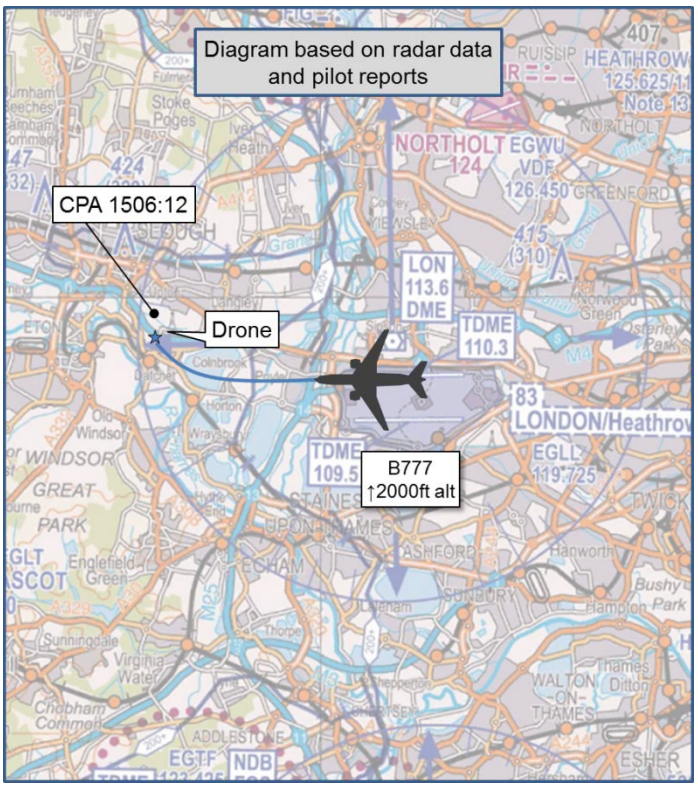
AIRPROX REPORT No 2015162

Date: 22 Sep 2015 Time: 1506Z Position: 5129N 00034W Location: 3nm WNW Heathrow

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	B777	Drone
Operator	CAT	Unknown
Airspace	Heathrow CTA	
Class	D	D
Rules	IFR	
Service	Radar Control	
Provider	NW Deps (Swanwick)	
Altitude/FL	2000ft	
Transponder	A,C,S	
Reported		
Colours	White, Blue, Red	
Lighting	NK	
Conditions	VMC	
Visibility	NK	
Altitude/FL	2000ft	
Altimeter	QNH (1002hPa)	
Heading	NW	
Speed	NK	
ACAS/TAS	TCAS II	
Alert	None	
Separation		
Reported	0ft V/25m H	
Recorded	NK	



THE B777 PILOT reports being in the climb-out from Heathrow when, on passing 2000ft, the Captain saw a silver or metallic drone pass down the right-hand-side of the aircraft at the same height. He described the drone as a Quadcopter type, silver or metallic in colour with "coke can" size cylinders at each corner. He estimated it to be 12-18 inches diameter. The aircraft was climbing, and therefore had a nose up attitude, which meant that the crew had limit forward visibility; the encounter was only fleeting as the drone passed down the right-hand-side, lasting probably 1-2 seconds. There was no time to take avoiding action.

He assessed the risk of collision as 'High'.

The drone operator could not be traced.

THE NW DEPS CONTROLLER reports that the B777 departed from Heathrow and on first contact reported that he had encountered a drone that had just missed the tip of his starboard wing. The incident was reported to the police.

THE HEATHROW VCR SUPERVISOR reports that at 1507 the Swanwick NW Deps controller informed him that the pilot of the B777 had reported that he had "just missed" a drone. The Heathrow police were immediately informed and following departures warned, although there were no further sightings.

Factual Background

The weather at Heathrow was recorded as follows:

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METAR EGLL 221450Z 33007KT 290V010 9999 FEW021 14/09 Q1002 TEMPO SHRA
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Analysis and Investigation

UKAB Secretariat

The Air Navigation Order 2009 (as amended), Article 138[1] states:

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

Article 166, 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 …; 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).

The CAA has published a UAV Safety Notice[3] 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).
> Also, stay well clear of airports and airfields.

In addition, the CAA has published guidance regarding First Person View (FPV) drone operations which limit this activity to drones of less than 3.5kg take-off mass, and to not more than 1000ft[4].

[1] Article 253 of the ANO details which Articles apply to small unmanned aircraft. Article 255 defines 'small unmanned aircraft'. The ANO is available to view at http://www.legislation.gov.uk.
[2] www.caa.co.uk/uas
[3] CAP 1202
[4] ORSA No. 1108 Small Unmanned Aircraft – First Person View (FPV) Flying available at: ORSA No 1108

Summary

An Airprox was reported when a B777 and a drone flew into proximity at 1506 on Tuesday 22nd September 2015. The B777 was operating under IFR in VMC and in receipt of an Aerodrome control Service from Heathrow. Although the controller reported the incident to the police, the drone operator could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilot of the B777, radar photographs/video recordings and reports from the air traffic controllers involved.

The crew of the B777 reported the seeing the drone at 2000ft on climb-out from Heathrow airport. The Board first noted that, as for other aviators, drone operators are fundamentally required to avoid collisions with all aircraft. More specifically, drone flight above 400ft is prohibited in Class D airspace without the permission of the appropriate air traffic control unit, and therefore the drone operator was not entitled to operate in this location.

In this incident, operating at levels of 2000ft, the drone operator would almost certainly be operating on first-person-view (FPV), for which regulation mandates that an additional person must be used as a competent observer who must maintain direct unaided visual contact with the drone in order to monitor its flight path in relation to other aircraft. Under FPV operations, for drones of less than 3.5kg, the drone is not permitted to operate above 1000ft agl without CAA approval being gained and a NOTAM being issued. At 2000ft the drone operator was flying within the London CTR, Class D airspace, without permission and, in his non-compliance, the Board considered that the drone operator was posing a flight safety risk.

Operating as he was in airspace within which he was not permitted meant that the Board considered that the cause of the Airprox was that the drone operator had flown into conflict with the B777. As is often the case with drone Airprox, the incident did not show on the NATS radars; the B777 pilot estimated that the drone was at the same height and within 25m of the B777, less than a wingspan away. Using this estimate as a guide, the Board determined that the risk was Category A, separation had been reduced to the minimum and chance had played a major part in events.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The drone was flown into conflict with the B777.

Degree of Risk: A.