



RADIO TELEPHONY

INTRODUCTION

Radiotelephony (RTF) provides the means by which pilots and ground personnel communicate with each other. The information and instructions transmitted are of vital importance in the safe and expeditious operation of aircraft. Incidents and accidents have occurred in which a contributing factor has been the use of non-standard procedures and phraseology. The importance of using correct and precise standardized phraseology cannot be overemphasized.

TRANSMITTING TECHNIQUE

The following transmitting techniques will assist in ensuring that transmitted speech is clear and satisfactorily received:

- a) before transmitting, listen out on the frequency to be used to ensure that there will be no interference with a transmission from another station;
- b) be familiar with good microphone operating techniques;
- c) use a normal conversational tone, and speak clearly and distinctly;
- d) maintain an even rate of speech not exceeding 100 words per minute. When it is known that elements of the message will be written down by the recipient, 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) be familiar with the microphone operating techniques, particularly in relation to the maintenance of a constant distance from the microphone if a modulator with a constant level is not used;
- i) suspend speech temporarily if it becomes necessary to turn the head away from the microphone;
- j) depress the transmit switch fully before speaking and do not release it until the message is completed. This will ensure that the entire message is transmitted;
- k) the transmission of long messages should be interrupted momentarily from time to time to permit the transmitting operator to confirm that the frequency in use is clear and, if necessary, to permit the receiving operator to request repetition of parts not received.

1. An irritating and potentially dangerous situation in radiotelephony is a “stuck” microphone button. Operators should always ensure that the button is released after a transmission and the microphone placed in an appropriate place ensuring that it will not inadvertently be switched on.

TRANSMISSION OF LETTERS

2. To expedite communications, the use of phonetic spelling should be dispensed with if there is no risk of this affecting correct reception and intelligibility of the message.

3. With the exception of the telephony designator and the type of aircraft, each letter in the aircraft call sign shall be spoken separately using the phonetic spelling.

4. The words in the table below shall be used when using the phonetic spelling.

Note.— Syllables to be emphasized are underlined.

<i>Letter</i>	<i>Word</i>	<i>Pronunciation</i>
A	Alpha	<u>AL</u> FAH
B	Bravo	<u>BRAH</u> VOH
C	Charlie	<u>CHAR</u> LEE or <u>SHAR</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	HO <u>TELL</u>
I	India	<u>IN</u> DEE AH
J	Juliett	<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 or <u>OO</u> NEE FORM

<i>Letter</i>	<i>Word</i>	<i>Pronunciation</i>
V	Victor	<u>VIK</u> TAH
W	Whiskey	<u>WISS</u> KEY
X	X-ray	<u>ECKS</u> RAY
Y	Yankee	<u>YANG</u> KEY
Z	Zulu	<u>ZOO</u> LOO

TRANSMISSION OF NUMBERS

5. When the language used for communication is English, numbers shall be transmitted using the following pronunciation:

Note.— The syllables printed in capital letters are to be stressed; for example, the two syllables in ZE-RO are given equal emphasis, whereas the first syllable of FOW-er is given primary emphasis.

<i>Numeral or numeral element</i>	<i>Pronunciation</i>
0	ZE-RO
1	WUN
2	TOO
3	TREE
4	FOW-er
5	FIFE
6	SIX
7	SEV-en
8	AIT
9	NIN-er
Decimal	DAY-SEE-MAL
Hundred	HUN-dred
Thousand	TOU-SAND

6. All numbers, except as specified in Para 7, shall be transmitted by pronouncing each digit separately.

<i>aircraft call signs</i>	<i>transmitted as</i>
CCA 238 OAL 242	Air China two three eight Olympic two four two
<i>flight levels</i>	<i>transmitted as</i>
FL 180 FL 200	flight level one eight zero flight level two zero zero

<i>headings</i> 100 degrees 080 degrees	<i>transmitted as</i> heading one zero zero heading zero eight zero
<i>wind direction and speed</i> 200 degrees 25 knots 160 degrees 18 knots gusting 30 knots	<i>transmitted as</i> wind two zero zero degrees two five knots wind one six zero degrees one eight knots gusting three zero knots
<i>transponder codes</i> 2 400 4 203	<i>transmitted as</i> squawk two four zero zero squawk four two zero three
<i>runway</i> 27 30	<i>transmitted as</i> runway two seven runway three zero
<i>altimeter setting</i> 1 010 1 000	<i>transmitted as</i> QNH one zero one zero QNH one zero zero zero

7. All numbers used in the transmission of altitude, cloud height, visibility and runway visual range (RVR) information, which contain whole hundreds and whole thousands, shall be transmitted by pronouncing each digit in the number of hundreds or 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 followed by the number of hundreds followed by the word HUNDRED.

