

Annex D: Radio Procedure

D1: Introduction Air-band Radio-telephony is very specific with rules and procedures that need to be followed when communicating with Air Traffic Control and other aircraft. Most radio communications in ballooning is between the balloon and its retrieve. Increasing we are using non air-band radios. This does not need to as specific or precise. The rules of air-band communications are continuously being up-dated and procedures changed and there have been a lot of changes in air-band procedures and protocols recently.

The following guidelines are based on near-recent air-band procedures and good practice for non air-band radios. They also form a good basis for further study if one wishes to go forward to a Flight Radio Telegraph Licence (FRTOL).

D1: General

D1.1 Radio is the normal means by which Pilots and Ground Crew communicate with each other during flight. It is also the means by which the Pilot may communicate with Air Traffic Controllers during flight.

D1.2 Balloon to ground communication for retrieve messages is conducted on a frequency of 122.480 MHz, VHF. This is a common frequency within the UK for balloon to retrieve communication; all other users in the area will hear anything you say. Used properly, the information and instructions transmitted are of vital importance in assisting the safe operations of balloons. The use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over emphasised.

D2: Operation of Aircraft Radio

D2.1 Except for a student pilot flying in the course of his training an appropriate radiotelephony licence FRTOL must be held by anyone operating an aircraft's radio communication equipment. Such equipment must itself be licensed, and operated only in accordance with the conditions of that licence. (Air Navigation Order 1989, Article 38)

D2.2 It is clear from the above that the Pilot must hold a UK Civil Aviation Authority (CAA) Flight Radio Telephony Operator's Licence in order to use the radio from the balloon. It is also clear that all radio equipment must be licensed.

D2.3 The CAA has, for the time being, granted a concession for the operation of ground based, air band, radios used by balloon retrieve crews. This concession applies to radio equipment fixed to transmit and receive only on the balloon frequency of 122.480 Mhz. The concession is that any person who has been instructed in the correct use of the equipment may use the radio to communicate with a balloon in flight or preparing for flight. (The implication regarding equipment is that any multi-channel ground radio must be fixed or locked on the balloon frequency before any unlicensed person uses the radio).

D2.4 BBAC Crew Qualifications at Senior Crew and Master Crew levels contain tests of knowledge and experience in radio use. Anyone qualified under this scheme can be said to have received instruction in the correct use of the radio. All crew intending to use the radio should use this Annexe and the Crew Radio Procedure questions in the Senior Crew question bank to ensure that they have received instruction before first using the radio.

D3: Transmitting Technique

D3.1 The following transmitting techniques will assist in ensuring that transmitted speech is clearly and satisfactorily received.

- (a) Before transmitting check that the receiver volume is set at the optimum level and listen out to ensure that there will be no interference with a transmission from another station.
- (b) Be familiar with microphone operating techniques and do not turn your head away from it whilst talking or vary the distance between it and your mouth. Severe speech distortion may arise from:
 - Talking too close to the microphone
 - Touching the microphone with the lips
- (c) Use a normal conversational tone, speak clearly and distinctly.
- (d) Maintain an even rate of speech not exceeding 100 words per minute. When it is known that recipients will write down elements of the message, speak at a slightly slower rate.
- (e) Maintain the speaking volume at a constant level.
- (f) A slight pause before and after numbers will assist in making them easier to understand.
- (g) Avoid using hesitation sounds such as „er“.
- (h) Depress the transmit switch fully before speaking and do not release until the message is complete. This will ensure that the entire message is transmitted. However do not depress the transmit switch until ready to speak.
- (i) Speak clearly and use standard radiotelephony (RTF) words and phrases wherever possible.

D4: Transmission of Letters

D4.1 The words in the table below shall be used when individual letters need to be transmitted. The syllables to be emphasised are underlined.

<i>Letter</i>	<i>Word</i>	<i>Appropriate pronunciation</i>
A	Alpha	<u>AL</u> FAH
B	Bravo	<u>BRAH</u> <u>VOH</u>
C	Charlie	<u>CHAR</u> LEE
D	Delta	<u>DELL</u> TAH
E	Echo	<u>ECK</u> OH
F	Foxtrot	<u>FOKS</u> TROT
G	Golf	GOLF
H	Hotel	HOH <u>TELL</u>
I	India	<u>IN</u> DEE AH
J	Juliet	<u>JEW</u> LEE <u>ETT</u>
K	Kilo	<u>KEY</u> LOH
L	Lima	<u>LEE</u> MAH
M	Mike	MIKE
N	November	NO <u>VEM</u> BER
O	Oscar	<u>OSS</u> CAH
P	Papa	PAH <u>PAH</u>
Q	Quebec	KEH <u>BECK</u>
R	Romeo	<u>ROW</u> ME OH
S	Sierra	SEE <u>AIR</u> RAH

