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*Colin Hinson*

*In the village of Blunham, Bedfordshire, UK.*



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M.C.A.P. 22

August, 1947

AIR MINISTRY AND MINISTRY OF CIVIL AVIATION

**COMMUNICATIONS PROCEDURES**  
FOR THE  
**CIVIL AERONAUTICAL SERVICE**  
(BASED ON I.C.A.O.)

---

**PART II**

**Aeronautical Mobile, Navigational and Broadcasting Radio Services**

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## **FOR THE**

# **CIVIL AERONAUTICAL SERVICE**

### **(BASED ON I.C.A.O.)**

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## **PART II**

### **Aeronautical Mobile, Navigational and Broadcasting Radio Services**

The procedures described in this publication are based upon the International Civil Aviation Organization (I.C.A.O.) "Procedures for Air Navigation Services, Communication Procedures Codes and Abbreviations" of July, 1946 (Doc. 2015 com/126)

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Promulgated for the information and guidance of all concerned

AIR MINISTRY

By Command of the Air Council,  
J. H. BARNES

Issued by Direction of the Minister of Civil Aviation  
MINISTRY OF CIVIL AVIATION

A. E. OVERTON,  
Secretary

## FOREWORD

This publication presents, in a simple but detailed form, the procedures prescribed by the International Civil Aviation Organisation for use in the International Aeronautical Telecommunications Service.

Its primary purpose is to provide a text-book which may be used in the training of signals personnel, who may be required to employ International procedures when communicating with civil ground stations or aircraft, or when operating circuits in the Air Traffic Control Network.

The International Aeronautical Telecommunications Service is divided into four separate but complementary services, namely :—

- (a) The Aeronautical Fixed Telecommunications Service.
- (b) The Aeronautical Mobile Radio Service.
- (c) The Aeronautical Navigational Radio Service.
- (d) The Aeronautical Broadcasting Service.

The procedures used in these four Services differ in detail and, for simplicity and convenience, are dealt with separately in the two parts of this publication :

PART I contains only the procedures used in the Aeronautical Fixed Service on point-to-point morse and teleprinter circuits.

PART II contains the procedures used for air-ground communications in the Aeronautical Mobile Service and Navigational Radio Services and for ground to air communication in the Aeronautical Broadcasting Service.

At the time of issue of this publication the I.C.A.O. Communications Procedures are in use only in certain specified regions of the world. Details of these regions are promulgated in Air Ministry Orders, Ministry of Civil Aviation " Notices to Airmen " and " Air Traffic Instructions ". The procedures will, however, be introduced for world-wide use in the near future. Temporary orders for the use of the I.C.A.O. procedures in specified areas in which those procedures may not be officially in force under International regulations (for example, on routes associated with the British Air Traffic Control Network) may also be issued by the Air Ministry or Ministry of Civil Aviation to the responsible authorities concerned.

# **Part II**

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**THE AERONAUTICAL MOBILE RADIO SERVICE  
THE AERONAUTICAL NAVIGATIONAL RADIO  
SERVICE**

**(Air-Ground Communications Procedure)**

**and**

**THE AERONAUTICAL BROADCASTING SERVICE**

**(Ground to Air Communications Procedure)**

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## INTRODUCTION

### SECTION "A" (THE AERONAUTICAL MOBILE RADIO SERVICE)

1. The Aeronautical Mobile Radio Service exists to provide communication between aircraft themselves and between aircraft and ground stations. Such communication may be provided either by wireless telegraphy (W/T) or by radio telephony (R/T) ; radio telephony communication is normally on High Frequency (H/F) or Very High Frequency (V.H.F.).

2. In general, the basic components of messages, the types of messages which may be encountered, and the precedence in which various types of messages are transmitted are the same, whatever means of transmission is employed. The methods of calling, of requesting and giving corrections or repetitions of doubtful words, and of giving receipt differ as between W/T and R/T operation.

3. In the chapters in Section "A" the types of messages which are handled in the Aeronautical Mobile Radio Service are described first, the order of precedence in which messages of various types are transmitted and the standard division of a message into its component parts are then explained, and finally, the manner in which messages are transmitted by W/T and R/T is described in detail.

4. Because of the obvious importance of such communications, a separate chapter has been devoted to the procedure to be used in connection with Distress, Urgency and Safety Communications.

*Section "A" comprises :—*

- |                  |   |   |  |
|------------------|---|---|--|
| Chapter I.       | Dealing with " Categories and Types of Messages "   | } | Apply to both<br>W/T and R/T<br>Communication. |
| Chapter II.      | Dealing with " Order of Precedence in Establishing<br>Communication and in Transmission of Messages " |   |  |
| and Chapter III. | Dealing with " Components of a Message "  |   |  |
| Chapter IV.      | Describing the procedure used in air-ground W/T communication.  |   |  |
| Chapter V.       | Describing the procedure used in air-ground R/T communication.  |   |  |
| Chapter VI.      | Dealing with Distress, Urgency and Safety Communications.   |   |  |

### SECTION "B" (THE AERONAUTICAL NAVIGATIONAL RADIO SERVICE)

5. The Aeronautical Navigational Radio Service exists to provide aircraft with navigational information regarding their positions, their bearings from specified points, or the courses which the aircraft concerned must steer to reach specified points. This information may be obtained either by direction finding stations or from radio beacons.

6. In general, the communications procedure used in the Aeronautical Navigational Radio Service conforms to that used in the Aeronautical Mobile Radio Service. However, a number of additional special regulations and procedures are essential to ensure the smooth and rapid operation of the Aeronautical Navigational Radio Service. These are described fully in Section "B".

*Section "B" comprises :—*

- |                 |  |  |  |
|-----------------|--|--|--|
| Chapter I.      | Describing the procedure used for direction-finding in the Aeronautical Navigational Radio Service.  |  |  |
| and Chapter II. | Listing briefly the types of radio beacons used in the Aeronautical Radio Service and the method used to secure the operation of beacons which are not scheduled for continuous operation. |  |  |

SECTION " C " (THE AERONAUTICAL BROADCASTING SERVICE)

7. The Aeronautical Broadcasting Service provides for the regular broadcasting by radio, at scheduled times and by specified stations, of information which is necessary to ensure the safety of air navigation. Such information may be in the form either of meteorological information or of " Notices to Airmen " which announce changes in the establishment or status of aids to navigation, aerodromes or landing areas, hazards to navigation, etc.

8. Broadcasts of this nature are, where possible, transmitted by automatic sending equipment. Whilst the communications procedure used in making the broadcasts conforms in general to that used in the Aeronautical Mobile Radio Service, certain modifications are necessary to suit the type of equipment used and the special form of the transmission. Section " C " describes these modifications in detail and also lays down the International regulations which govern the transmission of broadcasts in this Service.

*Section " C " comprises :—*

Chapter I. Describing the types of broadcast which are made in the International Aeronautical Broadcasting Service.

and Chapter II. Describing the manner in which broadcast transmissions are made.

# **Section “A”**

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**AERONAUTICAL MOBILE RADIO SERVICE**

## CHAPTER I

### CATEGORIES AND TYPES OF MESSAGES

1. Messages which may be handled in the Aeronautical Mobile Radio Service fall into the following general categories :—

- (a) Distress Calls ; Distress, Urgency and Safety Messages and Distress Traffic.
- (b) Urgent “ Notices to Airmen ” (NOTAMS).
- (c) Air Traffic Control Messages.
- (d) Operational Control Messages.
- (e) Meteorological Messages.
- (f) Service Messages.

2. The types of messages which may be included in each of these categories are as follows :—

(a) **Distress Calls ; Distress, Urgency and Safety Messages and Distress Traffic.**

(i) *Distress Calls :*

When an aircraft is threatened by serious and imminent danger and requires immediate assistance, the aircraft commander will order the transmission of a “ Distress Call ” which serves to indicate briefly to all stations hearing the call that the aircraft concerned is in distress ; it also enables direction-finding stations to take bearings on the aircraft.

(ii) *Distress Messages :*

Whenever possible the “ Distress Call ” will be followed by a “ Distress Message ” giving more complete information regarding the aircraft’s position, condition and intended action.

(iii) *Distress Traffic :*

Any communications, subsequent to the Distress Call or Distress Message, which relate to the immediate assistance required or are exchanged with the distressed aircraft during the period of distress are described collectively as “ Distress Traffic ”.

(iv) *Urgency Messages :*

These are messages concerning the safety of a ship, aircraft or other vehicle, or of some person on board or within sight ; examples would be requests for assistance from an aircraft which is in difficulties which are not sufficiently dangerous to represent distress, or reports from aircraft of sightings of ships’ lifeboats containing survivors, etc.

(v) *Safety Messages :*

These are messages concerning the safety of navigation or giving important meteorological warnings. (*See also* sub-para. (b) below.)

(b) **Urgent Notices to Airmen :**

These are urgent messages concerning the establishment, cancellation or change in serviceability, nature, etc., of :—

- (a) aids to navigation.
- (b) hazards to navigation.

- (c) aerodrome physical characteristics.
- (d) air traffic rules.
- (e) established procedures for air traffic control, communications, meteorology or search and rescue.

Urgent "Notices to Airmen" (NOTAMS) which affect aircraft in flight are also regarded as being "Safety Messages" (see sub-para. (v)): these two categories are therefore closely inter-related.

(Note.—Full instructions concerning the transmission of Distress Calls, Distress Messages, Urgency and Safety Messages and for the handling of Distress Traffic are contained in Chapter VI.)

(c) **Air Traffic Control Messages**

These are messages relating to a particular flight, exchanged during flight between the commander of the aircraft and the ground organisation: examples—instructions for diversions arising out of unserviceability of airfields, instructions or requests for the use of a particular flying or landing procedure; position reports, etc.

(d) **Operational Control Messages**

These are messages which are exchanged during flight between the commander of an aircraft and the operating agency on whose behalf the flight is being made: examples—instructions for diversions or changes in schedule essential to the efficient operation of the airline concerned: instructions regarding the extension or termination of flights, etc.

(e) **Meteorological Messages**

These are messages containing requests for, or details of, meteorological information which is relevant to a particular flight: they are exchanged during flight between the aircraft commander and the ground organisation: examples: requests for landing forecasts and replies thereto; meteorological reports from aircraft; amendments to flight forecasts, etc.

(f) **Service Messages**

These are messages which are passed between stations (including aircraft of the Aeronautical Mobile Radio Service concerning other messages which have been incorrectly addressed or imperfectly received, or to arrange communications schedules, frequency changes or other matters affecting the satisfactory working of the Service and the regular transmission of other messages.

## CHAPTER II

### ORDER OF PRECEDENCE IN ESTABLISHING COMMUNICATION AND IN TRANSMISSION OF MESSAGES

1. Distress Calls, Distress Messages and Distress Traffic take absolute precedence over all other communications.

2. The International Distress Signal, “ $\overline{\text{SOS}}$ ” by W/T or “MAYDAY” by R/T, is used to identify all distress communications.

3. Urgency messages take precedence—after Distress Calls, Distress Messages and Distress Traffic—over all other communications.

4. Urgency Messages are identified by the use of the International Urgency Signal “XXX” by W/T or “PAN” by R/T.

5. Safety Messages take precedence—after Distress Calls, Distress Messages, Distress Traffic and Urgency Messages—over all other communications.

6. Safety Messages are identified by the use of the International Safety Signal “TTT” by W/T or “SECURITE” by R/T.

*(Note.—The method of use of the International Distress, Urgency and Safety Signals is described fully in Chapter VI.)*

#### Priority Prefixes

7. To indicate that preferential handling is necessary, messages of an abnormally urgent nature may be allotted priority prefixes by the originator.

8. In the International Aeronautical Mobile Radio Service, two priority prefixes are used, namely :—

- (i) “ $\overline{\text{SOS}}$ ”, which is used on all messages relating to distress conditions as a priority prefix in addition to its normal use as a Distress Signal.
- (ii) “D”, which indicates that the message to which it is allotted contains important information which must be transmitted without delay.

