

Radiotelephony Communications Handbook

Integrated Training for vACC SRM Controllers and Pilots



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Sri Lanka & Maldives

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SAFETY IN VATSIM SKIES

The need for clear and unambiguous communication between pilots and Air Traffic Control (ATC) is vital in assisting the safe and expeditious operation of aircraft. It is important, therefore, that due regard is given to the use of standard words and phrases and that all involved ensure that they maintain the highest professional standards when using RTF. This is especially important when operating within busy sectors with congested frequencies where any time wasted with verbosity and non-standard, ambiguous phrases could lead to flight safety incidents.

Phraseology has evolved over time and has been carefully developed to provide maximum clarity and brevity in communications while ensuring that phrases are unmistakable. However, while standard phraseology is available to cover most routine situations, not every conceivable scenario will be catered for and Vatsim controllers as well as pilots should be prepared to use plain language when necessary following the principle of keeping phrases clear and concise.

Note: Information appear in this document extracted from data available in WWW
For simulated flight and controller use only

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2 RT GENERAL OPERATING PROCEDURES

2.1 Pilots and air traffic controllers communicate by using the radiotelephony phraseology that consists of a set of standardized words and phrases approved for the radiotelephony communications by ICAO/Vatsim in all routine aircraft situations. The communication is made possible due to their common and work-related topics, especially because the situations they find themselves in are highly predictable. Even if misunderstandings do occur, they are rather easily dealt with since both parties engaged in the conversation know what replies to expect from each other.

2.2 Problems arise in non-routine and emergency situations, when pilots and controllers have to resort to plain English because the phraseology lacks the communicative means for effective communication in unpredictable situations such as on-board emergencies, engine problems, fuel shortage, etc. When both parties stick to the rules prescribed, problems in communication will rarely occur. It is essential to be aware of good transmitting techniques in all situations.

2.1 TRANSMITTING TECHNIQUE

2.1.1 According to the ICAO Doc 9432 Manual of Radiotelephony the following transmitting techniques will assist in ensuring that transmitted speech is clearly and satisfactorily received:

1. Before transmitting, listen out on the frequency to be used to ensure that there will be no interference with a transmission from another station/aircraft.
2. Be familiar with good microphone operating techniques.
3. Use a normal conversational tone, speak clearly and distinctly.
4. 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 recipient, speak at a slightly slower rate.
5. Maintain the speaking volume at a constant level.
6. A slight pause before and after numbers will assist in making them easier to understand.
7. Avoid using hesitation sounds such as "er...", "mm...".
8. 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.
9. An irritating and potentially dangerous situation in radiotelephony is a "stuck" microphone button.
10. Operators should always ensure that the button is released after a transmission and the microphone placed in an appropriate place that will ensure that it will not inadvertently be switched on.

2.2 TRANSMISSION OF LETTERS

2.2.1 The phonetic words shall be used when individual letters are required to be transmitted.

2.2.2 Some abbreviations have become unmistakable through common usage and are transmitted without using the phonetic word for each letter e.g. ILS, QNH, QFE.

2.2.3 The following words are to be used when it is required to transmit individual letters.

Table 2.2.3: THE RADIOTELEPHONY SPELLING ALPHABET (ICAO, Annex 10, Chapter 5)

LETTER	WORD	PRONUNCIATION	MORSE CODE
A	Alpha	AL FAH	· _
B	Bravo	BRAH VOH	_ · · ·
C	Charlie	CHAR LEE	_ · _ ·
D	Delta	DELL TAH	_ · ·
E	Echo	ECK OH	·
F	Foxtrot	FOKS TROT	· · _ ·
G	Golf	GOLF	_ _ ·
H	Hotel	HOH TELL	· · · ·
I	India	IN DEE AH	· ·
J	Juliet	JEW LEE ETT	· _ _ _
K	Kilo	KEY LOH	_ · _
L	Lima	LEE MAH	· _ · ·
M	Mike	MIKE	_ _
N	November	NO VEM BER	_ ·
O	Oscar	OSS CAR	_ _ _
P	Papa	PAH PAH	· _ _ ·
Q	Quebec	KEH BECK	_ _ · _
R	Romeo	ROW ME OH	· _ ·
S	Sierra	SEE AIR RAH	· · ·
T	Tango	TANG GO	_
U	Uniform	YOU NEE FORM	· · _
V	Victor	VIK TAH	· · · _
W	Whiskey	WISS KEY	· _ _
X	X-ray	ECKS RAY	_ · · _
Y	Yankee	YANG KEY	_ · _ _
Z	Zulu	ZOO LOO	_ _ · ·

2.3 TRANSMISSION OF NUMBERS

2.3.1 All numbers except whole hundreds, whole thousands and combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit separately.

2.3.2 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 TOUSAND as appropriate. Combinations of thousands and whole hundreds shall be transmitted by pronouncing each digit in the number of thousand followed by the word TOUSAND and the number of hundreds followed by the word HUNDRED.

2.3.3 The following examples illustrate the application of this procedure:

TABLE 2.3.3A: PRONUNCIATION OF NUMERALS		TABLE 2.3.3B: PRONUNCIATION OF NUMBERS	
NUMERAL	PRONOUNCED AS	NUMBER	PRONOUNCED AS
0	ZERO	10	WUN ZE-RO
1	WUN	75	SEV-en FIFE
2	TOO	100	WUN HUN-dred
3	TREE	583	FIFE AIT TREE
4	POWER	2500	TOO TOU-SAND FIFE HUN-dred
5	FIFE	5000	FIFE TOU-SAND
6	SIX	11000	WUN WUN TOU-SAND
7	SEVEN	18900	WUN AIT TOU-SAND NIN-er HUN-dred
8	AIT	25000	TOO FIFE TOU-SAND
9	NINER	31000	TREE WUN TOU-SAND
Hundred	HUN DRED	40000	POWER ZERO TOU-SAND
Thousand	TOU SAND	28000	TOO AIT TOU-SAND
Decimal	DAY SEE MAL	1013	WUN ZERO WUN TREE
Point	POINT	38143	TREE AIT WUN FOW-er TREE

Numbers containing a decimal point shall be transmitted with the decimal point in appropriate sequence being indicated by the word DECIMAL (in case of frequencies) or POINT (in all other cases).

a) indicated by the word DECIMAL

e.g. 124.725 - one two power decimal seven two five

b) pronounced point in all situations except for frequencies

e.g. distance 11.5 miles - distance one one point five miles

Table 2.3.3c: Reporting Mach number

ATC- SIA123, report Mach number

Pilot- SIA123, 0.75 (point seven five)

ATC- SIA123, reduce speed Mach 0.72 (point seven two).

When the frequency of an aeronautical station is an intermediate 25 kHz the full figure will comprise 6 digits:

124.725 - ONE TWO POWER DECIMAL SEVEN TWO FIVE

Table 2.3.3d: Pronunciation of numbers containing decimal point

Number	Transmitted as
0.72 Mach	MACH POINT SEVEN TWO
1.2 Mach	MACH ONE POINT TWO
25.5 NM	TWO FIFE POINT FIFE MILES
120.375	ONE TWO ZERO DECIMAL THREE SEVEN FIVE

118.000	ONE ONE EIGHT DECIMAL ZERO
118.005	ONE ONE EIGHT DECIMAL ZERO ZERO FIVE
118.050	ONE ONE EIGHT DECIMAL ZERO FIVE ZERO
118.125	ONE ONE EIGHT DECIMAL ONE TWO FIVE
118.150	ONE ONE EIGHT DECIMAL ONE FIVE ZERO
118.300	ONE ONE EIGHT DECIMAL TREE



2.4 EXCEPTIONS TO NUMBERS

2.4.1 Excepted from these above mentioned regulations are:

1. Azimuth in terms of 12 o'clock in passing traffic information in radar environment shall be transmitted as "ten", "eleven" or "twelve" o'clock (e.g. "ALK662, traffic information, traffic is at 12 o'clock, 6 miles, passing left to right, B737, FL 350")
2. Course, heading, track, radial, flight level, speed (e.g. heading 300 – "tree zero zero")
3. QNH (1000)
4. Squawk (7500)
5. Instruction to fly a 360 turn, (e.g. "Make a tree sixty turn to the left")
6. Instruction to make a U-turn on ground, (e.g. "Make one eighty turn")
7. Visibility over 10 (ten) km

2.4.2 VERIFICATION OF NUMBERS: When 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.



2.5 TRANSMISSION OF TIME

2.5.1 All time references should be made in Co-ordinated universal time (UTC). This used to be called Greenwich Mean Time (GMT). This time zone is sometimes referred to as Zulu (Z). Time is always in the 24 hour clock. 2400 is midnight and 0001 begins the new day. When transmitting time, only the minutes of the hour are normally required, each figure being pronounced separately. However, if there is any possibility of confusion or if crossing the hour, the full four-figure group will be spoken. Correct time, expected approach time (EAT and revised EAT) and SLOT time are to be spoken in hours and minutes (in four figures). EAT and SLOT are to be read back always.

