Overhead Join

A picture being worth “a thousand words”, this explanation is mostly pictorial.

As the complete track of the join can, at first sight, seem rather complex this explanation breaks it down into simple elements and builds gradually up to the complete join.

So starting with the runway and the “Zone”: -

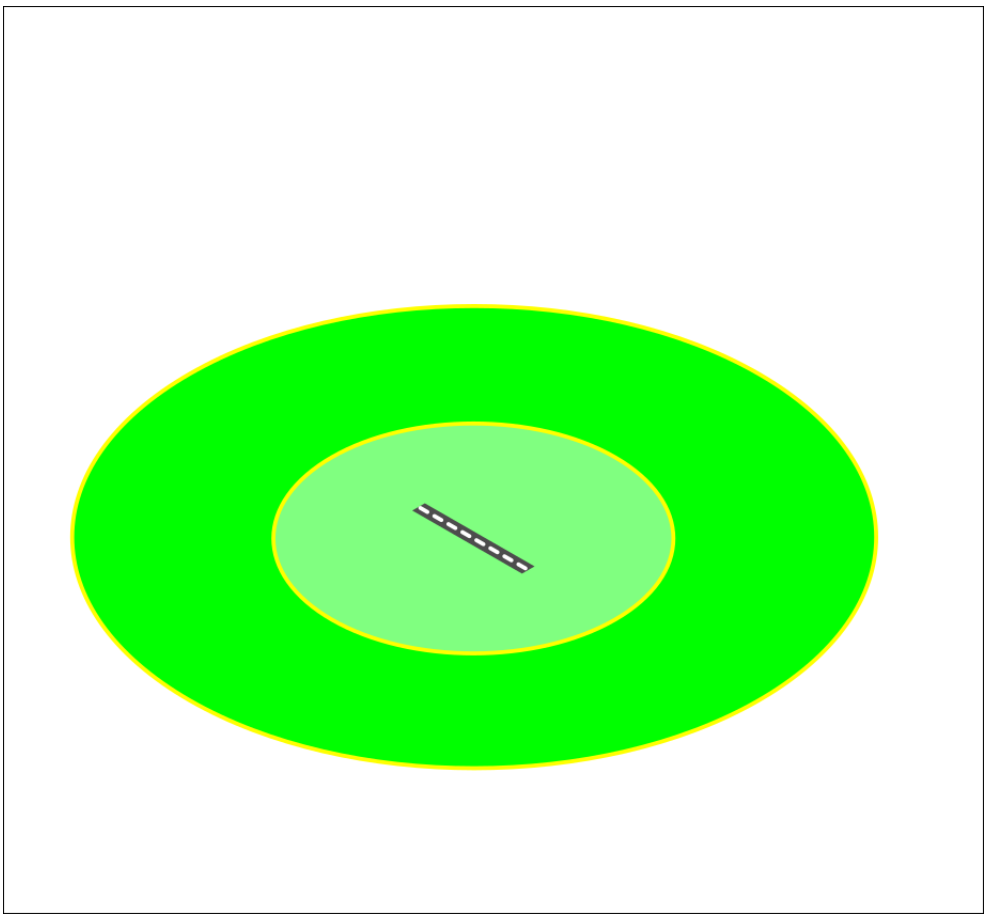

Fig 1 – The “Zone”

The two yellow “Range-rings” are at 1 and 2 miles, so the outer (2 mile) one marks the edge of the “Zone”.

