Airprox report number 2019057

Airprox Information from UKAB

Date: 7 Apr 19 Time: 1837Z Position: 5131N 00244W Location: Avonmouth Altitude: FL078 Aircraft: ATR72 (CAT)

The ATR72 pilot reports in a normal climb when he noticed a possible object in the distance. He asked the FO to verify what it was. It was identified as a small black quadcopter about 2sec prior to passing overhead. ATC were notified and the flight continued normally.

Reported Separation: 30ft V/ 0m H *Reported Risk of Collision: High*

The Cardiff Controller reports the ATR72 was passing above Avonmouth own navigation when the pilot reported passing in close proximity to a drone. No other radar return was seen. The controller notified the Bristol Radar controller and an aircraft inbound to Bristol of the report, with a radar heading to pass 6nm to the west of the reported position before transfer to Bristol. He then advised the Watch Manager. Bristol reported the incident to their local policing unit.

UKAB Cause/ Risk Statement

Cause: The drone was being flown above the maximum permitted height of 400ft and in controlled airspace such that it was endangering other aircraft at that location. The Board agreed that the incident was therefore best described as the drone was flown into conflict with the ATR72.

Risk: The Board considered that the pilot's overall account of the incident portrayed a situation where providence had played a major part in the incident and/or a definite risk of collision had existed.

Airprox Reality Check ADS-B based analysis

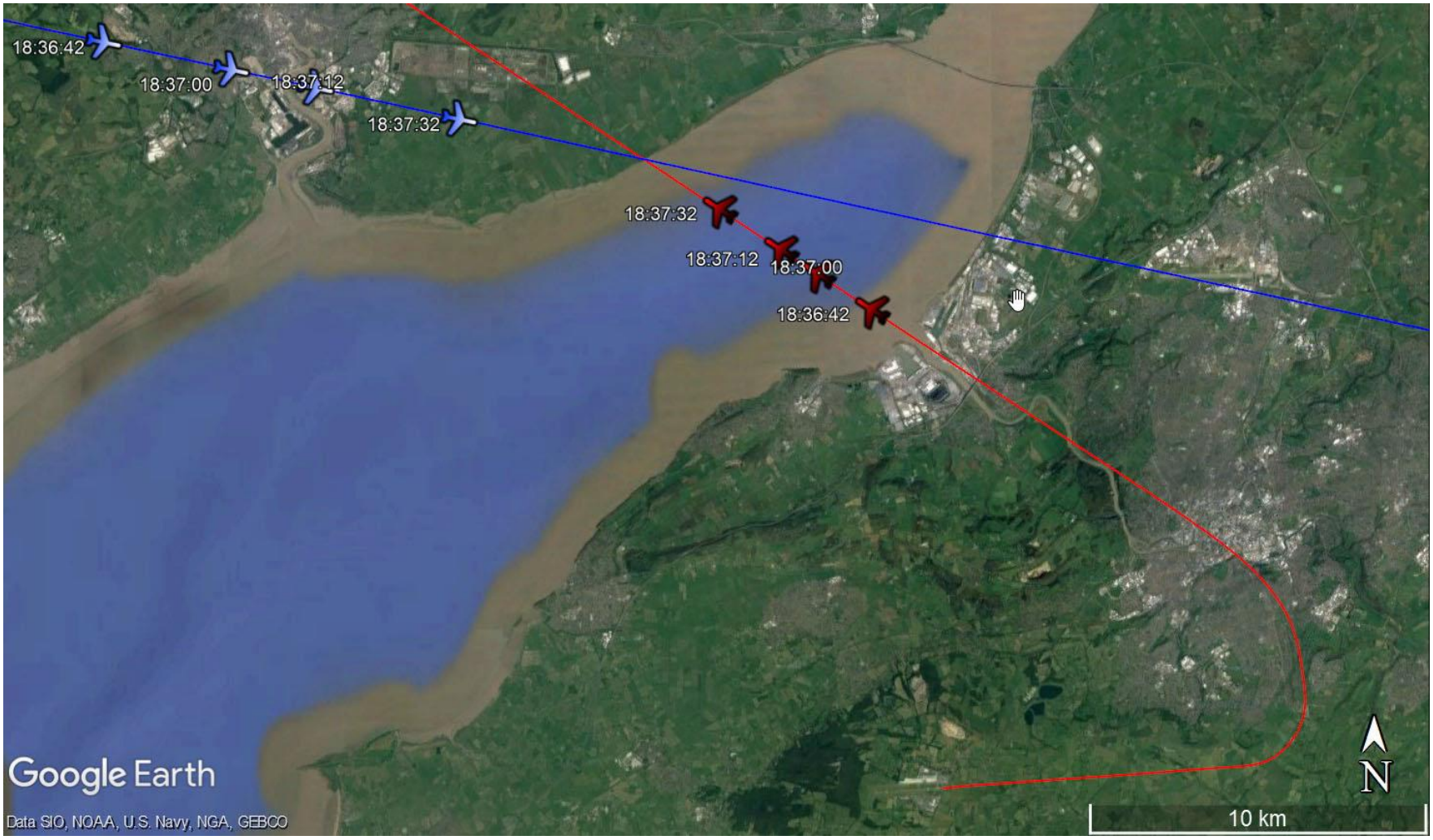
The reporting ATR72 aircraft was EI-FSK, Bristol to Dublin. It departed Bristol Airport on runway 08 and climbed East on the runway heading. Whilst climbing through 3,200ft the ATR72 began a gentle left turn, taking up a heading of 303 degrees (North West) at 18:35:04 whilst climbing through 5,725ft overhead Bristol.

