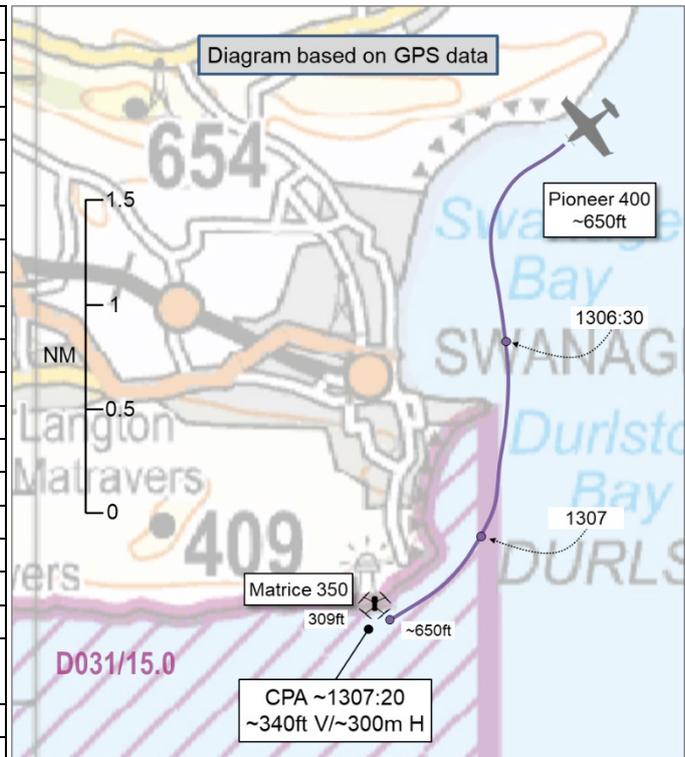


AIRPROX REPORT No 2024300

Date: 30 Dec 2024 Time: 1307Z Position: 5035N 00157W Location: 1NM S Swanage

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

| Recorded | Aircraft 1 | Aircraft 2 |
|--------------------------|----------------------|------------------------|
| Aircraft | Matrice 350 | Pioneer 400 |
| Operator | NPAS | Civ FW |
| Airspace | EGD031 | EGD031 |
| Class | Danger Area | Danger Area |
| Rules | VLOS (Specific Cat.) | VFR |
| Service | None | Listening Out |
| Provider | N/A | Bournemouth Radar |
| Altitude/FL | 309ft | ~650ft |
| Transponder | Not fitted | A, C, S+ |
| Reported | | |
| Colours | Black | White |
| Lighting | Nav | Strobes |
| Conditions | VMC | VMC |
| Visibility | <5km | >10km |
| Altitude/FL | 177ft | 620ft |
| Altimeter | NK | QNH (1022hPa) |
| Heading | NR | 240° |
| Speed | "Hover" | 125kt |
| ACAS/TAS | Other | PowerFLARM, PilotAware |
| Alert | Alert | None |
| Separation at CPA | | |
| Reported | 200ft V/30m H | "not seen" |
| Recorded | ~340ft V/~300m H | |



THE MATRICE 350 PILOT reports that, during an operational flight around Tilly Whim caves, a crewed two-seater small aircraft passed by in what appeared to have been close proximity to their drone. At that time, the drone was hovering approximately 10m out to sea. The drone was at a height of 54m from the Take-off and Landing Area (TOLA), which was approximately 45m ASL. A warning message came up on the controller to warn of crewed aircraft nearby and its direction. The Remote Pilot (RP) of the Matrice 350 used the drone’s camera to locate the aircraft, as it was unseen by their observer due to the environment topography. The aircraft was seen approaching the direction of the drone. The RP held the drone in its current position, as it was not in the immediate flightpath. The aircraft passed by the drone, higher and further out to sea. Exact distances are unknown but it did appear to be close. The aircraft could not have been much above 500ft AMSL. The concern was that, if the drone had been 400ft from the closest point of the Earth (but above the sea), this could have put it over 500ft AMSL and, potentially, into the flightpath of this aircraft. During the flight, the drone’s beacon was on. The weather on the day was clear and fine and it is highly likely the drone was visible to the pilot of the crewed aircraft as it approached and passed. The cliffs were busy with emergency services personnel, including the Police and Coastguard. A police officer, not drone trained, called the RP directly to warn of the approaching aeroplane and its proximity due to their own concerns. That was within seconds of the aeroplane then passing, which appeared to climb from beneath the drone to ascend away.

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

THE PIONEER 400 PILOT reports that, [during a] VFR flight to Portland and back, no other traffic was seen. They were listening-out on VHF1 to Bournemouth Radar with the transponder code 0011 and VHF2 was set to Guard 121.50MHz. [The pilot of the Pioneer 400 commented that] their aircraft had “quadruple collision warning systems”: [an EC device with ADSB-out] and [a second EC device]

displayed on two iPads running SkyDemon and Garmin Traffic, all linked to the aircraft interphone. No aircraft were seen or detected in the vicinity of Swanage.

