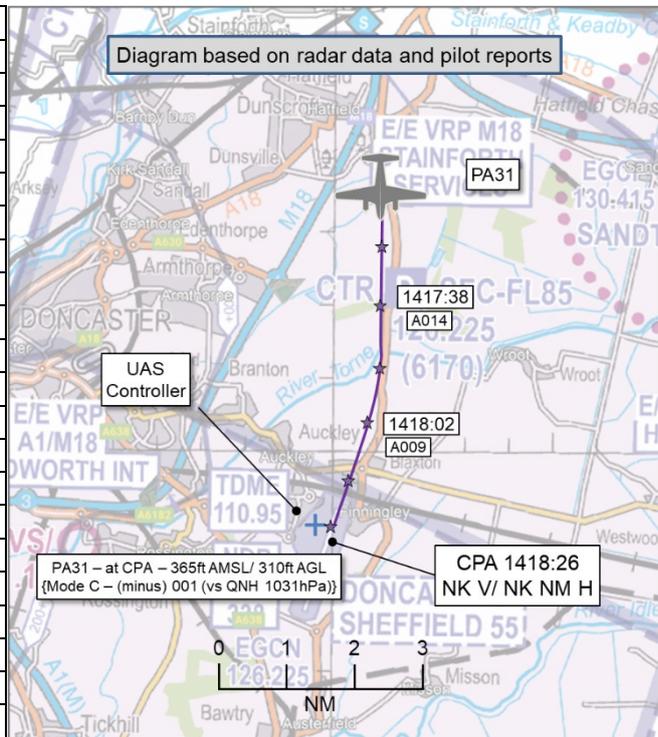


AIRPROX REPORT No 2023057

Date: 18 Apr 2023 Time: 1418Z Position: 5328N 00100W Location: Doncaster/Sheffield Airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	UAS	PA31
Operator	Civ UAS	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS	VFR
Service	None	None
Provider	N/A	N/A
Altitude/FL	NK	310ft AGL
Transponder	Not fitted	A, C, S
Reported		
Colours	Grey	White
Lighting	Navigation	Strobes/Position
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	165ft	650ft
Altimeter	NK	QNH
Heading	NK	200°
Speed	NK	150kt
ACAS/TAS	Not fitted	PilotAware
Alert	None	None
Separation at CPA		
Reported	NK V/200-300ft H	Not Seen
Recorded	NK V/NK H	



THE UAS PILOT reports that they had been conducting a UAS [instruction] course for serving police officers, flying a South Yorkshire police drone on the apron at Doncaster/Sheffield airport with permission of the land owners. Doncaster/Sheffield Airport is no longer operating, and ATC is closed. One of the students on the course had been undertaking some supervised practise, flying a UAS at an altitude of 165ft at the edge of the apron closest to the runway. The Airprox occurred when a light-aircraft made a low-level flight above the runway from north-to-south at a height of 200-300ft. It had not been possible to see the aircraft registration. The aircraft flew away to the south. The UAS pilot checked the [aircraft tracking] app immediately but the aircraft did not show.

The pilot assessed the risk of collision as ‘Low’.

THE PA31 PILOT reports that the flight had been the second of the day and a return to [destination airfield] from [departure airfield] with the captain in the left-hand seat as a line training captain and the pilot flying in the right-hand seat practising right-hand seat handling. It had been a good VMC day. The aircraft had been descended from 2000ft at Thorne to approximately 650ft to fly through the Doncaster/Sheffield (disused) airport and to then practise a go-around. There had been no NOTAMS indicating drone activity at the [now closed] airfield and no drone activity seen. Assuming that the drone had been operated at not above 400ft AGL, there should have been at least 200ft vertical separation plus whatever lateral separation existed. If a drone had been being operated within visual line-of-sight and below 400ft, they (the PA31 pilot) would have expected their aircraft to have been clearly visible to the operator given the good weather and sunlight and, therefore, would have hoped that safe separation would have been maintained. The aircraft maintained a steady and predictable flight path. Regrettably, they do not recall seeing the drone from the PA31 cockpit and did not receive a warning on [their EC equipment].