“Ideal” Left and Right-Hand circuits

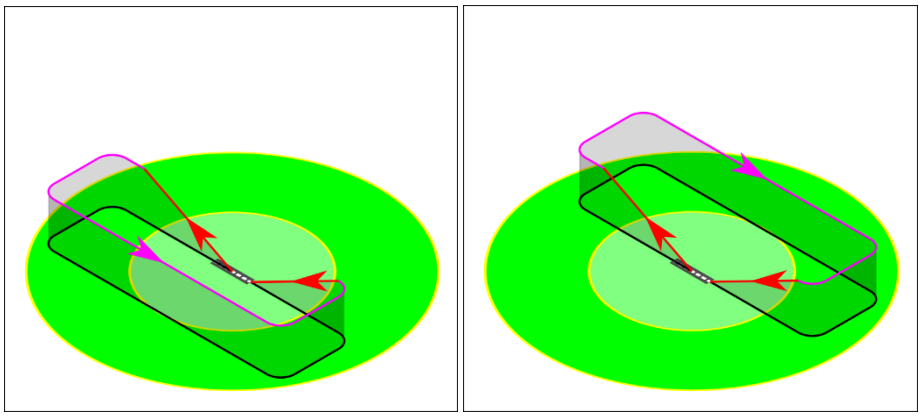

Fig 2 & 2a – Left-hand Circuit, and the Right-hand Circuit

In this (and the other diagrams) the thick black line shows the “Ground track” while the coloured lines show the aerial path.

The Overhead Join itself always starts from a fixed track, approaching from the “live side” with respect to the runway, aiming to cross the centre-line about half way along the “final” descent path.

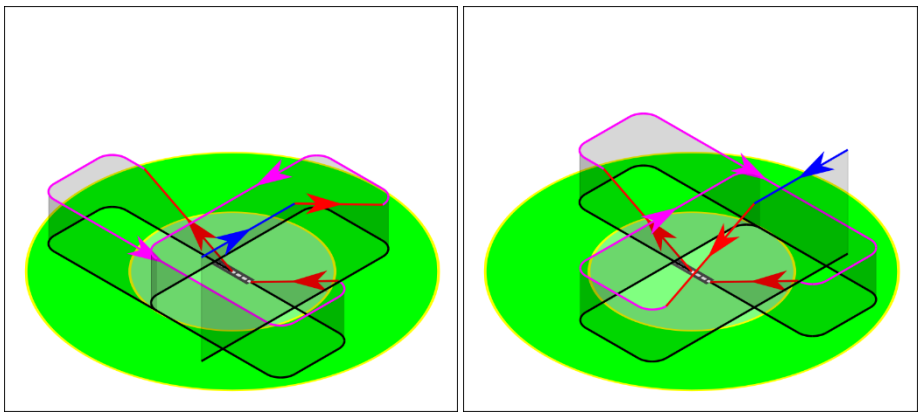

Fig 3 & 3a – Overhead Join, Left-hand Circuit, and Overhead Join, Right-hand Circuit

After crossing the runway centre line the descent to circuit height is made. (Although these diagrams show the descent being complete before the next turn it only needs to be complete *before* recrossing the runway centre line!)

These joins give good vertical separation from any traffic in the circuit.

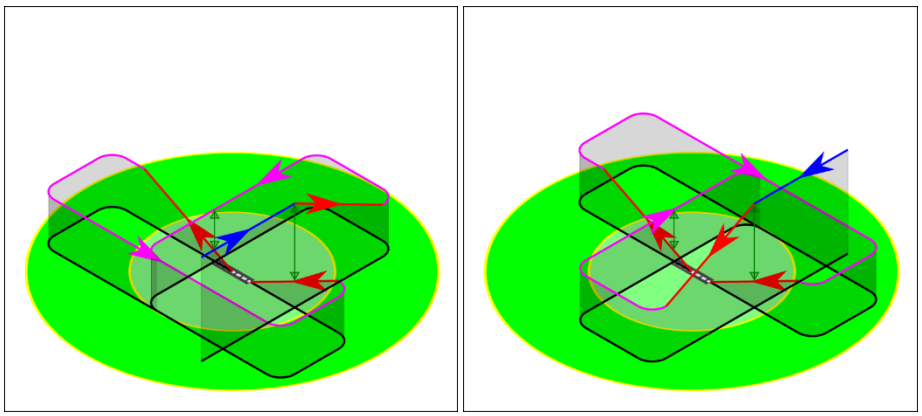

Fig 4 & 4a – Separation between the Circuit and the Overhead Join (Left, and Right-hand versions)

The main problem is how to achieve the correct track to start this join. This is moderately easy if approaching from the “live” side of the airfield as the join can be started “straight in”. However, if approaching from any other direction it is necessary first to get to the right position and heading with respect to the runway.

This can be done by entering an “Overhead” orbit pattern that has no potential conflict with traffic either in the pattern, or already making an Overhead Join. By remaining inside the “Zone” there is also no conflict with departing traffic climbing to cruise altitude.