9. Messages bearing the prefix “D” take precedence over all messages other than Distress, Urgency and Safety communications.

#### Messages which bear no Priority Prefix

10. In general, the relative order of precedence in transmission of messages, other than those representing Distress, Urgency or Safety Communications or those containing the priority prefix “D”, is determined by the categories of the messages concerned : for instance, meteorological messages automatically take precedence over operational messages. The table on page 12 lists the categories of messages in their relative order of precedence.

11. The category of a message is recognised from its subject matter.

12. Where air-ground channels are operated in close association with an air traffic control office, the air traffic control staff will normally indicate to the ground radio operator the order in which messages bearing no Priority Prefix and originated by the control staff are to be transmitted.

### Service Prefixes

13. In the Aeronautical Fixed Telecommunications Service, a variety of Service prefixes are used to identify particular types or categories of messages, for instance, the Service prefix "DEP" indicates a departure message.

The only Service prefix used in the Aeronautical Mobile Radio Service is "SVC", to identify a "Service Message".

### Service Messages

14. Service messages require rapid handling and demand an immediate reply. When a service message refers to another message which carried a priority prefix, it is to be given the same priority prefix as the message to which it refers.

15. In such cases, the appropriate Priority Prefix is to follow the Service Prefix "SVC" and the message concerned is to be handled in accordance with the Priority Prefix.

## ORDER OF PRECEDENCE

CATEGORY OR TYPE OF MESSAGE	IDENTIFYING INTERNATIONAL SIGNAL	PRIORITY PREFIX
1. { Distress Calls Distress Messages Distress Traffic	<u>SOS</u> by W/T : MAYDAY by R/T <u>SOS</u> by W/T : MAYDAY by R/T <u>SOS</u> by W/T : MAYDAY by R/T	— <u>SOS</u> <u>SOS</u>
2. Urgency Messages	XXX (by W/T) PAN (by R/T)	— —
3. Safety Messages	TTT (by W/T) SECURITE (by R/T)	— —
4. Any messages bearing the Priority Prefix "D"	—	D
5. Air Traffic Control Messages	—	—
6. Meteorological Messages	—	—
7. Operational Messages	—	—
8. Other Messages	—	—

## CHAPTER III

### THE COMPONENTS OF A MESSAGE

1. The majority of messages handled in the Aeronautical Mobile Radio Service are communications between the commander or crew of an aircraft and the ground organisation. Such messages are not normally addressed specifically to any authority or person, since the identity of the originating authority and of the intended recipient are obvious from the nature of the communication and the contents of the text.

2. Messages of this type contain the following component parts :—

- (a) The Call.
- (b) The Message Circuit Number (if used).
- (c) The Text.
- (d) The Signature (if used by the originator).

3. It may be desired, however, to address a message specifically to a particular authority on the ground or to a particular person in an aircraft. If this is done, the message normally contains the following component parts :—

- (a) The Call (may be omitted when satisfactory communication has been established).
- (b) The Message Circuit Number (if used).
- (c) The Preamble.
- (d) The Address.
- (e) The Text.
- (f) The Signature (if used by the originator).

4. The contents of each component are shown in detail in the table facing page 16. This table should be opened out so that it may be studied in conjunction with the following paragraphs which explain the use and nature of these contents.

#### **The Call**

5. This comprises the call-sign(s) of the station(s) which is/are being called, followed by the symbol "DE" (meaning "From") and the call-sign of the station which is calling. The call identifies the stations between which communication is taking place. It is often omitted when communication has been firmly established and when no mistake in the identity of the stations concerned can arise. (Note: the equivalent R/T call is described on page 29).

#### **Message Circuit Number**

(The use of this component is optional at the discretion of individual Governments: it is not normally used in the United Kingdom.)

6. In order to provide a check that all messages which are transmitted direct by one station to any other specific station are, in fact, received by that station, messages so transmitted may bear consecutive message circuit numbers. (The term "station", in this sense, includes both ground stations and aircraft.)

7. When message circuit numbers are used it is the responsibility of the receiving operator to ensure that any gaps in the sequence of numbers on messages received from the station or stations worked on his channel are brought to the attention of the station or stations concerned without delay.

8. At each station where message circuit numbers are used, a separate series of numbers is to be maintained for each station which is worked direct. When a particular station is worked direct on more than one channel, a separate series of message circuit numbers is to be maintained for each channel concerned.

9 Each series of messages circuit numbers is to be re-started at number 1 at 0000 hours GMT daily and is to be continued throughout that particular day. This applies, in the case of aircraft, irrespective of whether the aircraft concerned should break and resume its flight.

10. If a message is relayed to or from an aircraft via some station other than the ground station which would normally have transmitted or received the message direct, the message concerned is to bear the same message circuit number as if it had been sent direct.

### **Preamble**

(Omitted from messages which are not specifically addressed to a particular authority or person.)

11. When used, the preamble contains in the order shown :—

(a) *A priority prefix (if used)*—*SOS* or *D*.

(b) *The name and serial number of the office of origin*

(i) The identity of the station of origin of each message is to be indicated by the standard abbreviation for the station concerned, or, in the case of a message originating in an aircraft, by the aircraft radio call-sign.

(*Note.*—A list of the Standard Abbreviations of station names is contained in Ministry of Civil Aviation “ Notices to Airmen ” and also in Air Ministry “ Restricted Communications Orders ”.)

(ii) To establish the order of filing in the office of origin and to facilitate subsequent reference to the message by the originator or recipient, all messages are allotted office serial numbers. These numbers are to be allotted consecutively, without regard to the destinations of the messages. Sequences of office serial numbers are to commence daily at 0000 hours GMT with number 1.

(iii) The serial number may, optionally, be preceded by a letter which indicates the identity of the originator of the message.

(iv) In the case of a single message which is to be sent to more than one station, only one office of origin serial number is to be allotted and this is to be retained on all separate transmissions of the message.

(c) *The number of words*

This represents the number of words contained in the text and the signature only. One group or word is to be counted as one, irrespective of its composition or length. For example :—

“ 1/2 ” counts as one word.

“ Co-operation ” counts as one word.

“ 134-136 ” counts as one word.

(d) *The Date and Time of handing in*

The date and time at which the message is handed in for transmission is indicated by a six-figure group. The first two figures represent the day of the month, the third and fourth figures the hour of the day and the last two figures the number of minutes past the hour. The time standard used in all zones is Greenwich Mean Time (G M.T.).

## The Address

(Omitted from messages not specifically addressed to a particular authority or person.)

12. (a) The identity of the authority or person to whom the message is to be passed is indicated in this component (when it is used) in plain language or by standard abbreviations.

(b) When standard abbreviations are employed, the address must contain at least two abbreviations, the first indicating the actual addressee and the second the station of destination.

For example : “ BOA GAAA ” denotes  
 “ British Overseas Airways (at) London Airport.  
 and “ ATC FFLB ” denotes  
 “ Air Traffic Control Centre (at) Le Bourget ”.

(c) A list of standard abbreviations used in the addressing of messages is contained in Ministry of Civil Aviation “ Notices to Airmen ” and in Air Ministry “ Restricted Communications Orders ”.

(d) The Plain Language or Abbreviations comprising the address are inserted by the originator of the message.

(e) In the case of multiple-address messages, the originator will normally insert at the beginning of the text, a list of all addressees to whom the message has been sent. This list is not to be altered in any way by the communications staff.

(f) No provision is made for indicating in the address that the message is being passed to certain addressees for information only and not for their direct action. If such indication is necessary, it is given in the text of the message, by the originator.

## The Text

13. The text contains the subject matter of the message.

14. The texts of messages in the Aeronautical Mobile Radio Service are normally in the form of International Q-Code signals or plain language. Q-Code signals are to be used, whenever convenient and appropriate, in preference to plain language.

15. Standard International Abbreviations are used frequently in conjunction with either Q-Code or plain language. For information, abbreviations which are at present in common use are listed in Part II, Section G, of the Ministry of Civil Aviation Publications, MCAP I. Standard abbreviations for place names are listed in Ministry of Civil Aviation “ Notices to Airmen ” and in Air Ministry “ Restricted Communications Orders ”.

## Examples of Typical Message Texts :—

(a) Air Traffic Control Messages :

(i) “ **QBH 500 FT.** ”  
 signifies “ Maintain at least 500 feet below all cloud, smoke, haze or fog level ”.

(ii) “ **QEL 200 RRR** ”  
 signifies “ Take off on course of 200 degrees and turn right after take-off ”.

(b) An Operational Control Message :

“ **QAL NO FFLY QAB FFML** ”  
 signifies “ Do not land at Lyons : proceed to Marseilles ” (Marignane).

(c) A Meteorological Message :

“ **QAM FFOR 1040 QNY light rain QBA 500 MTR QBB 200 MTR  
 QAN NE 10 MPH QFE 1010·3 MB** ”

signifies “ The latest available meteorological information for Orly at 1040 is light rain, horizontal visibility 500 metres, height above ground level of base of lowest cloud 200 metres. Surface wind ~~NE~~ 10 miles per hour present barometric pressure at official aerodrome level 1010·3 millibars ”.

16. The text of a distress message follows a standard form which is designed to ensure that certain essential items of information are transmitted in the order of their relative importance to the rescue authorities. These items and the standard form of the text are described in detail in Chapter VI.

### **The Signature**

17. As a general rule, the signature will be the name of the person, or an abbreviation indicating the identity of the department or division of an organisation, responsible for the origination of the message.

18. Provided that its absence will not give rise to any confusion, the signature may be omitted by the originator if he so desires.

### **Service Messages**

19. The following special instructions apply to the contents of Service Messages :—

(a) Service messages normally are given message circuit numbers.

(b) The preamble of a Service message is to commence with the Service prefix “ SVC ”. The number of words is omitted from the preamble.

Example : “ **SVC D 10 EIP 101510 = Capt Smithers = Your 2/9 not delivered office closed -** ”.

20. When reference is made in a Service Message to another message, the office of origin serial number and date of the message is to be quoted for reference.

Example : “ **Your 2/9** ” means “ **your message, office of origin serial number 2, of the 9th** ”.

21. Any reply to a Service Message is to be addressed to the station which originated the initial Service Message. Replies are to be composed in the same form as the Service Messages themselves. All Service Messages are to be as brief as possible.

22. Service Messages are not to be used to query the contents of a message for any reason other than suspected errors in transmission.

## THE COMPONENTS OF A MESSAGE AND THEIR CONTENTS

COMPONENT		CONTENTS		EXAMPLES	
Call	Call-sign of station to which the message is being sent followed by " DE " and the call-sign of the station which is transmitting the message.	GABAC de GED	GABAC de GED		
Message Circuit Number.	Consecutive number of the message in respect of the frequency upon which it is sent and of the station to which it is sent. (The use of this component is not compulsory : it is not used in the U.K.)	—	6 GED		
Preamble	(i) Priority Prefix (if any). (ii) Service Prefix (if any). (iii) Abbreviation indicating office of origin, or abbreviated aircraft call-sign. (iv) Office of origin serial number. (v) Number of words in the text and signature. (vi) Date and time of handing in. (This component is normally only used on messages which are specifically addressed to a particular individual or authority.)	D	D —  GAAB P12 7  141200		
Address	Identity of addressee(s) and of station(s) of destination. Abbreviations or plain language are normally used to express the address. (This component is normally omitted from messages exchanged between an aircraft commander and the ground organisation when the identities of the originator and intended recipient are obvious from the nature of the communication.)	—	Mrs. Jones in GABAC		
Text	Subject matter of the message.	QAH IMI	(6 words of text)		
Signature	Identity of the individual or authority originating the message (use optional).	—	Oswold		

## THE COMPONENTS OF A MESSAGE AND THEIR CONTENTS

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Text	Subject matter of the message.	QAH <u>IMI</u>	(6 words of text)		
Signature	Identity of the individual or authority originating the message (use optional).	—	Oswold		

## CHAPTER IV

### AIR GROUND W/T PROCEDURE

1. This chapter describes the procedure used in the Aeronautical Mobile Radio Service for calling, replying to a call, transmitting a message, requesting and giving corrections or repetitions, and giving receipt, when wireless telegraphy is used. (Throughout the chapter, the term "station" is used to include aircraft as well as ground W/T stations.)

