

## FLYING CROSS COUNTRY NO. 1

### INTRODUCTION

In the air the student will have completed most of the advanced exercises, if not all, of the advanced flight exercises. On the ground the student will have studied much of the ground syllabus and have passed technical examinations such as Navigation, Meteorology, and Human Performance and Limitations. In fact, a student cannot be authorized to fly solo cross-country flights unless all the advanced exercises and examinations have been satisfactorily completed. This is explained in the PPL Course Notes.

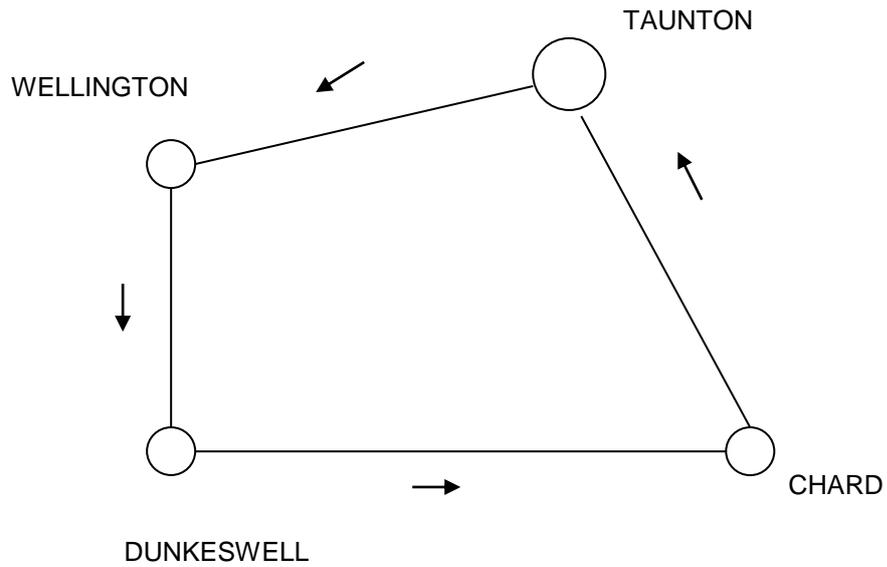
These additional notes will cover in detail the various aspects of the student's first cross-country route together with tips on the many techniques involved. It will be demonstrated that if correct headings are flown, sensible map reading is carried out in conjunction with careful pre-flight planning of the ground features en route the student will navigate confidently and competently while still operating the aircraft safely.

The first cross-country route is useful in showing the student the countryside around Dunkeswell Aerodrome and will enable the student to recognize local features when returning from later cross-country flights arriving from different directions. Moreover, this first cross-country flight can be flown without having to contact other ATC units by radio thereby keeping the workload at an acceptable level. The student merely listens out on the Dunkeswell frequency, just making a simple call at the three turning points. This has the advantage of being able to ask Dunkeswell for advice should it be necessary.

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### THE ROUTE

The route is Dunkeswell – Chard – Taunton – Wellington – Dunkeswell as follows:-



○  
EXETER

Leg	Tr(T)	Dist (nm)
Dunkeswell – Chard	085	14
Chard – Taunton	328	10
Taunton – Wellington	240	6
Wellington – Dunkeswell	182	7

## **FLIGHT PLANNING**

Your instructor will brief you on flight planning and on the many aspects that have to be taken into account. The topics to be covered are listed on the Student Solo Cross-country Certificate sheet. You could ask for a spare copy, if you wish, to use as a checklist. In any event, when you are authorized for a solo cross-country flight you will need one for completion prior to flight to ensure that you have been briefed on all relevant aspects.

During this process your instructor will check your combined flight plan and flight log and help you to prepare your map with the required annotations such as 5 and 10 degree lines which are particularly relevant to the longer cross-country flights. As regards the flight plan and flight log it is essential that the letters and figures are printed and not scribbled, the aim being to afford easy reading in the air.

Whilst magnetic variation is straightforward in its application compass deviation may be less so. The important thing is to check the deviation card in the aircraft. The fact that there is a deviation card is the good news: it means that the compass has been 'swung' and the errors have been reduced to a very small figure which you can check – usually just one or two degrees. It is the larger figures, if any, which must be noted and taken into account.

## **FLYING THE PLAN**

Before providing detailed advice on flying the individual legs of this first cross-country flight some general tips – which will apply throughout the flight – are offered below. Help on flying the individual legs of this first cross-country is given later in these notes.

