MOVEMENT OF JETS

Introduction

Lasham shares its runway with the maintenance facilities of the Aviation Tool Company (ATC). Big jets such as 727, 737 and DC8's arrive at Lasham regularly for maintenance or repair. Consequently, there is a real chance of having to land a glider when a large jet aircraft is either taking off or landing. These notes explain how these aircraft operate, what is expected of glider pilots and the problems associated with wake turbulence.

General operation during an ATC movement

The launch-point is usually given a warning of a jet movement several hours in advance but sometimes it can be just a few minutes. This information cannot be communicated to all gliders already in the air, but those nearby will see that the runway is cleared and fire trucks are positioned. If gliding is taking place on the short or medium runs, there may be little runway clearance to indicate an imminent movement.

Only the main runway is used by large jet aircraft. If an arrival is expected, PAPIS lights will also be positioned on the north side of the runway at a distance in from the threshold, a red & white-checked van will also be positioned alongside to supply the power for these lights. A departure is obvious from the appearance of a large jet at the end of the runway.

Arrivals

During an arrival all gliders and tugs must remain clear of the approach, the overhead and upwind on the extended centre-line. A ground controller cannot assess the height of a glider and therefore cannot clear a jet aircraft to land if gliders are seen in these areas. If you require to land during an arrival, plan your circuit so that your flight path does not cross the approach of the arriving jet.

Land parallel to an arriving jet and well off to one side. If operations are on runways 23 or 16, our approach and landings would be across arriving or departing aircraft. In this case choose to land well to the south of the main runway stopping well clear of the runway edge. Do not choose an approach which would result in a ground-run across the main runway.

Do not thermal off the end of the runway if a jet is arriving or departing. The jet and all ATC's ground crew will have to wait for you to move. It is also sensible not to be at the other end of the runway when a jet arrives in case it has to conduct a "go-round".

When a jet is arriving there can sometimes be occasions when it will have to orbit the field if it is early or there is a delay in clearing the runway. Endeavour to keep it in sight and stay out of its way. Cockpit visibility from a jet is not that good and the pilots may not be used to operating in uncontrolled airspace.

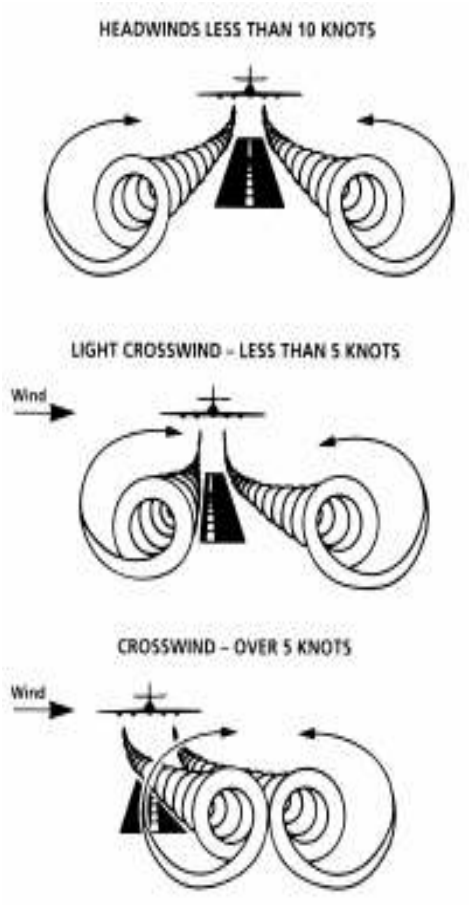
Despite their size, inbound aircraft can be inconspicuous. To enhance their visibility, landing lights are normally switched on during the approach. Sometimes a normal circuit or even an overhead join may be made and so a glider may be in conflict at a distance from the airfield. Keep your eyes open and use common sense and good airmanship.

Departures

Do not cross in front of an aircraft at any time, even when it is taxiing, always approach and land parallel to and well off to one side or to the south and clear. All airborne gliders must stay clear of the climb-out area. If there are gliders on the climb-out, the jet cannot be given clearance to take-off.

Wake turbulence

Wake turbulence is caused by the downwash created by the wing in the process of providing lift. The slower the aircraft flies, the more downwash it has to provide to be able to sustain flight. Since the pressure is slightly lower on the upper surface of the wing a flow is established around the wingtip. This flow is called a vortex. Anyone who has 'boxed' the tow knows of the control problems experienced just by flying through the wake of a small aircraft. A large aircraft presents a bigger problem and extreme care should be taken when landing during or immediately after a jet departure or arrival.