#### Operating signs

2. Operating signs are used to abbreviate certain standard words and phrases which must be frequently employed by operators in connection with the transmission of messages by W/T. The following operating signs are those which are most frequently used; other operating signs and their meanings are listed in Appendix 1.

<i>Operating Sign</i>	<i>Meaning and Use</i>
(i) $\overline{DE}$ .. ..	"From" Used in the call.
(ii) $\overline{AR}$ (written as "+")	"End of transmission". This sign is used to indicate the completion of transmission of a message. It is normally followed by the call-sign of the sending station and the operating sign "K". When a number of messages are sent in series, the call-sign of the sending station and the signal "K" are sent at the end of the series. In such a case, each message in the series is to end with the signal $\overline{AR}$ .
(iii) $\overline{VA}$ .. ..	"End of work". When two stations which have been working together have completed their communication, each station sends $\overline{VA}$ followed by its own call-sign.
(iv) K .. ..	"Invitation to transmit". This sign is used to invite another station to proceed with an expected transmission.
(v) $\overline{AS}$ .. ..	"Wait". This sign is used when the station transmitting it is unable, for any reason to receive traffic from the station to which it is sent. It may be followed by a number indicating the probable duration in minutes, of the period of inability.
(vi) $\overline{IMI}$ .. ..	This sign has three applications:— (a) "Call-sign of unknown station". When a station hears a call addressed to itself but is unable to distinguish the call-sign of the calling station, it must reply immediately, using " $\overline{IMI}$ " in place of the call-sign of the calling station. (b) "Repeat" or "I will repeat", used when an error has been made and is to be corrected, or when some part of a transmission has been imperfectly received and the receiving station requires a repetition. (c) "Note of Interrogation". " $\overline{IMI}$ " may be used to indicate that a question is being asked.

<i>Operating Sign</i>	<i>Meaning and Use</i>
(vii) EEEEEEEEE (at least 8 dots)	.. "Error sign". This sign indicates that an error in transmission has been noticed by the sending operator. After making the sign, the sending operator is to continue transmission, commencing from the last word which was sent correctly.
(viii) $\overline{\text{BT}}$ (written " = ")	.. "Breaksign". Used to separate the message circuit number from the Preamble, the Preamble from the Address, the Address from the Text and the Text from the Signature.

### Q-Code Signals

3. In addition to the operating signs referred to above, International Q-Code signals are used extensively to abbreviate messages relating to communications matters which are exchanged between operators. Q-Code signals are also used by originators in drafting the texts of messages in the International Aeronautical Mobile Radio Service.

### Call-signs

4. The W/T call-signs normally used by ground stations of the Aeronautical Mobile Service are International call-signs which are registered with the International Telecommunications Union and published in the "Berne List".

5. Ground stations normally have three-letter call-signs. Where one ground station operates on several different frequencies, it will use the same three-letter call-sign on each frequency.

6. Aircraft W/T call-signs used in the Aeronautical Mobile Radio Service are normally five-letter call-signs corresponding with the International registration letters of the aircraft concerned. (*See also* paragraph 29.)

### Establishing Communication

7. Before any transmission is made, the station intending to send is to ensure that it will not cause harmful interference with other authorised communications which are in progress within the station's normal communications area. If interference is likely the station is to await the first break in transmission. If two other stations are already in communication their working is not to be interrupted unless emergency conditions exist.

### Calling

8. A station having a message for transmission to another station is to attract the attention of that station and offer the message by transmitting a call which is to be in the following form :—

Call-sign of station called

DE

Call-sign of station calling

Example : **GAZAB DE SEF**

9. If receiving conditions are poor and a longer call appears to be necessary, the calling station may repeat both call-signs three times, thus :—

**GAZAB GAZAB GAZAB DE SEF SEF SEF**

10. The call-signs in any one complete call are not in any circumstances to be repeated more than three times.

11. If no reply is received from the station which is called, the complete call is to be repeated after an interval of two minutes. If no reply is then received, the call is to be repeated again after a further interval of two minutes. Thereafter no further calls are to be made for a period of five minutes, when the previous process may be repeated.

12. If the calling station is reasonably certain that no interference with stations already in communication will be caused, the call may be repeated at shorter intervals than those laid down in paragraph 10 above.

13. If the calling station wishes to indicate that the reply to the call is to be made on a specific frequency (which may differ from that on which the call is made) the appropriate Q-signal and the frequency concerned may be added at the end of the call.

Example : **GAZAB DE SEF QSU 13100 KCS**

14. If the calling station intends to use, for the transmission of its traffic, a frequency which differs from that upon which the call is made, the appropriate Q-signal and the frequency concerned may be added at the end of the call.

Example : **GAZAB DE SEF QSW 7440 KCS**

15. A station which has for transmission a multiple address message intended for two or more stations working on the same frequency, may make a multiple call in which all of the call-signs of the stations concerned are included.

Example : **GAZAB GEHAA GDFEH DE SEF**

### Replying to a Call

16. If the station called is ready to receive traffic, it is to transmit a reply, in the following form :—

Call-sign of calling station

DE

Call-sign of station replying.

The invitation to transmit sign “ K ”.

Example : **SEF DE GAZAB K**

17. Optionally, the strength of the calling station's signals, or any other information relating to its transmission, may be indicated in the reply by using the appropriate Q-signal, preceding the operating sign “ K ” thus :—

**SEF DE GAZAB QSA3 QRI K**

18. If the station called is not ready to receive, a reply is to be transmitted in the following form :—

Call-sign of calling station

DE

Call-sign of station replying.

The operating sign  $\overline{AS}$  followed by a number indicating in minutes the probable duration of the delay.

Example : **SEF DE GAZAB  $\overline{AS}$  5 +**

19. If the probable duration of the delay exceeds 10 minutes, the reason for the delay is to be briefly stated.

Example : **SEF DE GAZAB  $\overline{AS}$  15 QRM +**

20. When a station hears a call without being certain that this call is intended for it, no reply is to be made until the call is repeated and is understood.

21. When a station receives a call addressed to itself, but is unable to distinguish the call-sign of the calling station, it is to reply immediately, using the sign “  $\overline{IMI}$  ” in place of the call-sign of the calling station.

Example :  **$\overline{IMI}$  DE SEF K**

22. If the calling station has indicated in the call that it intends to transmit its traffic on a frequency other than that upon which the call was made, and the called station agrees with this intention, the reply is to contain the appropriate Q-signal indicating that the receiving station is changing to the frequency nominated, followed by the frequency concerned and the operating sign K.

Example : **SEF DE GAZAB QSY 13500 KCS K**

23. If the called station is not in agreement to use a frequency nominated by the calling station in the call, it is to advise the calling station of the frequency upon which it wishes traffic to be transmitted by including in the reply the appropriate Q-signal, and the frequency desired.

Example : **SEF DE GAZAB QSU 7450 KCS K**

24. When a multiple call is made, the stations called are to reply in the order in which their call-signs appeared in the call.

Example : *call*       **GAZAB GDFEH GEHAA DE SEF**  
*replies* **SEF DE GAZAB K**  
**SEF DE GDFEH K**  
**SEF DE GEHAA AS 2 +**

### General Calls

25. If a station wishes to establish contact with any station (irrespective of the identity of that station) which may be able to hear its transmissions, it is to make a call as follows :—

The general call signal, CQ

DE

Call-sign of calling station

The invitation to transmit sign “ K ”.

Example : **CQ DE GAZAB K**

25A. In regions where W/T traffic is congested the use of the call “ CQ ” followed by “ K ” is forbidden. As an exception it may be used with signals denoting urgency.

26. Any station which hears a call made in this form, and which is in a position to work with the calling station is to make a reply in the normal manner, thus :—

**GAZAB DE SUM K**

27. If the calling station wishes to communicate with the station which replies, its next transmission is to commence with a normal call, thus :—

**SUM DE GAZAB** ..... (remainder of transmission).

28. A station which makes a call as the preliminary to a scheduled broadcast which is intended to be read by any station which is able to do so, is to use the signal “ CQ ” as the call-sign of the station called. In this case the operating sign “ K ” is not used, since no replies are expected.

Example : **CQ CQ CQ DE GHK GHK GHK** (the whole repeated three times).

29. During the process of establishing communication between an aircraft and a ground station by calling and replying to the call, the full call-sign of the aircraft is to be used. When communication has been satisfactorily established, an abridged call-sign for the aircraft, consisting of the first letter and the last two letters of the complete five-letter aircraft call-sign, may be used, provided that there is no possibility of confusion arising.

Example : (Call)

**GAZAB DE SEF**

(Reply)

**SEF DE GAZAB QSA 4 QRI K**

(Further transmission)

**GAB DE SEF** (message) .....

(Reply)

**SEF DE GAB** (reply) .....

30.

**Transmission of Messages**

31. The calling station is not to proceed with the transmission of a message until a reply, containing the "invitation to transmit" sign has been received.

32. After communication has been established, continuous two-way working is to be conducted without further identification of the stations working and without further call up, until the termination of the contact. However, if there is any likelihood of a mistake being made in the identity of either station, further calls may be made as necessary.

33. After receiving the invitation to transmit, the calling station is to proceed immediately with the transmission of the message, commencing with the message circuit number.

34. The breaksign,  $\overline{\text{BT}}$  (written as "=") is used to separate the message circuit number from the preamble of the message, the preamble from the address, the address from the text and the text from the signature.

35. The completion of the transmission of a message is indicated by the "End of transmission" sign  $\overline{\text{AR}}$  (written as "+") which is normally followed by the call-sign of the sending station and the invitation to transmit, "K". (See, however, paragraph 48.)

36. If conditions are normal and the message is received perfectly at the first transmission, the complete sequence of transmission of a call, reply and message, upon the same frequency is as follows:—

**EXAMPLES OF MESSAGES (NOT SPECIFICALLY ADDRESSED TO A PARTICULAR PERSON OR AUTHORITY) SENT WITHOUT CORRECTIONS**

(1)

<i>Initial Call</i>	..	..	..	<b>SEF DE GAZAB</b>
<i>Reply</i>	..	..	..	<b>GAZAB DE SEF K</b>
<i>Message :</i>				
Call	..	..	..	<b>SEF DE GAB</b>
Breaksign	..	..	..	<b>=</b>
Text	..	..	..	<b>QTF <math>\overline{\text{MI}}</math></b>
End of transmission sign	..	..	..	<b>+</b>
Call-sign of sending station..	..	..	..	<b>GAB</b>
Invitation to transmit	..	..	..	<b>K</b>

(2)

<i>Initial Call</i>	..	..	..	<b>SEF DE GAZAB</b>
<i>Reply</i>	..	..	..	<b>GAZAB DE SEF K</b>
<i>Message :</i>				
Call	..	..	..	<b>SEF DE GAB</b>
Message Cct. No.	..	..	..	<b>3 GAB</b>
Breaksign	..	..	..	<b>=</b>
Priority prefix (preamble)	..	..	..	<b>D</b>
Breaksign	..	..	..	<b>=</b>
Text	..	..	..	<b>QAZ QAL LYDDA ETA 1200</b>
End of transmission sign	..	..	..	<b>+</b>
Call-sign of sending station..	..	..	..	<b>GAB</b>
Invitation to transmit	..	..	..	<b>K</b>

(3)

*Initial Call* .. .. **GAZAB DE SEF**  
*Reply* .. .. **SEF DE GAZAB K**  
*Message :*  
 Call .. .. **GAB DE SEF**  
 Message Cct. No. .. .. **8 SEF**  
 Breaksign .. .. =  
 (No preamble)  
 (No address)  
 Text .. .. Refuelling arranged as requested.  
 Breaksign .. .. =  
 Signature (if used) .. .. **CHEF ALMAZA**  
 End of transmission sign .. +  
 Call-sign of sending station.. **SEF**  
 Invitation to transmit .. **K**

**EXAMPLE OF NORMAL (MESSAGE SPECIFICALLY ADDRESSED)  
 SENT WITHOUT CORRECTIONS**

*Call* .. .. **GAZAB DE SEF**  
*Reply* .. .. **SEF DE GAZAB K**  
*Message :*  
 Message Cct. No. .. .. **6 SEF**  
 Breaksign .. .. =  
 Preamble .. .. **OFHF A23 13 141519**  
 Breaksign .. .. =  
 Address .. .. **Colonel Brown in GAZAB**  
 Breaksign .. .. =  
 Text .. .. **(12 words)**  
 Breaksign .. .. =  
 Signature .. .. **PRUNE**  
 End of transmission sign .. +  
 Call-sign of sending station.. **SEF**  
 Invitation to transmit .. **K**

**Giving Receipt**

37. If the receiving operator is satisfied with his receipt of a message, and, if the word-count quoted (when used) agrees with the number of words in the text and signature as received by him, he is to give receipt by transmitting the operating sign " R " followed by the message circuit number, or the abbreviation for the office of origin and office of origin serial number of the message received, followed by the end of transmission sign or the end of work sign as appropriate.