<i>altitude</i> 800 3 400 12 000	<i>transmitted as</i> eight hundred three thousand four hundred one two thousand
<i>cloud height</i> 2 200 4 300	<i>transmitted as</i> two thousand two hundred four thousand three hundred
<i>visibility</i> 1 000 700	<i>transmitted as</i> visibility one thousand visibility seven hundred
<i>runway visual range</i> 600 1 700	<i>transmitted as</i> RVR six hundred RVR one thousand seven hundred

8. All six digits of the numerical designator should be used to identify the transmitting channel in VHF radiotelephony communications, except in the case of both the fifth and sixth digits being zeros, in which case only the first four digits should be used.

Note 1.— The following examples illustrate the application of the procedure in Para 8:

<i>Channel</i>	<i>Transmitted as</i>
118.000	ONE ONE EIGHT DECIMAL ZERO
118.005	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.010	ONE ONE EIGHT DECIMAL ZERO ONE ZERO
118.025	ONE ONE EIGHT DECIMAL ZERO TWO FIVE
118.050	ONE ONE EIGHT DECIMAL ZERO FIVE ZERO
118.100	ONE ONE EIGHT DECIMAL ONE

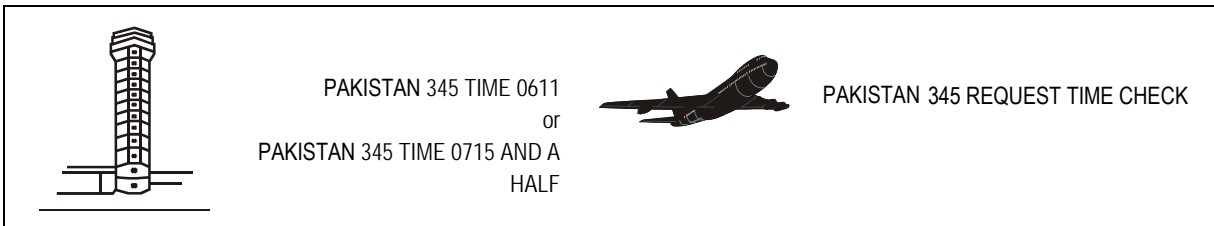
TRANSMISSION OF TIME

9. When transmitting time, only the minutes of the hour should normally be required. Each digit should be pronounced separately. However, the hour should be included when any possibility of confusion is likely to result.

Note.— The following example illustrates the application of this procedure:

<i>Time</i>	<i>Statement</i>
0920 (9:20 A.M.)	TOO ZE-RO <i>or</i> ZE-RO NIN-er TOO ZE-RO
1643 (4:43 P.M.)	FOW-er TREE <i>or</i> WUN SIX FOW-er TREE

10. Pilots may check the time with the appropriate ATS unit. Time checks shall be given to the nearest half minute.



STANDARD WORDS AND PHRASES

The following words and phrases shall be used in radiotelephony communications as appropriate and shall have the meaning given below.

<i>Word/Phrase</i>	<i>Meaning</i>
ACKNOWLEDGE	"Let me know that you have received and understood this message."
AFFIRM	"Yes."
APPROVED	"Permission for proposed action granted."
BREAK	"I hereby indicate the separation between portions of the message."
	<i>Note. — To be used where there is no clear distinction between the text and other portions of the message.</i>
BREAK BREAK	"I hereby indicate the separation between messages transmitted to different aircraft in a very busy environment."
CANCEL	"Annul the previously transmitted clearance."
CHECK	"Examine a system or procedure."

Note. — Not to be used in any other context. No answer is normally expected.

