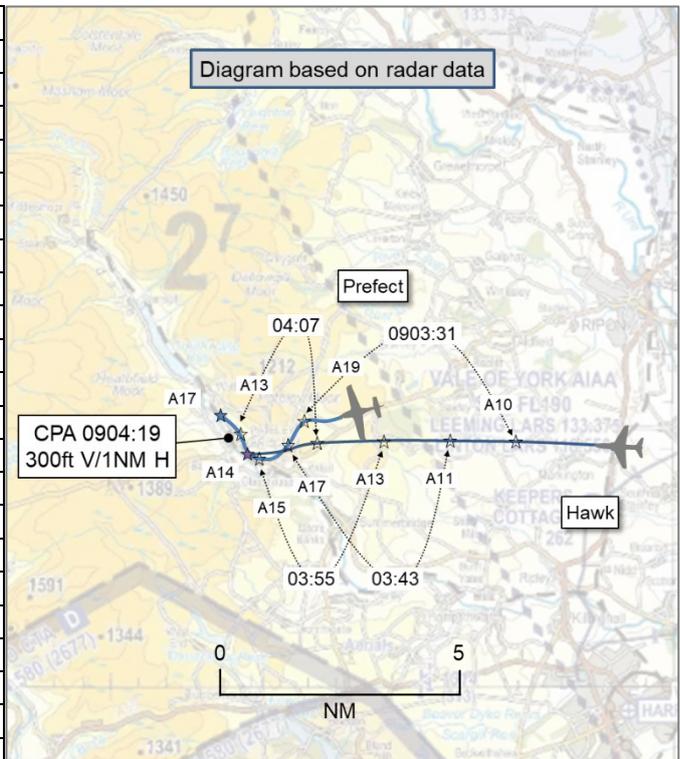


AIRPROX REPORT No 2021076

Date: 09 Jun 2021 Time: 0904Z Position: 5405N 00145W Location: ivo Pateley Bridge

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Prefect	Hawk TMk1
Operator	HQ Air (Trg)	HQ Air (Ops)
Airspace	LFA 17	LFA 17
Class	G	G
Rules	VFR	VFR
Service	Traffic	Listening Out
Provider	Leeming	VHF LL Common
Altitude/FL	1700ft	1400ft
Transponder	A, C, S	A, C
Reported		
Colours	White, blue	Black
Lighting	NK	HISL, nav
Conditions	VMC	VMC
Visibility	>10km	NK
Altitude/FL	NK	300ft
Altimeter	RPS (NK hPa)	agl (1019hPa RPS)
Heading	010°	270°
Speed	180kt	420kt
ACAS/TAS	TAS	Not fitted
Alert	RA	N/A
Separation		
Reported	NK	~750ft V/3NM H
Recorded	300ft V/1NM H	



THE PREFECT INSTRUCTOR reports being towards the end of a busy low-level navigation exercise from [departure airfield] to Leeming which had been challenging for the student. The aircraft was being flown by the Instructor following a simulated diversion immediately prior to recovery into Leeming. Approaching the final turn-point at 500ft MSD and 180kt groundspeed, the aircraft was flown into a shallow but defined valley orientated approximately north, leading to Grimwith reservoir. A call on the VHF low level frequency had been made two legs prior, in the vicinity of Malton. Leeming Approach was providing a Traffic Service, reduced due to proximity of terrain. Prior to entering, a good lookout up and down the valley was carried out. The TAS was checked with no conflicting traffic, although it did show returns from a pair of Hawks recovering to Leeming. At 500ft MSD the aircraft was approximately level with the terrain at the top of the valley sides, travelling north. Shortly after entering the valley, Leeming Approach called traffic in the 6 o'clock at three miles, similar heading, same height. The Instructor assessed that a co-height, co-heading aircraft was likely being flown up the same valley. Given the traffic density up to that point and the proximity to Leeming, it was assessed as likely to be a fast-jet. Immediately after the traffic call, a TAS alert sounded with pop-up traffic at very close range behind the aircraft and co-altitude. The Instructor elected to carry out a low-level abort, in order to rapidly change height and maximise the planform visibility of the aircraft. A call of "Climbing" was made on Leeming Approach to provide SA to the conflicting aircraft should its pilot be monitoring the frequency. The aircraft was rolled in an attempt to induce a wing-flash reflection from the sun, and to provide better lookout back into the valley. The other traffic was not seen at any point and, once the aircraft was re-established straight and level, the TAS contact was seen to continue north at high speed. Had the aircraft been any lower, they would likely not have been detected by the Leeming radar, and TAS would have been the only warning of the traffic, providing a vital warning, albeit much less detail than had been passed by the controller. CADS had been used to check for conflicts prior to the sortie, and while traffic out of Leeming had been noted, no conflicting traffic was seen in the vicinity of the Airprox. The Instructor noted that high temperature in the cockpit was a factor.

