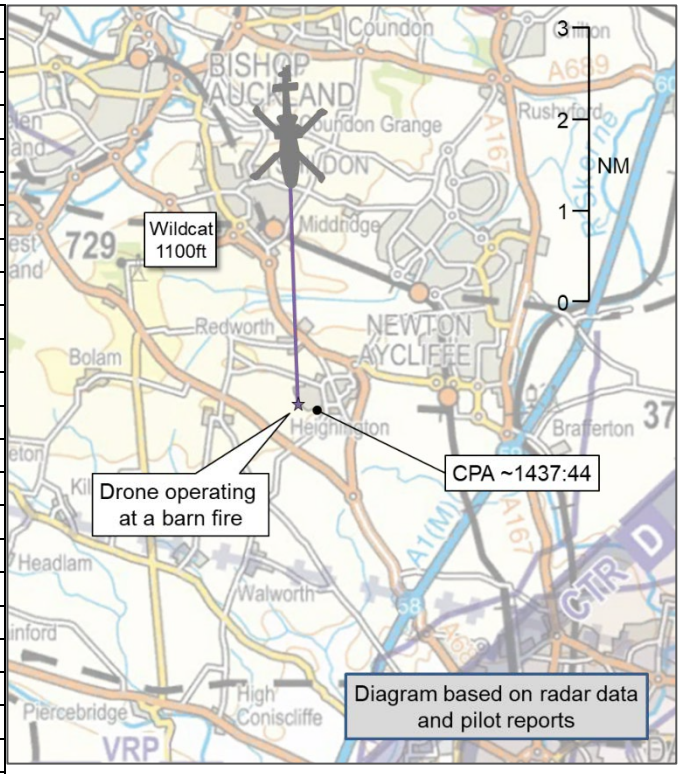
AIRPROX REPORT No 2021012

Date: 08 Mar 2021 Time: 1437Z Position: 5435N 00137W Location: Heighington

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DJI Inspire	Wildcat
Operator	Civ UAS	RN
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None
Provider		
Altitude/FL	NK	1100ft
Transponder	Not Fitted	A, C, S
Reported		
Colours	NK	Grey
Lighting	Nil	NK
Conditions	NK	VMC
Visibility	NK	>10KM
Altitude/FL	246ft	1200ft
Altimeter	agl	NK
Heading	NA	190°
Speed	0kts	100kts
ACAS/TAS	Not fitted	TAS
Alert	N/A	None
Separation		
Reported	30ft V/50m H	Not Seen
Recorded	NK	



THE DJI INSPIRE OPERATOR reports that they were attending a vehicle fire in a large barn. There was a running diesel fuel fire and prior to flying there was significant black smoke being produced. Flight operations were not commenced until conditions had improved. Over a period of 15 minutes the UAS was providing overhead imagery to support the on-going incident. They were operating on the fire ground with 5 fire appliances with water pumps running. It was the middle of the day and the UAS had been in the air for 15 minutes, when, with very little audible warning the helicopter was sighted and passed almost directly over the barn building at a similar or lower height than the UAS. The helicopter approached from NNW at very low altitude. The UAS was stationary at the time while timer actuated photographs were taken. The operator held the position of the UAS; the speed of approach made the angle of attack difficult to calculate. The operator noted that they considered that the helicopter pilot may have seen the UAS very late and so did not want to compromise their avoidance decision. They immediately landed the UAS after the helicopter had passed and then contacted NPAS in Wakefield and ATC at Teesside Airport for further information on the aircraft, to which neither could provide any further information. They confirmed that normally when responding to an incident they would inform the NPAS Wakefield Ops Centre via telephone to ensure that they can fly the drone safely while NPAS assets are in the area. They would also inform Teesside ATC if they were operating on the eastern side of Darlington. They noted that social media can be used to inform the public about large incidents, but is not used to specifically inform about drone use. On this occasion they only informed NPAS Ops Centre because of the location of the barn fire.

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

THE WILDCAT PILOT reports that they were delivering a passenger to RAF Leeming and then conducting a circular NavEx. They did not see the drone and did not know about the Airprox until advised by the UKAB.