Factual Background

The entry for EGD031 in the UK AIP provides the following information:

| | | |
|---|--|---|
| <p>EGD031 PORTLAND 503626N 0015635W - 503000N 0015635W - 503000N 0020058W - 503030N 0020043W - 503412N 0020356W - 503435N 0020320W - then along the coastline in an easterly direction to 503626N 0015635W</p> | <p>Upper limit: 15000 FT ALT Lower limit: SFC</p> | <p>AMC - Manageable.</p> <p>Activity: Ordnance, Munitions and Explosives / Para Dropping / Target Towing / Unmanned Aircraft System (VLOS/BVLOS) / High Energy Manoeuvres / Electronic/Optical Hazards.</p> <p>Service: SUACS: Plymouth Military on 124.150 MHz when open; at other times, Swanwick Mil via London Information on 124.750 MHz. SAAAIS: London Information on 124.750 MHz.</p> <p>Contact: Pre-flight information / Booking: FOST Duty Operations, Tel: 01752-557550.</p> <p>SUA Authority: DAATM (HQ Navy).</p> <p>This coastline definition is a generalisation of the geographic feature; operators must not use this as a definitive boundary and are responsible for applying appropriate measures to ensure they operate within or outside of the airspace structure.</p> <p>Hours: Mon-Thu 0800-1700 (0700-1600), Fri 0800-1400 (0700-1300); and as activated by NOTAM.</p> |
|---|--|---|

The weather at Bournemouth was recorded as follows:

METAR EGHH 301250Z 24007KT 9999 BKN010 10/08 Q1029
 METAR EGHH 301320Z 26009KT 9999 FEW012 BKN015 10/07 Q1028

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the Pioneer 400 could be positively identified from Mode S data but it faded from the replay at 1256:39. The Matrice 350 was not observed on the radar replay. The track of the Pioneer 400 was observed by analysis of ADS-B data (Figure 1).

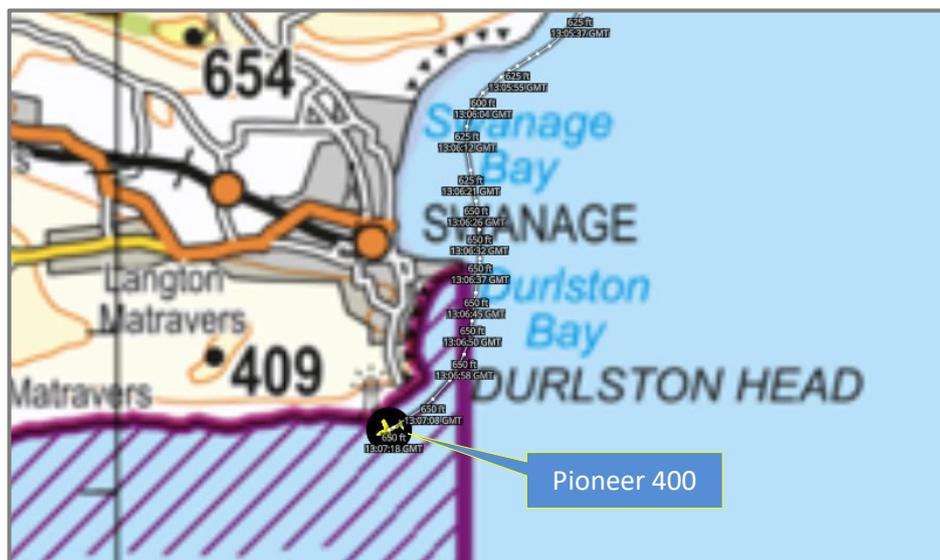


Figure 1 – The track of the Pioneer 400 (ADS-B data)

The pilot of the Matrice 350 kindly supplied GPS track data for their flight. At the moment of CPA, the Matrice 350 had been 178ft above the height of its take-off point (which is at an elevation of 131ft AMSL). Therefore, at CPA, the Matrice 350 had been at 309ft AMSL.

The diagram has been constructed and the separation determined by combining the data sources.

The Matrice 350 and Pioneer 400 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 The Operational

¹ (UK) SERA.3205 Proximity.