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

THE HAWK PILOT reports having planned a low-level training and circuit flying sortie for the morning of 9 Jun 21. Low-level was booked and a CADS route input with no conflicts evident at the outbrief in the area of the reported Airprox. The pilot took off 5min later than planned. The initial portion of the route was flown in LFA 11 and two position reports were made on the VHF LL Common Frequency. Approaching the boundary of LFA 17, the Hawk pilot called "[C/S], single Hawk, south of Topcliffe heading west at low level towards Grimwith reservoir." They did not hear the Prefect's position report near Malton but suspected they were only just airborne at the time and working Leeming Approach. Approaching Pateley Bridge, heading west, they saw a single Prefect heading north, up Gouthwaite reservoir some 3NM away. Shortly after seeing the Prefect they observed a wings level climb and that an estimated lateral separation of 2-3NM was maintained, increasing rapidly due to headings diverging by 90°. They did not consider that there was any risk of collision and carried on with the rest of the sortie. Of interest, whilst reviewing the CADS bookings to ensure that they had not missed a confliction, it was noticed that Prefect traffic was due in the area about 20min later than the time of the reported Airprox.

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

THE LEEMING APPROACH CONTROLLER reports providing a Traffic Service to the Prefect. The aircraft was booked into Leeming but was carrying out a navigation exercise prior to recovery. The aircraft was General Handling approximately 15 miles to the southwest of Leeming when the incident happened. The controller's attention was solely on this aircraft with no others on frequency. Pop-up traffic appeared on the radar screen, displayed in SSR only, moving rapidly towards the Prefect. They believe the traffic was called as "traffic 6 o'clock, 2 miles, similar heading indicating 300ft below". The Prefect's Mode C was indicating 014 and the conflictor's Mode C was indicating 011, as far as they recalled. The controller felt that the Prefect had detected the conflictor on TAS, because the pilot replied with, "yes we are in the climb". The Prefect climbed and turned to the north to resolve the confliction.

The controller perceived the severity of the incident as 'High'.

THE LEEMING SUPERVISOR did not submit a report.

Factual Background

The weather at Leeds/Bradford Airport was recorded as follows:

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METAR EGNM 090920Z 22010KT CAVOK 20/05 Q1019=
METAR EGNM 090850Z 21007KT 180V240 CAVOK 19/07 Q1019
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Analysis and Investigation

Military ATM

An Airprox occurred on 9 Jun 21, 15NM west of Leeming between a Prefect and a Hawk. The Prefect was in receipt of a Traffic Service from Leeming Approach and the Hawk was not in receipt of a Radar Service.

The Prefect was towards the end of a low-level navigation exercise and was being flown by the instructor at the time of the incident. They reported that they were in receipt of a Traffic Service operating at low level in a shallow valley and although a call on the VHF low level frequency had been made it was done so two legs prior. Prior to entering the valley, a good visual check was conducted and TAS showed no conflicting traffic. Traffic Information was passed by ATC which was followed with a TAS alert showing pop-up traffic at very close range and co-altitude. The Prefect conducted a low-level abort to change height and maximise the visibility of the aircraft, informing ATC they were "climbing". Although monitored on TAS the Hawk was never visually acquired by the Prefect and separation was unknown.

The Hawk was conducting the low-level portion of their planned sortie and was not in receipt of an ATS. They reported that their low level was booked, a CADS route had been input and at the time of their out brief there were no conflicts evident. A broadcast was made when approaching the Low Flying Area and reported that they did not hear the Prefect's position report over Malton. They observed the Prefect around 3NM and witnessed them climb and they did not consider there to be any risk of collision. Separation was reported at 3NM and 500 – 1000ft.

The Leeming Approach Controller was providing a Traffic Service to the Prefect which was the only aircraft on frequency. They reported that pop-up traffic appeared on the screen displaying in SSR only moving rapidly towards the Prefect. Traffic Information was passed, and the controller believed that the Prefect had received a TAS alert.

Figures 1 – 4 show the positions of the Prefect and the Hawk at relevant times during the Airprox. The screen shots are taken from a replay using NATS Radars, which are not utilised by Leeming and therefore may not be entirely representative of the picture available to the Leeming Controller.

