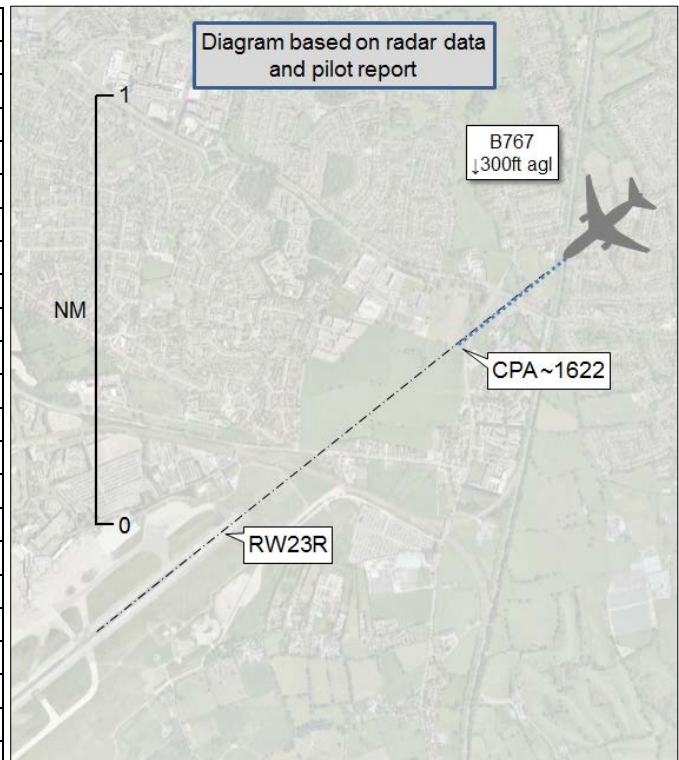


AIRPROX REPORT No 2016164

Date: 20 Jul 2016 Time: 1622Z Position: 5322N 00215W Location: Manchester Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|-------------------|----------------|----------------|
| Aircraft | B767 | Drone |
| Operator | CAT | Unknown |
| Airspace | Manchester CTR | Manchester CTR |
| Class | D | D |
| Rules | IFR | |
| Service | Aerodrome | |
| Provider | Manchester | |
| Altitude/FL | 300ft | |
| Transponder | A, C, S | |
| Reported | | Not reported |
| Colours | Company | |
| Lighting | All on | |
| Conditions | VMC | |
| Visibility | NK | |
| Altitude/FL | 300ft | |
| Altimeter | NK | |
| Heading | ~230° | |
| Speed | 143kt | |
| ACAS/TAS | TCAS II | |
| Alert | None | |
| Separation | | |
| Reported | 0ft V/<20ft H | |
| Recorded | | NK |



THE B767 PILOT reports being on short finals to RW23R at Manchester when an object passed very close down the right side of the aircraft. It was at exactly the level of the flight deck window, and so close it must have passed over the right wing. The object was bright yellow and around 60cm across. Its shape was a very sharp edged rectangle with a square below making a 'T'. It did not look like a drone but did not look like a balloon either. ATC was informed, and the police took details after landing.

He assessed the risk of collision as 'High'.

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

Factual Background

The weather at Manchester was recorded as follows:

METAR COR EGCC 201620Z 30010KT 9999 VCSH FEW025 FEW033TCU SCT042 22/17 Q1009 NOSIG=

Analysis and Investigation

UKAB Secretariat

There are no 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.

Neither are there any specific ANO regulations regarding minimum separation of drones from people, vessels, vehicles or structures for drones up to 20kg that are not fitted with surveillance or data acquisition systems [i.e. without cameras] other than if flown using FPV (with a maximum weight of 3.5kg) when 50m is the minimum distance (or 30m when taking off or landing), or 150m from any congested area or open-air assembly. For all drones up to 20kg that are fitted with surveillance and data acquisition systems [i.e. with cameras] the minimum separation distances are 50m (or 30m when taking off or landing) from people or objects that are 'not under the control of the person in charge' (ie. third parties), or 150m from any congested area or open-air assembly. Notwithstanding, CAP1202 advice is to never fly any drone within 50m of a person, vehicle or building.

Notwithstanding the above, all drone operators are also required to observe ANO 2016 Article 94(2) which requires that the person in charge of a small unmanned aircraft may only fly the aircraft if reasonably satisfied that the flight can safely be made, and the ANO 2016 Article 241 requirement not to recklessly or negligently cause or permit an aircraft to endanger any person or property. Allowing that the term 'endanger' might be open to interpretation, drones of any size that are operated in close proximity to airfield approach, pattern of traffic or departure lanes, or above 1000ft agl (i.e. beyond VLOS (visual line of sight) and FPV (first-person-view) heights), can be considered to have endangered any aircraft that come into proximity. In such circumstances, or if other specific regulations have not been complied with as appropriate above, the drone operator will be judged to have caused the Airprox by having flown their drone into conflict with the aircraft.

A CAA web site¹ provides information and guidance associated with the operation of Unmanned Aircraft Systems (UASs) and Unmanned Aerial Vehicles (UAVs) and CAP722 (UAS Operations in UK Airspace) provides comprehensive guidance.

Additionally, the CAA has published Drone Aware² which states the responsibilities for flying unmanned aircraft. This includes:

'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 a B767 and a drone flew into proximity at 1622 on Wednesday 20th July 2016. The B767 pilot was operating under IFR in VMC in receipt of an Aerodrome Control Service from Manchester Tower. The drone operator could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of a report from the B767 pilot and radar photographs/video recordings.

Notwithstanding the pilot's uncertainty, the Board agreed that the description of the shape of the reported object (T-shaped with sharp edges) was such that it was most likely a drone, perhaps with an under-slung camera. If that was indeed the case, then its operator had, by operating at that

¹ www.caa.co.uk/uas

² CAP 1202

position and altitude, flown the drone into conflict and had recklessly endangered the B767. Turning to the risk, although the incident did not show on radar, the Board noted that the pilot had estimated the separation to be less than 20ft from the aircraft, at co-altitude, and that there had not been time to take any avoiding action as it passed over the right wing. 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 B767.

Degree of Risk: A.