Authorisation issued to the operator of the Matrice 350 specified the authorised types of operation: a) Flights may be conducted within 150m of any residential, commercial, industrial, and/or recreational area.² b) VLOS as per the definition given in UK Regulation (EU) No. 2019/947, Article 2(7) and must not exceed 500m from the Remote Pilot.³ During the flight, the remote pilot shall: avoid any risk of collision with any manned aircraft and discontinue a flight when continuing it may pose a risk to other aircraft, people, animals, environment or property.⁴

Summary

An Airprox was reported when a Matrice 350 and a Pioneer 400 flew into proximity 1NM south of Swanage at 1307Z on Monday 30th December 2024. The Matrice 350 pilot was operating under VLOS in VMC not in receipt of an ATS. The Pioneer 400 pilot was operating under VFR in VMC listening-out on the Bournemouth Radar frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and GPS track data for the flight of the Matrice 350. 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 first considered the actions of the pilot of the Matrice 350 and members noted that they had conducted their flight within the boundary of EGD031. Notwithstanding that they had not coordinated their flight with Plymouth Military as they had been required to have done, it was agreed that they had denied themselves an opportunity to have gleaned information on any known traffic in the vicinity. Nevertheless, members noted that the pilot of the Matrice 350 had been alerted to the presence of the Pioneer 400 by an onboard system and agreed that that had amounted to generic information, rather than specific, with which to consider their subsequent actions. Members noted that the Matrice 350 observer had not sighted the Pioneer 400 but the pilot had used the UAV's camera to locate it. Members noted that the pilot of the Matrice 350 had considered that the safest course of action had been to hold the position of the UAV steady and to have observed the Pioneer 400 as it transited the area. Members appreciated that to have sighted the Pioneer 400 in close proximity to the Matrice 350 had caused concern.

Turning to the actions of the pilot of the Pioneer 400, members again noted that there had not been coordination with Plymouth Military before they had entered EGD031. Again, members emphasised that, in addition to ensuring safe passage through what might otherwise have been a live-firing military exercise, contact with Plymouth Military may have elicited information on known traffic that may have affected their flight. Further, members were keen to point-out that the pilot of the Pioneer 400 may also have been better served if they had contacted Bournemouth Radar for a surveillance-based service rather than listening-out on the frequency, although appreciated that it had been very unlikely that the radar at Bournemouth would have detected the Matrice 350. Members noted the fitment of EC devices to the Pioneer 400 but concluded that they would not have been expected to have detected the Matrice 350. Members therefore agreed that the pilot of the Pioneer 400 had not had situational awareness of the presence of the Matrice 350 and had not sighted it.

Members concluded their discussion and agreed that, once the pilot of the Matrice 350 had been aware of the presence of the Pioneer 400, they had correctly discontinued their task and had steadied the position of the UAV to have ensured no risk of collision. Notwithstanding the uncoordinated entry into EGD031, members agreed that normal safety margins had pertained with respect to the interaction between the aircraft. The Board assigned Risk Category E to this event.

Members agreed on the following contributory factors:

² Operational Authorisation (Specific Category) as issued to the operator of the Matrice 350 2.1.

³ Operational Authorisation (Specific Category) as issued to the operator of the Matrice 350 7.1.

⁴ Assimilated Regulation (EU) 2019/947- UAS.SPEC.060 Responsibilities of the remote pilot (3)(b).

CF1. Neither pilot had coordinated their entry into EGD031 with Plymouth Military.

CF2. The pilot of the Pioneer 400 had not had situational awareness of the presence of the Matrice 350. The pilot of the Matrice 350 had generic situational awareness of the presence of the Pioneer 400.

CF3. The EC devices fitted to the Pioneer 400 would not have been expected to have detected the presence of the Matrice 350.

CF4. The pilot of the Matrice 350 received an alert to the presence of the Pioneer 400.

CF5. The pilot of the Pioneer 400 had not visually acquired the Matrice 350.

CF6. The pilot of the Matrice 350 had been concerned by the proximity of the Pioneer 400.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| 2024300 | | | | |
|---|---------------|--|--|--|
| CF | Factor | Description | ECCAIRS Amplification | UKAB Amplification |
| Flight Elements | | | | |
| • Tactical Planning and Execution | | | | |
| 1 | Human Factors | • Communications by Flight Crew with ANS | An event related to the communications between the flight crew and the air navigation service. | Pilot did not request appropriate ATS service or communicate with appropriate provider |
| • 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, inaccurate or only generic, Situational Awareness |
| • 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 |
| 4 | Contextual | • Other warning system operation | An event involving a genuine warning from an airborne system other than TCAS. | |
| • 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: E.

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:

Tactical Planning and Execution was assessed as **partially effective** because neither pilot had coordinated their entry into EGD031 with Plymouth Military.

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

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the Pioneer 400 had not had situational awareness of the presence of the Matrice 350.

| Airprox Barrier Assessment: 2024300 | | 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: | | <u>Full</u> | <u>Partial</u> | <u>None</u> | <u>Not Present/Not Assessable</u> | <u>Not Used</u> | | |
| Provision | ● | ● | ● | ● | ○ | | | |
| Application | ● | ● | ● | ● | ○ | | | |
| Effectiveness | ■ | ■ | ■ | ■ | □ | | | |