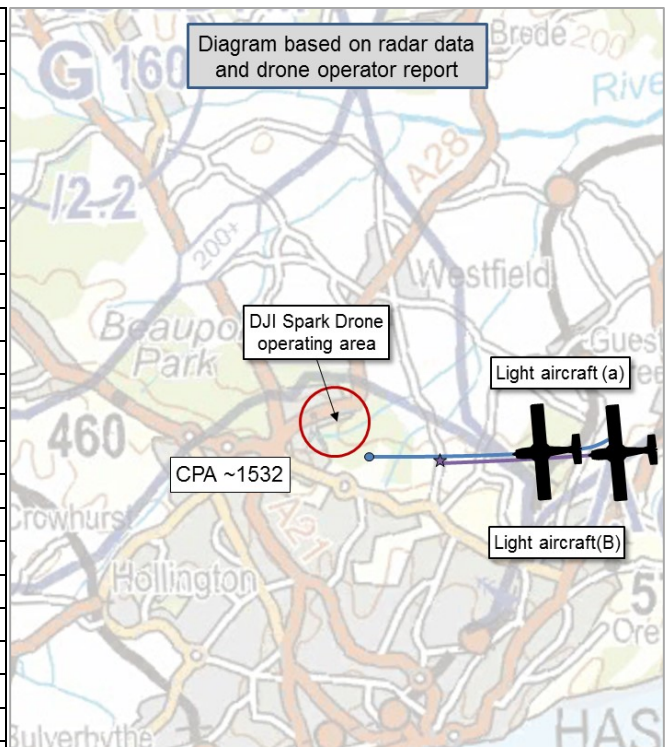


AIRPROX REPORT No 2017268

Date: 19 Nov 2017 Time: 1532Z Position: 5053N 00034E Location: 1nm north of Hastings

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DJI Spark Drone	Light Aircraft
Operator	Civ Pte	NK
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	Not reported
Service	None	
Provider		
Altitude/FL	NK	1500ft
Transponder	None	A, C
Reported		
Colours	White, Grey	Not reported
Lighting	4xLED	
Conditions	VMC	
Visibility	Not Reported	
Altitude/FL	393ft	
Altimeter	Not Reported	
Heading		
Speed		
ACAS/TAS	Not fitted	Unknown
Separation		
Reported	Not Reported	Not reported
Recorded	NK	



THE DJI SPARK DRONE OPERATOR reports that he was flying his drone in an area where it is safe to fly and he was following the Drone Code. He had the drone stationary at a height of 120m and had just started a ‘panorama mode’ flight to automatically take multiple photos (which took over a minute to complete) when he saw a light-aircraft approaching the drone at a low level. He immediately tried to lower the height of the drone to ensure it was not a hazard to the light-aircraft but he found that the drone controls were unresponsive because it was busy taking photos and there did not appear to be any way to abort the operation. The light-aircraft did not alter its course so he doesn’t know whether the pilot didn’t see the drone, or saw it and perceived it wasn’t a hazard. From his point of view, it was closer than he was comfortable with and he was frustrated at being unable to move the drone when he saw the aircraft. He had just started the panorama mode for a second time when a second light-aircraft appeared from the same direction and he was again unable to alter the position of the drone. The second aircraft was following the same course as the first and did not alter course. He has reported this incident to DJI, the drone manufacturer, and suggested that they should allow the user to abort the panorama photo mode or any other automatic flying modes. He stated that they had replied to say "there are no future developments to enhance this option at the moment". He was reporting this to the Airprox Board so that the CAA take this incident into account when influencing any future legislation or regulation regarding the flying of drones and, in particular, automated flying of drones.

He assessed the risk of collision as ‘Medium’.

THE LIGHT-AIRCRAFT PILOTS could not be traced.

Factual Background

The weather at Lydd was recorded as follows:

METAR EGMG 191520Z 26007KT CAVOK 07/03 Q1024


Analysis and Investigation

UKAB Secretariat

The DJI Spark drone and light aircraft pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹.


At the reported time of the Airprox the radar replay displays a primary-only contact transiting south of the DJI Spark drone operator's reported operating area on a westerly heading. Shortly after, a second aircraft is observed on the same route, the second aircraft is transponding 7000 but the data does not provide enough information to identify the aircraft. Both light-aircraft fade from radar shortly after the Airprox and unfortunately could not be identified.

