

## Consolidated Drone/Balloon/Model/Unknown Object Summary Sheet for UKAB Meeting on 15<sup>th</sup> September 2021

Total	Risk A	Risk B	Risk C	Risk D	Risk E
11	2	2	7	0	0

Airprox Number	Date Time (UTC)	Aircraft (Operator)	Object	Location <sup>1</sup> Description Altitude	Airspace (Class)	Pilot/Controller Report Reported Separation Reported Risk	Comments/Risk Statement	ICAO Risk
2021106	24 Jun 21 1545	EMB175 (CAT)	Balloon	5325N 00131W 1NM east of ADELU FL190	London FIR (A)	<p><b>The EMB175 pilot</b> reports that they were flying towards BHX on a radar heading of 260° in the descent passing FL190, under Radar Control. The balloon was seen 2 sec before it was underneath the aircraft. There was no time to take any action. The balloon caught their eye because of the reflection. There was no time to react. The object was small and only visible at the last moment, 2 sec before the balloon crossed underneath the aircraft. It was an unmanned balloon about 2m diameter made from aluminium coloured foil with a box underneath.</p> <p><b>Reported Separation:</b> H 0ft/V 15-50ft <b>Reported Risk of Collision:</b> High</p> <p><b>The Prestwick controller</b> reports that the EMB175 was passing FL190 in the vicinity of ADELU when the pilot reported a large balloon, about 10ft in diameter, about 30ft below the aircraft.</p>	<p>In the Board's opinion the reported altitude or description of the object were sufficient to indicate that it was probably a balloon.</p> <p><b>Applicable Contributory Factors:</b> 4, 6</p> <p><b>Risk:</b> 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.</p>	A

<sup>1</sup> Latitude and Longitude are usually only estimates that are based on the reported time of occurrence mapped against any available radar data for the aircraft's position at that time. Because such reported times may be inaccurate, the associated latitudes and longitudes should therefore not be relied upon as precise locations of the event.

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2021108	08 Jul 21 1825	Citation 525 (Civ Comm)	4 x Unk Objs	5122N 00019E 3NM NW Biggin Hill FL100	London TMA (A)	<p><b>The Citation 525 pilot</b> reports that they were on climb-out from Biggin Hill on vectors with London Control, climbing through FL100 at about 230kt and in a left hand turn as instructed by London. The FO/PF spotted 4 small black objects and called out “birds” pointing in their direction to alert the PIC/PM who was running the FL100 checks. They thought it was strange to see birds so high up but didn’t think it could be anything else as there were 4 of them quite close together. The left-hand turn brought them closer to the unidentified objects, but they could see they were going to miss them, passing just to the right and above. The pilot could see the objects were in a diagonal line and definitely not birds before they lost sight as they went under the aircraft, but the PIC was then able to get a much better look and identified the objects as ‘H’ shaped drones and black or dark grey in colour and 10-12 inches in size. They reported the incident to ATC giving them the limited information they had based on the few seconds they were exposed to the threat. The drones were quite close together in a sort of vertical diagonal line somewhere between FL100 and FL110. The pilot believed that there was not much they could have done to avoid them as they were on their flight path, even if they had seen them earlier.</p> <p><b>Reported Separation:</b> 50-100ftV/ 0m H</p> <p><b>The Capital Radar controller</b> reports that the Citation 525 pilot reported that they had had a near-miss with 4 drones. They reported the drones as grey, about the size of a tea-tray and at altitude 10,000ft.</p>	<p>Notwithstanding the pilot’s description of the objects, in the Board’s opinion the reported altitude of the objects was such that they were unable to determine the nature of the unknown objects.</p> <p><b>Applicable Contributory Factors:</b> 4, 6</p> <p><b>Risk:</b> The Board considered that the pilot’s overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2021109	30 May 21 1437	SportCruiser (Civ FW)	Drone	5257N 00315W 5NM ESE of Corwen 4700ft	London FIR (G)	<p><b>The SportCruiser pilot</b> reports cruise-climbing away from Sleaf and heading towards Snowdon for sightseeing. They observed a flashing distant red light and assumed it was a helicopter much further away and lower. They quickly realised it was a lot closer but wasn't an immediate threat as it was identified as a stationary drone. They mentally noted its significant size, estimated at 1.5m diameter, with at least 8 rotors – commercial scale. They did not recall any NOTAMs advising of drones in the area. They were not established in communications with London Info prior to this event but called immediately afterwards and reported the sighting to the London FISO.</p> <p><b>Reported Separation:</b> 200ft V/75m H <b>Reported Risk of Collision:</b> Low</p> <p><b>NATS Safety Investigations</b> reports that [the SportCruiser] pilot reported a small black quadcopter-style drone, approximately 2m in diameter. The FISO acknowledged the drone report and obtained details from the [SportCruiser] pilot. The pilot also reported that the drone passed them by approximately 20-50m. The drone report had no impact on operations.</p> <p>Analysis of the radar by Safety Investigations indicated that there were no associated primary or secondary contacts visible on radar at the approximate time of the event.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