2.5.2 Apart from UTC (Co-ordinated universal time), estimated times of arrival may sometimes be given as local time.

Table 2.5.2a: Transmission of time

Time	Statement
0920	TWO ZERO (within hour) or ZERO NINER TWO ZERO
EAT 1015	E-A-T ONE ZERO ONE FIFE
CORRECT TIME 2010	CORRECT TIME TWO ZERO ONE ZERO
1300	WUN TREE ZERO ZERO
2057	TOO ZERO FIFE SEV-en

Table 2.5.2b: Time check

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

PILOT- ALK654, REQUEST TIME CHECK

ATC- ALK654, TIME 0611

2.6 CALL SIGNS

Call signs can be considered as names used in aviation to identify aircraft stations and aeronautical stations which are in fact stations on the ground.

2.6.1 CALL SIGNS – AERONAUTICAL STATIONS

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

Table 2.6.1: Aeronautical station call signs

Unit or service	Call sign suffix
Area control center	CONTROL / CENTER
Radar (in general)	RADAR
Approach control	APPROACH / DIRECTOR*
Approach control radar arrivals	ARRIVAL
Approach control radar departures	DEPARTURE
Aerodrome control	TOWER
Surface movement control	GROUND
Clearance delivery	DELIVERY
Flight information service	INFORMATION
Aeronautical station	RADIO

*Approach brings aircraft off the airway/STAR. Director gives final vectors to runway.

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.

2.6.2 CALL SIGNS – AIRCRAFT

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

a) the characters corresponding to the registration marking of the aircraft; 4R-ULA or Cessna 8Q-ABC.

(The name of the aircraft manufacturer or name of aircraft model may be used as a radiotelephony prefix)

b) the telephony designator of the aircraft operating agency, followed by the last four characters of the registration marking of the aircraft; Speedbird DCAB

c) the telephony designator of the aircraft operating agency, followed by the flight identification; Qatari 662

Full radiotelephony call signs shall always be used when establishing communication (initial call).

After satisfactory communication has been established, and provided that no confusion is likely to occur, aircraft call sign may be abbreviated as follows:



- a) the first and at least the last two characters of the aircraft registration; 4-LA, Cessna 8-BC
- b) the telephony designator of the aircraft operating agency followed by at least the last two characters of the aircraft registration; Speedbird AB
- c) No abbreviated form; QTR662

Table 2.6.2: Aircraft call signs

TYPE	FULL CALL SIGN	ABBREVIATED CALL SIGN
TYPE A	CESSNA FABCD 4RATB	CESSNA CD 4TB
TYPE B	SPICE VMA	SPICE MA
TYPE C	MALAYSIAN 937	MALAYSIAN 937

An aircraft shall not change its type of call sign or alter its call sign during flight except when there is a likelihood that confusion may occur because of similar call sign. Then, an aircraft may be instructed by an air traffic control unit to change the type of its call sign temporarily:

- a) instruction to change its type of call sign:
CHANGE YOUR CALL SIGN TO (new call sign) UNTIL FURTHER ADVISED
- b) instruction to an aircraft to revert to the call sign indicated in the flight plan:
REVERT TO FLIGHT PLAN CALL SIGN (call sign) AT (significant point)

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

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.

2.7 CATEGORIES OF MESSAGES AND ORDER OF PRIORITY

According to ICAO, Annex 10, Chapter 5 all the communication between pilots and air traffic controllers can be categorised into 6 categories of messages depending on the priority of information being transmitted.

- a. DISTRESS CALLS, DISTRESS MESSAGES, AND DISTRESS TRAFFIC - A condition of being threatened by serious and /or imminent danger and of requiring immediate assistance (MAYDAY – radiotelephony signal)
- b. URGENCY MESSAGES, including messages preceded by the medical transports
 - A condition concerning the safety of an aircraft but does not require immediate assistance (PAN, PAN – radiotelephony signal)
 - Medical transport (PAN, PAN MEDICAL radiotelephony signal) *[Not used in Vatsim]*
- c. DIRECTION FINDING MESSAGE/COMMUNICATION RELATING TO DIRECTION FINDING
 - radar vectors and other ground base information
- d. FLIGHT SAFETY MESSAGES

- messages originated by an aircraft operating agency or by an aircraft, of immediate concern to an aircraft in flight.
 - meteorological advice of immediate concern to an aircraft in flight or about to depart (individually communicated or for broadcast).
 - other messages concerning aircraft in flight or about to depart.
- e. METEOROLOGICAL MESSAGES - reports, forecasts, warnings); comprise meteorological information to or from aircraft.
- f. FLIGHT REGULARITY MESSAGES *[Not used in Vatsim]*
- messages regarding the operation or maintenance of facilities essential for the safety or regularity of aircraft operation



3 ESTABLISHMENT AND CONTINUATION OF COMMUNICATION

In radiotelephony communications it is considered that the communication has been established after the station being called has answered the call being made by the station calling. After the initial call only the aircraft call sign shall be used and the aeronautical station call sign is omitted since there can be many aircraft under jurisdiction of the same aeronautical station and communicating with it during a certain time.

3.1 INITIAL CALL

Initial call is the call usually initiated by the pilot and it consists of the pilot's message and the controller's reply. When establishing RT communications, if the pilot initiates it, s/he shall use the full call sign of aeronautical station and the full aircraft call sign. The contact is established when the called station replies using full call sign of the station calling and the station being called. Each message shall include:

1. A CALL (THE STATION CALLED AND THE STATION CALLING)
2. A CONTENT

Table 3.1: Initial call

PILOT- MALE TOWER, ALK101, request start up
 ATC- ALK101, MALE TOWER, start up approved
 PILOT- MALE TOWER, ----- 345, request start up
 ATC- STATION CALLING MALE TOWER, say again your call sign

After the initial call, only the aircraft call sign is to be used. When a station is called, but it is not certain what the identification of the station calling is, the calling station should be requested to repeat its call sign until identification is established.

3.2 MULTIPLE CALL

ATC in the aeronautical service may simultaneously call several stations (aircraft). Stations (aircraft) called in multiple call shall acknowledge receipt of the message in the sequence used by the calling station.

3.3 GENERAL CALL

When an aeronautical station broadcasts information to all stations on the same frequency, the message should be prefaced by “all stations” and end with the word “OUT”. Aircraft (pilot) shall not attempt to acknowledge the receipt of the general call message.

Table 3.3: General call

ATC- ALL STATIONS, MALE TOWER, runway inspection completed. Out.

3.4 ACKNOWLEDGEMENT OF MESSAGE RECEIPT

Acknowledgement of the receipt of aircraft/aeronautical station message is made by transmission of the aircraft/station call sign and the word ROGER may be added.



4 STANDARD WORDS AND PHRASES

4.1 According to ICAO, Annex 10, Chapter 5 the following phrases and their meanings are to be used in standard communication between the pilots and air traffic controllers.

Table 4.1: Standard words and phrases

ACKNOWLEDGE	Let me know that you received and understood this message
ADVISE	Tell us/Inform us on/of/about...
AFFIRM	Yes
AIRBORNE	The time the flight has started after the take-off phase
APPROVED	Permission for proposed action granted
BREAK	I hereby indicate the separation between portions of the message. (To be used where there is no clear distinction between the text and other portions of the message)
BREAK BREAK	I hereby indicate the separation between messages transmitted to different addressees in a very busy environment
CANCEL	Annul the previously transmitted clearance
CAUTION	Beware of the following conditions or situations
CHECK	Examine a system or procedure. (No answer is normally expected)
CLEARED	Authorized to proceed under the conditions specified
CLIMB	Climb to maintain (to level out)
COMPLY	Act in compliance with a request or instruction
CONFIRM	I request verification of: (clearance, instruction, action, information)
CONTACT	Establish communications with ...
CORRECT	True or accurate
CORRECTION	An error has been made in this transmission (or message indicated). The correct version is...
CROSS	Fly/taxi across. Pass from one side to the other side of...
DEPART	Leave

