

AIRPROX REPORT No 2019297

Date: 17 Oct 2019 Time: 1442Z Position: 5328N 00146W Location: Derwent Valley

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	MD500	Prefect
Operator	Civ Helo	HQ Air (Trg)
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	None
Provider	Manchester	
Altitude/FL		
Transponder	A, C, S	A, C, S
Reported		
Colours	Green	White, Blue
Lighting	Strobes, Nav	Landing, Strobes, Nav
Conditions	VMC	VMC
Visibility	30km	NR
Altitude/FL	150ft	500ft
Altimeter	Rad Alt	Rad Alt
Heading	133°	160°
Speed	60kt	180kt
ACAS/TAS	Not fitted	TAS
Alert	N/A	None
Separation		
Reported	100ft V/0m H	Not Seen
Recorded	NK	



THE MD500 PILOT reports that he was conducting HESLO [underslung load-lifting] operations within a NOTAM'd ops area and had limited radio contact with ATC due to distance & operating altitude. He had been there for about 1.5hrs when a fixed-wing aircraft flew through but disappeared very quickly and he believed it to be a one-off incident. However, approximately 2hrs later, the same aircraft type did exactly the same thing, same location, same phase of helicopter flight, followed 10 mins later by a third occurrence again the same fixed-wing type, this one took late & significant avoiding action to box around the helicopter, before resuming track, low-level, down the Derwent Valley. The groundcrew were the first to catch sight of the aircraft and gave an immediate radio call to the pilot, but it was too late to take any action and he was unable to manoeuvre with any degree with the underslung load because he was already at maximum take-off power. The second & third incidents were reported to Manchester ATC by radio (pilot flying) and by telephone (groundcrew). Operations continued at first because they could do no more to remedy the situation. However, shortly after the third occurrence by identical aircraft within a 2hr period, HESLO ops were suspended. He noted that he was operating with a 'longline', somewhere between 50-100ft making them a bigger target; they normally have a cycle time of between 3 and 5mins between loads and keep flying from first-light to last-light. He opined that the Chinook crews normally gave them a phonecall if they were in the area and he normally passed them a discreet frequency to call up on. He considered the second aircraft the closest and it was so close he instinctively ducked as it flew overhead.

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

THE PREFECT PILOT reports that he was asked to raise a report in response to an Airprox reported by a helicopter pilot. On the day in question during the planning phase his student marked two points on his map which were a NOTAM pertaining to under-slung load helicopter activity. The two points were joined by a line and had a 2nm avoid around them. Since their route did not infringe the NOTAM he

briefed the student to fly the original route and keep a good look-out for any helicopters in the area of the NOTAM. They both did this and did not see any helicopters. The Prefect is fitted with a RAD ALT which has a low-height warning that prompts them to fly at or above 500ft, which was their minimum authorised MSD on that day. The max height of the NOTAM was 500ft he thought.