Example : **R OFHF A23 + GAB K**  
 or **R SSEF VA GAB**  
 or **R 3GAB + SEF K**

38. If the message concerned did not contain either a message circuit number or a preamble including an abbreviation for the office of origin and serial number, the operating sign " R " is to be used alone.

Example :  
 Message **GAB DE SEF QAL + SEF K**  
 (Receipt) **SEF DE GAB R VA GAB**

39. If the message has been sent on the same frequency to more than one station, the receiving stations concerned are to give receipt, or ask for any corrections necessary, in the order in which their call-signs appeared in the call.

40. A receipt is to be given for every message or series of messages and for every abbreviation or Q-signal containing information or instructions.

41. If a word-count is included in the message and if the number of words in the text and signature received do not agree with the number stated, the receiving operator is to query the word-count with the sending station by transmitting:—

the operating sign “ W ”

the number of words received

the Interrogative sign IMI

Thus: “ W 10 IMI + K ”

42. The sending operator is to check his copy of the message against the word-count originally sent. If the word-count was incorrect it may be necessary for a query to be referred back to the source from which the sending station originally received it. If, however, the message is obviously complete and an error in counting the words has been made at the sending station itself, after clearing the error locally, the sending operator is to correct the word-count by transmitting:—

the operating sign “ C ”

the operating sign “ W ”

the correct word-count.

Thus: “ C W 10 + K ”

43. If the sending operator finds that the word-count was correct as sent, and the receiving operator has obviously received the message incorrectly, he is to transmit the Q-signal “ QTB ” followed by the first letter of each word and the first figure of each number thus:—

“ QTB A C F 3 H 4 5 M I R I P + K ”

44. The receiving operator will relate these initials to the words received by him and will detect any errors in his reception or spacing of words. He is to request any necessary corrections in the normal manner (*see* Article 45).

### Obtaining Corrections or Repetitions before Receipt is given

45. If the receiving operator is not satisfied with his reception of the message and wishes to ask for a part or parts of the message to be repeated, he may do so by transmitting any of the following abbreviations, as appropriate:—

AA	<u>IMI</u>	..	..	(Meaning) Repeat all after .....
AB	<u>IMI</u>	..	..	Repeat all before .....
AL	<u>IMI</u>	..	..	Repeat all that has just been sent
BN	<u>IMI</u>	..	..	Repeat all between ..... and .....
WA	<u>IMI</u>	..	..	Repeat the word after .....
WB	<u>IMI</u>	..	..	Repeat the word before .....
ABV	..	..	..	Repeat the figures in abbreviated form
ADR	<u>IMI</u>	..	..	Repeat the address
PBL	<u>IMI</u>	..	..	Repeat the preamble
SIG	<u>IMI</u>	..	..	Repeat the signature
TXT	<u>IMI</u>	..	..	Repeat the text

Examples:

“ AA IMI London Airport ” means “ repeat all after London Airport ”.

“ BN IMI left landed ” means “ repeat all between ‘ left ’ and ‘ landed ’.”

### Obtaining Corrections or Repetitions after Receipt has been given

46. After receipt has been given for a message, any requests for corrections or repetitions which may then be found necessary are to be made by Service message or by use of the appropriate Q-signal and not by means of the abbreviations listed in paragraph 45 and Appendix I.

**Corrections made by the Sending Operator during Transmission of a Message**

47. If the sending operator makes an obvious error during transmission and can correct it immediately, he is to do so by sending the error sign (at least eight dots) and then resuming transmission, commencing from the last word which he sent correctly.

Example : “ arrived 1600 EEEEEEEEEEEEEEEEE arrived 1609 ”.

48. If, when he has reached the end of the message, the sending operator finds that an error has been made which he did not correct during transmission, he may include an appropriate correction after the “ end of transmission sign ” which marks the end of the message. If this is done, the call-sign of the sending station is omitted after this “ end of transmission ” sign, but another “ end of transmission sign ” is sent after the corrections have been made, and this is accompanied by the call-sign of the sending station and the operating sign “ K ”.

Example :

“ ..... TEXT = PRUNE + SIG PREWN + SEF K ”.

**EXAMPLES OF MESSAGES SENT WITH CORRECTIONS**

				(1)
<i>Initial Call</i>	..	..	..	GAZAB DE SEF
<i>Reply</i>	..	..	..	SEF DE GAZAB K
<i>Message</i>	..	..	..	GAB DE SEF QAG Birmingham 1450 EEEEEEEEEEE Birmingham 1430 + SEF.
<i>Receipt</i>	..	..	..	SEF DE GAB R <u>VA</u> GAB
				(2)
<i>Initial Call</i>	..	..	..	GAZAB DE SEF
<i>Reply</i>	..	..	..	SEF DE GAZAB K
<i>Message</i>	..	..	..	GAB DE SEF = Refuelling cannot be arranged by 1930 + WA by 1900 + SEF K.
<i>Receipt</i>	..	..	..	SEF DE GAB R <u>VA</u> GAB
				(3)
<i>Initial Call</i>	..	..	..	GAZAB DE SEF
<i>Reply</i>	..	..	..	SEF DE GAZAB K
<i>Message</i>	..	..	..	GAB DE SEF 9 SEF = OFHF A24 141555 = Colonel Brown in GAZAB = Smith will join at Orly as requested = Satterthworte + SIG Satterthwaite + SEF K
<i>Request for repetition</i>	..	..	..	SEF DE GAB WA at <u>IMI</u>
<i>Repetition</i>	..	..	..	GAB DE SEF WA at ORLY
<i>Receipt</i>	..	..	..	SEF DE GAB R 9 SEF + GAB K or SEF DE GAB R OFHF A24 + GAB K

## CHAPTER V

### RADIO TELEPHONY PROCEDURE

1. This Chapter describes the procedure used in the International Aeronautical Mobile Radio Service for calling, replying to a call, transmitting a message, requesting and giving corrections or repetitions, and giving receipt or acknowledgement when radio-telephony is used.

(Throughout the Chapter the term "station" is used to include aircraft as well as ground radio-telephony stations.)

#### Standard phrases

2. A number of standard abbreviated phrases are used frequently in connection with the transmission of messages by R/T. These phrases are as follows:—

<i>Phrase</i>	<i>Meaning</i>
(i) <b>ROGER</b> .. .. .	I have received all of your last transmission.
(ii) <b>WILCO</b> .. .. .	Your last message (or message indicated) received, understood and (where applicable) will be complied with.
(iii) <b>STANDBY</b> .. .. .	Standby.
(iv) <b>REPEAT</b> .. .. .	Repeat.
(v) <b>VERIFY</b> .. .. .	Check coding, check text (subject matter) with the originator and send correct version.
(vi) <b>SEND YOUR MESSAGE</b> .. .. .	I am ready for you to transmit.
(vii) <b>READ BACK</b> .. .. .	Repeat all of this message back to me exactly as received after I have given "OVER".
(viii) <b>THAT IS CORRECT</b> .. .. .	That is correct.
(ix) <b>CORRECTION</b> .. .. .	An error has been made in this transmission (or message indicated). The correct version is .....
(x) <b>BREAK</b> .. .. .	I hereby indicate the separation between portions of the message.
(xi) <b>OVER</b> .. .. .	My transmission is ended and I expect <del>an</del> <sup>it</sup> response from you.
(xii) <b>OUT</b> .. .. .	This conversation is ended and <del>the</del> <sup>no</sup> response is expected.
(xiii) <b>WORDS TWICE</b> .. .. .	Reception is difficult. Repeat each word or phrase in your transmissions twice.

#### Call-signs

3. The R/T call-sign normally used by ground radio stations of the Aeronautical Mobile Service consists of the place-name of the station followed by the word "Radio". When the ground station concerned is located in or associated with the air traffic control tower at an aerodrome, the R/T call-sign used is the aerodrome name followed by the word "Tower".

Examples :

New York Radio Station .. .. . "NEW YORK RADIO"  
 La Guardia Aerodrome Control Tower.. "LA GUARDIA TOWER"

4. Aircraft R/T call-signs consist of an abbreviation representing the name of the commercial company which operates the aircraft, followed by either

(i) the aircraft registration letters

or (ii) the trip number allotted to the aircraft.

Examples :

(i) " BRITAIR GABCD "

or (ii) " BRITAIR ONE FIVE "

(See also paragraph 14.)

### Phonetic alphabet

5. Whenever isolated letters or groups of letters have to be pronounced, or when proper names, abbreviations or words which are difficult to receive, require to be spelled out, the following " phonetic alphabet " is to be used for this purpose :—

A	—	ABLE	M	—	MIKE
B	—	BAKER	N	—	NAN
C	—	CHARLIE	O	—	OBOE
D	—	DOG	P	—	PETER
E	—	EASY	Q	—	QUEEN
F	—	FOX	R	—	ROGER
G	—	GEORGE	S	—	SUGAR
H	—	HOW	T	—	TARE
I	—	ITEM	U	—	UNCLE
J	—	JIG	V	—	VICTOR
K	—	KING	W	—	WILLIAM
L	—	LOVE	X	—	XRAY
			Y	—	YOKE
			Z	—	ZEBRA

#### Example :

The aircraft call-sign " **Britair GABCD** " in paragraph 4 above would be spoken as " **BRITAIR GEORGE ABLE BAKER CHARLIE DOG** ".

6. The digit " 0 " is to be spoken as " ZERO " when it occurs alone or in a group of numbers. All numbers are to be spoken individually.

#### Example :

" **1500** " is spoken as " **one five zero zero** ".

### Establishing Communication

7. Radio-telephony communications between aircraft and aeronautical ground stations are normally to be exchanged in the language appropriate to the ground station. In the International Mobile Radio Service, the English language will also normally be used if the aircraft asks for this to be done. In English-speaking countries, French is used as an alternative language.

8. Before any transmission is made, the station intending to transmit is to ensure that it will not cause harmful interference with other authorised communications which are in progress within the station's normal communications area. If interference is likely, the station is to await the first break in transmission. If two other stations are already in communication, their working is not to be interrupted unless emergency conditions exist.

9. A station desiring to establish communication with another station may attract the attention of that station by transmitting a simple initial call which is to be in the following form :—

- Call-sign of station called.
- Call-sign of station calling.
- The word " Calling ".
- The invitation to reply, " OVER ".