DEPARTURE	Take-off, departing
DESCEND	Descend to maintain (to level out)
DISREGARD	Ignore
ESTIMATE	Calculate/make approximate calculation
EXPEDITE	Speed up, increase speed/rate
HOLD	Keep in place or condition
HOLD SHORT	Keep at a distance/keep away of/ stop before reaching the specified location...
HOW DO YOU READ	What is the readability of my transmission?
IMMEDIATE(LY)	At once, without delay due immanent risk/hazard
I SAY AGAIN	I repeat for clarity or emphasis
LEAVE	Depart, abandon, go away from
LOOK OUT (FOR)	View over, survey inspection (watch out for immanent risk/hazard)
MAINTAIN	Continue in accordance with the condition(s) specified or in its literal sense, e.g. Maintain VFR
MAYDAY	My aircraft and its occupants are threatened by grave and imminent danger and/or I require immediate assistance
MONITOR	Listen out on (frequency)
NEGATIVE	No/Permission not granted/That is not correct/Not capable
OUT	This exchange of transmission is ended and no response is expected. (Not normally used in VHF / Vatsim communications)
OVER	My transmission is ended and I expect a response from you. (Not normally used in VHF / Vatsim communications)
PAN PAN	I have an urgent message to transmit concerning the safety of my aircraft or other vehicle or of some person on board or within sight but I do not require immediate assistance
READ	Hear and understand
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/I wish to obtain...
REVISION	Reconsidered or corrected version/calculation of time
ROGER	I have received all of your last transmission
SAY AGAIN	Repeat all, or the following part of your last transmission
SLOW DOWN	Reduce your speed
SPEAK SLOWER	Reduce your rate of speech
SQUAWK	Set the transponder mode/code as instructed
STANDBY	Wait and I will call you
UNABLE	I cannot comply with your request, instruction or clearance. (normally followed by a reason)
VERIFY	Check and confirm with originator
WILCO	I understand your message and will comply with it
WORDS TWICE	As a request: Communication is difficult. Please send every word, or group of words, twice. <i>(Not normally used in VATSIM communications)</i> As information: Since communication is difficult every word or group of words in this message will be sent twice. <i>(Not normally used in VATSIM communications)</i>

4.2 Radiotelephony distinguishes ATC clearance from ATC instruction.

4.3 **Air traffic control clearance:** An authorization for an aircraft to proceed under conditions specified by an air traffic control unit. (For convenience, the term “air traffic control clearance” is frequently abbreviated to “clearance” when used in appropriate contexts. The abbreviated term “clearance” may be prefixed by the words “taxi”, “take-off”, “departure”, “en-route”, “approach” or “landing” to indicate the particular portion of flight to which the air traffic control clearance relates).

4.4 **Air traffic control instruction:** Directives issued by air traffic control for the purpose of requiring a pilot to take a specific action.



5 READ BACK REQUIREMENTS

5.1 Important instructions issued by the ATC need to be repeated by the pilot so that it is made certain that the pilot has heard the message correctly. The ATC will acknowledge the correct read-back by transmitting the aircraft call sign and the phrase “READ BACK CORRECT”.

5.2 The following instructions are to be read back, i.e. are to be transmitted by verbatim repetition using the same words and the same sequence and are to be concluded with the aircraft call sign.

Table 5.2: Read back Requirement

1. LEVEL INSTRUCTIONS	ALK320, descend 3000ft. ALK121, after passing KAT descend FL 210
2. SPEED INSTRUCTIONS	QTR663, maintain present speed QTR663, increase speed 220 kt
3. HEADING INSTRUCTIONS	8QDDA, turn right heading 150 QTR663, fly/continue present heading
4. TRANSPONDER SETTING INSTRUCTIONS	8QCBE, squawk 6502 ALK320, confirm squawk 5505
5. ATS ROUTE CLEARANCES	QTR663, cleared to VABB via flight planned route, FL 190, RWY 22, squawk 7365 AIC644, MALE Radar, identified, cleared to MLE, descend 9000 ft, QNH 1010, TL 110, expect ILS approach RWY 36
6. ALTIMETER SETTINGS	8QBPW, QNH 1003
7. FREQUENCY CHANGES	4RDDA, contact Mattala Tower 118.3 4RDDA, monitor Unicom 122.8
8. APPROACH CLEARANCES (EAT - Expected Approach Time inclusive)	ALK505, EAT 1010 AIC321, EAT Chennai 0525
9. ATIS CODE LETTER AND DATA	4RDDA, check information Delta
10. TAXI INSTRUCTIONS	A7AGD, taxi to holding point RWY 23, wind 220/16
11. TRANSITION LEVEL	QTR663, descend 6000 ft, QNH 1013, transition level 70
12. POSITION UPON THE TERMINATION OF RADAR VECTORING OR RADAR SERVICE	ALK642, radar service terminated, position 25 NM to MTL, on track 192 degrees, resume own navigation to HAMB

13. CONDITIONAL CLEARANCES

QTR663, after passing BASUR, climb FL 290

- a) ENTER - QTR662, cleared enter RWY 22
- b) LAND ON - QTR662, cleared to land RWY 05, wind 050 degrees, 4 kt
- c) TAKE OFF - QTR662, cleared for takeoff RWY 23, wind 230 degrees, 5 kt
- d) REJECT TAKE OFF –

14. RUNWAY DESIGNATOR AND CLEARANCES TO:

- QTR662, stop immediately, QTR662, stop immediately, aircraft crossing the RWY
QTR 662, hold position, cancel I say again cancel take off clearance, vehicle on the RWY
- e) CROSS - QTR662, cleared to cross RWY 05
 - f) BACKTRACK - QTR662, cleared to backtrack RWY 05
 - g) LINE UP - QTR662, line up RWY 05
 - h) HOLD SHORT OF AN ACTIVE RUNWAY - QTR662, hold short of RWY 05



6 TEST PROCEDURES - RADIO CHECK AND READABILITY SCALE

Table 6.1: Readability scale

When radio checks are made, the following readability scale is to be used to indicate the quality of the transmission:	Quality	Scale
	Unreadable	1
	Readable now and then	2
	Readable but with difficulty	3
	Readable	4
	Perfectly readable	5

Test transmissions should consist of the following items:	Replies to test transmissions should be as follows:
1. the identification of the aeronautical station being called	1. the identification of the station calling
2. the aircraft/ATC identification	2. the identification of the station replying
3. the words "RADIO CHECK"	3. information regarding the readability of transmission
4. the frequency being used	

Table 6.1b: Radio check procedure samples

PILOT- MALE Tower, 8QDAS, radio check 118.3

ATC- 8QHBD, MALE Tower, reading you three, with a loud background whistle

ATC- 8QHBD, MALE Tower, you are unreadable (or read you one)

NOTE. - The readability of a transmission should be classified by the number (Table 6.1), together with any other information regarding the transmission which may be useful to the station making the test.

7 Q CODES

7.1 The Q code is a standardized collection of three-letter message encodings, all starting with the letter "Q". Although Q codes were created when radio used Morse code exclusively, they continued to be employed after the introduction of voice transmissions.

7.2 Q codes were used extensively in aviation when much of the communication work (especially HF-long range) was done in Morse code. QNH was quicker to "key-in" than A.L.T.I.M.E.T.E.R. S.E.T.T.I.N.G S.E.A. L.E.V.E.L. P.R.E.S.S.U.R.E.

7.3 Today some Q-codes are still widely used because they are useful abbreviations. They are spoken in plain English, not phonetically.

Table 7.3.1: Altimeter setting

Q CODE	MEANING
QFE	Atmospheric pressure at aerodrome elevation (or at RWY threshold)
QFU	Magnetic orientation of runway
QGH	Controlled descent through cloud
QNE	Standard pressure (1013.25 hPa) baseline pressure setting equivalent to the ISA at sea level
QNH	Altimeter sub-scale setting to obtain altitude above mean sea level (elevation when on the ground)

Table 7.3.2: Direction finding

Q CODE	MEANING
QDM	Magnetic direction TO a facility/ Magnetic heading (with nil wind)
QDR	Magnetic bearing (radial) FROM a facility
QTE	True bearing FROM a facility (station)
QUJ	True bearing TO a facility (station)

Note: Millibars (hPa) to Inches of Mercury (in/Hg) [Conversion Table](#)



8 AERODROME INFORMATION

8.1 WEATHER INFORMATION (Refer [METAR Handbook](#) for details)

8.1.1 Meteorological information in the form of reports, forecasts or warnings is made available to pilots using broadcast (e.g. ATIS) or by means of specific transmissions from ground personnel to pilots. Standard meteorological abbreviations and terms should be used and the information should be transmitted slowly and enunciated clearly in order that the recipient may write down such data as necessary. Weather information should include the following information given in this order:

- 1) RUNWAY
- 2) WIND (xxx) DEGREES (number) knots, WIND AT (height/altitude/flight level) (number) DEGREES (number) knots

- 3) QNH (number) units
- 4) TEMPERATURE (Celsius), DEW POINT (Celsius)
- 6) VISIBILITY (distance in KM) direction
- 7) CLOUDS (amount, type and height of base) (or SKY CLEAR)
- 8) PRECIPITATION
- 9) CORRECT Z TIME (Not normally used in VATSIM communications)

PILOT- MALE TOWER, QTR662, REQUEST WEATHER INFORMATION

ATC- QTR662, MALE TOWER, DEPARTURE RWY 36, WIND 040 DEGREES 5 KNOTS, QNH 1011, TEMPERATURE 26, DEW POINT 25, VISIBILITY 8 KM, BKN AT 1500FT, OVC AT 4000FT, LIGHT RAIN, TIME 0611

8.2 WAKE VORTEX SEPARATION

8.2.1 Wake turbulence is turbulence that forms behind an aircraft as it passes through the air. This turbulence includes various components, the most important of which are wingtip vortices and jetwash. Jetwash refers simply to the rapidly moving gasses expelled from a jet engine; it is extremely turbulent, but of short duration. Wingtip vortices, on the other hand, are much more stable and can remain in the air for up to two minutes after the passage of an aircraft. Wingtip vortices make up the primary and most dangerous component of wake turbulence.