<i>Word/Phrase</i>	<i>Meaning</i>
CLEARED	"Authorized to proceed under the conditions specified."
CONFIRM	"I request verification of: (<i>clearance, instruction, action, information</i>)."
CONTACT	"Establish communications with . . ."
CORRECT	"True" or "Accurate".
CORRECTION	"An error has been made in this transmission (or message indicated). The correct version is . . ."
DISREGARD	"Ignore."
HOW DO YOU READ	"What is the readability of my transmission?"
I SAY AGAIN	"I repeat for clarity or emphasis."
MAINTAIN	Continue in accordance with the condition(s) specified or in its literal sense, e.g. "maintain VFR".
MONITOR	"Listen out on (frequency)."
NEGATIVE	"No" or "Permission not granted" or "That is not correct" or "not capable".
OUT	"This exchange of transmissions is ended and no response is expected." <i>Note.— Not normally used in VHF communications.</i>
OVER	"My transmission is ended and I expect a response from you." <i>Note.— Not normally used in VHF communications.</i>
READ BACK	"Repeat all, or the specified part, of this message back to me exactly as received."
RECLEARED	"A change has been made to your last clearance and this new clearance supersedes your previous clearance or part thereof."
REPORT	"Pass me the following information . . ."
REQUEST	"I should like to know . . ." or "I wish to obtain . . ."
ROGER	"I have received all of your last transmission." <i>Note.— Under no circumstances to be used in reply to a question requiring "READ BACK" or a direct answer in the affirmative (AFFIRM) or negative (NEGATIVE).</i>
SAY AGAIN	"Repeat all, or the following part, of your last transmission."
SPEAK SLOWER	"Reduce your rate of speech."
STANDBY	"Wait and I will call you." <i>Note.— The caller would normally re-establish contact if the delay is lengthy. STANDBY is not an approval or denial.</i>

<i>Word/Phrase</i>	<i>Meaning</i>
UNABLE	<p>“I cannot comply with your request, instruction, or clearance.”</p> <p><i>Note.—UNABLE is normally followed by a reason.</i></p>
WILCO	<p>(Abbreviation for “will comply”.)</p> <p>“I understand your message and will comply with it.”</p>
WORDS TWICE	<p>a) <i>As a request:</i></p> <p>“Communication is difficult. Please send every word or group of words twice.”</p> <p>b) <i>As information:</i></p> <p>“Since communication is difficult, every word or group of words in this message will be sent twice.”</p>

Note.— The phrase “GO AHEAD” has been deleted, in its place the use of the calling aeronautical station’s call sign followed by the answering aeronautical station’s call sign shall be considered the invitation to proceed with transmission by the station calling.

CALL SIGNS

Call signs for aeronautical stations

11. Aeronautical stations are identified by the name of the location followed by a suffix. The suffix indicates the type of unit or service provided.

<i>Unit or service</i>	<i>Call sign suffix</i>
Area control centre	CONTROL
Radar (in general)	RADAR
Approach control	APPROACH
Approach control radar arrivals	ARRIVAL
Approach control radar departures	DEPARTURE
Aerodrome control	TOWER
Surface movement control	GROUND
Clearance delivery	DELIVERY
Precision approach radar	PRECISION
Direction-finding station	HOMER
Flight information service	INFORMATION
Apron control	APRON
Company dispatch	DISPATCH
Aeronautical station	RADIO

12. When satisfactory communication has been established, and provided that it will not be confusing, the name of the location or the call sign suffix may be omitted.

Aircraft call signs

13. An aircraft call sign shall be one of the following types:

<i>Type</i>	<i>Example</i>
a) the characters corresponding to the registration marking of the aircraft;	G-ABCD or Cessna G-ABCD
b) the telephony designator of the aircraft operating agency, followed by the last four characters of the registration marking of the aircraft; or	PAKISTAN DCAB
c) the telephony designator of the aircraft operating agency, followed by the flight identification.	PAKISTAN 345

Note. — *The name of the aircraft manufacturer or name of aircraft model may be used as a radiotelephony prefix to the Type a) above.*

14. After satisfactory communication has been established, and provided that no confusion is likely to occur, aircraft call signs specified in Pra 13 may be abbreviated as follows:

<i>Type</i>	<i>Example</i>
a) the first and at least the last two characters of the aircraft registration;	CD or Cessna CD
b) the telephony designator of the aircraft operating agency followed by at least the last two characters of the aircraft registration;	PAKISTAN AB
c) no abbreviated form.	—

Note.— *The abbreviated examples correspond to Para 13*

15. An aircraft shall use its abbreviated call sign only after it has been addressed in this manner by the aeronautical station.

