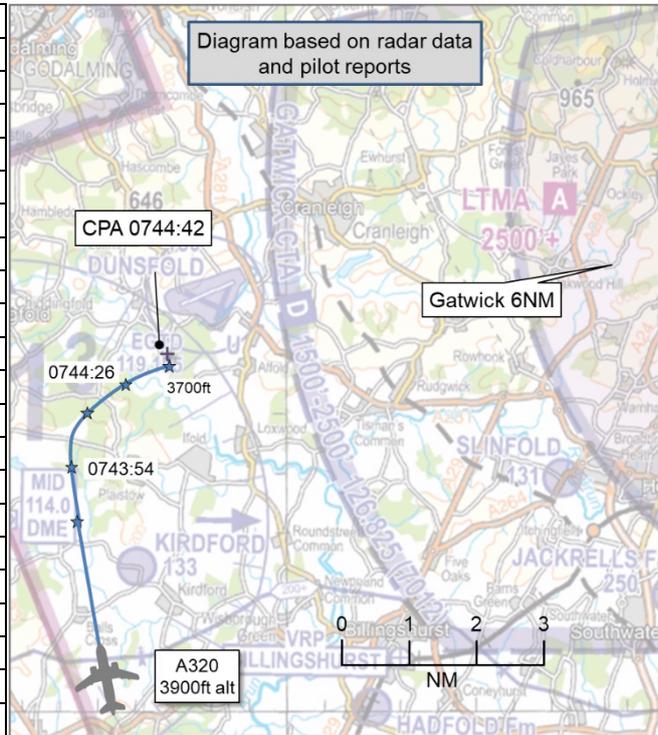


AIRPROX REPORT No 2023068

Date: 30 Apr 2023 Time: 0745Z Position: 5105N 00033W Location: 2NM SW Dunsfold

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A320	Hot Air Balloon
Operator	CAT	Civ Bal
Airspace	London TMA	NK
Class	A	NK
Rules	IFR	VFR
Service	Radar Control	None
Provider	Gatwick Approach	N/A
Altitude/FL	3700ft	NR
Transponder	A, C, S+	Not fitted
Reported		
Colours	Company	Red
Lighting	Full suite	Nil
Conditions	VMC	VMC
Visibility	NR	>10km
Altitude/FL	3800ft	2400ft
Altimeter	QNH (1022hPa)	QNH (1020hPa)
Heading	077°	360°
Speed	180kt	14kt
ACAS/TAS	TCAS II	Not fitted
Alert	None	N/A
Separation at CPA		
Reported	1000ft V/1.0NM H	NK V/0.6-2.0NM H
Recorded	NK V/ NK H	



THE A320 PILOT reports talking to Gatwick Director as they had been descending to 5000ft on a downwind for RW08R, they had been informed of a hot air balloon south of the final approach track at approximately 3000ft. The pilot became visual with the balloon as they descended to 4000ft and turned onto a base heading of 355° for an approximately 12NM final. They remained visual with the balloon noting that it looked like it had been drifting north with the wind; the A320 pilot had been given a heading of 055° to intercept final approach, descent to 3000ft and cleared ILS. The A320 pilot maintained visual with the balloon at all times. As the A320 pilot captured the localiser it became clear the balloon had been on the final approach track so deemed it unsafe to continue; the A320 pilot estimated the balloon to have been 1NM ahead of them. The A320 pilot took a heading of south and climbed back up to 4000ft and retracted flaps. Looking at the wind on the nav display, it appeared the balloon would be north of the final approach track by the time the A320 took a second approach. They took a right turn for a base leg, descended to 3000ft and could see the balloon also descending north of final approach. The A320 pilot considered it safe to continue a second approach which resulted in an uneventful landing. The balloon appeared to have been red in colour with [company brand] written on the side and it appeared to land at [destination airfield] at approximately 0755.

The pilot assessed the risk of collision as 'High'.