8.2.2 Wake turbulence is especially hazardous during the landing and take-off phases of flight, for three reasons. The first is that during take-off and landing, aircraft operate at low speeds and high angle of attack. This flight attitude maximizes the formation of dangerous wingtip vortices. Secondly, take off and landing are the times when a plane is operating closest to its stall speed and to the ground - meaning there is little margin for recovery in the event of encountering another aircraft's wake turbulence. Thirdly, these phases of flight put aircraft closest together and along the same flight path, maximizing the chance of encountering the phenomenon.

8.2.3 ICAO mandates separation minima based upon wake vortex categories that are, in turn, based upon the certified Maximum Take Off Mass (MTOM) of the aircraft.

Aircraft are categorized as follows: L-Light	: MTOM of 7,000 kilograms or less
M-Medium	: MTOM of greater than 7,000 kg, but less than 136,000 kg
H-Heavy	: MTOM between 136,000 kg and 560,000 kg
J/S-Super	: MTOM greater than 560,000 kg

8.3 BRAKING ACTION (Not normally used in VATSIM communications)

8.3.1 Braking action in aviation is a description of how easily an aircraft can stop after landing on a runway. Either pilots or ATC can report the braking action. When reporting braking action, any of the following terms may be used:

Good

Medium (Medium used to be known as Fair)

Poor

Nil - bad or no braking action, not measured, (deposits over total runway length= clear and dry)

8.4 ESSENTIAL INFORMATION ON AERODROME CONDITIONS (Not normally used in VATSIM communications)

8.4.1 Essential information on aerodrome conditions is information necessary to safety in the operation of aircraft, which refers to the movement area or any facilities usually associated with it. For example, construction work on a taxi strip not connected to the runway-in-use would not be essential information to any aircraft except one that might be taxied in the vicinity of the construction work. If all traffic must be confined to runways, that fact should be considered as essential aerodrome information to any aircraft not familiar with the aerodrome. (Not normally used in VATSIM communications)

1. construction or maintenance work on or immediately adjacent to the movement area
2. rough or broken surfaces on RWY, TWY or apron whether marked or not
3. snow, slush or ice on RWY, TWY or apron
4. water on RWY, TWY or apron
5. snow banks or drifts adjacent to RWY, TWY or apron
6. other temporary hazards including parked A/C and birds on the ground or in the air
7. failure of irregular operation of a part or all of the aerodrome lighting system
8. any other pertinent information

8.5 AMOUNT OF WATER ON THE RUNWAY (Not normally used in VATSIM communications)

8.5.1 The runway conditions are very important for the aircraft landing and taking off from a certain airport. The controller shall inform the pilot of the amount of water on the runway whenever possible. The terminology used is the following:

DAMP – the surface shows a change of colour due to moisture

WET – the surface is soaked but there is no standing water

WATER PATCHES – patches of standing water are visible on the runway

FLOODED – extensive standing water is visible on the runway

8.6 SKY COVERING IN OKTAS

8.6.1 Sky covering refers to the amount of sky being covered by clouds. The sky is divided into eight parts or oktas and according to the number of oktas being covered by clouds, the following expressions are used:

Table 8.6.1: Clouds cover

Term	Description	Oktas
FEW	Few	1/8 – 2/8
SCT	Scattered	3/8 – 4/8
BKN	Broken	5/8 – 7/8
OVC	Overcast	8/8
Other terms being used in connection to cloud cover are:		
SKC	sky clear	(0/8)
NSC	nil significant clouds	
CAVOK	clouds/ceiling, visibility and weather O.K. Note: Pronounced 'CAV-O-KAY'	



8.7 AUTOMATIC TERMINAL INFORMATION SERVICE (ATIS)

8.7.1 To alleviate RTF workload at some busy airports, ATIS messages are broadcast to pass routine arrival/departure information on a discrete RTF frequency. It is a recorded message being played in a continuous loop. It is coded using the phonetic alphabet and with every change in ATIS message, the code (name) of the ATIS changes. Pilots inbound to the airports are normally required on first contact with the aerodrome ATC to acknowledge receipt of current information by quoting the code letter of the broadcast. Pilots of outbound aircraft are not normally required to acknowledge receipt of departure ATIS except when requested on the actual ATIS broadcast.

8.7.2 Aerodromes possessing ATIS, ATIS operation and the frequency employed are published in the AIP. All broadcasts are carried out in English.

8.7.3 ATIS broadcast will include the following:

1. Message identification
2. Time of origin of weather report
3. Weather report
4. Runway(s) in use
5. Short term AIS information such as unserviceability of NAV AIDS, runway surfaces, etc.
6. Any other routine information useful to pilots operating at the aerodrome

NOTE: The QFE and RVR/RVRs are not included. The highest cloud base that will be reported is 10,000 feet.

8.7.4 Rapidly changing meteorological situations sometimes make it impractical to include weather reports in the broadcast. In these circumstances, ATIS messages will indicate that weather information will be passed on RTF. Any significant change to the content of a current ATIS message will be passed to pilots by RTF until such time as a new message is broadcast.

An example of ATIS broadcast:

"This is KATUNAYAKA Information Alpha, 0850 hours weather. Wind 240 12kt 10 km, intermittent slight rain, 3 octas 1000 ft, 8 octas 1800 ft, temperature 22, dew point 18, QNH 1011, RWY in use 22." ILS is not in use. Runway surface wet.

The pilot should report "Information Alpha received" on first contact with the Tower



9 ORDER OF INSTRUCTIONS IN AERODROME CONTROL

AERODROME ENVIRONMENT: VFR PROCEDURE

VFR DEPARTURES	VFR ARRIVALS
1. INITIAL CALL + TAXI (DEPARTURE) INSTRUCTIONS	1. INITIAL CALL + POSITION REPORT
2. ATC CLEARANCE	2. JOINING INSTRUCTIONS
3. TAKE OFF CLEARANCE	3. JOINING TRAFFIC CIRCUIT
4. AIRBORNE AND/OR POSITION REPORT	4. LANDING CLEARANCE (LOW PASS/LOW APPROACH/ TOUCH AND GO)

5. FREQUENCY CHANGE

5. INSTRUCTION TO VACATE THE RUNWAY (OR INSTRUCTION WHAT TO DO AFTER LOW PASS/LOW APPROACH/ TOUCH AND GO)

AERODROME ENVIRONMENT: IFR PROCEDURE

IFR DEPARTURES	IFR ARRIVALS
1. INITIAL CALL + DEPARTURE INFORMATION	1. INITIAL CALL + POSITION REPORT
2. START UP / PUSH BACK CLEARANCE	2. REPORT OUTER MARKER
3. TAXI INSTRUCTIONS	3. LANDING CLEARANCE
4. ATC CLEARANCE	4. INSTRUCTION TO VACATE THE RUNWAY
5. TAKE OFF CLEARANCE	
6. AIRBORNE	
7. FREQUENCY CHANGE	

9.1 DEPARTURE INFORMATION

At the airports with no ATIS, departing aircraft will ask for departure information upon first contact with the tower air traffic controller.

PILOT	ATC
ALK661 (IFR/VFR) TO (DESTINATION), REQUEST DEPARTURE INFORMATION	ALK661, DEPARTURE RUNWAY, WIND, QNH, TEMPERATURE, DEW POINT, RVR (VISIBILITY), DEPARTURE SLOT
GAN TOWER, QTR622, IFR TO MALE, REQUEST DEPARTURE INFORMATION	QTR662, DEPARTURE RWY 10, WIND 040 DEGREES 5 KNOTS, QNH1018, TEMPERATURE 26, DEW POINT 25, VISIBILITY 9KM, DEPARTURE SLOT 0705

Exercises: Using the given data produce the pilot/controller communication on departure information, first set for VCBI & second set for VRMM. Note: In each airport select the runway (xx) to match wind conditions.

AC CALL SIGN	DEP INFO	VCBI	VRMM
BAW678	xx, 090/8, 1018, 25/24, 7, 1010		
SIA17	xx, 280/15, 998, 24/23, 9, 1000		
ADA471	xx, 310/10, 1010, 30/28, 8, 0930		
AIC542	xx, 100/20, 1014, 28/23, 5, 2015		
ALK677	xx, 220/20, 1011, 31/25, 10, 1915		
8QMDP	xx, 080/12, 1010, 30/28, 6, 2025		
N422CJ	xx, 050/03, 1015, 27/23, 7, 1735		

9.2 ENGINE STARTING PROCEDURE

Engine starting procedure (also known as start-up clearance) are procedures when a pilot asks the controller for the permission to start the engines. It is being done to save fuel in case there are delays at the aerodrome and the aircraft is not allowed to depart immediately. In case the pilot has not requested departure information before start-up, departure runway and QNH are to be given to the pilot together with the start-up clearance.