Example :

**" BRITAIR GABCD NEW YORK RADIO CALLING OVER "**.

10. The same form of initial call is to be used whenever it is desired to establish or to re-establish communication.

11. If the station which makes the initial call has a message on hand for transmission, this may be indicated in the call by the use of the phrase " MESSAGE FOR YOU " as follows :—

- Call-sign of station called.
- Call-sign of station calling.
- The phrase " message for you ".
- The invitation to reply " OVER ".

Example :

**" BRITAIR GABAC NEW YORK RADIO CALLING MESSAGE FOR YOU OVER "**.

### Replying to a Call

12. The station called is to reply to a simple initial call in the following form :—

- Call-sign of calling station.
- Call-sign of station answering.
- The word " Answering ".
- The invitation to transmit, " OVER ".

Example :

**" NEW YORK RADIO BRITAIR GABCD ANSWERING OVER "**.

13. If a message has been offered in the initial call and if the station called is ready to receive the message, the replying is to include the phrase " SEND YOUR MESSAGE " and will be in the following form :—

- Call-sign of calling station.
- Call-sign of station answering.
- The phrase " send your message ".
- The invitation to transmit " OVER ".

### Abbreviated Calls

14. After communication has been established satisfactorily by means of a complete initial call and reply, an abridged call-sign for the aircraft, consisting of the abbreviation representing the name of the operating company, followed by the last two letters of the aircraft call-sign may be used, in subsequent initial calls provided that there is no possibility of confusion arising.

Example :

**" BRITAIR CD "** would be used instead of **" BRITAIR GABCD "**, the letters " CD " being spoken as " Charlie Dog ".

### Transmission of Messages

15. R/T messages consist of short, concise sentences in plain language, representing the text only. The message circuit number, preamble, address and signature which are used in W/T messages are seldom included in R/T messages.

16. If it is reasonably certain that the station called will receive the initial call, the calling station may follow the first call with the message, without waiting for a reply from the station called.

Example :

**BRITAIR GABCD**  
**NEW YORK RADIO CALLING**  
**Are you flying in cloud OVER.**

17. If a reply from the station called is awaited before transmission of the message commenced, the calling station is to proceed with the message as soon as the invitation to transmit is received.

Example :

*Initial Call* .. .. " **LAGUARDIA TOWER**  
**BRITAIR TWO ONE CALLING**  
**MESSAGE FOR YOU OVER "**."  
*Reply* .. .. " **BRITAIR TWO ONE**  
**LAGUARDIA TOWER ANSWERING**  
**SEND YOUR MESSAGE OVER "**."  
*Message* .. .. " **LAGUARDIA TOWER**  
**BRITAIR TWO ONE CALLING**  
**AM I CLEARED TO LAND OVER "**."

18. After communication has been satisfactorily established by means of an initial call, continuous two-way communication may be conducted without further identification by call-signs until the termination of the contact, provided that no mistake in identity is liable to occur. However, if communication should lapse for any reason (for example, because, for a period, neither station has a message to transmit, or in the case of communication being interrupted to enable one of the communicating stations to call or answer a third station) an initial call should be made to re-establish communication. This initial call is to contain the full or abbreviated call-signs of both called and calling stations.

Example :

*Initial Call* .. .. " **BRITAIR GABAC**  
**LAGUARDIA TOWER CALLING**  
**MESSAGE FOR YOU OVER "**."  
*Reply* .. .. " **LAGUARDIA TOWER**  
**BRITAIR AC ANSWERING**  
**SEND YOUR MESSAGE OVER "**."  
*Message* .. .. " **BRITAIR AC**  
**LAGUARDIA TOWER CALLING**  
**What is your altitude OVER "**."  
*Response* .. .. " **ROGER altitude 1,000 metres OVER "**."  
*Further message* .. " **ROGER climb to 1,500 metres OVER "**."  
*Receipt and acknowledgement.* " **WILCO OUT "**  
*Initial Call* .. .. " **LAGUARDIA TOWER**  
**BRITAIR AC CALLING**  
**MESSAGE FOR YOU OVER "**."  
*Reply* .. .. " **BRITAIR AC**  
**LAGUARDIA TOWER ANSWERING**  
**SEND YOUR MESSAGE OVER "**."  
*Message* .. .. " **MY ETA LA GUARDIA 1530 OVER "**."  
*Receipt* .. .. " **ROGER OUT "**."

19. If an R/T message contains other components (i.e. message circuit number, preamble, address, or signature) in addition to the text, the word "BREAK" is to be used to separate each component from the adjacent components.

20. R/T transmissions are normally to conclude with one of the phrases "OVER" or "OUT" as applicable. "OVER" is to be used when a response is expected from the station called, "OUT" when no response is expected.

21. When communication is difficult, phrases, words or groups may be transmitted twice. When this is necessary, the station experiencing difficult reception is to make use of the phrase "WORDS TWICE". The sending station is thereafter to speak each word or each phrase (as is most convenient) twice in all subsequent transmissions until advised that reception is normal.

Example :

**BRITAIR CD**  
**LAGUARDIA TOWER CALLING**  
**WORDS TWICE OVER.**

**LAGUARDIA TOWER**  
**BRITAIR CD ANSWERING**  
**ROGER ROGER My present endurance four hours**  
**My present endurance four hours**  
**OVER OVER.**

#### **Giving Receipt**

22. If the receiving station has received a message satisfactorily, and provided that the message concerned did not contain orders or requests which are to be complied with by the recipient, receipt for the message is to be given by means of the word "ROGER".

23. If a message containing orders or requests, which are to be complied with by the recipient, is satisfactorily received and if the recipient wishes to indicate that he will comply with the orders or requests, receipt is to be given for the message by means of the word "WILCO". As the meaning of "ROGER" is included in that of "WILCO", the two words are never used together.

Examples :

(i) (Message) .. .. **BRITAIR CD**  
**LA GUARDIA TOWER CALLING**  
**You are over the aerodrome OVER.**

(Receipt) .. .. **LA GUARDIA TOWER**  
**BRITAIR CD ANSWERING**  
**ROGER OUT.**

(ii) (Message) .. .. **BRITAIR CD**  
**LA GUARDIA TOWER CALLING**  
**Circle the aerodrome OVER.**

(Receipt) .. .. **LA GUARDIA TOWER**  
**BRITAIR CD ANSWERING**  
**WILCO OUT**

#### **Corrections made by the Sending Station during Transmission**

24. If an error is made by the sending station during transmission, this may be corrected immediately by using the word "CORRECTION".

Example :

**"..... Flying under visual flight correction under instrument flight rules is compulsory ....."**

**Obtaining Corrections or Repetitions before giving Receipt**

25. If the receiving station is not satisfied with the accuracy of a message as this has been received, a repetition of the whole message or of a doubtful part or parts of the message is to be requested by use of the word "REPEAT" as follows :—

- (i) "REPEAT", not followed by the identity of a part of the message means "Repeat the whole of the message".
- (ii) "REPEAT ALL BEFORE ....."  
"REPEAT ALL AFTER ....."  
"REPEAT ..... TO ....."  
are used, as convenient, to request repetition of a particular part of the message.
- (iii) If it is more convenient a repetition of specific items in the message may be requested by name.

Example :

**"REPEAT ALTITUDE : REPEAT POSITION".**

26. Repetitions should only be made if so requested by the receiving station by means of the phrase "WORDS TWICE" or the word "REPEAT".

Examples :

**LA GUARDIA TOWER  
BRITAIR CD CALLING  
My altitnde is 2,000 metres OVER.**

**BRITAIR CD  
LA GUARDIA TOWER ANSWERING  
Repeat OVER.**

**LA GUARDIA TOWER  
BRITAIR CD CALLING  
My altitude is 2,000 metres OVER.**

**BRITAIR CD  
LAGUARDIA TOWER ANSWERING  
Repeat all after altitude OVER.**

**LAGUARDIA TOWER  
BRITAIR CD CALLING  
All after altitude .... is 2,000 metres OVER.**

**BRITAIR CD  
LAGUARDIA TOWER ANSWERING  
ROGER OUT.**

## CHAPTER VI

### DISTRESS, URGENCY AND SAFETY COMMUNICATIONS

1. This Chapter contains detailed instructions for the transmission of Distress Calls, Distress Messages, Urgency and Safety Messages and Distress Traffic, all of which are defined under "Categories of Messages" in Chapter I.

#### Distress Calls

2. When an aircraft is threatened by serious and imminent danger and requires immediate assistance the person in command of the aircraft will order the transmission of a "Distress Call" which is to be in the following form:—

- (i) *By W/T* :  $\overline{\text{SOS}} \overline{\text{SOS}} \overline{\text{SOS}}$   
 DE  
 The Aircraft call sign (sent three times)  
 A 20-seconds dash  
 The Aircraft call sign (sent once only).

Example :

**$\overline{\text{SOS}} \overline{\text{SOS}} \overline{\text{SOS}} \text{ DE GABAZ GABAZ GABAZ (20-seconds dash) GABAZ}$**

- (ii) *By V.H.F. R/T* : MAYDAY MAYDAY MAYDAY  
 The Aircraft call sign (spoken three times).  
 The word "Calling".

Example :

**MAYDAY MAYDAY MAYDAY BRITAIR GABHZ BRITAIR GABHZ  
 BRITAIR GABHZ CALLING**

- (iii) *By H/F R/T* : MAYDAY MAYDAY MAYDAY  
 Aircraft call sign (spoken three times).  
 The word "Calling".  
 A 20-seconds period during which no spoken transmission is made but the aircraft transmitter continues to radiate its carrier wave.  
 The call sign of the aircraft (spoken once).

Example :

**MAYDAY MAYDAY MAYDAY  
 BRITAIR GAZAB BRITAIR GAZAB BRITAIR GAZAB CALLING  
 (20-seconds period during which aircraft radiates unmodulated carrier wave.)  
 BRITAIR GAZAB.**

3. If automatic emergency equipment is provided, this is to be turned on before the Distress Call is transmitted.

4. The first transmission by the aircraft will be on the designated air-ground frequency appropriate to the route over which the aircraft is flying. If the aircraft is unable to establish communication on this frequency, one or more of the following will be used :—

- (i) The International distress frequency 500 kcs.

*Note.*—International silence periods are observed on 500 kcs. from 15 to 18 and from 45 to 48 minutes past each hour. Distress calls transmitted during these periods would have maximum effectiveness. When the Distress Call is transmitted on 500 kcs. it should, if practicable, be preceded by the automatic alarm signal of 12, four-second dashes in one minute, with intervals of one second between each dash.

- (ii) The general calling frequency of the Aeronautical Mobile Radio Service, 6210 kcs.  
 (iii) Any other available frequency, in an effort to establish communication with a ground or ship station.

### **Distress Messages**

5. If time permits, the Distress Call will be followed by a Distress Message, the text of which will be in the following form :—

- (i) Best estimated position and time thereof.  
 (ii) Course and speed.  
 (iii) Altitude of the aircraft.  
 (iv) Nature of distress.  
 (v) Intention of aircraft commander (such as forced alighting on the sea, crash-landing or baling out).

6. The Distress Call and Message is, where possible, to be repeated at intervals until an answer has been received.

### **EXAMPLE OF DISTRESS CALL FOLLOWED BY DISTRESS MESSAGE :—**

- (i) *By W/T :*             $\overline{\text{SOS}}$   $\overline{\text{SOS}}$   $\overline{\text{SOS}}$  de GABCD GABCD GABCD 20-seconds dash  
                               GABCD QTH 15 KM Bexhill QTI 270 QTJ 200 KTS  
                               ENGINE FAILURE QUG +.
- (ii) *By V.H.F. R/T :* MAYDAY MAYDAY MAYDAY BRITAIR GABCD BRITAIR  
                               GABCD BRITAIR GABCD CALLING My position 15 kilo-  
                               metres south east Bexhill course 270 speed 200 knots Engine  
                               failure ditching OVER.
- (iii) *By H/F R/T :*    MAYDAY MAYDAY MAYDAY BRITAIR GABCD BRITAIR  
                               GABCD BRITAIR GABCD CALLING (20-seconds period  
                               during which aircraft radiates unmodulated carrier wave)  
                               BRITAIR GABCD My position 15 kilometres south east Bexhil  
                               course 270, speed 200 knots engine failure ditching OVER.