THE BALLOON PILOT reports that they often fly this same flight day-after-day from [departure point] to [destination airfield]. Having had a few reports of an Airprox earlier this year, the Balloon pilot noted that they now go nowhere near the 2500ft level so stay at 2400ft. During the flight several [commercial airline] planes over flew them with a good separation, they report being straight [and] level, holding course straight north and saw a [commercial airline] jet coming straight at them. The Balloon pilot observed the A320 [pitch] their nose up and turned to their right, though they had been on a track to turn and go into Gatwick. The Balloon pilot believed the A320 to have been sitting at 2500ft which gave them no separation at all. The Balloon pilot noted that they had been outside the 1500ft zone by about

a kilometre believing that in the end separation had been quite good and they had been more worried about wake turbulence. The Balloon pilot carried on to land successfully at [destination airfield] recalling that the A320 turned and landed at [destination airfield].

The pilot assessed the risk of collision as 'Medium'.

THE GATWICK CONTROLLER reports that at 0730 a pilot reported a hot air balloon which they believed to be at 4000ft; they had been downwind at 4700ft and flew a longer downwind before turning base leg. They then reported the balloon might be lower than 4000ft. Subsequent aircraft pilots also reported seeing a [company name] branded balloon with estimates of its height between 2000-4000ft. At time 0745 the A320 pilot on a closing heading reported visual with the balloon overhead the final approach track approximately 1000ft below. The controller then broke the A320 off the approach, vectored it south, and climbed it to 4000ft. When the A320 pilot had been happy to make another approach, they reported that the balloon had been descending and appeared to be landing at [destination aerodrome].

THE GATWICK SUPERVISOR reports that the controller filed a report at the time of the event however, as they had not been aware the pilot had filed an Airprox at the time, this event had been filed as an Infringement Mandatory Occurrence Report.

Factual Background

The weather at Gatwick was recorded as follows:

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METAR EGKK 300750Z VRB02KT 6000 NSC 10/08 Q1022=
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Analysis and Investigation

NATS

The pilot of the A320 had been being vectored downwind for an approach to RW08R at Gatwick. At 0729:36 the pilot reported that they had "visual contact with a Hot Air Balloon about one o'clock position approximately one thousand feet below", which the Gatwick FIN controller acknowledged. The controller subsequently issued a right turn onto a base leg heading of 355° and a speed instruction of 180kts, however the pilot declined this and reported that they wanted to keep their current heading for at least 5NM, adding that the visual contact had moved into their 2 o'clock and less than 1000ft below. The pilot described the Balloon as a "large red Hot Air Balloon, erm, possibly a [company] logo on the side".

At 0731:01 the A320 pilot reported that the Balloon appeared now to be directly on their beam and estimated the altitude to be approximately 4000ft. The pilot of the following arrival confirmed visual with the Balloon at 0731:55. No further communication with this aircraft regarding the Balloon had been made.

Analysis of the radar showed that a primary return had been displayed at 0732:42, which correlated with the approximate position the A320 pilot reported the Balloon to have been, however this return disappeared shortly after. No further related radar returns had been observed. It had not been possible to definitively correlate the radar return to the Balloon. The pilot of the aircraft following reported that the Balloon had been directly abeam them at 0735:14, which correlated to the approximate position of that primary return. The pilot added that it looked to them to be "more than 2000ft, perhaps 3000ft", the base of controlled airspace in the area in which the primary return had appeared is 2500ft. The pilot of a following aircraft gave position reports of the Balloon which suggested it to have been tracking in a NNW direction, towards the final approach track for RW08R at Gatwick, and gave altitude reports ranging from 2500ft to above 3000ft.

The A320 pilot stated that they had been unable to continue at 0744:22 and reported the Balloon to be "right in front of them, 12 o'clock, about a thousand feet below". At this time the A320 had been on the localiser at 14NM DME, indicating an altitude of 3800ft. The controller issued a right turn onto

a heading of 165° and climb to 4000ft in order to re-position the aircraft. The A320 pilot confirmed happy to make another attempt and had been vectored for another approach. At 0748:59 the pilot informed the controller that they had gained visual again with the Balloon, giving a position report of 11 o'clock and stated that the Balloon appeared to be landing at an airfield. The A320 pilot continued the approach to land without further incident.

Safety Investigations had been subsequently informed by the UK Airprox Board that the A320 pilot had filed an Airprox report in relation to the event. There had been no contact on TCAS.

