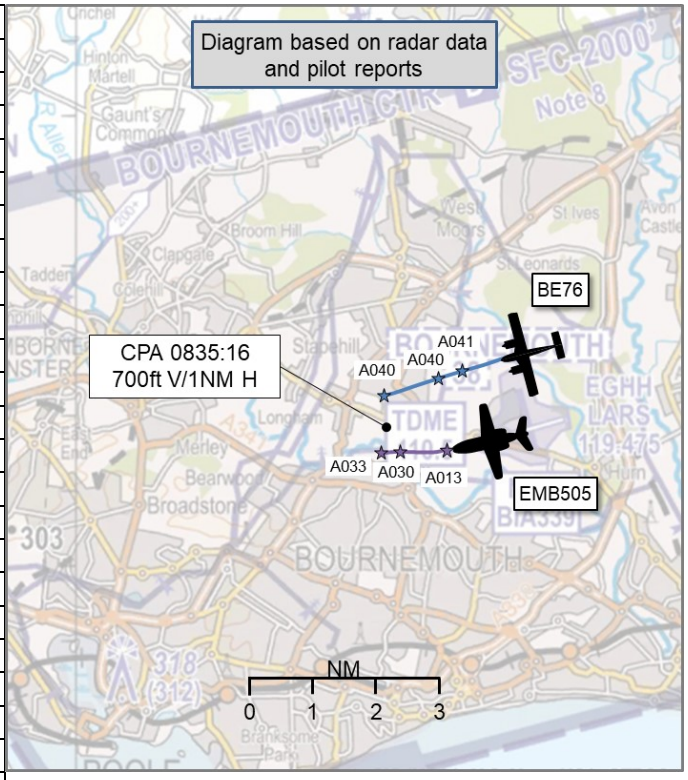
## AIRPROX REPORT No 2020145

Date: 06 Oct 2020 Time: 0835Z Position: 5046N 00152W Location: Bournemouth Airport

## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

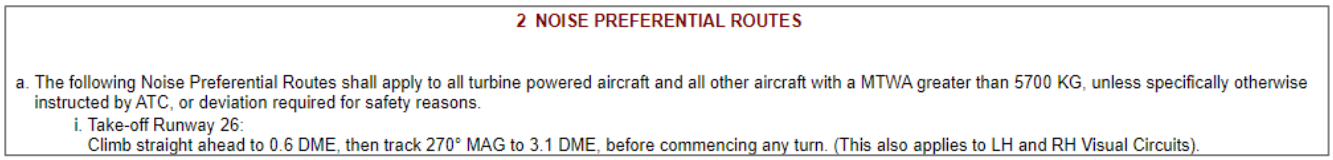
| Recorded | Aircraft 1 | Aircraft 2 |
|---|---|---|
| Aircraft | BE76 | EMB505 |
| Operator | Civ FW | Civ Comm |
| Airspace | Bournemouth CTR | Bournemouth CTR |
| Class | D | D |
| Rules | IFR | IFR |
| Service | Radar Control | ACS[1] |
| Provider | Bournemouth | Bournemouth |
| Altitude/FL | 4000ft | 3300ft |
| Transponder | A, C, S | A, C, S |
| **Reported** | | |
| Colours | Not reported | Not reported |
| Lighting | Not reported | Not reported |
| Conditions | IMC | NK |
| Visibility | Not reported | Not reported |
| Altitude/FL | 4000ft | 3320ft |
| Altimeter | NK | NK |
| Heading | 260° | ~260° |
| Speed | Not reported | 150kt |
| ACAS/TAS | Not fitted | Unknown[2] |
| Alert | N/A | Unknown |
| **Separation** | | |
| Reported | Not seen | Not reported |
| Recorded | 700ft V/1NM H | |




**THE BE76 PILOT** reports that they were conducting an IR training flight in the NDB Hold on the BIA at Bournemouth airport. Whilst westbound in the hold, heading 260° at 4000ft, Bournemouth Radar suddenly told them to climb immediately to 5000ft and turn onto north. Due to the urgency in the controllers tone they instigated a max rate climbing turn onto 360° and reported their passing level of 4700ft. ATC Informed them that the avoiding action was due to a departing Jet having bust their assigned level. They did not see the Jet.

