1 A301	1 A301		
IRL	2 A301		2 A301				1 A301						A337 A338
ISR	2 A339	1 A339			2 A339	1 A339	2 A340		2 A340	2 A340	2 A340		

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

APPENDICE C (suite) - APPENDIX C (cont.) - APÉNDICE C (cont.)

Récapitulation des besoins en matière de contrôle
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Summary of long-distance operational control requirements (LDOC)

Resumen de las necesidades relativas al control operacional
a larga distancia (LDOC)

	3	3.5	4.7	5.4 (Reg. 2)	5.6	6.6	9	10	11.3	13.3	18	22	
J					1 A301	1 A301	2 A301	1 A301	1 A301	2 A301	2 A301		A381
JON (USA)													A362
LBR		1 A341				1 A341	1 A341		1 A341	1 A341	1 A341	1 A341	
MAU						1 A342			1 A342		1 A342		
MDW (USA)													A362
MLA	1 A354				1 A354		1 A314			1 A380	1 A316	1 A317	
MLT	2 A339	2 A339	2 A339		2 A339	2 A339	2 A339	2 A339	2 A339	2 A339	2 A339		
MRA (USA)													A362
MRL (USA)													A362
NOR	1 A301	1 A301	1 A301		1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301		A321
NPL			1 A343			1 A343	1 A343						
NZL		1 A344				1 A344		1 A344		1 A344	1 A344	1 A344	
			1 A345			1 A345							
PAK	1		1		1		2		1				
PHL	1 A347					1 A347	1 A347		1 A347	1 A347	1 A347	1 A347	
PHX (USA)													A362
PLM (USA)													A362
PNG	2 A346		2 A346				2 A346						A337 A378 A379
	1 A348		1 A348				1 A348			1 A348	1 A348		A337 A378 A379
POL	1 A349	2 A350	1 A349		2 A350	2 A301	2 A301		1 A301	1 A301	1 A301		
POR		1 A351				1 A351	1 A351			1 A351	1 A351		
PTR (USA)													A362
ROU	1 A301	2 A301	2 A301		2 A301	2 A301	2 A301	2 A301	2 A301	2 A301	2 A301		

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

APPENDICE C (suite) - APPENDIX C (cont.) - APÉNDICE C (cont.)

Récapitulation des besoins en matière de contrôle
d'exploitation à grande distance (LDOC)

Summary of long-distance operational control requirements (LDOC)

Resumen de las necesidades relativas al control operacional
a larga distancia (LDOC)

	3	3.5	4.7	5.4 (Reg. 2)	5.6	6.6	9	10	11.3	13.3	18	22	
S	1 A301	1 A301	1 A301		1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	A321
SEN			1 A353		1 A353		1 A353						
SMA (USA)													A362
SMO (NZL)		1 A346				1 A346	1 A346		1 A346				
SNG					1 A354		1 A354			1 A354			
SUI	1 A301	1 A301	1 A301		1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	1 A301	
SUR													A377
SWN (USA)													A362
TCH	2 A317 1 A355	1 A317	2 A317		1 A317 1 A355	1 A317	1 A317	1 A317		1 A317 1 A355		1 A355	
TON						6							
TRD							1 A330						
UKR													A360
URG	1 A356 1 A357 1 A358 1 A359				1 A356 1 A357 1 A358 1 A359		1 A356 1 A357 1 A358 1 A359		1 A356 1 A357 1 A358 1 A359	1 A356 1 A357 1 A358 1 A359	1 A356 1 A357 1 A358 1 A359	1 A356	
URS		1 A301			2 A301	3 A301	2 A301	1 A301	3 A301	3 A301	3 A301	2 A301	A360
USA	3 A301	6 A301	3 A301		6 A301	8 A301	4 A301	8 A301	6 A301	6 A301	8 A301		A361 A362
VEN	1 A366					1 A366		1 A366		1 A366			
VIR (USA)													A362
WAK (USA)													A362

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

Summary of long-distance operational control requirements (LDOC)

Resumen de las necesidades relativas al control operacional a larga distancia (LDOC)

1) Pour l'explication des Observations, voir page

1) For explanation of Remarks see page

1) Para la explicación de las Observaciones véase página

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<u>Annexe à l'Appendice C</u>	<u>Annex to Appendix C</u>	<u>Anexo al Apéndice C</u>
<u>Explications des Observations</u>	<u>Explanation of Remarks</u>	<u>Explicación de las Observaciones</u>
A301 B, BEL, CAN, D, DNK, F, G, GRC, HOL, IND, IRL, J, NOR, POL, ROU, S, SUI, URS, USA, YUG	Mondiale - Worldwide - Mundial	
A302 AFS	NSA1 SA CAR SAM NA EU SEA FE NSA2	
A303 AFS	7E	
A304 AFG, GUI	ME	
A305 AGL	NSA1 NSA2 EU	
A306 ARG	SAM ATL - N/S	
A307 ARG	SAM - PAC	
A308 AUS	Voir page 72 - See page 72 - Ver página 72	
A309 AUS	CWP SP NP SEA MID IO SAM AFI FE	
A310 B	SA CWP NA3 EU CAR SAM1 CEP NSA1 NSA2	
A311 BHR	EU ME	
A312 CPV	SA	
A313 D	EU 1 2A 2C	
A314 MLA	FE SEA ME SP	
A315 D	EU ME NA NSA1 NSA2	
A316 MLA	ME EU SP	
A317 YUG, E, DDR, HOL, MLA, TCH	EU	
A318 DDR	EU ME NA2 CAR	
A319 DDR	EU ME FE NA2 CAR NSA1 NSA2	
A320 DDR	ME FE NA2 CAR NSA1 NSA2	
A321 DNK, NOR, S	Voir page 72- See page 72 - Ver página 72	
A322 GRL(DNK)	NA1 NA2	
A323 E	EU NA2	
A324 E	NA2 NA3 SA	
A325 E	NA2 NA3 SA SAM	
A326 ETH	EU FE ME NA2 NSA1	
A327 FNL	EU NA2 NA3 ME	
A328 FNL	EU NA2 NA3 ME SA NSA1 NSA2	
A329 FNL	EU NA2 NA3 ME SA NSA1 NSA2 FE SEA CWP CEP NP NA1 CAR	
A330 TRD, GUI	CAR	

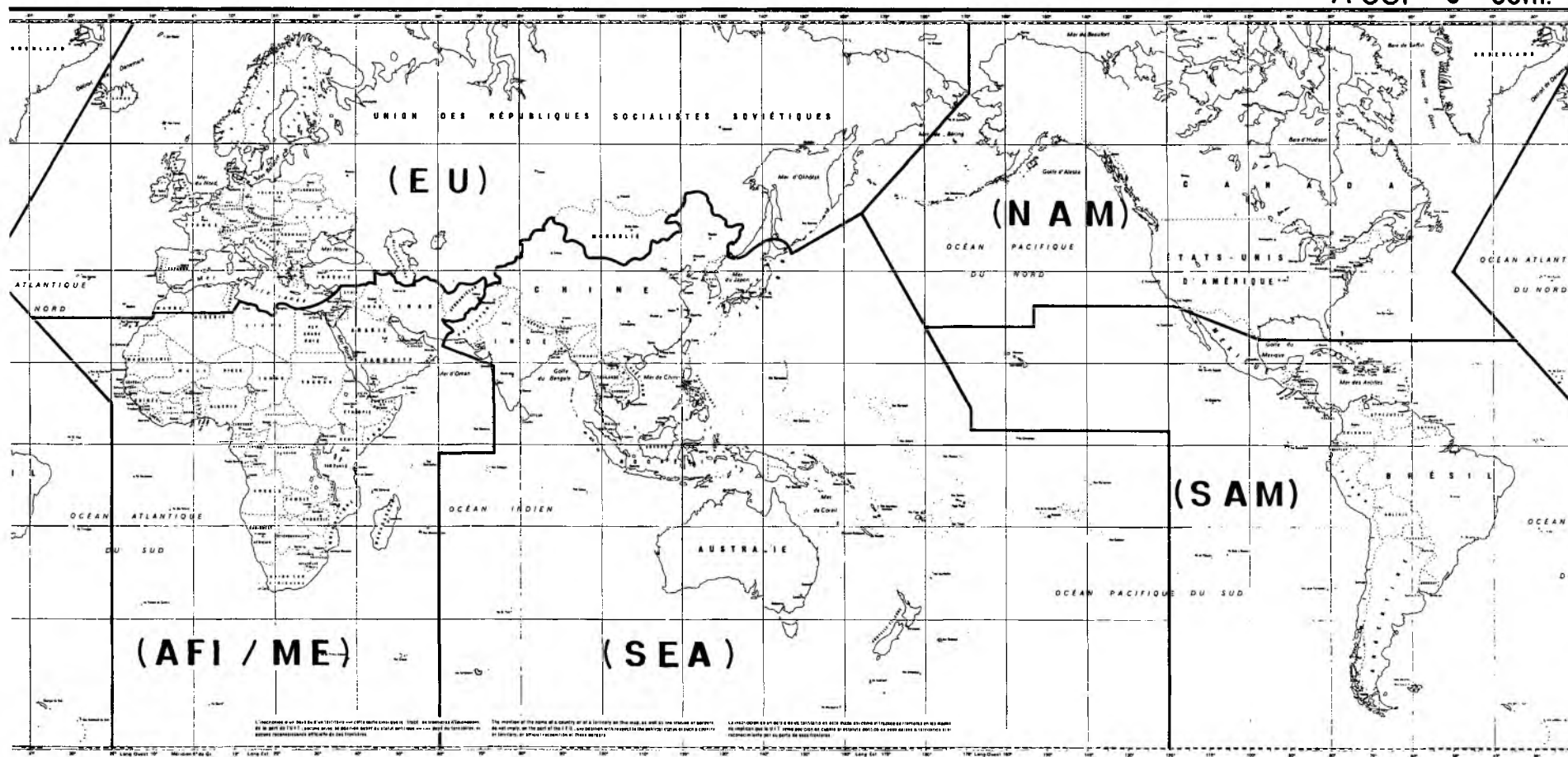
A331	GUI	NSA1
A332	GUI	NA2 NSA2
A333	GUI	CWP
A334	ATN	CAR SAM1
A335	ATN	CAR SAM1 SAM2 NA2 NA3
A336	IND	FE ME SEA
A337	IRL, PNG	Voir page 72 - See page 72 - Ver página 72
A338	IRL	Voir page 72 - See page 72 - Ver página 72
A339	MLT, ISR	EU ME NSA2
A340	ISR	ME EU NSA2 NSA1 NA2 NA3 CAR
A341	LBR	AFI SA SAT NA3
A342	MAU	NSA2 EU NA2 ME
A343	NPL	ME SEA
A344	NZL	SP SEA CWP FE CEP NA1 NA2
A345	NZL	9D
A346	PNG, SMO(NZL)	9B
A347	PHL	FE SEA ME EU CWP CEP SP
A348	PNG	CWP SEA FE SP 9B
A349	POL	EUR
A350	POL	EUR et national FIS - and national FIS - y nacional FIS
A351	POR	EU NA2 NA3 CAR SA SAM2 NSA1 NSA2
A352	non utilisé	- not used - no utilizada
A353	SEN	SA NSA1
A354	MLA, SNG	FE SEA
A355	TCH	NA1 NA2 NA3 EU CAR SA ME SEA
A356	URG	SAM1
A357	URG	SAM2
A358	URG	SA
A359	URG	Voir page 73 - See page 73 - Ver página 73
A360	URS, BLR, UKR	Voir page 73 - See page 73 - Ver página 73
A361	USA	Voir page 73 - See page 73 - Ver página 73
A362	USA	Voir page 73 - See page 73 - Ver página 73
A363	YUG	2 3

A364	YUG	NSA2
A365	F	Voir page 73 - See page 73 - Ver página 73
A366	VEN	12G
A367	FJI	SP
A368	FJI	SP SEA
A369	G	EUR NAT
A370	G	EUR NAT AFI
A371	G	PAC SEA
A372	G	EUR NAT AFI MID
A373	G	PAC SEA MID
A374	G	Voir page 73 - See page 73 - Ver página 73
A375	ARG	Voir page 74 - See page 74 - Ver página 74
A376	IND	Voir page 74 - See page 74 - Ver página 74
A377	SUR	Voir page 74 - See page 74 - Ver página 74
A378	PNG	Voir page 74 - See page 74 - Ver página 74
A379	PNG	Voir page 74 - See page 74 - Ver página 74
A380	MLA	FE SEA ME EU SP
A381	J	Voir page 74 - See page 74 - Ver página 74

A308	AUS	La lettre-circulaire N° 386 demande que les zones d'exploitation des voies attribuées au contrôle d'exploitation à grande distance soient indiquées sur la base des ZLAMP. Le problème des zones d'allotissement pour le contrôle d'exploitation à grande distance n'a pas encore été résolu. L'Australie est d'avis que la Conférence administrative mondiale des radiocommunications devra spécifier une méthode pour déterminer les fréquences à allouer, à l'échelon mondial ou par zones, pour les besoins du contrôle d'exploitation. On trouve dans la colonne 10 de l'Annexe 2 à la lettre-circulaire N° 386 une liste des besoins de l'Australie en matière de fréquences pour le contrôle d'exploitation à grande distance. Les ZLAMP indiquées dans l'en-tête de la colonne sont les zones en direction desquelles une station australienne pourrait être amenée à émettre.	Circular-letter No. 386 requests that the areas of operation of the long-distance operational control channels be stated in terms of MVARAS. The problem of allotment areas for long-distance operational control is a problem that has still to be resolved. Australia is of the opinion that a method to determine the frequencies to be allotted on a world-wide or Sectional areas basis for operational control requirements must be resolved at the World Administrative Radio Conference. Column 10 of Annex 2 of Circular-letter No. 386 has been completed and lists the long-distance operational control frequency requirements of Australia. The MVARAS shown at the head of the column are the areas into which an Australian station could be expected to operate.	En la carta circular N.º 386 se solicita que las zonas de explotación de los canales para el control operacional a larga distancia se indiquen en forma de ZRMP. El problema de las zonas de adjudicación para el control operacional a larga distancia está todavía por resolver. Australia considera que el método para determinar las frecuencias que han de adjudicarse con carácter mundial o por zonas y subzonas para las necesidades del control de operaciones debe decidirlo la Conferencia Administrativa Mundial de Radiocomunicaciones. En la columna 10 del Anexo 2 a la carta circular N.º 386 se han enumerado las frecuencias que Australia necesita para el control de operaciones a larga distancia. En el encabezamiento de la columna se han indicado las ZRMP que corresponden a las zonas previstas de operación de la estación australiana.
A321		Famille commune pour DNK, NOR et S.	Common family for DNK, NOR and S.	Familia de frecuencias común para DNK, NOR y S.
A337	PNG IRL	Bandes de fréquences des 3 ou 3,5 MHz.	3 or 3.5 MHz frequency bands.	Bandas de frecuencias de 3 ó 3,5 MHz.
A338	IRL	Bandes de fréquences des 4,7 ou 5,6 MHz.	4.7 or 5.6 MHz frequency bands.	Bandas de frecuencias de 4,7 ó 5,6 MHz.

A359	URG	L'Uruguay estime que, à moins de modifier les limites de la ZLAMP SA, il faudra créer dans l'Atlantique Sud une nouvelle ZLAMP pour le trafic aérien entre Montevideo et la ville de Johannesburg en Afrique du Sud. Une famille de fréquences, dans les bandes énumérées dans le formulaire ci-joint (formulaire MWARA XXX), devrait être allotie à cette fin. Etant donné le trafic réduit prévisible dans la ZLAMP XXX concernant le contrôle d'exploitation à grande distance, et au cas où il serait permis d'utiliser les fréquences de la ZLAMP XXX à cette fin, on pourrait renoncer à utiliser la famille de fréquences indiquée pour ce contrôle d'exploitation.	Uruguay considers that unless the boundaries of MWARA SA are modified, a new MWARA should be created in the South Atlantic in order to cater for air traffic between Montevideo and the city of Johannesburg in South Africa. A family of frequencies in the bands listed in the attached form (Form MWARA XXX) would have to be allotted for this purpose. Given the low estimated traffic requirements for long-distance operational control in MWARA XXX, the family of frequencies listed for that purpose may be dispensed with if the MWARA XXX frequencies are authorized for such operational control.	Uruguay estima necesario - salvo que se ajusten los límites de la ZRMP SP - crear una nueva ZRMP en el Océano Atlántico Sur, con la finalidad de atender el tránsito aéreo entre Montevideo y la ciudad de Johannesburgo en África del Sur, para lo cual se requeriría la adjudicación de una familia de frecuencias en las bandas que se detallan en el formulario que se acompaña (Formulario ZRMP XXX). Dado el reducido tráfico que se estima cursar en control de operaciones a larga distancia en la ZRMP XXX, se prescinde de la familia de frecuencias que se detalla para esa finalidad, en el caso de que se permita utilizar las frecuencias de la ZRMP XXX para dicho control de operaciones.
A360	URS	Mêmes fréquences URS, BLR, UKR.	Same frequencies URS, BLR, UKR.	Las mismas frecuencias para URS, BLR, UKR.
A361	USA	Voir la proposition USA/4/39 (ADD27/73A) - Document N° 4 de la Conférence	See proposal USA/4/39 (ADD27/73A) - Document No. 4 of the Conference	Véase la proposición USA/4/39 (ADD27/73A) - Documento N.º de la Conferencia
A362	USA	Mêmes fréquences USA, HWA, PTR, PLM, SMA, ALS, GUM, PHX, WAK, MDW, MRL, MRA, CAR, HWL, JON, VIR, SWN.	Same frecuencies USA, HWA, PTR, PLM, SMA, ALS, GUM, PHX, WAK, MDW, MRL, MRA, CAR, HWL, JON, VIR, SWN.	Las mismas frecuencias para USA, HWA, PTR, PLM, SMA, ALS, GUM, PHX, WAK, MDW, MRL, MRA, CAR, HWL, JON, VIR, SWN.
A365	F	Deux familles à vocation mondiale pour une assignation exclusive à PARIS.	Two world-wide families for assignment exclusively to PARIS.	Dos familias de frecuencias mundiales para su asignación exclusiva a PARÍS.
A374	G	Les ZLAMP sont spécifiées de façon approximative seulement, pour donner une indication des portées de service prévues.	The MWARA areas are approximate only and are included for the purpose of giving an indication of the service ranges expected.	Las zonas ZRMP, que únicamente son aproximadas, se incluyen para facilitar una indicación sobre los alcances de servicio previstos.

A375	ARG	Le service d'exploitation ou service complémentaire doit encore être défini. En particulier, pour les communications à grande distance.	Operational, or complementary service to be defined. Particularly for long-distance communications.	Servicio operacional o complementario por definir. Especialmente para comunicaciones a larga distancia.
A376	IND	Concernant les besoins en fréquences pour les ZLAMP et pour le contrôle d'exploitation international à grande distance, les renseignements fournis sont basés sur la répartition actuelle et sur les prévisions qu'il est possible de faire.	As regards frequency requirements for MWARA and international long-distance operation control, the information included is based on existing allocation and whatever could be foreseen.	En lo que respecta a las necesidades de frecuencias para la ZRMP y para el control de operaciones internacional a larga distancia, la información incluida se ha basado en las adjudicaciones existentes y en las previsiones que se han formulado.
A377	SUR	Une famille partagée est nécessaire.	1 family on a shared basis is required.	Se requiere una familia de frecuencias en régimen de compartición.
A378	PNG	Bandes de fréquences des 4,7, 5,6 ou 6,6 MHz	4.7, 5.6 or 6.6 MHz frequency bands	Bandas de frecuencias de 4,7, 5,6 ó 6,6 MHz
A379	PNG	Bandes de fréquences des 9, 10 ou 11,3 MHz	9, 10 or 11.3 MHz frequency bands	Bandas de frecuencias de 9, 10 ó 11,3 MHz
A381	J	Concernant la planification des zones pour les stations aéronautiques effectuant le contrôle d'exploitation à grande distance, cette Administration propose la création de nouvelles zones de ce genre, de manière à diviser le monde entier en cinq zones, comme indiqué dans la carte ci-jointe (voir page 75).	As far as the areas planning for aeronautical stations for long-distance operational control are concerned, this Administration would like to make a proposal for establishment of such new areas as to divide the whole world into five areas, as indicated in the map enclosed herewith (see next page 75).	En lo que respecta a la planificación de las zonas de estaciones aeronáuticas para el control de operaciones a larga distancia, esta Administración formulará una propuesta de establecimiento de estas nuevas zonas dividiendo el mundo entero en cinco zonas, de conformidad con el mapa que se adjunta (véase página 75).



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APPENDICE D A LA LETTRE CIRCULAIRE DE L'IFRB N° 400

APPENDIX D TO IFRB CIRCULAR-LETTER No. 400

APÉNDICE D A LA CARTA CIRCULAR DE LA IFRB N.º 400

ANALYSE DES DEMANDES DE FRÉQUENCES

ANALYSIS OF FREQUENCY REQUIREMENTS

ANÁLISIS DE LAS NECESIDADES EN MATERIA DE FRECUENCIAS

1. L'objet de la présente analyse est d'aider les administrations à se préparer à la Conférence administrative mondiale des radiocommunications du service mobile aéronautique (R) qui se tiendra en 1978 à Genève; il est aussi d'aider ladite Conférence à réviser le Plan d'allotissement de fréquences de l'appendice 27, sur la base de l'utilisation de la technique de la bande latérale unique, tout en utilisant une portion du spectre aussi limitée que possible.

1. The purpose of this analysis is to assist Administrations in their preparation for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978, and to assist the Conference in revising the Frequency Allotment Plan contained in Appendix 27, on the basis of the use of single sideband, within the minimum amount of spectrum necessary.

1. Este análisis se ha hecho para facilitar a las Administraciones la preparación de la Conferencia Administrativa Mundial de Radiocomunicaciones para el servicio móvil aeronáutico (R), Ginebra, 1978, y simplificar la labor de la Conferencia a la hora de revisar el Plan de adjudicación de frecuencias contenido en el Apéndice 27, sobre la base del empleo de la técnica de banda lateral única y reduciendo al máximo el espectro necesario.

2. Partie du spectre disponible

On trouvera ci-dessous un tableau comparatif du nombre des voies à double bande latérale comprises dans chaque bande de fréquences couverte par l'appendice 27 et du nombre des voies à bande latérale unique (espacement: 3 kHz) que donnerait la disposition des voies indiquée dans le Document N° 21 de la Conférence.

2. Available Spectrum

Table 1 below shows a comparison between the number of double sideband channels in each frequency band included in Appendix 27 and the number of single sideband channels, with 3 kHz channel separation, that would be available with the channelling arrangement contained in Document No. 21 of the Conference.

2. Espectro disponible

En el Cuadro 1 se comparan el número de canales de doble banda lateral de cada una de las bandas de frecuencias que figuran en el Apéndice 27 y el número de canales de banda lateral única, con una separación de 3 kHz entre canales, que se obtendrían con la disposición indicada en el Documento N.º 21 de la Conferencia.

TABLEAU 1 – TABLE 1 – CUADRO 1

Bande de fréquences	Nombre des voies à double bande latérale dans l'Appendice 27	Nombre des voies à bande latérale unique ¹⁾	Observations	Remarks	Observaciones
Frequency band	Number of DSB channels in Appendix 27	Number of SSB channels ¹⁾			
Banda de frecuencias (kHz)	Número de canales de doble banda lateral en el Apéndice 27	Número de canales de banda lateral única ¹⁾			
2 850 – 3 025	24 (+ 3023.5 kHz)	57 (+ 3023 kHz)	Dans l'appendice 27, 3499 kHz disponible pour les émissions A1 seulement.	3499 kHz available for A1 emission only in Appendix 27.	3499 kHz disponible solamente para emisiones A1 en el Apéndice 27.
3 400 – 3 500	14 (+ 3499 kHz)	33			
4 650 – 4 700 5 450 – 5 480 (Region 2)	7 4	16 9			
5 480 – 5 680	28 (+ 5680 kHz)	66 (+ 5680 kHz)			
6 525 – 6 685	22 (+ 6526 kHz)	53	Dans l'appendice 27, 6526 kHz disponible pour les émissions A1, A3A, A3H et A3J seulement.	6526 kHz available for A1, A3A, A3H and A3J emissions only in Appendix 27.	6526 kHz disponible solamente para emisiones A1, A3A, A3H y A3J en el Apéndice 27.
8 815 – 8 965	21 (+ 8963 kHz)	49	Dans l'appendice 27, 8963 kHz disponible pour les émissions A1 seulement.	8963 kHz available for A1 emission only in Appendix 27.	8963 kHz disponible solamente para emisiones A1 en el Apéndice 27.
10 005 – 10 100	11 (+ 10 093 kHz)	31	Dans l'appendice 27, 10 093 kHz disponible pour les émissions A1, A3A, A3H et A3J seulement.	10 093 kHz available for A1, A3A, A3H and A3J emissions only in Appendix 27.	10 093 kHz disponible solamente para emisiones A1, A3A, A3H y A3J en el Apéndice 27.
11 275 – 11 400	15	41			
13 260 – 13 360	12 (+ 13 356 kHz)	33	Dans l'appendice 27, 13 356 kHz disponible pour les émissions A1, A3A, A3H et A3J seulement.	13 356 kHz available for A1, A3A, A3H and A3J emissions only in Appendix 27.	13 356 kHz disponible solamente para emisiones A1, A3A, A3H y A3J en el Apéndice 27.
17 900 – 17 970	8	23			
TOTAL	166	411			

1) Les nombres portés dans cette colonne ne couvrent pas les voies proches des limites de bande et larges de moins de 3 kHz qui résultent de la disposition des voies indiquée dans le Document N° 21 de la Conférence.

1) This column does not show the channels near the band-edges with less than 3 kHz bandwidth which will result from the channelling arrangement contained in Conference Document No. 21.

1) En esta columna no figuran los canales que, tras la disposición indicada en el Documento N.º 21 de la Conferencia, resultarían próximos a los bordes de las bandas y tendrían una anchura inferior a 3 kHz.

3. Tableau comparatif des allotissements actuels et des demandes de fréquence

3.1 Zones de passage des lignes aériennes mondiales principales (ZLAMP)

Le tableau 2 ci-dessous indique pour chaque ZLAMP le nombre actuel des allotissements de l'appendice 27, le nombre de demandes indiqué dans le Document N° 21 de la Conférence, le nombre total des allotissements qui en découlent¹⁾ et le nombre total des demandes présentées par les administrations (tiré de l'appendice B).

3. Comparison of present allotments and frequency requirements

3.1 Major World Air Route Areas (MWARAs)

Table 2 below shows for each MWARA the present allotments in Appendix 27, the requirements indicated in Conference Document No. 21, the total number of required allotments resulting therefrom¹⁾ and the total number of requirements presented by Administrations (taken from Appendix B).

3. Comparación entre las actuales adjudicaciones y las necesidades en frecuencias

3.1 Zonas de paso de rutas aéreas mundiales principales (ZRMP)

En el Cuadro 2 se indican para cada ZRMP, las adjudicaciones existentes en el Apéndice 27, las necesidades indicadas en el Documento N.º 21 de la Conferencia, el número total de adjudicaciones resultante¹⁾ y el número total de solicitudes formuladas por las Administraciones (tomadas del Apéndice B).

TABLEAU 2 – TABLE 2 – CUADRO 2

	Allotissements actuels de l'appendice 27 Present allotments in Appendix 27 Adjudicaciones existentes en el Apéndice 27			Nombre de demandes indiqué dans le Document N° 21 de la Conférence (les chiffres entre parenthèses indiquent la page) ¹⁾ Requirements indicated in Conference Document No. 21 (figures in parentheses are page numbers) ¹⁾ Necesidades indicadas en el Documento N.º 21 de la Conferencia (las cifras entre paréntesis remiten a la página) ¹⁾	Nombre total des allotissements nécessaires (II + V) Total number of allotments required (II + V) Número total de adjudicaciones necesarias (II + V)	Demandes présentées par les administrations (Appendice B) ²⁾ Requirements presented by Administrations (Appendix B) ²⁾ Solicitudes formuladas por las Administraciones (Apéndice B) ²⁾	Différence Difference Diferencia (VII – VI)
	Nombre total d'allotissements Total number of allotments Número total de adjudicaciones	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ³⁾ Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194) ³⁾ Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ³⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone Number of allotments NOT "common" to other Areas or Sub-Areas Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas				
I	II	III	IV	V	VI	VII	VIII
CAR	13	3	10	NOC (2-17)	13	15	(+ 2)
CEP	7	–	7	+ 1 ⁴⁾ (2-17)	12	–	(– 12)
CWP	8	1	7	+ 1 ⁴⁾ (2-18)	13	16	(+ 3)
EU	10	2	8	NOC (2-18)	10	30	(+ 20)
FE	9	4	5	SUP (2-18)	–	11	(+ 11)
ME	8	1	7	NOC (2-19)	8	22	(+ 14)
NA { NA-1	5	5	–	+ 3 ⁴⁾ (2-19)	41	48	(+ 7)
NA { NA-2	16	1	15				
NA { NA-3	5	5	–				
NP	5	1	4	+ 1 ⁴⁾ (2-20)	10	9	(– 1)
NSA-1	5	1	4	+ 1 ⁴⁾ (2-20)	20	26	(+ 6)
NSA-2	10	2	8				
SA	8	1	7	+ 2 ⁴⁾ (2-21)	18	19	(+ 1)
SAM-1	6	2	4	NOC (2-21)	12	15	(+ 3)
SAM-2	6	2	4				
SEA	6	4	2	+ 3 ⁴⁾ (2-22)	21	25	(+ 4)
SP	5	–	5	+ 1 ⁴⁾ (2-21)	10	8	(– 2)
NCA ⁵⁾	–	–	–	3 ⁴⁾ (2- 9)	15	20	(+ 5)
CEA ⁵⁾	–	–	–	3 ⁴⁾ (2- 9)	15	18	(+ 3)
IO ⁵⁾	–	–	–	1 ⁴⁾ (2-18)	5	17	(+ 12)
XXX ⁵⁾	–	–	–		–	6	(+ 6)
TOTAL	132	35	97	–	223	305	(+ 82)

1) En traduisant le nombre des familles en nombre d'allotissements on admet que, pour une ZLAMP, une famille se compose de cinq (5) fréquences.

2) Le nombre de demandes couvre les 11 demandes présentées dans la bande des 22 MHz.

3) Voir appendice 27, page 44, numéro 27/194.

4) Famille(s).

5) Nouvelles Zones: voir les Observations B010 A012 dans l'annexe à l'appendice A.

1) In converting the number of families to number of allotments it is assumed that, on an average, a family for a MWARA comprises five (5) frequencies.

2) The requirements shown include the 11 in the 22 MHz band.

3) See Appendix 27, page 44, No. 27/194.

4) Family(ies).

5) New Areas: see Remarks in Annex to Appendix A – B010 A012.

1) Al convertir el número de familias en número de adjudicaciones se ha supuesto un promedio de cinco (5) frecuencias por familia para las ZRMP.

2) En las necesidades indicadas se han incluido las once que corresponden a la banda de 22 MHz.

3) Véase Apéndice 27, página 44, número 27/194.

4) Familia(s).

5) Nuevas Zonas: véanse las Observaciones B010 A012 en el Anexo al Apéndice A.

3.2 Zones de passage des lignes aériennes régionales et nationales (ZLARN)

Le Tableau 3 montre, pour chaque ZLARN et subdivision de ZLARN, le nombre des allotissements actuels de l'appendice 27 et le nombre des demandes présentées par les administrations (tiré de l'appendice B).

3.2 Regional and Domestic Air Route Areas (RDARAs)

Table 3 below shows for each RDARA and Sub-RDARA the present allotments in Appendix 27 and the requirements presented by Administrations (taken from Appendix B).

3.2 Zonas de rutas aéreas regionales y nacionales (ZRRN)

En el Cuadro 3 se indican, para cada ZRRN y Sub-ZRRN, las adjudicaciones existentes en el Apéndice 27 y las solicitudes formuladas por las Administraciones (tomadas del Apéndice B).

TABLEAU 3 - TABLE 3 - CUADRO 3

ZLARN	Subdivision de ZLARN	Allotissements actuels de l'appendice 27 Present allotments in Appendix 27 Adjudicaciones existentes en el Apéndice 27			Demandes présentées par les administrations Requirements presented by Administrations Solicitudes formuladas por las administraciones			Différence
		Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194) ¹⁾ Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone Number of allotments NOT "common" to other Areas or Sub-Areas Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194) ¹⁾ Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone Number of allotments NOT "common" to other Areas or Sub-Areas Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	
RDARA	Sub-RDARA	Total number of allotments			Total number of allotments			Diferencia
ZRRN	Sub-ZRRN	Número total de adjudicaciones			Número total de adjudicaciones			(VI - III)
I	II	III	IV	V	VI	VII	VIII	IX
1		2	0	2	42	0	42	
	1A	0	0	0	0	0	0	
	1B	3	3	0	12	0	12	
	1C	8	4	4	46	0	46	
	1D	7	1	6	24	0	24	
	1E	4	1	3	5	1	4	
Total 1		24	9	15	129	1	128	+ 105
2		12	3	9	13	1	12	
	2A	27	21	6	71	17	54	
	2B	30	23	7	54	15	39	
	2C	40	30	10	63	28	35	
Total 2		109	77	32	201	61	140	+ 92
3		9	3	6	11	1	10	
	3A	23	14	9	51	15	36	
	3B	31	14	17	68	17	51	
	3C	24	18	6	62	30	32	
Total 3		87	49	38	192	63	129	+ 105
4		2	1	1	4	0	4	
	4A	4	3	1	6	5	1	
	4B	4	1	3	73	4	69	
Total 4		10	5	5	83	9	74	+ 73
5		2	1	1	11	0	11	
	5A	4	1	3	3	0	3	
	5B	6	4	2	15	0	15	
	5C	4	4	—	0	0	0	
	5D	5	3	2	19	0	19	
Total 5		21	13	8	48	0	48	+ 27

1) Voir Appendice 27, page 44, numéro 27/194.

1) See Appendix 27, page 44, No. 27/194.

1) Ver Apéndice 27, página 44, número 27/194.

TABLEAU 3 (suite) — TABLE 3 (continued) — CUADRO 3 (continuación)

		Allotissements actuels de l'appendice 27 <i>Present allotments in Appendix 27</i> Adjudicaciones existentes en el Apéndice 27			Demandes présentées par les administrations <i>Requirements presented by Administrations</i> Solicitudes formuladas por las administraciones			Différence Difference Diferencia (VI — III)
		Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ <i>Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194)¹⁾</i> Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone <i>Number of allotments NOT "common" to other Areas or Sub-Areas</i> Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ <i>Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194)¹⁾</i> Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone <i>Number of allotments NOT "common" to other Areas or Sub-Areas</i> Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	
ZLARN	Subdivision de ZLARN							
RDARA	Sub-RDARA							
ZRRN	Sub-ZRRN							
I	II	III	IV	V	VI	VII	VIII	IX
6		4	0	4	38	0	38	
	6A	12	5	7	19	0	19	
	6B	10	0	10	28	18	10	
	6C	10	2	8	4	0	4	
	6D	20	2	18	13	0	13	
	6E	9	3	6	9	0	9	
	6F	9	2	7	28	18	10	
	6G (nouveau) (new) (nuevo)	—	—	—	150	0	150	
Total 6		74	14	60	289	36	253	+ 215
7		3	0	3	6	0	6	
	7A	3	3	0	0	0	0	
	7B	3	3	0	7	0	7	
	7C	3	3	0	1	1	0	
	7D	3	3	0	4	0	4	
	7E	6	0	6	8	0	8	
Total 7		21	12	9	26	1	25	+ 5
8		0	0	0	0	0	0	
	8A	0	0	0	3	0	3	
Total 8		0	0	0	3	0	3	+ 3
9		2	0	2	2	0	2	
	9A	9	2	7	0	0	0	
	9B	21	16	5	29	1	28	
	9C	16	16	0	17	1	16	
	9D	19	14	5	6	2	4	
Total 9		67	48	19	54	4	50	— 13
10		7	0	7	15	0	15	
	10A	17	0	17	35	0	35	
	10B	19	1	18	21	0	21	
	10C	14	1	13	16	0	16	
	10D	22	2	20	21	0	21	
	10E	14	3	11	19	0	19	
	10F (nouveau) (new) (nuevo)	—	—	—	7	0	7	
Total 10		93	7	86	134	0	134	+ 41

1) Voir Appendice 27, page 44, numéro 27/194.

1) See Appendix 27, page 44, No. 27/194.

1) Ver Apéndice 27, página 44, número 27/194.

TABLEAU 3 (suite) - TABLE 3 (continued) - CUADRO 3 (continuación)

		Allotissements actuels de l'appendice 27 Present allotments in Appendix 27 Adjudicaciones existentes en el Apéndice 27			Demandes présentées par les administrations Requirements presented by Administrations Solicitudes formuladas por las administraciones			Différence Difference Diferencia (VI - III)
		Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194) ¹⁾ Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone Number of allotments NOT "common" to other Areas or Sub-Areas Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194) ¹⁾ Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone Number of allotments NOT "common" to other Areas or Sub-Areas Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	
ZLARN	Subdivision de ZLARN							
RDARA	Sub-RDARA							
ZRRN	Sub-ZRRN							
I	II	III	IV	V	VI	VII	VIII	IX
11	11A 11B	0 0 0	0 0 0	0 0 0	45 0 0	0 0 0	45 0 0	
Total 11		0	0	0	45	0	45	+ 45
12	12A 12B 12C 12D 12E 12F 12G 12H 12I	1 0 0 18 4 9 13 8 6 0	0 0 0 0 8 8 4 6 0	1 0 0 18 4 1 5 4 0 0	37 4 0 25 15 17 13 11 12 0	0 0 0 0 0 0 0 0 0 0	37 4 0 25 15 17 13 11 12 0	
Total 12		59	26	33	134	0	134	+ 75
13	13A 13B 13C 13D 13E 13F 13G 13H 13I 13J 13K 13L	2 0 0 9 12 4 10 13 11 3 15 12 0	0 0 0 0 3 3 0 0 0 0 0 0 0	2 0 0 9 12 1 7 13 11 3 15 12 0	2 2 2 24 7 13 21 14 13 9 31 26 0	0 2 2 0 0 10 10 0 0 0 0 0 0	2 0 0 24 7 3 11 14 13 9 31 26 0	
Total 13		91	6	85	164	24	140	+ 73
14 (nouveau) 14 (new) 14 (nuevo)	14A 14B 14C 14D 14E 14F 14G	- - - - - - -	- - - - - - -	- - - - - - -	22 10 10 10 10 10 10	0 0 0 0 0 0 0	22 10 10 10 10 10 10	
Total 14		-	-	-	92	0	92	+ 92
Grand total		656	266	390	1594	199	1395	+ 938

1) Voir Appendice 27, page 44, numéro 27/194

1) See Appendix 27, page 44, No. 27/194.

1) Ver Apéndice 27, página 44, número 27/194.

3.3 Zones VOLMET

Le Tableau 4 ci-dessous montre, pour chaque zone d'allotissement VOLMET, le nombre actuel des allotissements de l'appendice 27, le nombre des demandes indiqué dans le rapport de l'OACI, le nombre total d'allotissements qui en découle¹⁾ et le nombre total des demandes présentées par les administrations (tiré de l'appendice B).

3.3 VOLMET Areas

Table 4 below shows for each VOLMET Allotment Area, the present allotments in Appendix 27, the requirements indicated in Conference Document No. 21, the total number of required allotments resulting therefrom¹⁾ and the total number of requirements presented by Administrations (taken from Appendix B).

3.3 Zonas VOLMET

En el Cuadro 4 se indican, para cada zona de adjudicación VOLMET, las adjudicaciones existentes en el Apéndice 27, las necesidades indicadas en el Documento N.º 21 de la Conferencia, el número total de adjudicaciones resultante¹⁾ y el número total de solicitudes formuladas por las Administraciones (tomadas del Apéndice B).

TABLEAU 4 – TABLE 4 – CUADRO 4

Zone VOLMET	Allotissements actuels de l'Appendice 27	Demandes indiquées dans le Document N° 21 de la Conférence (les chiffres entre parenthèses indiquent la page) ¹⁾	Nombre total des allotissements nécessaires (II et III)	Demandes présentées par les Administrations (Appendix B)	Différence
VOLMET Area	Present allotments in Appendix 27	Requirements indicated in Conference Document No. 21 (figures in parentheses are page numbers) ¹⁾	Total number of allotments required (II and III)	Requirements presented by Administrations (Appendix B)	Difference
Zona VOLMET	Adjudicaciones existentes en el Apéndice 27	Necesidades indicadas en el Documento N.º 21 de la Conferencia (las cifras entre paréntesis remiten a la página) ¹⁾	Número total de adjudicaciones necesarias (II y III)	Solicitudes formuladas por las Administraciones (Apéndice B)	(V – IV)
I	II	III	IV	V	VI
AFI-MET	7	NOC (2-25)	7	16	+ 9
AT-MET	4	+ 1 ²⁾ (2-26)	9	18	+ 9
EU-MET	7	+ 1 ²⁾ (2-26)	12	21	+ 9
ME-MET	6	+ 1 ²⁾ (2-26)	11	15	+ 4
PAC-MET	6	+ 1 ²⁾ (2-27)	11	13	+ 2
SEA-MET	3	+ 2 ²⁾ (2-27)	13	11	- 2
CAR-MET ³⁾	—	1 ²⁾ (2-28)	5	—	- 5
NCA-MET ³⁾	—	2 ²⁾ (2-28)	10	8	- 2
SAM-MET ³⁾	—	1 ²⁾ (2-28)	5	8	+ 3
SAT-MET ⁴⁾	—	—	—	4	+ 4
TOTAL	33		83	114	+ 31

1) En traduisant le nombre de familles en nombre d'allotissements, on admet que, pour une zone VOLMET, une famille se compose de cinq (5) fréquences.

2) Famille(s).

3) Nouvelles zones : recommandées dans le Document N° 21 de la Conférence.

4) Nouvelle zone : proposée par ARG.

1) In converting the number of families to number of allotments it is assumed that, on an average, a family for a VOLMET Area comprises five (5) frequencies.

2) Family(ies).

3) New Areas : Recommended in Conference Document No. 21.

4) New Area : Proposed by ARG.

1) Al convertir el número de familias en número de adjudicaciones se ha supuesto un promedio de cinco (5) frecuencias por familia para una Zona VOLMET.

2) Familia(s).

3) Nuevas zonas : Recomendadas en el Documento N.º 21 de la Conferencia.

4) Nueva zona : Propuesta por ARG.

3.4 Nombre total des allotissements et des demandes (présentées par les administrations) pour les ZLAMP, les ZLARN et les zones VOLMET
Les données contenues dans les Tableaux 2, 3 et 4 sont résumées dans le Tableau 5 qui suit.

3.4 Total allotments and requirements (as presented by Administrations) for MVARAs, RDARAs and VOLMET Areas
The information given in Tables 2, 3 and 4 is summarized in Table 5 below.

3.4 Número total de adjudicaciones y solicitudes (formuladas por las Administraciones) para las ZRMP, ZRRN y Zonas VOLMET
Las informaciones contenidas en los Cuadros 2, 3 y 4 se han resumido en el siguiente Cuadro 5.

TABLEAU 5 – TABLE 5 – CUADRO 5

	Allotissements actuels de l'appendice 27 <i>Present allotments in Appendix 27</i> Adjudicaciones existentes en el Apéndice 27			Demandes présentées par les administrations <i>Requirements presented by Administrations</i> Solicitudes formuladas por las administraciones			Différence Difference Diferencia (V – II)
	Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ <i>Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194)¹⁾</i> Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone <i>Number of allotments NOT "common" to other Areas or Sub-Areas</i> Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	Nombre total d'allotissements	Nombre d'allotissements "communs" aux autres zones ou subdivisions de zone (Ap. 27/194) ¹⁾ <i>Number of allotments "common" to other Areas or Sub-Areas (Ap. 27/194)¹⁾</i> Número de adjudicaciones "comunes" a otras zonas o sub-zonas (Ap. 27/194) ¹⁾	Nombre d'allotissements NON "communs" aux autres zones ou subdivisions de zone <i>Number of allotments NOT "common" to other Areas or Sub-Areas</i> Número de adjudicaciones NO "comunes" a otras zonas o sub-zonas	
Zones							
Areas	<i>Total number of allotments</i>			<i>Total number of allotments</i>			
Zonas	Número total de adjudicaciones			Número total de adjudicaciones			
I	II	III	IV	V	VI	VII	VIII
ZLAMP MVARAs ZRMP	132	35	97	305	0	305	+ 173
ZLARN RDARAs ZRRN	656	266	390	1594	199	1395	+ 938
Zones VOLMET VOLMET Areas Zonas VOLMET	33	0	33	114	0	114	+ 81
Total	821	301	520	2013	199	1814	+ 1192

1) Voir Appendice 27, page 44, numéro 27/194

1) See Appendix 27, page 44, No. 27/194.

1) Ver Apéndice 27, página 44, número 27/194.

3.5 Besoins de fréquences pour les communications du contrôle de l'exploitation à grande distance (LDOC)

L'appendice C indique les besoins de fréquences pour les communications de contrôle de l'exploitation à grande distance. Le nombre total des voies à prévoir dans chaque bande pour répondre à ces besoins reste à déterminer.

3.5 Frequency requirements for long-distance aeronautical operational control communications (LDOC)

The frequency requirements for long-distance aeronautical operational control communications are shown in Appendix C. The total number of channels necessary in each band to satisfy these requirements is yet to be determined.

3.5 Necesidades en materia de frecuencias para las comunicaciones de control de operaciones a larga distancia (LDOC)

En el Apéndice C se indican las necesidades en materia de frecuencias para las comunicaciones aeronáuticas de control de operaciones a larga distancia. Queda por determinar el número total de canales que se requieren en cada banda para satisfacer estas necesidades.

INTERNATIONAL TELECOMMUNICATION UNION
AERONAUTICAL (R) CONFERENCE
(Geneva, 1978)

Addendum No. 1 to
Document No. 49-E
30 January 1978
Original : English, French
Spanish

PLENARY MEETING

Note by the Secretary-General

METHOD DEVELOPED BY THE IFRB FOR REVISION OF THE FREQUENCY
ALLOTMENT PLAN CONTAINED IN APPENDIX 27 TO
THE RADIO REGULATIONS

I hereby transmit to the Conference an Addendum to IFRB
Circular-letter No. 401 relating to the above-mentioned subject.