UKAB Secretariat



Figure 1: CPA 0744:42

The A320 and Balloon pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.¹ If the incident geometry is considered as converging then the A320 pilot was required to give way to the Balloon pilot.²

Summary

An Airprox was reported when an A320 and a Hot Air Balloon flew into proximity approximately 14NM west of Gatwick at 0745Z on Sunday 30th April 2023. The A320 pilot was operating under IFR in VMC and the Balloon pilot was operating under VFR in VMC, the A320 pilot in receipt of a Radar Control Service from Gatwick Approach and the Balloon pilot not in receipt of an Air Traffic Service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and reports from the air traffic controllers involved. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

¹ (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² (UK) SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

Members discussed the actions of the Balloon pilot and agreed that it would have been helpful had they furthered their tactical planning in this very busy operating area by calling Gatwick informing them of their intentions (CF1). Discussion amongst members included reference to the need for qualification with a FRTOL (Flight Radio Telephony Operator's Licence) for commercial operations in a Hot Air Balloon, so the Board could not understand why the Balloon pilot had not attempted to inform the Gatwick controller of their intended flightpath, being as it had been seemingly close to the approach path to Gatwick. Furthermore, the Board considered that multiple reports from pilots of the Balloon having been inside controlled airspace had indicated that if the Balloon had not been inside the London TMA, then it had been very close to the base level of the TMA, and that to operate in such proximity to controlled airspace without contacting the controller had been imprudent (CF2). Additionally, members noted that the altitude of the balloon had not been captured by any electronic means, leading to variations in reporting from visual sightings and greatly increased difficulty in developing robust situational awareness both for ground controllers and other pilots (CF3). Members also noted that electronic conspicuity equipment can be light, portable, low power and relatively inexpensive, particularly whilst the CAA maintained a rebate scheme to contribute towards that cost, but that the Balloon had not been fitted with any equipment that could have interacted with the TCAS II fitted to the A320 (CF4).³

The Board noted the full content of the submission by the A320 pilot, recognising their concern about the proximity of the Balloon in this area (CF5), on the understanding that the Balloon had been previously reported and had been continually monitored by numerous other pilots in its passage north, opined that an extension downwind or other would have given more time for the Balloon to drift further north through the RW08 centreline before then turning in.

That being said, the Board concluded that there had nonetheless been sufficient separation at CPA for there to have been no risk of collision. Accordingly, members assigned risk category C to this Airprox.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023068			
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Accuracy of Communication	Events involving flight crew using inaccurate communication - wrong or incomplete information provided	Ineffective communication of intentions
2	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
	• Situational Awareness of the Conflicting Aircraft and Action			
3	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
	• Electronic Warning System Operation and Compliance			
4	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
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

Degree of Risk:

C

³ <https://www.caa.co.uk/general-aviation/aircraft-ownership-and-maintenance/electronic-conspicuity-devices/>

Safety Barrier Assessment⁴

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the Hot Air Balloon pilot had elected to fly within 100ft of active (and busy) Class D airspace without contacting the Gatwick controller.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the altitude of the Hot Air Balloon could not be ascertained and therefore the separation between it and traffic around it could not be accurately assessed.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TCAS II on the A320 could not detect the Hot Air Balloon.

Airprox Barrier Assessment: 2023068		Within Controlled Airspace		Effectiveness						
Barrier		Provision	Application	Barrier Weighting						
				0%	5%	10%	15%	20%		
Ground Element	Regulations, Processes, Procedures and Compliance	✓	✓	100%						
	Manning & Equipment	✓	✓	75%						
	Situational Awareness of the Confliction & Action	!	✓	75%						
	Electronic Warning System Operation and Compliance	○	○	25%						
Flight Element	Regulations, Processes, Procedures and Compliance	○	○	25%						
	Tactical Planning and Execution	✓	✗	25%						
	Situational Awareness of the Conflicting Aircraft & Action	!	✗	50%						
	Electronic Warning System Operation and Compliance	✗	✓	75%						
	See & Avoid	✓	✓	25%						
Key:		Full	Partial	None	Not Present/Not Assessable	Not Used				
Provision	✓	!	✗	○						
Application	✓	!	✗	○					○	
Effectiveness	█	█	█	█					□	

⁴ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).