Factual Background

The weather at Teesside was recorded as follows:

```
METAR EGNV 081420Z 25011KT 9999 -RA FEW020 BKN034 09/05 Q1019=
```

Analysis and Investigation

UKAB Secretariat

Although the drone cannot be seen on the NATS radars, the Wildcat can be seen transiting at 1100ft (radar QNH set at 1023hPa). The Wildcat, squawking 7000, maintained 1100ft on a southerly heading for the transit through the area, see Figure 1; the white cross represents the approximate position of the barn when plotted on the radar. According to Google Earth the elevation at the site where the drone was operating is 136m, approximately 446ft, the drone operator reported flying the drone at 246ft, putting the drone at approximately 692ft amsl.

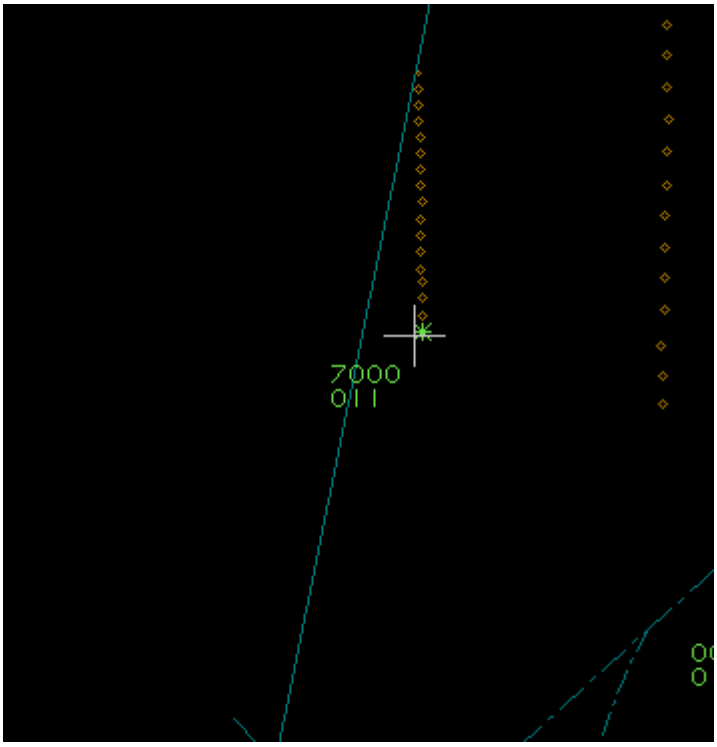


Figure 1: 1437:44

EASA states that:

> 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. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.[1]

Occurrence Investigation

RNAS Yeovilton Investigation

Flight planning iaw SoPs was conducted with the crew conducting the initial route brief prior to the event due to the early nature of the task on the Monday morning. On the morning of the task, the aircrew conducted an updated flight brief iaw JHC MRCs, to include the days MET and NOTAMs (with no drone activity visible on the identified routing). The passengers were met and briefed by

[1] EASA Part UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

the aircrewman. The sortie itself was conducted without visible incident. Approximately 2 weeks[2] later the Aircraft Commander was contacted by the UK Airprox Board and requested to submit a DASOR as they [UKAB] believed that [Wildcat C/S] had come into close proximity with a UAS. On recollection the aircraft commander did not realise where, or when the event took place, only that it happened between RAF Leeming and RNAS Yeovilton whilst transiting at medium level.

The UAS activity was not highlighted via NOTAM, leaving the aircrew with a distinct lack of situational awareness of activity en-route. There is very real potential that expanding dynamic UAS activity by UK Emergency Services may present growing risk to aircraft and personnel. Whilst currently not NOTAM'd UAS activity are regularly observed by aircrew and reported, however in this case, the highlighted UAS was 'unseen'. During long transits this is mitigated through medium level cruise, when MET allows.

