The

CIX

VFR Club

AIR TRAFFIC CONTROL MANUAL

for

VATSIM

VFR PILOTS

NOT TO BE USED FOR REAL WORLD AVIATION

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Document History

Date	Version	Changes
03/02/2004	1.0	Initial Published version
12/02/2004	1.1	Some Aviation law errors corrected.
		Sections added on CTR clearances and SVFR
		Minor amendments to text throughout document.
10/10/2005	1.2	Minor corrections made.
15/01/2006	1.3	Minor corrections made
08/03/2009	1.4	Minor corrections made
15/04/2011	1.5	Significantly rewritten and updated
01/07/2013	2.0	Completely revised and updated. AFIS and AGCS communication procedures added.
12/07/2013	2.01	Minor correctionsmade.

Acknowledgements

1.   GENERAL INFORMATION

This manual is intended for use by Flight Simulator pilots who are members of one of the online communities. It is written with specific reference to VATSIM, but is equally applicable to IVAO or any other online service, and reflects real world Air Traffic Control rules and procedures as accurately as necessary. It is designed to help virtual pilots perform as realistically as possible, which is one of the things which makes the hobby so enjoyable. It takes as its basis, a number of UK Civil Aviation Publications, but generally extracts from these only the information required for online General Aviation flight in Flight Simulator.

Version 2.0 is a completely new version with all dialogue and procedures updated to current 2013 standard. The manual now also contains the ATS information for Aerodrome Flight Information Service (AFIS) and Air / Ground Radio Communication Service. (AGCS) and Emergency ATS procedures.

There are many terms which will be unfamiliar to non-pilots in this manual. Please refer to the Acronyms and Abbreviations at section 2.5.3 and the Abbreviations Section at section 8 for an explanation.

On first reading, it may seem that radiotelephony (R/T) dialogue is hugely complex. However, it has a simple structure in two basic forms.

Pilot initiated

    a) A pilot contacts an Air Traffic Controller and requests a service.

    b) A controller provides that service either as a series of instructions or as information

Controller initiated

    a) An Air Traffic Controller contacts a pilot to provide information, request information or pass instructions

    b) The pilot responds to the information, or complies with the instructions.

There are many different scenarios within that structure, as you would expect but they all follow that general principle.

1.1   Virtual Air Traffic Controllers

Real world Air Traffic Controllers have a VERY demanding job, which is why they only ever do 2 hours on duty at a time. VATSIM Controllers also have a demanding time sometimes, but they are doing it for FUN. It isn't a job. In fact one of the rules of VATSIM is that members should have fun.

The relationship between controller and pilot is a partnership. Each wants the same result; an enjoyable hobby experience with the satisfaction of a successful outcome. Neither controller nor pilot should ever fall into the error of trying to be too clever; taking realism to the nth degree. That simply spoils the enjoyment for at least one of the partners.

Note that a real world Air Traffic Controller will never give a pilot a "telling off" whilst he is flying. That is potentially dangerous if the pilot is already under stress. Rather, the Controller guides the pilot calmly to a safe outcome. However, the instruction "`Golf-Golf Yankee Alpha Victor, please report to the Tower`" after an aircraft has landed, is quite likely to turn its pilot's legs to jelly. But at least this will happen when he is safely on the ground. This should also be the case on VATSIM, but sadly, sometimes it isn't. Inexperienced pilots and inexperienced controllers both need to learn. Patience and tolerance should therefore be one of the characteristics of our hobby.

However, no matter what ATC or other pilots say or do, when a difficult situation arises and heart rate increases, the golden rule of flying, above all else is: -

AVIATE : NAVIGATE : COMMUNICATE

To that, one could add, for Flight Simulator pilots online, if it all goes pear shaped – disconnect (which is actually one of the VATSIM Rules of Conduct).

1.2   Speed and Distance Measurements

Although many older aircraft have their airspeed indicators calibrated in miles per hour, the internationally recognized units are knots for speed, and nautical miles for horizontal distance. Altitude is in feet in the UK and USA, and most of the rest of the world except in Russia and China where it is metres below the Transition Level. Terrain elevation is in feet in the UK and the USA, and in metres on European charts.

A nautical mile is one minute (1/60th of a degree) of longitude (or latitude if and only if measured at the equator). It is equivalent to 6072 feet or 1.15 statute miles (1.85 kilometres)

One knot is one nautical mile per hour. In our sailing heritage, when the "log" was thrown overboard and trailed behind the ship, the speed was measured by the number of knots in the rope attached to it, which were counted in a given time. Thus we have speed being measured in knots!

1.3   Visual Flight Rules

Pilots flying under Visual Flight Rules (VFR) in a fixed wing aircraft below 3000ft and **outside** controlled airspace must fly at all times within sight of the surface, 1500 metres horizontally and 1000 feet vertically clear of cloud and with a horizontal visibility of 5 kilometres or more. If the aircraft speed is 140 knots or less, then it is sufficient to fly within sight of the surface, clear of cloud and with a horizontal visibility of 1500 metres or more.

Pilots flying under Visual Flight Rules (VFR) in a fixed wing aircraft below 3000ft and **within** controlled airspace must fly at all times within sight of the surface, 1500 metres horizontally and 1000 feet vertically clear of cloud and with a horizontal visibility of 5 kilometres or more. If the aircraft speed is 140

knots or less, then it is sufficient to fly within sight of the surface, clear of cloud and with a horizontal visibility of 5 kilometres or more.

The full rules cover flight at higher altitudes and flight within controlled airspace, and may be found at http://www.caa.co.uk/docs/64/VFR_Guide_2011.pdf.

1.4   Traffic Priority – Light and Large

Aircraft are classified into 2 groups. Those which weigh less that 5700 kilograms maximum all-up weight (MAUW) are classified as "Light". MAUW includes aircraft, fuel, passengers and baggage. All others are classified as "Large". See http://www.easa.europa.eu/agency-measures/certification-specifications.php - CS-23 for full details.

1.4.1   Priority by Performance

The major effect of this classification in the ATC environment is that light normally gives way to heavy, because they are normally faster, less manouevrable, and being mostly commercially operated, more important than light aircraft flown for pleasure. Of course on VATSIM, all aircraft are flown for pleasure, but controllers will tend to work to real world procedures. Thus, if two aircraft are approaching to land, the large one, or the faster one (which is usually one and the same) will be given priority, and if necessary, the light (slower) aircraft will be instructed to hold at a known location until the large aircraft has landed.

1.4.2   Priority by Wake Turbulence Category

There is also a classification known as the Wake Turbulence Category. This separates aircraft into Small, Light, Medium, Upper Medium, Heavy and Super-heavy. The Wake Turbulence Category of an aircraft is not the same as its weight class, but the Wake Turbulence Category also determines how it is handled by ATC.

For example, a light wake turbulence category aircraft landing behind a heavy wake turbulence category, has to remain behind the heavy by, typically (it varies) 6 nautical miles, to avoid being affected by the turbulence generated by the wings of large aircraft. It has been known for light aircraft to be turned over completely on late final approach by the swirling vortices produced by big wings.

Wake turbulence is not modelled in default Flight Simulator, but addon weather programs such as Active Sky do model wake turbulence accurately. On VATSIM, ATC will normally give a wake turbulence warning in situations where it would be necessary in the real world.

1.5   Types of Air Traffic Control

There are three basic types of Air Traffic Service.

a) Air/Ground Communication Service (AGCS)

b) Aerodrome Flight Information Service (AFIS)

c) Air Traffic Control (ATC)

The difference between a, b, and c is one of the level of instruction given to pilots.

AGCS is used at most small General Aviation (GA) airfields and provides **information** only to pilots who must make their own decisions based on the information given. An AFIS service is something of a hybrid between ATC and AGCS. It is used at slightly busier aerodromes. Under an AFIS, pilots are given information and **advice** while airborne, taking off and landing, but **instructions** for manoeuvring on the ground.

With certain exceptions, Air Traffic Control provides pilots with **instructions** both on the ground and while airborne, taking off and landing. This may include an aircraft being instructed to fly at particular altitudes and on particular headings in order to comply with instrument flight procedures or to avoid traffic confliction; a procedure known as Radar Vectoring. Radar Vectoring is mostly applicable to Instrument Flight, so Cix VFR Club members need not concern themselves with it when flying under VFR.

1.6   Controlled Airspace

There are seven classes of airspace in international air law, but for the VFR pilot in the UK, there are only four with which they need concern themselves: - Class A, Class D, Class E and Class F/G. There is one area (at present) of Class E airspace – the Scottish Terminal Manoeuvring Area (TMA) which covers the Glasgow – Edinburgh region at various altitudes. The Scottish TMA also includes some Class D Airspace.

Class A   VFR flight is not permitted in Class A airspace under any circumstances, with the sole exceptions of the London Control Zone and the Jersey Control Zone, where a VFR flight, known as a *Special* VFR flight (SVFR) may be permitted in certain conditions (see section 3.14 for details of Special VFR Flight).

Class D   IFR and VFR flights are permitted and all flights are provided with air traffic control service. IFR flights are separated from other IFR flights and receive traffic information in respect of VFR flights. VFR flights receive traffic information in respect of all other flights.

This is airspace around the larger aerodromes and airports in which VFR traffic is not permitted without specific clearance from ATC. A VFR clearance may be granted within Class D airspace, if the VFR minima can be met.

Note: Pilots flying under VFR MUST NOT ENTER Class D airspace without permission and a specific clearance from the ATC unit, and must obey instructions from ATC.

If VFR conditions cannot be met in Class D airspace, a Special VFR clearance may be granted. See section 3.14 for details of Special VFR Flight.

VFR and SVFR clearances in Class D airspace are commonly provided. Aircraft without radios are not normally permitted.

Class E   IFR and VFR flights are permitted. IFR flights are provided with air traffic control service and are separated from other IFR flights. All flights receive traffic information as far as is practical. Class E is not used for control zones.

The VFR minima for Classes D and E airspace are an in-flight visibility of 5km or more; 1000 feet vertically and 1500 metres horizontally clear of cloud, and in sight of the surface. For aircraft flying below 3000 feet and at 140 knots or less, being clear of cloud and in sight of the surface is sufficient. The in-flight visibility minimum of 5km is required.

1.7   Other Controlled Airspace

The large airports have a significant area of country embraced by controlled airspace which falls into four categories. These three-dimensional blocks of the atmosphere, several cubic miles in size and with, of course, entirely invisible boundaries become so engrained in the pilot's thinking that they might as well have brick walls, floors and ceilings!