### **Expressing the Aircraft's Position**

7. As a general rule, an aircraft flying over the sea is to signal its position in latitude and longitude (Greenwich). In some cases, the true bearing and distance in nautical miles (unless otherwise stated in the message) of the aircraft from some known geographical point may be given.

8. When the position is expressed in latitude and longitude in a W/T transmission, a group of four figures, followed by the letters "N" or "S" is to be used for latitude, and a group of four figures followed by the letters "E" or "W" for longitude. In a R/T transmission, the words "North" or "South", "East" or "West" are to be used in full.

9. As a general rule, an aircraft flying over land will signal its position as follows :—

- (i) Name of nearest reference point.
- (ii) Distance of aircraft from this point.
- (iii) Direction of aircraft from this point.

(In a W/T transmission, the direction will be indicated by the letters N, S, E or W, or the letters appropriate to the 16 cardinal points of the compass. In a R/T transmission the words " North ", " South ", " East " or " West " or words appropriate to the intermediate directions will be used.)

9A. Alternatively, if it should be more convenient, an aircraft flying over land may signal its position in terms of latitude and longitude.

### **Forced-landing or Crash-landing**

10. Immediately prior to making a forced or crash landing, the person in command of the aircraft, or the radio operator is to secure the W/T key in the closed position. If the aircraft is equipped with R/T the person in command will use any means available to obtain continuous transmission. In both cases, the steady transmission resulting will enable any available direction-finding stations to continue to take bearings on the aircraft until the last possible moment.

### **Distress Call or Message transmitted on behalf of another aircraft**

11. Should the Commander of one aircraft become aware that another aircraft is in distress, he may order the transmission of a distress call and/or distress message (making clear the identity of the aircraft which is, in fact, in distress) if the following circumstances obtain :

- (a) the aircraft in distress is not itself in a position to transmit it ; or
- (b) the commander of the aircraft which proposes to make the transmission believes that further help is necessary.

#### Example :

Aircraft GABAC observes that another aircraft GAZED has crash-landed and is aware that GAZED did not transmit a distress call or message. GABAC transmits :—

(i) *By W/T :*        **SOS SOS SOS DE GABAC GABAC GABAC 20 seconds  
dash GABAC = GAZED GAZED crash landed QTH  
GAZED DOVER 10Km. NNE survivors seen +.**

(ii) *By H/F R/T :* **MAYDAY MAYDAY MAYDAY BRITAIR GABAC  
BRITAIR GABAC BRITAIR GABAC CALLING. (Twenty-  
second period during which aircraft radiates unmodulated  
carrier wave.) BRITAIR GABAC BREAK BRITAIR  
GAZED BRITAIR GAZED crash landed position  
10 Kilometres North North East DOVER survivors  
seen OVER**

### **Giving Receipt for a Distress Message**

12. When a distress message is transmitted, the ground station of the Aeronautical Service which was last in communication with the distressed aircraft is to give receipt at once, if the message has been satisfactorily received. Other stations of the Aeronautical Service which have received the distress message are to wait a reasonable period of time before commencing to give receipt so that the station having primary responsibility may have the opportunity to give receipt without interference. If, however, that station fails to give receipt in a reasonable time (in which case it may be assumed that it has not received the distress message) any other station which is in a position to do so is to give receipt to the aircraft.

13. Receipt is to be given for a Distress Message in the following form :—

- (a) *By W/T* : Call-sign of the aircraft in distress (sent three times).  
 DE  
 Call-sign of the station giving receipt (sent three times).  
 The operating sign " R " (sent three times).  
 The Distress signal SOS

Example :

**GABAC GABAC GABAC DE GED GED GED RRR SOS +.**

- (b) *By R/T* : Call-sign of the aircraft in distress (spoken three times).  
 Call-sign of the station giving receipt (spoken three times).  
 The word " Answering ".  
 The word " Roger ".  
 The word " Mayday ".

Example :

**BRITAIR AC BRITAIR AC BRITAIR AC CROYDON RADIO CROYDON  
 RADIO CROYDON RADIO ANSWERING ROGER MAYDAY OVER.**

#### **Action by a Station receiving a Distress Call or Message**

14. Upon receipt of a distress call or message, the air-ground control radio station is to forward the information available, immediately, to the air traffic control officer or other responsible authority and is also to take immediate action as follows :—

- (a) Continue to guard the aircraft frequency last used and, as far as possible, all other frequencies which may be used by the particular aircraft in distress on the route which it is flying. Under no circumstances is the frequency last used by the aircraft to be left unguarded. A continuous watch is to be set immediately on the authorised International distress frequencies.
- (b) Warn any D/F stations with which the control station can communicate.
- (c) Handle the distress traffic to or from the aircraft.

#### **Distress traffic**

15. Any communications subsequent to the Distress Call (when sent without a Distress Message) or to the Distress Message, which relate to the immediate assistance required, or are exchanged with the distressed aircraft during the period of distress are described collectively as " Distress Traffic ".

16. Every message relating to distress conditions is to contain the Distress signal (SOS or MAYDAY) preceding the call and repeated at the beginning of the preamble.

#### **Cancellation of Distress**

17. If the distress conditions cease to exist, the aircraft is to transmit a message, cancelling the state of distress, upon the frequency on which the distress call and/or Distress Message was transmitted.

18. When it is no longer necessary for other stations to observe silence, or when the distress traffic is ended, the station which has controlled the distress traffic is to send, on the distress frequency (and, where necessary, on the frequency which has been used for the distress traffic) a message addressed to all stations (using the collective call " CQ ") indicating that the distress traffic is ended.

19. This message is to be in the following form :—

- (a) *By W/T* : **SOS** (sent three times).  
**CQ** (sent three times).  
**DE**.  
 Call-sign of station transmitting (once).  
 Time of filing of the message.  
 Name and call-sign of the aircraft which was in distress (once).  
 The Q-signal "QUM".
- (b) *By R/T* : **MAYDAY** (spoken three times).  
 Call-sign of station transmitting (once).  
 The word "Calling".  
 Name and call sign of the aircraft which was in distress.  
 The words "Distress traffic ended".

Examples :

**Aircraft**

- (a) *By W/T* : **SOS GED DE GABAC QTA Distress motors running again +.**
- (b) *By R/T* : **MAYDAY CROYDON RADIO BRITAIR AC CALLING CANCEL DISTRESS CALL MOTORS RUNNING AGAIN OVER.**

**Groundstation**

- (a) *By W/T* : **SOS SOS SOS CQ CQ CQ DE GED 1015 BRITAIR GABAC QUM VA GED.**
- (b) *By R/T* : **MAYDAY MAYDAY MAYDAY CROYDON RADIO CALLING BRITAIR GABAC DISTRESS TRAFFIC ENDED BRITAIR GABAC DISTRESS TRAFFIC ENDED OUT**

20. If the air-ground control radio station has no facilities for transmission on the International Distress frequency, the rescue service or other agency having the frequency available is to be requested to transmit the message announcing the cessation of distress traffic.

21. The speed of transmission of all distress communications is not normally to exceed 16 words per minute.

**Urgency Messages**

22. Urgency Messages are messages concerning the safety of a ship, aircraft or other vehicle or of some person on board or within sight.

23. The International Urgency Signal ("XXX", sent three times, in the case of W/T or the word "PAN", spoken three times, by R/T) is to precede the call of all Urgency Messages. This identifies the type of message, indicates the condition of urgency which exists and ensures that the urgency message will not be interfered with.

24. The Urgency signal secures precedence in communication over all other communications except Distress Calls, Distress Messages and Distress Traffic.

25. Stations which hear the urgency signal are to take care not to interfere with the transmission of messages which follow the urgency signal. Such stations are to listen out for a period of at least three minutes. If no urgency message has been heard before the end of this period, the stations may resume their normal service.

25a. As a general rule, urgency messages are addressed to a specific station: this may be indicated in the call only and the message may not necessarily contain an "address" component.

26. Receipt is given for urgency messages in the normal manner. (See Chapter IV, paragraph 37.)

27. The speed of transmission of "Urgency" messages is not normally to exceed 16 words per minute.

28. When urgency messages are transmitted in the Aeronautical Fixed Service (as opposed to the Aeronautical Mobile Service) they contain the Service Prefix "SVH".

### EXAMPLE OF URGENCY MESSAGE

(i) *By W/T* : **XXX XXX XXX GED GED GED DE GABCD GABCD GABCD =  
QBD 20 MINS QTF IMI +.**

(ii) *By R/T* : **PAN PAN PAN CROYDON RADIO CROYDON RADIO CROYDON  
RADIO BRITAIR CD BRITAIR CD BRITAIR CD CALLING  
My endurance now only 20 minutes request position by D/F OVER.**

### Safety Messages

29. When a station has for transmission a message which concerns the safety of navigation or which gives important meteorological warnings, it is to transmit the International Safety Signal ("TTT sent three times, in the case of W/T transmission or "Sécurité", spoken three times, in the case of R/T). This serves to identify the type of message and ensures that the transmission of the message will not be interfered with.

30. Messages which are preceded by the International Safety Signal are known as "Safety Messages".

31. Safety messages may be transmitted to "all stations" (using the collective call-sign "CQ") or may be transmitted to one or more specific stations as indicated in the call. The call-sign of the station transmitting the message is to be sent three times in the call.

32. Urgent "Notices to Airman" which affect the safety of aircraft in flight are to be preceded by the safety signal and are classed as Safety Messages.

33. An Aeronautical Mobile Radio Service station which transmits a Safety message will transmit, after the "End of message" sign, the call-signs of all aircraft known to be in the area, followed by the operating sign "K".

34. Aircraft are invariably to give receipt for any Safety messages which are obviously intended for them. The order in which aircraft are to transmit their receipts will be decided by the order in which their call-signs were transmitted after the "End of message" sign in the Safety message.

### EXAMPLES OF SAFETY MESSAGES

(i) **TTT TTT TTT CQ CQ CQ DE GED GED GED = Croydon Airport unserviceable  
due to snowfall + GAZAB GAZAD GABAZ GHAAA FEZAL K.**

GED DE GAZAB	R $\overline{VA}$ GAB
GED DE GAZAD	R $\overline{VA}$ GAD
GED DE GABAZ	R $\overline{VA}$ GAZ
GED DE GHAAA	R $\overline{VA}$ GAA
GED DE FEZAL	R + FAL QTC

(ii) **TTT TTT TTT GABAZ GABAZ GABAZ DE GED GED GED = CROYDON  
SBA unserviceable + GED K  
GED DE GABAZ R  $\overline{VA}$  GAZ**

## **Section “B”**

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AERONAUTICAL NAVIGATIONAL RADIO  
SERVICE

## CHAPTER I

### DIRECTION FINDING (D/F)—GENERAL

1. The procedure which is used for direction finding in the Aeronautical Navigational Radio Service is described in this chapter. The same basic procedure is used for wireless telegraphy, H/F radio telephony or V.H.F. radio telephony; however, certain small modifications of the basic procedure have been found necessary to suit particular methods of communication. Such modifications are noted where appropriate, in the text of the chapter and in the examples.

2. In Wireless telegraphy, communications relating to direction finding are generally in the form of Q-code signals, and the "Direction finding" section of the International Q-code for the Aeronautical Service is sufficiently comprehensive to cover all normal requirements.

3. In all forms of Radio telephony, communications relating to direction finding are to be made in plain language, the phrases used for this purpose are to be suitable contractions of the plain language significations of the appropriate Q-code signals. Q-code signals themselves are not used in radio telephony direction finding.