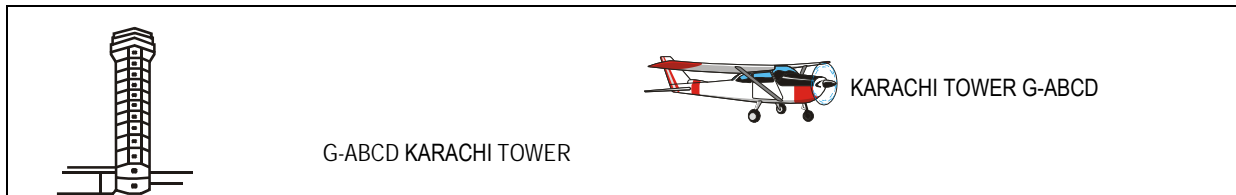
16. An aircraft shall not change its type of call sign during flight except when there is a likelihood that confusion may occur because of similar call signs; in such cases, an aircraft may be instructed by an air traffic control unit to change the type of its call sign temporarily.

17. Aircraft in the heavy wake turbulence category shall include the word "HEAVY" immediately after the aircraft call sign in the initial contact between such aircraft and ATS units.

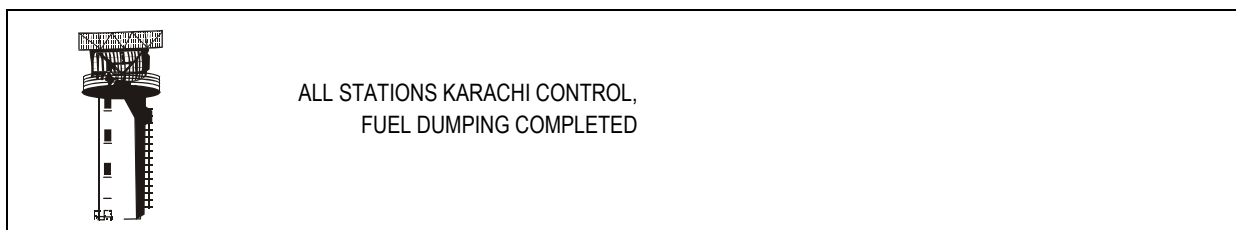
COMMUNICATIONS

Establishment and continuation of communications

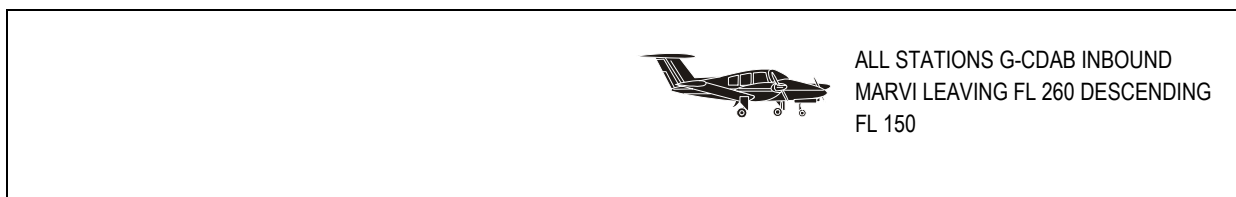
18. When establishing communications, an aircraft should use the full call sign of both the aircraft and the aeronautical station.



19. When a ground station wishes to broadcast information, the message should be prefaced by the call "ALL STATIONS".



20. When an aircraft wishes to broadcast information to aircraft in its vicinity, the message should be prefaced by the call "ALL STATIONS".



No reply is expected to such general calls unless individual stations are subsequently called upon to acknowledge receipt.

21. If there is doubt that a message has been correctly received, a repetition of the message shall be requested either in full or in part.

