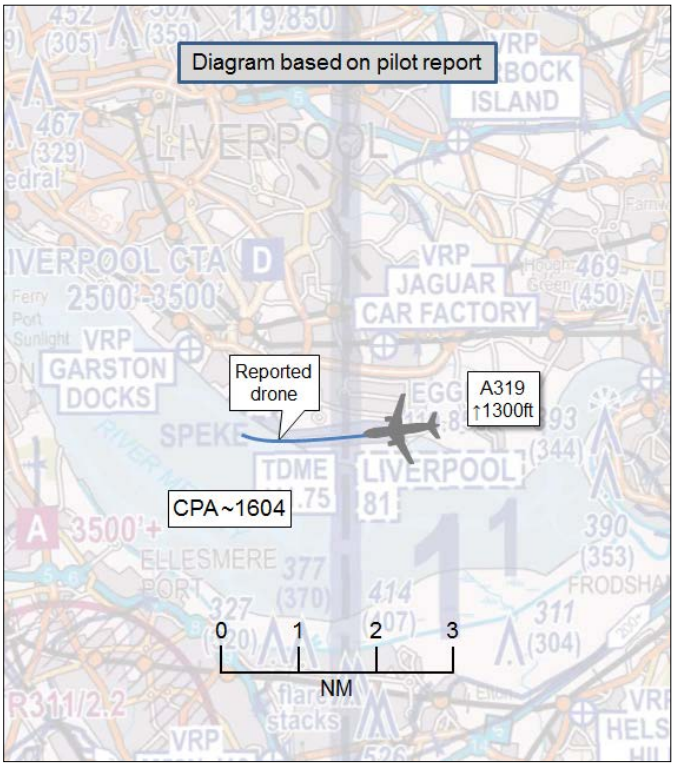
## AIRPROX REPORT No 2016133

Date: 12 Jul 2016 Time: 1604Z Position: 5320N 00254W Location: Liverpool

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | A319 | Drone |
| Operator | CAT | Unknown |
| Airspace | Liverpool CTR | Liverpool CTR |
| Class | D | D |
| Rules | IFR | |
| Service | Aerodrome | |
| Provider | Liverpool | |
| Altitude/FL | 1300ft | |
| Transponder | A, C, S | |
| **Reported** | | Not reported |
| Colours | Company | |
| Lighting | All on | |
| Conditions | VMC | |
| Visibility | 10km | |
| Altitude/FL | 1300ft | |
| Altimeter | QNH (1013hPa) | |
| Heading | 270° | |
| Speed | 150kt | |
| ACAS/TAS | TCAS II | |
| Alert | None | |
| **Separation** | | |
| Reported | 0ft V/5m H | |
| Recorded | NK | |




**THE A319 PILOT** reports that immediately after take-off from RW27 the captain noticed a large black-and-yellow drone in the right 2 o'clock position. As the A319 climbed through the drone's level, it passed down the right side, about 5m from the wing-tip. The drone appeared to be moving in a westerly direction, as it took longer to pass than the crew thought normal. The pilot noted that the drone's presence was an unnecessary distraction at a critical stage of flight, between thrust reduction and flap retraction. The drone sighting was reported to ATC, who informed the following aircraft, at that time lining-up on the runway.

He assessed the risk of collision as 'High'.

**THE DRONE OPERATOR:** The drone operator could not be traced.

**THE LIVERPOOL CONTROLLER** reports the A319 pilot on climb-out, departing from RW27, reported a drone operating at about 1500ft on his right hand side. The drone was described as being yellow and black in colour, about 2ft in length and with 4 'engine pods'. Tower controllers were not able to visually acquire the drone. Airport police and the Aerodrome Manager were advised.

### Factual Background

The weather at Liverpool was recorded as follows:

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METAR EGGP 121550Z 29011KT 9999 FEW024 15/10 Q1013=
METAR EGGP 121620Z NIL=
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## Analysis and Investigation

### UKAB Secretariat

There are no specific ANO regulations limiting the maximum height for the operation of drones that weigh 7kg or less other than if flown using FPV (with a maximum weight of 3.5kg) when 1000ft is the maximum height. Drones weighing between 7kg and 20kg are limited to 400ft unless in accordance with airspace requirements. Notwithstanding, there remains a requirement to maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions. CAP 722 gives guidance that, within the UK, visual line of sight (VLOS) operations are normally accepted to mean a maximum distance of 500m [1640ft] horizontally and 400ft [122m] vertically from the Remote Pilot.