If the pilot has received departure information just before start-up request, QNH does not have to be given to the pilot together with the start-up clearance unless it changed in the meantime.

PILOT	ATC
Ex.1: 8QHGD, request start up	8QHGD, unable to approve start up (reason) 8QHGD, standby to start up (reason)
8QHGD, roger	
Ex.2: 8QHGD, request start up	8QHGD, expect departure at 20 start up at own discretion
8QHGD, roger, departure at 20, start up at own discretion	
Ex.3: 8QHGD, request start up	8QHGD, start up approved, (departure RWY 05, QNH 1012), report ready to taxi
Starting up, (RWY 05, QNH 1012), wilco, 8QHGD	
Ex.4: 8QHGD, request start up	8QHGD, your slot is 1002, start up at own discretion
Slot 1002, roger, 8QHGD	

Exercises: Using the given data, produce start up clearances			
AC CALL SIGN	QNH	DEP. SLOT	EXPECTED START UP CLEARANCE
BAW678	1008	1055	
SIA17	1003	0655	
ADA471	1022	1010	
AIC542	1014	1515	
ALK677	1016	2036	
8QM DP	998	2020	
N422CJ	1000	2140	

9.3 PUSH-BACK PROCEDURE

When an aircraft is parked nose-in to the terminal, it has to be pushed backwards by tugs or by its own power before taxiing for departure.

PILOT	ATC
BAW 234, request push back from stand 13	BAW 234, pushback approved RWY 30
BAW 234, stand 23, request start up and push back	BAW 234, start up and push back approved runway 23
BAW 234, stand 23, request push back	BAW 234, expect 2 minutes delay, B737 taxiing behind you
8QBAV, request push back	8QBAV, negative, hold position, aircraft taxiing behind you
8QBAV, request push back	8QBAV, pushback at own discretion runway 05

Ground crew – pilot: This exchange is followed by a visual signal to the pilot to indicate that disconnection is completed and all is clear for taxiing.

Ground-cockpit, ready for push back

Cockpit-ground, confirm brakes released

Brakes released

Confirm brakes set

Brakes set

Commencing push back

Push back completed

Stop push back

Disconnect

Disconnecting, stand by for visual at your right/left



9.4 ATC CLEARANCE

ATC clearance is in fact a term often used for ATS route or en-route clearances. It is a clearance given to a pilot before departure (either during taxiing or at the holding point) which confirms the filed flight plan. The pilot should not enter the runway without having received and read back ATC clearance. ATC clearance consists of the information about destination, route, departure procedure, and altitude/flight level and transponder code of the departing aircraft. There are slight differences between IFR and VFR ATC clearances.

9.4.1 IFR CLEARANCE

IFR ATC clearance should consist of the following:

CLEARED TO destination xxxx, VIA FLIGHT PLANNED ROUTE, LEVEL xxx, SID xxx, SQUAWK xxxx

1. IFR FLIGHT TO MALE:

PILOT	ATC
	QTR662, are you ready to copy ATC clearance?
QTR662, ready /affirm	QTR662 cleared to MALE via flight planned route, FL330, SID S2R, squawk 7311
QTR662 Cleared to MALE via flight planned route, FL330, SID S2R, squawk 7311	QTR662, read back correct

2. IFR FLIGHT TO CHENNAI

PILOT	ATC
	ALK121, cleared to CHENNAI via flight planned route, FL330, (when airborne) maintain RWY heading until passing 3000ft, then turn left to SAGOR, squawk 7321
ALK121 cleared to CHENNAI, via flight planned route FL330, climb on RWY heading, after passing 3000ft turn left to SAGOR, squawk 7321	ALK121, READ BACK correct

9.4.2 VFR CLEARANCE

VFR ATC clearance should consist of the following:

CLEARED VFR FLIGHT TO xxxx, clearance limit/point/FIR boundary, etc., WHEN AIRBORNE TURN LEFT/RIGHT, PROCEED TO (instructions), LEVEL xxx, SQUAWK xxxx

1. VFR FLIGHT TO MATTALA

PILOT	ATC
4RUAB, VFR flight to Mattala, ready to copy ATC clearance	4RUAB, cleared VFR flight to Mattala, when airborne turn left, proceed to Mattala, at 2500ft, squawk 4011
4RUAB Cleared VFR flight to Mattala, when airborne to turn left, to proceed to Mattala, at 2500ft, squawk 4011	4RUAB, read back correct

2. VFR FLIGHT TO GAN

PILOT	ATC
8QDDA, VFR flight to Gan, ready to copy ATC clearance	8QDDA, cleared VFR flight to Gan, when airborne turn right, proceed to point x, (altitude) 3000ft, squawk 0217
Cleared VFR flight to Gan, when airborne to turn right, to proceed to point x, 3000ft, squawk 0217, 8QDDA	8QDDA, read back correct

3. VFR TRAINING FLIGHT

PILOT	ATC
4RDKH, for VFR zone Ratmalana training flight, ready to copy ATC clearance	4RDKH, cleared VFR training flight, when airborne turn left, proceed to Ratmalana, altitude 2500ft, squawk 4016
Cleared VFR training flight, when airborne turn left, proceed to Ratmalana, altitude 2500ft, squawk 4016, 4RDKH	4RDKH, read back correct

4. VFR FLYING IN TRAFFIC CIRCUIT

PILOT	ATC
4RDKH, for aerodrome traffic circuit training flight, ready to copy ATC clearance	4RDKH, cleared left-hand traffic circuit RWY 22 training flight, when airborne turn left, join left- hand downwind RWY 22, altitude 1500 ft, squawk 4012
Cleared left-hand traffic circuit RWY 22 training flight, when airborne turn left to join left-hand downwind RWY 22, altitude 1500 ft, squawk 4012, 4RDKH	4RDKH, read back correct

Exercise: Using the information provided in flight strips produce the ATC clearances for the following aircraft

RULE	A/C	SQ	ALT	CALL SIGN	DEP/SID	AIRPORT
VFR	PA18/L	1005	1500'	8QDPA	FPR	VC11
VFR	C210/L	3205	2500'	4RDEG	S1	VRMG
IFR	C181/L	2206	FL160	4RMST	MABAN2C	VRMM
IFR	C172/L	2101	FL130	8QDDA	TEBLI2C	VCBI
VFR	C150/L	2621	1500'	4RDAB	FPR	VCRI
VFR	C210/L	2505	3000'	4RREG	E	VRMM
VFR	PA18/L	0015	2500'	4RDRB	S1	VCCW
IFR	A320/M	6521	FL140	QTR510	NEDEL2C	VABB
IFR	AT43/M	7126	FL130	IAC321	GOLUN 2R	VOBL
IFR	A319/M	6506	FL140	IGO211	NEDEL2C	VAAH
IFR	B739	6342	FL140	ALK485	RASIN2C	VNKT
VFR	PA18	1515	3000'	8QCDH	N1	VOTV

9.5 TAXI PROCEDURES

Taxi instructions require read back which means that they should be repeated exactly as received since it can greatly reduce the number of runway incursions especially at larger airports with a vast network of taxiways and runways.

IFR FLIGHT – TAXI INSTRUCTIONS

PILOT	ATC
ALK662, request taxi (instructions)	ALK662, taxi via taxiway Papa to holding point A RWY 22, QNH 1012
Taxi via taxiway Papa to holding point A RWY 22, QNH 1012, ALK662	

VFR FLIGHT – TAXI INSTRUCTIONS - 1

PILOT	ATC
4RDDA, general aviation apron, VFR flight to Mattala, request taxi	4RDDA, taxi to holding point Bravo RWY22 via taxiway Papa, wind 040º/5kt, QNH 1018, time 0611
Taxi to holding point Bravo RWY 22 via taxiway Papa, wind copied, QNH 1018, 4RDDA	

VFR FLIGHT - TAXI INSTRUCTIONS - 2

PILOT	ATC
8QCDH, general aviation apron, VFR flight to GAN, request taxi	8QCDH, taxi via TWY B, to holding point RWY 36, wind 050°/10kt, QNH 1009
To taxi via TWY B, to holding point RWY 36, QNH 1009, 8QCDH	

VFR FLIGHT – Male, RWY 18

PILOT	ATC
8QHGD, starting up, request taxi instructions	8QHGD taxi to holding point RWY 18, via Taxiway C, wind 220°/16kt
Taxi to holding point RWY 18, via C 8QHGD	
8QUWX, request taxi clearance	8QUWX, taxi via TWY A to holding point RWY 18, report approaching TWY B
Taxi via TWY A to holding point RWY 18, wilco, 8QUWX	
8QUWX, approaching TWY B	8QUWX, hold position
Holding (position), 8QUWX	
	8QUWX, continue taxing
8QUWX, continue taxing	8QDDC, hold short of TWY B
Holding short of TWY B, 8QDDC	
8QBAV, request TWY B	8QBAV, TWY B approved, taxi via TWY B to holding point B, RWY 18
Taxi via TWY B to holding point B RWY 18, 8QBAV	8QBAV, give way to Airbus 319 passing ahead of you
8QBAV, giving way to Airbus 319	8QBAV, report traffic/Airbus 319 insight
8QBAV, roger	