To aid the investigation personnel from the Dorset and Wiltshire Fire Service were contacted to understand how they would notify drone operations. They reported that if operating in unrestricted airspace they would inform NPAS, the local Air Ambulance and where appropriate military ATC. They would seek permission from the appropriate ATC authority for flights within restricted airspace. They also have the option to publish operations on social media, normally used for public awareness when operating near urban areas.

Comments

JHC

The Wildcat was transiting from RAF Leeming to Yeovilton at medium level 1100ft QNH. Unknown to them they had an Airprox filed against them from a fire service attending a barn fire and after a gentle reminder of their requirement to submit a report, did so. The Wildcat crew had properly briefed, checked NOTAMS and booked into the LFA for the transit. Due to the short notice response of the fire, the drone activity could not be NOTAM'd and despite the best attempts of the local fire service in notifying ATC post the incident, the Wildcat crew were unaware of its activity.

The difficulty in assessing separation is well known and the inability of Emergency Responsive Services to notify aircraft already airborne of drone activity is also understood. JHC will continue to remind its crews of the importance of good airmanship, lookout and emphasise the ever increasing numbers of drones operating around the UK. JHC has this month embarked on an advertising campaign on the subject of increasing drone activity and awareness of the increase in emergency services utilising UAS at short notice.

Summary

An Airprox was reported when a DJI Inspire and a Wildcat flew into proximity in the vicinity of Heighington at 1437Z on Monday 8th March 2021. Both pilots were operating under VFR in VMC, and neither were receiving an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate operating authorities. 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.

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

[2] The pilot was first contacted by the Radar Analysis Cell on behalf of UKAB 5 days after the event.

The Board first discussed the actions of the Drone operator. They were taking photos to assess the damage of the barn after a fire. Prior to hearing and then seeing the Wildcat, the drone operator had no situational awareness that it was approaching (**CF2**). The operator heard the helicopter approaching, but saw it late and assessed it was beneath the drone and so held the drone's position until they thought they could safely descend (**CF4**). A CAA drone advisor noted that it was normally a safe option for drone operators to descend a drone when they thought an aircraft was approaching, because it was unlikely that aircraft would be flying at altitudes below them, but members accepted that on this occasion the lateness of the sighting, together with the fact that the drone was in a mode that was taking photos, meant that the drone operator did what they thought best at the time. Some members wondered whether the operator should have informed Teesside ATC of their position (**CF1**), but they noted that in this particular incident it would not have made any difference because the Wildcat pilot was not in communication with Teesside ATC either.

There followed a discussion about how best the drone operator could have informed other users about their position, whilst noting that the immediate nature of the fire service drone activity meant that they did not have any prior notice of the operation. The Board Advisor from the Low Flying Co-ordination Military Airspace Management Cell (LFC MAMC) noted that they had already engaged with some emergency services who used drones, and they had granted these emergency services access to view the Centralised Aviation Data Service (CADS) so that they could see the military activity in their planned area and also had a process in place where these emergency services informed LFC MAMC whenever they were flying. Furthermore, any drone operator could call LFC MAMC on their booking number[3] to pass on details about their drone operations if they thought they might conflict with military low-flying. Members thought that although a step in the right direction, it was not a panacea given that by the time that LFC MAMC were notified about the drones and uploaded the information to CADS, most pilots would have already briefed and got airborne; still it might provide the drone operators with an indication of what was booked into the low-flying system in their area of operation and cue them to be alert for the traffic. A military member also noted that on 1st June a trial was about to commence on a new VHF common low-flying frequency (130.490 MHz) which was designed to allow military and GA pilots to communicate when operating low-level. The frequency was not intended to replace any ATC services, but to act as a mechanism for pilots to announce their intentions and provide position information. They noted that drone pilots could also monitor this frequency for immediate information on military low-flying traffic in the area. The Board agreed that this was a positive development and heard that both the CAA and the military were actively engaged in promoting this initiative via their comms teams[4].