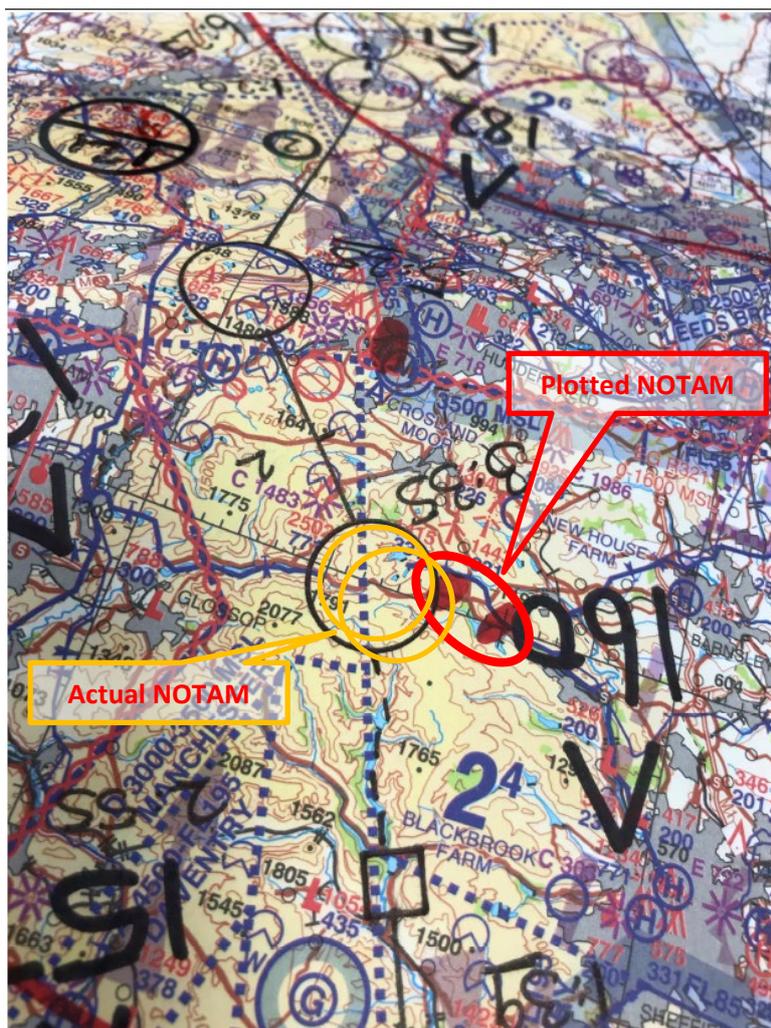


Figure 1 Prefect route planning showing NOTAM plotting on map

THE MANCHESTER CONTROLLER reports that he had taken quite a lengthy handover from his colleague with traffic holding and further traffic requiring co-ordination with Warton. Therefore his attention for the first 5mins on console had been focused on other traffic. He had noticed a 7001 squawk to the north-east, but it was below controlled airspace. During the handover he had been told about the helicopter on a Basic Service lifting loads on the hills outside controlled airspace to the east, but there had been no radar return on the helicopter during the handover, and wasn't for the whole of time it was on frequency. At 1441 the helicopter pilot reported that he had an Airprox with traffic whilst lifting loads. He still could not see a radar return and although he tried to establish radio comms with the pilot, it was unsuccessful.

Factual Background

The weather at Manchester was recorded as follows:

METAR COR EGCC 171420Z AUTO 16006KT 080V230 9999 FEW034 14/08 Q1001 NOSIG=

A copy of the NOTAM is reproduced below:

NOTAM Text

(H6735/19 NOTAMN
 Q) EGTT/QWELW/IV/BO /W /000/025/5330N00147W002
 A) EGTT B) 1910160900 C) 1910181700
 D) 0900-1700
 E) UNDERSLUNG LOADS WILL OPERATE LOW FLYING AREA 8 WI 2NM EITHER SIDE
 OF TRACK AND 2NM RADIUS OF 532953N 0014725W TO 532826N 0014604W,
 (WOODHEAD PASS, DERBYSHIRE). MAX HEIGHT 500FT AGL. ACFT MAY BE
 RESTRICTED IN ABILITY TO MANOEUVRE AND UNABLE TO COMPLY WITH RAC.
 OPS CTC 07775533504. 19/10/043/LFBC
 F) SFC G) 2457FT AMSL)

Analysis and Investigation

NATS

A NATS investigation found that at 1441z the MD500 pilot reported that he had just been passed 'very close' by a light aircraft that had directly overflown them whilst they were getting airborne for one of their underslung lifting tasks. He was unable to identify the traffic but reported it as a small, low-wing single-engine aircraft. He thought the same aircraft had overflown them about 90mins previously. A review of the radar showed that the helicopter was not visible on the radar, due to the low-level nature of the task in the foothills of the Pennines and therefore the Airprox was not visible to the controller. The helicopter was also often out of RT contact due to terrain shielding. At the time reported by the pilot, a 7001 squawk could be seen tracking southeast, indicating 2000ft altitude and remaining about 4nm east of the Manchester control zone (Figure 2). There was no requirement for the controller to pass Traffic Information because the MD500 was under a Basic Service and it was impossible for the controller to know whether the helicopter was airborne or not, or what its position was. The 7001 was unknown traffic to the controller, was not in contact with Manchester and remained outside CAS at all times, fading from radar 1min later.