Examples :

- "What is my true bearing from you?"  
(equivalent to QTE IM1).
- "Your true bearing from me is . . . . ."  
(equivalent to QTE)
- "What is my position?"  
(equivalent to QTF IM1)
- "Your position is . . . . ."  
(equivalent to QTF).

#### Organisation of Ground D/F Stations

4. Ground D/F stations work either singly or in groups of two or more stations operating under the direction of a main (or "control") D/F station.

5. A D/F station which works alone is capable only of determining the direction in which an aircraft lies in relation to the D/F station itself. It may give an aircraft the following information :—

- (a) The *true bearing* of the aircraft from the D/F station (using the Q-signal QTE).
- (b) The *true course* which must be steered by the aircraft, assuming zero wind, to make for the D/F station (using the Q-signal QUJ).
- (c) The *magnetic bearing* of the aircraft from the D/F station (using the Q-signal QDR).
- (d) The *magnetic course* which must be steered by the aircraft, assuming zero wind, to make for the D/F station (using the Q-signal QDM).

6. Two or more D/F stations operating as a group are capable of determining the position of an aircraft. The bearings obtained by the various stations of the group are passed in to the main (or "control") D/F station by land-line or W/T. The bearings are laid off on a chart at the control D/F station and the position of the aircraft is plotted. This position is then reported to the aircraft by the control D/F station.

7. The control D/F station may report a position to an aircraft in any one of the following ways :—

- (a) The *aircraft's position* in relation to a point of reference, or in latitude and longitude (using the Q-signal QTF). (In the UK, latitude and longitude only are used in response to " QTF ? ").
- (b) The *true bearing* of the aircraft from a direction finding station or other specified point *and the distance* of the aircraft from that station or point (using the Q-signals QGE and QTE).
- (c) The *magnetic course* which the aircraft must steer, assuming zero wind, to make for a D/F station or other specified point, *and the distance* of the aircraft from that station or point (using the Q-signals QGE and QDM).

### Requests for D/F Information

8. Aircraft are normally to request bearings or courses from the particular D/F station in relation to which the bearing or course is required, or that station which is most conveniently situated to provide bearings or courses in relation to another specified point.

9. Aircraft are to request D/F positions from the control D/F station of a group.

10. An aircraft which requires a bearing, course or position is to call the air-ground control radio station, or the control D/F station of a group, on the listening frequency and is to indicate its requirement by use of the appropriate phrase or Q-signal.

11. As soon as the D/F station or group of stations is ready to take bearings, the station originally called by the aircraft is to request the aircraft to make a transmission for D/F purposes, using the appropriate R/T phrase or Q-code signal.

12. In some cases, it may be necessary for the aircraft to change to a different transmitting frequency before making the transmission upon which bearings will be taken. In such cases the station originally called by the aircraft will indicate this necessity when it requests the aircraft to make the transmission.

13. If the aircraft is using wireless telegraphy, after having changed (if this was necessary) to its new transmitting frequency, the aircraft is to reply by sending its call-sign, followed by repetitions of the group " AAA ", a long dash and its abbreviated call-sign. The long dash is to be of ten seconds' duration when M/F or V.H.F. wireless telegraphy is used, and of 20 seconds' duration in the case of H/F wireless telegraphy. The whole transmission should not last for more than 50 seconds.

14. When radio telephony is used, the aircraft's reply is to comprise the call-sign of the aircraft followed by a period of about 20 seconds during which the microphone button is pressed and the aircraft transmitter continues to radiate.

### Examples :

(i) **W/T (M/F or H/F)**

Request  $\left\{ \begin{array}{l} \text{GBF de GAZAB QTE } \overline{\text{IMI}} + \text{K} \\ \text{or GBF de GAZAB QDM } \overline{\text{IMI}} + \text{K} \\ \text{or GBF de GAZAB QTF } \overline{\text{IMI}} + \text{K} \end{array} \right.$

(a) **M/F D/F**

*Reply (D/F Station) .. GAZAB de GBF R QSY 333 KCS QDN + GBF K*

(Note.—If a change of frequency should not be necessary, QSY 333 KCS would be omitted.)

*Reply (Aircraft, having changed to transmit on 333 Mcs.)*  $\left\{ \begin{array}{l} \text{GAZAB AAA AAA AAA } \underline{\text{10 seconds dash}} \\ \text{GAB} + \text{K} \end{array} \right.$

(b) **H/F D/F**

*Reply (D/F Station)* .. **GAZAB de GBF R QDN + GBF K**

(Note.—Instructions to transmit on a different frequency might have been given.)

*Reply (Aircraft)* .. **GAZAB AAA AAA AAA AAA 20 seconds  
dash GAB + K.**

(ii) **R/T (H/F or V.H.F.)**

*Request* { **HESTON RADIO BRITAIR AC CALLING** what is my true bearing from you **OVER.**

or **HESTON RADIO BRITAIR AC CALLING** what is the magnetic course with zero wind to reach you **OVER.**

or **HESTON RADIO BRITAIR AC CALLING** what is my position **OVER.**

*Reply (D/F Station)* {

**BRITAIR AC HESTON RADIO ANSWERING** change to transmit on 333 Kcs and transmit for bearing **OVER.**

or **BRITAIR AC HESTON RADIO ANSWERING** transmit for bearing **OVER.**

*Reply (Aircraft having changed 333 Kcs. if so requested.)* }

**BRITAIR AC (20 second pause with microphone button pressed) BRITAIR AC OVER.**

15. If the D/F station is not satisfied with the bearings taken on the aircraft's transmission, it may request the aircraft to repeat the transmission, using the Q-signal "QTG".

**Reporting D/F Information***Bearings and Courses*

16. If a course or a bearing was requested, and has been satisfactorily determined, the D/F station is to report the required information to the aircraft in the following form:—

- (a) The appropriate Q-signal or R/T phrase.
- (b) The bearing or course, in degrees, sent as three figures.
- (c) The class of bearing (if necessary) (*see* paragraph 17).
- (d) The time of determination (if necessary).

Example :(i) **W/T**

"**QTE 305 2 1635**"

or "**QDM 185 1646**"

(ii) **R/T**

"**Your true bearing from me is three zero five second class time one six three five**".

or "**Course with zero wind one eight five magnetic time one six four six**."

17. Upon receipt, the aircraft is to repeat back the information for confirmation or correction.

18. If the repetition is correct the ground station is to confirm this by transmitting the operating sign "C" by W/T or the phrase "That is correct" by R/T.

19. If the repetition is wrong the ground station will reply by using the operating sign "N" or "NO" by W/T, or the word "Correction" by R/T, followed by a correct repetition of the items of information which were incorrectly repeated back by the aircraft.

20. The aircraft is to give receipt for a confirmation by using the operating sign " R " or the word " Roger " as appropriate. If a correction is given, the whole of the information originally given is to be repeated back as corrected.

Examples :

(i) **W/T**

(D/F Station) .. **GAZAB DE GBF QTE 206 2 1710 + GBF K**

(A/C) .. .. **GBF DE GAB QTE 296 2 1710 + GAB K**

(D/F Station) .. **NO QTE 206**

(A/C) .. .. **QTE 206 2 1710 + K**

(D/S Station) .. **C + GBF**

(A/C) .. .. **R + GAB**

(ii) **R/T**

(D/F Station) .. **BRITAIR AC HESTON RADIO ANSWERING your true bearing from me is 206 second class time one seven one zero OVER.**

(A/C) .. .. **HESTON RADIO BRITAIR AC CALLING my true bearing from you is 206 third class time one seven one zero OVER.**

(D/F Station) .. **Correction second class OVER.**

(A/C) .. .. **My true bearing from you is 206 second class time one seven one zero OVER.**

(D/F Station) .. **That is correct OVER.**

(A/C) .. .. **Roger OUT.**

21. To indicate to aircraft the probable degree of accuracy of bearings, as judged by the D/F station, bearings may be classified as follows:—

(a) *Class 1* bearings are judged to be accurate within  $\pm 3$  degrees.

*Class 2* bearings are judged to be accurate within  $\pm 5$  degrees.

*Class 3* bearings have a possible error which may exceed  $\pm 5$  degrees.

(b) The classification of a bearing is to be included in the report given to an aircraft only when the bearing is a *Class 2* or *Class 3* bearing. When a bearing is reported without classification, it will be understood to be a *Class 1* bearing.

(c) The classification figure is to follow the operating signal or the R/T phrase reporting a bearing, as shown in the examples in paragraph 20 above.

22. The International abbreviations " DB ", " DI " (shown in Appendix 1) may also be used, where appropriate, to amplify a D/F report.

23.

*Positions*

24. If a position was requested and satisfactory bearings have been obtained from the D/F stations comprising the group, these bearings will be passed immediately to the D/F control station. Having plotted the aircraft's position from these bearings the D/F control station is to report the position to the aircraft in the following form :—

- (a) The appropriate Q-signal or R/T phrase.
- (b) The position.
- (c) The accuracy of the position (if necessary).
- (d) The time of determination.

Example :—

(i) **W/T**

“ **QTF Mersa Matruh 2 1530** ”  
 or “ **QTF 0051N 0224W 3 1500** ”  
 or “ **QTE 205 QGE 10 MLS 2 1520** ”

(ii) **R/T**

“ **Your position is Mersa Matruh second class time one five three zero** ”  
 or “ **Your position is zero zero five one North zero two two four West third class time one five zero zero** ”.  
 or “ **Your true bearing from me is two zero five distance ten miles second class time one five two zero** ”.

25. Upon receipt, the aircraft is to repeat back the information for confirmation or correction. Confirmation or correction will be given and acknowledged in the same manner as that described in paras. 18, 19 and 20 as applying to report of bearings and courses.

26. When positions reported by a D/F station are expressed in terms of a bearing or course and a distance from a known reference point which is other than the D/F station itself, the reference point to be used is to be an aerodrome, prominent town or geographical feature. An aerodrome is to be used as a reference point, in preference to other places, when positions are reported, in this way, to aircraft. When a large city or town is used as a reference point the bearing or course and the distance given is to be calculated from the centre of the place in question.

27. When a position is reported to an aircraft in terms of latitude and longitude, the latitude is to be expressed as a group of four figures followed by the letters “ N ” or “ S ” (on W/T) or by the words “ North ” or “ South ” (on R/T). Similarly the longitude is to be expressed as a group of four figures followed by the letters “ E ” or “ W ” or the words “ East ” or “ West ”.

Examples :—

(i) (D/F Station) .. **GAZAB DE GBF QTF 5030N 0400W 1530 + K.**  
 (A/C) .. .. **GBF DE GAB QTF 5030N 0400W 1530 + K.**  
 (D/F Station) .. **C + GBF**  
 (A/C) .. .. **R + GAB**

(ii) (D/F Station) .. **GAZAB DE GBF QTE PARIS 120 QGE 15 KM**  
                                   **2 1430 + K.**  
 (A/C) .. .. **GBF DE GAB QTE PARIS 120 QGE 15 KM**  
                                   **2 1430 + K.**  
 (D/F Station) .. **C + GBF.**  
 (A/C) .. .. **R + GAB.**

- (iii) (D/F Station) .. **BRITAIR AC HESTON RADIO ANSWERING your position is five zero three zero North zero four zero zero West second class time one five three zero OVER.**
- (A/C) .. .. **HESTON RADIO BRITAIR AC CALLING my position five zero three zero North zero five zero zero West second class time one five three zero OVER.**
- (D/F Station) .. **CORRECTION zero four zero zero West OVER.**
- (A/C) .. .. **My position is five zero three zero North zero four zero zero West second class time one five three zero OVER.**
- (D/F Station) .. **That is correct OVER.**
- (A/C) .. .. **Roger OUT.**

28. To indicate to aircraft the probable degree of accuracy of positions as judged by the D/F control station, the following standard classification of positions is used within the U.K. and has also been adopted by the majority of other countries :—

- (a) *Class 1* positions are those which have been plotted from two or more Class 1 bearings.
- Class 2* positions are those which have been plotted from one Class 1 bearing and one or more Class 2 bearings.
- Class 3* positions are those which have been plotted from bearings of which none was a Class 1 bearing.
- (b) The classification of a position is to be included in the report given to an aircraft only when the position is a Class 2 or Class 3 position. When a position is reported without classification, it will be understood to be a Class 1 position.
- (c) The classification figure is to follow the operating signal or the R/T phrase reporting a position as shown in the examples in paragraph 27 above.