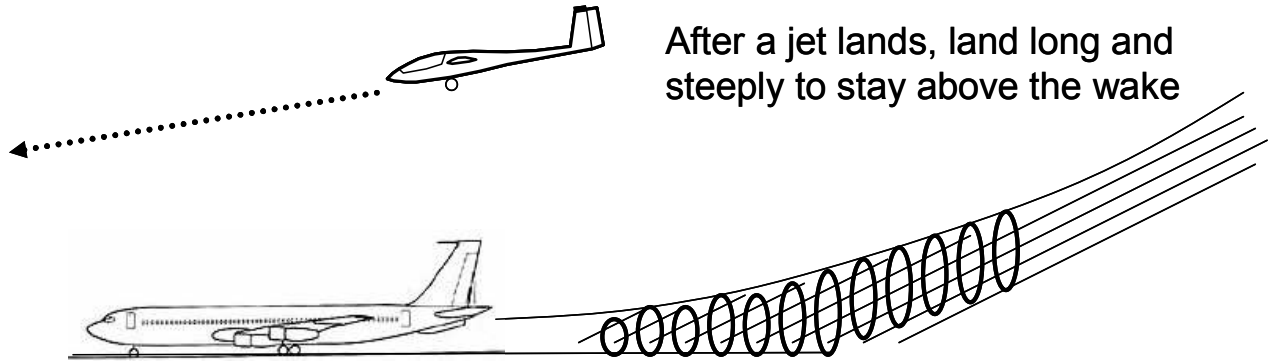
Close to the ground vortices generally persist for about 80 seconds. Here their effect is most hazardous. They tend to move apart at about 5 knots in still air, so a crosswind component of 5 knots will maintain the upwind vortex stationary on or near the runway. The downwind vortex will move away at about 10 knots. In a crosswind of more than 5 knots, the area of hazard is not necessarily aligned with the flight path of the aircraft creating the vortex.

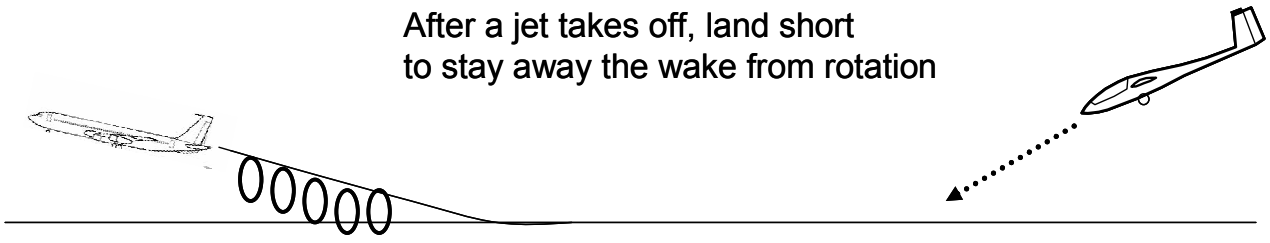
Air traffic controllers ensure time separation so that there the vortices will not affect the next landing aircraft. Medium jets such as DC9s have crashed after encountering the vortices from larger jets like Boeing 747s.

Wake turbulence is at its greatest when a heavy aircraft is flying at its slowest speed, ie at touchdown. Once the wheels are on the ground, less lift is generated and the vortex is also much weaker. This means that if landing at the same time or just after a jet-arrival, we should aim to land well into the field with a steeper approach than normal. The steep approach allows you to over-fly the vortex.

If you have to land when a jet is taking off, you should aim to touch down as short as possible. There will not be a significant vortex until the jet has rotated and the vortex will dissipate as it moves downwind of this point.

In summary:





If you do not have to land during a movement, you should avoid doing this if possible. It only takes about three minutes for the whole vortex to dissipate. If possible, keep soaring for an extra three minutes between a departure and a landing or take-off to be sure the turbulence has ceased. If you are having difficulty in staying airborne, try to land well before the movement occurs.

Jet efflux

In addition to wake turbulence, the jet engine itself can create a core of very high velocity air which could affect a glider on approach or on the ground during engine runs. The jet should be deflected into the 'bund', a large bank of earth near ATC's hangar, that shields the rest of the airfield. However from time to time part of the jet exhaust misses the bund and is directed onto or

across an approach. When a jet is conducting a run-up the engines exhaust faces the earthen mound causing two main problems:

- Turbulent air which could easily overturn a glider parked nearby
- Flying stones and debris from the jet blast could cause damage to a glider

So do not park a glider near ATC's "run-up" bay and do not overfly the bay while they are testing. So if you are landing and see a jet in the run-up bay with flashing lights, stay well clear as it may have engines running at a high power setting.

Occasionally ATC will conduct an engine run other than at the bund: sometimes off the end of Runway 09 or at the intersection with the Runway 05. Again stay well clear and do not overfly.