Figure 2- 1441:10

UKAB Secretariat

The MD500 and Prefect 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 If the incident geometry is considered as overtaking then the MD500 pilot had right of way and the Prefect pilot was required to keep out of the way of the other aircraft by altering course to the right.²

Occurrence Investigation

A Cranwell investigation found that the Prefect sortie was an "out and back" land-away by the crew. The route flown was identical in either direction, therefore it can be assumed that since the route was directly over the NOTAM position, that it was the same aircraft which affected the helicopter in the first and second instances. A further crew, another Prefect, (probably the third incident on flying through NOTAM) saw the helicopter and the QFI took avoiding action on becoming visual. This QFI stated he was aware of all details of the NOTAM and had plotted it on their chart, but suspected it may have been mis-plotted. It was thought that this was the apparent avoiding action mentioned in the Airprox report by the MD500 pilot. The second aircraft pilot reported seeing the helicopter on the route north and south, and was manoeuvring clear based on the visual sighting.

The investigation also found the following points:

Route Planning. For the most part, Prefect navigation route planning is conducted on the Mission Planning System (MPS). This allows the crews to upload the route (as a series of waypoints) to the aircraft which provides steering information to them. If planning is undertaken on the day of the sortie, crews can overlay current NOTAM data on the MPS screen – NOTAM data cannot be loaded to the aircraft navigation system for display in-cockpit. If the route is flown at a later time, the NOTAM data must be refreshed. However, issues with the quality of the printed 'map' from the MPS mean that crews are directed to draw their route on legacy ½ mil maps for use in-cockpit. NOTAMs must then also be hand drawn onto the map, with most crews manually transposing the data from the MPS screen to the hand-drawn map –this air gap presents a clear opportunity for error and on the balance of probability, the NOTAM was incorrectly transposed from the screen to the legacy map on this occasion.

NOTAM Wording. While NOTAMs are entered onto the MPS (manually – another potential source of error, though strict independent checking is used) crews do check the actual LF Ops NOTAM. In this instance, the AST [Air Safety Team] conducted a substitution test amongst a cadre of experienced QFIs and inexperienced trainees. It was clear that the text's phrase 'MAX HEIGHT 500FT AGL' caused confusion, with several crews believing this to be the NOTAM's vertical extent.

Contact with CANP Operator. The NOTAM included contact details for the helicopter ops. Both crews attempted to contact the operator using the details provided but neither got a response. A discussion with the helicopter ops may well have dispelled the mistaken belief that the maximum height of the NOTAM was 500ft AGL and therefore increased the crews' focus on the NOTAM.

Acquisition. Although all parties were actively squawking Mode 3C, and the Prefect is TAS equipped, electronic conspicuity did not provide situational awareness to the Prefect crews because no TAS alerts were received by either crew. It was likely that terrain masking would have resulted in a late pick up by TAS and equally surprising that given the proximity reported by crews (including the helicopter operator) that there was no TAS indication during any of the events. One of the crews reports having seen the helicopter on the route north, displaced to his east and then again as he routed south. On this second sighting the Prefect pilot manoeuvred to the east to route around the helicopter; he reports having done so in an exaggerated fashion to make it obvious to the helicopter pilot that he had seen him. During the other reported encounter, the Prefect crew remained unaware of the presence of the helicopter.

¹ SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

² SERA.3210 Right-of-way (c)(3) Overtaking. MAA RA 2307 paragraph 14.

Comments

HQ Air Command

This Airprox was caused as a direct consequence of the Prefect crew mis-plotting the associated NOTAM and therefore flying closer to the MD500's location than planned. The thorough and comprehensive investigation made six recommendations to reduce the likelihood of a similar event happening in the future. To address the issue of the mis-plotting of NOTAMs, a review of the use of Mission Planning Software is underway to reduce the potential for transfer errors between the digital plan and hand-drawn charts. It has also been recommended that max operating height within a CANP NOTAM should be displayed as 'max operating height' and that a review of ground training lesson plans are undertaken to ensure that crew's understanding of NOTAMs, and CANPs in particular, is adequate. Further, it has been recommended that NOTAMs which detail CANP avoids clearly highlight CANP status and the additional avoid criteria requirement.