M. MILI
Secretary-General

Annex : 1





INTERNATIONAL
FREQUENCY REGISTRATION BOARD
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2 RUE DE VAREMBÉ

26 January 1978

Addendum to
I.F.R.B. Circular-letter No. 401 of 1 December 1977

Subject: Technical planning for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978
Report on a planning method developed by the I.F.R.B. for revision of the Frequency Allotment Plan contained in Appendix 27 to the Radio Regulations

References: Appendix 27 to the Radio Regulations
No. 482 of the Radio Regulations
I.F.R.B. Circular-letter No. 401 (Conference Document No. 49)

Subsequent to the publication of I.F.R.B. Circular-letter No. 401, the Board has studied a possible extension of the computer methods with the objective of meeting any adjacent channel criteria that the Conference may decide to incorporate in the revised Plan.

2. The Board has developed a computer programme that can use any adjacent channel criteria that the Conference may wish to consider. The programme will then determine the sequence of the combinations of Aeronautical Areas that meet the criteria, or indicate when the criteria cannot be met.

3. The Board has tested the programme using the combination of Aeronautical Areas shown in Annex 2 to the Appendix to I.F.R.B. Circular-letter No. 401, which are the existing twenty-four channels in the 3 MHz band contained in Appendix 27, using various adjacent channel criteria. The results of this test confirmed the views expressed in paragraph 4.5 of the Appendix to I.F.R.B. Circular-letter No. 401.

4. The sharing matrix used in Circular-letter No. 401 (Annex 1 to the Appendix), contained one typographical error in that sharing was shown as possible between two Aeronautical Areas when it should have been shown as not possible. The correction results in a different combination of Aeronautical Areas, without changing the number of channels required; however, as Annexes 1 and 2 were shown only as examples, the Board decided not to republish them.

C.W. Sowton
Chairman

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Toda correspondencia oficial debe dirigirse a

Monsieur le Président de l'I.F.R.B.
The Chairman of the I.F.R.B.
Señor Presidente de la I.F.R.B.
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AERONAUTICAL (R) CONFERENCE

1978

(Geneva, 1977)

Document No. 49-E

8 December 1977

Original : French

English

Spanish

PLENARY MEETING

Note by the Secretary-General

METHOD DEVELOPED BY THE IFRB FOR REVISION OF THE FREQUENCY
ALLOTMENT PLAN CONTAINED IN APPENDIX 27 TO
THE RADIO REGULATIONS

I hereby transmit to the Conference IFRB Circular-letter No. 401 relating to the above-mentioned subject.

With regard to the schedule of work of the Conference (point 4 of the Circular-letter), according to the usual practice this question as well as the structure of the Conference will be studied further at ITU Headquarters.

The results of these studies will be communicated to the competent organs of the Conference, particularly during the meeting of Heads of Delegations.

M. MILI

Secretary-General

Annex : 1





INTERNATIONAL
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I.F.R.B. Circular-letter No. 401

Subject : Technical planning for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978

Method developed by the I.F.R.B. for revision of the Frequency Allotment Plan contained in Appendix 27 to the Radio Regulations

References : Appendix 27 to the Radio Regulations
No. 482 of the Radio Regulations

To the Director-General

Dear Sir,

On behalf of the International Frequency Registration Board, I wish to inform you that as part of its preparatory work for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978 (hereinafter referred to as "the Conference"), the I.F.R.B. has developed a method for revision of the Frequency Allotment Plan (hereinafter referred to as "the Plan"). The purpose of the present Circular-letter is to explain this method and the basic considerations which the Board kept in mind in developing it.

2. Basic considerations

The Board considered that:

2.1 under No. 482 of the Radio Regulations, it has a responsibility to assist the Conference to complete its work in the period of the four weeks duration adopted for the Conference;

2.2 the method to be developed by the I.F.R.B. should not in any manner presuppose any specific decisions which the Conference may take on the technical criteria, operational considerations, boundaries of the various aeronautical areas and the frequency requirements for these areas;

2.3 however, once the Conference has taken the necessary decisions on these and other parameters which may be required to be taken into account, the method should permit the establishment of a Plan as expeditiously as possible to satisfy the frequency requirements within the minimum amount of the spectrum necessary;

./...

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Please address all official correspondence to
Toda correspondencia oficial debe dirigirse a

Monsieur le Président de l'I.F.R.B.
The Chairman of the I.F.R.B.
Señor Presidente de la I.F.R.B.
Union internationale des télécommunications
1211 GENÈVE 20
Suisse - Switzerland - Suiza

2.4 the method should permit such adjustments to the first draft Plan as may be necessary to enable the Conference to make amendments and adopt the final Plan.

3. The method developed by the I.F.R.B.

3.1 The method is described in detail in the Appendix to the present Circular-letter. It makes use of the computer facilities of the Union, where such use as can be made would result in economy of time and effort for the Conference and at the same time provide more accurate results. The method has already been tested successfully using the information contained in Appendix 27. These tests are continuing with the objective of improving the method; however, major changes are not envisaged. Such improvements that may be made between now and the beginning of the Conference will be explained in the information sessions on 4 and 6 February 1978 (see I.F.R.B. Circular-letter No. 395 of 21 September 1977).

3.2 The method described in the Appendix to this Circular-letter does not cover the determination of the number of frequencies that would need to be allotted in the revision of the Plan to satisfy the requirements for long-distance operational control communications. However, the Board is endeavouring to develop a method for this purpose and should this method be proved adequate it will be the subject of a separate Circular-letter or a Conference document.

3.3 The Board would welcome comments from Administrations on the method described in the Appendix, and remains at the disposal of Administrations which may require further clarification.

4. Work schedule

4.1 In the technical planning for the Conference and the development of a method for the revision of the Frequency Allotment Plan, it has become apparent to the Board that it is essential that a work schedule be established for the Conference if it is to complete its task in the limited time available. It is assumed that the Conference will establish three Committees in addition to the Steering Committee, Credentials Committee, Budget Control Committee and Editorial Committee. It is further assumed that these three Committees would be a Technical Committee, a Planning Committee and a Regulations Committee.

4.2 Taking into account the material facilities available and the volume of work involved, it is the view of the Board that, on the basis of the above structure, a possible work schedule which would permit the Conference to complete its work in four weeks might be along the following lines:

- a) by the end of the first week; the Technical Committee should adopt the technical criteria to be used for the revision of the Plan and the Planning Committee should adopt the boundaries of the MWARAs and VOLMET Areas;
- b) early in the second week; the Planning Committee should adopt the boundaries of all remaining Aeronautical Areas and the frequency requirements;

- c) at the beginning of the third week; the first draft revised Plan should be distributed;
- d) early in the third week; the Technical Committee should complete its work on the technical provisions for inclusion in the revised Appendix 27, the Planning Committee should consider the first draft revised Plan and the Regulations Committee should have completed its work on the provisions of the Radio Regulations concerning Appendix 27 and on the transition procedures;
- e) by the end of the third week; the Planning Committee should draw up amendments to the first draft revised Plan;
- f) at the beginning of the fourth and last week; the second and final draft revised Plan should be distributed;
- g) by Tuesday of the fourth and last week; the Planning Committee should complete its work.

4.3 A more detailed draft work schedule for these three Committees along the above lines has been communicated to the Secretary-General for consideration in making final material arrangements for these and the other Committees of the Conference.

5. A second copy of the present Circular-letter is enclosed for your convenience.

Yours faithfully,



F.G. Perrin
Chairman

Enclosures

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APPENDIX to I.F.R.B. Circular-letter No. 401

DESCRIPTION OF THE METHOD DEVELOPED BY THE I.F.R.B.

FOR REVISION OF THE FREQUENCY ALLOTMENT PLAN IN APPENDIX 27

1. Determination of the most suitable bands to constitute a family of frequencies for an aeronautical area

1.1 One of the first tasks of the Conference will be to take decisions concerning the frequency requirements for each aeronautical area. Frequency requirements are determined by the geographical location and extent of the area and the expected air/ground traffic in the area. The total frequency requirements for each area can be expressed as the sum of the number of frequencies in one or more families, each consisting of two or more frequencies and the number of additional frequencies in one or more bands necessary to meet the demands of aircraft and aeronautical stations during peak traffic hours. A family of frequencies should ensure a 24-hour communication capability over the entire aeronautical area with a predetermined reliability. Propagation conditions specific to a given geographical area may ensure this capability by the use of frequencies chosen from three or more bands.

1.2 In general, it can be said that four or five frequencies, each chosen from one of the ten bands between 2850 kHz and 17,970 kHz can constitute an optimum family. These bands are designated in Appendix 27 as 3, 3.5, 4.7, 5.6, 6.6, 9, 10, 11.3, 13.3 and 18 MHz bands, and in addition the 5.4 MHz band in Region 2.

1.2.1 In the present Plan in Appendix 27 a four-frequency family usually consists of one frequency each from:

1.	2.	3.	4.
3 or 3.5 MHz	4.7, 5.6 or 6.6 MHz	9, 10 or 11.3 MHz	13.3 or 18 MHz

1.2.2 A five-frequency family usually consists of one frequency each from:

1.	2.	3.	4.	5.
3 or 3.5 MHz	4.7, 5.6 or 6.6 MHz	9, 10 or 11.3 MHz	13.3 MHz	18 MHz

1.3 From the propagation data taken from C.C.I.R. Report 340, the I.F.R.B. has prepared Tables of Maximum Usable Frequency (MUF) data for four propagation conditions, viz:

December	low sunspot activity (sunspot number SSN 5)
June	low sunspot activity (SSN 5)
December	high sunspot activity (SSN 125)
June	high sunspot activity (SSN 125)

./...

1.4 In the existing MWARA, RDARA, Sub-RDARA and VOLMET Areas three typical path lengths have been identified for each area and the corresponding MUF values have been tabulated. These Tables can be consulted in the I.F.R.B. Secretariat to determine the range of variation of the MUFs in a given geographical area and to determine therefrom an optimum family of frequencies for an aeronautical area, situated in the geographical area concerned, which would ensure satisfactory communication throughout a sunspot cycle within that aeronautical area.

2. Determination of the boundaries of the aeronautical areas

2.1 Before taking decisions concerning the frequency requirements, it would be necessary to determine the boundaries of the aeronautical areas.

2.2 As soon as the decisions of the Conference concerning the boundaries are available these will be plotted on world maps similar to those contained in Appendix 27. One category of aeronautical areas (e.g. MWARAs) will be drawn on one map, another category (e.g. RDARAs and Sub-RDARAs) on another map and the third category (VOLMET Allotment and Reception Areas) on the third map.

3. Preparation of sharing matrices

3.1 According to the decisions of the Conference concerning geographical sharing conditions and the propagation data to be used, the Conference would be able to determine, by using the maps mentioned in paragraph 2.2, the aeronautical areas which can share the same channel without the risk of harmful interference. In determining these areas the Conference might wish to take into account the practical considerations of the possible locations of aeronautical stations, and the normal service range from these aeronautical stations within which air/ground communication can be ensured for the frequency band concerned, etc. This was done in establishing the Plan in Appendix 27 and contributed considerably in accommodating the frequency requirements within the available spectrum.

3.2 The I.F.R.B. Secretariat would need the information from the Conference, for each frequency band, concerning the possibility or otherwise of sharing the same channel:

- i) between a RDARA (or a Sub-RDARA) and another RDARA (or a Sub-RDARA)
- ii) between a RDARA (or a Sub-RDARA) and a MWARA
- iii) between a RDARA (or a Sub-RDARA) and a VOLMET Area
- iv) between a MWARA and another MWARA
- v) between a MWARA and a VOLMET Area
- vi) between a VOLMET Area and another VOLMET Area

./...

3.3 From the information so obtained the I.F.R.B. Secretariat will prepare a "sharing matrix", an example of which, based on the Plan appearing in Appendix 27, is shown in Annex 1. There will be one sharing matrix per band. Such matrices will be constructed for those frequency bands for which the Conference agrees on interference range contours. For the other bands the Board hopes to provide the Conference with some guidelines in order to decide upon the sharing criteria.

4. Use of sharing matrices to determine the minimum number of channels necessary to satisfy the frequency requirements

4.1 The sharing matrices provide a simple "yes", "no" indication as to the possibility of sharing between a given aeronautical area and every other aeronautical area. The matrix for each frequency band will be stored in the computer memory.

4.2 A method has been developed to prepare, for each frequency band, a "requirements matrix". This matrix shows the number of channels to be allotted from that band to each aeronautical area.

4.3 The "sharing matrix" and the "requirements matrix" are examined by the computer simultaneously to determine the best way in which all the possibilities of the sharing available in the sharing matrix are used to obtain a result in which the overall requirements for the band concerned are satisfied with the minimum number of combinations of aeronautical areas. In such a result each combination includes a maximum number of aeronautical areas which are mutually compatible and can use the same channel. By way of example, the results obtained by the computer programme for 3 MHz sharing matrix of Appendix 27 are shown in Annex 2.

4.4 Channels to be allotted to each combination or group of aeronautical areas mentioned in paragraph 4.3 above can then be designated. Should the Conference decide to avoid allotment of adjacent channels to adjacent aeronautical areas, or to take account of possible interference due to 3rd order intermodulation products, it can do so by designating the appropriate channels to be allotted to each combination or group of aeronautical areas. In the Plan in Appendix 27, the 1966 Conference did not take into account the adjacent channel nor the 3rd order intermodulation questions. A large number of examples where adjacent channels have been allotted to the same or adjacent areas will be available for consultation in the I.F.R.B. Secretariat. As to the avoidance of possible interference from 3rd order intermodulation products at aeronautical stations using a large frequency complement from the same frequency band, the Board has submitted to the CCIR Document No. 8/322, requesting reconsideration of this question at the final meeting of CCIR Study Group 8. The number of aeronautical stations which may be concerned is very small and, in addition, proper engineering of local installations with adequate physical separation between transmitting and receiving sites can provide a satisfactory solution.

./...

4.5 The approach outlined in paragraph 4.4 above shows that the method permits the application of any criteria in designating individual channels to be allotted to each group in preparation of the revised Plan. However, a systematic application of a criterion to avoid adjacent channel interference or 3rd order intermodulation interference could put a severe and possibly insurmountable constraint on the development of a Plan within the minimum amount of the radio frequency spectrum.

5. Printing of the draft and final Plan

5.1 To facilitate examination of the draft Plan by the Conference with a view to making improvements in it, a computer programme has been prepared to provide the printing of the Plan in two forms, as in the present Appendix 27, one showing the channels allotted to each aeronautical area and the other showing, in ascending order of carrier (reference) frequency of each channel, the aeronautical areas to which the channel is allotted.

5.2 Any revised version of the draft Plan can be examined to see that the sharing possibilities are maintained and then it can be printed in the two versions as mentioned in paragraph 5.1 above for its final approval.

Annexes: 2

ANNEX 1 to the APPENDIX to I.F.R.B. Circular-letter No. 401

SHARING MATRIX - 3 MHz - Night-time propagation

Established using the method described in No. 27/30 to No. 27/38 also taking into account the actual sharing as it appears from the Plan in No. 27/195

Legend:

- ☐ indicates sharing possible
☒ indicates sharing not possible

Example: A channel should be allotted to Sub-RDARA 4B. Which are the other areas that can share the same channel?

1. Enter line 4B in the left-hand margin and list all the areas with which the matrix indicates that sharing is possible. For example going along the line 4B the possible areas which 4B could share with are:

PAC MET or CEP or CWP or ... or 1B ...

or any of the other areas with which the matrix indicates that sharing is possible.

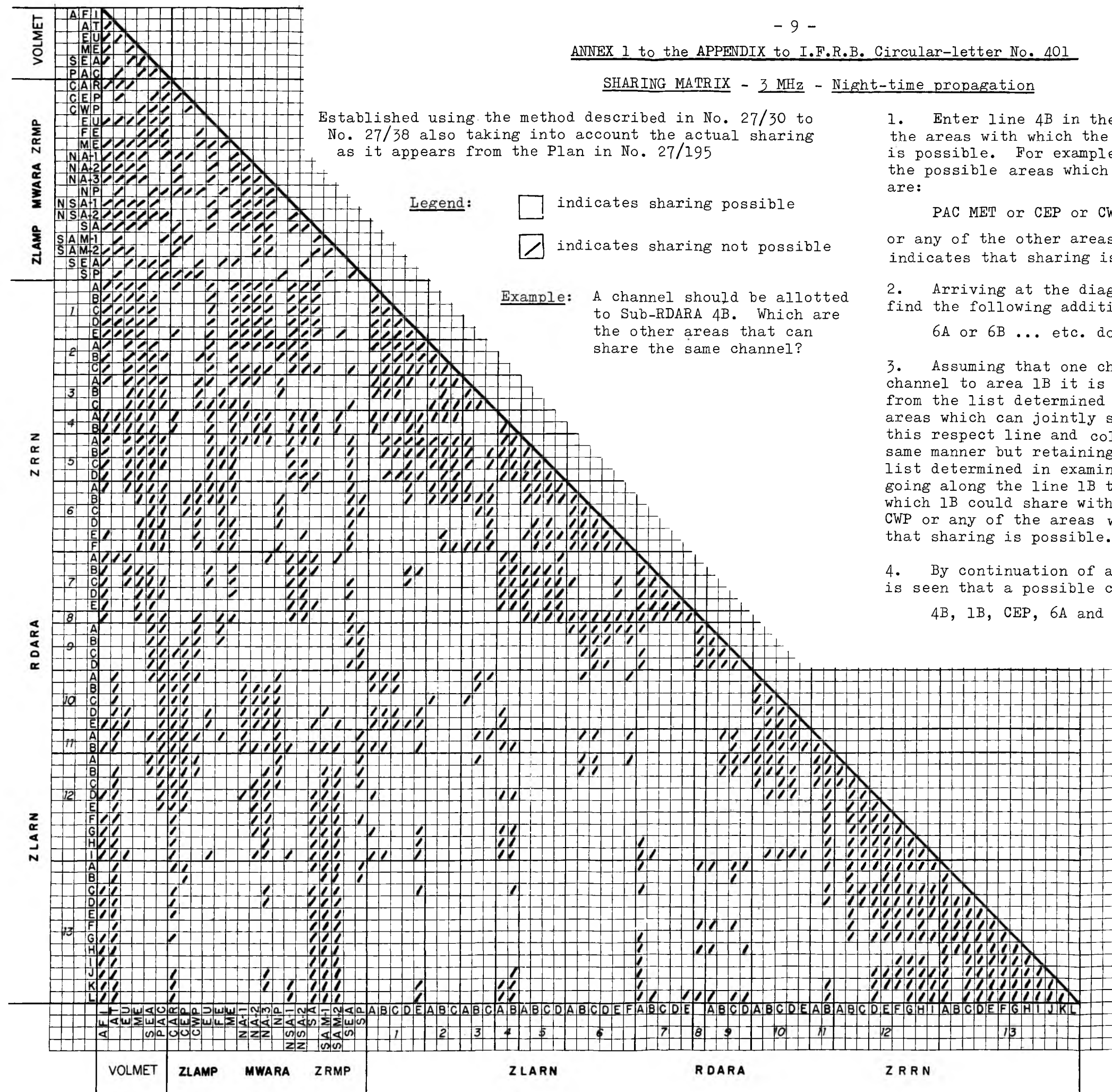
2. Arriving at the diagonal, go down-wards and find the following additional alternatives:

6A or 6B ... etc. down to 13I.

3. Assuming that one chooses to allot the same channel to area 1B it is then necessary to identify from the list determined in examining line 4B those areas which can jointly share with 4B and 1B. In this respect line and column 1B is now examined in the same manner but retaining only those areas from the list determined in examining line 4B. For example going along the line 1B the possible allotments which 1B could share with are: PAC MET or CEP or CWP or any of the areas with which the matrix indicates that sharing is possible.

4. By continuation of a similar examination, it is seen that a possible combination could be:

4B, 1B, CEP, 6A and 12F.



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ANNEX 2 to the APPENDIX to I.F.R.B. Circular-letter No. 401

Example of Combinations of Allotments derived
by the method explained in paragraph 4.2 for the 3 MHz band

Frequency kHz	Authorized area of use	Remarks
	MWARA : CAR RDARA : 2C, 3B, 7A, 7B, 7C, 7D, 9B, 13F	Common channel to 2C and 3B Common channel to 7A, 7B, 7C and 7D
	MWARA : NP RDARA : 2C, 3C, 7E, 9B, 9C 12E, 12F, 12G, 12H, 13H	Common channel to 2C and 3C Common channel to 9B and 9C Common channel to 12E, 12F, 12G and 12H
	RDARA : 2A, 2B, 3A, 9B, 9D, 10A, 10E 12E, 12F, 12G, 12H	Common channel to 2A, 2B and 3A Common channel to 9B and 9D Common channel to 12E, 12F, 12G and 12H
	RDARA : 2A, 2C, 3B, 6E, 9C, 9D VOLMET: AT-MET	Common channel to 2A and 2C Common channel to 9C and 9D
	MWARA : SP RDARA : 2A, 2C, 3C, 4B, 10B 13E, 13F, 12G*	Common channel to 2A, 2C and 3C Common channel to 13E and 13F In 12G power limited to 500 W mean power during night-time In 12G night-time protection 12dB
	MWARA : CAR RDARA : 2A, 2C, 3C, 9D, 13H, 10A*	Common channel to 2A, 2C and 3C In 10A limited to use on a day- time basis
	MWARA : SAM-1 RDARA : 2B, 2C, 3A, 6C, 10A, 10E	Common channel to 2B, 2C and 3A
	MWARA : SAM-2 RDARA : 2B, 2C, 3B, 9D, 10C	Common channel to 2B, 2C, 3B
	MWARA : EU RDARA : 3B, 6A, 10C, 13C	Common channel to EU and 6A
	MWARA : FE, SEA, NA-1, NA-2 RDARA : 13C, 2B*	Common channel to FE and SEA Common channel to NA-1 and NA-2 In 2B, limited to use on a day- time basis
	MWARA : NA-2, NA-3 RDARA : 2B*, 3B, 3C, 13G	Common channel to NA-2 and NA-3 Common channel to 2B, 3B and 3C In 2B, limited to use on a day- time basis
	RDARA : 2B, 2C, 6B*, 10B, 12C, 13G	Common channel to 2B and 2C In 6B, use limited to East of 125° East
	MWARA : NA-2 RDARA : 3B, 6A, 6E, 13D	Common channel to 6A and 6E

Annex 2 (Cont.)

Frequency kHz	Authorized area of use	Remarks
	RDARA : 13D VOLMET: EU-MET, PAC-MET	
	MWARA : CWP, NA-2 RDARA : 13G, 5B*	In 5B, limited to use on a day-time basis
	MWARA : FE, NSA-2 RDARA : 3A, 10B, 13G	
	RDARA : 1C, 3C, 12D, 13I	
	RDARA : 1D, 2B*, 10B, 13K	In 2B, limited to use on a day-time basis
	RDARA : 1E, 2C*, 6A, 13J	In 2C, limited to use on a day-time basis
	RDARA : 6F, 10D, 13J VOLMET: EU-MET**	
	RDARA : 4A, 6B, 13J	
	MWARA : SA* RDARA : 6F*, 10D VOLMET: ME-MET	In SA, use limited to South of 30° North In 6F, use limited to East of 120° East
	RDARA : 6C, 10A**, 10E, 13K VOLMET: ME-MET	
	RDARA : 2A	

Note 1: Allotments with an asterisk(*) are subject to the same limitations as given in No. 27/195, and have been "manually" added into the "allotment plan" prepared from the computer print-out.

Note 2: Allotments with two asterisks(**) were subject to limitations in No. 27/195, but it has been possible to allot them in the present example of a plan without any limitations.

AERONAUTICAL (R) CONFERENCE1978
(Geneva, 1977)Document No. 50-E
6 December 1977
Original : EnglishPLENARY MEETINGAustralia

PROPOSALS FOR THE WORK OF THE CONFERENCE

DETERMINATION OF FUTURE HIGH FREQUENCY AM(R)S RDARA-14 REQUIREMENTS1. Introduction

- 1.1 A method of determining future requirements is essential for the equitable distribution of frequencies throughout the World so that best use is made of the limited spectrum in the high frequency bands of the Aeronautical Mobile (R) Service. Australia has developed a set of criteria which describe reasonable bounds for determining future requirements.
- 1.2 The Australian method involves the projection of existing communication traffic into the future to justify the frequency requirements and for those services for which no such communication traffic history exists, a simple calculation is used. (See paras 5 and 6).

2. Use of VHF

- 2.1 In response to the many exhortations made over recent years that VHF be employed to the maximum extent practicable, this Paper also indicates the extent to which Australia has complied with this desirable objective and its future intentions in that regard.
- 2.2 A measure of the extent to which Australia plans to transfer workload from the high frequency AM(R)S is indicated in the following table. (Note that the proposal to create a new RDARA-14 for Australian domestic purposes has been incorporated in this paper. See Conference Document No. 32).

TABLE A

Sub RDARA	VHF Percentage of Total Traffic 1975 Survey	Percentage of HF Traffic Projected to be Transferred to VHF (1975-85)	VHF Percentage of Total Traffic Projected 1985
14A	69%	58%	87%
14B	48%	41%	69%
14C	56%	40%	74%
14D	69%	60%	87%
14E	63%	50%	72%
14F	76%	21%	80%
14G	89%	43%	94%
RDARA 14	73%	47%	86%



- 2.3 These figures are based on the most recent Australian traffic survey of 1-7 September 1975 when 74 VHF facilities were serving functions which would otherwise be on the AM(R)S HF bands. It is planned that many new VHF facilities be installed prior to 1985 to transfer workload from high frequency facilities. Beyond that date there is limited scope for further transfer of HF workload to VHF facilities with current technology.

3. Australian Communication Traffic Survey

- 3.1 The survey was assumed to be representative of the real traffic needs at that time, even though at a lower standard than that desired. During the survey period each of the twenty four one hour GMT time slots from each day was averaged over the week and an "average day" thereby constructed. The "busy hour" employed was the busiest hour of such an average day.

4. Standards

- 4.1 The maximum number of contacts on a network in any one hour period was used as the standard of performance rather than the more familiar measure of circuit utilisation because this guarantees a better grade of service in operations where messages are kept short and is therefore thought to provide a better form of equity.
- 4.2 For the method described herein a maximum contact count figure of 45 contacts per hour is employed and this is equivalent to a channel utilisation of $p = 0.25$ when the mean message length is 20 seconds or $p = 0.5$ when the mean message length is 40 seconds. This compares with a commonly accepted channel utilisation of $p = 0.4$ to 0.6 .
- 4.3 The standard of 45 contacts per hour was chosen having regard to total interstation interference in a network and the form of "busy hour" employed with its relationship to hour to hour, day to day and seasonal variations in traffic loadings.

5. Forward Projection of Existing Communication Traffic

- 5.1 The projected growth rate of aviation communication traffic in Australia is 7% per annum and a simple forward projection of the 1975 survey period "busy hour" (taking into account the planned transfer of workload to VHF) results in the following requirements for high frequency air-ground channels in Australia (See Table B).
- 5.2 The term "channel" is used herein to describe the means whereby a particular communication service may be provided over the relevant time period. viz a "channel" may be a three frequency family for twenty-four hour coverage, or a two frequency family for daytime only operations, or it may comprise a five frequency family where larger areas are to be served.

TABLE B

Sub RDARA	2 channels	Date Required	
		3 channels	4 channels
14A	1982	1992	1998
14B	1980	1990	1996
14C	1983	1993	1999
14D	1981	1991	1997
14E	1984	1994	2000
14F	1983	1993	1999
14G	1986	1996	2002

- 5.3 The table shows Australia's requirements for those services where there is an existing traffic history. The accuracy of the forward projection is such that it would be reasonable to conclude that three channels per Sub-RDARA should be adequate for Australian purposes. This requirement is based on satisfying the "busy hour"

load which normally occurs during daylight hours when the 4.7, 5.6 and 6.6 MHz bands are favoured. Australia therefore requires a basic three frequency family as the first channel in each Sub-RDARA with the second and third being made up of daytime frequencies only as shown in Table C.

6. Requirement for Other RDARA Services

6.1 The projected future development of the aviation industry in Australia also dictates a firm requirement for three separate types of service in addition to those calculated above by extrapolation of existing traffic loads. An integral part of the forward projections described above was the transfer of the long format messages associated with the dissemination of meteorological information to a broadcast service specifically reserved for such a purpose. In addition to a composite network of VHF installations, the Australian requirement is for an arrangement of high frequency facilities to serve the vast isolated areas of the continent where this is the only economically viable method. A single three frequency family per Sub-RDARA will suffice for this national VOLMET service because a cyclic system may be employed which will allow up to six stations to share the same family and each broadcast five minutes of meteorological information every half hour in rotation.

6.2 There is also a firm requirement for company operational control channels to facilitate direct communication between aircraft located anywhere within RDARA-14 and a single base station. Assuming some sharing is possible the Australian requirement is for three families each of five frequencies. An indication of the capacity of these channels may be gained by the application of a simple formula where the number of channels required may be related to the number of messages per day, average contact length and acceptable channel utilisation.

X = Number of channels

N = Aircraft population

U_A = Aircraft utilisation (0.5)

C = Number of contacts per aircraft per day

T = Contact length (3 minutes)

ρ = Channel utilisation (0.4)

$$\text{then } X = \frac{N \cdot U_A \cdot C \cdot T}{1440 \rho}$$

The stated requirement for three Australia-wide operational control channels will therefore cater for up to six contacts per aircraft per day for up to sixty-four aircraft on each channel.

6.3 For the purposes of Search and Rescue the Australian requirement in RDARA-14 is for seven frequencies including the International SAR frequencies 3023 and 5680 KHz.

TABLE C

AUS/50/1 Summary of Australian High Frequency AM(R)S Domestic Requirements

Sub RDARA Band MHz	Frequency Requirements										
	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	22
14A Channel 1	1			1		1					
2			1(1)		1						
3				1		1					
National Volmet		1			1	1					
14B Channel 1		1(5)			1	1					
2 } (Note 2)				1		1					
3 }			1(5)		1						
National Volmet)	1				1	1					
14C Channel 1		1			1	1					
2 } (Note 3)				1		1					
3 }			1(1)		1						
National Volmet)	1				1	1					
14D Channel 1	1			1		1					
2			1(1)		1						
3				1		1					
National Volmet		1			1	1					
14E Channel 1		1			1	1					
2				1		1					
3			1(1)		1						
National Volmet	1				1	1					
14F Channel 1		1			1	1					
2				1		1					
3			1(1)		1						
National Volmet	1				1	1					
14G Channel 1	1(5)			1		1					
2			1(5)								
3				1		1					
Volmet	1			1		1					
National Operational)											
Control } (Note 4)		3		3		3		3		3	
SAR	3			1	1	1	1				
TOTAL 92	10	10	7	15	18	25	1	3	-	3	-

Notes :

- (1) Daytime interference protection only.
 - (2) Allotment also required for these channels in Sub RDARA-14A and 14D for the duration of the transition period.
 - (3) Allotment also required for these channels in Sub RDARA-14E and 14F for the duration of the transition period.
 - (4) Allotment required over the whole of RDARA-14.
 - (5) Allotment required over the whole of RDARA-14 to facilitate night-time operation.
-

AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 51-E
8 December 1977
Original : English

PLENARY MEETING

United States of America

ADJACENT CHANNEL INTERFERENCE

It is noted that :

- i) ITU and ICAO have recognized that adjacent channels are generally not usable in the same air route area;
- ii) the current Allotment Plan was structured in such a manner that adjacent channels generally were not allotted to the same allotment area;
- iii) adjacent channel interference is primarily a function of the levels of unwanted transmitter emissions, for which state-of-the-art specifications have been proposed;
- iv) enhancement of receiver rejection characteristics does little to provide a safeguard against adjacent channel interference.

USA/51/1

In view of the foregoing, the United States believes that adjacent channel interference must be taken into account in the drawing up of a revised Frequency Allotment Plan.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum No. 1 to
Document No. 52-E
17 January 1978
Original: English

PLENARY MEETING

United States of America

RDARA BOUNDARY DESCRIPTIONS AND ALLOTMENT REQUIREMENTS

In Document No. 52

- page 1, USA/52/1 MOD 27/146, second line, last word,
read : along

- page 2, USA/52/3 MOD 27/151, read :

USA/52/3 MOD 27/151 (a) RDARA-11A:

- (1) Boundary description: From the point 29N 180, through the points 50N 164E, 50N 130W, 33N 130W, 33N 153W, 29N 153W, to close the sub-area at 29N 180.
- (2) Frequency Allotment requirements: nil.



AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 52-E
14 December 1977
Original : English

PLENARY MEETING

United States of America

RDARA BOUNDARY DESCRIPTIONS AND ALLOTMENT REQUIREMENTS

This concerns RDARAs of direct operational interest to the United States, and their respective frequency allotment requirements. It is also in further reference to:

- a) results of the ICAO Communications Divisional Meeting, Montreal, 1976;
 - b) IFRB Circular Letter No. 386 and the U.S. response thereto;
 - c) IFRB informal inquiry concerning proposed changes to RDARA boundaries.
- A. With respect to RDARAs which are essentially of exclusive operational concern to the U.S. (10A, 11 and its sub-areas, 12A), the following applies:
- 1. RDARA-10A: The U.S. reconfirms the results of the ICAO COM DIV meeting with respect to boundary redefinition and frequency allotment requirements, the latter also being indicated responsive to IFRB Circular Letter No. 386. Re-stated, these comprise:

USA/52/1 MOD 27/146 (a) Boundary description: From the point 50N 164E to 66N 169W, then along the 169W meridian to the North Pole, then among the 130W meridian to 50N, thence westward to close the sub-area at 50N 164E.

USA/52/2 (b) Frequency allotment requirements:

2850 - 3025	kHz	- 6
3400 - 3500	"	- 5
4650 - 4700	"	- 3
5450 - 5480	"	- *
5480 - 5680	"	- 6
6525 - 6685	"	- 6
8815 - 8965	"	- 4
10005 - 10100	"	- 2
11275 - 11400	"	- 3

*combined with 5480-5680



2. RDARA-11: The U.S. proposes reconfiguration of the RDARA-11 sub-areas from those now described in Appendix 27 (27/151, 27/152), and proposes frequency allotment requirements essentially in keeping with those indicated responsive to IFRB Circular Letter No. 386, but on a more restrictive basis in the interest of spectrum utilization efficiency through increased frequency repeatability. These elements are summarized as follows:

USA/52/3 MOD 27/151 (a) RDARA-11A:

- (1) Boundary description: From the point 29N 180, through the points 50N 164E, 50N 130W, 33N 153W, 29N 153W, to close the sub-area at 29N 180.
- (2) Frequency Allotment requirements: nil

USA/52/4 MOD 27/152 (b) RDARA-11B:

- (1) Boundary description: From the point 50N 130W and through the points 33N 130W, 33N 119W, 25N 98W, 25N 65W, 40N 65W, 46N 67W then along the border between the United States and Canada through 50 N 127W, to close the sub-area at 50N 130W.

USA/52/5

- (2) Frequency allotment requirements:

2850	-	3025	kHz	-	6
3400	-	3500	"	-	8
4650	-	4700	"	-	6
5450	-	5480	"	-	*
5480	-	5680	"	-	9
6525	-	6685	"	-	7
8815	-	8965	"	-	3
10005	-	10100	"	-	1
11275	-	11400	"	-	2
13260	-	13360	"	-	1
17900	-	17970	"	-	2

USA/52/6 ADD 27/152A

(c) RDARA-11C:

- (1) Boundary description: From the point 25N 65W and through the points 40N 65W, 40N 50W, 25N 35W, to close the sub-area at 25N 65W.
- (2) Frequency allotment requirements: nil

*combined with 5480-5680

USA/52/7

3. RDARA-12A: The U.S. considers the boundary description contained in Appendix 27 (27/153) appropriate, with no need for change. The associated frequency allotment requirements, as indicated responsive to IFRB Circular Letter No. 386, comprise:

2850	-	3025	kHz	-	1
3400	-	3500	"	-	1
4650	-	4700	"	-	1
5450	-	5480	"	-	*
5480	-	5680	"	-	1

USA/52/8

- B. The remaining RDARAs of direct U.S. operational involvement are 6C, 9B and 12D. These are not exclusively of U.S. concern, since their geographical areas additionally encompass the territories of other Administrations. Although the U.S. foresees no need for adjustment to these boundaries, cooperative discussions at the Conference may mutually develop amended boundary descriptions. Similarly, frequency allotment requirements must be mutually developed through judicious merging of the indicated requirements of all concerned Administrations with which these RDARAs are shared. The U.S. allotment requirements to be so merged, as indicated responsive to IFRB Circular Letter No. 386, comprise:

			<u>6C</u>	<u>9B</u>	<u>12D</u>
2850	-	3025 kHz	-	-	1
3400	-	3500 "	1	1	-
5450	-	5480 "	-	-	*
5480	-	5680 "	1	1	1
6525	-	6685 "	-	-	1
8815	-	8965 "	1	-	1
11275	-	11400 "	1	-	-

*combined with 5480-5680

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum No. 1
to Document No. 53-E
6 February 1978
Original : English

COMMITTEE 5

The People's Republic of China

In Document No. 53 :

Page 3

CHN/53/8 MOD 27/130 Sub-Area 6D, 11th line, change 21°N 121°E to read
20°N 120°40'E;

Page 4

CHN/53/11 MOD 27/181, read :

ME MID-MET reception area is defined by a line drawn from the point
50°N 80°E, through the points ~~29°N 80°E~~, 50°N 90°E, 35°N 90°E, 27°N 85°E, 16°N 78°E,
15°42'E, 20°N 20°E, 40°N 20°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.



AERONAUTICAL (R) CONFERENCE

1978
(Geneva, 1977)

Document No. 53-E
22 December 1977
Original : English

PLENARY MEETINGThe People's Republic of China

PROPOSALS ON THE AMENDMENTS TO THE DESCRIPTIONS OF THE BOUNDARIES
OF THE MWARAs, RDARAs AND VOLMET AREAS IN APPENDIX 27
TO THE RADIO REGULATIONS

The Chinese Administration presents to the ITU World Administrative Radio Conference on the Aeronautical Mobile (R) Service (February 1978, Geneva) the following proposals on the amendments to the descriptions of the boundaries of the MWARAs, RDARA 6 and certain VOLMET areas related to the People's Republic of China contained in Appendix 27 to the Radio Regulations.

1. On Major World Air Route Areas

CHN/53/1 SUP 27/85 MWARA-Far East (MWARA-FE)

Reason : Due to ADD 27/103A MWARA-East Asia (MWARA-EAS).

CHN/53/2 MOD 27/86 MWARA-Middle East (MWARA-ME MID)

From the point 50°N 80°E through the points 31°N-80°E, 29°N-85°E, 08°N-75°E, 44°N 94°E, 08°N 76°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

Reason : To extend the eastern boundary eastward to include Urumchi so as to meet the requirements of international flight operations in this area.

CHN/53/3 MOD 27/94 MWARA-North Pacific (MWARA-NP)

~~From the point 50°N-166°E through the points 75°N-150°W, 75°N-90°W, 55°N-110°W, 46°N-122°W, 50°N-170°W, 33°N-138°E, 52°N-132°E, to the point 50°N-166°E.~~

From the North Pole through the points 60°N 135°W, 47°N 118°W, 30°N 165°W, 30°N 115°E, 41°N 116°E, 55°N 135°E, to the North Pole.

Reason : To extend the western boundary westward to include Peking and Shanghai so as to meet the requirements of international flight operations in this area.



CHN/53/4 MOD 27/102

MWARA-South East Asia (MWARA-SEA)

~~From the point 29°N-85°E through the points 15°N-105°E, 00°-135°E, 00°-168°E, 35°S-150°E, 35°S-116°E, 08°N-75°E, to the point 29°N-85°E.~~

From the point 26°N 130°E through the points 00° 130°E, 00° 135°E, 12°S 145°E, 12°S 160°E, 25°S 155°E, 40°S 150°E, 35°S 115°E, 18°N 62°E, 26°N 65°E, to the point 26°N 130°E.

Reason : To extend the eastern and western boundaries to meet the requirements of international flight operations in this area.

CHN/53/5 ADD 27/103A

MWARA-East Asia (MWARA-EAS)

From the point 55°N 124°E, through the points 37°N 145°E, 26°N 130°E, 00° 130°E, 00° 80°E, 18°N 62°E, 37°N 67°E, 55°N 80°E, to the point 55°N 124°E.

Reason : To establish this new area to meet the requirements of international flight operations in this area due to SUP 27/85 deletion of MWARA-FE.

CHN/53/6 ADD 27/103B

MWARA-North Central Asia (MWARA-NCA)

From the North Pole through the points 75°N 10°E, 60°N 25°E, 30°N 25°E, 30°N 73°E, 37°N 73°E, 49°N 85°E, 42°N 97°E, 42°N 110°E, 54°N 123°E, 47°N 131°E, 40°N 131°E, 30°N 135°E, 65°N 170°W, to the North Pole.

Reason : Since the northern boundary of the new MWARA-EAS has been on Latitude 55°N, the requirements of flight operations between China and USSR could be met. Therefore, it is not necessary for the south-eastern part of the new NCA MWARA to overlap with MWARA-EAS to include Peking and Northeast region of the People's Republic of China.

2. On Regional and Domestic Air Route Areas

CHN/53/7 MOD 27/128

Sub-Area 6B

~~From approximately 49°N-88°E, along the common border between China and the USSR to the point 37°N-75°E. Thence eastward along the southern border of China to the coast of South China Sea. Thence along the southern territorial waters of Hainan Island to the point 20°N-113°E.~~

From the point 39°49'41"N 124°10'06"E through the points 39°31'51"N 124°06'31"E, 39°N 124°E, 32°30'N 124°E, 32°30'N 126°50'E, 26°N 125°E, 25°N 123°E, 21°N 121°30'E, 20°N 120°40'E, 20°N 176°W, 50°N 164°E, 43°N 147°E, thence west between the territorial waters of Japan and the USSR, and along the border between China and the USSR, and along the border between China and Mongolia to approximately 49°N 88°E, and along the border between the Democratic People's Republic of Korea and USSR, and then the border between China and the Democratic People's Republic of Korea, to the point 39°49'41"N 124°10'06"E.

Reason : Consequential changes due to ADD 27/132A Sub-Area 6G

CHN/53/8 MOD 27/130

Sub-Area 6D

From the junction of the borders of China, India and Burma, south along the India-Burma and ~~Pakistan~~ Bangladesh-Burma borders to the Bay of Bengal. Along the coast of Burma to its southernmost point, then to Weh Island (off the north coast of Sumatra). Then to the point 02°S 92°E, and through the point 10°S 92°E to 10°S 110°E. Then northward along the 110°E meridian, and thence along the boundary of Sub-Area 6C ~~through the point 20°N 130°E to 20°N 113°E. Thence south around the Island of Hainan, and to the point 04°N 130°E.~~ through the points 20°N 130°E, 21°N 121°E, 18°N 119°E, 14°N 119°E, 10°N 118°E, 08°N 116°E, 04°N 113°E, 03°30'N 112°E, 06°N 108°E, 10°N 110°E, 15°N 110°E, 18°N 108°E, 18°N 107°E, 20°N 107°E, 20°N 108°E, 21°32'52"N 108°E. Thence along the China-North Viet-Nam, China-Laos and China-Burma borders to close the sub-area at the junction of the borders of China, India and Burma.

Reason : Consequential changes due to ADD 27/132A Sub-Area 6G.

AN/53/9 MOD 27/132

Sub-Area 6F

~~From the junction of the China-India-Burma borders north-east to the 100°E meridian. North on this meridian to the northern boundary of Sub-Area 6B. Eastward along this boundary to 147°E thence through the points 20°N 130°E, 04°N 130°E. Then west along the boundary of Sub-Area 6D to the junction of the China-India-Burma borders.~~

From the point 39°49'41"N 124°10'06"E through the points 39°31'51"N 124°06'31"E, 39°N 124°E, 32°30'N 124°E, 32°30'N 126°50'E, 26°N 125°E, 25°N 123°E, 21°N 121°30'E, 18°N 119°E, 14°N 119°E, 10°N 118°E, 08°N 116°E, 04°N 113°E, 03°30'N 112°E, 06°N 108°E, 10°N 110°E, 15°N 110°E, 18°N 108°E, 18°N 107°E, 20°N 107°E, 20°N 108°E, 21°32'52"N 108°E. Then along the China-Viet-Nam, China-Laos and China-Burma borders to the junction of the borders of China, India and Burma. Thence south along the India-Burma and Bangladesh-Burma borders to the Bay of Bengal, following the coast of Burma to its southernmost point, then to Weh Island (off the north coast of Sumatra). Thence through the points 02°S 92°E, 10°S 92°E,

10°S 110°E, then northward along the 110°E meridian, and along the boundary of Sub-Area 6C to the point 04°N 130°E. Then through the points 20°N 130°E, 43°N 147°E, and then westward between the territorial waters of Japan and the USSR, and then along the DPRK-USSR and China-DPRK borders to the point 39°49'41"N 124°10'06"E.

Reason : Consequential changes due to ADD 27/132A Sub-Area 6G.

CHN/53/10 ADD 27/132A

New Sub-Area 6G

From the point 21°32'52"N 108°E on the China-Viet-Nam border, along the national boundary of the mainland part of the People's Republic of China to the point 39°49'41"N 124°10'06"E on the China-DPRK border, then through the points 39°31'51"N 124°06'31"E, 39°N 124°E, 32°30'N 124°E, 32°30'N 126°50'E, 26°N 125°E, 25°N 123°E, 21°N 121°30'E, 18°N 119°E, 14°N 119°E, 10°N 118°E, 08°N 116°E, 04°N 113°E, 03°30'N 112°E, 06°N 108°E, 10°N 110°E, 15°N 110°E, 18°N 108°E, 18°N 107°E, 20°N 107°E, 20°N 108°E, to the point 21°32'52"N 108°E.

Reason : The parts related to the People's Republic of China in the delineation of RDARA 6 and its sub-areas contained in the existing Appendix 27 are unreasonable. In view of the great development of the domestic air routes in China, it is proposed that a new Sub-Area 6G in RDARA 6 be established so as to embrace all the domestic air routes of China to meet the requirements of air traffic control. All the parts of Sub-Areas 6B, 6D and 6F in Appendix 27 covering China should be deleted.

3. On the VOLMET Areas

CHN/53/11 MOD 27/181

MID-MET reception area is defined by a line drawn from the point 50°N 80°E, through the points 50°N 90°E, 29°N-80°E, 35°N 90°E, 27°N 85°E, 16°N 78°E, 15°N-42°E, 20°N-20°E, 40°N-20°E, 22°N 56°E, 16°N 42°E, 30°N 30°E, 51°N 30°E, 57°N 37°E, to the point 50°N 80°E.

Reason : To include Urumchi in this reception area.