**THE EMB505 PILOT** reports that after take-off several factors occurred which contributed to the level-bust. The low-level noise abatement departure for RW26 had a navigation issue since the DME was not showing correctly until they were over the RW08 threshold; it showed as beginning at 15NM, then 150NM and finally indicating correctly at 0.2NM. SOP's are that the Vertical Speed (VS) can only be selected after flaps zero "close loop", which resulted in VS being engaged at the same time that the selected altitude was captured, this inhibited the autopilot to capture the selected altitude. Lastly, the frequency changes occurred at an early stage. All these contributed to taking capacity away from the PM and triggered the autopilot not to capture the altitude with autopilot engaged and they climbed to 3320ft. They were aware of the light traffic 1000ft above them, approaching for a downwind join to land on RW26 [UKB note: the BE76 pilot was entering the BIA hold for an NDB instrument approach], and disconnected the autopilot and manually returned to 3000ft at low speed.

[1] Changing frequency from Bournemouth Tower to Bournemouth Approach.
[2] The EMB505 pilot did not report their TCAS equipment.



2 NOISE PREFERENTIAL ROUTES

a. The following Noise Preferential Routes shall apply to all turbine powered aircraft and all other aircraft with a MTWA greater than 5700 KG, unless specifically otherwise instructed by ATC, or deviation required for safety reasons.

i. Take-off Runway 26:
Climb straight ahead to 0.6 DME, then track 270° MAG to 3.1 DME, before commencing any turn. (This also applies to LH and RH Visual Circuits).

Figure 1: Bournemouth Noise Preferential Route - Runway 26

**THE BOURNEMOUTH APPROACH RADAR CONTROLLER** reports that the BE76 entered the BIA hold above the airfield maintaining 4000ft. The EMB505 pilot was released on a standard East departure, via GWC, climbing to 3000ft. When the EMB505 was observed airborne, shortly after the displayed Mode C level passed 3000ft. The EMB505 was about 1NM west, ahead of the BE76, and avoiding action was given to the BE76 pilot to climb to 5000ft and turn right heading 350° and Traffic Information was passed. The Mode C level of the EMB505 was observed to reach 3400ft before descending to 3000ft. The EMB505 then called on the Radar frequency and reported maintaining 3000ft. During the level bust, the minimum observed separation was around 1NM and 600ft. The pilot of the EMB505 was informed of the need to take avoiding action. The EMB505 pilot subsequently continued en-route and the BE76 pilot completed the planned training detail without further incident.

## Factual Background

The weather at Bournemouth was recorded as follows:

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METAR EGHH 060820Z 26014KT 9999 FEW024CB 14/10 Q0999
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## Analysis and Investigation

### Bournemouth Occurrence Investigation

The EMB505 pilot, departing Bournemouth, was given a clearance of right turn after noise abatement towards GWC climbing to altitude 3000ft which was correctly read back. Once released by radar the aircraft was lined up on RW26 and issued clearance to take off. At the time of the release the BE76 pilot had just established in the hold above the airfield at 4000ft. The EMB505 was seen to be climbing relatively quickly and the Bournemouth Tower controller reminded the pilot to maintain 3000ft on reaching and to contact Bournemouth Radar, again the 3000ft was acknowledged by the pilot. Shortly after the Mode C of the EMB505 was seen to pass through 3300ft and came into conflict with the BE76 in the hold. The Bournemouth Radar controller spotted the level bust very quickly and immediately issued avoiding action instructions to the BE76 pilot to climb to 5000ft and turn right onto 360°. The EMB505 was then seen to descend to 3000ft and calls Bournemouth Radar. The separation between the EMB505 and the BE76 was reduced to 1NM and 700ft at the closest point.[3]

The Bournemouth Tower controller informed the investigator that they were conscious of the rate of climb of the EMB505 and decided to reiterate to the pilot to maintain altitude 3000ft on reaching as they transferred them to the Radar frequency. The instruction to maintain 3000ft on reaching is again acknowledged by the pilot of the EMB505 and they leave the Bournemouth Tower frequency.

[3] Using a different radar replay CPA was observed to be 500ft vertically and 1NM horizontally.

