1   INTRODUCTION

This tutorial is specifically designed for Microsoft Flight Simulator pilots flying VFR flight in the UK. It describes the basis of the interaction with VATSIM Controllers which pilots may expect, and the manoeuvring actions required of the pilot by ATC. The description is simplified here for the VATSIM P2 Pilot Rating, because the requirement here is not to have full knowledge of the various types of Air Traffic Service, but to be able to manoeuvre the aircraft appropriately under ATC instructions. For full details of the interaction with ATC, refer to the Club's Air Traffic Control Manual for VFR Pilots on the website.

There are three basic types of Air Traffic Control with which Club members flying VFR will need to know about.

a)   Air/Ground radio (A/G)

b)   Aerodrome Flight Information Service (AFIS)

c)   Air Traffic Control (ATC)

The difference between them is all to do with the level of information or instruction given to pilots. VATSIM rarely has ATC services other than full ATC, but from time to time A/G and AFIS services do come on line as pilots recognise the fun to be had flying small aeroplanes around little aerodromes. Therefore all types of service are covered in this series of lessons.

2   AERODROMES WITH A "FULL" AIR TRAFFIC CONTROL SERVICE

This lesson describes procedures at Aerodromes (Note: not Airports) where an ATC service is provided and where the aerodrome does not have a large area of controlled airspace surrounding it, such as Heathrow or Manchester, but only the standard 2 miles radius "Aerodrome Traffic Zone" (ATZ). The Club bases at Gloucestershire (EGBJ), Biggin Hill (EGKB_ and Shoreham {EGKA), are aerodromes with a "full" ATC service.

2.1   Groundschool

Read Chapter 3 of the Club's Air Traffic Control Manual for VFR Pilots which may be found on the web site in the Training section, Tutorials subsection. To download the file, click on the "Radiotelephony Manual" link under "VATSIM". In addition you may wish to obtain a copy of CAP 413, "The Radiotelephony Manual" which contains every official ATC instruction and response. (CAP by the way stands for Civil Aviation Publication"). This is available to download completely free from

http://www.caa.co.uk/docs/33/cap413.pdf

However, don't be frightened off by the huge amount of information it contains. Possibly as little as a quarter of the total contents are applicable to Flight Sim and VATSIM.

With certain exceptions, an Air Traffic Control service provides pilots with **instructions** both on the ground and airborne. An Air Traffic Control Officer (ATCO) at an aerodrome with an ATZ gives instructions to all aircraft on the ground, on the active runway, and airborne to outbound aircraft within the ATZ, and to inbound aircraft within about 10 miles or five minutes flying time whichever is the greater.

2.1.1 Outbound

After start up and before taxiing, the pilot should obtain the "Automated Terminal Information Service"(ATIS) broadcast where provided, and note the designation letter. The frequency is given in the usual flight guides or on the CAA's AIS Aerodrome charts. For FS and VATSIM, this procedure is slightly different.

Where there is a separate ATIS frequency given, you can receive a voice broadcast in the same way as in the real world, except that it sounds more like a human being (because it was a human being recording it).

If there is no voice ATIS, then when you tune the ATIS frequency, it will be displayed as text in Squawkbox or FSInn. With ATC, as with AFIS, your ground movements are controlled, so you must request permission to taxi.

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

Golf Bravo November Oscar Zulu: Reading you strength 5: Taxi to holding point Charlie. QNH 1012.

Under ATC control, you must read back all instructions, so: -

Taxi Holding point Charlie, QNH 1012: Golf Oscar Zulu.

Engine run up and vital actions may be completed at the holding point, or at designated run-up areas. ATC will advise if a run-up area is used (as at Carlisle, for example).

When these checks are complete, you are ready for your next instruction. Golf Oscar Zulu: Ready for Departure

Note that it is not "Ready for take off" What ATC say next can vary depending on circumstances, but will eventually include the words:

Golf Oscar Zulu runway 22 cleared for take off

It is illegal to take off until given an instruction which includes the exact words "cleared take off" (the runway number will vary of course). You MUST

NOT take off until you have had that instruction, and you MUST read back at least the words "Cleared Take Off" and your callsign.

Cleared for take off runway 22 Oscar Zulu

2.1.2 Inbound

The instructions to inbound aircraft will be given for positioning purposes, e.g.

Golf Bravo November Oscar Zulu, join overhead for runway two seven, right-hand circuit, QNH 1011, report overhead

All of that is an instruction, which the pilot should obey except if to do so would place his aircraft in danger or in illegal flight conditions (e.g. flying into cloud). As you continue round the circuit to land you will be given further instructions. Then, as you turn onto the final approach, you call

Golf Oscar Zulu final [Runway 22]

In a similar way to departure, you MUST NOT land unless given the explicit instruction

Golf Oscar Zulu Runway 22, Cleared to land, Surface wind 210 8 knots.

Note that the ATCO gives you first the runway to land on (pilots frequently make approaches to the wrong runway) then the "Cleared to land" instruction, followed by the surface wind. You MUST repeat back the "Cleared to land" instruction.

Cleared to land Golf Oscar Zulu

Note that you do not read back the wind, and reading back the runway is optional.

If you do not receive a "Cleared to land" instruction then you MUST initiate a missed approach and rejoin the circuit for another attempt. This is as true on VATSIM as it is in the real world which we are trying to emulate. Specific landing and take off clearances are only required at aerodromes with full ATC.

There are many more possible instructions, many of them listed in the Club's Air Traffic Control Manual for VFR Pilots and all of them in CAP413. Learn as many as you can which are applicable to Cix VFR Club flights, and practice them almost anyway you like. The Club offers one to one ATC voice practice, which can be a good starting point.

2.2   Practical

The VATSIM P2 Pilot Rating requires that you are able to comply with ATC manoeuvring instructions. For Club pilots on VFR flight, manoeuvring instructions will include:

Join overhead for runway 04

Join Downwind for runway 04

Join right base for runway 27

Join right base for runway 09

Report downwind

Report final

Occasionally, to avoid traffic confliction, you may be given

Turn right heading 170 degrees

Or similar.

On departure, at some aerodromes, the example below is for Biggin Hill runway 21 departures, you may be given an instruction such as

After departure, maintain runway heading for 2 miles, not above 2500 feet

You will be expected to be able to control the aircraft to comply with that instruction.