T	Tango	<u>TANG</u> GO
U	Uniform	<u>YOU</u> NEE FORM
V	Victor	<u>VIK</u> TAH
W	Whiskey	<u>WISS</u> KEY
X	X-ray	<u>ECKS</u> RAY
Y	Yankee	<u>YANG</u> KEE
Z	Zulu	<u>ZOO</u> LOO

D4.2 The above letters should be used to spell out words or abbreviations where this will assist understanding. It is common aviation practise not to spell out clearly understood abbreviations such as RV (Rendezvous), ETA (Estimated Time of Arrival), QNH (Regional Pressure Setting) and the like. Abbreviations such as these may be transmitted, as they would be spoken in normal speech.

D5: Transmission of Numbers

D5.1 The syllables to be emphasised are underlined

<i>Numeral or numeral element</i>	<i>Latin alphabet representation</i>
0	<u>ZERO</u>
1	<u>WUN</u>
2	<u>TOO</u>
3	<u>TREE</u>
4	<u>FOW</u> ER
5	<u>FIFE</u>
6	<u>SIX</u>
7	<u>SEV</u> EN
8	<u>AIT</u>
9	<u>NIN</u> ER

Decimal	<u>DAYSEEMAL</u>
Hundred	<u>HUN DRED</u>
Thousand	<u>TOUSAND</u>

D5.2 All numbers except whole hundreds, whole thousands and combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit separately. Whole hundreds and whole thousands shall be transmitted by pronouncing each digit in the number of hundreds and thousands followed by the word HUNDRED or THOUSAND as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousands followed by the word THOUSAND and the number of hundreds followed by the word HUNDRED.

<i>Number</i>	<i>Transmitted as</i>	<i>Pronounced as</i>
10	One Zero	WUN ZERO
75	Seven Five	SEVEN FIFE
100	One Hundred	WUN HUN DRED
583	Five Eight Three	FIFE AIT TREE
2500	Two Five Hundred	TOO FIFE HUN DRED
11000	One One Thousand	WUN WUN TOUSAND
25000	Two Five Thousand	TOO FIFE TOUSAND
38143	Three Eight One Four Three	TREE AIT WUN FOWER
TREE		

D5.3 Numbers containing a decimal point shall be transmitted as prescribed with the decimal point in appropriate sequence being indicated by the word „DECIMAL“.

<i>Number</i>	<i>Transmitted as</i>	<i>Pronounced as</i>
118.1	One One Eight Decimal One	WUN WUN AIT DAY SEE MAL WUN
120.37	One Two Zero Decimal Three Seven	WUN TOO ZERO DAY SEE MAL TREE SEVEN

D5.4 When it is necessary to verify the accurate reception of numbers the person transmitting the message shall request the person receiving the message to read back the numbers.

D6: Transmission of Time

D6.1 When transmitting time only the minutes of the hour are normally required. However, the hour should be included if there is any possibility of confusion. *The word „hours“ may be used to indicate a time. Time used for balloon transmissions will normally be local time.* Time checks should be given to the nearest minute.

Message	Transmitted as	Pronounced as
Landing in 10 minutes	Landing In One Zero	LANDING IN WUN ZERO
Time Check 0823 now	Time Check Zero Eight Two Three Hours Now	TIME CHECK ZERO AIT TOO TREE HOURS NOW
Expect to be overhead Bristol at 0730	Expect To Be Overhead Bristol at Three Zero	EXPECT TO BE OVERHEAD BRISTOL AT TREE ZERO

(All Annexe D3: to D6: above, less italics, from CAP 413)

D7: Standard Words and Phrases

D7.1 The following words and phrases shall be used in radio communications as appropriate and have the meaning given below:

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Word / Phrase	Meaning
ACKNOWLEDGE	Let me know that you have received and understood the message.
AFFIRM	Yes
APPROVED	Permission for the proposed action granted.
CANCEL ...	<i>Annul the previous message referred to</i>
CHANGING TO	I intend to call.....on <i>another</i> frequency
CONFIRM	Have I correctly received the following.. or did you correctly receive?
CORRECT	That is correct
CORRECTION	An error has been made in this message (or message indicated). The correct version is.....
GRID	<i>The figures which follow are a grid reference.</i>
HOW DO YOU READ	What is the readability of my transmission.?
I SAY AGAIN	I repeat for clarity or emphasis.
NEGATIVE	No or Permission not granted or That is not correct.
OVER	My transmission is ended, I expect a response from you.
OUT	This exchange of transmissions is ended and no response is expected.
PASS YOUR MESSAGE	Proceed with your message
READ BACK	Repeat all, or a specified part of this message back to me exactly as received.
REPORT	Pass requested information.