CHN/53/12 MOD 27/184

SEA-MET allotment area is defined by a line drawn from the point 29°N-86°E, 55°N 75°E, through the points 55°N 135°E, 45°N 135°E, 35°N 130°E, 10°N 130°E, 10°S 155°E, 35°S 155°E, 35°S 116°E, 08°N 75°E, 26°N 65°E, 15°N-105°E, to the point 29°N-86°E, 55°N 75°E.

CHN/53/13 MOD 27/185

SEA-MET reception area is defined by a line drawn from ~~the point 35°N-50°E through the points 30°N-90°E, 10°N-180°, 40°S-180°, 48°S-170°E, 35°S-116°E, 08°N-75°E, 10°N-50°E, to the point 35°N-50°E.~~ the point 55°N 50°E, through the points 55°N 180°, 50°S 180°, 50°S 70°E, 08°N 70°E, 08°N 50°E, to the point 55°N 50°E.

Reason : To meet the requirements of international flight operations in this area.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 54-E
18 January 1978
Original : English

PLENARY MEETING

Republic of the Philippines

PROPOSAL FOR THE WORK OF THE CONFERENCE

The Administration proposes the addition of the following resolution:

PHL/54/1 ADD

RESOLUTION NO. Aer 7

RELATING TO THE IMPLEMENTATION OF THE NEW ARRANGEMENT OF HIGH FREQUENCY BANDS ALLOCATED EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE BETWEEN 2 850 and 17 970 kHz

The Aeronautical World Administrative Radio Conference Geneva, 1978.

considering

- a) that each of the high frequency bands allocated exclusively to the aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this conference to provide for SSB techniques;
- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;
- f) that the Final Acts of this Conference will enter into force on 1 April 1979;
- g) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on February 1983;



recognizing

- a) that the aeronautical mobile (R) service is a safety service
- b) that some frequencies have been allotted for world-wide use

resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;

2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single side band operation shall be made in accordance with the following provisions:

2.1 the carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;

2.2 the carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;

2.3 that, prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be co-ordinated with the International Civil Aviation Organization in accordance with No. (MOD) 27/20 of Appendix 27 (Rev) to the Radio Regulations;

3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations shall be replaced by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);

4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2850 and 17 970 kHz shall comply with the following conditions:

4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operations at the earliest possible date; furthermore; they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3 until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized.

Reason: With the Appendix 27 (Rev), an orderly transition to the new plan is required. However it is our considered opinion that any usage of double sideband should definitely cease as of 1 February 1983 as more than enough time has been provided to all concerned to effect the necessary transition to SSB operation.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

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18 January 1978
Original : EnglishPLENARY MEETINGRepublic of the Philippines

PROPOSAL FOR THE WORK OF THE CONFERENCE

Description of the Boundaries of the Regional and Domestic
Air Route Area (RDARA).

PHL/55/1 MOD 27/130 SUB-AREA 6D

From the junction of the borders of China, India and Burma, south along the India-Burma and Pakistan-Burma borders to the Bay of Bengal. Along the coast of Burma to its southernmost point. Then to Weh Island (off the north coast of Sumatra). Then to the point 02°S 92°E, and through the point 10°S 92°E to 10°S 110°E. Then eastward to 10°S 141°E extending northward to 04°S 141°E and then to 04°N 130°E through the point 20°N 130°E to 20°N 113°E and through the point 20°N 130°E to 20°N 113°E. Thence south around the Island of Hainan, and along the China-North Viet-Nam, China-Laos and China-Burma borders to close the sub-area at the junction of the borders of China, India and Burma.

REASON:

In the ASEAN Region, the existing RDARA configurations as defined in Appendix 27 to the ITU Radio Regulations do not provide Aeronautical Mobile (R) Service to regional flights between Indonesia and the Philippines or between Indonesia and Malaysia in Borneo. This is presently felt in the border flights between Davao and Manado, Zamboanga and Tarakan and other similar locations.

In view of the archipelagic nature of Indonesia, Malaysia and the Philippines, it is envisioned that more regional or border flights between islands will take place in the future pursuant to the economic development of the region. The absence of this enroute air/ground communication service will consequently be prejudicial to the safety, efficiency, regularity and economy of these border aircraft operations. It is therefore necessary to reconfigure the boundaries of the existing RDARAs and thus provide the appropriate common RDARA frequencies on which the ground and aircraft stations within the area could operate and mutually assist each other.



PLENARY MEETINGRepublic of Zaire

PROPOSALS FOR THE WORK OF THE CONFERENCE

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PROPOSALS OF THE REPUBLIC OF ZAIRE FOR THE WORLD
ADMINISTRATIVE RADIO CONFERENCE ON THE AERONAUTICAL MOBILE (R) SERVICE
GENEVA, FEBRUARY 1978

PART I

INTRODUCTION

1.1 The Republic of Zaire, aware of the importance of the role played by the International Telecommunication Union in the promotion, development and use of telecommunications in the interests of all mankind, reaffirms its constant readiness and desire to participate, in cooperation with other nations whatever their state of telecommunication development, in any regional or international meeting or conference with a view to making its modest contribution to the success of the joint undertaking.

1.2 The substantial increase in air traffic during the past few years over national and international air routes has led to a shortage for ITU Member countries of HF frequency assignments to the Aeronautical Mobile (R) Service due to limitations in the HF spectrum arising out of competition among international civil aviation radio services.

1.3 This shortage of frequencies for the Aeronautical Mobile (R) Service is caused by the following :

- a) Firstly, the impossibility of permanently providing long-range operational control links with the present HF radio networks operated in accordance with the practices recommended by ICAO, for the following reasons :
 - 1) the frequencies used by these radio networks are allotted to particular geographical areas (MWARAs and RDARAs). They cannot therefore be used for links between operators and their aircraft throughout the world;
 - 2) the mode and methods of operation, the frequencies used and the traffic load depend on the air traffic services provided in a flight information region, i.e. within distances generally not exceeding 1,000 nautical miles;
 - 3) frequencies above 19 MHz are not used, which in certain propagation conditions limits the long-range link possibilities.

The shortage of frequency assignments thus makes it urgent to draw up a new frequency allotment plan to cover all the requirements of the Aeronautical Mobile (R) Service until the year 2000. The apportionment of frequencies allotted under this new plan must be based :

- either on time-sharing between the different geographical areas
 - or on sharing of the same frequency families or the same frequencies within a given geographical area according to the channel load and the distribution of the air traffic of the airlines concerned.
- b) The pressing need to review the boundaries of the MWARA, RDARA and VOLMET areas without thereby altering the principle of the allotment and reception areas corresponding to the three areas.

It is necessary to create MWARAs throughout the world with a reasonable overlap between areas in order to reduce changes in frequencies during long-distance flights to a minimum.

Regional requirements call for a modification in the boundaries of certain RDARAs or internal subdivisions of these areas covering certain territories, on the one hand, and in the frequency families for these RDARAs, on the other.

Improved quality of the transmission and reception of the meteorological information needed for long-distance flight control will require either the extension of certain VOLMET areas or the opening of new radio stations for VOLMET communications.

1.4 Aircraft operating agencies now have a constant and extensive need for telecommunications to ensure the safe and efficient movement of aircraft.

Their mode of communication must be HF telecommunication and this will remain the primary mode of long-distance communication in the Aeronautical Mobile (R) Service in spite of the availability of other modern transmission media.

1.5 In view of the complexity of the problems involved in sharing the radio frequency spectrum and in reviewing the boundaries of the MWARA, RDARA and VOLMET areas in order to meet the requirements of all worldwide aircraft operating agencies in the Aeronautical Mobile (R) Service, the need to increase the importance of ICAO throughout the world is acute.

Against this background, the World Administrative Radio Conference on the Aeronautical Mobile (R) Service in 1978 will be required to review the role and authority of ICAO in the establishment of frequency allotment plans and coordination procedures with a view to facilitating the implementation of the decisions of the Conference.

PART II

OBJECTIVES

In order to meet national and international requirements in the Aeronautical Mobile (R) Service, the Republic of Zaire proposes :

1. On a worldwide basis

a) To provide more HF channels for the Aeronautical Mobile (R) Service both through the use of single sideband (SSB) operation, which has the obvious advantage of at least doubling the number of frequencies available, and by including the band from 21 960 to 22 000 kHz to augment long-distance link possibilities;

b) to provide for the universal use of single sideband in radio-telephony transmissions in the Aeronautical Mobile (R) Service;

c) to draw up a new frequency allotment plan in the HF bands provided for this service;

d) to permit the use of families of frequencies across MWARA and RDARA boundaries by aircraft operating agencies for purposes of flight safety and regularity, on channels used for operations other than air traffic control;

e) to introduce an efficient, worldwide, operational control system;

f) to approve or modify proposed amendments to the Radio Regulations and the resolutions and recommendations adopted by the Communications Divisional Meeting, Montreal, 1976.

2. On a regional basis

Considering the changes that have taken place in the structure of national and international routes, the Administration of Zaire proposes that the MWARA, RDARA and VOLMET areas with which it is concerned should be amended as follows :

- a) Recommendation 2/6(e) in Document 9187, COM/76 of the Communications Divisional Meeting combining MWARA-NSA-1 and NSA-2 in MWARA-AFI should be either amended or rejected :
 - 1) either the South-western boundary of MWARA-AFI should be extended towards the West according to the map in Annex 1, maintaining RDARA 7B in order to respect the political and administrative unity of the Republic of Zaire;
 - 2) or the above-mentioned Recommendation 2/6(e) should be rejected since it does not cover the whole of Africa according to the reasons put forward to justify it; the former MWARA-NSA-1 and NSA-2 sub-areas should be maintained, modified as shown on the map in Annex 2 where they are designated as MWARA-AFI-1 and MWARA-AFI-2. The RDARA must be maintained to respect the political and administrative unity of Zaire.
- b) Better definitions for the AFI-MET allotment area and the AFI-MET reception area should be adopted with a view to providing the meteorological information needed for international flights over Africa.

Minor amendments will be made to the texts quoted in points MOD 27/174 and MOD 27/175 in Document 9187, COM/76.

- c) Amendments of both a general and a specific nature concerning the Republic of Zaire and neighbouring countries are required in Appendix 27.
- d) VOLMET ATIS or OFIS broadcasts by RTF of VOR will be provided from all the international aerodromes of the Republic of Zaire in accordance with Recommendation 14/19 of Document 7474/20, AFI V.

PART III

METHOD OF PRESENTATION

Note 1 : The procedure of underlining or lining through existing texts, as well as the use of the symbols NOC, SUP, MOD and ADD, have the usual meaning :

ADD = Addition of a new paragraph;

MOD = Amendment of a paragraph;

SUP = Deletion of a paragraph;

NOC = Paragraph maintained without change.

Note 2 : Underlined words correspond to new text. Words crossed out with dashes indicate a deleted text.

Note 3 : The following paragraphs are numbered as in Appendix 27.

PART IV

DRAFT REVISION OF PARTS I AND II
OF APPENDIX 27

PART I

GENERAL PROVISIONS

Section I. Definitions

1. Frequency Allotment Plan

NOC 27/1 through 27/8

ZAI/56/1 MOD 27/9

A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different Aeronautical Mobile (R) bands and is intended to permit communication at any time ~~and within ever any distance~~ the authorized area of use (See Nos. 27/189 - 27/207 between aircraft ~~in-flight~~ stations and appropriate aeronautical stations.

- Reasons : 1) In order to clarify the definition and to align it with ITU Radio Regulations No. 33.
- 2) As the term "in-flight" is not defined in the Radio Regulations, it may give rise to conflicting interpretations.

Section II. Technical and operational principles used for the establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service

ZAI/56/2 MOD of Title A. ~~Determination of Channel Width~~

Channel Characteristics

Reasons : Sub-division A deals with general channel characteristics.

1. Frequency separation

ZAI/56/3 MOD 27/10

~~The A frequency separations~~ separation between carrier (reference) frequencies of 3 kHz ~~is indicated in the following table are~~ adequate to permit communications using the classes of emission referred to in Nos. 27/49-27/53 27/52 in the frequency bands between 2 850 kHz and 22 000 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be on integral multiples of 1 kHz.

BAND (kHz)	SEPARATION	BAND	SEPARATION
2 850 - 3 025	3	8 815 - 8 165	3
3 400 - 3 500	3	10 005 - 10 100	3
4 650 - 4 700	3	11 275 - 11 400	3
5 450 - 5 480	3	13 260 - 13 360	3
5 480 - 5 680	3	17 900 - 17 970	3
6 525 - 6 685	3	21 960 - 22 000	3

Reasons : It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channelling in increments of less than 1 kHz.

ZAI/56/4 MOD 27/11

~~It is assumed that~~ For radiotelephone emissions the ~~modulating~~ audio frequencies will be limited to between 300 and 2 700 Hz and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met.

Note : For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3 000 Hz.

Reasons : To define an audio bandwidth necessary for A3J operation consistent with 3 kHz channel separation and to provide accommodation for other permitted classes of emission.

ZAI/56/5 MOD 27/12

The use of channels, indicated in 27/16 as derived from the above table (No. 27/10), for the various classes of emission other than A3J and A2H will be subject to special arrangements by the Administrations concerned in order to avoid ~~the~~ harmful interference which may result from the simultaneous use of the same channel for several classes of emission. ~~No inherent priority being given to any particular class of emission.~~

Reasons : Amended to be consistent with SSB operation.

ZAI/56/6 SUP 27/13

Reasons : No longer applicable as a result of the introduction of SSB operation in the Aeronautical Mobile (R) Service.

ZAI/56/7 SUP 27/14

Reasons : No longer applicable.

ZAI/56/8 MOD 27/15 The arrangements contemplated in ~~Nes. 27/12 and 27/14~~ No. 27/12 should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled "~~Special Agreements~~" "Special Arrangements".

Reasons : For clarification.

ZAI/56/9 MOD 27/16 The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under No. 27/10 (ZAI/56/3), will be found in the following table.

Reasons : 1. To indicate clearly that the frequencies in the Allotment Plan are carrier frequencies.

2. To present the frequency table in the form used in Appendix 27(Rev.).

3. To replace the existing table by a new table indicating 3 kHz frequency spacing pursuant to MOD 27/10.

ZAI/56/9A

kHz							
2850 - 3025		3400 - 3500	4650 - 4700	5480 - 5680		6525 - 6685	
2851	2953	3401	4651	5481	5583	6526	6628
2854	2956	3404	4654	5484	5586	6529	6631
2857	2959	3407	4657	5487	5589	6532	6634
2860	2962	3410	4660	5490	5592	6535	6637
2863	2965	3413	4663	5493	5595	6538	6640
2866	2968	3416	4666	5496	5598	6541	6643
2869	2971	3419	4669	5499	5601	6544	6646
2872	2974	3422	4672	5502	5604	6547	6649
2875	2977	3425	4675	5505	5607	6550	6652
2878	2980	3428	4678	5508	5610	6553	6655
2881	2983	3431	4681	5511	5613	6556	6658
2884	2986	3434	4684	5514	5616	6559	6661
2887	2989	3437	4687	5517	5619	6562	6664
2890	2992	3440	4690	5520	5622	6565	6667
2893	2995	3443	4693	5523	5625	6568	6670
2896	2998	3446	4696	5526	5628	6571	6673
2899	3001	3449	(16) CHNLS	5529	5631	6574	6676
2902	3004	3452	*4699	5532	5634	6577	6679
2905	3007	3455		5535	5637	6580	6682
2908	3010	3458		5538	5640	6583	(53) CHNLS
2911	3013	3461		5541	5643	6586	
2914	3016	3464	5450 - 5480	5544	5646	6589	
2917	3019	3467	REGION 2	5547	5649	6592	
2920	3023(R/OR)	3470	5451	5550	5652	6595	
2923		3473	5454	5553	5655	6598	
2926	(58) CHNLS	3476	5457	5556	5658	6601	
2929		3479	5460	5559	5661	6604	
2932		3482	5463	5562	5664	6607	
2935		3485	5466	5565	5667	6610	
2938		3488	5469	5568	5670	6613	
2941		3491	5472	5571	5673	6616	
2944		3494	5475	5574	5676	6619	
2947		3497	(9) CHNLS	5577	5680(R/OR)	6622	
2950			*5478	5580		6625	
		(33) CHNLS				(67) CHNLS	

* Guard Band

<u>8815 - 8965</u>	<u>10005 - 10100</u>	<u>11275 - 11400</u>	<u>13260 - 13360</u>	<u>17900 - 17970</u>
8816 8921	10006	11276 11384	13261	17901
8819 8924	10009	11279 11387	13264	17904
8822 8927	10012	11282 11390	13267	17907
8825 8930	10015	11285 11393	13270	17910
8828 8933	10018	11288 11396	13273	17913
8831 8936	10021	11291	13276	17916
8834 3939	10024	(41) CHNLS 11294	13279	17919
8837 8942	10027	*11399 11297	13282	17922
8840 8945	10030	11300	13285	17925
8843	10033	11303	13288	17928
8846 8948	10036	11306	13291	17931
8849 8951	10039	11309	13294	17934
8852 8954	10042	11312	13297	17937
8855 8957	10045	11315	13300	17940
8858 8960	10048	11318	13303	17943
8861	10051	11321	13306	17946
(49) CHNLS 8864	10054	11324	13309	17949
*8963 8867	10057	11327	13312	17952
8870	10060	11330	13315	17955
8873	10063	11333	13318	17958
8876	10066	11336	13321	17961
8879	10069	11339	13324	17964
8882	10072	11342	13327	17967
8885	10075	11345	13330	(23) CHNLS
8888	10078	11348	13333	
8891	10081	11351	13336	
8894	10084	11354	13339	
8897	10087	11357	13342	
8900	10090	11360	13345	
8903	10093	11363	13348	
8906	10096	11366	13351	
8909	(31) CHNLS 11369	11369	13354	
8912	*10099 11372	11372	13357	
8915		11375	(33) CHNLS	
8918		11378		
		11381		

* Guard Band

3 channels common to (R) and (OR) services

ZAI/56/10 MOD 27/17

The ~~channels~~ carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and 5680 kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency 5680 ke/s kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the Aeronautical Mobile Service.

Reasons : To reflect new carrier frequencies determined by frequency separation of 3 kHz.

ZAI/56/11 MOD 27/18

All stations directly involved in co-ordinated search and rescue operations using ~~3023.5~~ 3023 and 5680 ~~ke/s kHz~~ for search and rescue purposes and employing single sideband (SSB) shall transmit a carrier at a level sufficient to permit reception on a double sideband (DSB) receiver and shall be able to receive DSB transmissions only in the upper sideband mode (See also Mod 27/73).

Reasons : If it is accepted that double sideband emissions may continue to be used on 3023 and 5680 kHz, no modification of 27/18 would appear to be necessary. Should, however, it be agreed that single sideband operation be introduced on these frequencies, the preceding change to 27/18 would appear to be necessary.

ZAI/56/12 SUP 27/19

ZAI/56/13 MOD 27/20

4. The International Civil Aviation Organization ~~{I-C-A-O-}~~ (ICAO) coordinates communications in the Aeronautical Mobile (R) Service with international aeronautical air operations for a large part of the world, and this Organization ~~should~~ shall be consulted ~~in appropriate cases, particularly~~ on any international aeronautical operational use of the frequencies in the Plan, including any coordination of the use of frequencies allotted on a world-wide basis. ICAO shall carry out the necessary co-ordination, in collaboration with the IFRB, to facilitate application of the amendment and registration procedures detailed in Article 9 of the Radio Regulations.

Reasons : At the time (1959) 27/20 was originally drafted, all areas of the world were not covered by ICAO Regional Air Navigation Plans (ANP's). To reflect the current ICAO world-wide coordination of communications for the Aeronautical Mobile (R) Service, the preceding change is suggested.

NOC 27/21 through 27/23

B. Interference Range Contours

1. DEFINITION OF CONTOURS

ZAI/56/14 MOD 27/24 To be determined by the Conference.

NOC 27/25 through 27/31

ZAI/56/15 MOD 27/32 5. METHOD OF USE

Take the MWARA, RDARA or VOLMET area maps associated with this Appendix and select the transparency for the frequency order and sharing conditions under consideration. (Note : MWARA and RDARA transparencies are equally applicable for world-wide use.)

Reasons : To show that the interference range contours are equally applicable for world-wide use.

NOC 27/33 through 27/48

C. Classes of Emission and Power

NOC 27/49

ZAI/56/16 MOD 27/50 through MOD 27/56

To be determined by the Conference.

NOC 27/57 through 27/62

3. Technical provisions relating to the use of single sideband emissions.

ZAI/56/17 MOD 27/63 through 27/73

To be determined by the Conference.

PART II

PLAN FOR THE ALLOTMENT OF FREQUENCIES FOR THE AERONAUTICAL
MOBILE (R) SERVICE IN THE EXCLUSIVE BANDS BETWEEN 2 850 and 22 000 kHz

ZAI/56/18 ADD Section 0

ZAI/56/19 ADD Frequencies allotted for world-wide use

ZAI/56/20 ADD 27/73A Frequencies designated for Aeronautical Operational Control in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area.

Note : Where an operational area lies wholly within a RDARA or Sub-RDARA boundary, to the extent possible, frequencies allotted to RDARAs and Sub-RDARAs should be used.

ZAI/56/21 MOD 27/120 Sub-Area 4B

From the point 21°N 31°W through the points 10°N 20°W, 05°S 20°W, to 05°S 12°E. Thence along the southern border of the People's Republic of the Congo (~~Brazzaville~~) and the Central African Republic to the junction between the Democratic Republic of the Congo, ZAIRE, the Sudan and the Central African Republic. Along the western border of the Sudan to the point 12°N 22°E. Thence along the ~~Fort-Lamy~~ NDJAMENA parallel to the Nigerian border. Then West along this border to Zinder. From Zinder through Gao to close the sub-area at 21°N 31°W.

Reasons : To observe the official names of African countries and cities.

ZAI/56/22 MOD 27/95

Major World Air Route Area - NORTH-SOUTH AFRICA 1 (NSA-1) will be determined by the Conference in accordance with the proposals notified by the Administration of the Republic of Zaire on page 3, Part II : Objectives, 2. On a regional basis, a) and b).

1. If the amendment in paragraph 2 a) is approved by the 1978 Conference, an additional family of frequencies will be needed and point 27/96 of Appendix 27 defining the MWARA NORTH-SOUTH AFRICA-2 (NSA-2) will have to be deleted.

Reasons : a) to use the ICAO nomenclature;

b) to create a new MWARA covering most of Africa;

c) the MWARA-AFI thus defined must respect the political and administrative unity of the Republic of Zaire.

2. If the proposal in paragraph 2 b) is approved by the Conference, MWARA NSA-1 and NSA-2 will co-exist under the new names MWARA-AFI-1 and AFI-2 as indicated on the map in Annex 2 and an additional family of frequencies will not be needed, although a request for three frequencies for MWARA-AFI-1 is submitted in Annex 4.

Reasons : a) to use the ICAO nomenclature;

b) the MWARA-AFI-1 must respect the political and administrative unity of the Republic of Zaire;

c) there would then be a greater number of frequencies available for allotment to other MWARA, RDARA or VOLMET sub-areas.

ZAI/56/23 MOD 27/96

Major World Air Route Area NORTH-SOUTH AFRICA-2 (NSA-2) will be determined by the Conference (see ZAI/56/22 above).

Section I. Description of the boundaries of the areas and sub-areas

NOC 27/74 through 27/79

ZAI/56/24 MOD 27/80 through 27/94, 27/97 through 27/119, 27/121 through 27/132, 27/134, 27/137, 27/139 through 27/173, 27/176 through 27/185 will be determined by the conference.

ZAI/56/25 MOD 27/133 Regional and Domestic Air Route Area-7 (RDARA-7)

From the South Pole along the 20°W meridian to 05°S . Then along the 05°S parallel to 12°E . Thence along the northern border of the ~~Democratic~~ Republic of ~~the-Congo~~ Zaire, Cabinda Territory being included in this Area, along the border between Uganda and Sudan, and between Kenya and the following countries : Sudan, Ethiopia and Somalia to the point $02^{\circ}\text{S } 42^{\circ}\text{E}$. Then to $02^{\circ}\text{S } 60^{\circ}\text{E}$, and along the 60°E meridian to the South Pole.

Reasons : To observe the official name of the Republic of Zaire.

ZAI/56/26 MOD 27/135 Sub-Area 7B

From the points $05^{\circ}\text{S } 10^{\circ}\text{E}$ to $05^{\circ}\text{S } 12^{\circ}\text{E}$. Thence along the northern border of the ~~Democratic~~ Republic of ~~the-Congo~~ Zaire, Cabinda Territory being included in this Area, to the junction of the borders of Uganda, ~~Democratic~~ Republic of ~~the-Congo~~ Zaire and Sudan. Thence south along the eastern and southern border of the ~~Democratic~~ Republic of ~~the-Congo~~ Zaire, including the ~~Kingdom~~ Republic of Burundi and the Republic of Rwanda, and along the eastern and southern border of ~~Angola~~ the People's Republic of Angola to the coast of the South Atlantic. Thence to the point $17^{\circ}\text{S } 10^{\circ}\text{E}$, and then to close the sub-area at $05^{\circ}\text{S } 10^{\circ}\text{E}$.

Reasons : To observe the official names of African countries.

ZAI/56/27 MOD 27/136 Sub-Area 7C

From the junction of the borders of Uganda, ~~Democratic~~ Republic of ~~the-Congo~~ Zaire and Sudan along the western border of Uganda and Tanzania, and then along the southern border of Tanzania to the coast. Thence through the points $11^{\circ}\text{S } 41^{\circ}\text{E}$, $11^{\circ}\text{S } 60^{\circ}\text{E}$, $02^{\circ}\text{S } 60^{\circ}\text{E}$, to $02^{\circ}\text{S } 41^{\circ}\text{E}$. Thence to the East coast of Africa. Then North along the eastern border of Kenya, then West along the northern borders of Kenya and Uganda to close the sub-area at the junction of the borders of the ~~Democratic~~ Republic of ~~the-Congo~~ Zaire, Sudan and Uganda.

Reasons : To observe the official name of the Republic of Zaire.

ZAI/56/28 MOD 27/138 Sub-Area 7E

From the point $17^{\circ}\text{S } 10^{\circ}\text{E}$, and through the points $40^{\circ}\text{S } 10^{\circ}\text{E}$, $40^{\circ}\text{S } 33^{\circ}\text{E}$, to $27^{\circ}\text{S } 33^{\circ}\text{E}$. Thence along the West border of Mozambique and the lower part of the western border of Tanzania as far as the northern point of Lake Nyasa. Thence along the border between Malawi and Tanzania and between Zambia and Tanzania and along the borders between the ~~Democratic~~

Republic of the ~~Congo~~ Zaire and Zambia, ~~Angola~~ the People's Republic of Angola and Zambia, and ~~Angola~~ the People's Republic of Angola and the Territory of South-West Africa to the coast at the point 17°S 10°E.

Reasons : To observe the official names of African countries.

ZAI/56/29 MOD 27/174 The AFI-MET allotment area is defined by a line drawn from the point 29°N 20°W, through the points 37°N 03°W, 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, 35°S 35°E, 35°S 15°E, 08°S 15°W, 12°N 20°W, to the point 29°N 20°W.

ZAI/56/30 MOD 27/175 The AFI-MET reception area is defined by a line drawn from the point 37°N 03°W, through the points 37°N 36°E, 30°N 35°E, 10°N 52°E, 22°S 60°E, 30°S 34°E, 30°S 24°E, 05°N 10°W, 10°S 40°W, 10°N 100°E, the South Pole, 29°S 40°W, 20°N 20°W, to the point 37°N 03°W.

NOC FREQUENCY ALLOTMENT

Reasons : To provide a VOLMET service for flights between South America and Southern Africa and between Southern Africa and Australia.

Section II. Allotment of frequencies to the Aeronautical Mobile (R) Service

ARTICLE 1

ZAI/56/31 MOD 27/186 Frequency Allotment Plan by Areas
 (by MWARAs, RDARAs, Sub-RDARAs and VOLMET Areas)

Reasons : To indicate that the title embraces all uses of the frequencies in the Frequency Allotment Plan.

NOC 27/187

ZAI/56/32 MOD 27/188 The following list does not include the world-wide common (R) and (OR) frequencies of 3-023.5, 3 023 and 5 680 kHz ~~or the world-wide frequencies of 3-499, 6-526, 8-963, 10-093 and 13-256 kc/s.~~ The allotment of these frequencies is shown in Article 2.

Reasons : Consequent to inclusion of Aeronautical Operational Control frequencies in the new allotment Table.

ZAI/56/33 MOD 27/189

[illegible]

Note : Frequencies to be inserted in above Table to be determined by the Conference. (See the frequency requirements of the Republic of Zaire in Annex 3).

Reasons : To align with the Table in 27/195-27/207 (27/190-27/192 - Not Used).

ARTICLE 2

Frequency Allotment Plan

(in numerical order of frequencies)

General Notes

ZAI/56/34 MOD 27/192 To be determined by the Conference.

Reasons : Consequence of previous amendments (see Nos. 27/49-27/56) (ZAI/56/16).

ZAI/56/35 MOD 27/193 2. A frequency allotted on a "day-time basis" may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET Areas or Aeronautical Operational Control which receive full protection during the twenty-four hours.

Reasons : To add channels allotted for Aeronautical Operational Control use.

NOC 27/194

ZAI/56/36 ADD 27/194A 3A. The frequency allotment for aeronautical operational control use is for assignment by Administrations for the purpose of serving one or more aircraft operating agencies, operating under authority granted by the Administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight, and are not to be assigned by Administrations for MWARA, RDARA or VOLMET purposes.

Reasons : To provide for operational control (flight regularity) communications between aircraft and associated aeronautical stations.

ZAI/56/37 MOD 27/195 through 27/207, as follows :

ZAI/56/38 Add new 3 kHz channels. (See MOD 27/16) (ZAI/56/9).

ZAI/56/39 In the Table (pages (45) to (55)), it is recommended that frequencies allotted for world-wide use be designated as follows :

Column 1 - "Frequency ~~ke/s~~ kHz" - ()
Column 2 - "Authorized Area of Use" - World-wide
Column 3 - "Remarks" - Aeronautical Operational Control (AOC)
(See ADD 27/194A) (ZAI/56/36).

Reasons : To indicate clearly frequencies allotted for world-wide operational control (flight regularity) communications and new channels made available by the Plan.

ZAI/56/40 MOD 27/196 & 27/201 In the Table, MOD Column 2 with regard to 27/196 and 27/201 to read : world-wide, (R) and (OR)

ZAI/56/41 In the Table MOD Column 3 for both 27/196 and 27/201 as follows :

3. the specific application of this frequency for the above purposes may be decided at ICAO regional aeronautical-conferences; air navigation meetings;

4. the use of this frequency is also authorized for inter-communication between stations in the aeronautical mobile service and mobile stations engaged in coordinated air-surface search and rescue operations including communication between these stations and participating land stations;

Reasons : To indicate world-wide Aeronautical Mobile (R) and (OR) Services application and to clarify the intent for the use of these aeronautical frequencies by other mobile services.

ZAI/56/41A 27/195

Band 2850-3025 ke/s kHz

FREQUENCY <u>ke/s- kHz</u>	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
2851		
2854 NOC	RDARA: 2B,3B,3C,4A,10C,13C	In 2B, use limited to North of 40° North and East of 60° East. Common channel to 2B,3B and 3C.
2857		
2861 2860	RDARA: 1E,3A,6E,9B,9C,10A,12D,13H	Common channel to 9B and 9C.
2863		
2866		
2868 2869	MWARA: FE, NA-1, NA-2 RDARA: 2B,7A,7B,7C,7D,13D	Common channel to NA-1 and NA-2. In 2B, limited to use on a day-time basis. Common channel to 7A,7B,7C and 7D.
2872		
2875 NOC	MWARA: SA RDARA: 2A,2B,3A,10A,12C	In SA, use limited to South of 30° North. Common channel to 2A,2B and 3A. In 10A, limited to use on a day-time basis.
2878		
2882 2881	RDARA: 2A,2C,3C,10E,13J	Common channel to 2A,2C and 3C.
2884		
2887		
2889 2890	MWARA: SAM-1 RDARA: 6B,10C VOLMET: EU-MET	In EU-MET, use limited to North of 50° North.
2893		
2896 NOC	MWARA: CWP RDARA: 1D,10B,13K	
2899		
2903 2902	RDARA: 2A,2C,3B,10D,13J	Common channel to 2A,2C and 3B.
2905		
2908		
2910 2911	MWARA: EU, NP, SAM-2 RDARA: 6A	Common channel to EU and 6A.
2914		
2917 NOC	RDARA: 2C,3C,7E,9D,10B,13E,13F	Common channel to 2C and 3C. Common channel to 13E and 13F.
2920		
2924 2923	RDARA: 2B,2C,3A,4B,6C,10A,10E,13D	Common channel to 2B,2C and 3A.
2926		

Band 2850-3025 ke/s kHz

1	2	3
2929		
2931 2932	MWARA: NA-2, NA-3 RDARA: 3B, 6A, 6E, 13I	Common channel to NA-2 and NA-3. Common channel to 6A and 6E.
2935		
2938 NOC	RDARA: 2B, 2C, 3B, 9D, 10E, 13G	Common channel to 2B, 2C and 3B.
2941		
2945 2944	MWARA: NA-2, SP RDARA: 6A, 13K	
2947		
2950		
2952 2953	MWARA: CAR RDARA: 2B, 2C, 6B, 13F	Common channel to 2B and 2C. In 6B, use limited to East of 125° East.
2956		
2959 NOC	RDARA: 2C, 3B, 9B, 12E, 12F, 12G, 12H	Common channel to 2C and 3B. Common channel to 12E, 12F, 12G and 12H.
2962		
2966 2965	MWARA: CAR, NSA-2 RDARA: 3B, 5B, 13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti.
2968		
2971		
2973 2974	RDARA: 2A, 6F, 9C, 9D, 10B, 13J	Common channel to 9C and 9D.
2977		
2980 NOC	RDARA: 2B, 12G, 13G VOLMET: EU-MET, PAC-MET	In 2B, limited to use on a day-time basis. In 12G, power limited to 500 W mean power during night-time. In 12G, night-time protection 12 db.
2983		
2987 2986	MWARA: FE, NA-2, SEA RDARA: 2C, 10A, 13C	Common channel to FE and SEA. In 2C, limited to use on a day-time basis. In 10A, use limited to East of 180°.
2989		
2992		
2994 2995	RDARA: 1C, 3C, 13G	
2998		
3001 NOC	RDARA: 6F, CEP-5 VOLMET: AT-MET, ME-MET	In 6F, use limited to East of 120° East.

Band 2850-3025 ke/s kHz (end)

1	2	3
3004		
3008 3007	RDARA: 2A,2C,3C,9B,9D, 10D,13G	Common channel to 2A,2C and 3C. Common channel to 9B and 9D.
3010		
3013		
3015 3016	RDARA: 6C,10B,12E,12F, 12G,12H	Common channel to 12E,12F,12G and 12H.
3019		
3023.5 3023	Worldwide R & OR.	Authorized for worldwide use: 1. aboard aircraft for: a) communications with approach and aerodrome control; b) communications with an aero- nautical station when other frequencies of the station are either unavailable or un- known; 2. at aeronautical stations for aerodrome and approach control under the following conditions: a) with mean power limited to a value of not more than 20 watts in the antenna circuit; b) special attention must be given in each case to the type of antenna used in order to avoid harmful inter- ference; c) the power of aeronautical stations which use this fre- quency in accordance with the above conditions, may be in- creased to the extent necessary to meet certain operational requirements subject to co- ordination between the Adminis- trations directly concerned and those whose services may be adversely affected; 3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences. 4. the use of this frequency is also authorized for inter- communication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations; 5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.

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ZAI/56/41C 27/197

Band 3400-3500 kc/s kHz

1	2	3
3401		
3404 NOC	MWARA: ME RDARA: 3B, 9A, 12C	
3407		
3411 3410	MWARA: NSA-1 RDARA: 3A,6A,6D,6E,10A,13D	In 3A, limited to use on a day-time basis. In 6A, reduced to 250 W mean power during night-time operation. In 6E, use limited to West of 82°30' East and reduced to 250 W mean power during night-time operation.
3413		
3416		
3418 3419	RDARA: 1D,2C,6B,9A,10B,13J	In 1D, use limited to East of 21° East. In 6B, use limited to East of 120° East.
3422		
3425 NOC	RDARA: 2A,2B,2C,3C,7E,9B, 9C,10D,12E,12F, 12G,12H,13H	Common channel to 2A,2B,2C and 3C. Common channel to 9B and 9C. Common channel to 12E,12F,12G and 12H.
3428		
3432 3431	MWARA: SA RDARA: 3A,10B,10D VOLMET: SEA-MET	SA: use extended on air route to Buenos Aires. In 3A, reduced to 250 W mean power during night-time operation.
3434		
3437		
3439 3440	RDARA: 2A,2B,2C,3A,6C, 10D,13F	Common channel to 2A,2B,2C and 3A.
3443		
3446 NOC	MWARA: ME RDARA: 9B,9C,10A,12E,12F, 12G,12H	Common channel to 9B and 9C. Common channel to 12E,12F,12G and 12H.
3449		
3451 3452	RDARA: 1B,1C,3C,5A,9A,10B, 12C	Common channel for use only in the North Sea area of 1B and 1C.
3455		
3458		
3460 3461	RDARA: 2A,2B,2C,6B,9B,9C, 10E,12C,13K	Common channel to 2A,2B and 2C. In 6B, use limited to East of 120° East. Common channel to 9B and 9C.
3464		

Band 3400-3500 ke/s kHz (end)

1	2	3
3467 NOC	MWARA: CEP, EU RDARA: 6E,90,12F	In 9D, use limited to West of 160° East
3470		
3473	RDARA: 1C,2C,3C,6D,10C,13C	Common channel to 1C and 2C. In 3C, limited to use on a day-time basis.
3476		
3479		
3481 3482	MWARA: NSA-2 RDARA: 3A,6F,9D,10A,13K	NSA-2: use extended to Western Australia and the Cocos islands. Common channel to 6F and the extension of NSA-2. In 6F, use limited to South of 25° North and to 250 W mean power during night-time operation. In 9D, use limited to East of 160° East.
3485		
3488 NOC	RDARA: 2B,6D,10D,13E VOLMET: AFI-MET	In AFI-MET, use limited to West of 10° East and South of 20° North.
3491		
3494	RDARA: 2A,2C,3B,6D,10D,10E,13D VOLMET: AFI-MET	Common channel to 2A and 2C. Common channel to 10D and 10E. In AFI-MET, use limited to South of the Equator.
3499 3497	Worldwide	At-only-

ZAI/56/41D 27/198

Band 4650-4700 ke/s kHz

FREQUENCY	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
4651		
4654 NOC	RDARA: 1E,2B,2C,3C,10B,13E,13F	In 1E, limited to use on a day-time basis. Common channel to 2B,2C and 3C. Common channel to 13E and 13F.
4657		
4661 4660	RDARA: 2A,2B,2C,3A,3B,3C,9D,10D,12C,13K	Common channel to 2A,2B,2C,3A,3B and 3C.
4663		
4666		
4668 4669	RDARA: 1D,2B,6D,10A,13G	In 2B, limited to use on a day-time basis.
4672		
4675 NOC	MWARA: CWP RDARA: 2C,3A,7E,10D,10E,13J	In 3A, limited to use on a day-time basis. Common channel to 10D and 10E.

Band 4650-4700 ke/s kHz (end)

1	2	3
4678		
4682 4681	RDARA: 3C, 5B, 5C, 5D, 9D, 10B, 10E, 13J	In 3C, limited to use on a day-time basis. Common channel to 5B, 5C and 5D.
4684		
4687		
4689 4690	MWARA: EU RDARA: 3B, 6D, 10C, 12C	In 3B and 10C, limited to use on a day-time basis.
4693		
4696 NOC	MWARA: SAM-1 RDARA: 2A, 2B, 2C, 3C, 10A	Common channel to 2A, 2B, 2C and 3C. In 10A, limited to use on a day- time basis.
4699	Worldwide	A1 only

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Band 5450-5480 ke/s kHz

FREQUENCY	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
5451		
5454 NOC	RDARA: 10A, 10E, 12C, 13D	
5457		
5461 5460	RDARA: 10B, 12D, 13J	
5463		
5466		
5469 NOC	RDARA: 10B, 13D	
5472		
5477 5475	RDARA: 10D, 12G, 13H	
5478	Worldwide	A1 only

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Band 5480-5680 kc/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS (Subject to change) 3
5481		
5484 NOC	MWARA: CAR RDARA: 2B, 3B	Common channel to 2B and 3B.
5487		
5491 5490	RDARA: 2C, 6B, 7E, 10B, 12F, 13G	
5493		
5496		
5498 5499	RDARA: 2B, 3C, 7, 9B, 9C, 9D, 10C, 13H	Common channel to 2B and 3C. Common channel to 9B, 9C and 9D.
5502		
5505 NOC	MWARA: CWP, NSA-2 RDARA: 10E, 13K	In 10E, use limited to East of 60° West and to 250 W mean power.
5508		
5512 5511	RDARA: 2A, 6A, 10C, 12G	
5514		
5517		
5519 5520	MWARA: NSA-1 VOLMET: PAC-MET	
5523		
5526 NOC	RDARA: 3C, 5A, 6D, 9B, 9C, 9D, 10B, 13J	Common channel to 9B, 9C and 9D.
5529		
5533 5532	RDARA: 3B, 6D, 12C VOLMET: EU-MET	
5535		
5538		
5541	RDARA: 2B, 3B, 10D, 13C	Common channel to 2B and 3B.
5544		
5547 NOC	RDARA: 2C, 6A, 6E, 10A, 13H	Common channel to 6A and 6E.
5550		
5554 5553	MWARA: CEP, EU RDARA: 3C	In 3C, limited to use on a day-time basis.
5556		
5559		
5561 5562	RDARA: 10D VOLMET: ME-MET	

Band 5480-5680 ke/s kHz

1	2	3
5565		
5568 NOC	MWARA: CAR RDARA: 1D, 2A, 3C, 6A	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. In 1D, limited to use on a day-time basis. Common channel to 2A and 3C.
5571		
5575 5574	RDARA: 3B, 10C, 12E VOLMET: EU-MET	
5577		
5580		
5582 5583	MWARA: SAM-2 RDARA: 2C, 6A	
5586		
5589 NOC	MWARA: NP RDARA: 2C, 12F, 12H	Common channel to 12F and 12H.
5592		
5596 5595	RDARA: 2A, 2B, 2C, 6D, 10D, 13K	Common channel to 2A, 2B and 2C.
5598		
5601		
5603 5604	MWARA: CEP, ME	
5607		
5610 NOC	MWARA: NA-2, NA-3 RDARA: 6B	Common channel to NA-2 and NA-3. In 6B, use limited to East of 100° East.
5613		
5617 5616	RDARA: 2C, 6E, 10D, 12C, 13C	
5619		
5622		
5624 5625	MWARA: FE, NA-1, NA-2	Common channel to NA-1 and NA-2.
5628		
5631 NOC	RDARA: 2C, 3A, 6B, 10A, 10E, 12E, 12F	Common channel to 2C and 3A. In 6B, use limited to East of 100° East and South of 40° North. Common channel to 12E and 12F.
5634		
5638 5637	MWARA: NA-2, SP RDARA: 2B	In 2B, limited to use on a day-time basis.