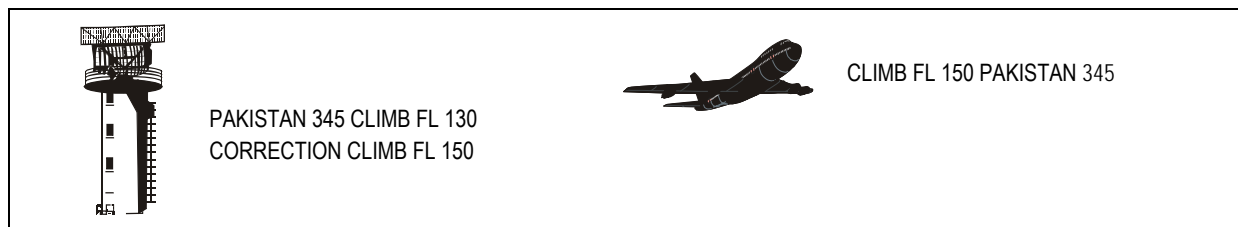
Examples:

<i>Phrase</i>	<i>Meaning</i>
SAY AGAIN	Repeat entire message
SAY AGAIN . . . (item)	Repeat specific item
SAY AGAIN ALL BEFORE . . . (the first word satisfactorily received)	Repeat part of message
SAY AGAIN ALL AFTER . . . (the last word satisfactorily received)	Repeat part of message
SAY AGAIN ALL BETWEEN . . . AND . . .	Repeat part of message

22. When a station is called but is uncertain of the identity of the calling station, the calling station should be requested to repeat its call sign until the identity is established.




23. When an error is made in a transmission, the word "CORRECTION" shall be spoken, the last correct group or phrase repeated and then the correct version transmitted.





24. If a correction can best be made by repeating the entire message, the operator shall use the phrase "CORRECTION I SAY AGAIN" before transmitting the message a second time.

25. When it is considered that reception is likely to be difficult, important elements of the message should be spoken twice.



	KARACHI TOWER, G-ABCD ALTITUDE 2 500 FEET, I SAY AGAIN 2 500 FEET, ENGINE LOSING POWER, ENGINE LOSING POWER
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Transfer of communications

26. An aircraft shall be advised by the appropriate aeronautical station to change from one radio frequency to another in accordance with agreed procedures. In the absence of such advice, the aircraft shall notify the aeronautical station before such a change takes place.

	PAKISTAN 345 CONTACT KARACHI CONTROL 123.7		123.7 PAKISTAN 345
	PAKISTAN 345 WHEN PASSING FL 80 CONTACT KARACHI CONTROL 123.7	-----	
		WHEN PASSING FL 80 123.7 PAKISTAN 345	

27. An aircraft may be instructed to “stand by” on a frequency when it is intended that the ATS unit will initiate communications soon, and to “monitor” a frequency on which information is being broadcast.

	PAKISTAN 345 STAND BY FOR KARACHI TOWER 118.3		118.3 PAKISTAN 345
	-PAKISTAN 345 MONITOR ATIS 123.250	-----	
		MONITORING 123.250 PAKISTAN 345	

Issue of clearance and read-back requirements

28. Provisions governing clearances are contained in Annex 11 — *Air Traffic Services* and the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444). A clearance may vary in content from a detailed description of the route and levels to be flown to a brief landing clearance.

29. Controllers should pass a clearance slowly and clearly since the pilot needs to write it down and wasteful repetition will thus be avoided. Whenever possible, a route clearance should be passed to an aircraft before start up. In any case, controllers should avoid passing a clearance to a pilot engaged in complicated taxiing manoeuvres and on no occasion should a clearance be passed when the pilot is engaged in line up or take-off manoeuvres.