### **Refusal of D/F Information**

29. D/F stations may refuse to give bearings, courses or positions where conditions are unsatisfactory or when bearings do not fall within the prescribed limits shown in paragraphs 21 and 28, stating, at the time of refusal, the reason why refusal is made.

### **Successions of Courses**

30. An aircraft which requires a series of courses to steer with zero wind to reach a D/F station or other specified point is to call the D/F station concerned, on the appropriate frequency and make an appropriate request, using the Q-signal QDL or its equivalent R/T phrase. When the series has commenced and provided that no confusion is likely to result, the call-signs of the D.F station and the aircraft may be omitted in subsequent transmissions from either.

## CHAPTER II

### RADIO BEACONS

1. The term " Radio Beacons " embraces :—

- (a) Radio ranges.
- (b) Non-directional radio beacons.
- (c) Marker beacons.
- (d) Localizer.
- (e) Glide paths.
- (f) Locators.
- (g) Omni-directional radio beacons.

2. A radio beacon station which is not scheduled for continuous operation will be put into operation on receipt of a request from an aircraft.

3. Such requests are to be made to the Aeronautical Communications station concerned, using the air-to-ground frequency in use for normal communication. When wireless telegraphy is employed, the appropriate Q-signal should be used for making the request.

## **Section “C”**

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**THE AERONAUTICAL BROADCASTING SERVICE**

## CHAPTER I

### THE AERONAUTICAL BROADCASTING SERVICE—GENERAL

1. The Aeronautical Broadcasting Service provides radio broadcasts which are made at regular, scheduled times by specified stations and which contain information necessary to the safety of air navigation ; they are intended to be intercepted by all aircraft and other radio stations concerned.

2. There are two main classes of broadcasts :—

(a) Scheduled meteorological broadcasts,

and (b) Scheduled broadcasts of “ Notices to Airmen ” (NOTAMS).

#### Scheduled Meteorological Broadcasts

3. Meteorological broadcasts, made at scheduled times by stations of the Aeronautical Broadcasting Service, may be divided into the following categories :—

(a) *Continental Broadcasts* : providing meteorological information in respect of a whole continent and its adjoining oceans.

(b) *Marine Broadcasts* : providing information in respect of large ocean regions.

(c) *Multi-National Broadcasts* : providing information in respect of two or more countries and the adjoining seas.

(d) *National Broadcasts* : providing information in respect of a whole country and the adjoining seas.

(e) *Regional Broadcasts* : providing information in respect of a section of a country, usually surrounding an aeronautical centre, or covering an air route.

(f) *Station Broadcasts* : these contain information from one or more stations of an area which is of insufficient extent for these broadcasts to be called “ regional ”.

(g) *Collective Messages for Ships* : collective messages for ships are messages from land or sea areas intended primarily for meteorological forecasting at sea : they may also be useful for International aeronautics.

#### Scheduled Broadcast of Notices to Airmen (NOTAMS)

4. “ Notices to Airmen ” contain general information(excluding meteorological information) of an urgent nature which affects the safety of air navigation, such as the establishment or change in status of :—

(a) an aid to air navigation.

(b) an aerodrome or landing area.

(c) a hazard to air navigation.

(d) a special air traffic route.

5. Specified centres are established for the broadcasting of collective “ Notices to Airmen ” and make broadcasts every day at routine times.

6. Several countries may agree to depute one country to broadcast "Notices to Airmen" for the benefit of all. In such cases, the information intended for broadcasting is transmitted to the designated broadcast centre over the Aeronautical Fixed Telecommunications Service channels.

7. "Notices to Airmen" are numbered by the broadcasting centre in an annual series commencing at "No. 1" at 0000 GMT on 1st January each year.

8. If, at the scheduled broadcasting time, there should be no "Notices to Airmen" awaiting transmission, the broadcasting station is to transmit "QRU NOTAMS" after the normal call.

## CHAPTER II

### TRANSMISSION OF BROADCAST MESSAGES

1. The following general instructions apply to all broadcast transmissions made in the International Aeronautical Broadcasting Service.

#### **Time of transmissions and frequencies used**

2. Broadcasts are made on specified frequencies and at specified times. Any change of frequency or of schedule which is intended, is to be announced on all regular broadcasts for a period of 48 hours before the change is due to take place.

3. Announcements of an intended change of frequency or schedule are to be transmitted once at the beginning and repeated at the end of each regular broadcast during the 48-hour period.

#### **Speed and Method of Transmission**

4. Broadcasts made by wireless telegraphy are to be transmitted at a uniform speed, using automatic transmitting equipment, if this is available.

5. When automatic equipment is used, broadcasts are to be made from perfectly perforated tape or from tape from which any errors in perforation detected have been patched out. The error sign (eight dots) and the repeat sign (IMI) are not to be used to correct perforating errors.

#### **The Call**

6. Broadcasts are not normally addressed to specific stations. When made by wireless telegraphy, the call preceding the broadcast is normally the International "general call to all stations" or the general call of some particular organisation.

7. The International general call to all stations is made in the following form :—

“ CQ ” (transmitted three times)

DE (transmitted once).

Call-sign of sending station (transmitted three times).

The whole is repeated three times.

8. The operating sign BT (=) is to be used to separate the general call from the first word of the text.

#### **The Text**

9. The text of a message which is to be transmitted in the Broadcasting Service will be prepared by the originator in the exact form in which transmission is to be made. The originator will insert the operating sign = (BT), where necessary, to separate individual sections of the text.

10. All groups, appearing in the text, which are combinations of figures or letters, or are otherwise unfamiliar or difficult to receive, are to be repeated, the repetition being preceded by the operating sign IMI.

Example :

“ 1204/H IMI 1204/H ”.

“ Pantalleria IMI Pantalleria ”.

### Corrections to Broadcast Transmissions

11. If an error in perforation, or a momentary fault in keying should be detected during the transmission, the tape is to be removed from the keying head and any defect in the tape is to be corrected by patching out the error. Alternatively, a correction may be transmitted by hand-keying.

12. Corrections transmitted by hand-keying are to be made in the following form :—

The operating sign IMI.

The last group or word which was transmitted correctly.

The correct version of the error which was made.

The three groups or words which follow the correction.

The tape is then to be reset so that automatic transmission is recommenced as from the beginning of the three groups or words which follow the correction (note that these have already been transmitted by hand).

Example :

(Error) .. .. . 12345 67?4 14567 98764 .....

(Correction sent by hand) .. .. . “IMI 12345 67345 14567 98764 12547”.

(Auto transmission recommenced) “14567 98764 12547 etc.”

### Delayed Broadcasts

13. Scheduled broadcasts are normally to be commenced by the transmission of the call at the exact scheduled time. If, for any reason, the material which is to be broadcast has not been received but is expected shortly, the call is to be commenced at the scheduled time in the normal way and a brief notice (expressed in Q-signals) stating the approximate number of minutes which the broadcast will be delayed, is to be transmitted.

Example :

**CQ CQ CQ DE SEF SEF SEF**

**CQ CQ CQ DE SEF SEF SEF**

**CQ CQ CQ DE SEF SEF SEF**

= **QRX 5 min** +

14. After a definite notice of delay has been given, the broadcast proper is not to be started until the expected period of delay which was notified has expired.

### Interruption of Service

15. If, for any reason, a station which is scheduled to make a broadcast is unable to do so, the broadcast is, where possible, to be made according to schedule, by another aeronautical communication station, until such time as normal service can be resumed.

## APPENDIX I

OPERATING SIGNS USED IN THE AERONAUTICAL FIXED  
AND MOBILE RADIO SERVICES

<i>Operating Sign</i>	<i>Meaning</i>
C .. ..	Yes.
N or } .. ..	No.
NO } .. ..	
P .. ..	Indicator of private telegrams in the mobile service (to be used as a prefix).
AA ? .. ..	Repeat all after .....
AB ? .. ..	Repeat all before .....
AL ? .. ..	Repeat all that has just been sent.
AS .. ..	Wait.
BN ? .. ..	Repeat all between ..... and .....
BQ .. ..	A reply to a request for verification.
CL .. ..	I am closing my station.
CS .. ..	Call sign (to be used to ask for a call sign or to have one repeated).
DB .. ..	I cannot give you a bearing ; you are not in the calibrated sector of this station.
DC .. ..	The minimum of your signal is suitable for the bearing.
DF .. ..	Your bearing at ..... (time) was ..... degrees, in the doubtful sector of this station, with a possible error of two degrees.
DG .. ..	Please advise me if you note an error in the bearing given.
DI .. ..	Bearing doubtful in consequence of the bad quality of your signal.
DJ .. ..	Bearing doubtful on account of interference.
DL .. ..	Your bearing at ..... (time) was .....degrees in the doubtful sector of this station.
ETA .. ..	Estimated time of arrival.
ETD .. ..	Estimated time of departure.
DP .. ..	Beyond fifty miles, the possible error of bearing may amount to two degrees.
DS .. ..	Adjust your transmitter ; the minimum of your signal is too broad.
DT .. ..	I cannot furnish you with a bearing ; the minimum of your signal is too broad.
DU .. ..	Position not guaranteed ; distance from direction-finding station exceeding 150 km.
DY .. ..	This station is two-way. What is your approximate direction in degrees in relation to this station ?
DZ .. ..	Your bearing is reciprocal. (To be used only by the control station of a group of direction-finding stations when it is addressing other stations of the same group).
ER .. ..	Here..... (To be used before the name of a mobile station in sending route instruction).
GA .. ..	Resume sending. (To be used especially in the fixed service).
JM .. ..	If I may transmit, send a series of dashes ; to stop my transmission, send a series of dots. (Not to be used on 500 kc/s.)

*Operating Sign**Meaning*

MN	..	..	Minute or Minutes. (To be used to indicate the duration of a wait).
NW	..	..	I resume transmission. (To be used especially in the fixed service).
OK	..	..	Agreed.
RQ	..	..	Request for verification.
SA	..	..	Precedes the name of an aircraft station. (To be used in sending particulars of flight).
SF	..	..	Signifies the name of an aeronautical station.
SN	..	..	Signifies the name of a coast station.
SS	..	..	Signifies the name of a ship station. (To be used in sending particulars of voyage).
TR	..	..	Used in requesting or sending particulars concerning a mobile station.
TU	..	..	Thank you for your help.
UA	..	..	Are we agreed?
WA ?	..	..	Repeat the word after .....
WB ?	..	..	Repeat the word before .....
XS	..	..	Atmospherics.
ABV ?	..	..	Repeat ( <i>or</i> I repeat) the figures in abbreviated form.
ADR ?	..	..	Repeat the address.
CFM	..	..	Confirm : <i>or</i> I confirm.
COL	..	..	Collate : <i>or</i> I collate.
GMT	..	..	Greenwich Mean Time.
ITP	..	..	Stops (punctuation) count.
MSG	..	..	Telegram concerning the service of a ship. (To be used as a prefix).
NIL	..	..	I have nothing for you.
PBL P	..	..	Repeat the preamble.
....POUR	..	..	Station..... replaces station .....
REF	..	..	Refer to ..... <i>or</i> Referring to .....
RPT	..	..	Repeat, <i>or</i> I repeat. (To be used to give repetition of all or part of the traffic, the relative particulars being sent after the abbreviation).
SIG P	..	..	Repeat the signature.
TFC	..	..	Traffic.
TXT P	..	..	Repeat the text.
VVV	..	..	Traffic will be broadcast on the fixed aeronautical service frequency.
W	..	..	Word(s).