Factual Background

The weather at Humberside was recorded as follows:

METAR EGNJ 181450Z 06017KT CAVOK 13/05 Q1031=

Analysis and Investigation

UKAB Secretariat

The UAS cannot be seen on radar. No primary tracks or pop-ups appear during the period observed. The PA31 can be positively identified by Mode S. The PA31 is shown on radar as indicating – (minus) 100ft on 1013hPa which, with a QNH of 1031hPa equates to an altitude of 365ft and a height at the airfield of 310ft.¹ Fig 1 shows the CPA between the UAS operator and the PA31. The Reference Point (N5328.58 00100.36W) provided by the operator of the UAS is represented with a white cross on the screen.

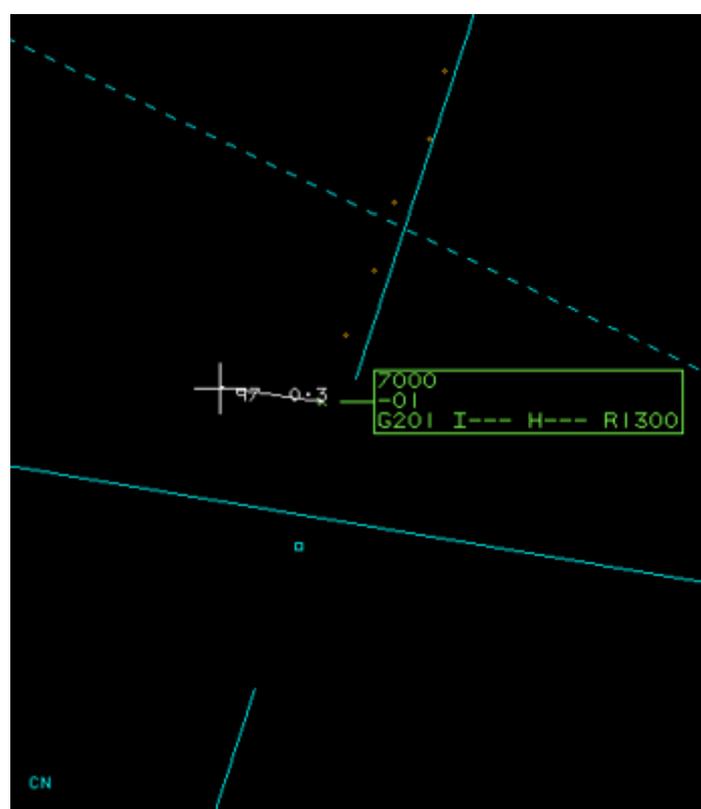


Figure 1: CPA 1418:26

The UAS and PA31 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.² During the flight, the remote pilot shall keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft.

¹ 5) General (SERA.5005(f)(2)) – Day VFR Flights a) Except when being flown over the congested areas of cities, towns or settlements or over an open-air assembly of persons, or in a Flying Display, Private Flying Display, aircraft race or contest, The Civil Aviation Authority (CAA) permits, under SERA.5005(f), an aircraft conducting day VFR flight, to be flown at a height of: i) less than 500 ft above the ground or water; or ii) less than 500 ft above the highest obstacle within a radius of 150 m from the aircraft, subject to the condition in subparagraph (b). b) The aircraft must not be flown closer than 500 ft to any person, vessel, vehicle or structure except with the permission of the CAA. c) In subparagraph a): i) “Flying Display” has the same meaning as in Schedule 1 of the Order; and ii) “Private Flying Display” has the same meaning as in CAP 403.

² (UK) SERA.3205 Proximity.