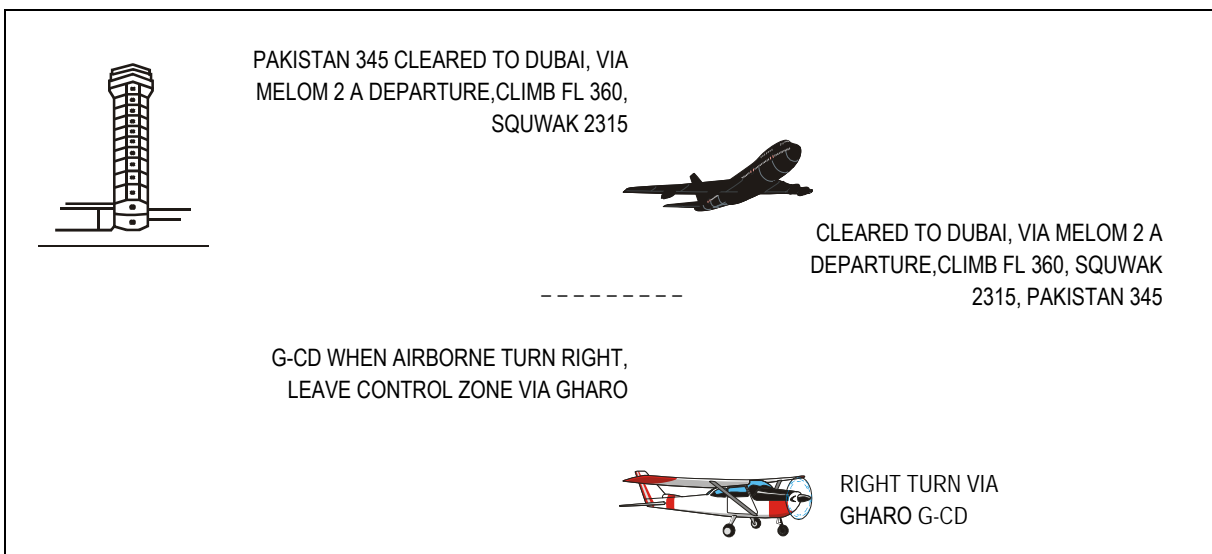
30. An air traffic control (ATC) route clearance is not an instruction to take off or enter an active runway. The words "TAKE OFF" are used only when an aircraft is cleared for take-off, or when cancelling a take-off clearance. At other times, the word "DEPARTURE" or "AIRBORNE" is used.

31. Read-back requirements have been introduced in the interests of flight safety. The stringency of the read-back requirement is directly related to the possible seriousness of a misunderstanding in the transmission and receipt of ATC clearances and instructions. Strict adherence to read-back procedures ensures not only that the clearance has been received correctly but also that the clearance was transmitted as intended. It also serves as a check that the right aircraft, and only that aircraft, will take action on the clearance.

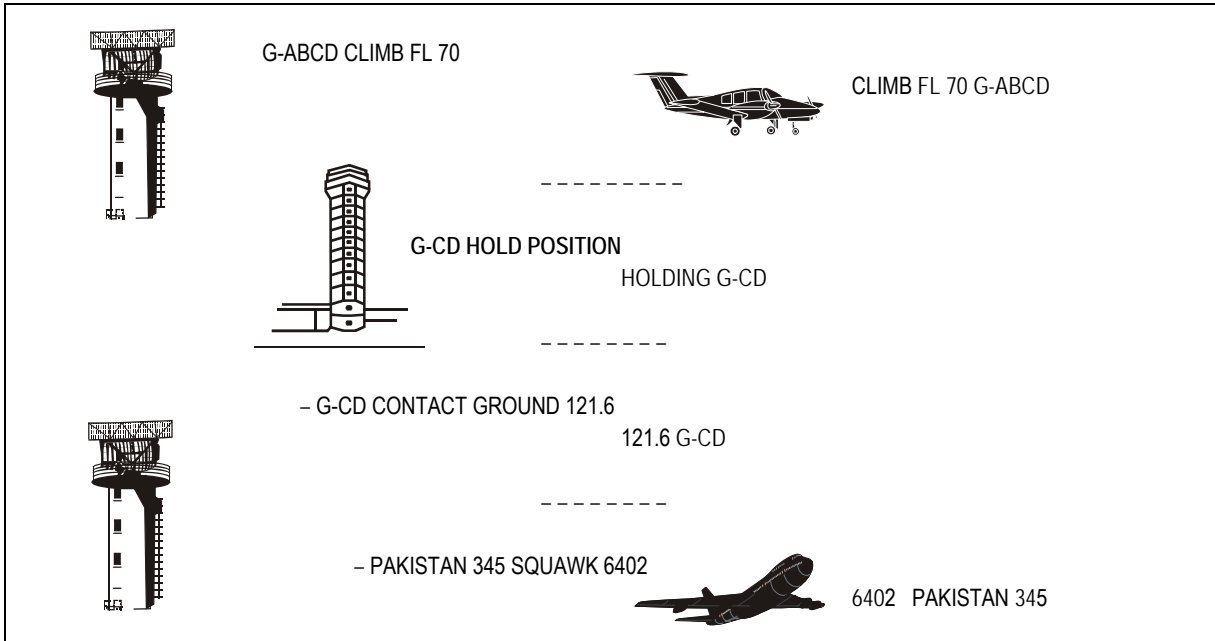
32. The following shall always be read back:

- a) ATC route clearances;
- b) clearances and instructions to enter, land on, take off from, hold short of, cross and backtrack on any runway; and
- c) runway-in-use, altimeter settings, SSR codes, level instructions, heading and speed instructions and, whether issued by the controller or contained in ATIS broadcasts, transition levels.

33. Other clearances or instructions, including conditional clearances, shall be read back or acknowledged in a manner to clearly indicate that they have been understood and will be complied with.

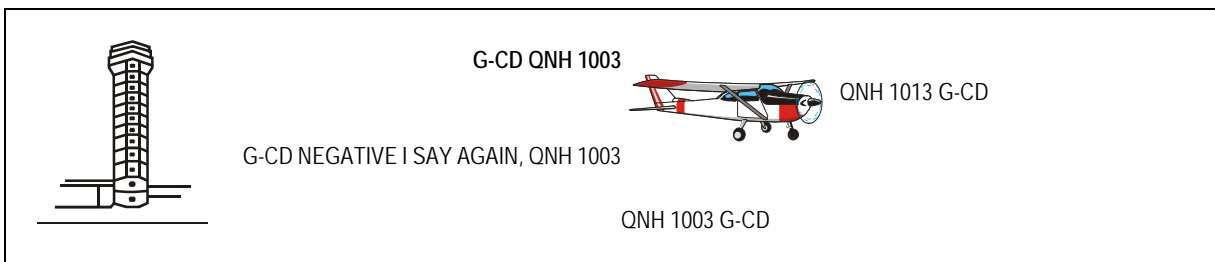


34. An aircraft should terminate the read-back by its call sign.





35. The controller shall listen to the read-back to ascertain that the clearance or instruction has been correctly acknowledged by the flight crew and shall take immediate action to correct any discrepancies revealed by the read-back.

36. If an aircraft read-back of a clearance or instruction is incorrect, the controller shall transmit the word "NEGATIVE I SAY AGAIN" followed by the correct version.



37. If there is a doubt as to whether a pilot can comply with an ATC clearance or instruction, the controller may follow the clearance or instruction by the phrase “if unable”, and subsequently offer an alternative. If at any time a pilot receives a clearance or instruction which cannot be complied with, that pilot should advise the controller using the phrase “UNABLE” and give the reasons.

	PAKISTAN 345 KARACHI GROUND, CLEARED TO LAHORE FL 390, CROSS NH FL 300 OR ABOVE, IF UNABLE, MAINTAIN FL 270		KARACHI GROUND UNABLE TO CROSS NH FL 300 DUE WEIGHT, MAINTAINING FL 270 PAKISTAN 345
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Test procedures

38. Test transmissions should take the following form:


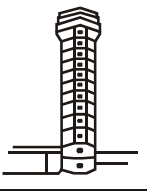
- a) the identification of the aeronautical station being called;
- b) the aircraft identification;
- c) the words “RADIO CHECK”; and
- d) the frequency being used.

39. Replies to test transmissions should be as follows:

- a) the identification of the station calling;
- b) the identification of the station replying; and
- c) information regarding the readability of the transmission.

40. The readability of transmissions should be classified in accordance with the following readability scale:

1. Unreadable.
2. Readable now and then.
3. Readable but with difficulty.
4. Readable.
5. Perfectly readable.



KARACHI TOWER G-ABCD
RADIO CHECK 118.3

STATION CALLING KARACHI
TOWER
YOU ARE UNREADABLE

or

G-ABCD TOWER READING YOU THREE,
LOUD BACKGROUND WHISTLE

or

G-ABCD TOWER READING
YOU FIVE

41. When it is necessary for a ground station to make test signals, either for the adjustment of a transmitter before making a call or for the adjustment of a receiver, such signals shall not continue for more than 10 seconds and shall be composed of spoken numbers (ONE, TWO, THREE, etc.) followed by the radio call sign of the station transmitting the test signals.