Band 5480-5620 ke/s kHz

1	2	3
5640		
5643		
5645 5646	MWARA: FE RDARA: 1B,1C,2B,10D	Common channel for use only in the North Sea area of 1B and 1C. In 2B, limited to use on a day-time basis.
5649		
5652 NOC	RDARA: 2C, 6D VOLMET: AT-MET	In 2C, limited to use on a day-time basis.
5655		
5659 5658	RDARA: 1C,3A,5B,5C,5D,6C, 10B,13I	Common channel to 5B,5C and 5D.
5661		
5664		
5666 5667	RDARA: 2A,2B,2C,9B,9C, 10D,12C,13F	Common channel to 2A,2B and 2C. Common channel to 9B and 9C.
5670		
5673 NOC	MWARA: NA-2, SEA	
5676		
5680 NOC	Worldwide-- (R & OR)	Authorized for worldwide use, 1. aboard aircraft for: a) communications with approach and aerodrome control; b) communication with an aeronautical station when other frequencies of the station are either unavailable or unknown; 2. at aeronautical stations for aerodrome and approach control under the following conditions: a) with mean power limited to a value of not more than 20 watts in the antenna circuit; b) special attention must be given in each case to the type of antenna used in order to avoid harmful interference; c) the power of aeronautical stations which use this frequency in accordance with the above conditions may be increased to the extent necessary to meet certain operational requirements subject to coordination between the administrations directly concerned and those whose services may be adversely affected;

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Band 5480-5680 ke/s kHz (end)

1	2	3
		<p>3. the specific application of this frequency for the above purposes may be decided at regional aeronautical conferences;</p> <p>4. the use of this frequency is also authorized for inter-communication between mobile stations engaged in coordinated search and rescue operations including communication between these stations and participating land stations;</p> <p>5. this channel may be used for A1 or A3 emission, in accordance with special arrangements. It shall not be subdivided.</p>

ZAI/56/41H

27/202

Band 6525-6685 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS (Subject to change) 3
6526 NOC	Worldwide	A1,A3A,A3H and A3J only.
6529		
6533 6532	RDARA: 1C,2B,3B,6E,9B,9C, 10C,12E,12F,12H	Common channel to 9B and 9C.
6535		
6538		
6540 6541	MWARA: CAR, NSA-2 RDARA: 2A, 6B, 9B	
6544		
6547 NOC	RDARA: 1E,3A,5B,5C,5D, 12C,13J	Common channel to 5B,5C and 5D.
6550		
6554 6553	RDARA: 2C, 6C, 10D, 13G	
6556		
6559		
6561 6562	MWARA: CAR, NSA-2 RDARA: 2A, 9D	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. NSA-2: use extended to Western Australia and the Cocos Islands.
6565		
6568 NOC	MWARA: EU W/CAR RDARA: 6F, 10A, 13J	

Band 6525-6685 kc/s kHz

1	2	3
6571		
<u>6575</u> <u>6574</u>	RDARA: 2A,6B,9B,12D VOLMET: AFI-MET	
6577		
6580		
<u>6582</u> <u>6583</u>	MWARA: EU RDARA: 6F,10C,13J	
6586		
6589 NOC	RDARA: 2A,2B,3A,3B,4B,6D 12C	Common channel to 2A,2B,3A and 3B.
6592		
<u>6596</u> <u>6595</u>	RDARA: 10B, 12G VOLMET: ME-MET	
6598		
6601		
<u>6603</u> <u>6604</u>	RDARA: 2B,2C,3C,7E,12C,13C	Common channel to 2B,2C and 3C.
6607		
6610 NOC	MWARA: SA RDARA: 2A,5A,9A,10D VOLMET: PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
6613		
<u>6617</u> <u>6616</u>	RDARA: 2C,3A,6C,6D,10A,13D VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator. Common channel to 2C and 3A. Common channel to 6C and 6D.
6619		
6622		
<u>6624</u> <u>6625</u>	MWARA: ME RDARA: 3B, 10C, 13F	
6628		
6631 NOC	MWARA: CWP RDARA: 1D, 3A, 10E, 13K	
6634		
<u>6638</u> <u>6637</u>	RDARA: 2B,4A,4B,9A,10C,13D	Common channel to 4A and 4B.
6640		
6643		
<u>6645</u> <u>6646</u>	RDARA: 2B,2C,5D,9B,10B,13G	Common channel to 2B and 2C.
6649		

Band 6525-6685 ke/s kHz (end)

1	2	3
6652 NOC	RDARA: 2C,3C,9A,12C,13C	Common channel to 2C and 3C.
6655		
6659 6658	RDARA: 2C,3B,6D,10D,13K	
6661		
6664		
6666 6667	MWARA: SAM-1 RDARA: 2C,3C,9B,10D	Common channel to 2C and 3C.
6670		
6673 NOC	RDARA: 2B,3A,6F,10C,12F	Common channel to 2B and 3A. In 6F, use limited to East of 120° East and South of 43° North.
6676		
6680 6679	MWARA: SA RDARA: 3A, 10D. VOLMET: SEA-MET	SA: use extended on the air route to Buenos Aires.
6682		

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Band 8815-8965 ke/s kHz

FREQUENCY	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
8816		
8819 NOC	RDARA: 3B, 6C, 13C VOLMET: ME-MET	In 3B, use limited to East of 140° East.
8822		
8826 8825	MWARA: NSA-1, SAM-1 RDARA: 3B,6D,9D,10C	In 3B, use limited to East of 130° East.
8828		
8831		
8833 8834	RDARA: 3B,6C,6D,13K VOLMET: EU-MET	In 3B, use limited to North of 50° North. Common channel to 6C and 6D.
8837		
8840 NOC	MWARA: CAR, FE RDARA: 2A,2C,3A,7A,7B,7C,7D, 9D,13H	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A,2C and 3A. Common channel to 7A,7B,7C and 7D.
8843		
8847 8846	MWARA: ME, SAM-2, SP RDARA: 3B	In 3B, use limited to East of 140° East

Band 8815-8965 ke/s kHz (end)

1	2	3
8917 8918	RDARA: 2A,2B,2C,3A,6E,9B,9C, 10A,13D	Common channel to 2A,2B,2C and 3A. In 2C, use limited to West of 40° East. Common channel to 9B and 9C.
8921		
8924 NOC	RDARA: 4B,6A,9B,9C,10A,12D, 13I	Common channel to 9B and 9C.
8927		
8931 8930	MWARA: CEP, EU RDARA: 3B,6D,9D,13J	In 3B, use limited to West of 180° In 9D, use limited to West of 160° East.
8933		
8936		
8938 8939	MWARA: NP RDARA: 1C,6A,9A,12E,12F,13H	Common channel to 12E and 12F.
8942		
8945 NOC	MWARA: NA-2, NA-3 RDARA: 3B,3C,6C,13E,13F	Common channel to NA-2 and NA-3. In 3B and 3C, use limited to North of 50° North. Common channel to 3B and 3C. Common channel to 13E and 13F.
8948		
8952 8951	RDARA: 1D,6B,9A,9C,9D,10B,13G	Common channel to 9A,9C and 9D.
8954		
8959 8957	MWARA: CAR, NSA-2 RDARA: 3A,6D,9C,9D	In 3A, use limited to East of 80° East. Common channel to 9C and 9D.
8960		
8963	Worldwide	A1 only

ZAI/56/41J 27/204

Band 10 005-10 100 ke/s kHz

FREQUENCY	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
10 006		
10 009 NOC	MWARA: ME RDARA: 13J	
10 012		
10 015		
10-017 10 018	MWARA: CAR RDARA: 2A, 2C VOLMET: SEA-MET	CAR: use extended to the mid-point of the air route between Mexico City and Tahiti. Common channel to 2A and 2C with use of directional antennae to protect SEA-MET.

Band 8815-8965 ke/s kHz

1	2	3
8849		
8852		
8854 8855	MWARA: CWP, NA-2 RDARA: 5B, 13K	
8858		
8861 NOC	RDARA: 2A,2B,2C,3A,3B,3C,5D, 6D,10E,12C,12F,13F	Common channel to 2A,2B,2C,3A,3B and 3C. In 6D, use limited to South of 10° North. In 12F, use limited to North of 04° North and to 300 W mean power.
8864		
8868 8867	MWARA: FE, SEA RDARA: 2A, 3A, 10A VOLMET: AT-MET	Common channel to FE and SEA. Common channel to 2A and 3A. In 3A, use limited to North of 60° North.
8870		
8873		
8875 8876	MWARA: CEP, EU RDARA: 3B, 6D, 7E, 12E, 12F	In 3B, use limited to East of 120° East. Common channel to 12E and 12F.
8879		
8882 NOC	MWARA: SA, SEA RDARA: 3A, 3B	SA: use extended on the air route to Buenos Aires. Use outside the SEA boundaries is authorized in India and Pakistan. Common channel to 3A and 3B.
8885		
8889 8888	MWARA: NA-2 RDARA: 3B,6A,6E,9B,9D,13J	Common channel to 6A and 6E. Common channel to 9B and 9D.
8891		
8894		
8896 8897	RDARA: 3B,3C,4A,5A,5B,5C,9B, 9C,10B,13F	Common channel to 3B and 3C. Common channel to 4A,5A,5B and 5C. Common channel to 9B and 9C.
8900		
8903 NOC	RDARA: 2A,2C,10E,13G VOLMET: PAC-MET	Common channel to 2A and 2C.
8906		
8910 8909	MWARA: NA-1, NA-2 RDARA: 3B,3C,9B,9C,13D	Common channel to NA-1 and NA-2. Common channel to 3B and 3C. Common channel to 9B and 9C.
8912		
8915		

Band 10 005-10 100 kc/s kHz (end)

1	2	3
10 021		
10-025 10 024	MWARA: NSA-2 RDARA: 3B,3C,12C,13G	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to 3B and 3C.
10 027		
10 030		
10 033 NOC	RDARA: 2,3,13D	Common channel to 2 and 3.
10 036		
10 039		
10-041 10 042	RDARA: 2,7,10,13G	
10 045		
10-049 10 048	MWARA: SA RDARA: 2A, 6	SA: use extended on the air route to Buenos Aires.
10 051		
10 054		
10 057 NOC	RDARA: 2,10,13J	
10 060		
10 063		
10-065 10 066	RDARA: 1B,1C,1E,6A,6F,13D	Common channel to 1B,1C and 1E. Common channel to 6A and 6F.
10 069		
10-073 10 072	RDARA: 3, 12C VOLMET: AFI-MET	In AFI-MET, use limited to South of the Equator.
10 075		
10 078		
10 081 NOC	RDARA: 1D,4A,6F,13G	Common channel to 1D and 4A.
10 084		
10 087		
10-089 10 090	RDARA: 2,3,12C,13K	Common channel to 2 and 3.
10 093 NOC	Worldwide	A1, A3A, A3H and A3J only.
10 096		
10 099	Worldwide	A1

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Band 11 275-11 400 ke/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS (Subject to change) 3
11 276		
11 279 NOC	VOLMET: AFI-MET, PAC-MET	In PAC-MET, use limited to North of 30° North and West of 160° East.
11 282		
11 285		
11-287 11 288	RDARA: 2, 13H	
11 291		
11-295 11 294	RDARA: 5, 10, 13C	
11 297		
11 300		
11 303 NOC	MWARA: CWP, EU	
11 306		
11 309		
11-311 11 312	RDARA: 6, 10B, 10C, 10 D, 10E	Common channel to 10B,10C,10D and 10E.
11 315		
11-319 11 318	RDARA: 2,9A,9B,9D,10,13H	Common channel to 9A,9B and 9D.
11 321		
11 324		
11 327 NOC	MWARA: SAM-2 RDARA: 3	
11 330		
11 333		
11-335 11 336	RDARA: 2, 7, 9	
11 339		
11-343 11 342	MWARA: CAR, SAM-1 VOLMET: ME-MET	Common channel to CAR and SAM-1.
11 345		
11 348		
11 351 NOC	RDARA: 2, 12	
11 354		
11 357		

Band 11 275-11 400 ke/s kHz (end)

1	2	3
11-359 <u>11 360</u>	RDARA: 1, 60, 10, 13F	
<u>11 363</u>		
11-367 <u>11 366</u>	MWARA: CAR RDARA: 2	
<u>11 369</u>		
<u>11 372</u>		
<u>11 375</u> NOC	RDARA: 3, 4	
<u>11 378</u>		
<u>11 381</u>		
11-383 <u>11 384</u>	RDARA: 2, 9, 10	
<u>11 387</u>		
11-391 <u>11 390</u>	RDARA: 3 VOLMET: EU-MET	In 3, use limited to East of 90° East.
<u>11 393</u>		
<u>11 396</u>		
<u>11 399</u>	Worldwide	A1

ZAI/56/41L

27/206

Band 13 260-13 360 ke/s kHz

FREQUENCY	AUTHORIZED AREA OF USE	REMARKS (Subject to change)
1	2	3
<u>13.261</u>		
<u>13 264</u> NOC	MWARA: NP RDARA: 7A,7B,7C,7D	Common channel to 7A,7B,7C and 7D.
<u>13 267</u>		
<u>13 270</u>		
13-272- <u>13 273</u>	RDARA: 3 VOLMET: AT-MET	
<u>13 276</u>		
13-280 <u>13 279</u>	MWARA: NSA-2 RDARA: 6F, 10, 13	
<u>13 282</u>		
<u>13 285</u>		
<u>13 288</u> NOC	MWARA: FE, NA-2, SEA	Common channel to FE and SEA. Use outside the SEA boundaries is authorized in India and Pakistan, provided that adequate protection is ensured between 300° and 340° (clockwise) from True North.

Band 13 260-13 360 ke/s kHz (end)

1	2	3
13 291		
13 294		
13-296 13 297	MWARA: CWP RDARA: 1	
13 300		
13-304 13 303	MWARA: NSA-1, SP	
13 306		
13 309		
13 312 NOC	MWARA: FE RDARA: 13H VOLMET: EU-MET	
13 315		
13 318		
13-320 13 321	MWARA: CAR, SAM-2 RDARA: 2, 6C	Common channel to CAR and SAM-2.
13 324		
13-328 13 327	MWARA: NA-1, NA-2, NA-3 RDARA: 6	Common channel to NA-1, NA-2, NA-3.
13 330		
13 333		
13 336 NOC	MWARA: CEP, ME, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands. Common channel to ME and NSA-2.
13 339		
13 342		
13-344 13 345	MWARA: SA, AFI-2 VOLMET: PAC-MET	
13 348		
13-352 13 351	MWARA: NA-2 RDARA: 6	
13 354		
13-356 13 357	Worldwide	*A1, A3A, A3H and A3J only.

ZAI/56/41M

27/207

Band 17 900-17 970 kc/s kHz

FREQUENCY 1	AUTHORIZED AREA OF USE 2	REMARKS (Subject to change) 3
17 901		
17 904		
17 907		
17-909 17 910	MWARA: CWP, NP VOLMET: AFI-MET	Common channel to CWP and NP. In AFI-MET, use limited to South of the Equator.
17 913		
17-917 17 916	MWARA: CAR, ME SAM-1, SAM-2	Common channel to CAR, SAM and SAM-2. CAR: use extended to the mid-point on the air route between Mexico City and Tahiti.
17 919		
17 922		
17 925 NOC	MWARA: CEP, NSA-2	NSA-2: use extended to Western Australia and the Cocos Islands.
17 928		
17 931		
17-933 17 934	RDARA: 4,5,9B,9C,9D	Common channel to 4 and 5. Common channel to 9B,9C,9D.
17,937		
17-941 17 940	MWARA: EU, NA-1, NA-2, NA-3 RDARA: 3	Common channel to EU, NA-1, NA-2 and NA-3. In 3, use limited to East of 100° East.
17 943		
17 946		
17 949 NOC	MWARA: NSA-1, SA, SP	Common channel to NSA-1 and SA.
17 952		
17 955		
17-957 17 958	RDARA: 2, 3, 13	Common channel to 2 and 3.
17 961		
17-965 17 964	MWARA: FE, SEA	Common channel to FE and SEA.
17 967		

ZAI/56/41N ADD 27/207A

Band 21 960 -- 22 000 kHz

Frequency kHz 1	Authorized area of use 2	Remarks (Subject to change) 3
21 961		
21 964		
21 967		
21 970		
21 973		
21 976		
21 979		
21 982		
21 985		
21 988		
21 991		
21 994		
21 997		

PART V

PROPOSED AMENDMENTS TO THE RADIO REGULATIONS

ARTICLE 5

Frequency allocations

10 kHz to 275 GHz

NOC NOS. 125 through 201

ZAI/56/42 MOD 201A The frequencies 2182 kHz, ~~3023~~⁵ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz and 243 MHz may also be used, in accordance with the procedures in force for terrestrial radio-communication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of + 3 kHz about the frequency.

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC NOS. 202 through 205

ZAI/56/43 MOD 205A The ~~carrier~~ frequencies ~~3023~~⁵ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.

Reason: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by new frequency separation.

NOC NOS. 206 through 429

ARTICLE 7

Special Rules Relating to Particular Services

Section II

Aeronautical Mobile Service

ZAI/56/44 ADD 429A Aeronautical Operational Control Communications in the Aeronautical Mobile (R) Service are reserved for communications related to regularity of flight.

Reason: To provide clarification for the special use of spectrum for Operational Control Communications.

ARTICLE 9

Notification and Recording in the Master International
Frequency Register of Frequency Assignments to Terrestrial
Radiocommunication Stations

NOC NOS. 486 through 589

- ZAI/56/45 MOD 590 (2) If the finding is favourable with respect to Nos. 554 to 557 the date of ~~29-April-1966~~ (the date of signing of the WARC Agreement, Geneva, 1978) shall be entered in Column 2a.
- ZAI/56/46 MOD 591 (3) If the finding is favourable with respect to No. 558, the date of ~~29-April-1966~~ (the date of signing of the WARC Agreement, Geneva, 1978) shall be entered in Column 2b.

Reason: To provide a procedure for recording of notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates specified by the final procedure.

NOC NOS. 592 through 639EX

ARTICLE 28

Conditions to be Observed by Mobile Services

NOC NOS. 955 through 969

- ZAI/56/47 MOD 969A (3) The aeronautical frequencies ~~3023-5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communication between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A and 1326C.

NOC NOS. 970 through 999

ARTICLE 35

Use of Frequencies for Radiotelephony in the Maritime Mobile Service

NOC NOS. 1319 through 1322AB

Section II

Bands Between 1 605 and ~~4 000 kc/s~~ kHz

NOC NOS. 1322B through 1326B

C. Search and Rescue

ZAI/56/48 MOD 1326C 3A The aeronautical frequency ~~3023.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC NOS. 1327 through 1351

SECTION III. Bands between 4 000 and 23 000 kHz

NOC NOS. 1351A through 1353A

D. Search and Rescue

ZAI/56/49 MOD 1353B 15A. The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with the carrier frequencies, classes of emission and conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: To align with MOD 969A and MOD 1326C.

NOC NOS. 1354 through 1379

ZAI/56/50

APPENDIX 3

Mar Mar 2

Table of Frequency Tolerances*
(See Article 12)

Frequency Bands (lower limit exclusive, upper limit inclusive) and Categories of Stations	Tolerances applicable until 1st January, 1966* to transmitters in use and to those to be installed before 1st January, 1964	Tolerances applicable to new transmitters installed after 1st January, 1964 and to all trans- mitters after 1st January, 1966*
---	---	---

*1st January, 1970 in the case of all
tolerances marked with an asterisk.

Band: 1 605 to 4 000 kHz

3. Mobile Stations:

<u>MOD</u>	c) Aircraft Stations	200*	100* r)
<u>ADD</u>	4. Aeronautical Stations:	100	
	- power 500 W or less	50	100 r)
	- power above 500 W		50 r)
<u>MOD 5.</u>	-4- Radiodetermination Stations:		
	- power 200 W or less	100	100
	- power above 200 W	50	50
<u>MOD 6.</u>	-5- Broadcasting Stations:	50	20
	Band: 4 to 29.7 MHz		
	2. Land Stations:		
<u>MOD</u>	b) Aeronautical Stations:		
	- power 500 W or less	100	100 r)
	- power above 500 W	50	50 r)
	3. Mobile Stations:		
<u>MOD</u>	c) Aircraft Stations	200*	100* r)

Notes referring to the Table of Frequency Tolerances

After Note q) add the following new note:

ZAI/56/51

ADD

r) For single sideband transmitters operating in
the Aeronautical Mobile (R) Service, the
tolerance is:

- 1) In the band 1605 - 4000 kHz:
Aeronautical stations 10 Hz
Aircraft stations 20 Hz

- 2) In the band 4 to 29.7 MHz:
- | | |
|------------------------------|--------------|
| <u>Aeronautical stations</u> | <u>10 Hz</u> |
| <u>Aircraft stations</u> | <u>20 Hz</u> |

Reason: To add aeronautical stations in the band 1605 - 4000 kHz. With the introduction of single sideband equipment, particularly that using suppressed carrier (class A3J emission), it is necessary that the carrier frequency be maintained within closer tolerance to avoid loss of intelligibility due to frequency instability. Equipment now available can meet the tolerance being proposed in the new footnote (4). Also to renumber paragraphs.

PART VI

RESOLUTIONS AND RECOMMENDATIONS

ZAI/56/52

ADD

RESOLUTION No. Aer2 - (A)

Relating to the Implementation of the New Arrangement
of High Frequency Bands Allocated Exclusively to the
Aeronautical Mobile (R) Service Between 2 850 and 22 000 kHz.

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that each of the high frequency bands allocated exclusively to the aeronautical mobile (R) service by the Administrative Radio Conference, Geneva, 1959, and modified by the Extraordinary Administrative Radio Conference, Geneva, 1966, has been further modified by this conference to provide for SSB techniques;
- b) that a considerable number of both aircraft and aeronautical stations will be transferred from existing frequencies to the new frequencies and channels designated by the present Conference;
- c) that changes in frequency assignments should be made as soon as possible so that the advantages of the new channels designated by the present Conference may be realized at the earliest opportunity;
- d) that the transfer of assignments should be made with the least possible disruption of the service rendered by each station;
- e) that the transfer of assignments should be made in such a manner that harmful interference between stations involved is avoided during the implementation period;
- f) that the Final Acts of this Conference will enter into force on 1 April 1979;
- g) that the revised Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force on 1 February 1983;

recognizing

- a) that the aeronautical mobile (R) service is a safety service
- b) that some frequencies have been allotted for world-wide use

resolves

1. that the implementation of the decisions made by the present Conference relating to the new arrangements of the high frequency bands allocated to the aeronautical mobile (R) service should follow an orderly procedure for the transfer of existing services from the old to the new assignments and for the introduction of new services;

2. that between the entering into force of the Final Acts of this Conference on 1 April 1979 and the entering into force of the new Frequency Allotment Plan contained in Appendix 27 (Rev) on 1 February 1983, the transition to single sideband operation shall be made in accordance with the following provisions:

2.1 that carrier (reference) frequency of the single sideband channel in the upper half of the previous double sideband channel shall be the same as the carrier (reference) frequency of that channel;

2.2 that carrier (reference) frequency of the single sideband channel in the lower half of the previous double sideband channel shall be 3 kHz lower than the carrier (reference) frequency of the previous double sideband channel;

2.3 that prior to 1 February 1983, Aeronautical and Aircraft stations fitted with single sideband equipment may employ either half of the previous double sideband channel (the single sideband carrier (reference) frequency being that in 2.1 and 2.2 above), or a channel in the new frequency plan on a non-interference basis to the existing users of channels in the present plan. Operational use of the channels concerned shall be co-ordinated with the International Civil Aviation Organization in accordance with No. (MOD) 27/20 of Appendix 27 to the Radio Regulations;

3. that on 1 February 1983, the frequencies appearing in Appendix 27 to the Radio Regulations shall be replaced by the frequencies appearing in Section II, Article I, Appendix 27 (Rev);

4. that unless otherwise specified in the Final Acts of this Conference radiotelephone stations in the Aeronautical Mobile (R) Service operating in the bands between 2 850 and 22 000 kHz shall comply with the following conditions:

4.1 installations of new double sideband equipment in aircraft stations shall not be permitted after 1 April 1979; however, administrations shall endeavour to discontinue the installations of double sideband equipment at the earliest possible date prior to 1 April 1979;

4.2 installations of new double sideband equipment in aeronautical stations shall not be permitted after 1 April 1979; aeronautical stations shall be capable of single sideband operation at the earliest possible date; furthermore; they shall discontinue double sideband emissions as early as possible, and, in any event, not later than 1 February 1983;

4.3. until 1 February 1983, aeronautical and aircraft stations equipped for single sideband operation shall also be equipped to transmit class A3H emissions where required to be compatible with reception by double sideband equipment;

4.4 as of 1 February 1983, the use of classes of emission A2H, A3J, A7J and A9J only shall be authorized. Double sideband operations may, however, be continued in exceptional cases for domestic use until 1 February 1987, provided that harmful interference which may be caused to the International Aeronautical Mobile (R) Service operating in the single sideband mode be resolved by application of Article 15 of the ITU Radio Regulations, noting in particular RR 667 and RR 674. The Administrations requiring such an extension of the full implementation of single sideband are, nevertheless, urged to ceased double sideband operations as soon as possible.

Reason: With the Appendix 27 (Rev.), an orderly transition to the new Plan is required.

ZAI/56/53 ADD

RESOLUTION No. Aer2 - (B)

Relating to the Treatment of Notices Concerning Frequency Assignments to Aeronautical Stations in the Aeronautical Mobile (R) Service in the Bands Allocated Exclusively to that Service Between 2 850 and 22 000 kHz.

The Aeronautical World Administrative Radio Conference,
Geneva, 1978,

considering

- a) that the Final Acts of this Conference will enter into force on 1 April 1979;
- b) that the new Frequency Allotment Plan contained in Appendix 27 (Rev) will enter into force at 0001 hours G.M.T. on 1 February 1983;
- c) that some administrations may wish to implement certain provisions of the revised Frequency Allotment Plan in advance of the latter date when this may be done without causing harmful interference to stations working in accordance with the present Frequency Allotment Plan;
- d) that it will therefore be necessary to provide an interim procedure to facilitate transition from the present Frequency Allotment Plan to the new Frequency Allotment Plan;

resolves

- 1. that during the period between the date of entry into force of the Final Acts and the date of entry into force of the new Frequency Allotment Plan:

1.1 that provisions of Nos. 553 to 558 of the Radio Regulations, shall continue to be applied in the examination of notices concerning frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2 850 and 22 000 kHz;

1.2. all such assignments shall be recorded in the Master International Frequency Register according to the findings reached by the IFRB;

1.3 the date to be entered in Column 2a or 2b of the Master International Frequency Register shall be as follows:

- a) if the finding is favourable with respect to Nos. 554 to 557, the date of 29th April 1966 shall be entered in Column 2a;
- b) if the finding is favourable with respect to Nos. 558, the date of 29th April 1966 shall be entered in Column 2b;
- c) for all other assignments (including those which may be in conformity with the revised Frequency Allotment Plan but not in conformity with the present Frequency Allotment Plan) the date of receipt of the notice by the IFRB shall be entered in Column 2b;

1.4 any assignment which is in accordance with the revised Frequency Allotment Plan shall be so indicated by the insertion by the IFRB of an appropriate symbol in the Remarks Column of the Master International Frequency Register:

2. that on the date of coming into force of the new Frequency Allotment Plan, the IFRB shall examine those frequency assignments to aeronautical stations in the aeronautical mobile (R) service in the bands allocated exclusively to that service between 2 850 and 22 000 kHz, which are contained in the Master International Frequency Register from the point of view of their conformity with the new Frequency Allotment Plan following the relevant parts of the procedure described in Nos. 553 to 559 of the Radio Regulations, and shall record against them in the Master International Frequency Register a date in Column 2a or 2b as follows:

2.1 assignments with double sideband emission (A3), mentioned in paragraph 4.4 of Resolution Aer 2-(A), and already appearing in the Master Register on the date of coming into force of the new Frequency Allotment Plan, shall retain the date recorded in column 2a or 2b as appropriate until 1 February 1983. A date in column 2a for a frequency assignment using double sideband (A3) as mentioned in paragraph 4.4 of proposed Resolution Aer 2-(A), shall be transferred to column 2b on 2 February 1983. On 1 January 1987 the IFRB shall review the entries and, in consultation with Administrations concerned, cancel those entries which are no longer in use, retaining the others for information only, without a date in column 2b.

2.2 assignments found favourable with respect to Nos. 554 to 557 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2a;

2.3 assignments found favourable with respect to No. 558 shall have (the date of signing of the AWARC Agreement, Geneva, 1978) entered in column 2b;

2.4 all other assignments shall have (the day AFTER the date of signing the AWARC Agreement, Geneva, 1978) entered in column 2b;

3. that, on the date of entry into force of the new Frequency Allotment Plan, the allotments therein shall replace in the Master International Frequency Register those allotments in the present Frequency Allotment Plan;

invites

administrations to notify to the IFRB as soon as possible the cancellation of frequency assignments released as a consequence of bringing into use the allotments in the new Frequency Allotment Plan.

Reason: With the revision of Appendix 27, it will be necessary to provide means to assure that notices filed with the International Frequency Registration Board (IFRB) under the revised Frequency Allotment Plan do not prejudice notices filed under provision of the current Plan. Further, an interim procedure is necessary to facilitate transition from the 1966 to the 1978 (R) Plan.

ZAI/56/54

RESOLUTION No. 13

Relating to the Preparation of Revised Allotment Plans for the Aeronautical Mobile (R) Service;

Note: Although the World Administrative Radio Conference on the Aeronautical Mobile (R) Service, 1978, will not be competent to address this resolution because of the interest of the (OR) service, the Resolution is no longer necessary in so far as the (R) service is concerned.

ZAI/56/55 SUP RESOLUTION No. 14

 Relating to the Use of Frequencies of the Aeronautical
 Mobile (R) Service

Reason: This Resolution has been modified to bring it up to date,
 and is shown as an ADD Resolution Aer2-(C).

ZAI/56/56 ADD RESOLUTION No. Aer2 - (C)

 Relating to the Use of Frequencies of the Aeronautical
 Mobile (R) Service

 The Aeronautical World Administrative Radio Conference,
 Geneva, 1978,

considering

- a) that the previous Allotment Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service Appendix 27 to the Radio Regulations, Geneva, edition of 1968) has been substantially revised by this conference;
- b) that air operations are subject to continuous changes;
- c) that these changes require attention by the administrations concerned, but
- d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the coordinated utilization of those high frequency (R) band allotments as prescribed in the Plan;
- e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional and Domestic Air Route Areas (RDARA) and Sub-Areas and VOLMET areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;
- f) that it is essential to distributed the communication traffic load as uniformly as possible over frequencies of the same order available;
- g) that specific steps should be taken to ensure that the correct order of frequency is used;
- h) that frequencies have been allotted for world-wide use

resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands;
2. to make as great a use as possible of antennas of appropriate directivity and efficient in order to minimize possibilities of mutual interference within an area or between areas;
3. to coordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in the light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;

4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;

5. to collect precise data on the operation of their high frequency communication systems particularly that having a bearing on technical and operating standards, so as to facilitate future re-examination of this Plan.

Reason: Represents an update of Resolution No. I4 which has been proposed for SUP.

ZAI/56/57

SUP

RESOLUTION No. Aer1

relating to the use of frequencies 3023.5 and 5680 kHz common to the aeronautical mobile (R) and (OR) service

Reason: This Resolution has been modified to bring it up to date, and is shown as an ADD Resolution Aer2 - (D) which follows.

ZAI/56/58

ADD

RESOLUTION No. Aer2 - (D)

Relating to the Use of frequencies 3023 and 5680 kHz common to the Aeronautical Mobile (R) and (OR) Services

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

having noted

that this conference in adopting a new Frequency Allotment Plan in, Appendix 27 (Rev), has decided to use 3023 kHz instead of 3023.5 kHz; and, additionally, has amended the provisions governing the use of 3023 and 5680 kHz,

considering

1. that, by this action some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;

2. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operation, was extended to include communication between mobile stations and participating land stations;

3. that it would be in the general interests of the aeronautical mobile (R) service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the Frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

Reason: Represents an up-date of Resolution No. Aer 1, which has been proposed for SUP.

ZAI/56/59

SUP

RESOLUTION No. Aer 2

relating to the use of frequencies in the HF bands allocated exclusively to the aeronautical mobile (R) service.

Reason: This Resolution has been modified to bring it up to date, and is shown as an ADD Resolution No. Aer 2 - (E) below.

ZAI/56/60

ADD

RESOLUTION No. Aer2 - (E)

Relating to the Unauthorized Use of Frequencies in the Bands allocated to the Aeronautical Mobile (R) Service.

The World Aeronautical Administrative Radio Conference, Geneva, 1978

considering

a) that monitoring observations of the use of the frequencies in the bands between 2 850 and 22 000 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high powered broadcasting stations, some of which are operating in contravention of No. 422 of the Radio Regulations;

b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;

c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the Aeronautical Mobile (R) Service bands other than under the conditions specified in Nos. 115 and 415;

2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;

3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;

4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of No. 422 of the Radio Regulations;

requests the International Frequency Registration Board

1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

2. to take the necessary steps with a view to the elimination of the emissions of out-of-band stations which cause, or are likely to cause harmful interference to the aeronautical mobile (R) service;

3. to seek, as appropriate, the co-operation of administrations in identifying the sources of out-of-band emissions by all available means, and in securing the cessation of these emissions.

Reason: Represents an up-date of Resolution No. Aer 2, which has been proposed for SUP.

ZAI/56/61

SUP

RESOLUTION No. Aer 3

relating to the introduction of single sideband techniques in the HF bands allocated to the aeronautical mobile (R) service

Reason: With the adoptment of an allotment plan based on single sideband techniques, this Resolution is no longer applicable.

ZAI/56/62

SUP

RESOLUTION No. Aer 4

relating to the use of VHF for communication in the aeronautical mobile (R) service

Reason: This Resolution has been modified to bring it up-to-date, and is shown as an ADD Resolution No. Aer 2 - (f) which follows.

ZAI/56/63

ADD

RESOLUTION No. Aer2 - (F)

Relating to the use of VHF for Communication in the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

a) that from an aeronautical viewpoint, VHF can provide a more reliable and more static-free communication system than HF;

b) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;

c) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;

d) that, owing to development of aeronautical telecommunications in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

resolves

that administrations, to the maximum extent practicable, should employ VHF to meet their requirements in the aeronautical mobile (R) service.

Reason: Represents an up-date of Resolution No. Aer 4, which has been proposed for SUP.

ZAI/56/64 SUP

RESOLUTION No. Aer 5

relating to the use of VHF for meteorological
broadcasts in the aeronautical mobile (R) service

Reason: This Resolution has been modified to bring it up to date,
and is shown as an ADD Resolution No. Aer 2 - (G) which
follows

ZAI/56/65 ADD

RESOLUTION No. Aer2 - (G)

Relating to the use of VHF for meteorological
Broadcasts in the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

considering

- a) that the number of channels available for the aeronautical mobile (R) service in the frequency bands between 2 850 and 22 000 kHz is limited;
- b) that the need for frequencies for aeronautical mobile (R) service communications and for meteorological broadcasts to aircraft is increasing;
- c) that the propagation characteristics of high frequencies make them essential for aviation communication requirements over long distances;
- d) that in Recommendation No. 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution No. 14 MOD (See Report on Agenda Item 3, first page of Appendix D) of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";
- e) that this conference has adopted a Resolution whereby administrations should, to the maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;
- f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;
- g) that this extension of the operational range of VHF could partially meet the increasing need for meteorological broadcasts to aircraft;

resolves

that administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

Reason: Represents an up-date of Resolution No. Aer 5, which has been proposed for SUP.

ZAI/56/66 SUP

RESOLUTION No. Aer 6

relating to the treatment of notices concerning
frequency assignments to aeronautical stations
in the aeronautical mobile (R) service in the
bands allocated exclusively to that service
between 2850 and 17970 kHz.

Reason: This Resolution has been rewritten and is shown as
Resolution No. Aer2-(B), and, therefore, should be deleted.

ZAI/56/67

ADD

RESOLUTION No. Aer2 - (H)

Relating to the Implementation of the Frequency Allotment Plan in the High Frequency Bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17970 kHz

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between 2 850 and 20 000 kHz) to the aeronautical mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;
- b) that the 1966 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;
- c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a safety service;
- e) that the present conference has further modified the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to implement the modifications made by the present Conference with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

- 1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows;

1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;

1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action;

- 2. that, if an administration so desires, the IFRB shall give it all necessary assistance. In so doing, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

Reason: To provide for transfer of assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

ZAI/56/68 ADD

RECOMMENDATION No. Aer2 - (A)

Relating to a Study of the Feasibility of
Creating new High Frequency Bands to be
Allocated exclusively to the Aeronautical
Mobile (R) Service

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

considering

- a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all of the requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations;
- c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive allocations in the 20-24 MHz region of the spectrum when preparing their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the Aeronautical Mobile (R) Service at the next competent WARC.

ZAI/56/69 SUP

RECOMMENDATION No. Aer 1

Relating to the development of techniques which
would help to reduce congestion in the high
frequency bands allocated to the Aeronautical
Mobile (R) Service

Reason: This Recommendation has been modified, to bring it up-to-date and is shown as ADD Recommendation No. Aer 2 - (B) which follows.

ZAI/56/70 ADD

RECOMMENDATION No. Aer2 - (B)

Relating to the development of Techniques which
would help to reduce congestion in the High Frequency
bands allocated to the Aeronautical Mobile (R)
Service

The Aeronautical World Administrative Radio Conference,
Geneva, 1978, considering

considering

a) that several administrations are actively engaged in the development of communication techniques the wider use of which in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high-powered VHF transmitters employing directional antennae, space radiocommunication techniques and automatic data transmission;

b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication services;

(c) that the International Civil Aviation Organization (ICAO) is actively engaged in coordinating the operational development of such techniques;

invites

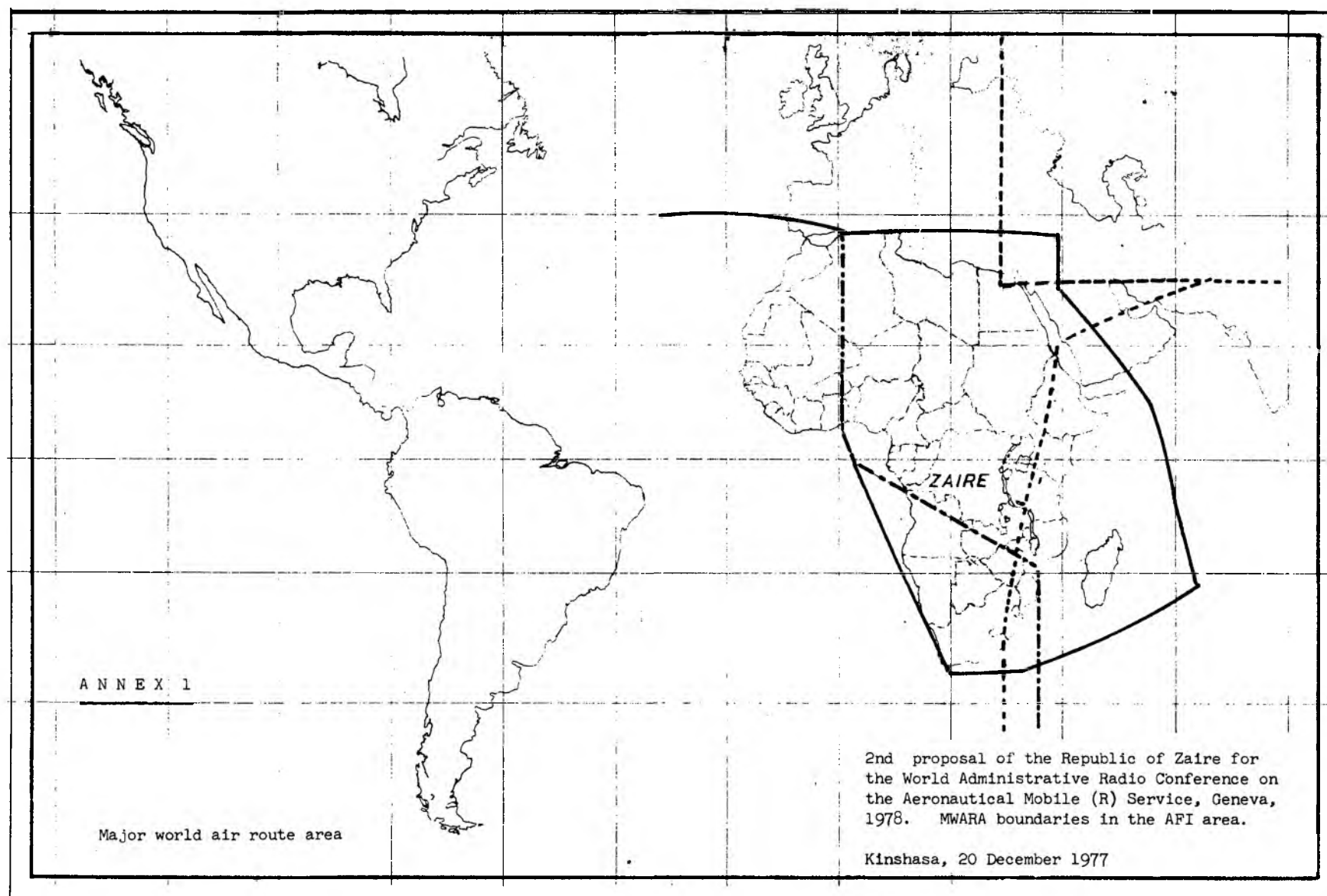
administrations engaged in such developments to inform the IFRB periodically of the progress achieved;

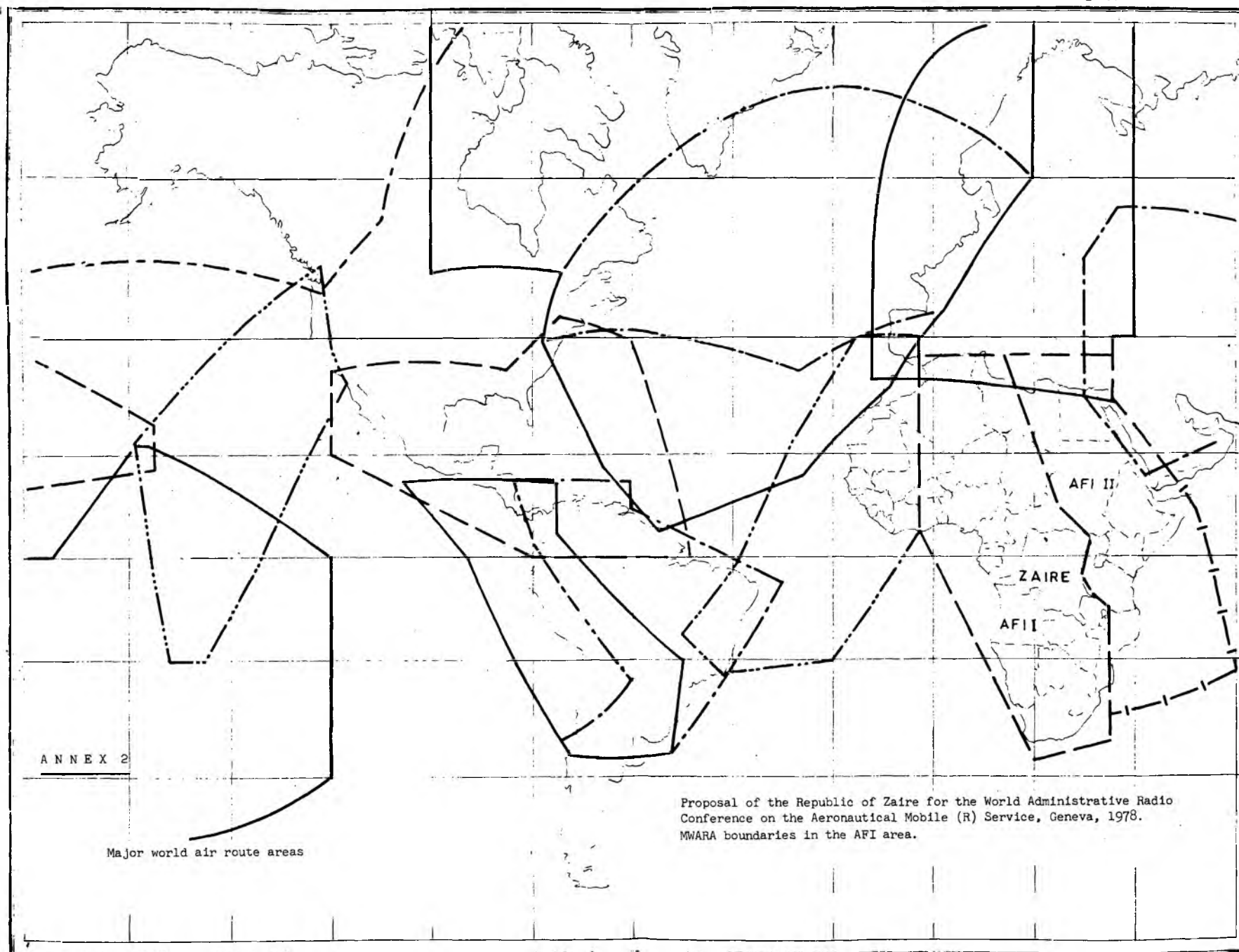
requests

the IFRB periodically to circulate the information so obtained to administrations and to ICAO

Reason: Represents an up-date of Recommendation No. Aer 1, which has been proposed for SUP.

Annexes : 3





FREQUENCY REQUIREMENTS

1	2				3
Frequency band (kHz)	Number of frequencies used according to allotments in Appendix 27 and number of frequencies required				Remarks (including the frequencies in use for long-range operational control and operational areas)
	MWARA		RDARA		
	Used	Required	Used	Required	
1) 2 850 - 3 025	-	-	-	-	
2) 3 400 - 3 500	1	-	-	-	
3) 4 650 - 4 700	-	-	-	-	
4) 5 450 - 5 480(Rég.2)	-	-	-	-	
5) 5 480 - 5 680	1	-	1	-	
6) 6 525 - 6 685	-	1	-	1	1 frequency for MWARA-AFI or AFI-I 1 frequency for RDARA-7B
7) 8 815 - 8 965	1	-	1	-	
8) 10 005 - 10 100	-	-	-	-	
9) 11 275 - 11 400	-	-	-	-	
10) 13 260 - 13 360	1	-	1	-	
11) 17 900 - 17 970	-	1	-	1	1 frequency for MWARA AFI or AFI-I 1 frequency for RDARA-7B
12) 21 900 - 22 000	-	1	-	-	1 frequency for MWARA-AFI or AFI-I

Frequencies required for the VOLMET areas

1) AFI - MET (Allotment area and reception area)

NOC Frequency Allotments, in accordance with MOD 27/174 and 27/175 of Appendix D
to Doc. 9187, COM/76, Montreal.

2) VOLMET ATIS OR OFIS broadcasts by RTF of VOR will be provided from the international aerodromes
of the Republic of Zaire in accordance with Recommendation 14/19 of Doc. 7474/20 AFI V.

PLENARY MEETING

Note by the Secretary-General

SPECIAL PROGRAMME FOR MONITORING THE FREQUENCY
BANDS BETWEEN 2850 kHz AND 17,970 kHz ALLOCATED
EXCLUSIVELY TO THE AERONAUTICAL MOBILE (R) SERVICE

I hereby transmit to the Conference IFRB Circular-letter
No. 405 relating to the above-mentioned subject.

M. MILI

Secretary-General

Annex : 1





INTERNATIONAL
FREQUENCY REGISTRATION BOARD
I.F.R.B.

National (022) 34 60 21
International + 41 22 34 60 21

Tg: Burinterna Genève
Tx: 23 000/23 000 a uit ch

1211 GENÈVE 20, LE
2 RUE DE VAREMBÉ

18 January 1978

I.F.R.B. Circular-letter No. 405

Subject: Technical preparation for the World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978

Special programme for monitoring the frequency bands between 2850 kHz and 17,970 kHz allocated exclusively to the Aeronautical Mobile (R) Service

References: No. 482 of the Radio Regulations

I.F.R.B. Circular-letter No. 387 of 29 July 1977

To the Director-General

Dear Sir,

On behalf of the International Frequency Registration Board, I wish to inform you of the results of the above Special Monitoring Programme.

2. In reply to I.F.R.B. Circular-letter No. 387, the Board received reports from twenty-seven Administrations involving forty-seven monitoring stations. A total of 18,500 observations was included in these reports.

3. About fifty percent of the total observations did not provide sufficient information concerning the origin, identification or class of station to enable the Board to carry out a complete analysis of the data. Therefore, the Board has decided to publish in the "Summary of Monitoring Information No. 195" for the period from 3 July to 5 November 1977 only those data which concern the stations which were identified. To facilitate consultation, the data received have been sorted by RDARA in which the monitoring station from which it has been received is situated. However all the data received have been included in Appendix 1 to this circular-letter. In addition the Board will make available to the Conference for consultation the full data received from Administrations. In this respect the Board would invite the attention of Administrations to Resolution No. Aer 2 (see Appendix 2).

Yours faithfully,

S. Fujiki
Acting Chairman

Appendices: 2

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Appendice 1 à la lettre-circulaire de l'I.F.R.B. N° 405

Les stations observées ont été classées de la façon suivante :

- Colonne I : classe de station "FA"
- Colonne II : classe de station "BC"
- Colonne III : classe de station "FX"
- Colonne IV : autre classe de station
- Colonne V : avec un indicatif d'appel ou autre indentation, mais pas de classe de station
- Colonne VI : sans aucun indicatif d'appel, ni autre indentation, ni classe de station

Appendix 1 to I.F.R.B. Circular-letter No. 405

The stations observed have been classified as follows:

- Column I : class of station "FA"
- Column II : class of station "BC"
- Column III : class of station "FX"
- Column IV : other class of station
- Column V : with a call sign or other identification but no class of station
- Column VI : with neither a call sign or other identification, nor class of station.