1.7.1   Terminal Manoeuvring Areas

Terminal Manoeuvring Areas (TMAs) are large areas of controlled airspace, covering one or two counties or more, and with the exception of the Scottish TMA, are Class A airspace. They are used for arriving and departing commercial traffic flying entirely under Instrument Flight Rules (IFR). VFR traffic is prohibited from the Class A TMAs, but fortunately they extend from a base level of a few thousand feet so that General Aviation traffic does not have to go round them, but can go underneath them. There are three in the UK

- London TMA   – Base level 2500-4500 feet varies
- Manchester TMA   – Base level 3500 feet
- Scottish TMA   – Base level 2500 - 4000 feet (varies)

The Scottish TMA is Class E Airspace, which for the VFR pilot is effectively the same as Class D.

1.7.2   Control Areas

Control Areas (CTAs) are smaller than TMAs and they cover the arrival and departure routes of the smaller airports such as Luton, East Midlands and Birmingham. All Control Areas in the UK are Class D. The base level of a CTA

is some thousands of feet above the ground as they are protecting inbound and outbound traffic which is already airborne. The top of a CTA usually coincides with the base of the Airways system, which is all Class A airspace, so that "participating" IFR traffic is always flying within controlled airspace. VFR traffic may transit Class D CTAs with ATC permission.

Note that IFR traffic does not <u>have</u> to fly in controlled airspace. Some IFR traffic, such as private flights, air taxis, medical flights etc. may choose for operational reasons not to "participate" and can fly IFR outside controlled airspace. However, IFR traffic in the real world must always be in contact with an ATS unit. On VATSIM of course this may not always be possible.

1.7.3   Control Zones

Control Zones (CTRs) are smaller again than CTAs – perhaps 20 miles across north to south and east to west. They are used to protect landing and departing IFR traffic and, with the exception of Heathrow, which is Class A airspace, as mentioned above in section 1.6, are all Class D airspace, and extend from the surface. The top of a CTR usually if not invariably coincides with the base of that airport's CTA. VFR traffic wishing to land at one of these airports may request a VFR clearance to enter the Control Zone in order to do so.

Once again, the one exception to this rule is London CTR which is Class A airspace. As one of the busiest airports in the world, with an arriving aircraft every 2 minutes and similar departing, one's Cessna 152 is very definitely not welcome, and an SVFR clearance to land would be unlikely to be given (although not specifically excluded). An SVFR clearance to transit the Heathrow CTR, however, may very well be granted, and indeed helicopters regularly move throughout the CTR via designated routes.

1.7.4   Aerodrome Traffic Zones

Aerodrome Traffic Zones (ATZs) are a special little area of controlled airspace which surround all **Licensed** Airfields other than those controlled by CTRs etc. Unlike the other types of Airfield protection airspace, which may be any shape, depending on traffic requirements, ATZs are circular with a radius of 2 nautical miles (nm), unless the runway is 1850 metres in length or more, in which case the ATZ is 2.5nm in radius.

An aircraft should enter an ATZ only with the permission of the Air Traffic Controller, and of course, in the case of small aerodromes, this means the Air/Ground radio operator or the Aerodrome Flight information Service Officer (AFISO) (see Section 1.5 above.)

Where an aerodrome has "Prior Permission Required" (PPR) included in its particulars as printed in the Air Pilot (the aviation law "Bible") or one of the published Flight Guides such as "Pooleys", it means that pilots must not land without express permission from the airfield operator. This requirement does not arise within the VATSIM environment and can be disregarded.

1.7.5   Military Aerodrome Traffic Zones

The final type of aerodrome protective airspace is the Military Aerodrome Traffic Zone, or MATZ (pronounced "mats"). Surprisingly perhaps, it is not mandatory to request permission from the ATCO at the military aerodrome to transit a MATZ, but it is ALWAYS good airmanship to do so. There is a standard radio procedure for this outlined in section 6.5.5 below.

1.7.6   Exceptions

There are always exceptions. The Channel Islands are surrounded by Class A airspace extending across much of the Channel from the coast of France to the line of latitude 50º North. However, Channel Islands Control, based on Jersey will give a SVFR clearance to an aircraft flying under VFR provided it is radio and transponder equipped.

1.8   Uncontrolled Airspace

In the UK all geographic areas "outside controlled airspace" are either Class F or Class G, and the pilot has more freedom of choice about where to go, who to talk to and when. It is also known as "the open Flight Information Region" (FIR). Pilots may fly VFR in the open FIR (learn your acronyms!) under the terms described in 1.3 above.

Class F   "Advisory or "Notified" routes are special areas of uncontrolled airspace where aircraft are permitted to fly VFR without being in contact with an ATS unit, but are required to navigate within certain constraints laterally and vertically because of the proximity of controlled airspace. They exist where navigation past or round the adjacent controlled airspace would require a significant diversion or extension – effectively the controlled airspace would otherwise virtually prevent VFR navigation in or past a large area. Probably the best example is the Manchester Low level Route which is a corridor approximately from Whitegate NDB to a little north of the town of Warrington. It is 20 nautical miles long, north to south, and apart from wider sections at the northern and southern ends, is 4 nautical miles in width. It is clearly shown on the aviation 1:500,000 and 1:250,000 charts. These Notified Routes are currently classified as "Class F" airspace, but some time after 2013 they are to be reclassified as Class E airspace.

Class G   In the UK, this effectively means "everywhere else".

1.9   Real World References

The CAA publish a chart depicting airspace definitions. Every serious online pilot should have a copy and use it to augment the information contained in this manual.   For a copy of the chart please go to https://www.caa.co.uk/docs/64/200890108ATSAirspaceClassificationV3.pdf

2.   AIR TRAFFIC CONTROL PROCEDURES

2.1   General

At an aerodrome with ATC, there are normally Tower and Approach Controllers, and very occasionally Ground Controllers. Ground controls taxiing and vehicle movements, Tower controls final approach, landing and take off. In the real world, both these controllers are in the part of the Control Tower with windows, and use their eyes. Approach controllers monitor and regulate aircraft approaching or departing from a CTR or ATZ. Control is transferred between Approach and Tower at a point agreed between them (for example a defined Visual Reference Point, or, for arrivals, often when the pilot reports that he has the airfield in sight).

In this manual, the Air Traffic Controller's instruction is printed in red, and the pilot's response in blue. Text within square brackets is optional.

The rules state that the full call sign of the aircraft is used unless or until the ATCO abbreviates it, which would be after the initial call. He may abbreviate Golf Bravo November Oscar Zulu to Golf Oscar Zulu or just Oscar Zulu. In practice, after the initial call, pilots often abbreviate their call sign first. Where two aircraft have similar call signs, the Controller may request that each aircraft uses its full call sign in all transmissions.

The pilot reads most transmissions from ATC back in full. There are exceptions which are identified in the examples of correct R/T dialogue below.

2.2   Who is in charge?

The pilot is totally responsible for the aircraft's safety at all times. For example, if ATC give a landing clearance, but there is an aircraft on the runway which doesn't seem, to the pilot, to be moving, then he must consider the safety of his aircraft first and foremost, and if necessary, call "going around" and make a missed approach. ATC may have been confident that the aircraft ahead would clear in time, but if the pilot is unsure HE is in charge of his aircraft.

The usual flow of dialogue is in one of two forms.

d) a **request** from the pilot, followed by a **permission** from ATC, or

e)   an **instruction** from ATC followed by an **acknowledgment** of compliance by the pilot.

The pilot NEVER tells ATC what to do, but may tell ATC what he is doing, in particular if he is unable to comply with an ATC instruction because of aircraft safety, or for air-legal reasons.

Under an Air Traffic Control Service, which is the majority of VATSIM positions of course, the real world rules are applied.

- An aircraft must NEVER take off without an express clearance to take off in the exact words "Cleared [for] take off". A frequently used phrase "Line up and wait" is not a take off clearance.

- An aircraft must NEVER land without the express clearance to land in the exact words "Cleared [to] land".

2.3   Chatter

Don't! ATC don't want to know your life history. "Good morning" and "Goodbye" and "Thank you" are acceptable, used sparingly. You can commence a dialogue with a controller with good morning, or good afternoon, etc., and end the session with "Goodbye". If you must; "Thank you for the ATC" is acceptable, but it is a VATSIM only courtesy. You would never hear it in the real world. The only non-standard patter you should use is to inform ATC of a potential problem. "Gloster Approach, Golf Oscar Zulu, the Piper Cherokee ahead has not lowered his undercarriage".

2.4   Talking to other Aircraft

The rule is – you don't, except in an emergency.

Sometimes (not usually under ATC, but at smaller fields), you might want to inform another aircraft who is about to land, that you are not about to enter the runway beneath him. In that situation, you do not call the other pilot, you simply make **your** intentions known by saying

Golf Oscar Zulu holding short runway two seven for landing aircraft.

If you do talk to another pilot, you only ever state **your** intentions. You don't try and tell him what to do. That's his responsibility.

On VATSIM, of course, there is the private message system. This is the way to talk to other pilots, other than by a separate Voice Over Internet Application such as TeamSpeak or Skype. To send a private message to an aircraft logged on as GABCD, type ".msg GABCD are you landing on runway 27 left?". Note the dot before msg. There are a number of "Dot commands" in the Pilot Client software which are listed in the relevant user manuals.

2.5   What to Say and How to Say It

There are few rules. In many cases you just have to learn the correct way to say things.

2.5.1   The Introduction

Every ATC dialogue starts with: -

<The called station>, <The calling station> and a statement of the ATC service required.

E.g.

Gloster Approach, Golf Bravo November Oscar Zulu request Basic Service

or, if approaching an airfield to land.

Gloster Approach, Golf Bravo November Oscar Zulu request join

The last of these two calls tells the controller that you are intending to land at his aerodrome. This has changed in recent years. Previously the request was "request joining instructions".

An alternative call for approach and landing where the aircraft is known and flying into his "home" airfield, (not strictly correct, but acceptable)

Gloster Approach, Golf Bravo November Oscar Zulu inbound

Contrary to film folklore, you do not use the words "this is" in the middle as in "Gloster Approach, this is Golf Bravo November Oscar Zulu"

NEVER use Golf Bravo November Oscar Zulu calling Gloster Approach" – another line beloved of film directors, the most famous of which is probably "Flying Doctor calling Walambula Base".

