The CIX VFR Club	Flight Training Notes	Exercise 21
For Simulation Purposes only. Not to be used for real World flight	PREPARATION for ARRIVAL	Issue 1.0 19/09/08

1 INTRODUCTION

This tutorial is specifically designed for Microsoft Flight Simulator pilots flying VFR flight in the UK. It is part of a series of tutorials being produced by the Cix VFR Club.

If you are confused by any issue, Cix VFR Club members may post a message in the Cix Conference or Web Forum, or email the Club CFI (see web site), and we will try to clarify any points you are having difficulty with. Because you don't have the benefit of an instructor to bounce questions off, you are actively encouraged to discuss the material in this way.

Departing an airfield on a cross country flight is covered in Exercise 18. This tutorial moves on one stage and describes how to arrive safely at yyour planned destination.

2 PREPARATION

We have said several times that preparation is vital in all phases of flight. None more so than when planning your arrival at your destination. You may hear the phrase occasionally in the world flight simulator, "getting behind the aircraft", or "staying ahead of the aircraft". The first quotation means simply being insufficiently prepared for the next event in the flight. The second quotation means the opposite.

What is certain is that it is definitely not a good idea to arrive at your destination without knowing which runway you're going to land on, what frequency you will be transmitting on, or what the weather is like.

Therefore I make no apology for the following diatribe on preparation, planning, and rehearsal. And yet more preparation planning and rehearsal!

2.1 Checklist

The following is a list of checks about your destination that you should make before your departure.

1) Runway in use
2) Weather
3) ATIS frequency
4) Approach frequency
5) Tower frequency
6) Circuit height
7) The circuit direction
8) Reporting points
9) What type of join are you going to make
10) Are there any areas to avoid

11) Estimated time of arrival
12) Waypoint at which you will make your first radio call

2.2 Essential Information before Departure

In the real world, you would telephone your destination airfield for a briefing on the circuit information and weather, as a minimum, and possibly a briefing on special procedures such as noise abatement (avoiding certain population centres, wildlife sanctuaries etc.).

For on-line flying, assuming that your destination is manned on Vatsim, you get the destination airfield information from Servinfo. Select the ATC overview screen, and click on the union flag symbol to show only the British ATC-manned airfields. You will find the name of the controller and the position he is manning shown in the upper window. If you then click on the controller's name a pop-up window appears containing various pieces of information, including the airfield details, in a similar way to the Automated Terminal Information Service (ATIS) which is available in the real world by tuning the radio to a special frequency.

Some controllers will provide a voice ATIS on the same frequency that is used for ATIS in the real world. This frequency will be displayed in the upper part of the Servinfo screen.

As a minimum the Vatsim ATIS will provide the surface winds and the runway in use. From this information we can either decide on the approach you will make the field is a smaller one, without ATC, or you can mentally prepare for the possible approaches that will be given you by ATC.

2.3 Choices, Choices

At airfields which do not have full Air Traffic Control, in other words those with Air/Ground stations and Aerodrome Flight Information Service, the type of join is the pilot's choice, subject to landing on the promulgated runway in use, although the radio operator may have a preferred procedure which he communicates as an instruction. However it is within the pilot's authority to refuse the recommended procedure and request a different one. For example, if on approach to Wolverhampton the Aerodrome Flight Information Service Officer (AFISO) passes a radio message "GBNOZ join overhead runway 34" the pilot can accept an overhead join or quite legally request a different type of join. "Wolverhampton information GBNOZ request left base join".

It is true that in most cases it is good airmanship to accept the AFISO's recommendation, because he will have other traffic fitting into the pattern, and if you are flying in other directions than this pattern, safety could be compromised.

At airfields which have full Air Traffic Control, there is rather less choice. The pilot is given instructions which he must obey, unless to do so would compromise the safety of the aircraft. Most airfields which have full air traffic control also have a significant level of traffic in the real world, though probably less so on Vatsim. For this reason it is rare to be given a joining procedure which prolongs your presence in the circuit, and the base leg join is probably the commonest joining procedure for such airfields. You will be pleased to know that the overhead join is rarely given at busy airfields.

The pilot is also quite within his rights to request an approach to a different runway than the published one. In this case however, he has to be prepared to orbit away from the field until the circuit is clear because your planned approach could well interfere seriously with the standard procedure being used on that day. It may even be that permission is refused at an Airport with full ATC, because of the amount of other traffic which would be otherwise disrupted.

2.4 Plan and Rehearse

You might have a good idea about which approach procedure to use before departure, particularly if you know that certain airfields prefer certain types of join for inbound traffic. But what is vital is that you know in advance exactly what you're going to do. We have used the phrase before "staying ahead of the aircraft". By planning it in advance what you're going to do, you will be staying ahead of the aircraft.

You should rehearse your approach in your mind, or fly it off line, well before you need to do it, and several times, but have a contingency plan as well in case air traffic control have different ideas. Good spatial awareness is very helpful in making successful circuit joins and if you can visualise your position in relationship to other traffic and the runway pattern and you are halfway there before we even see the airfield ahead.

2.5 Draw it in your Mind

The first requirement for any joining procedure is to create a mental picture of the circuit. It is important to know clearly in advance, the heading of all four of the circuit legs. In the UK circuits are left-hand whenever possible, because the pilot sits in the left-hand seat and left-hand circuits provide him with a better view of the airfield. However in many situations right-hand circuits are used for a number of reasons - obstacle avoidance, noise sensitive habitations, high terrain etc.

If the circuit is left-hand then all turns are left-hand, without exception, and the heading of each leg is 90° less than the previous one. If the circuit is right-hand, then all the turns are right and the heading of each leg is 90° more than the previous one.

So for runway 34 left-hand at Wolverhampton, for example, the crosswind leg is 340° -100° + 10°, i.e. 250°. We have already mentioned that the downwind leg is 160°, and so the base leg is 160° -100° +10° = 070°. Notice that I didn't try and subtract 90° from the runway heading, but used an easier way of doing it quickly in your head. At least I find it easier.

It gets tricky in situations where the heading of one of the circuit legs is less than 090°, and you're trying to calculate the heading of the next leg in your head. Let's take runway 22 at Welshpool. The heading of the crosswind leg will be 220° -100° +10° = 130°, and the downwind leg is 130° -100° +10° or 040°.

But what about the heading of the base leg in this case? You know that it is going to be less than 360° but if you subtract 100° and add 10° you get the answer -30°. In such a case, you add 360° at the beginning. i.e. 040° + 360° = 400° and *then* subtract 100° and add 10° to arrive at the correct answer, 310°.

This mental awareness is crucially important for safe and satisfying flying. The lack of such preparation creates mental stress, even though we are only talking about a hobby, and leads to pilots leaving for something less stressful, perhaps tiddlywinks! After a while, and it's impossible to predict when, you will begin to learn some of the numbers, e.g. if someone says to me the runway heading is 270°, I immediately know that the downwind leg heading is 090° and so on.

You're probably not aware that pilots very frequently talk aloud to themselves. What they are doing is reinforcing in their minds the procedure they are going to follow, and strangely, talking aloud is a very good technique for doing this.

3 STANDARD JOINING PROCEDURES

I hope you are now totally convinced of the need to plan your joining procedure. There are four standard joining procedures which are used in British civil aviation: -

- The downwind join,
- The base leg join,
- The straight in approach, and
- The overhead join,

We will discuss each one in turn in the next exercise.