Turning to the Wildcat pilot, they had checked all NOTAMs and booked into the LFA appropriately, however, the drone was not operating above 400ft and therefore the operator was not required to NOTAM the activity, so there was no indication to the Wildcat pilot that it would be there. The Wildcat pilot did not see the drone (**CF5**) and the TAS could not detect it (**CF3**), so the pilot did not have any situational awareness about the drone (**CF2**); indeed the pilot was not aware of the proximity until subsequently informed by the UKAB. The JHC member noted that the incident highlighted an increase in such incidents between manned and unmanned aircraft and advised that they were actively disseminating information to promote education amongst their crews.

When assessing the risk of the Airprox the Board considered the assessment from the drone operator together with the radar data and agreed that, whilst safety had been degraded, there had been no risk of collision on this occasion. Risk Category C.

[3] LFC MAMC number 01489 443100.

[4] For further information see article on the UKAB website available here.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2021012			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
x	**• 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
x	**• Situational Awareness of the Conflicting Aircraft and Action**			
2	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
x	**• Electronic Warning System Operation and Compliance**			
3	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
x	**• See and Avoid**			
4	Human Factors	• Identification/Recognition	Events involving flight crew not fully identifying or recognising the reality of a situation	Late sighting by one or both pilots
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

Degree of Risk: C.

Safety Barrier Assessment[5]

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

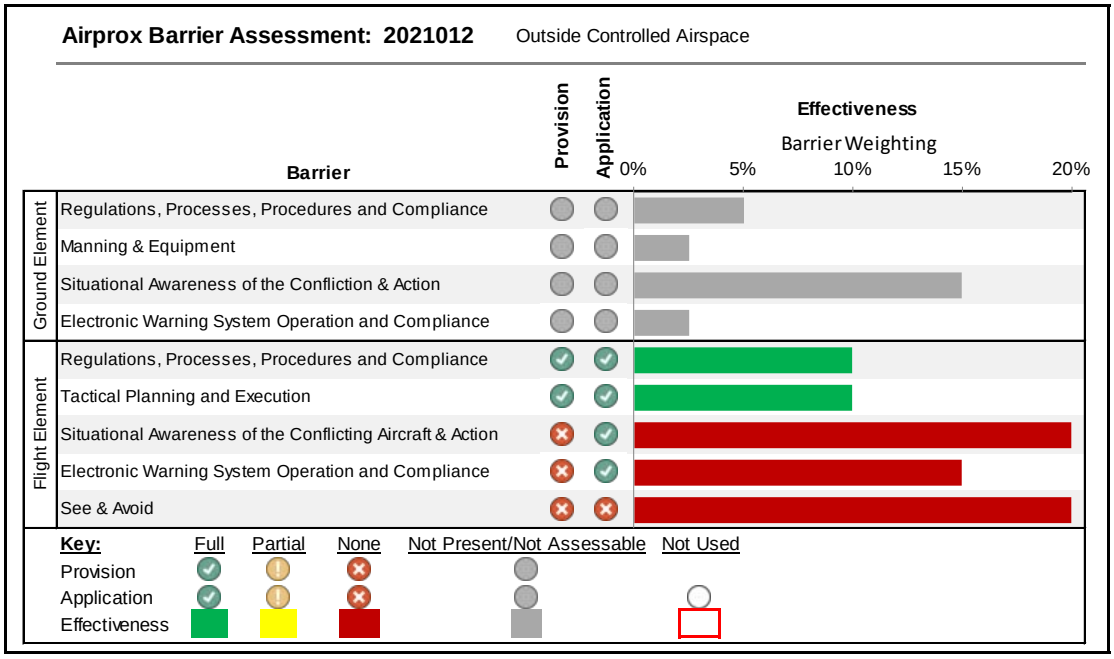
Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the drone operator, nor the Wildcat pilot had prior situational awareness about the other.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS in the Wildcat could not detect the drone.

See and Avoid were assessed as **ineffective** because the Wildcat pilot did not see the drone and the drone operator did not see the Wildcat in time to take effective avoiding action.

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


Airprox Barrier Assessment: 2021012
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 Confliction & 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:
Full
Partial
None
Not Present/Not Assessable
Not Used
Provision
Application
Effectiveness