Once communication is established, the form becomes

For information or instructions: - <Called station> Message

e.g. "Golf Oscar Zulu, turn right two seven zero degrees"

For acknowledgement: - Message <Calling station>

e.g. "Right two seven zero, Golf Oscar Zulu"

2.5.2 Numbers

The deliberate pronunciations of words and numbers set out below originates in the days when radios were much less sophisticated than today, and reception much poorer. Consequently, today, these deliberately off-normal pronunciations are not used. As always, if in doubt, use them.

Official phonetic spelling of numbers is as follows:

zero wun too tree fower fife six seven eight niner; plus tousand (1,000) and daisimal rather than decimal. Examples are given below.

Runway too seven, not twenty seven

Runway zero fower, not four

Queue Enn Aitch one zero too fife (yes **fife**)

Heading wun niner zero (yes **Niner**)

Runway zero niner

One tousand fife hundred feet (NEVER "fifteen hundred"**)**

Tree tousand feet (NEVER tree zero zero zero!)

"Surface wind too seven zero, wun four knots". The direction and speed of the wind are expressed as separate digits.

Radio frequencies are spoken "one two six daisimal three fife". With the introduction of 8.33KHz in the real world, many frequencies now have three digits after the decimal point, as in 126.355. However, FS cannot model this change, but radio frequencies are now spoken by VATSIM controllers as if 8.33 KHz frequency spacing existed in FS.

The following examples may help clarify the method.

123.000 (wun too tree daisimal zero)

122.900 (wun too too daisimal niner)

119.725 (wun wun niner daisimal seven too fife)

123.650 (wun too tree daisimal six fife zero)

Nevertheless, you will hear (in the real world and on VATSIM) abbreviations such as "one two six tree fife".

2.5.3 Acronyms and Abbreviations

The following are some of the short cuts used in ATC dialogue. Unfortunately the custom is not consistent, so some are spoken as phonetic alphabet letters, and some as English language letters. You just have to learn which is which, unfortunately.

PPL – Private Pilots Licence. Pronounced pee pee ell. All club members will have one of these. The term PPL is also in general use to describe a Private Pilot – e.g. "He's a PPL with 300 hours on Tomahawks".

IMC – Instrument Meteorological Conditions. Normally pronounced India Mike Charlie, but sometimes eye emm cee. These are weather conditions which are below the minima for VFR flight.

IR – Instrument Rating, pronounced India Romeo, probably, but it almost never used in ATC dialogue. It is included here for completeness and also because VATSIM members are assumed to have an Instrument Rating.

VFR – Visual Flight Rules normally pronounced Vee Eff Are on the radio.

IFR – Instrument Flight Rules normally pronounced eye eff are on the radio.

QNH – the altimeter barometric pressure setting which indicates the aircraft's height above sea level. It is used for take off and en route flight – pronounced Queue Enn Aitch. Officially the QNH should include the word hectospascals, such as " Queue Enn Aitch wun zero wun tree hectopascals", but the word hectopascals is often omitted on VATSIM. See section 2.5.4 for an additional explanation of hectopascals.

QFE – the altimeter barometric pressure setting which indicates the aircraft's height above the aerodrome. It is used for landing – pronounced Queue Eff EE. Again; the word hectopascals is added after the numbers as above for QNH.

MATZ – "Mats" not Mike Alpha Tango Sierra

G-WHIZ – Golf Whisky Hotel India Zulu not Gee Whiz!! (There is an aircraft with that registration!). "Clever" registrations are always ignored in radio dialogue and phonetic pronunciation used.

ATZ – ay tee zed

CTR – abbreviated almost always to "Zone" e.g. "Request entry into the Liverpool zone at Chester"

TMA – Tee Emm aye, but "Zone" is used where required, in a similar way to CTR above.

POB (Persons on Board) – Pee Oh Bee

If using radio navigation aids (navaids) – quite acceptable for VFR navigation, then:-

NDB – Enn Dee Bee

VOR – Vee Oh Are

But the identification letters of the navaid are spoken phonetically.

Gloucestershire NDB (GST) would be Golf Sierra Tango. E.g.

Gloster Approach, Golf Oscar Zulu. Estimate the Golf Sierra Tango in six minutes

Roger – beloved of all those Top Gun films. It means, "I have heard your last transmission." Use it sparingly.

Wilco – another chestnut, but from the Biggles era. It is probably used more commonly than "Roger", and is a little more specific in its meaning. It means "I have understood your message and will comply with it."

Affirm – means "Yes"

Affirmative – Not used in UK ATC terminology

Negative – means "No"

Negatory – Ugh! (CB Radio-speak – ten-one buddy!).

Over – at the end of a transmission. This is NEVER used in Aviation R/T.

Out – This may be used very occasionally if you are ending a transmission, but the Controller could be expecting more.

Gloster Tower, Golf Bravo November Oscar Zulu, request radio check one too tree daisimal too fife

Golf Bravo November Oscar Zulu, Gloster, readability 5

Roger. Strength 5. Golf Oscar Zulu out

ATC was probably expecting you to request taxi, but all you wanted to do was test your radio. That's OK.

Note that ATC has abbreviated its callsign to just "Gloster" in this example. It is **inadvisable** for you to do the same because you have a choice of two Glosters, Tower and Approach, so omitting that word could lead to confusion.

Note also that Gloucestershire Airport, near the town of Gloucester, in the County of Gloucestershire, uses "Gloster" as its ATC call sign!

2.5.4   QNH and QFE

Originating back in the days of morse code transmissions, the "Q codes" were a way of quickly transferring information. There were many of them, and a few have remained as it is much quicker to say "QNH" than it is to say "atmospheric pressure". QFE, QDM and QTE are few others which have remained.

The difference between QNH and QFE is very important in aviation. QNH is the atmospheric pressure relative to sea level. QFE is the atmospheric pressure relative to the aerodrome elevation.

Similarly, the difference between **altitude** and **height** must be clearly understood. When the QNH is set on the altimeter subscale, the altimeter indicates the aircraft's **altitude** - it's elevation above sea level. When the QFE is set on the altimeter subscale, the altimeter indicates the aircraft's **height** - it's elevation above the aerodrome.

Similarly, an aircraft on the ground at an airfield will indicate the airfield elevation above sea level when the QNH is set on the altimeter subscale. With QFE set, the altimeter will show zero.

Originally atmospheric pressure was measured in inches of mercury, because the first barometers used a column of mercury under vacuum to provide the necessary indication. Meteorologists later adopted millibars - where 1 Bar was equal to one Atmosphere; 14 pounds per square inch, and there are 1000 millibars in 1 Bar. The International Standard Atmospheric Pressure is now 1013.2 millibars at sea level.

On 17th November 2011, the millibar was replaced by the Standard International Unit "hectopascal" (HPa) in the aviation world. One hectopascal is numerically equivalent to one millibar. In addition, since 4th April 2013, for all radio transmissions, the word 'hectopascal' must be appended to figures when transmitting a pressure setting below 1000 hPa, or in cases where confusion or ambiguity may result.

QFE is rarely given by VATSIM controllers, as it does not display on their software, so they would have to know the aerodrome height above sea level and then make an adjusting calculation. One hectopascal is equivalent to approximately 30 feet, so the QFE at an aerodrome 300 feet above sea level would be 10 hectopascals less than the QNH at that aerodrome.

2.6   The Terrified Student

In his or her early student days, a pilot is invariably terrified of talking to ATC, because so much information is passed in one transmission, which has to be noted down, remembered and then (the desperate bit) read back as precisely as a tape recording, without getting the numbers the wrong way round, and without hesitation or deviation.

However, the only way to defeat nerves is to talk to ATC as often as you can. it really does become second nature after quite a short time. After 40 hours flight training, the student is often better than the seasoned pilot who has become slipshod with time.

2.7   Real World References

The Civil Aviation Authority publishes a "Radio Telephony Manual",. There are several volumes, each one aimed at a specific audience.

- CAP413

- CAP 413 Supplement 1 Quick Reference Guide for Air Transport Pilots

- Cap 413 Supplement 2 for Aerodrome Drivers

- CAP 413 Supplement 3 for General Aviation Pilots.

This manual forms the basis of dialogue between pilots and controllers on VATSIM and IVAO.   It is strongly recommended that all VFR pilots have at least Supplement 3.

3.   VFR FLIGHT UNDER AIR TRAFFIC CONTROL

Full Air Traffic Control (ATC) is the norm on VATSIM. Occasionally a controller will log on at an AFIS or AGCS aerodrome. The procedures and dialogue for flight at an AFIS or AGCS aerodrome are described in sections 4 and 5.

Air Traffic Control (ATC) consists of a dialogue between pilot and controller in which the controller gives **instructions** to the pilot and the pilot carries out these instructions. For VFR flight, a Radar Control Service is only given inside certain controlled airspace (although you may receive an ATC service inside controlled airspace – be careful to note the difference). Outside controlled airspace, VFR flight may receive one of four Air Traffic Services Outside Controlled Airspace (ATSOCAS) – see Section 6.

Note: The pilot remains responsible for complying with the Rules of the Air and for the safety of the aircraft at all times.

This means that in some circumstances, if he is unable to legally or safely carry out an ATC instruction (e.g. if asked to climb, but this would take him/her into cloud) he must inform ATC that he is unable to comply.

3.1   Movement on the Ground

At an ATC controlled aerodrome, no aircraft (or vehicle) must move anywhere without express permission from ATC. In some cases, ATC even require the light aircraft pilot to obtain permission to start his engine(s), a procedure which is mandatory for commercial aircraft.

3.2 Automatic Terminal Information Service (ATIS) – Departure

After start up and before taxiing, the pilot should obtain the Automatic Terminal Information Service (ATIS) broadcast where provided, and note the designation letter. A real world ATIS gives some or all of the following information: -

Airport, time, runway in use, runway surface condition (at three positions along the runway), Surface wind direction and speed, Cloud information, Visibility, QNH, QFE, Temperature, Dewpoint, and ends with "On first contact, report information <phonetic letter> received."

For example:

Liverpool information Quebec. Time zero niner too zero zulu. Runway too seven in use. Wet, wet, wet, Surface Wind too fower zero degrees wun too knots. Scattered at too tousand, broken at tree tousand five hundred. Queue enn aitch wun zero wun too, queue eff ee wun zero zero niner Temperature plus too dewpoint plus wun. On first contact, report information Quebec received.

(Aside: If you ever wondered why a pop group should call itself "Wet Wet Wet", - well now you know!)