Apéndice 1 a la carta circular de la I.F.R.B. N.º 405

Se han clasificado las estaciones observadas como sigue:

- Columna I : clase de estación "FA"
- Columna II : clase de estación "BC"
- Columna III : clase de estación "FX"
- Columna IV : otras clases de estación
- Columna V : con un distintivo de llamada u otro medio de identificación, pero sin indicación de la clase de estación
- Columna VI : sin distintivo de llamada u otro medio de identificación, ni indicación de la clase de estación.

NOMBRE D'OBSERVATIONS SIGNALEES - NUMBER OF OBSERVATIONS REPORTED - CIFRA DE OBSERVACIONES SEÑALADAS

ZLARN 1 - RDARA 1 - ZRRN 1

	I	II	III	IV	V	VI	
2850 - 3025 KHZ	109	17	132	44	169	197	668
3400 - 3500	28	3	39	5	104	216	395
4650 - 4700	48	12	64	10	61	108	303
5450 - 5480	1	2	49	11	30	28	121
5480 - 5680	141	16	125	18	139	380	819
6525 - 6685	160	147	108	31	116	245	807
8815 - 8965	190	14	101	35	65	200	605
10005 - 10100	43	65	168	5	36	175	492
11275 - 11400	25	148	61	24	25	85	368
13260 - 13360	103	16	64	3	49	121	356
17900 - 17970	1	88	16	13	12	13	143
	849	528	927	199	806	1768	5077
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 4 - RDARA 4 - ZRRN 4

	I	II	III	IV	V	VI	
2850 - 3025 KHZ		10			54	222	286
3400 - 3500	2	57	2	1	20	331	413
4650 - 4700		14			1	147	162
5450 - 5480					13	218	231
5480 - 5680	3	32	2	2	19	466	524
6525 - 6685		47		1	16	321	385
8815 - 8965		32	4	2	20	393	451
10005 - 10100		39			28	341	408
11275 - 11400	1	75	2	2	8	309	397
13260 - 13360		13			13	338	364
17900 - 17970		91		1	19	154	265
	6	410	10	9	211	3240	3886
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 5 - RDARA 5 - ZRRN 5

	I	II	III	IV	V	VI	
2850 - 3025 KHZ	2	6			9	148	165
3400 - 3500		17			8	46	71
4650 - 4700		1			1	65	67
5450 - 5480		8			6	46	60
5480 - 5680	1	3		2	38	155	199
6525 - 6685	2	7			9	116	134
8815 - 8965	1	13			17	117	148
10005 - 10100	1	1			2	104	108
11275 - 11400	3	32			5	38	78
13260 - 13360	1				10	78	89
17900 - 17970		12			1	11	24
	11	100		2	106	924	1143
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 6 - RDARA 6 - ZRRN 6

	I	II	III	IV	V	VI	
2850 - 3025 KHZ	26	67	17		20	110	240
3400 - 3500		71	18	3	28	184	304
4650 - 4700	1	34	27		23	103	188
5450 - 5480		1	1			2	4
5480 - 5680	82	23	88	6	32	306	537
6525 - 6685	14	173	8		11	201	407
8815 - 8965	147	46	17	10	33	304	557
10005 - 10100	25	94	7	6	21	126	279
11275 - 11400		189	15		3	62	269
13260 - 13360	44	11	26		15	101	197
17900 - 17970	1	26	2			2	31
	340	735	226	25	186	1501	3013
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 9 - RDARA 9 - ZRRN 9

	I	II	III	IV	V	VI	
2850 - 3025 KHZ	27	73	2	67	1	17	187
3400 - 3500	59	49	3	2		88	201
4650 - 4700	6	67	4	5	1	38	121
5450 - 5480		4			2	9	15
5480 - 5680	242	12	6	230	5	198	693
6525 - 6685	75	163	6	12	10	75	341
8815 - 8965	306	73		107	6	250	742
10005 - 10100	121	171	8	3	10	73	386
11275 - 11400	13	306	6	1	7	121	454
13260 - 13360	82	26	22	8	13	96	247
17900 - 17970	3	15		1		6	25
	934	959	57	436	55	971	3412
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 10 - RDARA 10 - ZRRN 10

	I	II	III	IV	V	VI	
2850 - 3025 KHZ	12	2	3				17
3400 - 3500	3		1	1		5	10
4650 - 4700	3	5	1	1	2	9	21
5450 - 5480	1	1	7		1	15	25
5480 - 5680	14	1	3	2		8	28
6525 - 6685	12	15	14	3	2	32	78
8815 - 8965	54	1	10	6	6	22	99
10005 - 10100	10	15	17		4	19	65
11275 - 11400	4	19	11	3	2	13	52
13260 - 13360	32		24	3	12	14	85
17900 - 17970		4		2		5	11
	145	63	91	21	29	142	491
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 12 - RDARA 12 - ZRRN 12

	I	II	III	IV	V	VI	
2850 - 3025 KHZ		13		6	5	25	49
3400 - 3500		11	1	2	7	19	40
4650 - 4700	1	9	7	1	2	20	40
5450 - 5480	1	1	4	1	4	32	43
5480 - 5680	23	8	21	31	26	173	282
6525 - 6685	17	26	16	24	33	253	369
8815 - 8965	10	1	16	47	7	126	207
10005 - 10100	2	12		9	3	57	83
11275 - 11400	2	9	2	6	5	31	55
13260 - 13360		3	7	25	8	89	132
17900 - 17970		14		2		11	27
	56	107	74	154	100	836	1327
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

ZLARN 13 - RDARA 13 - ZRRN 13

	I	II	III	IV	V	VI	
2850 - 3025 KHZ			3	2			5
3400 - 3500		6					6
4650 - 4700	1	3	2	1			7
5450 - 5480		1	3	2			6
5480 - 5680	16	1	12	1			30
6525 - 6685	8	9	10	16			43
8815 - 8965	23	1	8	7	3	1	43
10005 - 10100	3	2	7	1	1		14
11275 - 11400	3	7	7		3		20
13260 - 13360	4		5	1	2		12
17900 - 17970	1	2	1	3			7
	59	32	58	34	9	1	193
							TOTAL { ZLARN: 1 RDARA: -- ZRRN: --

Appendix 2 to I.F.R.B. Circular-letter No. 405

RESOLUTION No. Aer 2

**relating to the use of frequencies in the HF bands allocated
exclusively to the aeronautical mobile (R) service**

The Extraordinary Administrative Radio Conference,
Geneva, 1966,

considering

- a) that monitoring observations on the use of frequencies in the bands allocated exclusively to the aeronautical mobile (R) service between 2850 and 17 970 kc/s show that a number of frequencies in these bands are being used by stations of services other than the aeronautical mobile (R) service, thus causing harmful interference to aeronautical mobile (R) service communications on some international air routes ; and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands ;
- b) that the aeronautical mobile (R) service is a safety service, to which frequency bands are exclusively allocated in order to ensure the safety and regularity of flight along national or international civil air routes as defined in No. 429 of the Radio Regulations, Geneva, 1959 ;
- c) that in order to protect the safety of life and property in the air, and to operate aeronautical transport services in a regular and effective manner, it is essential that the aeronautical mobile communication channels be kept free from harmful interference ;

recognizing

that the aeronautical mobile (R) service is a safety service ;

urges

administrations to abstain from the use of frequencies in the bands exclusively allocated to this service by stations of services other than the aeronautical mobile (R) service, except under the express conditions prescribed in No. 115 or No. 415 of the Radio Regulations, Geneva, 1959 ;

invites

the I.F.R.B. to continue to organize monitoring observations in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service ; and to seek the collaboration of administrations in identifying the source of such emission by all available means including the use of automatic recording equipment, direction finding and field strength measurements, and in securing the suppression of these emissions.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum No. 2 to
Document No. 58-E
1 March 1978

Note by the Secretary-General

LOSS OF THE RIGHT TO VOTE

Since the Republic of Kenya has ratified the International Telecommunication Convention (Malaga-Torremolinos, 1973), its right to vote has now been restored.

The name of this country should therefore be deleted in Document No. 58.

M. MILI

Secretary-General



INTERNATIONAL TELECOMMUNICATION UNION
AERONAUTICAL (R) CONFERENCE
(Geneva, 1978)

Corrigendum No. 1 to
Document No. 58-E
9 February 1978

Note by the Secretary-General

LOSS OF THE RIGHT TO VOTE

Since the Yemen Arab Republic has ratified the International Telecommunication Convention (Malaga-Torremolinos, 1973), its right to vote has now been restored.

The name of this country should therefore be deleted in Document No. 58.

M. MILI
Secretary-General



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 58-E

31 January 1978

Original : FrenchPLENARY MEETINGNote by the Secretary-General

LOSS OF THE RIGHT TO VOTE

1. Under the Convention, a Member loses its right to vote at conferences of the Union :

a) when it has not yet ratified (or acceded to) the International Telecommunication Convention, Malaga-Torremolinos, 1973 (Article 45, paragraph 2, of the Convention),

b) when it is in arrear in its payments to the Union, for as long as the amount of its arrears equals or exceeds the amount of the contribution due from it for the preceding two years (Article 15, paragraph 7, of the Convention).

2. At the present time, for one or other of the two above-mentioned reasons and until their situation is regularized, the following countries are not entitled to vote at the World Administrative Radio Conference for the Aeronautical Mobile (R) Service :

Country	Has not ratified (or acceded to) the Convention	In arrear in its payment of contributions
Belgium	x	
Benin (People's Rep. of)	x	
Bolivia (Rep. of)	x	
Botswana (Rep. of)	x	
Cameroon (United Rep. of)	x	
Central African Empire		x
Congo (People's Rep. of)	x	
Costa Rica	x	
Ivory Coast (Rep. of)	x	
Dominican Republic	x	x
Gabon Republic	x	
Guatemala (Rep. of)	x	
Equatorial Guinea	x	
Upper Volta (Rep. of)	x	
Honduras (Rep. of)	x	



Country	Has not ratified (or acceded to) the Convention	In arrear in its payment of contributions
Democratic Kampuchea	x	x
Kenya (Rep. of)	x	
Lebanon	x	
Liberia (Rep. of)		x
Nauru (Rep. of)	x	
Niger (Rep. of)	x	
Nigeria (Fed. Rep. of)		x
Uganda (Rep. of)	x	
Panama (Rep. of)		x
Peru	x	
Sierra Leone		x
Sudan (Dem. Rep. of)	x	
Chad (Rep. of)	x	x
Turkey	x	
Yemen Arab Republic	x	
Yemen (Dem. People's Rep. of)	x	
Zaire (Rep. of)		x
Zambia (Rep. of)	x	

M. MILI

Secretary-General

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 59-E

25 January 1978

Original : English

PLENARY MEETING

United States of America

INFORMATION RECEIVED CONCERNING FREQUENCY REQUIREMENTS

With reference to paragraph 4 of Circular letter No. 400 (Document No. 48), the United States Administration submits the accompanying data to clarify its responses to Circular letters Nos. 354 and 386. These data are subject to further refinement as the plan is developed in the course of the conference.

Annex : 1



A N N E X

MWARA	Country Symbol	Number of frequencies by band (MHz)												Common Channel to:	Remarks
		3	3.5	4.7	5.4	5.6	6.6	9	10	11.3	13.3	18	22		
CAR	1)	2				2	2	2	1	2	1	1			A008, A025
CEP	2)	1	1	1		2	1	2	1		2	1			A008, A025
CWP	3)	1	1	2		2	1	1	1	1	1	1			A008, A025
NA1															A025: 4),
NA2	5)	4*	2*			6*	2*	5*	2*	2*	3*	1*		*Com-mon to NA1 & NA3 4)	A008, A025
NA3															A025; 4),
NP	6)	1		1		1	1	1		1	1	1			A008, A025
SAM1	7)	2*		1*		1*	1*	2*		2*	1*	1*		*Com-mon to SAM2 8)	A008, A025
SAM2	7)													8)	A008, A025
SP	9)	1				2		2			2	1			A008, A025

- 1) PNZ, PTR, SWN, USA, VIR.
- 2) HWA, USA
- 3) GUM, HWA, HWL, JON, MDW, MRA, MRL, WAK.
- 4) MWARA NA2 requirements indicated are common to NA1 and NA3 on the basis of desectorization and provision of one common MWARA NA ("NAT").
- 5) PTR, USA, VIR. (PTR and VIR are included on the basis of desectorization and provision on one common MWARA "NAT".)
- 6) ALS, USA.
- 7) PNZ.
- 8) MWARA SAM1 requirements indicated are common to SAM1 and SAM2 on the basis of desectorization and provision of one common MWARA SAM.
- 9) HWA, JAR, PHX, PLM, SMA.

VOLMET Area	COUNTRY Symbol	Number of frequencies by band (MHz)												Remarks
		3	3.5	4.7	5.4	5.6	6.6	9	10	11.3	13.3	18		
AT-MET	USA	1	1			1	1	1	1		2			A008, A025; 1)
PAC-MET	2)	1	1			1	1	1	1	1	1			A008, A025
CAR-MET	3)	1				1		1		1				A008, A025
SAM-MET	PNZ		1			1		1			1			A008, A025

- 1) Based on redefinition of allotment and reception areas, and renomenclature to NAT-MET, per Document 21.
- 2) ALS, GUM, HWA, HWL, JAR, JON, MDW, MRA, MRL, PHX, PLM, SMA, USA, WAK.
- 3) PNZ, PTR, USA, VIR.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 60-E

25 January 1978

Original : Spanish

PLENARY MEETING

Argentine Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

ARG/60/1 MOD 27/9

A Family of Frequencies in the Aeronautical Mobile (R) Service is a group of two or more frequencies selected from different (MF/HF) Aeronautical Mobile (R) Service bands and intended to permit communication at any time within the authorized area of use and ever any distance between stations of aircraft in flight and appropriate aeronautical stations.

- Reasons :
- a) to clarify the principles inherent in the use of the MF/HF frequency bands and to make it clear that the reference to a "family of frequencies" is necessarily associated with these bands, as well as with aircraft in flight;
 - b) although the extension implied by the definition of "aircraft station" presupposes unrestricted use from an administrative point of view, it remains an undeniable fact that the MF/HF bands are intended a priori for medium or long-range communications, in the sense generally given to these expressions;
 - c) short-range communication systems are normally organized on the basis of VHF.

ARG/60/2 MOD 27/17

The channels common to the (R) and (OR) Services, with carrier (reference) frequencies of 3 023 centred at 3-023.5 and 5 680 kc/s, kHz, are authorized for world-wide use as shown in Nos. 27/196 and 27/201. Notwithstanding

ARG/60/3 MOD 27/18

All stations using 3-023.5 and 5-680 kc/s for directly involved in search and rescue purposes operations using frequencies 3 023 and 5 680 kHz and employing single sideband (SSB) shall transmit a carrier at a level sufficient to permit reception on a double sideband (DSB) receiver and shall be able to receive DSB transmissions in the upper sideband mode.

However, as a provisional measure, DSB transmissions may be made on 3 023 and 5 680 kHz until

Reasons : To make it clear that the use of DSB should be provisionally allowed in certain cases (search and rescue).



ARG/60/4 SUP 27/19 (Unnecessary in view of the proposal concerning No. 27/18).

ARG/60/5 MOD 27/20 The International Civil Aviation Organization (ICAO) coordinates communications of the Aeronautical Mobile (R) Service with international air operations ~~for a large part of the world~~ and this Organization ~~should~~ shall be consulted in appropriate all cases where appropriate for coordinated and efficient operation of the services. ~~particularly in the operational use of the frequencies in the Plan.~~

Reasons : To ensure that the ITU (IFRB) can perform its indispensable role within the habitual framework and in line with the regulations. To ensure coordination through the world organization (ICAO) as appropriate within the limits corresponding to its international functions. The normal first step is direct coordination between States. Subsequently, the need for other coordination can be met by ICAO for those questions corresponding to its specific activities and, finally, by compulsory regulatory procedures through the ITU (IFRB).

NOC 27/21

NOC 27/22

ARG/60/6 MOD 27/23 Resort to the coordination described in No. 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question and particularly when the procedures described in No. 27/22 have not produced the desired results.

Reasons : To outline the sequence of the steps to be taken for coordination purposes.

ARG/60/7 MOD 27/49 1. Classes of emission

In the Aeronautical Mobile (R) Service the use of emissions such as those listed below is permissible provided that such use if the special provisions applicable to each case are complied with and provided that such use does not cause harmful interference to other users of the channel concerned.

- ~~complies with the provisions of Nos. 27/10--27/16 and Nos. 27/63--27/73 and~~
- ~~does not cause harmful interference to other users of the frequency~~

ARG/60/8 MOD 27/50

1.1 Telephony - Amplitude modulation :

- of double sideband (A3)*
- ~~single-sideband,-reduced-carrier~~ (A3A)
- of single sideband, with full carrier (A3H)*
- of single sideband, with suppressed carrier (A3J)
- ~~two-independent-sidebands~~ (A3B)

*) The use of A3 and A3H in channels 3 023 and 5 680 kHz is allowed on a provisional basis until in channels 3 023 and 5 680 kHz.

ARG/60/9 MOD 27/51

1.2.1 Amplitude modulation :

- telegraphy without the use of a modulating audio frequency (by on-off keying) (A1)**
- ~~telegraphy-by-the-on-off-keying-of-an-amplitude modulating-audio-frequency-or-audio-frequencies,-or by-the-on-off-keying-of-the-modulation-emission-(A2)~~
- telegraphy by the on-off keying of an audio frequency carrier on an audio frequency, or by amplitude modulation, or by on-off keying of the carrier of the modulated emission, including selective calling - single sideband - full carrier (A2H)
- ~~multichannel-voice-frequency-telegraphy,-single sideband,-reduced-carrier~~ (A7A)
- ~~multichannel-voice-frequency-telegraphy,-single sideband,-suppressed-carrier~~ (A7H)
- multichannel voice frequency telegraphy, single sideband, suppressed carrier (A7J)
- other transmissions such as automatic data transmission - single sideband - suppressed carrier (A9J)

ARG/60/10 MOD 27/52

1.2.2 Frequency modulation :

- telegraphy by frequency shift keying without the use of a modulating audio frequency, one of two frequencies being emitted at any instant (F1)**
- ~~telegraphy-by-the-on-off-keying-of-a-frequency modulating-audio-frequency-or-by-the-on-off-keying of-a-frequency-modulated-emission-(F2)~~

**) A1 and F1 transmissions are permitted provided they do not cause harmful interference to the other classes of emission authorized in this Plan. They must also respect the power limits, channel width and attenuation levels set out in Nos. 27/65 and 27/66, the transmissions being kept wherever possible in the centre of the authorized channel.

Reasons for Nos. 27/49 to 27/52 : the modification of types of emission is based on single sideband operation, without carrier.

ARG/60/12 SUP 27/53 Reasons : Class of emission A4 not envisaged.

ARG/60/12 MOD 27/54 2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values :

Replace the original table by the following :

Class of emission	Stations	Maximum peak envelope power
A2H A3J A7J A9J (100 % modulated)	Aeronautical stations Aircraft stations	16 kW 300 W
A3* A3H* (100 % modulated)	Aeronautical stations Aircraft stations	6 kW 300 W
A1 F1	Aeronautical stations Aircraft stations	1.5 kW 75 W

*) A3 and A3H emissions are limited for search and rescue purposes to frequencies 3 023 and 5 680 kHz according to No. 27/50, and provisionally until according to No. 27/18.

Reasons : Emissions must be in conformity with the classes envisaged in the new plan. On the other hand, the powers should be maintained to retain the relationship in the levels of aeronautical and aircraft stations and for as long as available equipment with characteristics can be kept for sidebands.

ARG/60/13 MOD 27/55 2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1 and F1, ~~F2-and-unmodulated-A3-and-A3H-emissions~~) used as a basis for the interference range contours.

Reasons : To make the references consistent with the emissions foreseen for the new plan.

NOC 27/56 to 27/62

Reasons : The present references satisfy the coordination and protection requirements.

ARG/60/14 MOD 27/63 3. Technical provisions relating to the use of ~~single~~ sideband emissions

ARG/60/15 MOD 27/63 3.1 Definitions of carrier modes

Carrier mode	Level N (dB) of the carrier with respect to peak envelope power
Full carrier (A3H) (e.g. A2H)	$0 \geq N \geq -6$
Reduced-carrier (A3A)	$-6 \rightarrow N \rightarrow -26$
Suppressed carrier (A3J) (e.g. A3J)	<u>Aircraft stations</u> - $26 > N$ <u>Aeronautical stations</u> - $40 > N$

ARG/60/16 SUP 27/64 Reasons : The classes of emission to be used in the plan have already been defined.

ARG/60/17 MOD 27/65 3.3 Tolerances for levels of SSB emissions outside the necessary bandwidth

3.3.1 ~~In-a-single-sideband-A3H,-A3A-or-A3J-transmission,~~ the mean power of any emission supplied to the antenna transmission line of an aeronautical or aircraft station on any discrete frequency, outside the necessary band, shall be less than the mean power (P_m) of the transmitter in accordance with the following table :

ARG/60/18 MOD 27/66

3.3.2 For types of aircraft station transmitter and aeronautical station transmitters installed before 1 February 1983

Frequency separation Δ from the assigned frequency kHz	Minimum attenuation below mean power (P_m) dB
$2 \leq \Delta < 6$	25
$6 \leq \Delta < 10$	35
$10 \leq \Delta$	<p>Aircraft stations : 40</p> <p>Aeronautical stations : $43 + 10 \log_{10} P_m$ (watts)* 10</p>

*) The attenuation need not exceed 60 dB.

Note : The above attenuation values shall not apply to search and rescue emissions (A3 and A3H)

ARG/60/19 SUP 27/67 to 27/71

Reasons : The new plan gives the characteristics for single sideband emissions.

ARG/60/20 MOD 27/196

~~3023-5~~ 3023 World-wide. Authorized for world-wide use the rest unchanged.

Proposal : Conditions for the complementary operational service

ARG/60/21 ADD 27/8A Long-range complementary operational service (LRCOS) :
this is a communication service for aircraft in flight, mainly
for purposes connected with the regularity of flights along
world routes.

Note : This service could cover the responsibilities of the
aircraft operating agencies related to the operational control
of aircraft in regular commercial flights in cases where the
normal networks in service are insufficient.

ARG/60/22 ADD 27/73A The countries and stations participating in each
channel or family of channels of the LRCOS shall agree on the
areas and/or routes corresponding to such channels in the
present plan.

ARG/60/23 ADD 27/73B However, additional allocations may be made with the
agreement of the States concerned provided that they do not
cause congestion or harmful interference to the stations
operating in accordance with the present plan.

ARG/60/24 ADD 27/73C The channels which might be provided for general
unrestricted long-range use may be used by two or more countries
provided the States concerned agree through ICAO and provided no
interference is caused to the stations operating in accordance
with the present plan.

Provisions relating to the LRCOS

ARG/60 ADD 27/73D Provisions relating to stations, the establishment of
networks, standards, methods of operation any other
provisions governing the operation of the LRCOS :

a) shall be subject to general agreement between the
States concerned, acting through ICAO;

b) shall be consistent with the present plan. No
stipulation made under the preceding clause may affect the
general conditions laid down nor the right of States to
authorize or regulate the operation of aeronautical stations
in conformity with international conventions and regulations
and national interests;

c) shall be based on recognition as fundamental
principles of the unity of the Aeronautical Mobile Service and
the absolute priority of communications concerning the safety
and protection of flights;

d) shall be integrated into the set of standards,
recommendations or complementary provisions (as the case may
be) for the Aeronautical Mobile Service contained in the
appropriate documents of ICAO.

ARG/60/26 ADD

Recommendation No. ...

relating to characteristics of the services, operational conditions and associated provisions

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

that, in adopting a revised version of Appendix 27, this Conference is incorporating provisions modifying the various ways in which the (R) services are provided and is expanding the existing services considerably by extending them to areas or States not included in the previous plan;

considering further

that for these reasons special characteristics must be stipulated for some services and the provisions governing operation and other associated measures must be brought up to date;

that such measures should be taken before the date of entry into force of the new revised plan;

that it is considered necessary by the majority of delegations (Administrations) taking part in the meeting that such measures should be included in their entirety in the provisions and regulations of ICAO in order to ensure uniform and standardized consideration and application in the aeronautical field;

recommends

that Administrations study ways and means of ensuring the implementation of the above measures, preferably through a meeting of the States Members of ICAO in which these questions may be examined and solved prior to the date of entry into force of the new revised plan;

invites

Administrations and the International Civil Aviation Organization to consider the list of questions which should be covered by the action recommended above and deal with them at a meeting convened by the said organization.

ARG/60/27 ADD

Recommendation No. ...

relating to the study on assignments in the bands above 18 MHz.

The Aeronautical World Administrative Radio
Conference, Geneva, 1978,

considering

that in the course of the meeting service
requirements have been submitted for major world air routes,
whose extension justifies the use of frequencies higher than
those available for the Aeronautical Mobile Service at the
time of their examination;

that to meet such requirements it is essential at
certain periods and for certain sections of the routes to have
channels available of the order of 21-26 MHz, for example;

that the availability of such bands would facilitate
certain communications for these services;

recommends

that Administrations carry out the necessary
studies on the subject and on the basis of those studies
propose to the next World Administrative Radio Conference the
solutions they consider appropriate to meet the above-
mentioned requirements.

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 61(Rev.1)-E

8 February 1978

Original : SpanishCOMMITTEE 6Spain

PROPOSALS FOR THE WORK OF THE CONFERENCE

When revising the provisions of the Radio Regulations applicable to the Aeronautical Mobile (R) Service in the HF bands in accordance with item 2.1.2 of the Agenda, the Conference should make the following amendments in the texts shown below :

ARTICLE 7

Special rules relating to particular servicesSection II. Aeronautical Mobile Service

- E/61/1 MOD 429 § 3. ~~Frequencies in any band~~ (1) In the bands allocated to the Aeronautical Mobile (R) Service, ~~are reserved for absolute priority shall be given to~~ communications between any aircraft and those aeronautical stations primarily concerned with the safety and regularity of flight along national or international civil air routes.
- E/61/2 ADD 429A Operational control communications
- (2) Operational control communications of the Aeronautical Mobile (R) Service are intended to convey information relating to the regularity of flight and the safety of aircraft.
- E/61/3 (Note : The Conference should consider the desirability of defining the "safety" and "regularity" messages to which Nos. 429 and 429A refer and, if it decides in the affirmative, include such definitions at the end of Article 7 or in Section I of Article 1, taking Annexes 6 and 10 to the ICAO Convention as a basis.)
- E/61/4 MOD 431 § 5.(1) Frequencies in the bands allocated exclusively to Aer the Aeronautical Mobile (R) Service between 2 850 and 17 970 kHz (see Article 5) shall be assigned in conformity with the provisions of ~~Appendices 26 and 27 of~~ Appendix 27 and the other relevant provisions of these Regulations.



E/61/5 ADD 431A (2) Frequencies in the bands allocated to the Aeronautical Mobile (OR) Service between 2 505 and 23 350 kHz (see Article 5) shall be assigned in conformity with the provisions of Appendix 26 and the other relevant provisions of these Regulations.

E/61/6 MOD 432 § 6. Administrations ~~shall not~~ may permit public correspondence in the frequency bands allocated exclusively to the Aeronautical Mobile Service ~~unless permitted by special Aeronautical Regulations adopted by a Conference of the Union to which all interested Members and Associate Members of the Union are invited. Such Regulations shall recognize~~ provided that a Frequency Allotment Plan in which channels are assigned for this purpose has been adopted by a World Administrative Radio Conference convened by the Union. The Plan shall recognize the absolute priority of safety and control the messages referred to in No. 429.

Reasons : To extract the opinions expressed in Document No. 62 and formulate them as Regulations.

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 61-E
20 January 1978
Original : SpanishPLENARY MEETINGSpain

PROPOSALS FOR THE WORK OF THE CONFERENCE

When revising the provisions of the Radio Regulations applicable to the Aeronautical Mobile (R) Service in the HF bands in accordance with item 2.1.2 of the Agenda, the Conference should make the following amendments in the texts referred to below :

ARTICLE 7

Special rules relating to particular servicesSection II. Aeronautical Mobile Service

- E/61/1 MOD 429 § 3. ~~Frequencies-in-any-band (1)~~ In the bands allocated to the Aeronautical Mobile (R) Service, ~~are-reserved~~ absolute priority shall be given to communications between any aircraft and those aeronautical stations primarily concerned with the safety ~~and-regularity~~ of flight along national or international civil air routes.
- E/61/2 ADD 429A (2) In these bands, communications concerned with the regularity of flight, also referred to as operational control communications, shall also be permitted under the conditions laid down by each Administration.
- E/61/3 (Note : The Conference should consider the desirability of defining the "safety" and "regularity" messages to which Nos. 429 and 429A refer and, if it decides in the affirmative, include such definitions at the end of Article 7 or in Section I of Article 1, taking Annexes 6 and 10 to the ICAO Convention as a basis.)
- E/61/4 MOD 431 § 5. (1) Frequencies in the bands allocated exclusively to the Aeronautical Mobile (R) Service between 2 850 and 17 970 kHz (see Article 5) shall be assigned in conformity with the provisions of ~~Appendices 26-and-27~~ Appendix 27 and the other relevant provisions of these Regulations.



E/61/5 ADD 431A (2) Frequencies in the bands allocated to the Aeronautical Mobile (R) Service between 2 505 and 2 335 kHz (see Article 5) shall be assigned in conformity with the provisions of Appendix 26 and the other relevant provisions of these Regulations.

E/61/6 MOD 432 § 6. Administrations ~~shall not permit~~ may permit public correspondence in the frequency bands allocated exclusively to the Aeronautical Mobile Service ~~unless permitted by special Aeronautical Regulations adopted by a Conference of the Union to which all interested Members and Associate Members of the Union are invited. -- Such Regulations shall recognize~~ provided that a Frequency Allotment Plan in which channels are assigned for this purpose has been adopted by a World Administrative Radio Conference convened by the Union. The Plan shall recognize the absolute priority of safety and control the messages referred to in No. 429.

Reason : To extract the opinions expressed in Document No. 62 and formulate them as Regulations.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 62-E
20 January 1978
Original : Spanish

PLENARY MEETING

Spain

PROPOSAL FOR THE WORK OF THE CONFERENCE

When revising, on the basis of the single sideband technique, the Frequency Allotment Plan for the Aeronautical Mobile (R) Service contained in Appendix 27 to the Radio Regulations, in accordance with paragraph 2.1.1 of the Agenda, the Conference should :

- E/62/7 1. Revise Part I of Appendix 27, taking into account the technical bases proposed by the Special Meeting of CCIR Study Group 8 held at Geneva in March 1976 and by the Communications Divisional Meeting of ICAO held at Montreal in September 1976 (see Document 9187, COM/76).
- E/62/8 2. Allocate the channels obtained by the application of the SSB technique with a channel spacing of 3 kHz, for the following needs :
- (a) Communications concerned with safety in MWARA, RDARA and VOLMET areas and RDARA sub-areas.
 - (b) Communications concerned with regularity for the control of long-distance aeronautical operations.
- E/62/9 3. Reserve part of the channels in the 4, 6, 8, 11, 13 and 17 MHz bands for the future introduction of public correspondence communications in the Aeronautical Mobile Service, in accordance with the procedure described in the draft resolution reproduced in proposal E/62/11.
- E/62/10 4. Include, amend or delete texts in Appendix 27, as required to give effect to the above proposals.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum No. 1 to

Document No. 63-E

8 February 1978

Original : Spanish

PLENARY MEETING

Spain

PROPOSAL FOR THE WORK OF THE CONFERENCE

On page 2 of Document No. 63, delete operative paragraphs 2 and 3 of the draft Resolution appearing as proposal E/63/1.

Reason : The texts of these paragraphs will be submitted separately as draft Recommendations.



INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 63-E
20 January 1978
Original : Spanish

PLENARY MEETING

Spain

PROPOSAL FOR THE WORK OF THE CONFERENCE

In accordance with paragraph 2.1.3 of the Agenda and in connection with proposal E/-/6 for the amendment of the text of No. 432 of the Radio Regulations, it is proposed that the Conference should adopt the following draft Resolution :

E/63/1

ADD

RESOLUTION No. AER 2

concerning the introduction of public correspondence messages in the Aeronautical Mobile (R) Service in the HF bands

The World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva, 1978,

Considering

- (a) that the earlier Frequency Allotment Plan for the use of the HF bands in the Aeronautical Mobile (R) Service contained in Appendix 27 to the Radio Regulations (1968 edition) has been considerably modified by this Conference;
- (b) that the application of Resolutions Nos. 13, 14, Aer 3 and Aer 4 has led to an unmistakable improvement in the availability of frequencies in the bands exclusively allocated to the Aeronautical Mobile (R) Service;
- (c) that there is a need to arrange for the establishment of long-range communications in the Aeronautical Mobile Service without the limitations imposed for safety messages;
- (d) that the HF bands will still have to be used for long-range communications in the immediate future, notwithstanding the new possibilities of satellite communications;
- (e) that this Conference has allocated part of the new channels obtained to aeronautical operational control communications, which are regarded as flight regularity communications, on a world-wide basis;
- (f) that public correspondence messages in the Aeronautical Mobile (R) Service may be substantially expanded in the very near future, which is why part of the channels obtained during the revision of the Allotment Plan in Appendix 27 by this Conference has been reserved for these purposes;



Resolves

1. to request the World Administrative Radio Conference, 1979, to provide for the introduction of public correspondence messages in the channels available in the Allotment Plan contained in Appendix 27;
2. to request the Conference to plan the frequency band between 21 870 and 22 000 KHz, allocated on a world-wide basis to the Aeronautical Fixed and Mobile (R) Services, and to study the possibility of making available part of the radio spectrum between 20 and 24 MHz, in order to meet the needs of long-range communications for the various types of messages in the Aeronautical Mobile (R) Service, including the public correspondence service; and
3. that at a date deemed suitable by the Administrative Council a specialized administrative conference for the Aeronautical Mobile (OR) Service should be convened, pursuant to Article 54 of the International Telecommunications Convention, to modernize the objectives of that service and revise the Allotment Plan contained in Appendix 26.

Reasons : To introduce public correspondence messages into the Aeronautical Mobile Service in the HF bands.

E/63/2

Recommendation 19 of the Administrative Radio Conference, Geneva 1959, should be brought up to date or deleted if necessary.

INTERNATIONAL TELECOMMUNICATION UNION

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Corrigendum 1 to
Document No. 64-E
3 February 1978
Original : French

Note by the Secretary-General

LIMITATION OF CLASSES OF COMMUNICATION IN THE HF

AERONAUTICAL MOBILE (R) SERVICE

The Spanish Administration has informed the Secretariat that Document No. 64 has been cancelled. It has been replaced by the document published under symbol No. 67.

M. MILI

Secretary-General



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 64-E
20 January 1978
Original : SpanishPLENARY MEETINGSpainLIMITATION OF CLASSES OF COMMUNICATION IN THE
HF AERONAUTICAL MOBILE (R) SERVICE1. Introduction

1.1 The second specialized World Administrative Conference to deal with the Aeronautical Mobile (R) Service in the HF bands will revise, on the basis of SSB operation, the Frequency Allotment Plan in Appendix 27 to the Radio Regulations with a view to satisfying the requirements of the service with the minimum amount of spectrum necessary. In accordance with its agenda, the Conference will also examine and review as necessary the provisions of the Regulations governing the (R) service which are consequential to the revision of the Plan.

1.2 The need for revision was already predicted at the first such Conference in 1966, which adopted a Resolution (AER 3) recognizing that such requirements would continue in the foreseeable future and might increase in certain areas. The gradual conversion from DSB to SSB operation in the radiotelephone services as soon as possible was thus recommended in order to improve these services and to ensure spectrum economy.

1.3 At present the Aeronautical Mobile (R) Service has the exclusive use of 173 channels in 10 frequency bands (2, 3, 4, 5, 6, 8, 10, 11, 13 and 17 MHz). Of these, two are allocated on a worldwide basis (3 023.5 and 5 680 kHz) to both (R) and (OR) services, for aerodrome and approach control communications and for search and rescue operations coordinated with other mobile services. Five other channels (3 499, 6 526, 8 963, 10 093 and 13 356 kHz) may be used on a worldwide basis for the classes of emission stipulated in each case. The remaining 166 channels are allotted to the MWARA, RDARA and VOLMET areas which are defined and whose limits are specified in Appendix 27.

1.4 With the introduction of SSB technique and the reduction of channel spacing (from 7 or 8 to 3 kHz), some 418 channels can be obtained in the same bands, which means that another 245 channels will become available, an increase of 142 %, at least doubling the capacity per band. When we consider that the Maritime Mobile Service, for similar purposes, has had a total of 175 channels since the revision of the Allotment Plan in Appendix 25 (1974) (see Appendix 25, Mar-2, to the Radio Regulations), it must be recognized that, even taking into account the decisive factors deriving from the operational characteristics of civil aviation, which differ considerably from those of merchant shipping, the Aeronautical Mobile (R) Service will enjoy a range of facilities which might perhaps be used to extend the utilization of its frequencies to other classes of communication as far as possible.

2. Communications permitted in the Aeronautical Mobile (R) Service

2.1 The only communications permitted in the frequencies allocated to this service are those mentioned in No. 429 of the Radio Regulations, i.e. messages concerned

For reasons of economy, this document is printed in a limited number. Participants are therefore kindly asked to bring their copies to the conference since only a few additional copies can be made available.



with the safety and regularity of flight along national or international civil air routes. The Regulations do not authorize any other classes of communication in the Aeronautical Mobile (R) Service bands.

2.1.1 The next paragraph, No. 430, is not easy to interpret since, considered in conjunction with No. 429, it serves to distinguish between the (R) service and the (OR) service which concerns "communications other than those primarily concerned with flight along national or international civil air routes". In any event, the Conference will unfortunately not be competent to deal with the (OR) service, despite its close connection with the (R) service.

2.2 With regard to communications which can be considered as "safety communications", we find in the Radio Regulations only the definition of "safety service" (introduced by the Space Conference of 1971) in No. 69 and procedures for use of the "safety signal" in Nos. 1488 to 1495, but no mention of the limits imposed on such communications, although they may be deduced from the above definition. We have to turn to Annex 10 to the ICAO Convention "Aeronautical Telecommunications", Volume II (1972), paragraph 5.1.8.4, to find that "safety messages" in the Aeronautical Mobile Service are "movement and control" messages, "messages originated by an aircraft operating agency of immediate concern to an aircraft in flight", "meteorological advice of immediate concern", and "other messages concerning aircraft in flight or about to depart".

2.2.1 "Movement and control" messages are described in ICAO Document No. 4444-RAC/501 (PANS-RAC) and relate to flight plans, take-off and landing times, estimated delays, coordination, acceptance, control clearance and transfer, position requests and reports.

2.3 The same is true of "flight regularity" communications. It is paragraph 5.1.8.6 of ICAO Annex 10 (Volume II) which states that these messages comprise the following :

- messages concerning changes in aircraft operating schedules;
- messages concerning the servicing of aircraft;
- instructions to aircraft operating agency representatives concerning changes in requirements for passengers and crew caused by unavoidable deviations from normal operating schedules. Individual requirements of passengers or crew shall not be admissible in this type of message;
- messages concerning non-routine landings to be made by the aircraft;
- messages concerning aircraft parts and materials urgently required;
- messages regarding the operation or maintenance of facilities essential for the safety or regularity of aircraft operation.

2.3.1 ICAO Circular AN45-40 stated that these communications are non-public communications relating to the co-ordination by an aircraft operating agency, or its designated representative, of arrival and departure times, en-route position reports and flight plan revisions, in-flight engineering and maintenance reports, and other communications of a like nature (see ICAO Document 9187, COM/76, paragraph 3.4.3).

It may be seen that the distinction between "safety" and "regularity" communications is not clearly drawn as in many cases the requirements are the same.

3. Communications not permitted in the Aeronautical Mobile (R) Service

3.1 Under No. 432 of the Radio Regulations, public correspondence communications, defined in Annex 2 to the International Telecommunication Convention (Malaga-Torremolinos, 1973), are specifically not permitted in the frequency bands allocated exclusively to the Aeronautical Mobile Service (which signifies both (R) and (OR)). In any case, in view of the possibility of their being authorized at some future date, the provision demands absolute priority for safety and control messages (without mentioning regularity messages, which demonstrates once again the lack of precision as to what is meant by these terms).

3.2 It is remarkable that public correspondence communications have not yet been developed in the Aeronautical Mobile Service, considering their past and present spectacular development in the Maritime Mobile Service and bearing in mind the purposes of the ITU (see Article 4, 1.b) of the Convention).

3.2.1 Recommendation No. 19 of the World Administrative Radio Conference of 1959 recognized that at that date there was no adequate air-ground public correspondence system, and instead of encouraging its establishment it did the reverse by stating that transmissions from aircraft might cause interference over considerable distances and for that reason urged that, if such a system were established, no interference should be caused to the services of other countries.

4. The Preparatory Meeting of ICAO

4.1 The COM Department of ICAO held an important meeting in September 1976 (see Document 9187, COM/76) in preparation for the ITU Aeronautical Conference in 1978, whose agenda provided, inter alia, for the examination of present and future frequency requirements of the (R) service in view of the fact that considerable changes in aircraft operations had taken place since the first ITU Aeronautical Conference in 1966. It was considered essential that these changes should be reflected in the Plan in Appendix 27 to the Radio Regulations, and that the revision should take account of foreseen air route operation requirements up to the year 2000 (see paragraph 2.1.2 of Document 9187). It was also pointed out that, even if an operational satellite system were to evolve, it would be too late to have a significant impact on the revised Plan drawn up in 1978 for as long as the Plan remained in force (ibid. 3.2.1).

4.2 The meeting approved three important Recommendations, one on the substantiation by States of their frequency requirements (Recommendation 3/2), another on the need of a method to establish these requirements (Recommendation 3/3), and another inviting States to study criteria for the determination of total frequency requirements taking into account the available spectrum (Recommendation 3/4). It was obvious at the meeting that, apart from a few isolated cases, the frequency requirements for MWARA, RDARA and VOLMET areas were not known with precision, although it was perfectly clear that the need for HF channels for worldwide, long range, operational control communications was strongly felt.

4.3 The meeting agreed that there was "a requirement for a communications service, capable of providing direct voice communications between designated Aircraft Operating Agency Official(s) and the Agencies' aircraft operating anywhere on a global basis." It was further agreed that the revision of Appendix 27 would need to accommodate such appropriate regulatory provisions and additional frequency allotments

as proved necessary to enable States to effect assignments to permit direct communications between aircraft operating agencies and their aircraft anywhere in the world". (Document 9187, paragraph 3.4.6).

5. Operational control communications

5.1 In Part I (Chapters 1 and 3) of Annex 6 (Operation of Aircraft) to the ICAO Convention on International Civil Aviation, "operational control" is defined as the exercise of authority over initiation, continuation, diversion or termination of a flight", thus establishing that the operator, or a designated representative, is responsible for such control.

5.1.1 In Volume I (Part II, Chapter 1) of Annex 10 (Aeronautical Telecommunications) to the ICAO Convention, "operational control communications" are defined as communications "required for exercising authority over initiation, continuation, diversion or termination of a flight in accordance with the provisions of Annex 6", with a Note reading "Such communications are normally required for the exchange of messages between aircraft and aircraft operating agencies".

5.2 In the light of the above, the following questions arise :

- 1) Do such communications comprise messages concerning the safety and regularity of air navigation ?
- 2) If so, what limits should be imposed on such communications, in view of the conclusions reached at the ICAO Preparatory Meeting (see paragraph 4.3 above) ?

5.2.1 Clearly the control of the initiation, continuation, diversion or termination of a flight may require the safety and regularity messages referred to in paragraphs 5.1.8.4 and 5.1.8.6 in Volume II of Annex 10 to the ICAO Convention (see paragraphs 2.2 and 2.3 above), but the safeguarding of these needs does not justify the inclusion of other communications which obviously are not concerned with safety or regularity.

5.2.2 It is therefore necessary to define precisely in the Radio Regulations the safety and regularity communications which may be made on frequencies assigned on the basis of the Allotment Plan in revised Appendix 27.

5.3 In reality, what is required by the proposal to allot frequencies for operational control is the recognition of unlimited private correspondence between aircraft operating agencies and their aircraft in exclusive HF bands used by the aircraft operating agencies themselves, without competition from a public correspondence service which might limit their possibilities.

5.3.1 A very pertinent example is found in the Maritime Mobile Service in which long-range operational communications in the HF frequency bands are not considered as private correspondence but are handled as public correspondence through coast stations belonging to the State or operated under licence by agencies. The acceptance of "aeronautical operational control" communications in the bands concerned as private correspondence, would probably make maritime operators want to establish private links with their ships under the same conditions.

6. The need to reconsider the present limitations

6.1 The Aeronautical Conference in 1978, when revising the Plan in existing Appendix 27 on the basis of SSB technique, should bear in mind at all times that 245 additional channels are going to be obtained and that long-distance communications in the HF bands must continue to develop at least until the end of the century, so that now is the time to promote the introduction of public correspondence in the Aeronautical Mobile Service in the HF bands.

6.2 Nos. 429 and 430 of the Radio Regulations will therefore have to be revised. If we do not stipulate in the Regulations exactly what safety and regularity communications in the (R) bands comprise private correspondence communications will tend to develop under shelter of this ambiguity (thus using up almost all the new channels which will be available) without a corresponding revocation of the non-authorization of public correspondence in the (R) bands.

6.3 The Allotment Plan in Appendix 27, when revised, should show clearly the distribution of channels for the various classes of communication which can and must be permitted.

6.4 The Spanish Administration will submit appropriate proposals in other documents.

INTERNATIONAL TELECOMMUNICATION UNION
AERONAUTICAL (R) CONFERENCE
(Geneva, 1978)

Corrigendum No. 1 to
Document No. 65-E
8 February 1978
Original : English

COMMITTEES 4, 5, 6

Brazil

PROPOSALS FOR THE WORK OF THE CONFERENCE

Page 6, replace B/65/2 by the following :

B/65/2 MOD 27/9 A Family of Frequencies in the Aeronautical Mobile (R) Service ~~is a group of~~ contains two or more frequencies selected from different Aeronautical Mobile (R) bands and is intended to permit communication at any time and within ever any distance the authorized area of use (See Nos. 27/189 - 27/207) between aircraft in flight and appropriate aeronautical stations.

Reasons : In order to clarify the definition.

Pages 7 and 8, replace B/65/5 by the following :

B/65/5 MOD 27/11 ~~It is assumed that~~ For radiotelephone emissions the modulating audio frequencies will be limited to between 300 and 3-000 2 700 Hz cycles-per-second and ~~that~~ the occupied bandwidth of other authorized emissions will not exceed ~~that of A3~~ emissions the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met.