As additional measures, the feasibility of plotting CANP NOTAMs on CADS is being investigated and instructors at the unit involved have been reminded of the importance of the supervisory process and their role in reducing the likelihood of pilot error. Military aircrew, including the Prefect pilot, made four separate attempts to telephone the number supplied on the NOTAM on the day of the Airprox but none were able to get through. As a potential measure to improve communication, it has been recommended that LF Ops encourage CANP applicants to ensure that contact numbers are suitably manned. It is unfortunate that although the MD500 was squawking, it failed to appear on the display of the Prefect's TAS although it is not possible to determine why.

Summary

An Airprox was reported when a MD500 and a Prefect flew into proximity near Derwent at 1442hrs on Thursday 17th October 2019. Both pilots were operating under VFR in VMC, the MD500 pilot in receipt of a Basic Service from Manchester and the Prefect pilot was operating on the low-level common frequency and not in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and 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. Although not all Board members were present for the entirety of the meeting and, as a result, the usual wide-ranging discussions involving all Board members were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board first looked at the actions of the Prefect pilot. He was aware of the NOTAM, but the student had mis-plotted its position on his map and the instructor had not noticed the mistake (**CF3**, **CF6**). Military members noted that although the Airprox was a direct consequence of this plotting error, and despite the confusion amongst the pilots about the maximum height of the NOTAM, military aircraft above 140kts were also required to avoid the NOTAM by an additional 500ft³ (**CF4**). Even if they believed the maximum operating altitude to be 500ft, they should have passed no lower than 1000ft. Members also noted that 2 separate crews had tried on 4 occasions to telephone the helicopter crew on the given number to get more information, but the calls were not answered; this was a missed opportunity to pass information (**CF2**) but it was unknown whether the calls had not been answered due to lack of signal coverage or if the mobile phone was not being attended. The Prefect crew had generic

³ AIP ENR 1.10

(but incorrect) situational awareness that the helicopter was operating in the area from the NOTAM, but it was unfortunate that they did not receive additional information from their TAS; although an alert would have been expected, the Board could only surmise that none was generated because of terrain masking (CF5, CF7). Ultimately, the Prefect crew did not see the MD500 and were therefore unable to take avoiding action (CF9). The Board were heartened to hear that a number of recommendations had been made to amend the NOTAM procedure and how such NOTAMs are handled by the crews in future. Furthermore, the Commandant of 3FTS had extended an invitation to the MD500 pilot that, once the Covid-19 restrictions are lifted, he spends a day with 3FTS to view their operations first-hand and give him the opportunity to brief them on his operations; the Board urged the MD500 pilot to take advantage of this offer in the interests of mutual understanding of each other's operations.

For his part, the MD500 pilot had no prior situational awareness about the Prefect (CF5), had no CWS, and the ATS that he was receiving was severely limited by the lack of RT comms with ATC, who were not required to monitor the flight anyway (CF1). He was not able to see the Prefect as it approached from behind (CF8) and therefore could not take any avoiding action. Noting his assessment of the separation, military members opined that the Prefect would have been unlikely to have been below 500ft given that this was an instructional training sortie and that the radar altimeter would have given a warning had they done so. If this was the case, and notwithstanding any visual perception that it was lower (no doubt exacerbated by startle-factor for the helicopter pilot), the Board felt that with the helicopter being at about 150ft agl as reported by the helicopter pilot, the actual separation was likely to have been in the region of 350ft.

The Board then discussed the risk of the Airprox. Helicopter members thought that the lack of manoeuvrability of the MD500 with its long-line underslung load, and the non-sighting and lack of action by either pilot, meant that there had been a serious risk of collision; Category A. However, others noted that there had likely been in the region of 350ft separation and that although neither pilot had seen each other and safety had been much reduced below the norm, the encounter's separation was not at the bare minimum (the criteria for Category A). In the end the latter view prevailed and the Board agreed risk Category B.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019297		
CF	Factor	Description	Amplification
	Ground Elements		
	• Situational Awareness and Action		
1	Contextual	• Situational Awareness and Sensory Events	Not required to monitor the aircraft under the agreed service
	Flight Elements		
	• Tactical Planning and Execution		
2		• Any other event	NOTAM telephone number not answered.
3	Human Factors	• No Decision/Plan	Inadequate planning
4	Human Factors	• Aircraft Navigation	Flew through promulgated and active airspace or sporting site
	• Situational Awareness of the Conflicting Aircraft and Action		
5	Contextual	• Situational Awareness and Sensory Events	Generic, late, no or incorrect Situational Awareness
6	Human Factors	• Mentoring	Sub-Optimal
	• Electronic Warning System Operation and Compliance		
7	Human Factors	• Interpretation of Automation or Flight Deck Information	CWS alert expected but none reported