For FS and VATSIM, the procedure is the same. The controller may have recorded a voice ATIS which can be heard by the pilot if he tunes the ATIS frequency as published in the chart for the aerodrome. One of the VATSIM Control client applications actually mimics the real world automatic robotic ATIS broadcast voice very well, working from an entered textual script. The text is displayed at the same time. Sometimes a controller is responsible for more than one aerodrome and there may not be a voice ATIS for the one from which the pilot is departing (the controller can only run one). Each controller may also provide some information by text such as his area of responsibility, a reference web page etc. These do not normally change or have any identifying designator. When the radio is tuned to the controller's frequency, this "Controller Information" is displayed automatically.

3.3 Departure Clearances

At airports with a Class D Control Zone, all aircraft will be given a departure clearance whilst still on the ground. At large airports, this will normally be given before taxiing, but at the smaller regional airports and those local aerodromes with full ATC facilities, the clearance may be given during taxiing. There is no hard and fast rule. Each Airport has its own procedures, which VATSIM will mimic as far as possible.

A clearance will contain the following information: -

    f) After departure turn (left or right)

    g) Leave the zone at a standard exit point

    h) Any altitude restriction

i) The flight rules pertaining to the departure

A typical example would be: -

Golf Bravo November Oscar Zulu, you are cleared with a left turn out to leave the zone at Chester, not above wun tousand fife hundred feet Liverpool QNH wun zero wun tree, standard VFR.

And you have to read it back precisely as given (or as near as possible – note the slight difference in the reply below which is the result of familiarity rather than lack of it. It contains all the vital elements in the correct order, so is acceptable.

Cleared left turn out to Chester, not above one tousand fife hundred feet, QNH 1013, standard VFR, Golf Oscar Zulu.

3.4   Taxi

The dialogue between pilot and controller is as follows. Note that the ATIS information letter can change at any time. The pilot may have listened to Bravo, but when the ATIS changes, the next sequential letter will be applied. The pilot may have missed this change if he has retuned his radio away from the ATIS frequency.

Gloster Tower: Golf Bravo November Oscar Zulu: Request radio check & taxi [instructions] with information Bravo.

Golf Bravo November Oscar Zulu: Readability 5: [Information Charlie is current]. Taxi to holding point Echo One for runway 22.   QNH 1012.

Taxi Holding point Echo one for runway 22 [with information Charlie] QNH 1012: Golf Oscar Zulu.

Engine run up and vital actions may be completed at the holding point, or at busy airports where the taxi distance is short just before starting to move off the apron.

3.5   Take Off

It is important that the pilot is FULLY ready to take off promptly before he makes his "Ready for Departure" call, as he will be then expected to start his take off roll immediately after receiving take off clearance. ATC may add the instruction to turn left or right depending on the filed flight plan. When the Engine run up and vital actions checks are complete:

Golf Oscar Zulu: Ready for Departure

Golf Bravo November Oscar Zulu [With a right turn out] Cleared for take off runway 22. Surface wind too seven zero degrees wun wun knots

[With a right turn out] Cleared for take off runway 22 Golf Oscar Zulu

NOTES: The pilot's call is NEVER "Ready for Take Off". There are very sound safety reasons for this (see CAP413) and on VATSIM it sounds most unprofessional.

ATC will always use an aircraft's full call sign for take off (and landing) clearances; again for reasons of safety.

ATC may want you to depart very quickly indeed if he has an aircraft on final approach and can slot you in before it lands.

Golf Oscar Zulu are you ready for an immediate departure?

Ready for immediate departure Golf Oscar Zulu

Golf Oscar Zulu Cleared for immediate take off runway 22. Surface wind too seven zero degrees wun wun knots

Cleared for immediate take off runway 22 Oscar Zulu

Note the distinction here between departure and take off. Take off is only used for the actual permission to take off. Note also that all the wind is always given by ATC, the pilot does not read back that part of the message.

3.6   Leaving The Circuit

Shortly after take off, usually less than 2 miles from the field, Tower will "hand over" the aircraft to Approach. If the airfield is busy, it may be as soon as the aircraft turns away from the runway extended centreline.

Golf Oscar Zulu Contact Gloster Approach on 128.550

Gloster Approach 128.550, Golf Oscar Zulu

If Tower is late calling, but is obviously not busy, then if the pilot thinks he has been forgotten, (it does happen), he may make a gentle prompt:

Gloster Tower Golf Oscar Zulu, 2 miles north, crossing the Severn

Golf Oscar Zulu Contact Gloster Approach on 128.550

Gloster Approach 128.550, Golf Oscar Zulu

The pilot changes frequency, and then calls Approach:

Gloster Approach Golf Bravo November Oscar Zulu

Golf Oscar Zulu Regional QNH 1012. Report passing Evesham

Regional QNH 1012, Wilco – Golf Oscar Zulu

The Approach controller will ask the pilot to report at a point which is at the limit of his jurisdiction. This may be a local reference point in the case of an ATZ or an official Visual Reference Point in the case of a CTR. Note that the

"Wilco" in the response above refers to the instruction to report passing Evesham.

or,

while the aircraft is within a Control Zone, and the Regional pressure setting is not relevant;

Golf Oscar Zulu, Report leaving the zone at Oulton Park.

Wilco, Golf Oscar Zulu

As the pilot approaches the required reporting point: -

Gloster Approach Golf Bravo November Oscar Zulu, passing Evesham, request change frequency to London Information, 124.750.

Golf Oscar Zulu, Frequency change approved, Squawk 7000.

Or, sometimes,

Gloster Approach Golf Bravo November Oscar Zulu leaving the zone to the north en route Welshpool.

ATC's reply, specific only to Online ATC services – not used in the real world in the UK (although it is in the USA).

Golf Oscar Zulu, no further ATC available, monitor Unicom on 122.80.

3.7 Standby and be Quiet

Occasionally, an ATCO will tell a pilot to standby, because he is busy with more important traffic. The Controller will simply say

Golf bravo yankee alpha victor standby

This means very simply - wait; say <u>nothing</u>, not even "standing by" or anything similar - simply nothing. The controller come back to you when he can.

Very occasionally a controller will forget about you at a busy airport. After about 10 minutes, and when the channel has gone quite, it is in order to say

Golf bravo yankee alpha victor holding at alpha

or something very similar. It will be enough to jog his memory.

3.8 Transponder Use

The transponder is a very useful identification transmitter included in the radio equipment of most aircraft. It transmits a four digit code which has a specific meaning. When an aircraft is transmitting via its transponder, the code it is transmitting is displayed on all nearby ATC Radar scopes against that aircraft's "blip", and, if also transmitting Mode C; its altitude. A Liverpool Approach Controller will ask the pilot to "Squawk 4360" for example. 4360 tells

all other ATS units nearby (Manchester, Hawarden, Blackpool etc.) that that aircraft is being controlled by Liverpool,, because 4360 is "Liverpool's code" (as from 30th May 2013). Apart from specifically allocated codes, the most commonly used code is 7000. This the General "Conspicuity" code used in the UK and Europe. It is commonly believed to mean "Flying VFR", but it is more general than that. Aircraft squawking 7000 can be identified on radar by their call sign (which is also transmitted by the Transponder).

Note that currently, the aircraft callsign is not transmitted by real world transponders, although the technology (Mode S) now exists to do so. On VATSIM however, the aircraft callsign is transmitted, not by the transponder, but as part of the data exchanged by the several online flying software applications. A full list of Transponder Codes can be found on Wikipedia. Search for "Transponder (aviation)".

Note: The internationally recognised Hijack code, 7500, must NEVER be used on VATSIM, infringing this rule can lead to the member being banned.

3.9   Dialogue in The Circuit

Believe it or not, trying to land an aircraft visually from a long straight in approach is quite difficult, due to lack of visual references. Also, how did you know it is the right field you are aiming for (in the days before tarmac runways)? So the overhead join and circuit was devised. The circuit itself is a long rectangular flight path with the runway forming the centre part of one leg.
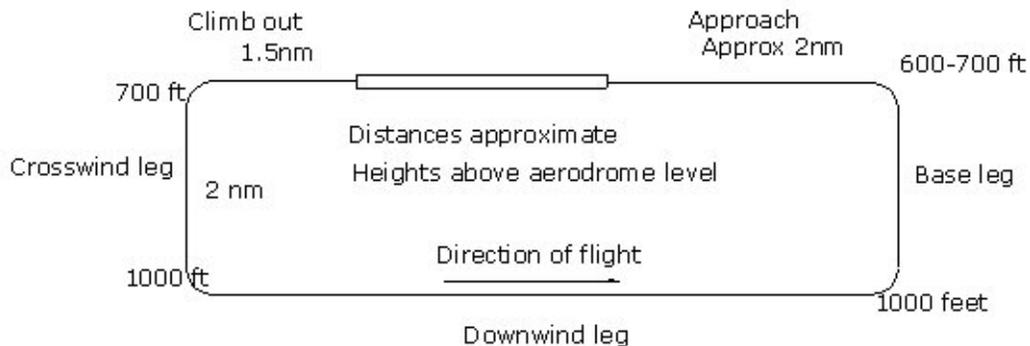
The VFR Circuit

Circuits may be left hand (anti-clockwise) or right hand (clockwise). Left hand circuits are more usual, and preferred by the pilot, as he sits in the left hand seat (well it was the American Wright Brothers that got us into this!). This gives him a better view of the airfield.

The "circuit height" is usually 1000 feet above the aerodrome level, though occasionally less – typically 800 feet, and rarely, more (Welshpool's circuit height is 1500 feet above aerodrome level because of adjacent high ground.) Circuits for helicopters are often lower (commonly 600 feet) and opposite in direction to that for fixed wing aircraft.

The standard circuit calls are straightforward. After take off, the aircraft turns crosswind, then downwind, and calls Tower

Golf Oscar Zulu downwind

Note that "Gloster Tower" is omitted, and the aircraft callsign comes first. This is because a dialogue is already established and the pilot's call is a report, not a request or an acknowledgement. There are no superfluous words at all. A common mistake is to call

Golf Oscar Zulu on the downwind leg **WRONG - t**oo many words.

ATC responds, and the pilot confirms by reading back the instruction: -

Golf Oscar Zulu report final number one

Report final number one, Golf Oscar Zulu

The next call is similarly succinct. On turning final and established in a stable descent, the pilot calls

Golf Oscar Zulu final [runway 22]

Adding the runway is not mandatory, but provides confirmation that the pilot is approaching the correct runway. Approaches to the wrong runway are not uncommon.