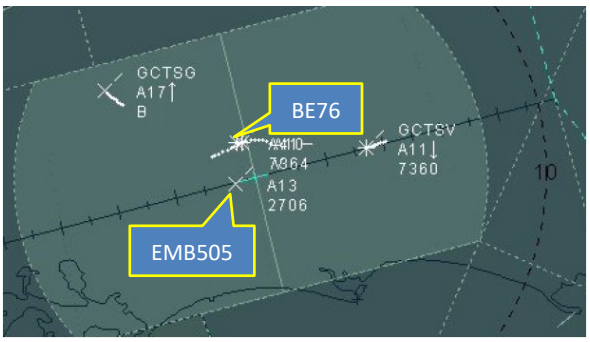



Figure 2: EMB505 shortly after departure

Prior to contacting Bournemouth Radar, the Mode C of the EMB505 is seen to be passing 3300ft with the BE76 just to the north of them at about 1NM at 4000ft in the hold. The Bournemouth Radar controller having noticed the Mode C gives immediate avoiding action to the BE76 pilot to climb to altitude 5000ft and turn right heading 360° (Figure 3).


Figure 3: EMB505 Prior to Contacting Bournemouth Radar

When the EMB505 pilot checks into the Bournemouth Radar frequency the Mode C is indicating 3000ft and they report heading 270° on the noise abatement and maintaining 3000ft. Having validated and verified the Mode A and C the Bournemouth Radar controller then advises the BE76 pilot that the traffic has now descended and that they can resume their own navigation to the BIA and descend to 4000ft. Once clear of the BE76 the EMB505 is then climbed to FL100 in accordance with their onwards clearance. Once the EMB505 is established in the climb and above the BE76 the Bournemouth Radar controller gives the EMB505 pilot a right turn towards GWC and advises them that the level bust had been noticed and that avoiding action had been required for another aircraft due to the climb above the cleared level. This is acknowledged by the pilot of the EMB505.

**UKAB Secretariat**

The BE76 and EMB505 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[4] If the incident geometry is considered as converging then the EMB505 pilot was required to give way to the BE76.[5]

## Summary

An Airprox was reported when a BE76 and an EMB505 flew into proximity at Bournemouth Airport at 0835Z on Tuesday 6th October 2020. Both pilots were operating under IFR, the BE76 pilot in IMC and

[4] SERA.3205 Proximity.
[5] SERA.3210 Right-of-way (c)(2) Converging.

in receipt of a Radar Control service from Bournemouth, the EMB505 pilot was changing frequency from Bournemouth Tower to Bournemouth Approach.

## 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.

The Board began by looking at the actions of the EMB505 pilot. The pilot reported '*SOP's are that the Vertical Speed (VS) can only be selected after flaps zero "close loop", which resulted in VS being engaged at the same time that the selected altitude was captured, this inhibited the autopilot to capture the selected altitude'*, Board members agreed that if this anomaly was not already in the company SOP's they should ensure it is included at the earliest opportunity to prevent a recurrence of the inadvertent autopilot inhibition. Members agreed that this highlighted the importance of monitoring onboard systems to ensure any inconsistencies are recognised early and appropriate actions taken to prevent inadvertent deviations. Members noted that Bournemouth has a frequency paired ILS/DME and, in these situations, it is not an unusual occurrence to receive spurious distance readings until the aircraft has passed the upwind end of the runway; because of this members agreed that the EMB505 crew should have been aware of the possibility that there may be spurious indications initially and planned for them. Likewise, the Bournemouth Approach frequency could have been selected on the aircraft's second radio, which would have reduced the impact of an early frequency change. Turning to the event, the EMB505 pilot did not stop the aircraft's climb until they had passed 3000ft (**CF2**) and it was not until they reached 3300ft that they started to descend to their cleared level of 3000ft (**CF1&3**). The EMB505 pilot had been informed of the requirement to maintain 3000ft [on reaching] a number of times by the Tower controller and had acknowledged the clearance restriction. The EMB505 pilot reported that they were aware of the BE76 at 4000ft, although they believed that the BE76 pilot was making a visual join rather than an instrument approach; they were not visual with the BE76 at any time during this incident (**CF5**).

Turning to the actions of the BE76 pilot, when they received an instruction from the Bournemouth controller to turn away from the conflicting EMB505 they had immediately complied with this instruction. The BE76 pilot did not see the EMB505 (**CF5**) but said that it was the Bournemouth Approach controller's tone of voice that alerted them to the possible danger and resulted in them quickly complying with the controller's instructions (**CF4**).