• See and Avoid			
8	Contextual	• Poor Visibility Encounter	One or both aircraft were obscured from the other
9	Human Factors	• Monitoring of Other Aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: B.

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:

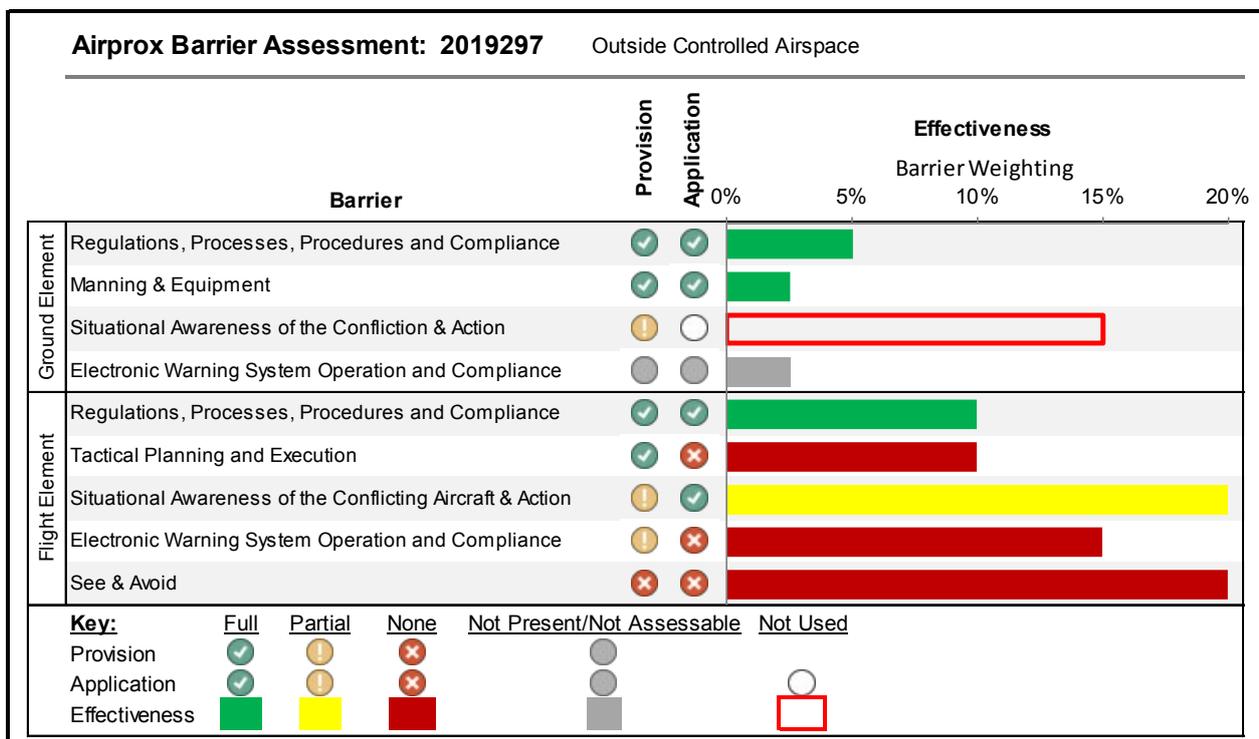
Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because the Prefect pilot mis-plotted the NOTAM.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because the Prefect pilots were aware from the NOTAM that the MD500 was operating in the area.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS in the Prefect did not alert as expected.

See and Avoid were assessed as **ineffective** because neither pilot saw the other aircraft in time to take avoiding action.



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