Golf Bravo November Oscar Zulu Runway 22, cleared to land. Surface wind two two zero degrees one two knots

Note that the aircraft's FULL callsign is always given with a landing clearance, which starts with the runway designator (number) and ends with the surface wind. The pilot MUST read back "Cleared to land", otherwise ATC will repeat the instruction, or possibly tell the pilot to go around. Reading back the runway designator is optional, but the pilot does not read back the wind.

[Runway 22] Cleared to land, Golf Bravo November Oscar Zulu

3.10 Flying Circuits

If flying circuits with touch and goes, the dialogue will be slightly different.

Golf Hotel Echo downwind touch and go

Golf Hotel Echo report final number two to a Mooney on short final

Report final number two, traffic in sight, Golf Hotel Echo

On turning final and established in a stable descent, the pilot calls

Golf Hotel Echo final touch and go [runway 18] contact one ahead

Golf Hotel Echo runway 18 cleared touch and go. Surface wind is one niner zero degrees zero eight knots

Note: Pilots should land their aircraft in the order given by ATC - avoid cutting in or going too far downwind. (from the UK Rules of the Air Rule 13(3).

3.11   Automatic Terminal Information Service (ATIS) – Inbound

At least 10 minutes (i.e. about 20nm) before the Estimated Time of Arrival (ETA) over the aerodrome, obtain the ATIS broadcast and note the designation letter.

Note: On VATSIM, when you tune a new frequency, depending on how the controller has set up his software, the ATIS (or "Controller Information") will usually be displayed in text on the FS or Squawkbox screen. It may contain all or some of the following.

Manchester Automatic Terminal Information Service Information Romeo

Arriving Runway 24R Departing Runway 24L

QNH zzzz

Surface Wind xx degrees at yy knots

Info at www.vatsim-uk.co.uk

Some controllers additional information which is used in a real world ATIS.

3.12   Joining Procedure

So you have listened to the ATIS and noted down the runway in use, the QNH, the surface wind and the designated letter. The rest is important to note, but you don't need to refer to it again, so there's no need to write it down.

3.12.1 An Aerodrome with an ATZ only

Aerodromes in this category which have an Approach controller and published ATIS frequency real world (such as Gloucestershire Airport), should have one on VATSIM as well. So having obtained the ATIS, at no less than 5 minutes (i.e. about 10nm) before the Estimated Time of Arrival (ETA) over the aerodrome, call the Approach controller.

Gloster Approach Golf Bravo November Oscar Zulu request join

Golf Bravo November Oscar Zulu Gloster Approach pass your message

Gloster Approach, Golf Bravo November Oscar Zulu Cessna 152 inbound from Welshpool: Overhead M50: Heading 140: 2500 feet QNH 1005: ETA Gloucester one fife: Information Golf, request overhead join

When giving an altitude, give the QNH you are using as well, in the form one zero zero fife. The ETA (Gloucester 15) means I will be arriving overhead

your airfield in 15 minutes time. If you want to give a time of arrival, then say at time three five meaning at 35 minutes past the current hour, the hour normally not being spoken. (Note M50 is said as "Emm Fifty").

Golf Oscar Zulu report 2 miles to the north west of aerodrome

Report 2 miles north west Golf Oscar Zulu

Then, when almost at the 2 mile point

Gloster Approach Golf Oscar Zulu, 2 miles to run

Golf Oscar Zulu contact tower on 122.9

Tower 122.9 Golf Oscar Zulu

Note: It is rare for you to actually get as far as the aerodrome overhead before being asked to position for the circuit, whereas at small airfields without full ATC, the "Overhead Join" is the standard joining procedure. The Overhead Join procedure is fully described in the Cix VFR Club Training Manual, Exercise 22.

Once you are handed over to Tower, you change frequency quickly and simply call: -

Gloster Tower Golf Bravo November Oscar Zulu*

Golf Bravo November Oscar Zulu, join right base for runway two two, you are No. 1

Join right Base runway two two, No. 1, Golf Oscar Zulu

*There is no need to say any more. He knows where you are, because you have been handed over by Approach, and he can see you through the window of the Tower. **Note:** that because it is a first contact on this frequency, the pilot uses his full call sign.

The word "Contact", as in Contact Tower on 122.9 has a specific meaning, which is "the station I am telling you to call has your details, so there is no need to tell him all over again".

3.12.2 An Aerodrome with a Control Zone (CTR)

Having obtained the ATIS as above, at no less than 5 minutes (i.e. about 10nm) before the Estimated Time of Arrival (ETA) at the Control Zone boundary, call the Approach controller.

Liverpool Approach Golf Bravo November Oscar Zulu request join

Golf Bravo November Oscar Zulu Liverpool [Approach], pass your message

Liverpool Approach, Golf Bravo November Oscar Zulu Cessna 152 inbound to Liverpool from Welshpool: Overhead Wrexham: Heading zero tree fife: too tousand fife hundred feet: QNH wun zero zero fife: VFR: Estimate zone boundary one fife: Information Golf, request entry into the zone at Chester

Golf Oscar Zulu Runway too seven in use. I am unable to clear you to enter the zone at Chester at this time. Do you wish to enter the zone at Oulton Park?

Affirm. Golf Oscar Zulu

All aircraft will be given an entry clearance after their initial call.

An entry clearance will contain the following information, similar to the departure clearance: -

a) Enter the zone at a standard entry point
b) Any altitude restriction
c) The limit of the clearance

Golf Oscar Zulu cleared to enter the zone at Oulton Park, VFR, not above one tousand fife hundred feet. Report at Oulton Park

And once again you have to read it back as precisely as possible as given.

Cleared [to] enter the zone at Oulton Park, VFR, not above one tousand fife hundred feet. Report at Oulton Park. Golf Oscar Zulu

Note: A pilot may request a non-standard entry point, which may be granted if traffic is light. In the example above, the request to join at Chester (Not a standard entry point, but a standard *exit* point when runway 27 is in use) was refused! The pilot was redirected to a standard entry point without any fuss or drama. *Oulton Park is a well known (and highly visible) Motor Racing Circuit, hence its use as a standard entry point.* Note also that the pilot was *offered* the alternative, not given it mandatorily, because he might wish to select a different standard entry point, and it is the pilot who has command of the aircraft.

If the pilot does not wish to enter at Oulton Park (there may be a huge thunderstorm sitting just overhead), he can request a different one.

Golf Oscar Zulu I am unable to clear you to enter the zone at Chester at this time. Do you wish to enter the zone at Oulton Park?

Negative. Request entry into the zone at Seaforth, Golf Oscar Zulu

Note: You use the word "Affirm" for Yes" and Negative" for "No". You do NOT use "Affirmative" – that is American.

Golden Rule: You **MUST** not enter the zone under any circumstances without express clearance. If you cannot get your message in, because of busy R/T, you must remain outside controlled airspace and wait until you can get your message in. It is best to turn 180o and fly back the way you came for 5 minutes, then turn and try again.

Liverpool Approach Golf Oscar Zulu passing Oulton Park

Golf Oscar Zulu, your clearance is to Helsby. Report at Helsby

Report Helsby Golf Oscar Zulu

(Give yourself time by calling a little early, rather than arriving and being told to orbit while waiting for other traffic to clear).

Liverpool Approach Golf Oscar Zulu approaching Helsby

In this case, Helsby has been given as the clearance limit. The pilot must not proceed into the circuit area without further permission. Before you reach your clearance limit, the ATCO may call you and, if you have the airfield in sight (the vital element here) he will hand you over to Tower. If you do not have the field in sight, as can happen in poor but legal visibility (5 kilometres is not very good visibility at all!), he may give you a heading to steer to bring you onto a section of the circuit.

Golf Oscar Zulu Do you have the field in sight?

Affirm, Golf Oscar Zulu

Golf Oscar Zulu, Contact tower on one two six daisimal three fife zero

Tower one two six three fife zero, Golf Oscar Zulu

Note the word "daisimal". This is the correct official way to read out frequencies, but on **read back**, it is acceptable to omit it.

Once you are handed over to Tower, change frequency quickly and simply call: -

Liverpool Tower Golf Bravo November Oscar Zulu*

Golf Bravo November Oscar Zulu, join left base for runway 27, you are No. 2 to a Cherokee on a three mile final

Join left base runway 27, No. 2, Golf Oscar Zulu

*As in the previous example, this is sufficient to let Tower know that you are now on his frequency.

3.13   The Approach and Landing

The procedure for the final approach and landing is the same whether the aerodrome has a CTR surrounding it or just an ATZ.. Report your position as you position onto left base. Note the brevity. An approach to land is no time for expounding your aircraft's life history.

Golf Oscar Zulu, left base

Golf Oscar Zulu Runway 27, cleared to land. Surface wind two seven zero one four knots**

Cleared [to] land runway 27, Golf Oscar Zulu**

or if you are behind another aircraft

Golf Oscar Zulu You are No. 2 to a Bandeirante. Report when you have that traffic in sight

Traffic ahead in sight. Golf Oscar Zulu

Because two aircraft are not allowed to occupy the runway at the same time without a specific ATC instruction, (only ever given if the landing runway is long enough for two aircraft to pose no safety risk), ATC will not give you landing clearance until the aircraft ahead has landed and vacated the runway.

Golf Oscar Zulu with that traffic in sight continue approach

Continue approach Golf Oscar Zulu

Once the aircraft ahead has landed and vacated the runway: -

Golf Bravo November Oscar Zulu Runway 27, cleared to land. Surface wind two seven zero one four knots**

Cleared to land runway 27. Golf Oscar Zulu**

**You do not read back the surface wind, but you do read back the runway number and your position in the queue.

Sometimes, if the runway is long enough, ATC may tell you to "land after" the landing aircraft ahead, confident that the first aircraft will not pose any danger to the second, and may have vacated the runway by the time the second aircraft touches down. This may happen if two light aircraft are landing one behind the other. Such "land after" clearances will never be given if a heavy aircraft is following a light aircraft, because of the long landing roll that the heavy requires, or if a light aircraft is following a heavy (the latter because of wake turbulence caused by the heavy aircraft, which can flip a light aircraft over on its back).

When given taxi instructions to "exit at Foxtrot", you normally report back passing Foxtrot, or runway vacated.

3.14   Special VFR

A Special VFR clearance may be given in a Control Zone to a pilot who is unable to comply with IFR flight (because he is not qualified to do so, or the aircraft is not equipped with the necessary instruments.

SVFR clearances are given to VFR pilots

- When the in-flight visibility is less than VFR minima for that class of airspace.

- Where the aircraft is flown visually in Class A Airspace (principally the London CTR and Jersey CTR.)