Next the Board looked at the actions of the Bournemouth controllers. The Tower controller had reminded the EMB505 pilot that their cleared level was 3000ft before they transferred the pilot to the Bournemouth Approach frequency. The EMB505 pilot was between frequencies when the Bournemouth Approach controller saw the EMB505's Mode C indicating above 3000ft and still climbing, they quickly gave the BE76 pilot an avoiding turn to increase separation between the aircraft. Because the EMB505 pilot was not yet established on their frequency this was the controller's only available course of immediate action. The Board commended the Bournemouth controllers for their diligence and quick actions.

Finally, the Board turned to the risk. Because of the quick actions of the Bournemouth controller and the BE76 pilot the Board agreed that the risk of collision had been averted, a Risk Category C.

## PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

| | 2020145 | | |
|---|---|---|---|
| CF | **Factor** | **Description** | **Amplification** |
| | **Flight Elements** | | |
| | **• Regulations, Processes, Procedures and Compliance** | | |
| 1 | Human Factors | • Flight Crew ATC Clearance Deviation | |
| | **• Tactical Planning and Execution** | | |
| 2 | Human Factors | • Action Performed Incorrectly | Incorrect or ineffective execution |
| 3 | Human Factors | • Flight Level/Altitude Deviation (Level Bust) | |
| | **• Situational Awareness of the Conflicting Aircraft and Action** | | |
| 4 | Human Factors | • Situational Awareness and Sensory Events | Pilot was concerned by the proximity of the other aircraft |
| | **• See and Avoid** | | |
| 5 | Human Factors | • Monitoring of Other Aircraft | Non-sighting or effectively a non-sighting by one or both pilots |

Degree of Risk: C.

Safety Barrier Assessment[6]

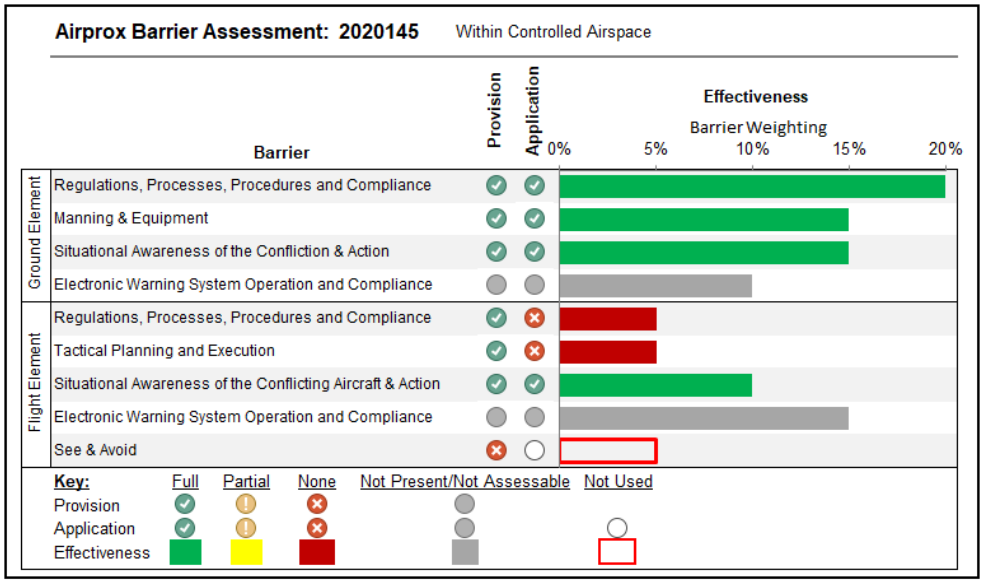
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

**Flight Elements:**

**Regulations, Processes, Procedures and Compliance** were assessed as **ineffective** because the EMB505 pilot did not conform with their ATC clearance to stop their climb at 3000ft.

**Tactical Planning and Execution** was assessed as **ineffective** because the EMB505 pilot climbed above their 3000ft ATC clearance, a level bust.

**See and Avoid** were assessed as **not used** because the controller acted to increase the separation of the aircraft occurred before either pilot had the opportunity to visually acquire the other aircraft.




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