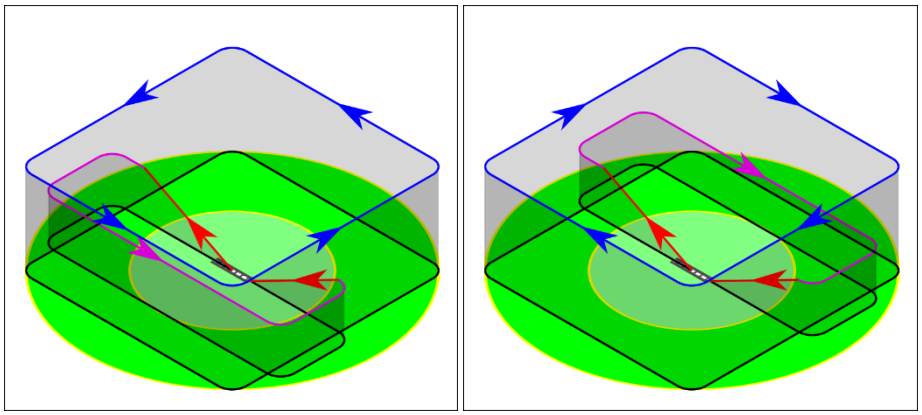

Fig 5 & 5a – Left-hand Overhead Orbit, and the Right-hand Overhead Orbit

These are normally flown at twice the circuit height, and remain (just) within the zone at all times. The aerial (blue) path can be joined at any point, and generally gives a good view of the runway, and of any traffic already in the circuit. If the circuit is know to be busy it can be advisable to enter this orbit, and only start the Overhead Join itself when ascertained safe to do so.

This orbit pattern also gives good vertical separation from traffic already in the circuit: -

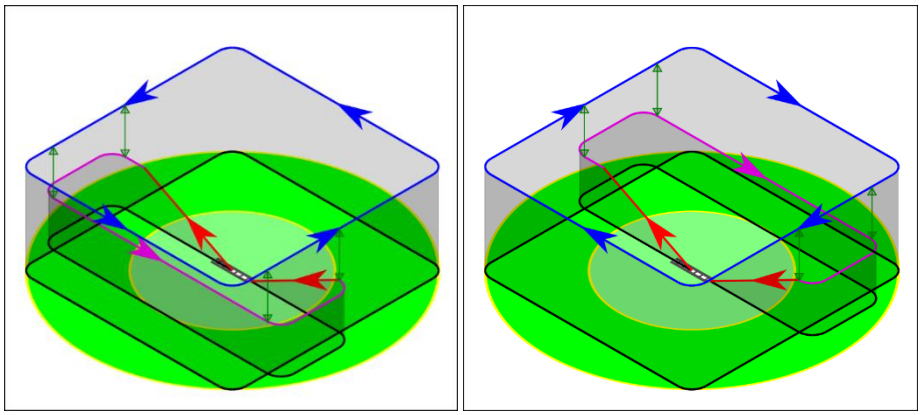

Fig 6 & 6a – Separation between the circuit and the overhead (Left, and Right-hand versions)

No matter from where the “Overhead” pattern was joined the turn to start/enter the overhead join is now the same.

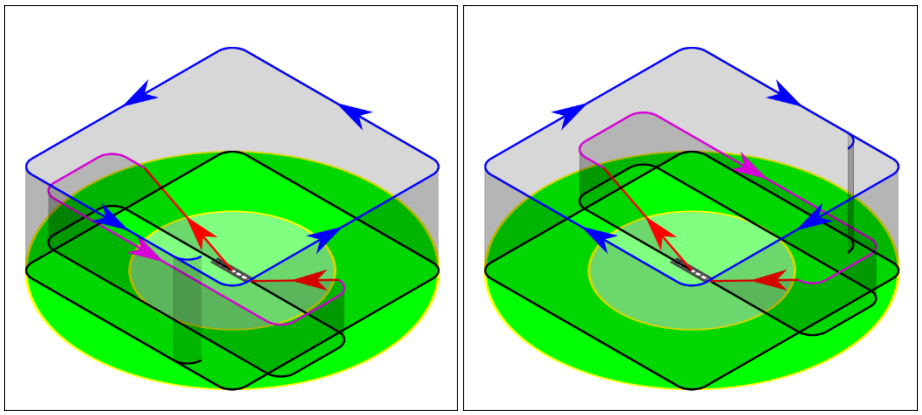

Fig 7 & 7a – Left-hand Join start, and the Right-hand Join start

The turn out of the overhead orbit is made a little after being abeam the “landing” end of the runway, aiming to cross the centre-line about half way along the “final” descent path.