When operating on a Special VFR clearance the pilot must

- Obtain an ATC clearance and comply with ATC instructions

- Fly within the limitations of the pilot's licence.(***** see below)

- Remain clear of cloud, in sight of the surface and clear of obstructions

- Comply with the low-flying regulations except the height restrictions of Rule 5 of the Rules of the Air******.
  a) Fly at sufficient height to be able to land clear of the area and without danger to people or property if an engine fails
  b) NOT fly closer than 500 ft to any person, vessel, vehicle or structure, unless landing or taking off

- Avoid aerodrome traffic zones unless prior permission has been obtained from ATC

Although almost all Control Zones are Class D airspace, the Channel Islands Control Zone is Class A airspace, and SVFR flight is permitted in this zone, provided a formal flight plan is filed and the aircraft is equipped with a transponder.

* For a PPL the privileges of the licence require that under an SVFR, the in flight visibility must be 10km or more, and this overrides the airspace condition. For a PPL with IMC or IR, the in flight visibility must be 3km or more.

** Rule 5 of the Rules of the Air states that an aircraft may not fly within 1500 feet vertically of any congested area, and fly at sufficient height to be able to land clear of the area and without danger to people or property if an engine fails. The 1500 feet rule is waived for SVFR flight, but NOT the "land clear" provision.

Note: All VATSIM pilots are assumed to have an Intrument Rating, so a pilot could file an IFR flight plan and thus not require an SVFR clearance. However, if, as most Cix VFR Club pilots do, he has filed a VFR flight plan, then the above SVFR rules will apply.

4.   AERODROMES WITH AN AFIS STATION

Full Air Traffic Control (ATC) is the norm on VATSIM. Only occasionally will a controller log on at an aerodrome with an Aerodrome Flight Information Service (AFIS).

At an AFIS station, the controller is designated the Aerodrome Flight Information Service Officer (AFISO). While an aircraft is on the ground, the AFISO gives **instructions** to the pilot and the pilot carries out these instructions. Once on the runway, ready for take off, the controller is only allowed to provide **information**. The pilot takes off at his own discretion.

Similarly, when approaching the aerodrome to land, the pilot makes his approach at his own discretion, having regard to **information** passed to him by the AFISO. Once the aircraft touches down, the AFISO issues taxi and parking **instructions**, with which the pilot must comply.

Note: The pilot remains responsible for complying with the Rules of the Air and for the safety of the aircraft at all times.

4.1   Movement on the Ground

As stated above, at an Aerodrome Flight Information Service (AFIS) station, all aircraft movement on the ground is subject to AFIS instructions.

4.2   Automatic Terminal Information Service (ATIS)

Aerodromes with an AFIS do not normally have ATIS broadcast capability.

4.3   Departure Clearances

Aerodromes with an AFIS service cannot give departure clearances, because, as described above, once the aircraft is airborne, the pilot is in total control of its movement.

4.4   Taxi

The dialogue between pilot and controller is as follows.

Wellesbourne Information, G-BPHE at South Warwickshire Flying School, request radio check, airfield information and taxi instructions

G-BPHE Wellesbourne Information readability 5, taxi to holding point Alpha for runway 18, right hand circuit, QNH 992 hectopascals

Taxi to holding point Alpha for runway 18 QNH 992 hectopascals, G-BPHE

Engine run up and vital actions will normally be completed at the holding point.

4.5   Take Off

It is important that the pilot is FULLY ready to take off promptly before he makes his "Ready for Departure" call, as he will be then expected to start his take off roll immediately in order to keep traffic moving and avoid conflicts with landing traffic.

G-BPHE ready for departure

G-BPHE take-off at your discretion, surface wind one niner zero degrees zero eight knots

G-BPHE Taking Off

Do not read back 'at my discretion' or the wind information.

Again note the distinction between departure and take off. Take off is only used for the actual action of taking off.

In recent years, the former pilot response G-BPHE is rolling has been replaced by G-BPHE Taking Off

There may be departing traffic ahead of him, or landing traffic reported by the AFISO.

G-BPHE Holding position for departing traffic

G-BPHE traffic information is a Cessna 172 on a 2 mile final, Take off at your discretion. Surface wind one niner zero degrees zero eight knots

Holding position G-BPHE

Because the pilot is responsible for taking off at his discretion, he has decided to wait for the landing traffic. Remember that landing traffic has precedence over departing traffic..

4.6   Leaving The Circuit

In general an AFISO is not interested in you once you have departed, It is courtesy to "sign out" from the service, though.

Golf Bravo Papa Hotel Echo departing to the North and changing frequency to Unicom 122.80

Golf Hotel Echo Roger.

Note that unlike ATC, the AFISO does not require you to report at an outbound reference point.

4.7   Dialogue in The Circuit

This is very similar to the calls made under an ATC service. You report downwind and final. However, the AFISO will not give you permission to land, but will provide the airfield information for landing. Remember not to use more words than are required.

Golf Hotel Echo downwind

Golf Hotel Echo report final number two to a Mooney on short final

Report final number two, traffic in sight, Golf Hotel Echo

On turning final and established in a stable descent, the pilot calls

Golf Hotel Echo final [runway 18] contact one ahead

Adding the runway is not mandatory, but provides confirmation that the pilot is approaching the correct runway. Approaches to the wrong runway are not uncommon. Contact one ahead refers to the aircraft (the Mooney) which is ahead of you.

Golf Hotel Echo runway 18 land at your discretion Surface wind one niner zero degrees zero eight knots

The pilot's response is only to transmit his intentions.

Golf Hotel Echo landing

Or, if flying circuits:

Golf Hotel Echo touch and go

Or, if the previous traffic has not vacated the runway: -

Golf Hotel Echo traffic ahead – going around

4.8 Joining Procedure

At no less than 5 minutes (i.e. about 10nm) before the Estimated Time of Arrival (ETA) over the aerodrome, call the AFISO. As in the departure sequence, the arriving pilot does not request a service, but only reports his intentions.

Wellesbourne Information, Golf Bravo Papa Hotel Echo inbound

Golf Bravo Papa Hotel Echo Wellesbourne Information pass your message.

or, (better)

Wellesbourne Information, Golf Bravo Papa Hotel Echo. PA28 inbound from Welshpool six miles south west descending to 1000 feet for landing.

Golf Hotel Echo runway 18 QFE 998 hectopascals. One aircraft in the circuit

Runway 18, QFE 998 Golf Hotel Echo

The pilot then joins the circuit in one of the standard ways, having regard to his position relative to the landing runway, and to other traffic. An overhead join is preferred if the circuit is busy, so that all other aircraft in the circuit can be identified and you can slot in to an appropriate position. It also allows you

to join safely from any direction. Join downwind if there is no traffic on crosswind leg and you are heading inbound within about 45º of the circuit downwind direction. Join on base leg if you are appropriately positioned and there is no traffic on downwind.

One of the skills of piloting is to establish where other traffic is located from listening to the R/T exchanges. This is equally true on VATSIM as in the real world. Try and get a mental picture of where other aircraft are and keep that picture in mind as you join the circuit.

Golf Hotel Echo, joining downwind

Roger, Hotel Echo. One aircraft on final

Golf Hotel Echo, final

Golf Hotel Echo, land at your discretion, surface wind one niner zero degrees zero eight knots

4.9   The Approach and Landing

Again the pilot gives his intentions in as few words as possible..

Golf Hotel Echo, final

Golf Hotel Echo, land at your discretion, surface wind one niner zero degrees zero eight knots

Golf Hotel Echo, landing

4.10   Taxiing to Parking

At an AFIS controlled aerodrome, the AFISO is in charge of ground movements, remember. So immediately after landing, you will be under his control, and he will issue taxi instructions.

Golf Hotel Echo, vacate first right onto the taxiway, and taxi to parking in front of the tower, stand 5

Stand 5 Wilco, Golf Hotel Echo

5.   AERODROMES WITH AN AIR/GROUND COMMUNICATION SERVICE

Full Air Traffic Control (ATC) is the norm on VATSIM. Only occasionally will a controller log on at an aerodrome with an Air/Ground Communication Service (AGCS).

At an AGCS station, the operator is only authorised to give airfield and traffic **information**, both on the ground and airborne. The pilot manoeuvres his aircraft on the ground and in the air at his own discretion. The AGCS operator may not use the instruction "at your discretion" and can only use the use the phraseology "traffic information…".

Note: The pilot remains responsible for complying with the Rules of the Air and for the safety of the aircraft at all times.

5.1   Automatic Terminal Information Service (ATIS)

Aerodromes with an AGCS do not have an ATIS broadcast in the real world.

5.2   Departure Clearances

Aerodromes with an AGCS cannot give departure clearances.

5.3   Taxi

The dialogue between pilot and AGCS operator is as follows.

Nottingham Radio, Golf Bravo Yankee Alpha Victor Request Radio Check and airfield information for VFR flight to Cambridge

Golf Alpha Victor, Nottingham Radio, readability 5, runway 27 in use, left hand circuit, QNH 1022

Note that no taxi instructions are given

Readability 5 also, taxiing to runway 03 left hand, QNH 1022 Golf Alpha Victor

Engine run up and vital actions will normally be completed at the holding point.

5.4   Take Off

Golf Bravo Yankee Alpha Victor ready for departure

Golf Alpha Victor no known traffic to effect, surface wind one niner zero degrees zero eight knots

Golf Alpha Victor Taking Off

Note: In recent years, the former pilot response G-BYAV is rolling has been replaced by G-BYAV Taking Off.

There may be departing traffic ahead of him, or landing traffic, so a request for traffic information may be made.

G-BYAV request traffic information

G-BYAV traffic information is a Cessna 172 on a 2 mile final. Surface wind one niner zero degrees zero eight knots

Holding position G-BYAV

Because the pilot is solely responsible for taking off safely, he has decided to wait for the landing traffic. Remember that landing traffic has precedence over departing traffic.

5.5   Leaving The Circuit

In general an AGCS operator is not interested in you once you have departed, It is courtesy to "sign out" from the VATSIM service, though. There is no real world Unicom service in the UK.

Nottingham Radio Golf Bravo Yankee Alpha Victor departing to the south and changing frequency to Unicom 122.80

Golf Alpha Victor Roger.

Note that unlike ATC, the AGCS Operator does not require you to report at an outbound reference point.

5.6   Dialogue in The Circuit

This is very similar to the calls made under an ATC service. You report downwind and final. However, the AGCS Operator will not give you permission to land, but will provide the airfield information for landing. Remember not to use more words than are required.