### **How to fly an accurate heading**

For accurate navigation you need to be able to fly accurate headings, in balance, so as not to upset the compass, with minimum effort so leaving your mind free to concentrate on the bigger picture: where you are really going, log keeping, R/T, and lookout for other traffic etc.

Having synchronized DI and compass and set up the correct aircraft heading all you have to do is to use both feet on the rudder pedals to obviate yaw i.e. using toe pressures to maintain the correct heading on the DI whilst cross-checking the compass to ensure it too shows the correct heading. DI precession, if present, can be detected immediately. Adopting this procedure will keep the wings level and the aircraft in balance and on the correct heading. This, of course, is the correct procedure for flying straight and level. Unfortunately flying correctly rigged aircraft does tend to make pilots foot-lazy.

To avoid 'head in the cockpit' syndrome the next step is to look ahead and pick a succession of landmarks and fly the aircraft towards them using the technique described on the previous page. Thus the aircraft is flown accurately by looking outside and it will only be necessary to look inside at the DI, compass, and other instruments every couple of minutes or so – and it is a safer way to fly. If the aircraft is trimmed with the elevator trimmer, you will learn to 'fly hands off' – but with toe pressure always on the rudder pedals – leaving the hands free for log keeping and handling the map. In a C152 you can actually lean backwards and forwards to correct minor pitch variations.

### **Use the Flight Plan/Log to help your navigation**

Be meticulous in log keeping. The cockpit is your office. Use the paperwork to control and record the details of your flight. You can use the form to add reminders of FREDAs or other notes such as R/T calls or whatever. Update ETA's as necessary. If you know how many nautical miles to run to a given point, take two thirds and the answer is in minutes: e.g. if you estimate nine miles to run the approximate time would be six minutes. If you wish to be more accurate on a windy day you could add a minute for a headwind and deduct a minute for a tailwind. In this way, there will be times when you can anticipate and make log entries slightly ahead of time especially if you are shortly to be busy doing other tasks.

### **Be able to estimate ground distances from the air**

When wishing to pinpoint the position of the aircraft it is frequently necessary to 'guesstimate' the number of nautical miles between the aircraft and a given feature on the ground. Experience will eventually teach you. In the meantime, you could use a rule of thumb. One such rule is knowing that most airfields are about a mile across. So, looking at a distant feature count the number of airfields you can fit in between the aircraft and the feature. Remember also that the actual aircraft position is underneath the aircraft – not alongside.

### **Understand the advantage of map orientation**

There will be times when you will need the map the 'right way up'. Alternatively, the map can be orientated with the aircraft heading which has the advantage of providing inside the aircraft an exact replica of the ground features below the aircraft with the features exactly reproduced, albeit in a reduced form. Bearings and alignments of features such as railway lines, coast lines, motorways will be identical and hence identifiable on the map inside the aircraft.

### **Suggested actions at a turning point**

In this first cross-country all the turning points are towns, so they are fairly easily identified. As you approach a turning point anticipate if possible i.e. get much of the paperwork out of the way so that you can concentrate on flying the aircraft. Whilst doing so, make sure that the town is the right turning point, guesstimate the time to run as described above and enter the times in the navigation log both for arrival at the turning point and for setting course on the next leg.

This also means that you can insert the ETA for the next waypoint or turning point, as applicable. All that remains is to concentrate on flying the aircraft in order to set course over the turning point and take up the new heading, DI and compass synchronized, picking a landmark ahead flying mainly by outside references, as before. In addition, ensure that the new track is the correct one, reading map to ground. If you are happy with the navigation log, all that remains to be done is to make the promised R/T call to Dunkeswell. It may seem a lot, but if you sort out the workload, by anticipating, it becomes fairly straightforward and logical, if you wish you could list the procedure on the side of your flight plan as an 'aide memoire'. Something on the lines of the following:-

<b>Time</b>	Action the Nav. Log
<b>Turn</b>	Fly the new heading
<b>Talk</b>	Make the R/T call

Hopefully the above tips will help. Now to provide further help with flying the four individual legs of the cross-country.

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### **LEG NO. 1 DUNKESWELL TO CHARD**

As well as checking that you have your map, flight plan, pencils/biros and your watch, give a thought as to how you will set course from the airfield. An accurate start from the 'field will help your navigation. At the holding point ready for departure you could then write in your log the likely setting course time and the ETA for Chard. If you don't do this it is so easy to forget in the air due to other pressures.

On this first leg, you will probably fly at 2000 ft but you can most likely set course on the climb-out as follows. If R/W 23 is in use you could turn downwind as normal, continue climbing and as you reach the 05 end of the runway turn on to your heading for Chard. Level off at cruising altitude. Your track check will be immediately apparent. On the left hand side of the nose you should see the disused airfield Upottery. Your track should pass approximately one and a half miles to the south (RHS) of the field. Adjust your heading as necessary.