Neither are there any specific ANO regulations limiting the operation of drones in controlled airspace if they weigh 7kg or less other than if flown using FPV (with a maximum weight of 3.5kg) when they must not be flown in Class A, C, D or E, or in an ATZ during notified hours, without ATC permission. Drones weighing between 7kg and 20kg must not be flown in Class A, C, D or E, or in an ATZ during notified hours, without ATC permission. CAP722 gives guidance that operators of drones of any weight must avoid and give way to manned aircraft at all times in controlled Airspace or ATZ. CAP722 gives further guidance that, in practical terms, drones of any mass could present a particular hazard when operating near an aerodrome or other landing site due to the presence of manned aircraft taking off and landing. Therefore, it strongly recommends that contact with the relevant ATS unit is made prior to conducting such a flight.

The Air Navigation Order 2016, Article 241[1] states:

> 'A person must not recklessly or negligently cause or permit an aircraft to endanger any person or property.'

Article 94, paragraphs 2, 3 and 4 state:

> (2) The person in charge of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made.
>
> (3) The person in charge of a small unmanned aircraft must maintain direct, unaided visual contact with the aircraft sufficient to monitor its flight path in relation to other aircraft, persons, vehicles, vessels and structures for the purpose of avoiding collisions.
>
> (4) The person in charge of a small unmanned aircraft which has a mass of more than 7kg excluding its fuel but including any articles or equipment installed in or attached to the aircraft at the commencement of its flight, must not fly the aircraft
>
> > (a) in Class A, C, D or E airspace unless the permission of the appropriate air traffic control unit has been obtained;
> >
> > (b) within an aerodrome traffic zone during the notified hours of watch of the air traffic control unit (if any) at that aerodrome unless the permission of any such air traffic control unit has been obtained; or
> >
> > (c) at a height of more than 400 feet above the surface unless it is flying in airspace described in sub-paragraph (a) or (b) and in accordance with the requirements for that airspace.

A CAA web site[2] provides information and guidance associated with the operation of Unmanned Aircraft Systems (UASs) and Unmanned Aerial Vehicles (UAVs). Additionally, the CAA has published a UAV Safety Notice[3] which states the responsibilities for flying unmanned aircraft and which include the following:

[1] Article 23 of the ANO 2016 details which Articles apply to small unmanned aircraft.
[2] www.caa.co.uk/uas
[3] CAP 1202

'You are responsible for avoiding collisions with other people or objects - including aircraft.
Do not fly your unmanned aircraft in any way that could endanger people or property.
It is illegal to fly your unmanned aircraft over a congested area (streets, towns and cities).
…, stay well clear of airports and airfields'.

## Summary

An Airprox was reported when an A319 and a reported drone flew into proximity at about 1604 on Tuesday 12th July 2016. The A319 pilot was operating under IFR in VMC in receipt of an Aerodrome Control Service from Liverpool Tower. The drone operator could not be traced.

## PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of a report from the A319 pilot, radar photographs/video recordings and a report from the air traffic controller involved.

Members quickly agreed that the drone operator was required to ensure that they were reasonably satisfied that their flight could be made safely and that by closing to a reported 5m from the departing A319 they had not done so. The Board were seriously concerned that a drone operator would consider operating their aircraft in such a manner and that even if the operator was not 'aviation minded', it should have been obvious from the stream of aircraft departing Liverpool airport that flight in that area and at the reported altitude could not be conducted safely. Members considered making a formal recommendation to the CAA to increase guidance to the public for the safe conduct of drone operations but were informed that the CAA already had plans in place to do so through the soon to be re-released Drone Code.

Turning to the risk, although the incident did not show on the NATS radars, the Board noted that the pilot had estimated the separation to be 5m from the aircraft wing tip, at co-altitude, and that there had not been time to take any avoiding action. Acknowledging the difficulties in judging separation visually without external references, the Board considered that the pilot's estimate of separation, allied to his overall account of the incident, portrayed a situation where a collision had only been narrowly avoided and chance had played a major part; they therefore determined the risk to be Category A.

## PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The drone was flown into conflict with the A319.

Degree of Risk: A.