Golf Hotel Echo downwind

Golf Hotel Echo report final number two to a PA28 on short final

Report final number two, traffic in sight, Golf Hotel Echo

On turning final and established in a stable descent, the pilot calls

Golf Hotel Echo final [runway 27] contact one ahead

Adding the runway is not mandatory, but provides confirmation that the pilot is approaching the correct runway. Approaches to the wrong runway are not uncommon. The phrase Contact one ahead refers to the aircraft (the PA28) which is ahead of you.

Golf Hotel Echo no traffic to affect. Surface wind is one niner zero degrees zero eight knots

The pilot's response is only to transmit his intentions.

Golf Hotel Echo landing

Or, if the previous traffic has not vacated the runway: -

Golf Hotel Echo traffic ahead - going around

Or, if flying circuits with touch and goes: -

Golf Hotel Echo touch and go

5.7   Joining Procedure

At no less than 5 minutes (i.e. about 10nm) before the Estimated Time of Arrival (ETA) over the aerodrome, call the A/G Operator. As in the departure

sequence, the arriving pilot does not **request** a service, but only reports his **intentions**.

Nottingham Radio, Golf Bravo Papa Hotel Echo inbound

Golf Bravo Papa Hotel Echo Nottingham Radio pass your message

Nottingham Radio, Golf Bravo Papa Hotel Echo. PA28 inbound from Welshpool six miles south west descending to 1000 feet for landing

Golf Hotel Echo runway 27 QFE 998 hectopascals. One aircraft in the circuit, report joining

Runway 27, QFE 998 Golf Hotel Echo

The pilot then joins the circuit in one of the standard ways, having regard to his position relative to the landing runway, and to other traffic. An overhead join is preferred if the circuit is busy, so that all other aircraft in the circuit can be identified and you can slot in to an appropriate position. It also allows you to join safely from any direction. Join downwind if there is no traffic on crosswind leg and you are heading inbound within about 45º of the circuit downwind direction. Join on base leg if you are appropriately positioned and there is no traffic on downwind.

One of the skills of piloting is to establish where other traffic is located from listening to the R/T exchanges. This is equally true on VATSIM as in the real world. Try and get a mental picture of where other aircraft are and keep that picture in mind as you join the circuit.

Nottingham radio, Golf Hotel Echo, joining downwind

Golf Hotel Echo, Roger. One aircraft on final

5.8   The Approach and Landing

Again the pilot gives his intentions in as few words as possible.

Nottingham radio, Golf Hotel Echo, final

Golf Hotel Echo, surface wind one niner zero degrees zero eight knots

Golf Hotel Echo, landing

5.9   Taxiing

At an AGCS aerodrome, the Operator can only provide information such as a suitable place to park. He cannot give any instructions at all.

6.   ENROUTE FLIGHT INFORMATION SERVICES

On 12th March 2009, the system of Air Traffic Services Outside Controlled Airspace (ATSOCAS) changed completely. If you search on the Internet for ATSOCAS, you will find many comprehensive references, so it is only necessary here to describe the procedures adopted by VATSIM.

There are three types of en route radio service applicable to VFR pilots, and two others which do not affect VFR traffic, but are mentioned briefly.

6.1   Basic Service

Under a Basic Service the pilot tells the ATC unit his position and intentions (route, destination etc.) and the ATC unit responds with limited information, usually just the QNH. A Basic Service is the commonest type of service requested and offered for VFR flights.

6.2   Traffic Service

This is a level higher that a Basic Service, but is only available from those ATC units which have radar (they don't all have). Here the ATC unit will monitor your position on radar and provide information on possible conflicting traffic within 5 miles radius of you and 1000 feet vertically (if the ATCO has height information, and they often don't have). VFR pilots can request a Traffic Service.

6.3   Deconfliction Service

A Deconfliction Service is a radar based service where the controller provides specific radar-derived traffic information and issues headings and/or levels aimed at achieving planned deconfliction minima, or for positioning and/or sequencing. However, the avoidance of other traffic remains ultimately the pilot's responsibility. Traffic must be able to accept routing or level instructions for flight in IMC, so therefore it may be unavailable to VFR traffic. You will very rarely come across a Deconfliction Service being offered and used on VATSIM.

6.4   Procedural Service

With a Procedural Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, achieve deconfliction minima against other aircraft participating in the Procedural Service. There is no radar or visual surveillance available for traffic using a Procedural Service, therefore neither traffic information nor deconfliction advice can be passed with respect to unknown traffic. Traffic must be able to accept routing or level instructions for flight in IMC, so therefore it may be unavailable to VFR traffic. You will very rarely come across a Procedural Service being offered and used on VATSIM.

6.5   Who do I Talk to En Route?

In general, any airfield which may be affected by your flight, plus the following, if available. However, these services are rarely available on VATSIM.

6.5.1   London Information

London (or Scottish) Information provide a basic service to allow pilots to know who is around them, without tying up the time of a busy airport controller. In the real world, the Information services do not have Radar and simply act as a clearing house for messages. They will provide the Regional QNH outside controlled airspace, and information on any other known traffic with about 10 miles radius. The Information Services cannot provide a radar service. Although all VATSIM ATC client software mimics radar, a controller manning London Information (or Scottish) has to pretend that he doesn't have radar, if he is to offer the service realistically. Consequently he will request position reports at intervals, even though he can see where you are.

6.5.2   Lower Airspace Radar Service

LARS is a service operated mainly by military aerodromes plus some of the regional airports, e.g. Luton. A LARS unit has radar (of course) and can provide all of the available en route services. Although you may request a Basic Service, they will often provide you with a Traffic Service unasked.

On VATSIM, a LARS service, from a military controller, is rarely available. However, a LARS can be provided by Approach or Radar Controllers within 40 nautical miles radius of their station. Tower and Ground controllers cannot provide a radar service. Approach or Radar controllers have the letters APP in their call sign; e.g. Thames_APP or EGNR_APP. Look for such callsigns in the Squawkbox or FSInn ATC Directory, or on VATSpy or Servinfo. Servinfo is of some vintage now, but is still excellent for its purpose of identifying which controllers and pilots are online. Servinfo is available for download from the Club website, if it cannot be located elsewhere.

6.5.3   Regional Airports

If you are passing near the controlled airspace of regional airports, and a VATSIM controller is on line, it is a good idea to get a Basic Service from them. They normally welcome this type of contact, especially if they are not busy.

6.5.4   Local Aerodromes

If you plan to overfly an aerodrome which has an ATZ, not a CTR, then provided you are above 2000 feet above the aerodrome level,, you don't need to call them. However, if a controller is online at a small airfield you wish to overfly, then it is good airmanship to call them and tell them your intentions. Again, this type of contact is normally welcomed.

6.5.5   Military Aerodrome Traffic Zones

The controlled airspace around military airfields is unique because it is always a defined shape as described below. Civil aircraft have the right, strangely, to fly through a MATZ without requiring permission, although pilots almost always treat a MATZ as a no-go area without permission.

- The main airspace is a zone 5 nautical miles in radius from the surface to 3,000 feet above aerodrome level (aal), centred on the midpoint of the longest runway.

- One or two stubs may also exist which extend beyond the main airspace in alignment with the longest runway.

- Each stub is 5 nautical miles long, 4 nautical miles wide, and extends from1000 feet to 3000 feet aal.

MATZ penetration, as it is termed, is always flown with the aircraft altimeter set at the aerodrome QFE, so that the pilot transits the MATZ at a given height above the aerodrome - usually 2000ft. If there is a VATSIM controller covering a military airfield, then the ATC dialogue is as follows.

Shawbury Zone G-ABCD request MATZ penetration.

G-ABCD Shawbury zone pass your message.

Shawbury zone G-ABCD en route Barton to Sleap 10 miles north of Shawbury, request MATZ penetration

G-ABCD MATZ penetration approved. Transit at 2000 feet Shawbury QFE. Set Shawbury QFE 1002

MATZ penetration approved. Transit at 2000 feet on Shawbury QFE 1002, G-ABCD

Normally Military radar units track the aircraft and do not require position reports. They tell the pilot when he is clear of the MATZ

G-ABCD you are now clear of the MATZ. Barnsley 1009

Clear of the MATZ. Barnsley 1009 G-ABCD.

6.6   The Airborne Flight Plan

When an en route controller responds with "Pass your Message" after an initial call from the pilot, the procedure used to be, for all flights, that an Airborne Flight Plan call was made. The full Airborne Flight Plan is now mainly used by IFR traffic.   The dialogue has certain required statements, given in a particular order – Flying Instructors use a mnemonic – CEPHACER.

Callsign & Type

En Route From/To

Position

Heading

Altitude

Conditions (VFR)

ETA at next turning point

Request

It goes like this: -

London Information Golf Bravo November Oscar Zulu

Golf Bravo November Oscar Zulu, London Information, pass your message

London Information Golf Bravo November Oscar Zulu : Cessna 152 : En route Gloucester to Welshpool : 10 miles north west of Gloucester : heading 320 : 2500 feet QNH 1008 : VFR : Two POB : Request Basic Service

There may be slight variations from this, but mostly by including or omitting the less vital items. Sometimes heading, POB or ETA or any two or all three may be omitted, but the others are essential.

Golf Bravo November Oscar Zulu Basic Service. Barnsley [QNH] 1007

The pilot acknowledges:

London [Information] Golf Bravo November Oscar Zulu Basic Service. Barnsley [QNH] 1007

The first time you try this you invariably end up tongue tied and garbled, so it may seem disappointing to get the terse reply giving just the regional QNH!

6.7   Position Reports

For VFR traffic, a shortened form is now used in preference to the long CEPHACER call. Aircraft operating under Instrument Flight Rules (IFR), when contacting an ATS unit that does not hold details of the flight may also use this form. The sequence is as follows.

a) Aircraft Callsign and Type

b) Departure and Destination Airfields

c) Present Position

d) Altitude

e) Intentions/Request

For Example: -

Birmingham Radar Golf Papa Mike Romeo Juliet Basic Service

Golf Papa Mike Romeo Juliet Birmingham Radar pass your message

Birmingham Radar Golf Papa Mike Romeo Juliet Cessna 172 en
route Coventry to Tatenhill. East abeam Tamworth, 2400
feet, VFR, tracking to Tatenhill, request Basic Service

Golf Papa Mike Romeo Juliet Birmingham Radar, Basic Service
Barnsley 1012, report leaving the frequency

Birmingham Radar Golf Papa Mike Romeo Juliet, Basic Service
Barnsley 1012, Wilco

Two particular points are worth noting about this exchange:

a) The phrase "East abeam" (or north, south, west) is used if a prominent
waypoint or landmark is up to about 3 miles away from the aircraft. There is
no hard and fast distance rule, but common sense tells you that if you are 5
miles east of Tamworth, you would instead report approaching Measham
VRP (check your charts or Plan-G to see for yourself).

b) The use of Wilco. The term Wilco (I will comply) can be used instead of
"report leaving the frequency". Wilco can be used to acknowledge an
instruction only when that instruction is not a clearance to land, or take off, or
an instruction to fly on a specific heading or at a specific altitude or flight level.
If in doubt, as always, read back exactly what the controller says to you.