AFTER LANDING INSTRUCTIONS TO VACATE THE RUNWAY

PILOT	ATC
ALK662, request taxi instructions	ALK662, vacate the runway via taxiway Delta, taxi via Papa to apron B, report runway vacated
Via taxiway Delta and Papa to apron B, wilco, ALK662	
	ALK662, expedite vacating the runway, traffic on final RWY 22, report runway vacated
Expediting vacating runway, wilco, ALK662	
ALK662, runway vacated	ALK662, roger

BACKTRACKING

PILOT	ATC
	ALK662, backtrack RWY 05, expedite vacating the runway via taxiway A, traffic on final RWY 23, report runway vacated
backtrack RWY 05 and to expedite vacating the runway via taxiway A, wilco, ALK662	
ALK662, runway vacated	ALK662, roger
AIC123, request backtrack RWY 23	AIC123, backtrack RWY 23 approved
Backtrack RWY 23 approved, AIC123	
QTR123, request backtrack RWY 10	QTR123, standby. I will call you back
Roger, standby, QTR123	

VARIOUS TAXI INSTRUCTIONS:

PILOT	ATC
	ALK123, expedite taxi (reason)
Expediting, ALK123	
	ALK123, caution taxi slower (reason)
Slowing down, ALK123	
	ALK123, vacate runway via taxiway A
Vacating runway via taxiway A, ALK123	
	ALK123, give way to Dash 80 entering the TWY C
Giving way Dash 80 entering the TWY C, ALK123	
	Take/turn first/second - left/right
	Taxi/turn right/left at the far end
	Taxi with caution
	Follow (description of other aircraft or vehicle)
	Taxi into holding area

9.6 LINE UP

9.6.1 Line up is an instruction given to an aircraft to enter the runway, align with the runway centreline, do all the necessary checks and wait for take-off clearance.

PILOT	ATC
4RDDC, at holding point Bravo RWY 22 ready for departure	4RDDC, line up (and wait)
Lining up, 4RDDC	
4RDDC, approaching holding point RWY 22	4RDDC, are you ready for immediate departure?
4RDDC, ready (or affirm)	4RDDC, line up and be ready for immediate departure
Lining up (for immediate departure), 4RDDC	

9.6.2 MULTIPLE LINE UPS ON THE SAME RUNWAY

When multiple runway/intersection departures are given, runway number is to be mentioned. Line-up instructions may be issued to more than one aircraft at different points on the same runway, taking into account that the intersection take-off criteria shall be complied with and conditions of application fulfilled according to local operating instructions.

PILOT	ATC
	SIA07, line up RWY 22
Lining up RWY 22, SIA07	
	4RDDC, line up and wait RWY 22, intersection C
Lining up RWY 22, intersection C, 4RDDC	

9.7 CONDITIONAL LINE-UP CLEARANCE

9.7.1 Conditional clearance affecting the active runways may be given only when the arriving aircraft is seen both by the controller and the pilot of the departing aircraft and after the departing aircraft has correctly identified the arriving aircraft on which the conditional clearance is based.

PILOT	ATC
	AIC662, traffic Airbus 319 on final RWY 04. Report traffic in sight

AIC662, traffic in sight	AIC662, roger, behind Airbus 319 line up behind
Behind Airbus 319 to line up behind, AIC662	AIC662, cleared for takeoff RWY 04, wind 060°/5kt
Cleared for takeoff RWY 04, AIC662	



9.8 TAKE OFF CLEARANCE

9.8.1 An aircraft is not allowed to take off without the takeoff clearance. Take off clearance can be given to the aircraft during taxiing, at the holding point or on the line up position. It should be followed by the information on wind direction and velocity. When visibility is good, the controller will also give the aircraft airborne time.

ATC- 8QDDC, cleared for takeoff RWY18, wind 220°/14kt

PILOT- Cleared for takeoff, 8QDDC

ATC- 8QDDC, airborne at 23 (23 minutes past the hour)

9.8.2 In poor visibility (Applicable for Low Visibility operations) the controller will ask the pilot to report airborne time.

ATC- 8QDDC, cleared for takeoff RWY 18, wind 220°/14kt, report airborne

PILOT- Cleared for takeoff, wilco 8QDDC

PILOT- 8QDDC, airborne at 23

9.8.3 When there is a possibility of confusion because there is more than one runway in use, the runway designator is to be mentioned together with the take-off clearance.

ATC- 8QDDC, runway 04, wind 020°/14kt, cleared for takeoff

PILOT- runway 04, cleared for takeoff, 8QDDC

8QDDC, airborne at 23

9.8.4 There are situations when the pilot has been given the takeoff clearance and has entered the runway in use but has not commenced the takeoff. Then, the controller is to determine the pilot's intentions:

ATC- 8QDDC, cleared for takeoff, wind 190°/20kt

(IF THE AIRCRAFT IS NOT MOVING)

ATC- 8QDDC, takeoff immediately or vacate the RWY

PILOT- Taking off, 8QDDC

OR

ATC- 8QDDC, cleared for takeoff, wind 190°/20kt

(IF THE AIRCRAFT IS NOT MOVING)

ATC- 8QDDC, take off immediately or vacate the RWY

PILOT- Vacating the RWY, 8QDDC

OR

ATC- AIC662, expedite departure, approaching traffic on 3 mile final RWY 04

PILOT- Taking off, AIC662

OR

ATC- AIC662, takeoff immediately or vacate the RWY via taxiway Bravo

PILOT- Vacating the runway via taxiway B, AIC662

9.8.5 In situations when the pilot has been given the takeoff clearance, but is still at the holding point and is not entering the runway in use to commence the takeoff, the controller is to determine the pilot's intentions:

PILOT- ALK662, holding point RWY 22, ready for departure

ATC- ALK662, cleared for takeoff, wind 210°/12kt.

(IF THE AIRCRAFT IS NOT MOVING)

ATC- ALK662, take off immediately or hold short of RWY.

PILOT- Holding short, ALK662.

OR

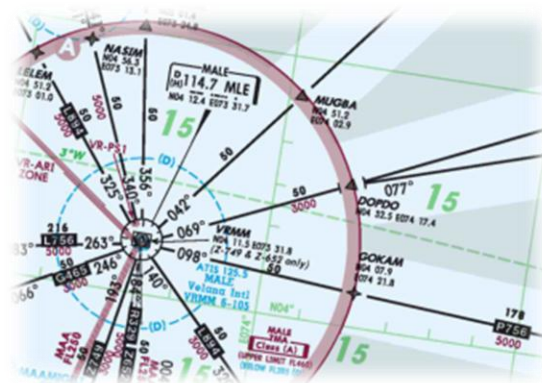
ATC- ALK662, holding point RWY 22, ready for departure.

PILOT- ALK662, cleared for takeoff, wind 210°/12kt.

(IF THE AIRCRAFT IS NOT MOVING)

ATC- ALK662, takeoff immediately or hold short of RWY.

PILOT- Taking off, ALK662.



9.8.6 CANCELLATION OF TAKE-OFF CLEARANCE AT THE HOLDING POINT

The takeoff clearance can be cancelled on the line up position or on the runway holding point. In situations when the pilot has been given the take-off clearance but has not yet started the take-off roll and there is some obstacle on the runway, the controller will attempt to stop the pilot/aircraft from taking off:

ATC- AIC662, hold position, cancel take off, I say again, cancel take off clearance, vehicle on the runway

PILOT- Holding position, ALK662

9.8.7 REJECTING THE TAKE OFF CLEARANCE DURING THE TAKE OFF RUN

In situations when the pilot has been given the take-off clearance and has started the take-off roll and there is some obstacle on the runway, the controller will attempt to stop the pilot/aircraft from taking off:

ATC- QTR662, stop immediately, abort takeoff, QTR662 stop immediately.

PILOT- Stopping, QTR662

9.9 REPORTING AIRBORNE

9.9.1 In case the visibility is good the controller will provide the pilot with the airborne time. If the visibility is low, the controller will ask the pilot to report airborne time.

PILOT	ATC
	8QDDC, report airborne
8QDDC, wilco	
8QDDC, airborne at 25	8QDDC, roger, contact Male Radar at 118.5
Contact 118.5, 8QDDC	

	8QDDC, cleared for takeoff, wind 220°/13kt, report airborne
Cleared for takeoff, wilco, 8QDDC	
8QDDC, airborne at 27	8QDDC, roger
	8QDDC, report leaving the control zone
8QDDC, wilco	
8QDDC, leaving the control zone	8QDDC, roger, contact Male Radar on 118.5
Contact 118.5, 8QDDC	

9.10 GO AROUND

9.10.1 A go-around is an aborted landing of an aircraft which is on final approach. If for some reason the pilot decides not to land, s/he can simply fly back up to circuit height, and complete another circuit — in other words, go around again. The term go-around is still used even for modern airliners, though they may not use traditional circuit patterns for landing. The manoeuvre is also known as a Balked Landing.