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2021110	8 Jul 21 1906	C680 (Civ Comm)	Drone	5124N 00022E 2NM S Gravesend 4000ft	London TMA (A)	<p><b>The C680 pilot</b> reports under radar vectors with Thames Radar, heading north. They saw a drone pass almost directly in front, around 300ft below. They immediately reported it to ATC who noted their position. They noted the drone looked mainly black with white markings.</p> <p><b>Reported Separation:</b> 300ft V/NK H <b>Reported Risk of Collision:</b> NR</p> <p><b>The Thames Radar Controller</b> reports that whilst being radar vectored, the C680 pilot reported a drone at about 4000ft in the vicinity of Brands Hatch. This was acknowledged as per current procedures and reported to subsequent flights for the next 30 mins.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C
2021111	07 Jul 21 1300	BE200 (Civ Comm)	Drone	5554N 00422W 3NM final RW23 Glasgow Airport 1100ft	Glasgow CTR (D)	<p><b>The BE200 pilot</b> reports that they were on ILS final descent to RW23, passing through about 1100ft QNH at about 3NM from the RW threshold, a round metallic drone about 1m in diameter was sighted level with the aircraft about 200m to the left of their track. The drone may have been stationary as it passed quickly down the left-hand side of their aircraft to go behind.</p> <p><b>Reported Separation:</b> H 200m/V 0ft <b>Reported Risk of Collision:</b> NR</p> <p><b>The Glasgow controller</b> reports that the BE200 pilot reported on frequency at 3.5NM final and was cleared to land RW23. Almost immediately the pilot reported at 100ft they had passed a drone on their left-hand side. The pilot was slightly right of the centreline at the time and so the drone was extremely close to the final approach track. Nothing was observed from the tower and no returns were visible on radar. Initially all aircraft movements were stopped until 1500Z when normal operations to RW23 were resumed.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

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2021116	14 Jul 21 2035	DJI Mavic Air (Civ UAS)	Drone	5434N 00113W IVO Riverside Stadium, Middlesbrough 196ft (60m)	Teesside CTR (D)	<p><b>The DJI Mavic Operator</b> reports that their first flight started at 18:42. 18 mins into the third flight at 19:50, the pilot spotted an unidentified UAS enter the same airspace. Flight behaviour was erratic (typical of DJI drones in sports mode) and followed by an ascent likely well beyond 400ft. The pilot landed their own UAS at the designated take off/landing point (TOLP) and saw the other operators approximately 150m west of the TOLP. They appeared to be using a controller similar to the controller used for a DJI Mavic Air 2 or DJI Mini 2. The pilot approached them, asked how long they would be flying for, the response was 'not long, they only had one battery left'. The pilot explained they would remain on the ground and asked the other operators to notify the pilot once they were finished. This was agreed. The pilot sat approximately 50m away from the other operators. At 20:10, the other operators alerted the pilot they were finished and walked away. The pilot returned to the TOLP to continue the mission from 20:13. At 20:35, the pilot spotted what appeared to be the same previous SUAS enter the airspace and came in close proximity with the pilot's own SUAS, proximity estimated to be around 30m, and would have been under 10m without evasion. At the time, the pilots SUAS was approximately 300m away from the TOLP at an elevation of 60m AGL and was static for at least 1 min taking photographs. The pilot took evasive action and returned to the TOLP immediately. During the return, the pilots RC briefly had a signal interference warning. After landing safely, the pilot checked the previous site as used by the other operators and confirmed they were not there however, they could see one of the other operators alone approximately 150m in the same direction slightly concealed by grass/bush. The pilot aborted the mission, noted details of the incident and packed up. During this time, the other UAS landed and the operator left the area.</p> <p><b>Reported Separation:</b> &lt;50ft/30m <b>Reported Risk of Collision:</b> Medium</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 4, 7</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where safety had been much reduced below the norm to the extent that safety had not been assured.</p>	B