6.8   VATSIM Procedures

In VATSIM, many airports and aerodromes do not have any ATS cover at the
time you choose to fly". On any evening, when most Flight Simulator pilots fly,
there may be perhaps half a dozen manned stations, mostly the major airports.
Using programs such as VATSPY or SERVINFO (free download from one of the
many VATSIM download sites, or via links from the Cix VFR Club website), you
can find out who these are. With the exception of Heathrow, the Club will try
and plan trips which maximise our exposure to manned stations.

If there is no ATC at a specific airport, it is worth trying the local Approach
controller. In VATSIM, a system known as the "Top Down" principle is used,
where controllers with a higher qualification can offer a service at those
locations where a lesser qualified service is all that is required. For example,
Thames Radar can give a Tower service for London City and Biggin Hill. We
have the advantage of cyber-mobility like that

6.9   Real World References

The CAA publish a comprehensive guide to Enroute Flight Information Services
within the UK, "UK Flight Information Services" reference CAP774. Every
serious online pilot should have a copy and use it to augment the information
contained in this manual.

7.   EMERGENCIES

For full details of all real world emergency procedures, see CAP 413 Chapter 8. There are two levels of emergency which may concern VATSIM pilots.

c) **Distress** A condition of being threatened by serious and/or imminent danger and of requiring immediate assistance.

d) **Urgency** A condition concerning the safety of an aircraft or other vehicle, or of some person on board or within sight, but does not require immediate assistance.

Normally, emergencies do not happen with Flight Simulator, unless created artificially through the failures system. Occasionally they do occur, as happened to a Pilot on VATSIM during an on-line flight with an ATC service. The pilot was flying a twin, when due to a quirk in the software, the right hand throttle refused to move, so effectively simulating a loss of power on one engine. The pilot declared an emergency, cut short the circuit and landed safely, although he wasn't easily able to turn left once on the ground!

In an emergency, it is even more important to

AVIATE : NAVIGATE : COMMUNICATE

7.1   MAYDAY MAYDAY

The standard MAYDAY call is as follows: -

Mayday, Mayday, Mayday. Gatwick Director Golf Bravo November Oscar Zulu: Cessna 152: Engine failure: Intend immediate forced landing 5 miles south east of Handcross: Passing 1500 feet heading 350: Student pilot: One POB

On VATSIM, there is no emergency frequency, so you would make your MAYDAY call on the frequency you are working at the time. However, a few pilots think it is "cool" to declare emergencies, and although they find it a lot of fun, it isn't always welcome, because an emergency then gets priority over all other traffic. Very occasionally someone will declare an emergency just to get priority, which is not at all good airmanship. Because of this, only declare an emergency if it is genuine; e.g. short of fuel, engine failure as described above. You may have to depart from standard phraseology to convince the controller that you have a genuine aviation related problem. Controllers can refuse MAYDAY calls at their discretion.

As an aside, it is actually good fun doing engine – out landings on Flight Simulator, and very good training. Switch your engine off mid-downwind in the circuit and try and land on the runway. However, please do so off line unless the controller gives you permission beforehand. Contact the controller on frequency and request practice forced landing.

7.2   PAN PAN PAN

The standard Pan call is as follows: -

PAN PAN. PAN PAN. PAN PAN. Birmingham Radar Golf Bravo
Charlie Delta Echo: Cessna 172: en route Coventry to
Tatenhill. Unsure of position. Last known overhead
Nuneaton at time 35 2000ft heading 330

The controller should respond: -

Golf Bravo Charlie Delta Echo, squawk 2330

Squawk 2330 Golf Delta Echo

Golf Delta Echo identified near Kingsbury. Tatenhill
Aerodrome is bearing 353 degrees, range 15 miles from your
present position.

Controllers can refuse PAN calls at their discretion.

Practice Pan calls are permitted, as in the real world. The call then is
Practice Pan, Practice Pan Practice Pan. However, on VATSIM
where there are no true in flight emergencies and the consequences of getting
lost are annoying rather than potentially dangerous, there isn't really a lot of
difference between the two. Apart from the inclusion of the word "Practice", the
dialogue is identical.

7.3   Loss of Communication with a VATSIM Controller

This situation is certainly the most common problem that online pilots face
which could be termed an emergency. Voice communication may be lost both
ways i.e. from the pilot and the controller, or, more usually, one way, where
one party has technical problems with their computer or software. The simple
solution is to revert to text transmissions if possible. It is quite permissible for
one party to use text and the other voice, if only one is having voice
communication problems.

However, if neither voice nor text communication is possible, and the pilot is in
an area of high aircraft activity, he may be forced to disconnect from VATSIM,
in accordance with VATSIM rules.

8.   ABBREVIATIONS USED IN AVIATION

This is a comprehensive, if not complete list. These abbreviations appear on
real world aviation charts and aerodrome plans, in Flight Guides etc., and
most of them are commonly used.

AAL	Above Aerodrome Level
ABn	Aerodrome Beacon
ACC	Area Control Centre
A/C	Aircraft
A/D	Aerodrome

AFIS	Aerodrome Flight Information Service
AGL	Above Ground Level
AGCS	Air/Ground communication station
AIAA	Area of Intense Aerial Activity
AIC	Aeronautical lnformation Circular
AlP	Aeronautical Information Publication
Ap	Approach (Lighting)
APAPI	Abbreviated Precision Approach Path Indicators
APP	Approach Control
ATC	Air Traffic Control
ATIS	Automatic Terminal Information Service
ATSU	Air Traffic Service Unit
AVGAS	Aviation Gasoline
AVTUR	Aviation Turbine Fuel
Awy	Airway
BAA	British Airports Authority
CAA	Civil Aviation Authority
CAS	Controlled Airspace
c/s	Call-sign
CTA	Control Area
Ctl	Control
CTR	Control Zone
DME	Distance Measuring Equipment
E	East
EET	Estimated Elapsed Time
Elev.	Elevation
ETA	Estimated Time of Arrival
ETD	Estimated Time of Departure
FAT	Final Approach Track
FBU	Flight Briefing Unit
FIC	Flight Information Centre
FIR	Flight Information Region
FIS	Flight Information Service
FL	Flight Level

Freq.	Frequency
ft.	Feet
GA	General Aviation
GCA	Ground Controlled Approach System
GMC	Ground Movement Control
GMP	Ground Movement Planning
GMT	Greenwich Mean Time (UTC)
Gn	Green
H+	minutes past the hour
H24	Continuous operation
HF	High frequency
HJ	Sunrise to Sunset
Hmr.	Homer
HN	Sunset to Sunrise
HO	Hours of operational requirement
Hold	Holding Point
HP	Holding Point
hr/s	Hour/s
IAP	Instrument Approach Procedure
IAS	Indicated Air Speed
IBn	Identification Beacon
ICAO	International Civil Aviation Organisation
IFR	lnstrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
Info.	Information
kHz	Kilohertz
kt	knots
Ibs	Pounds (weight)
Lctr.	Locator Beacon (NDB)
LDA	Landing Distance Available
LFA	Local Flying Area
LITAS	Low Intensity Two Colour Approach Slope System
LLZ	Localizer

m	metres
M or Mag	Magnetic
MATZ	Military Aerodrome Traffic Zone
MDH	Minimum Descent Height
MEDA	Military Emergency Diversion Aerodrome
Met	Meteorological Office
METAR	Aviation Routine Weather Report (in aeronautical meteorological code)
MHz	Megahertz
Mil.	Military
MKR.	Marker Beacon
MM	Middle Marker
MTWA	Maximum Total Weight Authorised
MAUW	Maximum All Up Weight
(N)	Night
N	North
NATS	National Air Traffic Services
NDB	Non-directional Radio Beacon
NAVAIDS	Radio Navigation Aids
NM, nm	Nautical Miles
NOTAM	Notice to Airmen. A notice containing information concerning the establishment, condition or change in any aeronautical facility, service, procedure or hazard, the timely knowledge of which is essential to personnel concerned with flight operations
OCH	Obstacle Clearance Height
Op hrs	Operation Hours
OPMET	Operational Meteorological (Information)
OM	Outer Marker
O/R	On Request
O/T	Other Times
P	Primary Frequency
PAPI	Precision Approach Path Indicators
POB	Persons on Board
PPL	Private Pilot's License

PAR	Precision Approach Radar
PN	Prior Notice
PNR	Prior Notice Required
PPR	Prior Permission Required
QFE	Altimeter sub-scale setting to obtain elevation above aerodrome level
QFU	Runway orientation (in degrees Magnetic)
QNH	Altimeter sub-scale setting to obtain elevation above sea level
R	Red or Radial
RAD	Radar
RCL	Runway Centre Line
REIL	Runway End Identifier Lights
R/T or RTF	Radio Telephone
RVR	Runway Visual Range
Rwy	Runway
S	South
S	Secondary Frequency
SAL	Supplementary Approach Lighting
Sctr.	Sector
SAR	Search and Rescue
SFC	Surface
SR	Sunrise
SRA	Surveillance Radar Approach
SS	Sunset
SSR	Secondary Surveillance Radar
SVFR	Special Visual Flight Rules
TACAN	Tactical Air Navigation Aid (UHF)
TAF	Aerodrome Weather Forecast
Tel	Telephone
Thr/Thld.	Threshold
TMA	Terminal Manoeuvring Area
TORA	Take-off Run Available
TVOR	Terminal VOR

TWR	Tower
UFN	Until Further Notice
UTC	Co-ordinated Universal Time
VAD	Visual Approach and Departure
VASIS	Visual Approach Slope Indicator System
VDF	VHF Direction Finding
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOLMET	Meteorological Information for aircraft in flight
VOR	VHF Omnidirectional Radio Range
VORTAC	Very High Frequency Omni Range and Tactical Air Navigation
VRP	Visual Reference Point
W-	West
Wh	White