The go-around procedure may be initiated either by the air traffic control or by the pilot in command of the aircraft. The controller may instruct the pilot to go around if there is an aircraft, vehicle or object on the runway or some other unsafe condition. In both controlled and uncontrolled fields, the pilot in command may decide to go around at any time.

9.10.2 Examples of Go Around situations:

1. aircraft is not lined up or configured properly for a safe landing
2. aircraft, vehicle or other object has not cleared the runway
3. no landing clearance was received (in a controlled field)
4. the landing gear is not properly extended
5. dangerous meteorological condition is experienced on final approach (e.g., poor visibility, excessive cross-winds, etc.)
6. excessive energy (too high or too fast)
7. some other unsafe condition is detected

Note: IFR flights refer to "executing the missed approach" rather than a (VFR) go around.

VFR flight – go around initiated by the controller:

PILOT	ATC
	4RDDB, go around, I say again, go around (not below 1000 ft), traffic on the RWY
Going around, 4RDDB	4RDDB report downwind
4RDDB, wilco	

IFR flight - go around initiated by the controller:

PILOT	ATC
	IGO622, go around and follow missed approach procedure
Going around to follow missed approach procedure, IGO622	IGO622, contact Mattala Radar 118.75
118.75, IGO622	

The pilot himself saw something on the runway or due to some other reason has decided to go around:

PILOT	ATC
4RBBC, going around (due to ...)	4RBBC, roger, climb 2500ft, report right-hand downwind RWY 04
4RBBC, climb 2500ft, wilco	

9.11 LOW APPROACH

9.11.1 Low approach is an approach along or parallel to a runway descending to a specified minimum level. It is some sort of a training flight when aircraft are flying along or parallel to a runway with its gear retracted intentionally.

PILOT	ATC
4RDDA, request low approach RWY 10 for training	4RDDA, cleared low approach RWY 10, at or above 500 feet, wind 120°/6kt, QNH 1009
Cleared low approach RWY 10, at or above 500 feet, QNH 1009, 4RDDA	4RDDA, after low approach proceed to point xxx, climb 3000 ft
After low approach proceed to point xxx, climb 3000 ft, 4RDDA	
4RDDA, low approach completed	4RDDA, roger, report passing 2000ft
4RDDA, wilco	



9.12 LOW PASS

9.12.1 In case of unsafe gear indication (main or nose landing gear), the pilot may request to fly past the control tower or some other observation point for the purpose of visual inspection from the ground. *NOTE: Low pass 'Landing gear check' procedure is not available in Vatsim operations.*

9.12.2 For training purpose pilot may request 'Low pass' over runway. Request must be made in advance, & controller clearance should be issued, subject to traffic conditions. Phraseology is similar to 'Touch and Go' procedure of 9.13 or 'Full stop Landing' of 9.14.

9.13 TOUCH AND GO

9.13.1 When a pilot wishes to land and take off again immediately for training purposes, thus reducing the time spent on the ground s/he will ask for touch-and-go.

PILOT	ATC
8QDKH, on final RWY 05, for touch-and-go / low pass (training)	8QDKH, cleared for touch-and-go / low pass RWY 05, wind 060°/5kt
Cleared for touch-and-go / low pass RWY 05, 8QDKH	8QDKH, after touch-and-go / low pass turn right, join right-hand traffic circuit RWY 05, report downwind
1- After touch-and-go turn right to join right-hand traffic circuit RWY 05, wilco, 8KH 2- After touch-and-go turn right to join right-hand downwind RWY 05, 8KH	

9.14 FULL STOP LANDING

9.14.1 After a number of touch-and-go landings the pilot may ask for a full stop landing or in case the traffic situation does not permit another execution of touch-and-go, the controller shall issue the instruction for the full stop landing.

PILOT	ATC
8QDDA, request touch-and-go (Low pass) for training	1-8DA, unable to approve touch-and-go (Low pass) due to traffic, make full stop landing, cleared to land, wind 050°/4kt 2-8DA, negative (due to traffic), make full stop landing, cleared to land, wind 050°/4kt
Cleared to land for full stop, 8DA	

9.15 FLYING IN THE TRAFFIC CIRCUIT/PATTERN/ZONE

Controlled airspace is an airspace of defined dimensions within which air traffic control service is provided to IFR flights and to VFR flights in accordance with the airspace classification.

Airway is a control area or portion thereof established in the form of a corridor equipped with radio navigational aids. (5 NM wide from the central line to each side).

Control zone (CTR) is a controlled airspace extending upwards from the surface of the earth to a specified upper limit.

Terminal control area (TMA) is a control area normally established at the confluence of ATS routes in the vicinity of one or more major aerodromes.

9.15.1 ENTERING THE CONTROL ZONE

PILOT	ATC
Male tower, 8QDDA, at point Delta, 2000 ft, request joining instructions for landing	8DA, Male TWR, roger, join left-hand pattern for RWY 18, wind 200°/12kt, QNH 997, report downwind
Join left-hand pattern for RWY 18, QNH 997, wilco, 8DA	
8QDDA, left-hand downwind (for) RWY 18	8DA, roger, report turning to base
8DA, wilco	
8DA, turning base	8DA, roger, report turning final
8DA, wilco	

Exercise: Produce initial calls and joining instruction for the following aircraft							
RULE	A/C	SQ	CIRCUIT	CALL SIGN	POINT	AIRPORT	
VFR	PA18/L	1005	1500'	8QDPA	YKW	VRMM	
VFR	C210/L	3205	2500'	4RDEG	S1	VCRI	
VFR	C172/L	2206	2500'	4RDHV	N1	VCCW	
VFR	C172/L	2101	1500'	8QDDA	N55	VRMG	
VFR	C150/L	2621	2000'	4RDAB	W	VCBI	
VFR	C210/L	2505	1000'	4RREG	E	VCCC	
VFR	PA18	1515	2500'	8QCDH	N	VRMM	
Exercise: Produce complete exchange of messages (initial call, departure information, ATC clearance, take off clearance or joining instructions for the following IFR FLIGHTS (One set each for TO/FROM airport)							
RULE	A/C	SQ	INITIAL ALT	CALL SIGN	POINT	CRUISE ALT	AIRPORT
IFR	F70/M	6543	FL140	QTR333	MACE2C	FL380	VRMM
IFR	A320/M	7013	FL130	SIA646	PODE2C	FL460	VRMM

IFR	A320/M	6535	FL140	AIC450	PODE2C	FL450	VOTV
IFR	AT43/M	1211	FL130	IGO369	RUDI2C	FL240	VCRI
IFR	B738	2621	FL130	ALK698	SEBL1A	FL460	VCBI
IFR	A319/M	2212	FL110	ALK123	DABA1A	FL410	VOMM
IFR	AT72/M	6521	FL160	ALK545	MABA2C	FL250	VRMG



9.16 DELAYING ACTIONS

9.16.1 For the purpose of maintaining the safe and orderly flow of traffic in the approach area and traffic circuit, the controller shall sometimes use delaying actions to separate traffic. The pilot can be asked to orbit at a certain position, to make one orbit or one 360 or to extend downwind.

9.16.2 MAKING 360 / AN ORBIT

When making a 360-degree turn the aircraft will lose couple of minutes, subject to aircraft speed. The controller needs to specify whether the turn should be made to the left or to the right and which will depend on the position in the traffic circuit. It is preferable to make turns away from the runway in use. Upon the completion, the pilot shall inform the controller that the 360 has been completed.

PILOT	ATC
	8QDDA, make a three sixty right, (report three sixty completed)
Making three sixty the right, (wilco), 8QDDA	
8QDDA, 360 completed	8QDDA, roger, continue approach, report on final
8QDDA, roger, wilco	

9.16.3 ORBITING

The controller can ask the pilot to orbit at a certain position, which means that the aircraft will be orbiting (doing orbits, each lasting 2 minutes) until the controller asks it to stop.

PILOT	ATC
	4RDDA, orbit right at position left-hand downwind RWY 05
To orbit right at left-hand downwind RWY 05, 4RDDA	
	4RDDA, stop orbiting, continue approach, report final RWY 05
Stopping, to continue approach, wilco, 4RDDA	
	4RDDA, orbit left at present position
To orbit left at present position, 4RDDA	
	4RDDA, you are number 3 for landing, orbit over Hotel Kilo
Number 3 for landing, to orbit over Hotel Kilo, 4RDDA	
	4RDDA, hold over Tango until (time) 1025
To hold over Tango until 1025, 4RDDA	

9.16.4 EXTENDING DOWNWIND

The pilot can be asked to extend downwind which means that the downwind section of the traffic circuit will be prolonged and the aircraft will turn base later than usual, thus making the final leg of the traffic circuit longer as well. The controller shall ask the pilot to turn base when the adequate separation has been established.