The DJI Spark drone has various 'Intelligent Flight Modes' including QuickShot, Active Track, Gesture and Tripod Mode. The DJI Spark user manual explains how to disengage these and other automatic functions and regain manual flight control:

- ⚠ • QuickShot is only available when GPS signal is strong.
- Tap  in DJI GO 4 or pull a control stick opposite to the direction of flight to exit QuickShot anytime during shooting.
 - In QuickShot, the aircraft cannot avoid obstacles automatically. Please make sure to only use QuickShot in wide open areas.

Exiting ActiveTrack

Use the following methods to exit ActiveTrack:


1. Press the Flight Pause button on the remote controller.
2. Tap the  icon on the screen.



After exiting ActiveTrack, the aircraft will hover in place, at which point you may choose to fly manually, track another subject, or return to home.


Exiting Coordinate Mode

Use the following methods to exit Coordinate Mode:

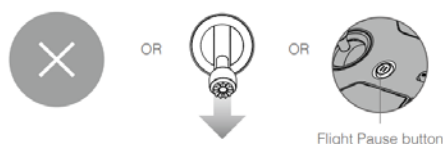
1. Tap the  icon on the screen.
2. Pull back the pitch stick on the remote controller for three seconds or more.
3. Press the Flight Pause button on the remote controller.
4. Drag the blue circle left and right.

Exiting Direction Mode

Use the following methods to exit Direction Mode:

1. Tap the  icon on the screen.
2. Pull back the pitch stick on the remote controller for three seconds or more.
3. Press the Flight Pause button on the remote controller.

The aircraft will stop and hover after exiting Direction Mode. Tap a new target direction to continue flying or begin manual flight.



¹ SERA.3205 Proximity.

Summary

An Airprox was reported when a DJI Spark drone and a light aircraft flew into proximity at approximately 1532 on Sunday 19th November 2017. Both pilots were operating under VFR in VMC. The light-aircraft operators could not be traced.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the drone operator and radar photographs/video recordings.

The Board began by commending the drone operator for his awareness of his responsibilities as a drone operator as contained within the dronecode² guidelines. The Board were mindful that he had endeavoured to move his drone away from the transiting light-aircraft but had, unfortunately, been unable to attain control of his drone because he believed that there was no quick way to take the drone out of automatic mode whilst it was taking multiple photo shots. Considerable debate ensued regarding the unsatisfactory nature of this, with many members concerned that it might not be obvious to users how to regain control of their drones. One of the Board members subsequently contacted an operator with a similar drone to determine if there was a way to cancel the auto function in panoramic photo and other modes. The operator confirmed that this can be accomplished quite quickly in accordance with the drone's manual by either selecting an on-screen icon or by pressing the 'flight pause' button on the controller (see screen shots in Part A), although it was apparent that this control function was not necessarily easily accessible for drone operators that are required to quickly disengage auto panorama mode and take manual control of the drone whilst using a phone or tablet to control the drone. It appeared that this was not clear to the Airprox drone operator, and some members wondered whether this information should be given more prominence in the manual as an important safety feature that should be clearly signposted to users. Notwithstanding, the Board praised the Airprox drone operator for reporting this incident, which will hopefully serve to highlight to other operators the method required to quickly regain manual control such that the drone can be safely manoeuvred out of the flight path of other aircraft. Whilst researching this information, the UKAB Secretariat noted that DJI provide other useful information regarding drone operations on their website under the 'Fly safe'³ tab.

The Board were disappointed that, despite best endeavours, the light-aircraft pilots could not be traced; without their reports, and with the DJI Spark drone not appearing on the radar recordings, it was difficult to assess the actual separation between the light-aircraft and the drone. Members agreed that the drone operator had been concerned enough to try to move the drone out of the flight path of the light-aircraft, and they thought that the light-aircraft pilots either probably did not see the drone or did not perceive it to be a threat and therefore did not alter their flight paths. In discussing the risk of collision, members wondered whether startle factor, coupled with the drone operator not being able to regain manual control, meant that the actual separation had not been as close as the drone operator thought. However, without any corroborating information, the Board concluded that there was insufficient information to determine the degree of risk and therefore they assessed the incident as Category D.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The drone operator was concerned by the proximity of the light-aircraft.

Degree of Risk: D.

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:

² <http://dronesafe.uk/>

³ <https://www.dji.com/flysafe>

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

Flight Crew:

Situational Awareness and Action were assessed as **ineffective** because neither light aircraft pilot or the drone operator was aware of the presence of the other aircraft until the drone operator saw the light aircraft approaching the location of his drone.

See and Avoid were assessed as **ineffective** because although the DJI Spark operator saw both light aircraft, and endeavoured to move his drone out of the way, he was unable to effectively control the drone due to his unfamiliarity with the equipment.