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2021134	01 Aug 21 1558	A321 (CAT)	Drone	5132N 00009E 3.5NM NE London/City Airport 7200ft	London TMA (A)	<p><b>The A321 pilot</b> reports that a large black drone passed them about 150m to their left-hand side. The drone was about the size of a shoebox, dark in colour and appeared to be a quadcopter-type drone.</p> <p><b>Reported Separation:</b> 0ft V/150m H <b>Reported Risk of Collision:</b> Low</p> <p><b>The NATS Safety Investigation</b> reports that the pilot of the A321 reported a drone 2NM E of London City Airport at 7500ft to the Heathrow Approach controller. Heathrow Tower was advised, and subsequent Heathrow inbound aircraft were positioned clear of the reported drone activity. There were no associated primary or secondary contacts visible on radar at the approximate time of the event.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

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2021138	02 Aug 21 1300	A320 (CAT)	Drone	5325N 00207W 6NM NE Manchester 2100ft	Manchester CTA (D)	<p><b>The A320 pilot</b> reports that the Captain was PM and the First Officer was PF and was flying the 23R ILS approach into Manchester Airport. On the Tower frequency, the crew heard that a drone had been spotted by the preceding aircraft. At approximately 6NM/2100ft the Captain and First Officer also identified a black object that passed the aircraft at about the 1 o'clock position and at about 20-30ft higher than the aircraft. Due to the speed of the aircraft and with the object also potentially moving, it was hard to identify the object with certainty but the Captain and First Officer both instinctively thought it was a drone. It was black in appearance and the shape was 'boxy' and certainly not like a bird (which would have had more distinctive features such as wings/colour/shape). It is also worth noting that it would have been highly unusual for a bird to have remained on the 3° flight path when the preceding aircraft also spotted it. The First Officer carried out the landing with no further incidences. Once the aircraft was secured, the First Officer and Captain both went to inspect the exterior the aircraft (in particular the rudder and elevators). There were no signs of impact.</p> <p><b>Reported Separation:</b> 20-30ft V/20ft H <b>Reported Risk of Collision:</b> High</p> <p><b>The Manchester controller</b> reports that the A320 pilot reported a drone in their 1 o'clock, 20ft away whilst on a 6NM final and only slightly higher than the aircraft.</p> <p><b>A NATS Investigation</b> found that the drone reported by a previous crew was a different drone, reported in the vicinity of Oldham. The two following aircraft elected to break-off the approach and no further sightings were reported.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 7</p> <p><b>Risk:</b> 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.</p>	A