ATC- 4RDDA extend left-hand downwind RWY 05 (call you back for turning to base/final)

PILOT- Extending left-hand downwind RWY 05, (roger), 4RDDA

ATC- 4RDDA, correct (expect onward instructions shortly)

9.17 AERODROME CONTROL - TRAFFIC INFORMATION

9.17.1 Traffic information shall be passed in order to arrange sequencing, to avoid unnecessary delay and to manage safety issues evaluating time most efficiently. It shall consist of the call sign of the aircraft being addressed, and information on the traffic consisting of the aircraft type, its position and level (when known).

9.17.2 Traffic information on VFR traffic:

ATC- 8QDML, traffic is Piper 28 from Koggala to Tango point at 2000 ft. (Report traffic in sight)

ATC- 8QDKL, traffic is C150 just departing (from) RWY 05, proceeding to Tango point, climbing 2000 ft (Report traffic in sight)

ATC- 8QDKL, traffic is Cessna 172 just airborne and joining left-hand traffic circuit RWY 05

ATC- ALK662, traffic is C130 on left-hand downwind RWY 05 at 2000 ft

9.17.3 The pilot can provide the following answers to acknowledge the receipt of the traffic information:

PILOT- 8QDDA, looking out / PILOT- 8QDDA, traffic in sight / PILOT- 8QDDA, negative contact

9.17.4 Here is a combination of joining instructions and traffic information to traffic No. 2 regarding traffic No. 1:

PILOT	ATC
Male TOWER, 8QDKH inbound from Gan, maintaining 1500ft, for low approach at Male (request joining instructions)	8QDKH, Male Tower, RWY in use 36, wind 060/5kt, QNH 1018, join left-hand traffic circuit RWY 36, at 1500ft, report on downwind
RWY 36, QNH 1018, to join left-hand traffic circuit RWY 36, at 1500 ft, wilco, 8QDKH	
8QDKH left-hand downwind RWY 36, 1500ft	8QDKH, roger
	8QDKH, traffic/number one is A320 just passing OM RWY 36, report traffic in sight
8QDKH, traffic in sight	8QDKH, roger, number two, follow A320, report on final, caution wake turbulence
Number two, wilco, 8QDKH	
8QDKH, on final RWY 36	8QDKH, cleared low approach RWY 36, wind 065º/7kt, not below 1000ft, QNH 1018
Cleared low approach RWY 36, not below 1000ft, QNH 1018, 8QDKH	8QDKH, correct, after low approach, turn left proceed to Gan, climb 1500ft, report over Tango point
Roger, after low approach turn left to proceed to Gan, climb 1500 ft, wilco, 8QDKH	

9.18 JOINING INSTRUCTIONS, FINAL APPROACH AND LANDING

ARRIVING IFR TRAFFIC

PILOT- Mattala Tower, IGO662, ILS established RWY 23.

ATC- IGO662, Mattala Tower, (roger) cleared to land RWY 23, wind 200/7kt.

PILOT- Cleared to land RWY 23, IGO662.

ARRIVING TRAFFIC ON 4NM FINAL

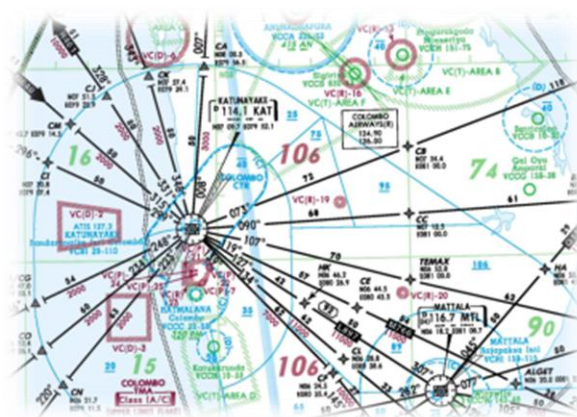
PILOT- ALK423, (on) final.

ATC- ALK423, roger, do you have RWY in sight?

PILOT- ALK423, affirm.

ATC- ALK423, cleared to land RWY 22, wind 190°/17 kt

PILOT- Cleared to land RWY 22, ALK423.



ARRIVING VFR TRAFFIC

PILOT- Koggala Tower, 4RDDA, 7NM NE of the field at 1500ft, for landing.

ATC- 4RDDA, Koggala Tower, cleared for straight in approach RWY 23, wind 220°/5, QNH 1009

PILOT- Cleared for straight in approach RWY 23, QNH 1009, 4RDDA

9.18.1 In case the runway is occupied and/or landing clearance will not be issued during the first contact, the pilot on an instrument approach shall be instructed as follows:

PILOT	ATC
Colombo Tower, QTR662, ILS established RWY 04	QTR662, Colombo Tower, (roger), continue approach, report passing OM (Outer Marker)
Continuing approach, wilco, QTR662	
QTR662 passing OM	QTR662 cleared to land, wind 060°/7kt
Cleared to land, QTR662	
	QTR662, continue approach, expect landing clearance shortly, (landed) aircraft still on the RWY
Continuing approach, roger, QTR662	QTR662 cleared to land RWY 04, wind 060/7kt
Cleared to land RWY 04, QTR662	

9.18.2 In case the runway is occupied and landing clearance cannot be issued, the pilot on a visual approach shall be instructed as follows:

PILOT	ATC
Colombo Tower, AIC662, on final RWY 04	AIC662, Colombo Tower, continue approach, expect late landing clearance, RWY occupied by landing aircraft
Continuing approach, roger, AIC662	
	AIC662, cleared to land RWY 04, wind 060/7kt
Cleared to land RWY 04, AIC662	

VFR FLIGHT

PILOT	ATC
Colombo Tower, 4RDKH departed from Ratmalana to Colombo, maintaining 1500ft, for landing (request joining instructions)	4RDKH, Colombo Tower, RWY in use 04, wind 060°/5kt, QNH 1018, join left-hand traffic circuit RWY 04, report downwind, at 1500ft
RWY 04, QNH 1018, join left-hand downwind RWY 04, wilco, 1500ft, 4RDKH	

9.18.3 When there is no other traffic or there is sufficient time before another approaching traffic:

PILOT	ATC
Colombo Tower, 4RDKH departed from Ratmalana to Colombo, maintaining 1500ft, for landing	4RDKH, Colombo Tower, join left-hand base RWY 04, wind 060°/5kt, QNH 1018
Join left-hand base RWY 04, QNH 1018, 4RDKH	
4RDKH on left-hand base RWY 04	4RDKH roger, cleared to land RWY 04, wind 060°/5kt
Cleared to land, 4RDKH	

9.18.4 Instructions to arriving traffic NDB Approach RWY 22 (Initial/intermediate fix /holding RML VOR):

PILOT	ATC
Colombo Tower, 4RDGM, 7 miles RML DME/inbound RM	4RDGM, Colombo Tower, continue approach, report RM inbound/final RWY 22
ALK662 wilco	
ALK662 passing RM	4RDGM cleared to land RWY 22 wind 200°/10kt
Cleared to land RWY 22, 4RDGM	

9.18.5 Instructions to arriving traffic for RM Approach RWY 22 (Initial/intermediate fix/holding RML VOR):

PILOT	ATC
Colombo Tower, IGO662, inbound RM	IGO662, Colombo Tower, roger, report RM
IGO662 wilco	
IGO662, passing RM	IGO662, roger continue approach, expect landing clearance shortly, runway still occupied
Continuing approach, roger, IGO662	

9.18.6 Instructions for visual departure:

PILOT	ATC
4RATB request visual departure	4RATB, cleared to Yakwila, when airborne turn left/right, climb 3000 ft visually, then proceed to Galle, climb 6000ft.
Cleared to Yakwila, when airborne turn left/right, climb 3000 ft visually, then proceed to Galle, climb 6000ft, 4RATB	4RATB, read back correct

9.19 LOST COMMUNICATIONS

9.19.1 Pilots and Controllers must exercise good judgment as it is virtually impossible to provide regulations and procedures for all situations. Intercept a "known value," on in other words, be as predictable to ATC and other aircraft as you can.

1. If the cause of the lost communication is not obvious, there is a fair chance it is user error.
2. Ensure the correct frequency has been set and the volume turned up.

3. Check to ensure your mic is working correctly.
4. Check all connections (cables/jacks).
5. If voice is not working always try text messaging, as it is acceptable in Vatsim flying.

9.19.2 If unable to re-establish communication with ATC, set aircraft transponder to squawk 7600 for lost comm.

9.19.3 Send a private text message to the controller. Similarly the controller can contact pilot using private message facility available with Vatsim.

9.19.4 Notify ATC about intentions. If able to maintain flight in VMC continue under VFR and land as soon as practicable.

9.19.5 If communications are established, advise communications was lost, and request further clearance from the controller.

RADIOTELEPHONY COMMUNICATIONS HANDBOOK SOURCES:

Information appear in this document extracted from data available in WWW

1. ICAO Annex 2
2. ICAO Annex 10, volume II, Chapter 5
3. ICAO Doc 4444
4. ICAO Doc 9432 RTF Manual of Radiotelephony
5. AIC A03/08