At 18:37:00 the ATR72 had an A320 (EI-DVH, Shannon to London Heathrow) in the 11 o'clock position at 19.6km range and 20.5 degrees above the horizon. Taking into account the ATR72's 2.5 degree climb angle, this would have appeared 18 degrees above the aircraft's flight deck angle.

The A320 was on a heading of 102 degrees (South West) descending through 30,450ft at approximately 407kts. This produced a closing speed of approximately 614kts. Assuming an aerospace standard 580B windscreen viewing angle of 35 degrees above level, and taking into account the ATR72's 2.5 degree climb, as the two aircraft closed, the A320 would have disappeared off the top of the ATR72 windscreen at approximately 18:37:32.

At this final 'in view' position, the slant range of the two aircraft was 10.3km (with the A320 approximately 20,000 feet higher than the ATR72.)

An Airbus A320 (37.6m fuselage length and 35.8m wingspan[1]) viewed from 10.3km would appear around the same size as a DJI Phantom (33cm) drone 94 metres away.



Reporting ATR72; red aircraft, red track.
Crossing A320; blue aircraft, blue track.

Discussion

The location (over the Bristol channel) and the altitude make it very unlikely that a drone was involved, due to the limitations of battery density/ mass. It is also highly improbable that the Captain could have sighted a 33cm drone in front of them, and had time to bring it to the attention of the First Officer for their opinion, whilst flying at more than 200knots (103m/s). A drone would have been passed in a second.

The ADS-B data is much more compelling. Given that the events shown in the ADS-B data occurred at the time stated in the UKAB report, at the location reported, and the features of how the aircraft would have appeared substantially match the narrative in the report, it is without doubt the encounter in question.

Sunset on the ground at this location on this day occurred at 18:54. The ATR72 pilots would have been looking West, in fading light, at a backlit object viewed from in front and below. It would have appeared as a small black silhouette. Unsurprisingly the pilots struggled to correctly identify the object – and eventually misidentified it as a drone in close proximity, when in fact it was an A320 some 10km away. (In the sky most of the normal cues to size and distance are absent, and human perception is prone to this error.)

Airprox Reality Check Conclusion

This was a classic case of a distant full-size aircraft being mistakenly identified as a nearby drone.

This was not in fact an airprox. There was absolutely no risk of collision.

In the sky, there is nothing to give scale to an object. Once the human brain leaps to the wrong conclusion about what the object is, the relative distance is 'calculated' on this 'wrong' basis.

About Airprox Reality Check

Airprox reports featuring unmanned aircraft are almost always pure eyewitness accounts, which are notoriously unreliable[2]. Airprox Reality Check analyses airprox data using its 'Reality Check System[3]' to evaluate the likelihood of the event actually having involved a multirotor drone.

Airprox Reality Check believes that airprox data relating to drones should be an accurate and reliable indicator of the actual number of times drones come into proximity to manned aircraft, and is committed to achieving that goal.

References

[1] = Airbus A320 specification source: http://www.modernairliners.com/airbus-a320-introduction/airbus-a320-specs/
[2] = There are several studies regarding eyewitness reports in the studies section on our website: https://www.airproxrealitycheck.org/studies/
[3] = The Airprox Reality Check is explained here: https://www.airproxrealitycheck.org/reality-check-system/
ADS-B data sourced from The OpenSky Network: http://www.opensky-network.org