After about a minute, looking ahead you should see the main road Y-junction A303/A30. The right hand fork points directly to Chard. So if you are tracking over or close to the first two miles of that RH fork you will be all set for Chard. If not, adjust your heading to suit. Because Chard is in a dip it will be late 'popping up' rest assured it will, and can be easily identified by the presence of a reservoir on the North side of the town i.e. on the left hand side of the nose. As the town is late appearing you may have to adjust your heading slightly to be able to turn over the centre of the town is set course for the next heading. Clearly a left turn. Time to anticipate: log the times etc. All as described above.

### **LEG NO. 2 CHARD TO TAUNTON**

After setting course and completing the checks as outlined earlier in these notes, make the R/T call on the following lines:-

Dunkeswell Radio. This is (callsign). Position Chard. Setting course for Taunton.

Then it is head out of the cockpit – you will notice the reservoir on the right hand side to the rear of the aircraft and more importantly the edge of the high ground of the Blackdown Hills on the left hand side. This last feature will provide a track check and more importantly will assist you in keeping clear of the Merryfield MATZ just off to the right hand side of the aircraft. After a short time the ground will fall away and you should see the Taunton Race Course and the M5 motorway dead ahead. These two features will identify your turning point and as you anticipate by entering the times in your navigation log and making any slight adjustment to your heading to pass over the centre of

the town you can further identify Taunton by noting the size of the town, plus the main railway lines, the rivers and the canal.

You shouldn't be anywhere near Bridgwater but it is worth noting for future flights that Bridgwater cannot be confused with Taunton as it is smaller and has a reservoir on the north west corner of the town. In addition the M5 motorway alongside the town runs north and south – unlike Taunton.

### **LEG NO. 3 TAUNTON TO WELLINGTON**

After setting up the new heading for Wellington complete the normal checks including an R/T call on the lines of the one used at Chard. You can easily check your track after setting course because you should be tracking between the M5 motorway on the left hand side and the main railway line on your right hand side – both of these features lead towards Wellington. Remember to fly 'head out of the cockpit', occasionally looking inside to check DI and compass. Just a few minutes after setting course you will see on your left hand side the two small reservoirs approximately 3 nautical miles from the aircraft tucked into the edge of the Blackdown Hills.

A few more minutes and you should be approaching the outskirts of Wellington. You will see again on the left hand side a tall monument on the high ground on the edge of the Blackdown Hills – a most useful landmark. This will confirm your turning point and is worth remembering for the future when returning to Dunkeswell after cross-country flights. If you need further confirmation there is the M5 Motorway on the left hand side, with its spur to the town, and the main line railway line on the right.

This is the time to make any corrections to fly towards the centre of the town, to anticipate your log times, and to think about a FRED A check. This last will prompt you to think about your next R/T call for joining at Dunkeswell, plus your need to consider any altimeter setting changes.

### **LEG NO. 4 WELLINGTON TO DUNKESWELL**

When over the centre of the town set course for the last leg, complete the normal setting course checks, carry out a FRED A check plus the R/T position call and request for landing information. Something on the lines of the following will suffice:-

Dunkeswell Radio. This is (callsign). Position Wellington. Request landing information.

Be prepared to write down the runway in use and QFE and to note if there is any parachuting in progress.

The navigation is quite straightforward. Your heading which will take you over, or close, to the monument should then take you over the only large village in the area: Hemyock. If you look ahead just a few nautical miles you should

see the airfield. In certain lights, the whitish airfield buildings on the NE end of the airfield plus the various units on the perimeter track may show up even before the runways.

During this short leg you will have to carry out a descent to circuit height once you have the airfield in sight and have set QFE. Your instructor will have briefed you on the joining procedure which will most likely be for a direct join. This type of join is mandatory if parachuting is in progress. It may be helpful to remember that 1650ft QNH is circuit height.

Joining for R/W 23/05 is best achieved by joining on the appropriate cross-wind leg, fairly close in, making an R/T call as you join.

Joining for R/W 35/17 is also straightforward. For R/W 35 adjust your heading so as to join direct downwind. For R/W 17 you can join for Long Final at 4 nautical miles, followed by a Final call when closer in.

Two final pieces of advice. Keep clear of the North Hill Gliding Site when joining cross-wind for R/W 23 and if your height when joining doesn't appear to be right check that you have QFE correctly set.

Have a good flight.