The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.³

Summary

An Airprox was reported when a UAS and a PA31 flew into proximity at Doncaster/Sheffield airport at 1418Z on Tuesday 18th April 2023. The UAS pilot was operating under VLOS rules and the PA31 pilot was operating under VFR in VMC, neither pilot was in receipt of an air traffic service.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots and radar photographs and recordings. 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.

The Board firstly discussed the UAS operation and the lack of NOTAM to raise awareness to other airspace users; members noted that although the activity had taken place below 400ft AGL, and therefore within the zone of 'normal operations' for such work, as this had been formal training on behalf of Emergency Service operators and taking place at a disused airfield where 'approach and go-around' practise is not uncommon, perhaps wider notification would help others improve their SA of such activity.⁴

In addition, the Board opined that SA can be greatly improved by the carriage and use of electronic conspicuity equipment. In this case, where the PA31 had been carrying an EWS, utilisation of compatible position emitting equipment by the UAS could have potentially alerted the PA31 pilot to the presence of UAS in the area.

Members went on to discuss the actions of the PA31 pilot, noting that it is common practice to use disused airfields for limited circuit-related practise although, as highlighted in footnote 1, the parameters for such activity are clearly defined. The Board agreed that, without any prior knowledge of the possible presence of the UAS (**CF3**) the PA31 pilot had descended (as recorded on the NATS radar) below the 500ft limit and that this had been a contributing factor to the Airprox (**CF1, CF2**). The Board also noted that the visibility from the flight deck of a PA31 has some constraints due to the siting of the engines and that, combined with the known issues around UAS visibility to other users, meant that the likelihood of the PA31 pilot spotting the drone had been extremely low, and agreed that the PA31 pilot had not seen the drone (**CF5**).

Fortunately, in this case, the UAS operator had constrained their activity to below the 400ft height limit and within a good VLOS range and, despite having no prior awareness of the approaching PA31 (**CF3**) and a relatively late sighting, this had enabled them to make a clear judgement on the likelihood of interaction between it and the PA31, and the Board agreed that the UAS operator had been concerned by the proximity of the PA31 (**CF6**).

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

³ Regulation (EU) 2019/947 as retained (and amended in UK domestic law) Under the European Union (Withdrawal) Act 2018 - UAS.SPEC.060 Responsibilities of the remote pilot (2)(b).

⁴ CAA policy is to avoid the proliferation of unnecessary NOTAMs. Typically, a NOTAM is not required for UAS specific category operations below 400 ft but one may be published where the UAS operator has identified a specific safety need to notify their operations, or where the CAA requires one as a condition of an operational approval.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

2023057				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
1	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
• Tactical Planning and Execution				
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	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots
6	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.

Safety Barrier Assessment⁵

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

Flight Elements:

Regulations, Processes, Procedures and Compliance were assessed as **ineffective** because the PA31 descended below the minimum altitude of 500ft, bringing it into potential conflict with UAS operating below 400ft.

Tactical Planning and Execution was assessed as **partially effective** because the PA31 pilot descended into the height band for Open Category UAS operations.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the PA31 pilot nor the UAS operator had any situational awareness of the other aircraft operating at Doncaster/Sheffield.

⁵ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the EC device carried by the PA31 could not detect the UAS.

Airprox Barrier Assessment: 2023057		Outside Controlled Airspace						
Barrier		Provision	Application	Effectiveness Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	○	○					
	Manning & Equipment	○	○					
	Situational Awareness of the Conflicition & Action	○	○					
	Electronic Warning System Operation and Compliance	○	○					
Flight Element	Regulations, Processes, Procedures and Compliance	✓	✗					
	Tactical Planning and Execution	✓	!					
	Situational Awareness of the Conflicting Aircraft & Action	✗	✓					
	Electronic Warning System Operation and Compliance	✗	✓					
	See & Avoid	✓	✓					
Key:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✓	!	✗	○				
Application	✓	!	✗	○	○			
Effectiveness	■	■	■	■	□			