Reasons : To define an audio bandwidth necessary for A3J operation consistent with 3 kHz Channel separation and to provide accommodation for other permitted classes of emission.

Page 25, replace B/65/35 by the following :

B/65/35 MOD 27/171 Sub-Area 13J

From the point 15° 50' S 47° 50' W 15° S 47° W through the points 20° S 44° W, 22° 55' S 43° 10' W, 23° 19' S 42° W, 29° S 40° W, 35° S 45° W, and thence along the borders of Brazil with Uruguay, Argentina, Paraguay and Bolivia to the point 22° 35' S 55° 40' W, ~~then through the point 20° 30' S 54° 30' W~~ 18° S 57° 37' W to close the sub-area at 15° 50' S 47° 50' W 15° S 47° W.

Reasons : To extend the northern boundary of Sub-Area 13J to include within it cities of significant air traffic.



INTERNATIONAL TELECOMMUNICATION UNION
AERONAUTICAL (R) CONFERENCE
(Geneva, 1978)

Document No. 65-E
26 January 1978
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PLENARY MEETING

Brazil

PROPOSALS FOR THE WORK OF THE
AERONAUTICAL (R) CONFERENCE

TABLE OF CONTENTS

- I. Introduction
- II. Brazilian requirements
- III. Proposed amendments to Appendix 27
- IV. Proposed amendments to the Radio Regulations
- V. Frequency requirements for MWARA, RDARA, VOLMET and long-distance operational control



I. INTRODUCTION

It has been quite evident that there is necessity of revising the Frequency Allotment Plan for the Aeronautical (R) Service, adopted by the EARC-1966, in order to satisfy the changes in aircraft operations happened since that date as a natural consequence of increases in the air traffic density and in size and range of the commercial aircrafts, and of their operations at greater heights.

At the same time, it must be considered that requirements of some States had not been taken into account when the Present Plan was developed, and thence, it does not meet their operational needs.

Finally it should be pointed out that in despite of all the efforts of the countries to employ VHF, to the maximum extent practicable, to meet their requirements in the AM(R) Service, in order to minimize the utilization of HF bands, the HF communications will remain the primary communication mode in this service, mainly in the developing countries, where establishment and operation of a VHF network and utilization of satellites are not feasible for physical and/or economical reasons.

II. BRAZILIAN REQUIREMENTS

1. Modification of the present RDARAs

Since the adoption of the Appendix 27 and with the increasing number of HF equipped aircrafts and the establishment of new air routes and airports in remote and sparsely populated areas, the operational requirements of the Brazilian AM(R) Service are not being met by the present boundaries of the Sub-RDARAs that cover the Bra

zilian territory. The majority of the domestic flights are long haul flights crossing at least two Sub-RDARAs and some frequency changes must occur in order to respect Frequency Allotment Plan of the Appendix 27.

The characteristics of the Brazilian development, being one of its main objectives to promote the real integration of all parts of the national territory, justified the division of our domestic civil aviation into two categories:

- a) the national one composed of the four greatest aircraft operating agencies, which have flights covering all the country; and
- b) the regional one composed at the present of five aircraft operating agencies, each one of them having flights in specific regions, which justify the use of HF for their communications due to the extension of these regions and/or due to the physical and economical impossibility to establish and to operate a VHF network within these regions.

In the Brazilian civil aviation there are three distinguished and well defined "air traffic poles" namely Brasilia, Rio de Janeiro and São Paulo, the administrative, turistic and economical centers of the country respectively. From these and to these cities aircrafts go and come to and from all parts of the national territory, in direct flights.

In order to minimize frequency changes during the various national long haul flights, the Brazilian Telecommunications Administration is proposing to this Conference some modifications in the boundaries of the Sub-RDARAs covering the Brazilian Territory, mainly the Sub-RDARAs 13C, 13J and 13K, with the purpose to create a reasonable and necessary over-lapping on the triangle Brasilia

-Rio de Janeiro-São Paulo, and in the region alongside of the axis Belém-Brasília (between the meridians 51°W and 47°W) where the economical development boom and its importance for the national integration program give rise to the requirement of connections with the more developed Brazilian cities actually realized almost exclusively by air, on account of the difficulties of other means of access to the region.

At the same time are being proposed new configurations for the Sub-RDARAs 12G, 12H and 12F so that concerning Brazil these configurations correspond to the Brazilian borders, because we had not used any of the frequencies allotted to them. And the communications needs of the Amazonic Region will be satisfied by the frequencies of the Sub-RDARAs 13C, 13J and 13K. It must also be considered that the new boundaries of these Sub-RDARA 12 will facilitate the use of the respective frequencies by the other countries reached by them, as well their use by other Sub-RDARAs.

2. Frequency Requirements

The Brazilian frequency requirements to the AM(R) Service were calculated based on the flight time of all HF equipped aircrafts travelling on all routes within the boundaries of all RDARAs that reach the Brazilian territory, with their new configuration as it has been proposed in MOD 27/164, 171 and 172, when HF communications are required.

Preparing these Proposals, Brazil has taken into account the Report of the Special Meeting of CCIR Study Group 8, Geneva-1976, and of the Report of the Communications Divisional Meeting of ICAO, Montreal-1976, with which the Proposals are generally in accordance.

III. PROPOSED MODIFICATIONS TO APPENDIX 27

The modifications to Appendix 27 are being proposed under the following method of presentation:

1. Numbers shown are the international Radio Regulation numbers;
2. Underlining indicates new text;
3. ADD means an addition to the current provisions;
4. Dashes through the text (e.g., Space) indicate existing text which is being deleted;
5. MOD means a modification of the current provisions;
6. SUP means to suppress the current provisions;
7. NOC means no change in the current provisions.

P A R T I

GENERAL PROVISIONS

Section I

Definitions

NOC 27/1 through 27/8

B/65/1 ADD 27/8A

Aeronautical Operational Control Communications in the aeronautical mobile (R) service are intended to permit communications related to regularity of flight, from take-off to landing.

Reason:

To include Aeronautical Operational Control Communications in the frequency allotment plan.

B/65/2 MOD 27/9

A Family of Frequencies in the Aeronautical Mobile (R) Service is a group of contains two or more frequencies selected from different Aeronautical Mobile (R) bands and is intended to permit communication at any time and within ever--any distance the authorized area of use (See Nos 27/189 - 27/207) between aircraft in flight stations and appropriate aeronautical stations.

Reason:

In order to clarify the definition and to align it with ITU RR No 33.

B/65/3 ADD 27/9A

A "common channel" is a channel allotted in common to two or more areas within interference distance of each other and its use is subject to agreement between the administrations concerned.

Reason:

To transfer of No 27/194 this definition to the section of definitions.

Section II

Technical and Operational Principles Used for the Establishment of the Plan of Allotment of Frequencies in the Aeronautical Mobile (R) Service.

MOD (Title)

A--Determination-of-Channel-Width

Channel Characteristics

B/65/4 MOD 27/10

The A frequency separations separation between carrier (reference) frequencies of 3 kHz is indicated in the following table are adequate to permit communications using the classes of emission referred to in Nos 27/49 through 27/53 MOD 27/51 in the frequency bands between 2850 kHz and 17970 kHz allocated exclusively to the Aeronautical Mobile (R) Service. The carrier (reference) frequency of the channels in the Plan shall be an integral multiples of 1 kHz.

Reason:

It is suggested that the equipment be capable of operating on integral multiples of 1 kHz, in order to preclude economic and operational penalties which may arise through a possible requirement to designate frequency channeling in increments of less than 1 kHz. Also, the table in the current Appendix 27 is unnecessary as channeling is based on 3 kHz separation in all bands.

B/65/5 MOD 27/11

It is assumed that For radiotelephone emissions the modulating audio frequencies will be limited to between 300 and 3000 2700 Hz cycles per second and that the occupied bandwidth of other authorized emissions will not exceed that of A3 emissions the upper limit of A3J emissions. In specifying these limits, however, no restriction in their extension

sion is implied in so far as emissions other than A3J are concerned, provided that the limits of unwanted emissions are met (see ADD 27/66A and ADD 27/66B)

Note: For aircraft station transmitter types first installed before 1 February 1983 the audio frequencies will be limited to 3000 Hz.

Reason:

To define a audio bandwidth necessary for A3J operation consistent with 3 kHz Channel separation and to provide accommodation for other permitted classes of emission.

B/65/6 ADD 27/11A

a.1) For reasons of possible interference potential a given channel should not be used in the same allotment area for radiotelephony and data transmissions.

Reason:

To reflect the Report of CCIR Study Group 8 Special Meeting (Classes of emission).

B/65/7 MOD 27/12

The use of channels, indicated in 27/16 as-derived-from-the-above-table--(Nº-27/10), for the various classes of emissions other than A3J and A2H will be subject to special arrangements by the administrations concerned in order to avoid the harmful interference which may result from the simultaneous use of the same channel for several classes of emission. No-inherent-priority-being-given--to-any-particular-class-of-emission.

Reason: Amended to be consistent with SSB operation.

B/65/8 SUP 27/13 and 27/14

Reason: No longer applicable.

B/65/9 MOD 27/15

The arrangements contemplated in NQs-27/12-and-27/14 NQ 27/12 should be made under the Articles of the International Telecommunication Convention and the Radio Regulations entitled "Special-Agreements" "Special Arrangements".

Reason: For clarification and to be consistent with SUP 27/14

B/65/10 MOD 27/16

The list of carrier (reference) frequencies to be allotted in the bands allocated exclusively to the Aeronautical Mobile (R) Service, on the basis of the frequency separation provided for under NQ 27/10, will be found in the following table.

(See the table on the next page)

B/65/11

kHz							
<u>2850 - 3025</u>		<u>3400 - 3500</u>	<u>4650 - 4700</u>	<u>5480 - 5680</u>		<u>6525 - 6685</u>	
2851	2953	3401	4651	5481	5583	6526	6628
2854	2956	3404	4654	5484	5586	6529	6631
2857	2959	3407	4657	5487	5589	6532	6634
2860	2962	3410	4660	5490	5592	6535	6637
2863	2965	3413	4663	5493	5595	6538	6640
2866	2968	3416	4666	5496	5598	6541	6643
2869	2971	3419	4669	5499	5601	6544	6646
2872	2974	3422	4672	5502	5604	6547	6649
2875	2977	3425	4675	5505	5607	6550	6652
2878	2980	3428	4678	5508	5610	6553	6655
2881	2983	3431	4681	5511	5613	6556	6658
2884	2986	3434	4684	5514	5616	6559	6661
2887	2989	3437	4687	5517	5619	6562	6664
2890	2992	3440	4690	5520	5622	6565	6667
2893	2995	3443	4693	5523	5625	6568	6670
2896	2998	3446	4696	5526	5628	6571	6673
2899	3001	3449	(16) CHNLS	5529	5631	6574	6676
2902	3004	3452	*4699	5532	5634	6577	6679
2905	3007	3455		5535	5637	6580	6682
2908	3010	3458		5538	5640	6583	
2911	3013	3461		5541	5643	6586	(53) CHNLS
2914	3016	3464	<u>5450 - 5480</u>	5544	5646	6589	
2917	3019	3467	REGION 2	5547	5649	6592	
2920	3023(R/OR)	3470	5451	5550	5652	6595	
2923	3473		5454	5553	5655	6598	
2926	(58) CHNLS	3476	5457	5556	5658	6601	
2929		3479	5460	5559	5661	6604	
2932		3482	5463	5562	5664	6607	
2935		3485	5466	5565	5667	6610	
2938		3488	5469	5568	5670	6613	
2941		3491	5472	5571	5673	6616	
2944		3494	5475	5574	5676	6619	
2947		3497	(9) CHNLS	5577	5680(R/OR)	6622	
2950			*5478	5580		6625	
		(33) CHNLS				(67) CHNLS	

* Guard Band

<u>8815 - 8965</u>	<u>10005 - 10100</u>	<u>11275 - 11400</u>	<u>13260 - 13360</u>	<u>17900 - 17970</u>
8816 8921	10006	11276 11384	13261	17901
8819 8924	10009	11279 11387	13264	17904
8822 8927	10012	11282 11390	13267	17907
8825 8930	10015	11285 11393	13270	17910
8828 8933	10018	11288 11396	13273	17913
8831 8936	10021	11291	13276	17916
8834 3939	10024	(41) CHNLS 11294	13279	17919
8837 8942	10027	*11399 11297	13282	17922
8840 8945	10030	11300	13285	17925
8843	10033	11303	13288	17928
8846 8948	10036	11306	13291	17931
8849 8951	10039	11309	13294	17934
8852 8954	10042	11312	13297	17937
8855 8957	10045	11315	13300	17940
8858 8960	10048	11318	13303	17943
8861	10051	11321	13306	17946
(49) CHNLS 8864	10054	11324	13309	17949
*8963 8867	10057	11327	13312	17952
8870	10060	11330	13315	17955
8873	10063	11333	13318	17958
8876	10066	11336	13321	17961
8879	10069	11339	13324	17964
8882	10072	11342	13327	17967
8885	10075	11345	13330	
8888	10078	11348	13333	(23) CHNLS
8891	10081	11351	13336	
8894	10084	11354	13339	
8897	10087	11357	13342	
8900	10090	11360	13345	
8903	10093	11363	13348	
8906	10096	11366	13351	
8909		11369	13354	
(31) CHNLS 8912		11372	13357	
*10099 8915		11375		
8918		11378	(33) CHNLS	
		11381		

* Guard Band

Reason:

To clearly indicated that the frequencies in the Allotment Plan are carrier frequencies, to replace the existing table with a new table indicating 3 kHz frequency spacing, and to provide band-edge protection.

B/65/12 MOD 27/17

The channels carrier (reference) frequencies common to the (R) and (OR) Services, ~~centered at 3023.5~~ 3023 and 5680 ~~ke/s~~ kHz, are authorized for world-wide use as shown in NOs 27/196 and 27/201. Notwithstanding these provisions, the carrier (reference) frequency 5680 ke/s kHz may also be used at aeronautical stations for communication with aircraft stations when other frequencies of the aeronautical stations are either unavailable or unknown. However, this use shall be restricted to such areas and conditions that harmful interference cannot be caused to other authorized operations of stations in the aeronautical mobile service.

Reason:

To reflect new carrier frequencies determined by frequency separation of 3 kHz.

B/65/13 SUP 27/18

B/65/14 SUP 27/19

Reason:

Consequential to conversion to single sideband emissions. The provision for A3 and A3H on the common channels is covered in MOD 27/50.

B/65/15 MOD 27/20

The International Civil Aviation Organization (I-C-A-O) (ICAO) coordinates communication in the Aeronautical Mobile (R) Service with international aeronautical air operations for--a--large--part--of--the world, and this Organization should be consulted in appropriate cases, particularly in the operational use of the world-wide frequencies in the Plan.

To reflect the current ICAO world-wide co-ordination of communications for the Aeronautical Mobile (R) Service, to be consistent with the proposed inclusion of World-Wide frequencies in the Plan.

NOC 27/21 through 27/22

B/65/16 MOD 27/23

Resort to the co-ordination described in N^o 27/20 shall be made where appropriate and desirable for the efficient utilization of the frequencies in question, and especially when the procedures of N^o 27/22 are not satisfactory.

Reason:

To clarify the intent.

B. Interference Range Contours

B/65/17 SUP 27/24

B/65/18 ADD 27/24A

1.1 General Provisions

- (a) Service Range - Due to factors such as the power of the transmitter, propagation loss, noise level, etc., there is a limit to the distance at which reliable communications can be effected between an aeronautical station and an aircraft station. This limiting distance, based on the weakest path, is the service range. Often, the boundary of the air route area is assumed to be the limiting distance.

- (b) Interference Range - This is the minimum distance from the limit of the service range of a wanted station to an interfering station, needed to produce a protection ratio of 15 dB. This protection ratio is between the wanted signal at an aircraft station at the limit of the service range and the signal from an interfering aeronautical station operating on the same frequency. The interference range has been calculated for the orders of frequencies indicated on the data tables, for day and night conditions, for various latitudes, for conditions of median sunspot activity and for a mean effective radiated power of 1.0 kW at the aeronautical station.

- (c) Repetition Distance - This is the distance at which a frequency may be successfully shared and is equal to the sum of the service range and the interference range.
- (d) Transparencies - The transparencies associated with this Appendix show, for the frequencies stated, the interference range described in 1.1(b) which would be required between an interfering aeronautical station and an aircraft station operating at the limit of its service range. Because of the variability of propagation conditions not only from hour to hour within the day-time and night-time periods but also from day-to-day, with season, with solar activity level and geographic location the 15 dB protection ratio may be expected to have marked variations and accordingly a greater protection may be available much of the time especially when the aircraft is not operating at the limit of its service range.
- (e) Figure 1 bellow illustrates the use of the concept of interference range in frequency planning through the determination of repetition distance.

(See next page)

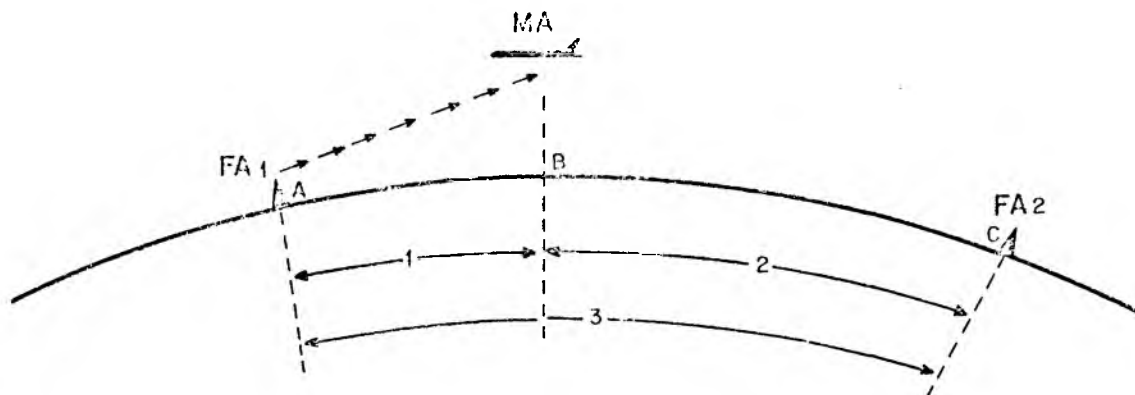


FIGURE 1

Service range, interference range, repetition distance

- FA1 : aeronautical station in communication with aircraft station MA
- FA2 : aeronautical station in communication with aircraft stations other than MA
- MA : aircraft station in communication with aeronautical station FA1
- 1 : service range AB
- 2 : interference range CB
- 3 : repetition distance AC

NOC 27/25 through 27/33

B/65/19 MOD 27/34

5.3 Place the centre of the transparency (i.e. the intersection of the axis of symmetry and the latitude line) over the boundary of the area or at the location of the transmitter at a point on the boundary nearest to the potentially interfering transmitter or at the location of the potentially interfering transmitter. Note the latitude of this point and select the contour corresponding to this latitude.

Reason for 27/24, 24A and 34: To provide a clear description of the interference contours and their use.

NOC 27/35 through 27/48

C. Classes of Emission and Power

1. Classes of Emission

NOC 27/49

B/65/20 MOD 27/50

1.1 Telephony - Amplitude Modulation:

- double-sideband (A3)
- single-sideband, reduced-carrier (A3A)
- single-sideband, full-carrier (A3H)
- single sideband, suppressed carrier (A3J)
- two-independent-sideband (A3B)

Classes of emission A3 and A3H should be retained only for stations directly involved in coordinated search and rescue operations using the frequencies 3 023 kHz and 5 680 kHz. See MOD 27/17.

1.2 Telegraphy (including automatic data transmissions).

B/65/21 MOD 27/51

1.2.1 Amplitude modulation:

- telegraphy-without-the-use-of-a-modulating-audio-frequency-(by-on-off-keying) (A1)
- telegraphy by the on-off keying of an amplitude-modulating audio frequency or audio frequencies, or by an on-off keying of the modulated emission and including selective calling - single sideband - full carrier (A2H)

- multichannel-voice-frequency--te
legraphy; single-sideband;--redu
ced-carrier (A7A)
- multichannel-voice-frequency--te
legraphy; single-sideband;--full
carrier (A7H)
- multichannel voice frequency te
legraphy, single sideband, suppre
ssed carrier (A7J)
- other transmissions such as auto
matic data transmission - single
sideband; suppressed carrier (A9J)

Classes of emission such as the following
should not be permitted unless appropria
te precautions are taken to ensure that
harmful interference is not caused to the
classes of emission given above:

A1, A7A, A7H, and F1

B/65/22 SUP 27/52

B/65/23 SUP 27/53

Reason for 27/50, 51, 52 and 53: To provide for the classes of
emission that will be used, to
reflect the Report of CCIR Stu
dy Group 8 Special Meeting (Clas
ses of emission).

B/65/24 MOD 27/54

2. Power

2.1 Unless otherwise specified in Part II of this Appendix, the peak envelope powers supplied to the antenna transmission line shall not exceed the maximum values indicated in the table below; the corresponding peak effective radiated powers being assumed to be equal to two-thirds of these values:

Class-of-emission	Stations	Maximum-peak-envelope-power
A1- F1- - F2-	Aeronautical-stations Aircraft-stations	1.5-kW 75-W
A3 A3H (100%-modulated)	Aeronautical-stations Aircraft-stations	6-kW 300-W
Other-emissions-such-as A2--A3A-A3B--A3J A4--A7A-A7H--A7J	Aeronautical-stations Aircraft-stations	6-kW 300-W

Station	Class of emission*	maximum Peak envelope power (P_p)
aeronautical	A3J, A2H, A7J, A9J	6 kW
aircraft	A3J, A2H, A7J, A9J	400 W

* For other classes of emission the maximum P_p should not exceed

- 1.5 kW for aeronautical stations and
- 75 W for aircraft stations

Reason:

To provide power levels for the classes of emission that will be used, to reflect the Report of CCIR Study Group 8 Special Meeting (Power Limits).

B/65/25 MOD 27/55

2.2 It is assumed that the maximum peak envelope powers specified above for aeronautical stations will produce the mean effective radiated power of 1 kW (for emissions such as A1, F1 F2-and-unmodulated-A3-and-A3H---emissions) used as a basis for the interference range contours.

Reason:

To be consistent with MOD 27/51

B/65/26 MOD 27/56

2.3 In order to provide satisfactory communication with aircraft, aeronautical stations serving MWARAs or VOLMET and world-wide areas may exceed the power limits specified in NO 27/54. In each such case, the Administration having jurisdiction over the aeronautical station shall note RR 694 and ensure:

Reason:

To make the same provision for aeronautical stations serving a World-Wide function.

NOC 27/57 through 27/61

B/65/27 SUP 27/62

Reason:

To limit interference from aircraft stations.

B/65/28 MOD 27/72

4. Assigned Frequencies

4.1 The-assigned-frequency For single sideband radiotelephone emissions, except class of emission A2H, the assigned frequency shall be at a value ± 500 cycles 1400 Hz above the carrier (reference) frequency.*

*Notes:

1. Aeronautical stations equipped with selective calling systems shall indicate in Supplementary Information column of the Form of Notice (see Appendix 1 to the Radio Regulations) the class of emission A2H.
2. For classes of emission A1 and F1 care should be taken not to place these emissions at the edge of the channel.

Reason:

To define the assigned frequency taking into account the Report of CCIR Study Group 8 Special Meeting.

B/65/29 SUP 27/73

Reason:

The DSB operation on 3023 kHz and 5680 kHz is covered in MOD 27/50.

PART II

PLAN FOR THE ALLOTMENT OF FREQUENCIES FOR THE AERONAUTICAL MOBILE (R) SERVICE IN THE EXCLUSIVE BANDS BETWEEN 2850 AND 17970 KC/S kHz.

Section I

NOC 27/74 to 27/79

Article 1

Description of the Boundaries of the Ma
jor World Air Route Areas (MWARAs)

To be determined by the Conference taking into account of the Report of the ICAO Communications Divisional Meeting Prepa
ratory to the ITU Aeronautical (K) Confe
rence (Montreal, 1976)

Article 2

Description of the Boundaries of the Re
gional and Domestic Air Route Areas (RDA
RAs).

B/65/30 MOD 27/158 Sub-Area 12F

From the point 04°S 93°W, and through the points 02°N 93°W, and 02°N 79°W, to Balboa, Canal Zone. Then to 13°N 77°W, and through the points 13°N 70°W, 08°N 70°W, 06°N 67°W, 01°N 66°W, and along the border between Brazil and Colombia to 04°S 70°W. Then along the border between Colombia and Peru to the junction of the borders of Colombia, Peru and Ecuador. Then along the border between Peru and Ecuador through 04°S 81°W to close the sub-area at 04°S 93°W.

B/65/31 MOD 27/159 Sub-Area 12G

From the point 07°N 73°W, and through the points 14°N 73°W, 14°N 58°W, 01°N-58°W, 01°31'N 58°W 01°N-68°W and along the borders of Brazil with British Guiana, Venezuela, Colombia through the points 1°57'N 68°W, 05°N 69°W, to close the sub-area at 07°N 73°W.

B/65/32 MOD 27/160 Sub-Area 12H

From the point ~~10°S-70°W~~ and through the points 05°N 70°W ~~05°N-61°10'W~~, and through the points 08°45'N 60°W, 08°N 58°W, 08°N 49°W, 02°N 47°W, 04°10'N 51°36'W, 10°S-47°W to close the sub-area at ~~10°S-70°W~~, and along the borders of Brazil with French Guiana, Surinam, British Guiana, Venezuela and Colombia to the junction of the borders of Brazil, Colombia and Peru, to close the sub-area at 05°N 70°W.

Reason for 27/158, 159 and 160: The operational requirements of the AM(R) Service in the amazonic region shall be met through the new boundaries of the Sub-RDARAs 13C, 13J and 13K, as proposed in MOD 27/164, 171 and 172. And the exclusion of Brazil of Sub-RDARAs 12F, 12G and 12H will facilitate the utilization of the frequencies allotted to them, by the other countries.

B/65/33 ADD 27/161

Regional and Domestic Air Route Area - 13
(RDARA - 13)

From the South Pole along the 120°W meridian to 05°S. Then through the points 05°S 93°W, 04°S 82°W, and along the southern border of Ecuador, Colombia, Venezuela, British Guiana, Surinam, French Guiana, to the point 04°24'N 50°39'W. Then through the points 04°24'N 47°W, 00°32°W to the point 00°20°W, and along the 20°W meridian to the South Pole.

Reason:

To define the boundaries of the RDARA 13

B/65/34 MOD 27/164 Sub-Area 13C

From the point 15°50'S-47°50'W 15°S 47°W and through the points 20°30'S-55°W, 22°35'S-54°30'W, 20°S 44°W, 23°19'S 42°W, 25°S 45°W, 22°30'S 50°39'W, 19°52'S 58°W, and along the border of Brazil with Paraguay, Bolivia, Peru, Colombia, Venezuela, British Guiana, Surinam and French Guiana to 05°N-50°W 04°24'N 50°39'W 05°N-48°30'W, 04°24'N 47°W, to close the sub-area at 15°50'S-47°50'W 15°S 47°W.

Reason:

To extend the southern boundaries of sub-area 13C to include the cities of Brasilia, Rio de Janeiro and São Paulo within it, in order create a reasonable and necessary over-lapping of sub-areas 13C, 13J and 13K, avoiding the frequency changes during national long haul flights.

B/65/35 MOD 27/171 Sub-Area 13J

From the point 15°50'S-47°50'W 15°S 47°W through the points 20°S 44°W, 22°55'S-43°10'W, 23°19'S 42°W, 29°S 40°W, 35°S 45°W, and thence along the borders of Brazil with Uruguay, Argentina, Paraguay and Bolivia to the point 22°35'S-55°40'W 19°52'S 58°W, then through the point 20°30'S 54°30'W 18°S 57°37'W to close the sub-area at 15°50'S-47°50'W 15°S 47°W.

Reason:

To extend the northern boundary of sub-area 13J to include within it cities of significant air traffic.

B/65/36 MOD 27/172 Sub-Area 13K

From the point 15°50'S-47°50'W 22°30'S 50°39'W and through the points 20°S-44°W, 22°55'S-43°10'W, 25°S 45°W, 29°S 40°W, 20°S 32°W, 00°32'W, 0°50'N-48°30'W, 04°24'N 47°W, 04°24'N 50°39'W, to close the sub-area at 15°50'S-47°50'W 22°30'S 50°39'W.

Reason:

To extend the western and southern boundaries of sub-area 13K to include the axis Belém - Brasilia and the cities of Brasilia, Rio de Janeiro and São Paulo within it, in order to create a reasonable and necessary over-lapping of sub-areas 13K and 13C, and of sub-areas 13K, 13C and 13J, avoiding the frequency changes during national long haul flights.

Section II

Allotments of Frequencies to the
Aeronautical Mobile (R) Service

Article 1

B/65/37 MOD 27/186

Frequency Allotment Plan by Areas (by
MWARAs; RDARAs; Sub-RDARAs and --- VOLMET
AREAS)

Reason:

To indicate that the table embraces all
uses of the frequencies in the frequency
allotment plan.

NOC 27/187

B/65/38 MOD 27/188

The following list does not include the
world-wide common (R) and (OR) frequencies
3023.5 and 3023 and 5680 kHz or the world-
wide frequencies of 3499, 6526, 8963 ,
10-093 and 13-256 kHz. The allotment of
these frequencies is shown in Article 2.

Reason:

Consequent to the inclusion of world-wide
frequencies in the table.

B/65/39 MOD 27/189

Revised table to be determined by the
Conference in order to include provisions
for Aeronautical Operational Control fre-
quencies.

Article 2

Frequency Allotment Plan

B/65/40 MOD 27/192

1. Class of Stations: FA

Classes of Emission: see Nos 27/49-27/
53 27/49 - 27/51

Power: Unless otherwise indicated in the Plan, the power values for Aero nautical and air craft stations are those shown in Nos 27/54-27/62 27/54 - 27/61

Hours: H24 unless other wise indicated.

Reason:

Consequential to SUP 27/52, 27/53 and 27/62.

B/65/41 MOD 27/193

2. A frequency allotted on a 'day-time basis' may be used during the period one hour after sunrise to one hour before sunset when the same channel is allotted in the Plan to Major World Air Route Areas, Regional and Domestic Air Route Areas, Sub-Regional and Domestic Air Route Areas, VOLMET areas or world-wide which receive full protection during the twenty-four hours.

Reason:

To add channels allotted for world-wide use.

B/65/42 SUP 27/194

Reason: To transfer it of the section of definitions (see ADD 27/9A)

B/65/43 ADD 27/194A

The frequency allotment for world-wide use except for the frequencies 3023 kHz and 5680 kHz is for assignment by administrations for the purpose of serving one or more aircraft operating agencies operating under authority granted by the administration(s) concerned. Such assignments are to provide communications between an appropriate aeronautical station and an aircraft station for exercising authority over regularity of flight.

Reason: To define the purpose for which such frequencies can be used.

B/65/44 ADD 27/194B

Frequencies designated World-Wide in the Frequency Allotment Plan are intended to be used anywhere in the world and within any operational area which does not lie wholly within a RDARA or Sub-RDARA boundary.

Reason: To define the areas in which such frequencies can be used.

B/65/45 MOD 27/195, 27/197, 27/198, 27/199, 27/200, 27/202, 27/203, 27/203, 27/204, 27/205, 27/206 and 27/207, as follows;

In the table (pages 45 to 58), it is proposed that the frequencies for world-wide use be designated as follows:

Column 1 Frequency kc/s kHz

Column 2 Authorized Area of Use - World-Wide

Column 3 Remarks - see ADD 194A and ADD 194B

Reason:

To include, in the numerical order of frequencies, the indication of which such frequencies can be used.

B/65/46 MOD 27/196 and 27/201 In the table MOD Column 2 with regard to 27/196 and 27/201 to read World-Wide, (R) and (OR).

Reason:

To indicate world-wide Aeronautical Mobile (R) and (OR) Services Application.

IV. PROPOSED AMENDMENTS TO THE RADIO REGULATIONS

Article 5

Frequency Allocations

10 kHz to 275 Ghz

NOC NOS. 125 through 201

B/65/47 MOD 201A The frequencies 2182 kHz, ~~3023-5~~ 3023 kHz, 5680 kHz, 8364 kHz, 121.5 MHz, 156.8 MHz may also be used, in accordance with the procedures in force for terrestrial radiocommunication services, for search and rescue operations concerning manned space vehicles.

The same applies to the frequencies, 10003 kHz, 14993 kHz and 19993 kHz, but in each of these cases emissions must be confined in a band of + 3 kHz about the frequency.

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation.

NOC NOS. 202 through 205

B/65/48 MOD 205A The carrier frequencies ~~3023-5~~ 3023 and 5680 kHz may also be used, in accordance with Nos. 1326C and 1353B, respectively, by stations of the maritime mobile service engaged in co-ordinated search and rescue operations.

Reason: Consequential to Appendix 27 (Rev) to reflect carrier frequencies determined by frequency separation.

NOC NOS. 206 through 429

Article 7
Special Rules Relating to Particular Services
Section II
Aeronautical Mobile Service

B/65/49 ADD 429A Aeronautical Operational Control Communications in the aeronautical mobile (R) service are reserved for communications related to regularity of flight, from take-off to landing

Reason: To provide clarification for the special use of spectrum for Operational Control Communications.

Article 9

NOC NOS. 430 through 432

Notification and Recording in the Master International Frequency Register of Frequency Assignments to Terrestrial Radiocommunication Stations

NOC NOS. 486 through 589

B/65/50 MOD 590 (2) If the finding is favourable with respect to Nos. 554

to 557 the date of 29-April-1966 (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2a.

B/65/51 MOD 591 (3) If the finding is favourable with respect to No. 558, the date of 29-April-1966 (the date of signing of the AWARC Agreement Geneva, 1978) shall be entered in Column 2b.

Reason: To provide a procedure for recording of Notices found satisfactory by the Board in the Master International Frequency Register in accordance with the dates as specified by the final procedure.

NOC NOS. 592 through 639EX

Article 28

Conditions to be Observed by Mobile Services

Section II

Special Provisions Regarding Safety

NOC NOS. 955 through 969

B/65/52 MOD 969A (3) The aeronautical frequencies ~~3023-5~~ 3023 kHz and 5680 kHz may be used by mobile stations for search and rescue scene-of-action co-ordination purposes, including communication between these stations and participating land stations, in accordance with any special arrangements by which the aeronautical mobile service is regulated (see Nos. 1326C and 1353B).

Reason: Consequential to Appendix 27 (Rev) to reflect new frequencies determined by frequency separation and to conform to Nos. 201A, 1326C.

NOC NOS. 970 through 999

Article 35

Use of Frequencies for Radiotelephony in the Maritime Mobile Service

NOC NOS. 1319 through 1322AR

Section II

Bands Between 1605 and 4000 KHz

NOC NOS. 1322B through 13226B

C. Search and Rescue

B/65/53 MOD 1326C 3A The aeronautical frequency ~~3022.5~~ 3023 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, with the carrier frequencies, classes of emission and conditions of operation ~~---d-e-f-i-n-e-d-----~~ in accordance with the provisions of Appendix 27 (REV).

Reason: Consequential to Appendix 27 (Rev) fo reflect new frequencies determined by frequency separation.

NOC NOS. 1327 through 1351

SECTION III. Bands between 4000 and 23000 kHz

NOC NOS. 1351A through 1353A

D. Search and Rescue

B/65/54 MOD 1353B 15A. The aeronautical frequency 5680 kHz may be used for intercommunication between mobile stations when engaged in coordinated search and rescue operations, including communication between these stations and participating land stations, ~~with---the---carrier frequencies; classes of emission and---conditions of operation defined in~~ in accordance with the provisions of Appendix 27 (Rev).

Reason: To align with MOD 969A and MOD 1326C.

NOC. NOS. 1354 through 1379

RESOLUTIONS AND RECOMMENDATIONS

B/65/55 SUP Resolution N9 13

Reason: This resolution led to creation of AP27 which is now being revised. It is therefore obsolete.

B/65/56 ADD

Resolution Nº Aer2-(A)

Relating to the Use of Frequencies of the Aeronautical Mobile (R) Service

The World Administrative Radio Conference, Geneva, 1978,

considering

- a) That the Plan developed for the use of high frequency channels for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations, Geneva, 1971) has been substantially implemented;
- b) that air operations are subject to continuous changes;
- c) that these changes require attention by the administrations concerned, but;
- d) that, in seeking to satisfy new communication requirements, no decision should be taken that will prevent or handicap the co-ordinated utilization of those high frequency (R) band allotments, as prescribed in the Plan;
- e) that the families of high frequencies allotted to the Major World Air Route Areas (MWARA), Regional

and Domestic Air Route Areas (RDARA) and Sub-Areas have been chosen considering propagation conditions which allow for the selection of the most suitable frequencies for the distance involved;

- f) that it is essential to distribute the communication traffic load as uniformly as possible over frequencies of the same order;
- g) that specific steps should be taken to ensure that the correct order of frequency is used;
- h) that from an aeronautical viewpoint, VHF can provide a more reliable and more noise-free communication system than HF;
- i) that from a technical and operational viewpoint, the use of VHF by aviation has progressed appreciably;
- j) that the use of VHF in its several modes could appreciably reduce the use of HF in the aeronautical mobile (R) service;
- k) that, owing to development in the telecommunication networks in many areas of the world, the possibilities of providing VHF coverage are rapidly increasing;

Resolves

that administrations, individually or in collaboration, take the necessary steps:

1. to employ, to the maximum extent practicable, VHF to meet their requirements in the aeronautical mobile (R) services to lessen the load on the high frequency (R) bands;
2. to make as great a use as possible of antennae of appropriate directivity and efficiency in order

- to minimize possibilities of mutual interference within an area or between areas;
3. to co-ordinate the use of families of frequencies necessary for a given route segment in accordance with the technical principles in Appendix 27 and, in light of the propagation data available, in order that the most appropriate frequencies be used with an aircraft at a given distance from the aeronautical station providing service over the route segment concerned;
 4. to improve operating techniques and procedures and to use equipment which will make it possible to attain the highest possible efficiency in handling air-ground high frequency communications;
 5. to collect precise data on the operation of their high frequency communication systems particularly those having a bearing on technical and operating standards, so as to facilitate re-examination of this Plan;
 6. to establish, through regional agreements, the best method to provide the required communications for any new long-distance international or regional air operation which is not or can not be accommodated within the system of MHARA and PQARA, in such a manner as not to cause harmful interference to the utilization of frequencies as prescribed in the Aeronautical Mobile (R) Frequency Plan.

Reason: Consolidation of Resolutions N° 14 and Aer 4, to bring them up to date.

Reason: Consolidation of Resolutions N^o 14 and Aer4 as proposed in ADD Resolution N^o Aer2 (A).

B/65/58 SUP RESOLUTION N^o Aer1

relating to the use of frequencies 3023.5 and 5680 kHz common to the aeronautical mobile (R) and (OR) service

Reason: This Resolution has been modified to bring it up to date, and is shown as an ADD Resolution Aer2-(B) which follows.

B/65/59 ADD RESOLUTION N^o Aer2 - (B)

Relating to the Use of frequencies 3023 and 5680 kHz common to the Aeronautical Mobile (R) and (OR) Services

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

having noted

That this conference in adopting a new Frequency Allocation Plan in, Appendix 27 (Rev), has decided to use 3023 kHz instead of 3023.5 kHz; and additionally, has amended the provisions governing the use of 3023 and 5680kHz,

considering

1. that, by this action some anomalies now exist in the conditions prescribed in Appendix 26 to the Radio Regulations, Geneva, 1959, for the use of the frequencies 3023.5 and 5680 kHz;

2. that the coordination of search and rescue operations at the scene of a disaster would be improved if the use of the frequencies 3023 and 5680 kHz in such operation, was extended to include communication between mobile stations and participating land stations;

3. that it would be in the general interests of the aeronautical mobile (R) service if the same provisions relating to the use of the frequencies 3023 and 5680 kHz were applied to operations both in the aeronautical mobile (R) service and the aeronautical mobile (OR) service;

resolves

to invite administrations to apply in the aeronautical mobile (OR) service, as from the date of coming into force of the Final Acts of the Conference, the provisions governing the use of the Frequencies 3023 and 5680 kHz specified in Appendix 27 (MOD 27/196 and MOD 27/201).

Reason: Represents an up-date of Resolution N^o Aer 1, which has been proposed for SUP.

B/65/60 SUP RESOLUTION N^o Aer 2

relating to the use of frequencies in the HF bands allocated exclusively to the aeronautical mobile (R) service.

Reason: This Resolution has been modified, to bring it up-to-date, and is shown as an ADD Resolution N^o 2 - (C) which follows

B/65/61 ADD RESOLUTION N° Aer - (C)

Relating to the Unauthorized Use of Frequencies in the Bands allocated to the Aeronautical Mobile (R) Service.

The World Aeronautical Administrative Radio Conference, Geneva, 1978

considering

- a) that monitoring observations of the use of the frequencies in the bands between 2850 and 17970 kHz allocated exclusively to the aeronautical mobile (R) service show that a number of frequencies in these bands are still being used by stations of services other than the aeronautical mobile (R) service, notably by high powered broadcasting stations, some of which are operating in contravention of N° 422 of the Radio Regulations;
- b) that these stations are causing harmful interference to the aeronautical mobile (R) service and that a considerable number of emissions, the sources of which could not be positively identified, were observed in these bands;
- c) that radio is the sole means of communication of the aeronautical mobile (R) service and that this service is a safety service;

considering, in particular

- d) that it is of paramount importance that channels directly concerned with the safe and regular conduct of aircraft operations be kept free from harmful interference, since they are essential for the protection of the safety of life and property;

resolves to urge administrations

1. to ensure that stations of services other than the aeronautical mobile (R) service abstain from using frequencies in the Aeronautical Mobile (R) Service bands other than under the conditions specified in Nos. 115 and 415;
2. to make every effort to identify and locate the source of any unauthorized emission capable of causing harmful interference to the aeronautical mobile (R) service and thereby endangering this safety service and to communicate their findings to the IFRB;
3. to participate in the monitoring programs that the IFRB may organize pursuant to this Resolution;
4. to request their governments to enact such legislation as is necessary to prevent stations located on-board aircraft operating in contravention of N° 422 of the Radio Regulations:

requests the International Frequency Registration Board

1. to continue to organize monitoring programmes in the bands exclusively allocated to the aeronautical mobile (R) service with a view to eliminating the emissions of out-of-band stations which cause, or are likely to cause, harmful interference to the aeronautical mobile (R) service;

B/65/62 SUP Resolution N° Aer 3

Reason: Consequential to introduction of single sideband, Resolution N° Aer 3 becomes obsolete.

B/65/63 SUP Resolutin NQ Aer 4

Reason: Consolidation of Resolution NQ 4 and Aer 4 as propo
sed in ADD Resolution NQ Aer 2 (A)

B/65/64 SUP RESOLUTION NQ Aer 5

relating to the use of VHF for meteorological broad
casts in the aeronautical mobile (R) service

Reason: This Resolution has been modified, to bring it up-to-
date, and is shown as an ADD Resolution NQ Aer 2-(D)
which follows

B/65/65 ADD RESOLUTION NQ Aer 2 - (D)

Relating to the use of VHF for meteorological Broad
casts in the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conferen
ce, Geneva, 1978,

considering

a) that the number of channels available for the aeronautical
mobile (R) service in the frequency bands between 2850 and 17970
kHz is limited;

b) that the need for frequencies for aeronautical mobile (R)
service communications and for meteorological broadcasts to
aircraft is increasing;

c) that the propagation characteristics of high frequencies
make them essential for aviation communication requirements over
long distances;

d) that in Recommendation N° 13 of the International Administrative Aeronautical Radio Conference, Geneva, 1949, and Resolution N° 14 MOD of the Ordinary Administrative Radio Conference, Geneva, 1959, administrations were urged "to make as great a use as possible of very high frequencies in order to lessen the load on the high frequency (R) bands";

e) that this conference has adopted a Resolution whereby administrations should, to maximum extent practicable, employ VHF to meet their requirements in the aeronautical mobile (R) service;

f) that substantial technical progress has been made by aviation in extending the operational range of VHF used for communications within the aeronautical mobile (R) service;

g) that this extension of the operational range of VHF could partially meet the encreasing need for meteorological broadcasts to aircraft;

resolves

That administrations, to the maximum extent practicable, should employ VHF for meteorological broadcasts to aircraft.

Reason: Represents an up-date of Resolution N° Aer 5, which has been proposed for SUP.

B/65/66 ADD Resolution N9 Aer 2 (E)

Relating to the Adoption of a New Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 MOD)

The World Administrative Radio Conference, Geneva, 1978
considering

- a) that it has revised the frequency allotment plan aeronautical mobile (R) service based on new technical criteria;

resolves

1. that the Final Acts of this Conference will enter into force on January 1, 1980;
2. that the revised frequency allotment plan contained in Appendix 27 will enter into force on February 1, 1983.

B/65/67 ADD Resolution N9 Aer 2 (F)

Relating to the use of Single Sideband Technique in the bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 - 17 970 kHz

The World Administrative Radio Conference, Geneva, 1978
considering

- a) that the Extraordinary Administrative Radio Conference, Geneva, 1966 resolved that Administrations should effect, as soon as possible, a progressive conversion of their HF radiotelephone services in the Aeronautical Mobile (R) Service from double sideband to single sideband operations;
- b) that the Final Acts of this Conference will enter into force on January 1, 1980;
- c) that the revised Frequency Allotment Plan contained in Appendix 27 will enter into force on February 1, 1983;

resolves

that, unless otherwise specified in the Final Acts of this Conference, radiotelephone stations in the Aeronautical mobile service operating in the bands between 2850 and 17 790 kHz shall comply with the following conditions:

1. as from January 1, 1980 any new installations of double sideband equipment in aeronautical and aircraft stations shall not be permitted; however, administrations shall endeavour to discontinue the use of double sideband equipment at the earliest possible date and in any case not later than February 1, 1983;
2. as from January 1, 1980, frequency assignments made in accordance with Appendix 27, Edition of 1968 may continue in force until February 1, 1983;

3. as from January 1, 1980 frequency assignments under the new frequency allotment plan may be implemented; however, the use of such frequencies must not interference with frequency assignments made under the frequency allotment plan contained in Appendix 27, Edition of 1968;
4. as from January 1, 1980 any new installations of single sideband equipment at aeronautical and aircraft stations using frequencies from the new frequency allotment plan are not required to be compatible with double sideband systems;
5. as from January 1, 1980 any new installations of single sideband equipment in aircraft using frequencies from the present frequency allotment plan are not required to be compatible with double sideband systems if communication is required only with aeronautical and aircraft stations using single sideband systems;
6. as from January 1, 1980 any new installations of single sideband equipment at aeronautical stations using frequencies from the present allotment plan are required to be compatible with double sideband systems until February 1, 1983.