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2021140	25 Jul 21 1655	B737 (CAT)	Unk Obj	5326N 00207W Bredbury 2500ft	Manchester CTR (D)	<p><b>The B737 pilot</b> reports descending on the ILS for RW23R at Manchester when the FO sighted a drone on the right side behind and above the aircraft. It was difficult to judge size and range. The sighting was reported to the tower controller on landing and an ASR was filed.</p> <p><b>Reported Separation:</b> ~500ft V/~300m H <b>Reported Risk of Collision:</b> High</p>	<p>In the Board's opinion the reported altitude and/or description of the object were such that they were unable to determine the nature of the unknown object.</p> <p><b>Applicable Contributory Factors:</b> 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C
2021149	14 Aug 21 1403	Quik GTR (Civ FW)	Drone	5111N 00023E Paddock Wood 2200ft	London FIR (G)	<p><b>The Quik GTR pilot</b> reports flying at 2200ft on the western periphery of Paddock Wood from south-to-north when they observed what appeared to be a small light-grey object crossing their flightpath from the west to the east at approximately 1800ft. At first, they thought was it was a small balloon but, as they passed over, they could see it was a drone (quadcopter). It was not changing course and their current course was taking them clear of the other aircraft, so they maintained heading, altitude and speed.</p> <p><b>Reported Separation:</b> 400ft V/100m H <b>Reported Risk of Collision:</b> Low</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C



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2021151	16 Aug 21 1441	FA20 (Civ Comm)	Drone	5426N 00126W Sockburn, Teesside 1200ft	Teesside CTR (D)	<p><b>The FA20 pilot</b> reports that they were turning base leg for RW05 at Teesside International on a visual approach. As they started the turn and descent a drone was spotted by the First Officer out of the right-hand window. The drone was always to the south of the aircraft and travelling in the opposite direction. It was noted that it was co-alt with them at approximately 1200ft. Air Traffic Control were advised and the flight continued to land without any further incident. The pilot reported that the incident all happened very quickly, but that they could see that the drone was a white quadcopter.</p> <p><b>Reported Separation:</b> 0ft V/0.1NM H <b>Reported Risk of Collision:</b> Low</p> <p><b>The Teesside controller</b> reports that the FA20 was on right base RW05, shortly to turn onto final, when the pilot reported a drone sighting on the right-hand side of the aircraft at 1200ft, the aircraft continued as normal to land. The controller on duty deemed this to be at approximately 2.5NM to the SW of Teesside, putting it on the edge of the FRZ. Due to proximity of the FRZ, the controller decided to class the situation as "Unauthorised drone within the FRZ but outside of the airfield boundary". Local procedures were followed in accordance with MATS Pt 2. Subsequent aircraft and police were all informed of the report.</p>	<p>In the Board's opinion the reported altitude and/or description of the object were sufficient to indicate that it could have been a drone. The Board also established that the reported position of the drone was outside the Teesside FRZ.</p> <p><b>Applicable Contributory Factors:</b> 1, 2, 3, 4, 5</p> <p><b>Risk:</b> The Board considered that the pilot's overall account of the incident portrayed a situation where although safety had been reduced, there had been no risk of collision.</p>	C

## Relevant Contributory Factor (CF) Table

CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
<b>Flight Elements</b>				
<b>• Regulations, Processes, Procedures and Compliance</b>				
1	Human Factors	• Flight Crew ATM Procedure Deviation	An event involving the drone operator deviating from applicable Air Traffic Management procedures	The drone operator did not comply with regulations by flying above 400ft and/or in controlled airspace/FRZ without clearance
<b>• Tactical Planning and Execution</b>				
2	Human Factors	• Action Performed Incorrectly	Events involving the drone operator performing the selected action incorrectly	The drone operator was flying above 400ft without clearance.
3	Human Factors	• Airspace Infringement	An event involving an infringement / unauthorized penetration of a controlled or restricted airspace	The drone pilot was flying in controlled airspace/FRZ without clearance.
<b>• Situational Awareness of the Conflicting Aircraft and Action</b>				
4	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, generic, or late Situational Awareness
<b>• See and Avoid</b>				
5	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft
<b>• Outcome Events</b>				
6	Contextual	• Near Airborne Collision with Other Airborne Object	An event involving a near collision by an aircraft with an unpiloted airborne object (unknown object or balloon)	
7	Contextual	• Near Airborne Collision with RPAS	An event involving a near collision with a remotely piloted air vehicle (drone or model aircraft)	