Putting all these elements together now shows the complete “Overhead Join” Patterns

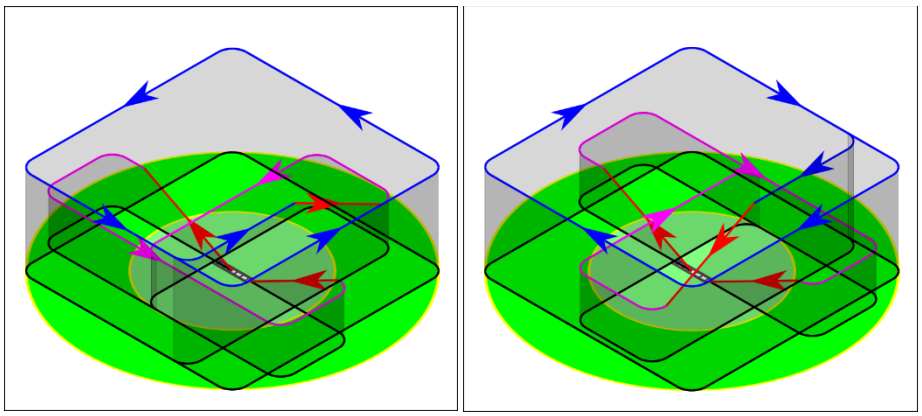

Fig 8 & 8a – Left-hand Orbit and Overhead Join, and the Right-hand orbit and Overhead Join

The “Blue” tracks are at twice the circuit height, the “Magenta” tracks are at circuit height while the “Red” tracks show the ascents and descents. (Circuit to ground, ground to circuit, and overhead to circuit.)

Mandatory calls

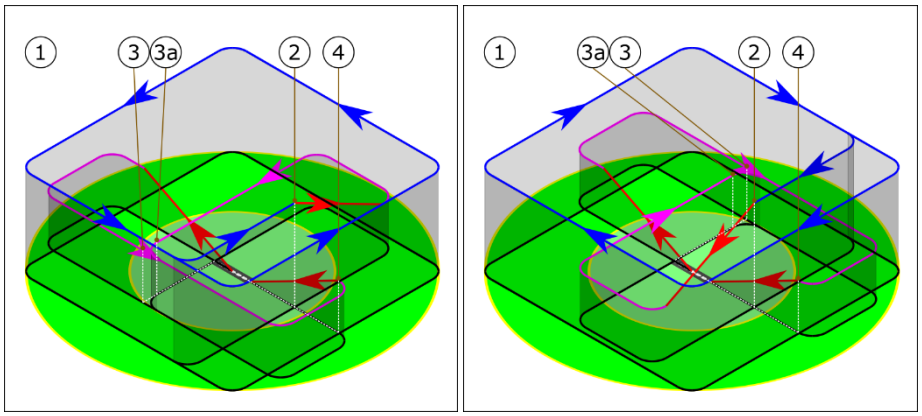

Fig 9 & 9a – points where the mandatory calls should be made (Left, and Right-hand versions)

1) This call is made at the point of entry into the "Zone", which may be from any direction!
   "G-ABCD Entering the overhead at #### feet for runway ## Left/Right-hand circuit."

2) The "descending deadside" call is made after turning out of the orbit, and at the point of crossing over the runway centre line.
   "G-ABCD descending deadside runway ## Left/Right-hand circuit."

3) The downwind call is ideally made when abreast of the end of the runway when already "in the circuit", however when joining after a deadside descent it is made abreast of the end of the runway, so at point "3a" as the turn onto "Downwind" is started.
   "G-ABCD Left/Right Downwind runway ##."

4) "Final" is called once the turn is complete, and as the descent is initiated.
   "G-ABCD Final runway ## *to land*/*Touch and Go*."

Other calls may be advisable for safety at uncontrolled fields, or as requested by ATC, as well as read-back of ATC instructions!