B/65/68 ADD Resolution N9 Aer 2 (G)

Relating to the Implementation of the Frequency Allotment Plan in the High Frequency Bands allocated exclusively to the Aeronautical Mobile (R) Service between 2850 and 17970 kHz.

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

- a) that the bands allocated exclusively (between 2850 and 17970 kHz) to the aeronautical mobile (R) Service by the Administrative Radio Conference, Geneva, 1959, were Modified by the Extraordinary Administrative Radio Conference, Geneva, 1966;

- b) that the 1956 Conference set up procedures to be followed by administrations relating to the implementation of the modifications;
- c) that the necessary provisions were made for the IFRB to carry out these procedures;

recognizing

- d) that the aeronautical mobile (R) service is a safety service;
- e) that the present conference has further modified the said bands to provide for SSB techniques;
- f) that there is a need for all administrations to implement the modifications made by the present conference, with a view to avoiding any harmful interference to the services rendered by stations operating in accordance with the Radio Regulations;

resolves

- 1. that the assignments existing in the Master Register on 1 February 1983 which are not in conformity with the decisions of the present Conference on that date shall be treated as follows;

1.1 the IFRB will send relevant extracts from the Master Register to the administrations concerned, within 30 days from 1 February 1983, advising that, in accordance with the terms of the present resolution, the assignments concerned are to be transferred to the appropriate bands within a period of 180 days after the dispatch of the extracts;

1.2 if an administration does not notify the IFRB of the transfer within the prescribed period, the original entry shall be retained in the Master

Register without a date in Column 2 and with a suitable remark in the Remarks column. The administrations shall be advised of this action:

2. that, if an administration so desires, the IFRB shall apply the provisions of Nos. 629 to 633 of the Radio Regulations.

Reason: To provide for transfer of assignments in the Master Register in the high frequency bands exclusively allocated to the Aeronautical Mobile (R) Service.

B/65/69

ADD

RECOMMENDATION N9 Aer 2 - (A)

Relating to a Study of the Feasibility of Creating new High Frequency Bands to be Allocated exclusively to the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva, 1978,

considering

a) that the HF bands exclusively allocated to the aeronautical mobile (R) service are at present generally of an adequate MHz order to satisfy all to requirements of Major World Air Route and Regional and Domestic Air Route areas as defined in Appendix 27 to the Radio Regulations:

b) that aircraft operating agencies have a requirement to communicate with their aircraft over long distances beyond the boundaries of Major World Air Route and Re

gional and Domestic Air Route areas as defined in Appendix 27 to the Regulations;

c) that frequencies of the higher MHz order (20-24 MHz) required for such long distance communications are not now exclusively allocated to the aeronautical mobile (R) service;

recommends

that administrations study the problem and take into account the needs of the aeronautical mobile (R) service for increased exclusive their proposals for the next competent World Administrative Radio Conference.

Reason: Higher frequencies, in the order of 20-24 MHz, should be investigated for possible use by the Aeronautical Mobile (R) Service at the next competent WARC.

B/65/70

SUP

RECOMMENDATION N9 Aer 1

Relating to the development of techniques which would help to reduce congestion in the high frequency bands allocated to the Aeronautical Mobile (R) Service

Reason: This Recommendation has been modified, to bring it up-to-date and is shown as an ADD Recommendation N9 Aer 2 - (B) which follows.

B/65/71

ADD

RECOMMENDATION No. Aer 2 - (B)

Relating to the development of techniques which would help to reduce congestion in the High Frequency bands allocated to the Aeronautical Mobile (R) Service

The Aeronautical World Administrative Radio Conference, Geneva, 1978 considering

considering

a) that several administrations are actively engaged in the development of communication techniques the wider use of which in the aeronautical mobile (R) service, would help to reduce congestion in the high frequency bands allocated to that service; such developments include remotely controlled VHF stations, high - powered VHF transmitters employing directional antennae, space radiocommunication techniques and automatic data transmission;

b) that knowledge of these developments would be useful to other administrations in considering the application of these techniques to their aeronautical mobile (R) communication service;

c) that the International Civil Aviation Organization (I.C.A.O.) is actively engaged in coordinating the operational development of such techniques;

invites

administrations engaged in such developments to inform the I.F.R.B. periodically of the progress achieved;

requests

the I.F.R.B. periodically to circulate the information so obtained to administrations and to I.C.A.O.

Reason: Represents an up-date of Recommendation N^o Aer 1, which has been proposed for SUP.

B/65/72

V. FREQUENCY REQUIREMENTS FOR HF CHANNELS IN THE AM(R) SERVICE FOR AVARAs.
 RDARA RDARAs, VOLMET AND INTERNATIONAL AERONAUTICAL OPERATIONAL CONTROL 1) 7)

Frequency band (kHz)		Number of channels by Area									
		12F ¹⁾	12G ¹⁾	12H ¹⁾	13 ¹⁾	13C ¹⁾	13J ¹⁾	13K ¹⁾	SAW2 ²⁾	AT-MET ³⁾	22000 ⁴⁾
2850 - 3025	Used under the Ap. 27	-	-	-	-	2	3	2	1	1	-
	Additional Requirements	-	-	-	-	1	3	1	-	-	-
3400 - 3500	Used under the Ap. 27	-	-	2	-	1	1	2	-	-	-
	Additional Requirements	-	-	-	-	4	3	3	-	-	-
4650 - 4700	Used under the Ap. 27	-	-	-	-	-	2	1	-	-	-
	Additional Requirements	-	-	-	-	2	4	2	-	-	1
5450 - 5460 (Reg.2)	Used under the Ap. 27	-	-	-	-	-	1	-	-	-	-
	Additional Requirements	-	-	-	-	-	1	1	-	-	-
5480 - 5680	Used under the Ap. 27	-	-	1	-	2	1	2	1	1	-
	Additional Requirements	-	-	-	-	3	3	2	-	-	-
6525 - 6585	Used under the Ap. 27	-	-	-	-	2	3	2	-	-	-
	Additional Requirements	-	-	-	-	4	3	3	-	-	1
8815 - 8965	Used under the Ap. 27	-	-	-	-	1	2	2	1	1	-
	Additional Requirements	-	-	-	-	2	2	3	-	-	-
10005 - 10100	Used under the Ap. 27	-	-	-	-	-	2	1	-	-	-
	Additional Requirements	-	-	-	-	3	2 ⁴⁾	3 ⁴⁾	-	-	1
11275 - 11400 ⁵⁾	Used under the Ap. 27	-	-	-	-	1	-	-	1	-	-
	Additional Requirements	-	-	-	-	2	-	3	-	-	-
13260 - 13360	Used under the Ap. 27	-	-	-	1	-	-	-	1	1	-
	Additional Requirements	-	-	-	-	2 ³⁾	-	2 ³⁾	-	-	1
17900 - 17970	Used under the Ap. 27	-	-	-	1	-	-	-	1	-	-
	Additional Requirements	-	-	-	-	1	-	-	-	-	1
22000	Used under the Ap. 27	-	-	-	-	-	-	-	-	-	-
	Additional Requirements	-	-	-	-	-	-	-	-	-	1

- 1) In the calculations of these frequency requirements it was taken into account the new boundaries of the areas 12F, 12G, 12H, 13, 13C, 13J and 13K as proposed in MOD 27/158, MOD 27/159, MOD 27/160, ADD 27/161A, MOD 27/164, MOD 27/171 and 27/172, and the national operational control and the national VOLMET.
 - 2) For long-distance Aeronautical Operational Control the communications are proposed to be established with the MWARAs SA, CWP NA3 EU, CAR, SAM1, CEP, NSA-1, NSA-2.
 - 3) Both the channels shall be common to 13K and 13C.
 - 4) One of the channels shall be common to 13J and 13K.
 - 5) No additional frequency or family of frequencies is being required for MWARA SAM2 or any other, as they are described by the present Appendix 27.
 - 6) No additional frequency or family of frequencies is being required for AT-MET, as it is described by the present Appendix 27.
 - 7) There are some differences between these requirements and those sent to IFRB and published in its circular-letter n° 400.
 - 8) The frequency 11.351 kHz allotted to RDARA 12 is being used in Brazil.
-

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 66-E
3 February 1978
Original : French,
English,
Spanish

PLENARY MEETING

Note by the Secretary-General

DOCUMENTS OF STUDY GROUP 8 OF THE CCIR

Study Group 8 of the CCIR, during its recent Final Meeting, decided that the following documents are of interest to the Aeronautical Conference and should be brought to its attention :

Docs. 8/392(Rev.1)
8/495
8/497

As requested by the Director of the CCIR, I hereby have the honour to transmit these documents to the Conference.

M. MILI
Secretary-General

Annexes : 3



Original : English

STUDY GROUP 8

COMMENTS ON STUDYING THE USE OF A COMMON DIGITAL
SELECTIVE CALLING SYSTEM FOR BOTH THE AERONAUTICAL
AND MARITIME MOBILE SERVICES*

1. Doc. 8/279 was examined in Sub-Working Group 8-F-1.
2. Doc. 8/279 was presented by Sweden and considerable discussion followed.
3. Although it was considered that possible advantages could be gained from utilization of the digital selective calling system to be used in the Maritime Mobile HF services for use also in the Aeronautical Mobile (R) Service, it was also considered that differences in operational and technical requirements might make such utilization difficult.
4. It is recommended that CCIR forward relevant documentation (Recommendation 493 and Report 501) to ICAO for their information and to seek their comment.

* Whilst not directly on the agenda of the forthcoming Aeronautical WARC, it may be helpful to bring these comments to the attention of the Conference for information only.

Original : English

STUDY GROUP 8

DRAFT RECOMMENDATION ...*

THE USE OF A3A AND A3J EMISSIONS FOR
DISTRESS AND SAFETY PURPOSES

(Question 26/8)

The CCIR,

(1978)

CONSIDERING

- (a) that the use of classes of emissions A3A and A3J for distress and safety purposes provides substantial operational advantages, particularly in terms of power saving;
- (b) that of these two classes of emissions, A3J provides greater spectrum utilization efficiency;
- (c) that system frequency stability requirements for class A3A and A3J services are similar;
- (d) that the development and operational use of class A3J has proved satisfactory;
- (e) that maritime public correspondence radiotelephone services have adopted class A3J;
- (f) that no substantial operational, technical or economic advantage accrues from the use of the class A3A;
- (g) that it would be an unnecessary and unjustified complication to introduce two new classes of emission for distress and safety purposes;
- (h) that the use of class A3J on 2182 kHz is under study;

RECOMMENDS

that class A3A emissions should not be used for distress and safety purposes.

*This Recommendation should be brought to the attention of the International Civil Aviation Organization (ICAO) and the Inter-Governmental Maritime Consultative Organization (IMCO).

Documents
CCIR Study Groups
Period 1974 - 1978

Doc. 8/497-E
19 January 1978

Original : English

STUDY GROUP 8

PROPOSED REVISION OF DRAFT REPORT AF/8

USE OF CLASS A3J EMISSIONS FOR DISTRESS AND SAFETY PURPOSES

(Question 26/8)

1. Introduction

This Report discusses the use of class A3J emissions for distress and safety purposes on the carrier frequency 2 182 kHz. The use of A3J emissions for distress and safety purposes on the carrier frequencies 4 125 kHz and 6 215.5 kHz is the subject of Recommendation 8/496. Recommendation 8/495 recommends that A3A emission should not be used for distress and safety purposes.

2. Operational considerations

2.1 The main operating advantage in using class A3J emission for distress is a power budget saving or alternatively an improved range of communications. Reliability and economy of ship's equipment would be enhanced because distress and commercial communication channels would use the same class of emission. There would also be an improvement in the utilization of frequency spectrum. However, there are large numbers of existing survival craft equipment, portable distress equipment and EPIRBs which use A3 or A3H emissions which should not be made obsolete before the end of their useful life.

2.2 Recommendation 488 implies that for a given primary input power, the use of A3J would improve the range of operation of the equipment. This has been confirmed by practical experience. In a distress situation the greatest possible communication range is desirable.

2.3 Conversely, Recommendation 488 indicates that, for the same signal/noise ratio, a peak envelope power saving of approximately 10 dB could be achievable by the use of A3J compared with A3 or A3H. Such a saving would be particularly attractive where limitations of space and weight could impose serious problems. These circumstances apply to radio equipment intended for use in survival craft and for other mobile and portable equipment which is battery operated.

2.4 The provision of a carrier signal or unvarying sideband improves direction finding techniques. If A3J emissions are used, technical and operational procedures are required to ensure optimum performance for direction finding in a SSB environment. Investigations are required to define optimum solutions for either SSB tone transmission or DF design changes. The operational requirements for "homing" must be recognized.

2.5 The atmospheric noise levels in temperate zones and the packaging constraints for 2 182 kHz survival craft equipment and EPIRBs reduce their effectiveness in those zones.

3. Compatibility of A3, A3H and A3J classes of emission

3.1 The problem to be solved before A3J class of emission could be introduced for distress and safety purposes is the difficulty of ensuring a satisfactory system, compatible with existing arrangements and capable of operation with A3, A3H and A3J classes of emission.

3.2 Tests have shown that where operator attended watchkeeping is provided by coast stations, the identification and reception of type A3 and A3H signals in an A3J system is practicable. Communication for distress and safety between ships and coast stations is, in these circumstances therefore achievable. However, existing distress and safety requirements call for the reception of distress signals from ships, survival craft stations and EPIRBs by ship stations as well as by coast stations.

3.3 To achieve this it may be necessary to design a watchkeeping receiver which automatically inserts into its demodulator a locally generated carrier when an A3J signal is received and which would ensure that this local carrier was not present when A3 or A3H was being received.

3.4 The presence of an A3 or A3H signal in an A3J receiver would produce an inter-carrier beat frequency which could have a maximum frequency depending on the frequency tolerance of survival craft transmitters (300 ppm, or 655 Hz at 2 182 kHz). Allowing a tolerance of ± 10 Hz on the carrier re-insertion frequency, the maximum anticipated inter-carrier beat frequency would be 665 Hz.

3.5 Beats would also occur between the re-inserted carrier and the sideband frequencies which, when demodulated, would produce tones within the audio passband of the receiver. These tones would obviously detract from the aural effectiveness of the two-tone alarm by an amount depending on the relative frequencies of the wanted and the unwanted tones. If the receiver was used in conjunction with a filtering device, the audio tone filters might reduce the likelihood that unwanted tones would be heard.

3.6 The problem cannot be completely solved except by arranging for the re-inserted carrier to be injected only in the presence of an A3J signal, or, to be absent during reception of an A3 or A3H signal. This arrangement would in any case be necessary for the satisfactory reception of voice transmissions.

3.7 Watchkeeping receivers designed to be compatible with both A3 or A3H and A3J transmissions are technically feasible. For example, it could be arranged for the oscillator output to be switched off by the carrier of any A3 or A3H signal within 665 Hz of 2 182 kHz, thus making allowance for the frequency tolerance permitted for EPIRBs and survival craft transmitters. A block diagram of the RF section of such an arrangement for a technical solution to the problem of compatibility is shown in Fig. 1.

3.8 Unless frequency down-conversion is incorporated a crystal filter would be required to isolate an A3 or A3H carrier within a passband of 1 330 Hz. The output of this filter would need to be integrated over a time long enough to prevent the carrier re-insertion being interrupted by impulsive noise or the low frequency component of speech and to significantly minimize interruption by bursts of interfering signals occurring within the filter passband. In practice a compromise would need to be set between the desirability of as long an integration time constant as possible and the need to minimize the time between the start of a two-tone alarm signal and its aural reception. A time constant of about 1.5 seconds would probably be a reasonable compromise.

3.9 The adoption of this or other technical solutions for ships required to participate in the distress service on 2 182 kHz should be the subject of further operational and economic study.

4. Frequency accuracies and stabilities

4.1 In the longer term, and before A3J could be introduced universally, some adjustments will be needed to the various frequency tolerances permitted by the Radio Regulations in distress equipment; particularly for satisfactory A3J operation with watchkeeping receivers using filters or a muting device.

4.2 The permitted long-term frequency tolerance on shipborne transmitters is 50 Hz for transmitters installed after 1 January 1982. The permitted tolerance on the frequency of each of the tones of the two-tone alarm is $\pm 1.5\%$ which, on the lower frequency tone of 1 300 Hz, is ± 19.5 Hz (say ± 20 Hz). Typical requirements for the audio tone filter characteristic for watchkeeping receivers state that the response should be not more than 3 dB below the maximum response within 3 % of the frequency of maximum response. This should occur within $\pm 1.5\%$ of the tone frequency, and at least 20 dB below the maximum response at 15 % of the frequency of maximum response.

4.3 If the frequency tolerance of ± 50 Hz for shipborne equipment was also applied to EPIRBs and survival craft equipment, the total system tolerance could be in the order of ± 120 Hz, or $\pm 9\%$ of the 1 300 Hz tone. The effect of this in an A3J system would be that the tone frequencies at the receiver could vary between 1 180 Hz and 1 420 Hz, and between 2 080 Hz and 2 320 Hz respectively. However, the tone difference between the two notes should be reasonably constant at about 900 Hz and in most practical cases the variation of the tone frequencies would probably not exceed ± 50 Hz.

4.4 If watch for the two tones was kept aurally, it is unlikely that the variation in the tone frequencies would have any effect on the detection of the alarm signal because the distinctive "warble" would still be present. Similarly, if a muted watchkeeping receiver was used, the effect would probably be negligible because detection can be carried out by a combination of tone frequencies and the timing sequence. Provided the two tones are present and in the correct time relationship, such equipment should function correctly.

4.5 However, if a filtering device was used, the widening of the filters would increase the background noise possibly to the extent of defeating the purpose of the filters as a means of reducing the noise on a ship's bridge.

4.6 For satisfactory operation of a filtering device, or for the aural tones to be similar in note to the present system, considerably tighter tolerances will need to be applied to A3J equipment. In the present A3 and A3H modes the allowable tone frequency tolerance is applicable only to the tone generator in the transmitter. In the A3J mode the ± 20 Hz tolerance must be shared between the tone generator frequency, the transmitter carrier frequency and the receiver oscillator frequency, because in this mode the received tone frequency and amplitude depend also on the accuracy of the carrier re-inserted at the receiver.

4.7 Due to the frequencies involved, nearly all of the tolerance would have to be shared between the transmitter carrier frequency and the receiver oscillator, leaving a small tolerance of about ± 0.1 Hz on the frequency of the tone generator at 1 300 Hz.

4.8 The division of the ± 20 Hz between different types of equipment will, in practice, probably be dictated by operational considerations and the current state-of-the-art of high stability oscillators. At present for equipment operating on the frequency 2 182 kHz, the following tolerances could be achieved at moderate cost :

Type of equipment	Temperature range	Frequency variation	
		with oven	without oven
Shipborne	0 to 40°C	± 0.3 Hz	± 10 Hz
Survival Craft	-25 to +70°C	± 0.3 Hz	± 22 Hz

However, further study is required, in particular as regards the cost aspect.

4.9 Although it would be technically possible to provide survival craft equipment with temperature controlled ovens, this would introduce several problems, in particular the extra power which would be needed and the "warm up" arrangements. Under these circumstances, the necessary system tolerance of ± 20 Hz could not be met. However, if the shipborne equipment was temperature controlled, a worst system tolerance of ± 22.4 Hz could be achieved. This would be made up of ± 22 Hz for the survival craft equipment, ± 0.3 Hz for the shipborne equipment and ± 0.1 Hz on the frequency of the 1 300 Hz tone generator. In view of crystal ageing etc., such requirements would require regular frequency verification of shipborne equipment. Other techniques providing stringent frequency tolerance in a hostile environment may be found to be applicable and study on this subject is necessary.

5. Conclusions

5.1 The advantages of A3J emissions are so significant that this class of emission should be adopted for distress and safety purposes. However, it will be necessary to :

- (a) Introduce effective watch at coast radio stations for A3, A3H and A3J distress signals thus ensuring that the existing distress service is in no way degraded.
- (b) Introduce the capability for maintaining watch for A3, A3H and A3J distress signals on all ships.
- (c) Improve the frequency accuracy and stability of equipment required to be used in distress situations. In this connection, the ability of survival craft radio equipment and EPIRBs to achieve and maintain a frequency tolerance of around ± 20 Hz and for ship equipment a tolerance of ± 0.3 Hz should be studied. Investigation into new techniques for SSB compatible auto-alarm signals would be helpful.
- (d) Assess in the present global philosophy of a 2 182 kHz distress service the value of survival craft equipment and EPIRBs in relation to their dominant influence on the introduction of A3J emissions for distress and safety purposes.
- (e) Develop emergency equipment for A3J operation which is simple to operate and capable of reliable operation in widely variable environments after long periods of storage.

(f) Obtain the views of IMCO on the need for an effective filtered loudspeaker watchkeeping receiver and the need for the tone frequencies to have an aural note within $\pm 1.5\%$ of their nominal values.

(i) Noting that if these are needed the following tolerances will be required :

Shipborne equipment	± 0.3 Hz
Survival craft equipment	± 22 Hz
Tone generators	± 0.1 Hz

(ii) However, if they are not needed, or some degradation can be accepted, the following tolerances would be suitable :

Shipborne equipment	± 50 Hz
Survival craft equipment	± 50 Hz
Tone generator	± 20 Hz

Note : The Director of CCIR is requested to draw the attention of ICAO and IMCO to this Report and invite their comments on this matter.

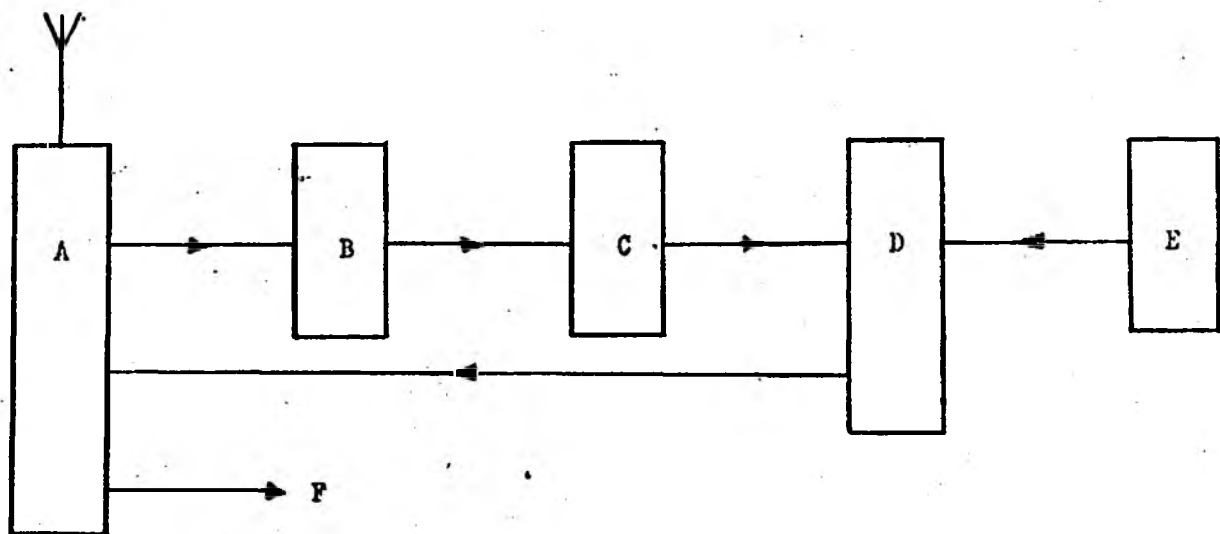


FIGURE 1

Block diagram of a compatible watchkeeping receiver

- A RF Amplifier
- B 2182 kHz filter with bandwidth of 1330 Hz
- C Integrator
- D Gate controlled by output from Integrator
- E 2182 kHz crystal oscillator
- F Output to next stage of receiver

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 67-E

2 February 1978

Original : Spanish

PLENARY MEETING

Spain

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. Introduction

In view of the revision of Appendix 27 to the Radio Regulations which the World Administrative Radio Conference on the Aeronautical Mobile (R) Service is to carry out on the basis of SSB operation in the HF bands, Spain reiterates its intention of making its contribution to the achievement of the Conference's objectives and to this end proposes that the provisions of the Radio Regulations and the Additional Radio Regulations relating to the Aeronautical Mobile Service should be amended with the following considerations in mind :

- a) That in view of the increased number of channels that will become available with the application of SSB operation in the HF frequency bands allocated to the Aeronautical Mobile (R) Service, and bearing in mind the ever increasing use made of the VHF band for air traffic control communications, families of HF frequencies should be provided on a world basis for air-ground communications for aeronautical control operations.
- b) That, in view of the foregoing, channels should be reserved for allocation to a future public correspondence service with aircraft, having regard to the expressed desire for such long-distance links.
- c) That in general we endorse the Recommendations of the Report on the ICAO Communications Divisional Meeting in 1976 (Document 9187 COM/76).

The Spanish Administration will make appropriate proposals in separate documents.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 68-E
4 February 1978
Original : English

PLENARY MEETING

Canada

PROPOSAL FOR THE WORK OF THE CONFERENCE

REQUIREMENT FOR THE INCLUSION OF THE BAND 21 870-22 000 kHz IN APPENDIX 27

1. Introduction

1.1 While the band 21870-22000 kHz is allocated to the Aeronautical Mobile (R) Service, currently it is not included in the frequency allotment plan and only limited use is made of the frequencies in this band. Based on the work of CCIR Study Group 6, it is well known that during certain phases of the solar cycle, these frequencies are ideally suited for long distance communications for all areas of the world, and in the equatorial zone they are also suited for medium distances. Since the new frequency allotment plan will include provision for aeronautical operational control (AOC) and VOLMET broadcasts, the frequencies in this band could be beneficially used in the new plan.

2. Proposal

2.1 It is proposed that the Conference support the inclusion of the band from 21870 to 22000 in the new frequency allotment plan to be contained in Appendix 27.

3. Discussion

3.1 It has been well established by CCIR that during the period of maximum solar activity the 22 MHz band is ideally suited for long distance communications. Particularly during the day, it is useful for communication over distances between 1500 and 3000 km and in the equatorial zone for distances as short as 1000 km.

3.2 In the interests of easing traffic congestion on the middle bands (9, 11, 13 MHz), a greater effort should be made to use the higher frequencies (17 and 22 MHz) during those periods when they are available. If this principle is followed the 22 MHz band will be required in the plan.

3.3 It is recognized that for RDARA and MWARA purposes, generally the communications distances are such that frequencies above those presently in the plan (13 and 17 MHz) are not required; however, for services that involve communications over longer distances (AOC, VOLMET), the 22 MHz band could be used. Notwithstanding the generally short-to-medium distances of most MWARA communications, this frequency band should be allotted to MWARAs located in close proximity to the equator where the propagation conditions favour the higher frequencies during a large portion of the time.

3.4 It is known that the presently installed communication equipment in international commercial aircraft is capable of operating on the frequencies in the 22 MHz band.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 69-E

6 February 1978

Original : English

PLENARY MEETING

German Democratic Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. Amendment for the description of the Major World Air Route Area - EUROPE

DDR/69/1 MOD 27/84 Major World Air Route Area - EUROPE (MWARA-EU EUR)

From the point $33^{\circ}\text{N } 12^{\circ}\text{W}$ through the points
 $54^{\circ}\text{N } 12^{\circ}\text{W}$, $70^{\circ}\text{N } 00^{\circ}$, $74^{\circ}\text{N } 40^{\circ}\text{E}$, ~~$40^{\circ}\text{N } 40^{\circ}\text{E}$~~ , $74^{\circ}\text{N } 52^{\circ}\text{E}$,
 $60^{\circ}\text{N } 52^{\circ}\text{E}$, $40^{\circ}\text{N } 36^{\circ}\text{E}$, $29^{\circ}\text{N } 35^{\circ}30'\text{E}$, $32^{\circ}\text{N } 13^{\circ}\text{E}$, to the point
 $33^{\circ}\text{N } 12^{\circ}\text{W}$.

2. Frequency requirements of MWARA, RDARA and long distance operational control

The Annex shows the GDR frequency requirements.

Annex : 1



A N N E X

Annex 2 to IFRB Circular-letter No. 386

1 <u>DDR</u> Administration	2 <u>DDR</u> Country Symbol	Form of frequency requirements for the Aeronautical Mobile (R) Service ⁴⁾ (See paragraph 5 of IFRB Circular-letter No. 386)				3 <u>5021-0 No. 30</u> Reference No.	4 <u>2 n Jan. 1978</u> Date
--------------------------------	--------------------------------	--	--	--	--	---	--------------------------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	<u>EU</u> MWARA Symbol ¹⁾	<u>1</u> RDARA Symbol ¹⁾	<u>1 C</u> Sub-RDARA Symbol ¹⁾	<u></u> VOLMET Symbol ¹⁾	<u></u> Symbol(s) ²⁾	
2 850 – 3 025	1	1	1		-	
3 400 – 3 500	1	1	2		1/EU	
4 650 – 4 700	1	1	1		1/EU, ME, NA-2, CAR	
5 450 – 5 480 (Reg. 2)	-	-	-		--	
5 480 – 5 680	1	-	2		1/EU, ME, NA-2, CAR	
6 525 – 6 685	2	1	1		1/EU, ME, NA-2, CAR	
8 815 – 8 965	2	1	1		1/EU, ME, FE, NA-2, CAR, NSA-1, NSA-2	
10,005 – 10,100	-	1	1		--	
11,275 – 11,400	1	2	1		1/EU, ME, FE, NA-2, CAR, NSA-1, NSA-2	
13,260 – 13,360	-	2	1		1/ME, FE, NA-2, CAR, NSA-1, NSA-2	
17,900 – 17,970	1	-	-		1/ME, FE, NA-2, CAR, NSA-1, NSA-2	

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 70-E
6 February 1978
Original : English

COMMITTEE 5

Republic of India

RDARA REQUIREMENTS FOR AREAS 5 AND 6

AND FOR SUB-AREAS 6A, 6E, 5B AND 5C

1. The RDARA requirements for India have been reassessed taking into account the growth of air routes and air traffic till the end of this century and the same is presented in the Annex. This replaces the RDARA requirements projected earlier and circulated through IFRB Circular-letter No. 400 dated 24 November 1977.
2. India would request this information to be distributed as a conference document.

Annex : 1



A N N E XRDARA REQUIREMENTS FOR INDIA

Area of allotment	Number of frequencies by band (MHz)										Remarks
	3	3.5	4.7	5.6	6.6	9	10	11.3	13.3	18	
6A	3(1)*)	2(1)	4(2)	4(2)	4(2)	4(2)	3	2	1	-	27**)(10)
6E	3(1)	4(2)	2(1)	3(1)	5(1)	4(2)	4(1)	2	1	-	28(9)
6	-	-	-	-	-	1	-	1	1	1	4
5B	2(1)	1	-	1	1	-	-	-	-	-	5(1)
5C	1	-	-	1	-	1	-	-	-	-	3
5	-	-	-	1	-	1	-	1	-	-	3

*) Figures in parenthesis indicate the exclusive frequency requirements of India.

**) Total number of frequency requirements.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 71-E
6 February 1978
Original : English

COMMITTEE 5

Ireland

PROPOSALS FOR THE WORK OF THE CONFERENCE

The following proposals are made by Ireland for changes of boundaries of RDARA 1, Sub-Areas 1A and 1B as defined in Appendix 27 of the Radio Regulations :

IRL/71/1 MOD 27/105 Sub-Area 1A

From the point 65°N 26°W, and through the points 40°N 50°W, 40°N 20°W, 60°N 20°W, 60°N 26°W, to the point 65°N 26°W.

IRL/71/2 MOD 27/106 Sub-Area 1B

Change the first sentence to read :

From the North Pole along the 15°W meridian to the point 72°N 15°W, then through the points 65°N 26°W, 60°N 26°W, 60°N 20°W to the point 50°N 20°W; thence east along the territorial waters between the Channel Islands and French coastline, reaching the latter at the meridian 03°W.

Reasons : To cater for the communication requirements of domestic flights involved in supporting off-shore oil exploration activities.

RDARA FREQUENCY REQUIREMENTS

Sub-Area 1B

- 3 frequencies in the bands between 2 850 kHz and 4 700 kHz.
- 3 frequencies in the bands between 5 480 kHz and 6 685 kHz



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 72-E

7 February 1978

Original : SpanishCOMMITTEE 5Cuba

INFORMATION ON FREQUENCY REQUIREMENTS

With reference to paragraph 4 of Circular letter No. 400, the Cuban Administration has already transmitted its frequency requirements to the IFRB. Following a recent review of these requirements, some further changes are felt to be necessary.

The new data are given below :

Aeronautical area	Number of frequencies by band (MHz)										
	3	3.5	4.7	5.4 (Reg)	5.6	6.6	9	10	11.3	13.3	18
CAR	2	1	1	-	2	2	2	1	2	1	1
12D	1	-	-	1	-	1	1	-	-	-	-
CAR-MET	1	-	-	1	1	1	1	1	-	-	-
LDOC*)	1	-	1	-	1	-	1	-	1	1	1

*) One channel is also requested in the 22 MHz band for this type of service.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Note by the Secretary-General

SECRETARIAT OF THE CONFERENCE

(adopted at the first plenary meeting)

In accordance with the provisions of No. 433 of the Convention, one of the tasks of the first plenary meeting is to set up the Secretariat of the Conference.

<u>Secretary of the Conference</u>	Mr. M. Mili, Secretary-General
<u>Executive Secretary</u>	Mr. A. Winter-Jensen
<u>Technical Secretary</u>	Mr. G. Brooks
<u>Meeting Secretaries</u>	
<u>Plenary meetings</u>	Mr. A. Zaccagnini
<u>Committee 1 - Steering</u>	Mr. A. Zaccagnini
<u>Committee 2 - Credentials</u>	Mr. A. Winter-Jensen
<u>Committee 3 - Budget control</u>	Mr. R. Prélaz
<u>Committee 4 - Technical</u>	Mr. L. Sonesson
<u>Committee 5 - Planning</u>	Mr. M. Sant
<u>Committee 6 - Regulatory procedures</u>	Mr. M. Ahmad
<u>Committee 7 - Editorial</u>	Mr. R. Macheret
<u>Administrative Secretary</u>	Mr. U. Petignat

The Secretariat will also include officials seconded from headquarters and supernumerary staff.

M. MILI

Secretary-General



Papua New Guinea

ADJACENT CHANNEL INTERFERENCE

Background

Papua New Guinea has noted that the existing Allotment Plan (Appendix 27 Edition of 1968) contains adjacent channel allotments.

It has further noted one case of severe adjacent channel interference arising from the use of 5 659 kHz in Sub RDARA 6C and 5 666 kHz in the adjoining Sub RDARA 9B.

This interference has caused problems to both aircraft and aeronautical stations using the above frequencies.

An examination of the application of the existing Allotment Plan with Sub RDARA 9B has shown that other potential adjacent channel interference problems have been alleviated by either not using the adjacent channel allotments or by using adjacent allotments in areas of light traffic density.

Proposals

In order to avoid a recurrence of adjacent channel problems within the new allotment plan the following guidelines for planning are proposed :

PNG/74/1 Where possible adjacent channel allotments within the same Sub RDARA should be avoided.

PNG/74/2 Where possible adjacent channel allotments within adjoining Sub RDARAs should be avoided.

PNG/74/3 Where adjacent channel allotments are necessary the channel utilization should be taken into account.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 75-E

7 February 1978

Original : English

COMMITTEE 4

COMMITTEE 6

Papua New Guinea

PROPOSAL FOR FREQUENCY STABILITY REQUIREMENT
FOR NATIONAL PURPOSES

Noting

1. that CCIR Study Group 8 Special Meeting recommended a frequency tolerance of ± 20 Hz for Aircraft Stations;
2. that the Study Group recognized that the above frequency tolerance may be too stringent for national purposes;
3. that the Study Group requested Administrations to consider the problem and to make contributions to this Assembly if considered necessary;

Considering

that under Appendix 3 of the Radio Regulations the corresponding frequency tolerance for Ship Stations is ± 50 Hz;

Proposes

PNG/75/1 that the frequency tolerance for Aircraft Stations restricted to national operations be ± 50 Hz.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 76-E

7 February 1978

Original : English

STRUCTURE OF THE AERONAUTICAL (R) CONFERENCE 1978

(approved in the First Plenary Meeting)

Committee 1 - Steering Committee

Terms of reference : To coordinate the work of the Committees, fix the timetable of meetings, etc.

Committee 2 - Credentials Committee

Terms of reference : To verify the credentials of delegations and to report on its conclusions to the Plenary Meeting within the time specified by the latter.

Committee 3 - Budget Control Committee

Terms of reference : To determine the organization and the facilities available to the delegates and to examine and approve the accounts for expenditure incurred throughout the duration of the Conference.

Committee 4 - Technical Committee

Terms of reference : To establish the basic technical criteria for revision of the Frequency Allotment Plan in Appendix 27, taking into account the Report of the CCIR dated March 1976, including its Addendum, January 1978, and to consider and revise, where necessary, the technical principles of that Appendix, as well as to make any consequential changes to other technical provisions of the Radio Regulations, including Appendix 3.

Committee 5 - Planning Committee

Terms of reference : To establish the frequency requirements and the boundaries of the various Aeronautical Areas, and to revise the Frequency Allotment Plan on the basis of single sideband operation which satisfies the frequency requirements within the minimum amount of spectrum necessary; to consider and revise related provisions of Appendix 27, and to make any consequential changes to the Radio Regulations on Planning matters.



Committee 6 - Regulatory Procedures Committee

Terms of reference : To revise the other provisions of Appendix 27 and to consider and make any consequential changes to the Radio Regulations on procedural matters; and to establish the basic timetable and the principles to be observed in the procedure for transition from the present Frequency Allotment Plan to the revised Frequency Allotment Plan.

Committee 7 - Editorial Committee

Terms of reference : To perfect the form of the texts of the Final Acts without altering the sense.

Each Committee would consider such Resolutions and Recommendations as necessary to fulfil its terms of reference.

UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
CONFERENCE AERONAUTIQUE (R)
(Genève, 1978)

Document NO 77-F/E/S
7 février 1978
Original : français
anglais
espagnol

ATTRIBUTION DES DOCUMENTS / ALLOCATION OF DOCUMENTS / ATRIBUCIÓN DE LOS DOCUMENTOS

(Nos. 1 - 65, 67)

(approuvée au cours de la première séance plénière)
(approved in the first plenary meeting)
(aprobada en la primera sesión plenaria)

<u>Plénière / Plenary / Plenaria</u>	: 1, 38, 40 ⁺ , 41, 47, 58
C2 - <u>Pouvoirs / Credentials / Credenciales</u>	: 3
C3 - <u>Budget / Presupuesto</u>	: 35, 36
C4 - <u>Technique / Technical / Técnica</u>	: 2 ⁺ , 4 [*] , 5, 18, 20, 21, 22, 24, 28, 29, 31, 33, 34, 42, 43, 44, 49, 51, 56, 60, 62, 65, 67
C5 - <u>Planification / Planning / Planificación</u>	: 4, 5, 6, 7, 8, 19, 20, 21, 22, 23, 25, 26, 27, 29, 30, 32, 33, 34, 37, 39, 43, 44, 45 [*] , 46, 48, 49 ⁺ , 50, 52 [*] , 53, 55, 56, 59, 60, 62, 65, 67
C6 - <u>Procédures réglementaires / Regulatory procedures / Procedimientos reglamentarios</u>	: 4, 5, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 22, 25, 27, 29, 33, 34, 43, 44, 46, 54, 56, 57, 60, 61, 62, 63, 65, 67

* : + Corr.
+ : + Add.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 78-E
7 February 1978
Original : FrenchCOMMITTEES 5 and 6Algerian Democratic and Popular Republic

PROPOSALS FOR THE WORK OF THE CONFERENCE

ALG/78/1

The frequency requirements of the Algerian Administration are given in the table below.

FREQUENCY BANDS (kHz)	MWARA				RDARA		SUB-RDARA		VOLMET AREA		OPERATIONAL CONTROL
	EU	NSA-1	NSA-2	SA	1	4	1E	4A	AFI-MET	EU-MET	
2 850 - 3 025	1	2	1	1	1	1	1	3	1	1	1
3 400 - 3 500	1	2	1	1	1	1	1	3	2	1	2
4 650 - 4 700	1	2	1	1	1	1	1	3	1	1	1
5 480 - 5 680	1	2	1	1	1	1	1	3	2	1	2
6 525 - 6 685	1	2	1	1	1	1	1	3	2	1	1
8 815 - 8 965	1	2	1	1	1	1	1	3	1	1	2
10 005 - 10 100	1	2	1	1	1	1	1	3	1	1	1
11 275 - 11 400	1	2	1	1	1	1	1	3	2	1	2
13 260 - 13 360	1	2	1	1	1	1	1	3	1	1	2
17 900 - 17 970	1	2	1	1	1	1	1	3	2	1	2
21 870 - 22 000	1	2	1	1	1	1	1	3	1	1	2

ALG/78/2 MOD 27/20

The International Civil Aviation Organization (ICAO) coordinates communications of the Aeronautical Mobile (R) Service with international air operations and this Organization should be consulted in appropriate cases in the use of frequencies provided in the Plan for long-distance aeronautical operational control.

Reasons : 1) The Plan concerns all regions of the world.

2) Need to bring in the idea of operational control.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 79-E

7 February 1978

Original : SpanishCOMMITTEE 5Mexico

FREQUENCY REQUIREMENTS

The Delegation of Mexico submits the following request for frequencies for the Long-Distance Operational Control (LDOC) Service for consideration by Committee 5 (Planning).

Country	Frequency bands (Number in each band)						Remarks
	3 MHz	4.7 MHz	6.6 MHz	9 MHz	11.3 MHz	18 MHz	
MEX	1	1	1	1	1	1	



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 80-E
7 February 1978
Original : English

COMMITTEES 5 & 6

Sweden

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. Introduction

The Swedish Administration favours the inclusion of so called operational control communications in the Plan for the Aeronautical Mobile (R) Service.

In our opinion the present No. 429 of the Radio Regulations excludes traffic on frequencies in the aeronautical mobile (R) bands from other aeronautical stations than those primarily concerned with the safety and regularity of flight etc.

Therefore it is in our opinion not satisfactory to add a new Regulation (429A) in order to provide for operational control communications. Instead we find it necessary to expand No. 429 so as to include those operational control communications the Conference may agree upon.

The Aeronautical Operational Control Communications should also cover communications between the crew of an aircraft and specialists at the operating agency concerning the safety of the aircraft, and this is also proposed to be clearly expressed in Article 7 (RR 429) as well as in a definition in Appendix 27.

2. Proposals

ARTICLE 7

Special rules relating to particular services

Section II. Aeronautical Mobile Service

S/80/1 MOD 429 § 3. Frequencies in any band allocated to the Aeronautical Mobile (R) Service are reserved for

(1) communications between any aircraft and those aeronautical stations primarily concerned with the safety and regularity of flight along national or international civil air routes, and

(2) communications between aircraft and aeronautical stations for communications related to regularity of flight and safety of aircraft (Aeronautical Operational Control Communications).

Reasons : To provide for the use of frequencies in the bands allocated to the Aeronautical Mobile (R) Service for Operational Control Communications.



Appendix 27

PART I

Section I. Definitions

S/80/2 ADD 27/8A Aeronautical Operational Control Communications in the Aeronautical Mobile (R) Service are intended to permit communications related to regularity of flight and safety of aircraft.

Reasons : The concept of Aeronautical Operational Control Communications should most suitably be defined in this part of the Radio Regulations.

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 81-E

7 February 1978

Original : FrenchCOMMITTEE 5Ivory Coast

FREQUENCY REQUIREMENTS

I. MWARA Area SA

3	3.5	4.7	5.4 (Reg.2)	5.6	6.6	9	10	11.3	13.3	18
	2			2	2	2	2	2	2	2

II. RDARA Area 4B

				1	1	1				
--	--	--	--	---	---	---	--	--	--	--

III. VOLMET Area AFI-MET

1		1			1	1				
---	--	---	--	--	---	---	--	--	--	--



UNION INTERNATIONALE DES TÉLÉCOMMUNICATIONS
CONFERENCE AERONAUTIQUE (R)
(Genève, 1978)

Addendum N° 1 au
Document N° 82-F/E/S
8 février 1978
Original : espagnol

COMMISSION 5
COMMITTEE 5
COMISION 5

République Argentine, République Orientale
de l'Uruguay

DESCRIPTION DES LIMITES DE LA ZONE SAT-MET
(RIO DE LA PLATA)

Veuillez ajouter la carte ci-jointe au Document N° 82.