REQUEST	I should like to know or should like to obtain....
ROGER	I have received and understood your last transmission. Note : Under no circumstances to be used in reply to a question requiring a direct answer in the affirmative or negative.
SAY AGAIN	Repeat all or the following part of your transmission.
SPEAK SLOWER	Reduce the rate of your speech.
STANDBY	Wait and I will call you.
VERIFY	Check and confirm.
WILCO	I understood your message and will comply with it.

(above table, except italics, extracted from CAP 413)

D8: Callsigns

D8.1 All transmissions should contain the Callsign of the transmitting station. The callsign can also be used to refer to other stations. The use of personal names should be avoided during transmissions.

In the example transmissions which follow:

The Balloon transmission is black on shading like this
The ground station transmission is black on clear like this

D8.2 All aircraft, including balloons, have registration letters; these form the normal callsign of the balloon. When first used between two radio stations the full callsign should be used, in following transmissions a shortened version using the last two registration letters, or a shortened title are used: e.g. -

Balloon Control - Golf Alpha Bravo Charlie Delta - request take-off
Control - Charlie Delta - once Zulu Yankee is clear you are clear for take-off
Charlie Delta - take-off after Zulu Yankee - wilco

D8.3 Balloon names may also be used as a call sign, so if the balloon G - ABCD is known as "Rainbow" this name can be used : e.g. -

Balloon Control - Rainbow request take-off
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However in crowded airspace, such as at a major balloon fiesta there may be more than one „Rainbow“ so care must be exercised. If in doubt use the full registration as a callsign.

D8.4 Retrieve callsigns can pose a problem. The most simple solution is to adopt the balloons last two registration letters or the name callsign and add „Retrieve“: e.g.-

Charlie Delta Retrieve - Charlie Delta - landing in five
Retrieve - roger

or

Rainbow Retrieve - Rainbow - landing in five
Retrieve - roger

D9: Radio Check

D9.1 Any user can check the strength and readability of their radio transmissions by requesting a „Radio Check“ or „How do you read“ from another station. „Radio Check“ is normal at the start of transmissions, just after the radio has been turned on, whilst „How do you read“ is used as a normal transmission check or when having recently changed frequency.

D9.2 The strength and readability is reported by both stations on a scale of 1 to 5:

<i>Scale</i>	<i>Meaning</i>
1	Unreadable
2	Readable now and then
3	Readable but with difficulty
4	Readable
5	Perfectly readable

D9.3 Hence, during inflation, having just switched on the radios, and in perfect reception conditions:

Charlie Delta Retrieve - Charlie Delta - Radio Check
Charlie Delta - Charlie Delta Retrieve - strength five
Charlie Delta - you strength five also

Later in the flight if there is any doubt about the quality and strength of the transmissions:

Charlie Delta Retrieve - Charlie Delta - how do you read
Charlie Delta Retrieve - strength three {readable but with difficulty}
Charlie Delta - I read you four {readable}

D10: Example transmissions

D10.1 Using the above procedures a typical series of conversations between balloon and retrieve during a flight may be:

First radio check

Charlie Delta Retrieve - Charlie Delta - Radio Check - Over

Charlie Delta Retrieve - strength five - Over

Charlie Delta - You strength five also - Out

Pre take-off checks

Charlie Delta Retrieve - Charlie Delta - How do you read - Over

Charlie Delta Retrieve - Strength Five - Over

Charlie Delta - Roger Out

In Flight Information

Charlie Delta - Charlie Delta Retrieve - Request your Track and Speed - Over

Charlie Delta - Track - One Seven Zero - Speed One Zero - Overhead
Loamville in one five - Over

Retrieve - Confirm overhead Loamville in one nine - over

Charlie Delta - I say again - overhead Loamville in one five - Over

Retrieve - one five - Roger Out

Changing Frequency

Charlie Delta Retrieve - Charlie Delta - Changing to Loamville Approach -
Leaving this frequency for one zero
Over

Charlie Delta Retrieve - Roger - call on return - Out

Returning to retrieve frequency

Charlie Delta Retrieve - Charlie Delta - How do you read - Over

Charlie Delta Retrieve - Read you five - Over

Charlie Delta - You Fives also - Out

Preparation for landing {ETA = Estimated Time of Arrival}

Charlie Delta Retrieve - Charlie Delta - Report your ETA at Little Loam - Over

Charlie Delta Retrieve - Wilco - Standby

Charlie Delta - Retrieve - reference your last - ETA one three - Over

Charlie Delta - Roger Out

Landed {RV = Rendezvous}

Charlie Delta Retrieve - Charlie Delta - Landed at Grid eight seven two - four
five one - approach from South West
RV Great Farm - Read back

Charlie Delta Retrieve - landed grid eight seven two - four five
one - approach from South West - RV
Great Farm - estimate you in five