Argentine Republic, Oriental Republic of Uruguay

DESCRIPTION OF THE BOUNDARIES OF THE SAT-MET
(RIO DE LA PLATA) AREA

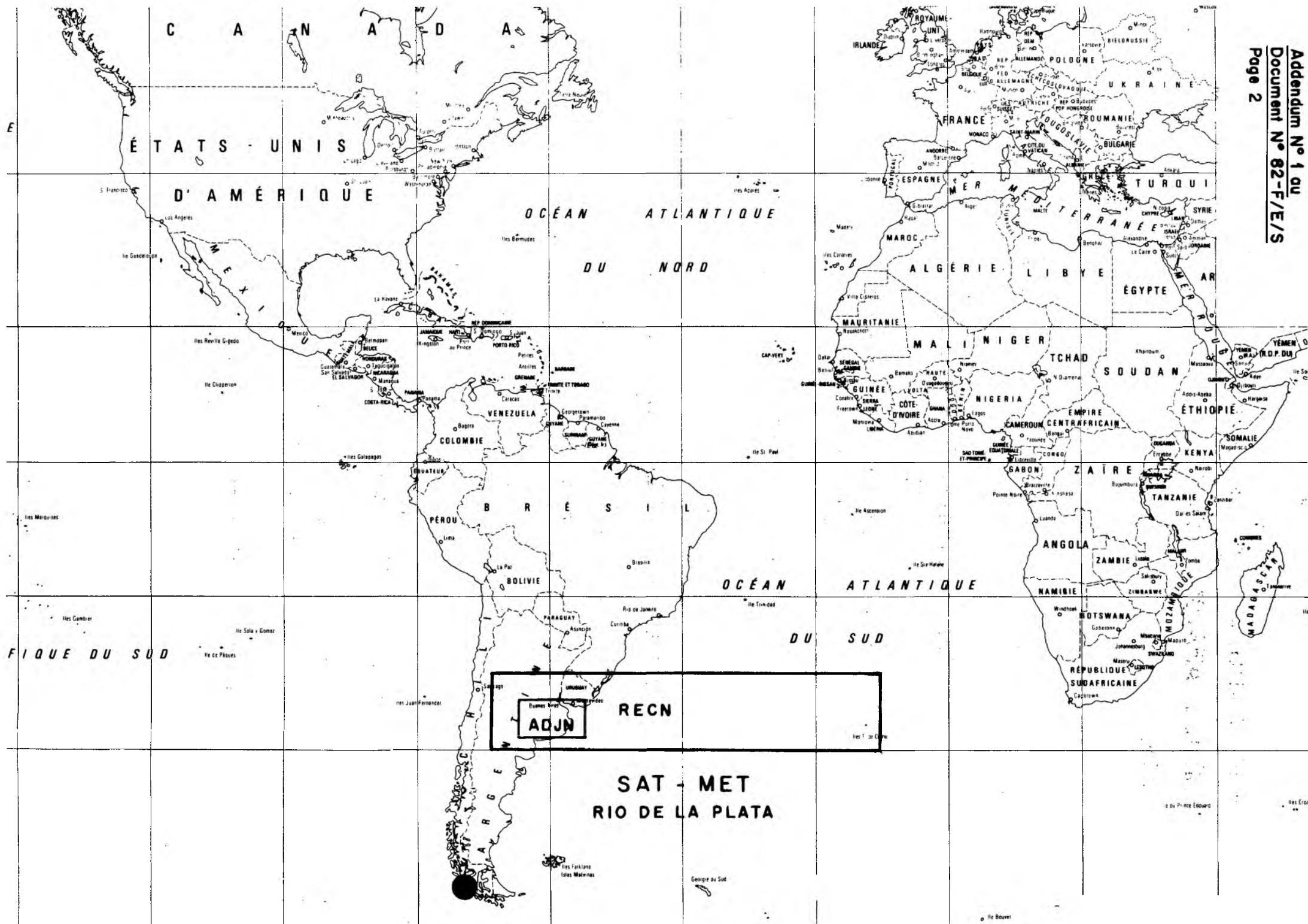
Please add the following page to Document No. 82.

República Argentina, República Oriental del Uruguay

DESCRIPCIÓN DE LOS LÍMITES DE LA ZONA SAT-MET
(RÍO DE LA PLATA)

Sírvase añadir la página adjunta al Documento N.º 82.





AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 82-E
7 February 1978
Original : Spanish

COMMITTEE 5

Argentine Republic, Oriental Republic of Uruguay

DESCRIPTION OF THE BOUNDARIES OF THE SAT-MET
(RIO DE LA PLATA) AREA

The delegations of Argentina and Uruguay submit to the Conference the boundaries of the SAT-MET "Rio de la Plata" Area proposed in response to IFRB Circular Letter No. 354 and published in IFRB Circular Letter No. 400, page 44 (Document No. 48).

Since the Rio de la Plata Area is subject to unstable weather conditions, with sudden marked variations greatly affecting aeronautical operations, and since several air routes converge in this area, the creation of the SAT-MET "RIO DE LA PLATA" VOLMET Area is proposed for the purpose of providing necessary assistance to air navigation within the boundaries it encompasses, which are defined below :

ARG/URG/82/1 ADD 27/168(A) The SAT-MET RIO DE LA PLATA allotment area is defined by a line drawn from the point $34^{\circ}\text{S } 65^{\circ}\text{W}$ through the points $34^{\circ}\text{S } 55^{\circ}\text{W}$, $40^{\circ}\text{S } 55^{\circ}\text{W}$, $40^{\circ}\text{S } 65^{\circ}\text{W}$, to the point $34^{\circ}\text{S } 65^{\circ}\text{W}$.

ARG/URG/82/2 ADD 27/168(B) The SAT-MET RIO DE LA PLATA reception area is defined by a line drawn from the point $30^{\circ}\text{S } 69^{\circ}\text{W}$ through the points $30^{\circ}\text{S } 10^{\circ}\text{W}$, $40^{\circ}\text{S } 10^{\circ}\text{W}$, $40^{\circ}\text{S } 69^{\circ}\text{W}$, to the point $30^{\circ}\text{S } 69^{\circ}\text{W}$.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 83-E

7 February 1978

Original : English

COMMITTEE 4

United States of America

PROPOSALS FOR THE WORK OF THE CONFERENCE

Frequency Tolerances

1. Introduction

1.1 Appendix 3 to the Radio Regulations specifies a maximum frequency tolerance of 100 parts per million for the HF bands allocated to the aeronautical mobile (R) service. Tolerances of this magnitude will cause unacceptable levels of intelligibility in single sideband operations. Such factors have been recognized by the international civil aviation community and existing equipment is designed to provide a maximum tolerance of ± 20 Hz for aircraft stations and ± 10 Hz for aeronautical stations. These technical requirements have been incorporated in Annex 10 to the Convention on International Civil Aviation since 1966 and in the national telecommunications regulations of a number of Administrations. Further, CCIR Study Group 8 (Report of 22 to 26 March 1976 meeting) considers these tolerances should apply to this service except for some national purposes.

2. Discussion

2.1 The aeronautical mobile (R) service is a safety service and use of the HF spectrum, with its adverse characteristics of fading, atmospheric and man-made noise, demands all practicable technical means to achieve and maintain high quality communication and intelligibility. Minimum frequency error is highly beneficial in this environment. Experience in the civil aviation community has demonstrated that the needed frequency tolerance can be maintained for all cost levels of equipment.

2.2 Intelligibility and quality of single sideband communications depend upon the frequency tolerance of the transmitter and the receiver local oscillator. When single sideband was first introduced in the aeronautical mobile (R) service over a decade ago, the achievement of the requisite tolerances presented serious technical and economic problems, but these problems were overcome. Industry equipment characteristics published before the 1966 Aeronautical Extraordinary Administrative Radio Conference have conformed to these tolerances. The International Civil Aviation Organization (ICAO), in Annex 10 to the Convention on International Civil Aviation, has also adopted these tolerances. In the past 15-20 years, technology has advanced and the cost of producing precision frequency control devices has been reduced substantially. Low cost HF/SSB equipment is now readily available.



2.3 It is misleading to equate acceptable frequency errors inherent in supersonic aircraft operations with frequency errors due to design and maintenance practices. The frequency error due to the Doppler effect encountered in the operation of supersonic types of aircraft is a fundamental technical limitation. In contrast, negligible cost savings have been shown due to the proposed relaxed frequency tolerances.

2.4 The major factors affecting the frequency tolerances of the transmitter and receiver local oscillator are:

- a) Initial alignment accuracy;
- b) Short-term stability;
- c) Long term drift.

The economic impact of each of these factors can be considered independently although the operating frequency tolerances will be dependent upon cumulative effect of these factors.

2.5 The initial alignment accuracy is dependent upon the accuracy of the test equipment and the ability of the technician to adjust and read the test equipment.

A typical frequency counter (e.g., Hewlett-Packard Model HP 5328A) with the optional high stability time base, provides a stability better than 5×10^{-10} per day. The 9-digit display on this counter provides a resolution of ± 0.1 Hz at HF. The digital nature of this display makes it possible for the technician to read the display to its full resolution.

A tolerance of better than 1×10^{-9} can be obtained by using standard frequency broadcasting signals to calibrate the counter. The cumulative error due to test equipment alignment, stability and reading is less than 1 Hz at HF.

The cost of the HP 5328A is approximately U.S. \$1,300 plus an additional U.S. \$525 for the optional high stability time base.

2.6 Typical short-term stability for aircraft SSB transceivers of better than 5×10^{-7} is widely accepted even for the low cost HF/SSB equipment. This frequency tolerance will produce a transmitter error of 5.5 Hz at a typical HF operating frequency of 11 MHz.

2.7 Long term frequency stability depends upon the change in characteristics of the crystal as it ages. Typical crystals now in service provide a frequency stability of better than 5×10^{-7} for the first year and improve with age. This corresponds to a frequency tolerance of 5.5 Hz for the first year at a typical operating frequency of 11 MHz.

2.8 Crystals having the quality described above are readily available at a cost of about U.S. \$10. Since the number of crystals required in the typical transmitter is extremely limited, their total cost is low.

2.9 The cumulative effect of the initial alignment, short term and long term errors in low cost HF/SSB equipment with respect to time is:

	<u>Error Contribution (Hz) at end of:</u>		
	<u>1 Yr.</u>	<u>2 Yr.</u>	<u>3 Yr.</u>
Initial Alignment	1	1	1
Short term	5.5	5.5	5.5
Long term (Aging)	<u>5.5</u>	<u>11</u>	<u>16.5</u>
Root-Sum-Square Tolerance	7.8	12.3	17.4

2.10 Based upon the foregoing, servicing of the general aviation HF/SSB equipment at three year intervals will adequately assure the tolerance of ± 20 Hz is maintained.

2.11 Conclusion

2.11.1 The present Conference has received proposals to revise Appendix 3 to the Radio Regulations to incorporate frequency tolerances less stringent than those adopted by ICAO and generally accepted in the international civil aviation community. Such relaxation of tolerances might provide limited economic relief where the degradation or intelligibility could be tolerated by aircraft engaged in national operations.

2.11.2 However, the Radio Regulations should specify the frequency tolerances appropriate to international aeronautical operations. These tolerances are ± 20 Hz for aircraft stations and ± 10 Hz for aeronautical stations as proposed in USA/4/61 and USA/4/62 (Document No. 4).

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 84-E
7 February 1978
Original : SpanishCOMMITTEE 5Bolivia

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. Introduction

1.1 Bolivia wishes once again to pay tribute to the importance of the work carried out by the International Telecommunication Union in ensuring the coordinated development of telecommunications as a means of linking together the countries of the world; it reaffirms its desire to continue assisting in that work and sincerely regrets that, for various reasons outside its control, it was unable to send its frequency requirements to the IFRB within the stipulated time limit.

2. Background

2.1 Appendix 27, the Frequency Allotment Plan for the Aeronautical Mobile (R) Service and Related Information, as adopted by the Extraordinary Administrative Radio Conference (Geneva, 1966), established Sub-Area 13D (RDARA), the boundaries of which enclose the whole territories of Paraguay, Peru and Bolivia. It allotted the following frequencies on a global basis to that Sub-Area for assignments by the three States in question to the Aeronautical Mobile (R) Service :

kHz Band	2 850-3 025	3 400-3 500	5 450-5 480	6 525-6 685	8 815-8 965	10 005-10 100
Sub-Area	2 868	3 411	5 454	6 617	8 910	10 033
13D	2 924	3 495	5 469	6 638	8 917	10 065

2.2 In order to ensure that the frequencies allotted to Sub-Area 13D in Appendix 27 should be used in a manner so far as possible consistent with the operational necessity for exclusive assignments to the various Flight Information Regions, the Administrations of Paraguay, Peru and Bolivia signed an Agreement on 27 September 1967 according to which the Signatory States agreed in principle to the following distribution of the frequencies allotted to Sub-Area 13D for use by the national stations in each country :

<u>Paraguay</u>	<u>Bolivia</u>	<u>Peru</u>
2 868 kHz	2 924 kHz	2 868 kHz
3 411 kHz	3 495 kHz	3 411 kHz
5 454 kHz	5 469 kHz	5 454 kHz
6 617 kHz	6 638 kHz	6 617 kHz
8 910 kHz	8 910 kHz	8 917 kHz
10 033 kHz	10 033 kHz	10 065 kHz

3. Requirements

3.1 The Bolivian Administration is using all the above-mentioned frequencies at the 28 aeronautical stations situated on its national territory. For this reason, Bolivia requests that, in revising the Frequency Allotment Plan for the Aeronautical Mobile (R) Service, the frequencies of 2 924, 3 495, 5 469 and 6 638 kHz now operated exclusively by Bolivia, as well as the frequencies 8 910 and 10 033 kHz at present shared with the Republic of Paraguay, should be maintained unchanged, in accordance with the Agreement referred to in paragraph 2.2.

3.2 In addition, it wishes to make known its frequency requirements for the Aeronautical Mobile (R) Service in the following bands :

2 850 - 3 025 kHz	2 channels
3 400 - 3 500 kHz	2 channels
5 480 - 5 680 kHz	2 channels
6 525 - 6 685 kHz	2 channels
8 815 - 8 965 kHz	2 channels
10 005 - 10 100 kHz	2 channels

3.3 These requirements are justified by the geographical position and relief structure of Bolivia, where air transport plays a central role in the economic and social development of the country. At the present time, regular air transport constitutes the only means of connection between most places in Bolivia's vast eastern territories and the main cities, particularly in the western (Andean) area, where, for economic reasons, a VHF radio service is not practicable in the foreseeable future, which means that air traffic control is confined to the use of HF channels.

3.4 These requirements replace those published in the Addendum to the IFRB Circular Letter No. 400.

4. Operational control (flight regularity) communications

4.1 Bolivia supports the views expressed by the ICAO Communications Division at Meeting preparatory to the ITU World Administrative World Conference, Aeronautical Mobile (R) Service (Document 9187, COM/76), concerning operational control (flight regularity) communications.

4.2 In the field of international air transport, the airline designated by Bolivia at present operates regular passenger and freight services over an extensive network of routes covering an area from Miami to Buenos Aires, with considerable possibilities for extending its services to the European Continent.

4.3 In view of the possibility of the introduction of new regulations governing operational control communications in the Aeronautical Mobile (R) Service, enabling airline companies to establish communications with their aircraft at any time and in any part of the world, the Bolivian Administration requests the assignment to it of a set of frequencies in the following ranges :

3 400 - 3 500 kHz	1 channel
6 525 - 6 685 kHz	1 channel
10 005 - 10 100 kHz	1 channel
13 260 - 13 360 kHz	1 channel
17 900 - 17 970 kHz	1 channel
21 870 - 22 000 kHz	1 channel

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 85-E
8 February 1978
Original : EnglishCOMMITTEE 5Malaysia

PROPOSALS FOR THE WORK OF THE CONFERENCE

DESCRIPTION OF THE BOUNDARIES OF THE REGIONAL
AND DOMESTIC AIR ROUTE AREAS (RDARA)MLA/85/1 MOD 27/130 Sub-Area 6D

From the junction of the borders of China, India and Burma, south along the India-Burma and Bangladesh-Burma borders to the Bay of Bengal, along the coast of Burma to its southernmost point. Then to Weh Island (off the north coast of Sumatra). Then to the point $02^{\circ}\text{S } 92^{\circ}\text{E}$ and through the point $10^{\circ}\text{S } 92^{\circ}\text{E}$ to $10^{\circ}\text{S } 110^{\circ}\text{E}$. Then eastward to $10^{\circ}\text{S } 141^{\circ}\text{E}$ extending northward to $04^{\circ}\text{S } 141^{\circ}\text{E}$ and then to $04^{\circ}\text{N } 130^{\circ}\text{E}$ through the point $20^{\circ}\text{N } 130^{\circ}\text{E}$ to $20^{\circ}\text{N } 113^{\circ}\text{E}$ and through the point $20^{\circ}\text{N } 130^{\circ}\text{E}$ to $20^{\circ}\text{N } 113^{\circ}\text{E}$. Thence south around the Island of Hainan, and along the China-Vietnam, China-Laos and China-Burma borders to close the sub area at the junction of the borders of China, India and Burma :

- Reasons : 1) Malaysia consists of two areas separated by the South China Sea - namely the Malay Peninsula and Sabah, Sarawak in the north of the island of Borneo. Malaysia operates two Flight Information Regions - Kuala Lumpur (FIR) and Kota Kinabalu (FIR). Because of the geographical separation there is a large volume of domestic air traffic over the South China Sea area.
- 2) The regional grouping in South-East Asia namely "ASEAN" comprising the countries : Republic of Indonesia, Republic of the Philippines, Republic of Singapore, Thailand and Malaysia has stimulated an increased amount of air traffic and this traffic is increasing rapidly. Flights between border areas have also increased. The present configuration involves two sub areas thus causing operational difficulties.



The proposed rearrangement of RDARA 6D will further regional cooperation and this reiterates Recommendation 1/1 of the ICAO Communications Divisional Meeting - Montreal 8-14 September 1976 (Document No. 21 by Secretary-General refers) referring to RDARA embracing air routes of a regional and national nature.

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 86-E (Rev.)

7 February 1978

Original : English

CONFERENCE CHAIRMEN AND VICE-CHAIRMEN

(Approved at the First Plenary Meeting)

Chairman of the Conference

: Mr. Srirangan, T.V.
(India (Republic of))

Vice-Chairmen of the Conference

: Mr. Bouhired, N.
(Algerian Democratic and Popular Republic)

Mr. Hermano Balduino, P.R.
(Brazil)

Mr. Wang, N.-T.
(China (People's Republic of))

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Committee 3 - Budget Control Committee

: Chairman : Mr. Dione, A.M.
(Senegal (Republic of the))

Vice-Chairman : Mr. Hakimian, A.
(Iran)

Committee 4 - Technical Committee

: Chairman : Dr. Kovács, G.
(Hungarian People's Republic)

Vice-Chairman : Mr. Inoma, R.E.N.
(Nigeria (Federal Republic of))

Committee 5 - Planning Committee

: Chairman : Mr. Chef, M.
(France)

Vice-Chairman : Mr. Ducharme, E.D.
(Canada)



Committee 6 - Regulatory Procedures
Committee

: Chairman : Mr. Bundle, R.J.
(New Zealand)

Vice-Chairman : Mr. Kupczyk, Z.
(Poland (People's Republic
of))

Committee 7 - Editorial Committee

: Chairman : Mr. Dhenin, C.-J.
(France)

Vice-Chairman : Mr. Valbuena Granados, M.
(Spain)

Mr. Baptiste, D.E.
(United Kingdom of Great
Britain and Northern
Ireland)

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 86-E

7 February 1978

Original : English

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(Nigeria (Federal Republic of))

Committee 5 - Planning Committee

: Chairman : Mr. Chef, M.
(France)

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(Canada)



Committee 6 - Regulatory Procedures
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(Poland (People's Republic
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(Spain)

Mr. Baptiste, D.E.
(United Kingdom of Great
Britain and Northern
Ireland)

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 87-E
8 February 1978
Original : EnglishPeople's Republic of AngolaCOMMITTEE 5RDARA BOUNDARY DESCRIPTIONS AND
ALLOTMENT REQUIREMENTS

The Administration of the People's Republic of Angola presents to the ITU World Administrative Radio Conference on the Aeronautical Mobile (R) Service the following proposals on the amendments to descriptions of the boundaries of the RDARA related to the People's Republic of Angola and their respective frequency allotment requirements.

1. On regional and domestic air route area

AGL/87/1 MOD 27/133

Regional and domestic air route area-7 (RDARA-7)

From the South Pole along the 20°W meridian to 05°S. Then along the 05°S parallel to 12°E. Thence along the ~~northern border of the Democratic Republic of the Congo, Cabinda Territory being included in this area,~~ border between People's Republic of Congo and People's Republic of Angola, then along the northern border of the Republic of Zaire, along the border between Uganda and Sudan, and between Kenya and the following countries : Sudan, Ethiopia and Somalia to the point 02°S 42°E. Then to 02°S 60°E and along the 60°E meridian to the South Pole.

AGL/87/2 MOD 27/135 Area 7B

From the point 05°S 10°E to 05°S 12°E. Thence along the ~~northern border of the Democratic Republic of the Congo, Cabinda Territory being included in this area,~~ border between People's Republic of Congo and People's Republic of Angola, then along the northern border of the Republic of Zaire, to the junction of the borders of Uganda, ~~Democratic Republic of the Congo~~ Zaire and Sudan. Thence South along the eastern and southern border of the ~~Democratic Republic of the Congo~~ Zaire, including the ~~Kingdom~~ Republic of Burundi and the Republic of Rwanda, and along the eastern and southern border of ~~Angola~~ the People's Republic of Angola to the coast of the South Atlantic. Thence to the point 17°S 10°E and then to close the sub-area at 05°S 10°E.

Reasons : The People's Republic of Angola considers the boundary descriptions contained in Annex 27 (27/133 and 27/135) inappropriate for the following reasons :

- a) Cabinda is not a Territory but one of the Provinces of People's Republic of Angola.



- b) To define the area and sub-areas it should be considered the border of the country and not the border of a province.
- c) To describe the normal sequence of the boundaries of the area and sub-area.
- d) To observe the official names of African countries.

2. Frequency requirements

The frequency requirements of the People's Republic of Angola are the following :

Frequency Band	MWARA 1) NSA-1	RDARA 7	Sub-Area 2) 7-B	VOLMET 1) AFI-MET	OP CONT 3)
2 850-3 025	-	-	1	-	-
3 400-3 500	2	-	2	2	1
4 650-4 700	-	-	-	-	-
5 480-5 680	2	1	2	-	1
6 525-6 685	-	-	2	2	-
8 815-8 965	2	1	2	-	1
10 005-10 000	-	-	-	1	-
11 275-11 400	-	-	-	1	-
13 260-13 360	2	1	-	-	1
17 900-17 970	2	-	-	1	1
21 870-22 000	-	-	-	-	1

1) Preparing these proposals, People's Republic of Angola has taken into account the Report of the Communications Divisional Meeting of ICAO, Montreal - 1976, with which proposals are generally in accordance.

2) In the calculations of RDARA frequency requirements it was taken into account the requirements for national operational control and national VOLMET.

3) For long-distance Aeronautical Operational Control the communications are proposed to be established with the MWARAs NSA-1, NSA-2, EU, SA, SAM-2, NA-3 and CAR.

COMMITTEE 5
COMMITTEE 6

United Kingdom

ALLOTMENT OF FREQUENCIES FROM THE BAND 21 870 - 22 000 kHz FOR INCLUSION
IN APPENDIX 27

1. The UK Administration is in sympathy with the objective of the Canadian Administration to have this frequency band planned by this Conference and included in Appendix 27. Clearly, it would be most desirable to do so at this time and place when all the factors can be assessed by the most competent authorities. However, the UK Administration places the highest importance on the observance by this Conference of No. 43 of the ITU Convention by which it is bound, and which states, in relation to Administrative Conferences, that only items included in their Agendas may be discussed.
2. The UK Administration does not agree with the view expressed in Document No. 46 that the Agenda permits the Conference to include this frequency band in Appendix 27. It is no argument to say that unless the Agenda specifically excludes the band 21 870 - 22 000 kHz, it is automatically included. The Administrative Council in preparing an Agenda does not purport to specifically exclude items from consideration, but only to include matters to be considered. This corresponds exactly with No. 43 of the Convention.
3. The Agenda of the Conference states that the Conference shall revise the Frequency Allotment Plan for the Aeronautical Mobile (R) Service which is in Appendix 27 to the Radio Regulations, and consider and review the provisions of the Radio Regulations which are consequential to that revised plan. The plan does not include the band 21 870 - 22 000 kHz.
4. The proposal of the Canadian Administration would require power to revise the Radio Regulation RR 431. In the view of the UK Administration this is a fundamental Regulation that sets the limit of the bands for which Appendix 27 provides and cannot be regarded as consequential to any change in Appendix 27.
5. The UK Administration does not agree that the Agenda of this Conference is expressed in the same terms as the Agenda for the 1979 WARC referred to in paragraph 4 c) of Document No. 46. The 1979 Agenda gives full power to that Conference to revise the Radio Regulations relating to the allocation of frequency bands and directly associated regulations.
6. A further important factor to be considered is that the band 21 870 - 22 000 kHz is not an exclusive Aeronautical Mobile (R) Service band, but is shared with the Aeronautical Fixed Service. It was established by the 1951 EARC that the Frequency Allotment Plan for the Aeronautical Mobile (R) Service should be confined to frequency bands allocated exclusively to that Service. In any case, this 1978 Conference has no mandate to consider matters relating to the Aeronautical Fixed Service or to take any decisions which would, in any way, affect that Service.



7. The UK Administration considers that before the band, or a part of the band, can be incorporated in Appendix 27, it should be re-allocated exclusively to the Aeronautical Mobile (R) Service. The next competent conference to take such a decision is the 1979 WARC.

8. The UK Administration suggests that the objective of the Canadian Administration could be fully met by a Recommendation to the 1979 WARC on the lines given in the attached draft. This will require a simple act of re-allocation by the 1979 Conference and endorsement of the work done by this 1978 Conference, without the necessity to re-open detailed consideration of Appendix 27. The Secretary-General could then produce the comprehensive revised Appendix 27 after the 1979 Conference. It is essential that all this should come into effect by the due date decided by this 1978 Conference.

9. This paper is addressed to Committee 6 in the first instance to decide whether or not to accept this procedure. If it is accepted, it is suggested that it will be for Committee 5 to decide whether it wishes to include this band and, if so, how much of it. This is why the band limits are set within square brackets. Clearly it would be preferable if this band could be planned by Committee 5 in the same planning operation as the other bands.

A N N E X

G/88/1

ADD

RECOMMENDATION AER ...

Relating to the inclusion of the band / 21 870 - 22 000 / kHz in the Frequency Allotment Plan for the Aeronautical Mobile (R) Service (Appendix 27 to the Radio Regulations)

The World Administrative Radio Conference for the Aeronautical Mobile (R) Service, Geneva 1978,

considering

- 1) that there is a need to add an additional frequency band to Appendix 27 to meet a requirement for additional traffic;
 - 2) that there is a suitable band at / 21 870 - 22 000 / kHz at present allocated to the AERONAUTICAL FIXED AND AERONAUTICAL MOBILE (R) Services;
 - 3) that if the band were to be allocated exclusively to the AERONAUTICAL MOBILE (R) Service it could be incorporated into Appendix 27 :
 - 4) that the decision to re-allocate the band could be taken by the 1979 General World Administrative Radio Conference;
 - 5) that the decision to incorporate a plan for the band into Appendix 27 could be taken by the 1979 General WARC;
- has formulated a plan for the band / 21 870 - 22 000 / kHz with associated consequential provisions for modifying the procedures of Appendix 27 (see Annex);

recommends

- 1) that the 1979 General World Administrative Radio Conference should re-allocate the band / 21 870 - 22 000 / kHz exclusively to the AERONAUTICAL MOBILE (R) Service and should annex the plan and associated provisions to Appendix 27 as an integral part thereof and to come into force on the same date; and
 - 2) that Administrations submit to the 1979 General WARC proposals to this effect.
-

AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 89-E
8 February 1978
Original : English

COMMITTEE 5
COMMITTEE 6

Papua New Guinea

PROPOSAL FOR INCLUSION OF FAMILIES OF FREQUENCIES FOR NATIONAL FLIGHT REGULARITY WITHIN THE FREQUENCY ALLOTMENT PLAN FOR THE AERONAUTICAL MOBILE (R) SERVICES

1. Background

Papua New Guinea is a country of extreme topographical variations ranging from vast swampy plains to an extremely rugged central cordillera.

Much of Papua New Guinea is covered with dense tropical rain forest which, along with the multi-island constitution of the country, makes the development of transport systems very difficult.

Unlike many countries, the majority of the population lives in the rural areas and therefore transport to these areas is a significant factor in almost every aspect of economic and social development.

Despite the recent emphasis on the construction of roads, very few major centres are connected by roads due to the extremely high constructional and maintenance costs, as well as the island breakup of the country.

As a result, in many inland and island areas, large pockets of population are only accessible by light aircraft, by foot or by canoe.

As of 31 December 1977, Papua New Guinea had 236 aircraft on the civil register and 418 aerodromes ranging from an international airport near Port Moresby to many small rural aerodromes served only by light aircraft. Many of the rural aerodromes have no telecommunications facilities other than HF radio and therefore the use of HF flight regularity is essential as the light aircraft servicing these aerodromes fly mainly through the valleys and high mountain passes and are often out of VHF range of any operational centre.

The Administration of Papua New Guinea believes that the frequencies required for its national flight regularity should be included within the new allotments included in the revision of Appendix 27.

2. Required number of channels

The Administration of Papua New Guinea considers that it will need 3 families each of 3 frequencies for its national flight regularity service.

One family will be extended to cater for its international requirements.

In order to allow for flexibility in planning, Papua New Guinea has requested channels from either the 2 850 - 3 025 or 3 400 - 3 500 kHz bands. Similarly channels have been requested from the 4 650 - 4 700 or the 5 480 - 5 680 or the 6 525 - 6 685 kHz bands as well as channels from the 8 815 - 8 965 or the 10 005 - 10 160 or the 11 275 - 11 400 kHz bands.

A table of requirements is as follows :

1) National Flight Regularity Service (within RDARA 9B)

	<u>Frequency bands</u>	<u>Requirements</u>
	2 850 - 3 025 kHz	
or	3 400 - 3 500 kHz	2 channels
	4 650 - 4 700 kHz	
or	5 480 - 5 680 kHz	2 channels
or	6 525 - 6 685 kHz	
	8 815 - 8 965 kHz	
or	10 005 - 10 100 kHz	2 channels
or	11 275 - 11 400 kHz	

2) National & International Flight Regularity Service (within MWARA's, CWP, SEA, FE, SP)

	<u>Frequency bands</u>	<u>Requirements</u>
	2 850 - 3 025 kHz	1 channel
or	3 400 - 3 500 kHz	
	4 650 - 4 700 kHz	1 channel
or	5 480 - 5 680 kHz	
or	6 525 - 6 685 kHz	
	8 815 - 8 965 kHz	
or	10 005 - 10 100 kHz	1 channel
or	11 275 - 11 400 kHz	
	13 260 - 13 360 kHz	1 channel
	17 900 - 17 970 kHz	1 channel

3. Proposal

In presenting its requirements for HF national flight regularity service, the Administration of Papua New Guinea considers that some other Administrations will have similar requirements especially among the developing countries where the resources are not available to develop an extensive VHF network for national flight regularity service, and proposes the following :

PNG/89/1

Noting

that there is a need for flight regularity communications with aircraft operating within national boundaries; and

that such communications cannot always be carried out using the VHF bands

Recommends

that the use of frequencies allotted within Appendix 27 (Rev.1978) for flight regularity communications within national boundaries is permissible.

PNG/89/2

Noting

that there is a need for flight regularity communications with aircraft operating beyond national boundaries; and

that such communications must, in some cases, use the HF bands

Recommends

that the use of frequencies allotted within Appendix 27 (Rev.1978) for flight regularity communications with aircraft operating beyond national boundaries is permissible.

COMMITTEE 6

Papua New Guinea

PROPOSALS TO FACILITATE THE CHANGEOVER TO THE PROVISIONS
OF THE FINAL ACTS

1. Background

The Administration of Papua New Guinea believes that the transition to the newly agreed provisions and allotments within the Final Acts must be capable of being carried out in such a manner as not to cause a serious disruption to existing air services.

In the case of Papua New Guinea by far the majority of aircraft are light aircraft, all of which will require re-equipping and rechannelling at a maintenance base.

With the limited technical resources available to Papua New Guinea it is estimated that the re-equipping of aircraft with equipments capable of A3J emissions will take at least 9 months and that the rechannelling of equipments will take about 3 months.

Because of the technical and economic factors it would not be possible for Papua New Guinea to increase aeronautical station facilities during the transition period to cater for both the existing allotments and the newly agreed allotments.

However for safety reasons it is essential that all aircraft operating in a particular area hear the transmissions between all other aircraft and aeronautical stations within that area.

2. Transition procedures

In analyzing the procedures necessary to effect the transition two distinct parts were considered, i.e. the re-equipping of the aircraft and aeronautical station to have A3J emission capability and the rechannelling to the newly agreed allotments.

It is not considered desirable to rechannel to the newly agreed allotments prior to the conversion to the A3J class of emission as the wider bandwidth of the existing receivers as compared to receivers designed for A3J class of service would mean that some increase in interference would be unavoidable particularly if any additional channels created were utilized for worldwide allocations.

It is therefore proposed to firstly re-equip all aircraft and aeronautical stations using the existing (R) band allotments with equipments capable of both the A3H and A3J classes of emission.

During the time of re-equipping all voice communications would use the A3 and A3H classes of emission.

Once the re-equipping is complete then, at an agreed date all voice transmissions using A3 and A3H classes of emissions would cease and the A3J class of emission would be used. There is some advantage in changing to the A3J class of emission prior to the change to the new allotments as interference which may arise during the changes to the new allotments would possibly be less severe if both aircraft and aeronautical stations were using the A3J class of emission at the changeover time.

Once all aircraft and aeronautical stations have changed to the A3J class of emission then at an agreed date all aeronautical stations would change to the newly agreed allotments.

Aircraft fitted with fixed channel equipments would have to ensure fitment of a limited number of the new allotments prior to the changeover date.

Such aircraft may be subject to geographical or hours of operations restrictions until such time as they are fitted with the required new channels for full operations.

Aircraft with equipments capable of being fitted with both the new and old allotments will change to the new allotments at the same time as the aeronautical stations change and would not be unduly affected.

3. Proposal

PNG/90/1 That the problems facing developing countries be taken into account in the formulation of the transition procedures.

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 91-E(Rev.)

9 February 1978

Original : EnglishCOMMITTEE 5COMMITTEE 6Kingdom of Saudi Arabia

FREQUENCY REQUIREMENTS

The frequency requirements of the Saudi Arabian Administration are given below :

Frequency bands	MWARA MID.		RDARA 5	SUB RDARA		VOLMET MID	Operational Control
				5A	5C		
2 850 - 3 025	5		1	1		1	1
3 400 - 3 500	3		1	1	1	1	1
4 650 - 4 700	4		1	1		1	2
5 450 - 5 480	6		1	1		2	2
5 480 - 5 680	4		1	2		1	1
6 525 - 6 685	4		1	1	1	2	1
8 815 - 8 965	6		2	1		2	1
10 005 - 10 100	4		2	1		2	1
11 275 - 11 400	4		2	1		2	1
13 260 - 13 360	4		2	1		2	2
17 900 - 17 970	2		2	1		2	2
21 870 - 22 000	2		2	1		1	2

ARS/91/1 MOD 27/20

The International Civil Aviation Organization (ICAO) coordinates communications of the Aeronautical Mobile (R) Service with international air operations ~~for a large part of the world~~ and this Organization should be consulted in ~~appropriate~~ all cases, ~~particularly~~ in the use of frequencies provided in the Plan for long-distance aeronautical operational control.

Reasons : 1) The Plan has world-wide effect concerning all the regions of the world.

2) Need to bring in the concept of operational control.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 91-E

8 February 1978

Original : EnglishCOMMITTEE 5COMMITTEE 6Kingdom of Saudi Arabia

PROPOSALS FOR THE WORK OF THE CONFERENCE

The frequency requirements of the Saudi Arabian Administration are given below :

Frequency bands	MWARA MID.	RDARA	SUB RDARA	VOLMET MID	Operational Control
2 850 - 3 025	5	1	1	1	1
3 400 - 3 500	3	1	1 (SA)	1	1
4 650 - 4 700	4	1	1	1	2
5 450 - 5 480	6	1	1	2	2
5 480 - 5 680	4	1	2	1	1
6 525 - 6 685	4	1	1 (SA)	2	1
8 815 - 8 965	6	2	1	2	1
10 005 - 10 100	4	2	1	2	1
11 275 - 11 400	4	2	1	2	1
13 260 - 13 360	4	2	1	2	2
17 900 - 17 970	2	2	1	2	2
21 870 - 22 000	2	2	1	1	2

ARS/91/1 MOD 27/20

The International Civil Aviation Organization (ICAO) coordinates communications of the Aeronautical Mobile (R) Service with international air operations ~~for a large part of the world~~ and this Organization should be consulted in ~~appropriate~~ all cases, ~~particularly~~ in the use of frequencies provided in the Plan for long-distance aeronautical operational control.

Reasons : 1) The Plan has world-wide effect concerning all the regions of the world.

2) Need to bring in the concept of operational control.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 92-E
8 February 1978
Original : EnglishCOMMITTEE 5Sweden

PROPOSALS FOR THE WORK OF THE CONFERENCE

The frequency requirements of Sweden are as follows :

Frequency band (kHz)	Long distance operational control	Remarks
	world-wide	
4 650 - 4 700	1	Common family for DNK, NOR and S
5 480 - 5 680	1	
6 525 - 6 685	1	
8 815 - 8 965	1	
10 005 - 10 100	1	
11 275 - 11 400	1	
13 260 - 13 360	1	
17 900 - 17 970	1	

Sweden also has a requirement for a frequency for long distance operational control world-wide, common to Denmark, Norway and Sweden in the band at 22 MHz for the Aeronautical Mobile (R) Service.



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 93-E

8 February 1978

Original : Spanish

COMMITTEE 4

COMMITTEE 5

Republic of Paraguay

PROPOSALS FOR THE WORK OF THE CONFERENCE

Frequency requirements for long-distance operational control and VOLMET

In order to meet its present and future needs, the Republic of Paraguay requests a set of frequencies which will enable it to cover its operational and VOLMET needs.

Annex : 1



A N N E X

Annex 2 to IFRB Circular-letter No. 386

**Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

1 <u>PRG</u> Administration	2 <u>PRG</u> Country Symbol
--------------------------------	--------------------------------

3 <u> </u> Reference No.	4 <u> </u> Date
--	---------------------------------------

Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From -- to	<u> </u> MWARA Symbol ¹⁾	<u> </u> RDARA Symbol ¹⁾	<u> </u> Sub-RDARA Symbol ¹⁾	<u> </u> VOLMET Symbol ¹⁾	<u> </u> Symbol(s) ²⁾	
2 850 -- 3 025					1 SAM-1 SAM-2	
3 400 -- 3 500					1 SAM-1 SAM-2	
4 650 -- 4 700					1 SAM-1 SAM-2	
5 450 -- 5 480 (Reg. 2)						
5 480 -- 5 680				1 AT-MET	1 SAM-1 SAM-2	
6 525 -- 6 685					1 SAM-1 SAM-2 CAR	
8 815 -- 8 965				1 AT-MET		
10,005 -- 10,100					1 SAM-1 SAM-2 CAR EU	
11,275 -- 11,400						
13,260 -- 13,360					1 SAM-2 CAR EU	
17,900 -- 17,970					1 NA-3 CAR*EU	

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and in any case so as to reach the Board by 30 September 1977.

AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**Document No. 94-E
8 February 1978
Original : EnglishCOMMITTEE 5Republic of Kenya

PROPOSALS FOR THE WORK OF THE CONFERENCE

1. The Kenya Administration proposes the following frequencies for the indicated regions.

FREQUENCY BANDS	MWARA		RDARA 7	SUB-RDARA 7C	VOLMET AREA AFI-MET	OPERATIONAL CONTROL
	AFI	IND				
2 850- 3 025	1					1
3 400- 3 500	4	1			2	
4 650- 4 700	1					
5 480- 5 680	2	1	1	1		1
6 525- 6 685	2				2	1
8 815- 8 965	3	1		1		1
10 005-10 100	1		1		1	
11 275-11 400	1		1	1	1	
13 260-13 360	5	1				1
17 900-17 970	3	1			1	
21 870-22 000	2					1

Note : The regions are as defined in ICAO Document 21.

2. The Administration of the Republic of Kenya supports the proposal of the Republic of Mauritius to change the designation of newly created MWARA IO to MWARA INO as per Conference Document 33.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 95-E
8 February 1978
Original : English

COMMITTEE 5United Republic of Tanzania

PROPOSALS FOR THE WORK OF THE CONFERENCE

The Tanzanian Administration supports the proposal by the Kenya Administration in Document 94 for the following frequencies in the region indicated in the table below :

Frequency Band (kHz)	MWARA		RDARA 7	SUB-RDARA 7C	VOLMET AREA AFI-MET	Operational control
	AFI	INO				
2 850-3 025	1					1
3 400-3 500	4	1			2	
4 650-4 700	1					
5 480-5 680	2	1	1	1		1
6 525-6 685	2				2	1
8 815-8 965	3	1		1		1
10 005-10 100	1		1		1	
11 275-11 400	1		1	1	1	
13 260-13 360	5	1				1
17 900-17 970	3	1			1	
21 870-22 000	2					1

We further endorse the proposal by Mauritius in Document 33 to change the designation from MWARA IO to MWARA INO as proposed by ICAO.



Denmark

REQUIREMENTS FOR LONG DISTANCE OPERATIONAL CONTROL

In coordination with the Norwegian and Swedish delegations, the Danish requirements for operational control frequencies for common use by Denmark, Norway and Sweden in Document 37 should be replaced by the following :

4.6 MHz	1
5.6 "	1
6.6 "	1
8.9 "	1
10.0 "	1
11.3 "	1
13.3 "	1
17.9 "	1
22.0 "	1



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 97-E
8 February 1978
Original : Spanish

COMMITTEE 5

Spain

PROPOSAL FOR THE WORK OF THE CONFERENCE

E/97/1

ADD

RECOMMENDATION No. ... AER 2

on the inclusion of the 21 870 - 22 000 kHz band
in the Frequency Allotment Plan in
Appendix 27(Rev.) to the
Radio Regulations

The World Administrative Radio Conference on the
Aeronautical Mobile (R) Service, Geneva, 1978,

considering

- a) that there is a need for exclusive frequencies higher than those at present allocated in the Frequency Allotment Plan in Appendix 27(Rev.) to the Radio Regulations for communications in the Aeronautical Mobile (R) Service;
- b) that an appropriate band - 21 870 to 22 000 kHz - is at present allocated to the Aeronautical Mobile (R) and Aeronautical Fixed Services which, if it was allocated exclusively to the Aeronautical Mobile (R) Service, could be incorporated in the Allotment Plan in Appendix 27(Rev.) for the purposes stated;
- c) that the decision to reconsider the allocation of this band and to include it in Appendix 27 might fall within the competence of the 1979 World Administrative Radio Conference;

has drawn up

a plan for the 21 870 - 22 000 kHz band and the corresponding provisions for its inclusion in Appendix 27 to the Radio Regulations, and

recommends

- 1. that the World Administrative Radio Conference (1979) should consider the possibility of allocating the 21 870 - 22 000 kHz band exclusively to the Aeronautical Mobile (R) Service and of including it as an integral part of Appendix 27(Rev.);
- 2. that Administrations should submit proposals on this point to the 1979 World Administrative Radio Conference.

Reasons : In order that the Aeronautical Mobile (R) Service should have exclusive frequency channels in the
21 870 - 22 000 kHz band.



AERONAUTICAL (R) CONFERENCE**(Geneva, 1978)**

Document No. 98-E

8 February 1978

Original : FrenchCOMMITTEE 5Gabon Republic

FREQUENCY REQUIREMENTS

Frequency Band	Frequency Requirements		Remarks
	MWARA-AFI	RDARA-4B	
1. 2 850 - 3 025			
2. 3 400 - 3 500			
3. 5 450 - 5 480	1	2	MET - VOLMET
4. 5 480 - 5 680	1		
5. 6 525 - 6 685	2	2	Operational control
6. 8 815 - 8 965	1	2	ditto
7. 10 005 - 10 100	1		
8. 11 275 - 11 400	1		
9. 13 260 - 13 360	1		
10. 17 900 - 17 970	2		
21 900 - 22 000	1		



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 99-E
8 February 1978
Original : English

COMMITTEE 5

Yemen Arab Republic

FREQUENCY ALLOTMENT FOR THE RDARA SUB-AREA 5A

Presently, only one family of frequencies has been allotted to the RDARA Sub-Area 5A;

Whereas air traffic in this Sub-Area consisting of several countries has tremendously increased during the past decade;

Whereas the land mass of this Sub-Area is either isolated vast desert or mountainous region and it is, therefore, economically not feasible to provide VHF coverage; and

Whereas for the safety of the air traffic it is essential that an effective interference-free HF communication day and night coverage be provided in this area;

Therefore, the Conference takes into consideration the above facts and allocates an additional family or families of frequencies to the RDARA Sub-Area 5A.

AHMED ELZAGGAR
Chief Delegate of the
Yemen Arab Republic



AERONAUTICAL (R) CONFERENCE

(Geneva, 1978)

Document No. 100-E

8 February 1978

Original : English

COMMITTEE 5

Yemen Arab Republic

FREQUENCY REQUIREMENTS

The delegation of the Yemen Arab Republic submits the following requirements for MWARA and Sub-RDARA and long distance operational control as indicated in the attached Annex.

Annex : 1



Annex 2 to IFRB Circular-letter No. 386

1 <u>YEMEN A.R.</u> Administration	2 <u>YEM</u> Country Symbol
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**Form of frequency requirements
for the Aeronautical Mobile (R) Service ⁴⁾**

(See paragraph 5 of IFRB Circular-letter No. 386)

3 _____ Reference No.	4 _____ Date
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Number of Allotments required for inclusion in the Appendix 27 to the Radio Regulations						
5	6	7	8	9	10	11
Frequency band (kHz)	MWARA	RDARA	Sub-RDARA	VOLMET Area	Long distance operational control	Remarks ³⁾
From – to	ME, NSA 2 MWARA Symbol ¹⁾	RDARA Symbol ¹⁾	S'A Sub-RDARA Symbol ¹⁾	VOLMET Symbol ¹⁾	Symbol(s) ²⁾	
2 850 – 3 025						
3 400 – 3 500			1			
4 650 – 4 700			1			
5 450 – 5 480 (Reg. 2)						
5 480 – 5 680	ME, NSA 2 (2)		1		1	NSA 1/2
6 525 – 6 685			1		1	NSA 1/2
8 815 – 8 965	ME, NSA 2 (2)		1		1	ME
10,005 – 10,100					1	EU
11,275 – 11,400					1	EU ME
13,260 – 13,360	ME NSA 2 (1)				1	EU ME
17,900 – 17,970					1	EU NA 2

1) Indicate, in each case, the symbol for the Area, or Sub-Area (in case of Sub-RDARA), as it appears in Appendix 27 for which the allotment is required and the number of allotments required in each band. When the country or geographical area (designated by a country symbol) extends over or is located in more than one Aeronautical Area (MWARA, RDARA, Sub-RDARA and/or VOLMET Area), the number of frequency requirements for each of such additional Areas or Sub-Areas should be shown on separate forms, e.g. the Administration of a country whose territory spreads into two MWARAs, five Sub-RDARAs and two VOLMET Areas would use two forms on which to communicate its requirements for the two MWARAs, two of the five Sub-RDARAs and the two VOLMET Areas, and would use three additional forms for the remaining Sub-RDARAs.

2) In case of long-distance operational control requirements, please indicate the area (in terms of the symbols for MWARA(s) as they appear in Appendix 27) with which communication is proposed to be established.

3) This column is reserved for any information which an Administration may wish to communicate to supplement that given in any of the Columns 6 to 10. Where necessary use a separate sheet of paper.

4) This form should be sent to The Chairman, International Frequency Registration Board, International Telecommunication Union, 1211 Geneva 20, Switzerland, as soon as possible and *in any case so as to reach the Board by 30 September 1977.*