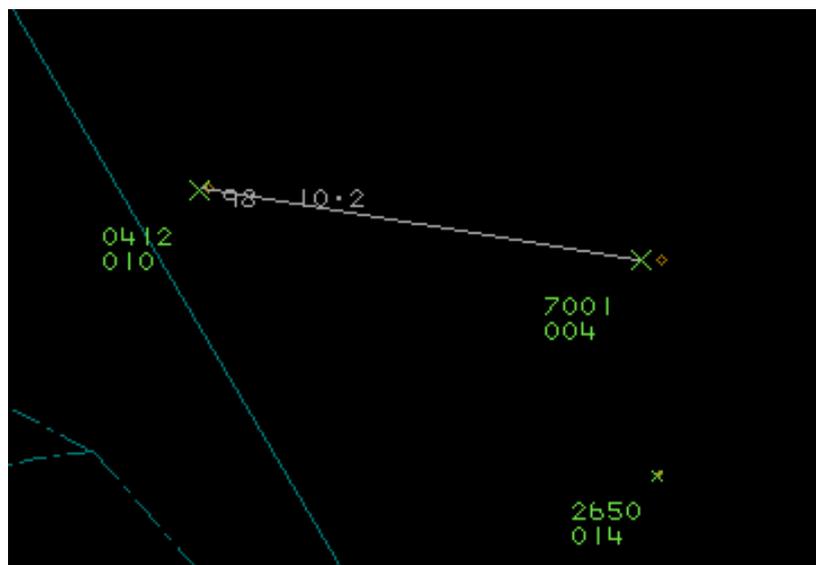


Figure 1: Prefect (0412) and Hawk (7001) at 0902:00. Separation is 10.2NM and 600ft.

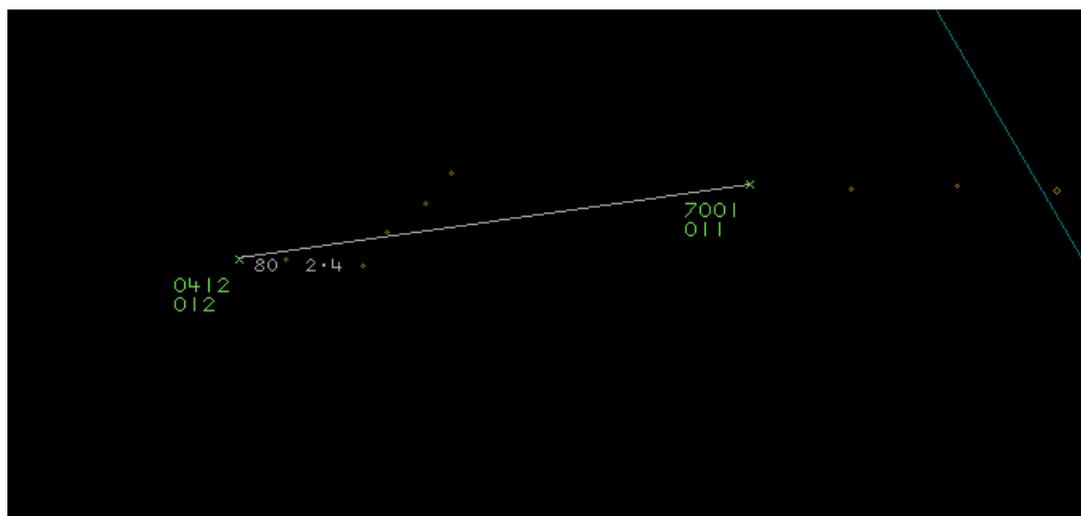


Figure 2: Traffic Information passed to the Prefect.

The Leeming Approach Controller passed Traffic Information to the Prefect as *“traffic six o’clock, two miles, similar heading, similar level”*. Separation decreased to 2.4NM and 100ft.

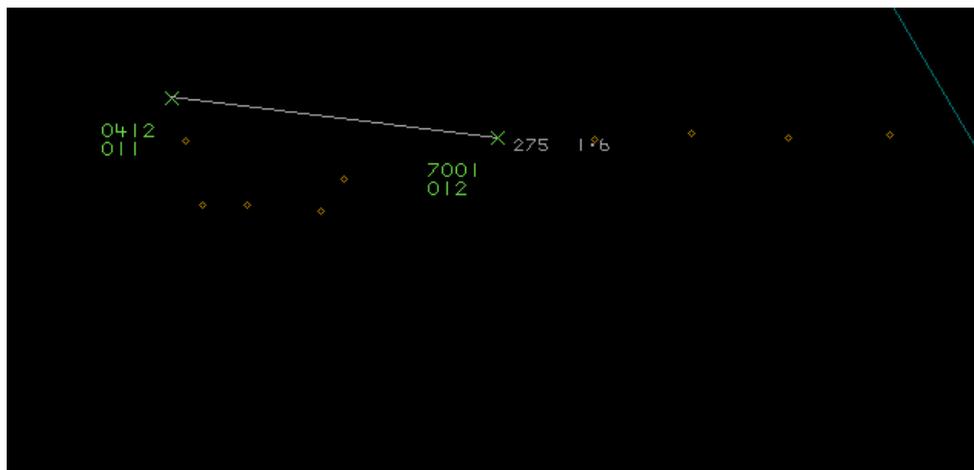


Figure 3: Prefect reports that they are climbing.

Eight seconds after the Prefect is passed Traffic Information, they report that they are climbing. Separation decreased to 1.6NM and 100ft.

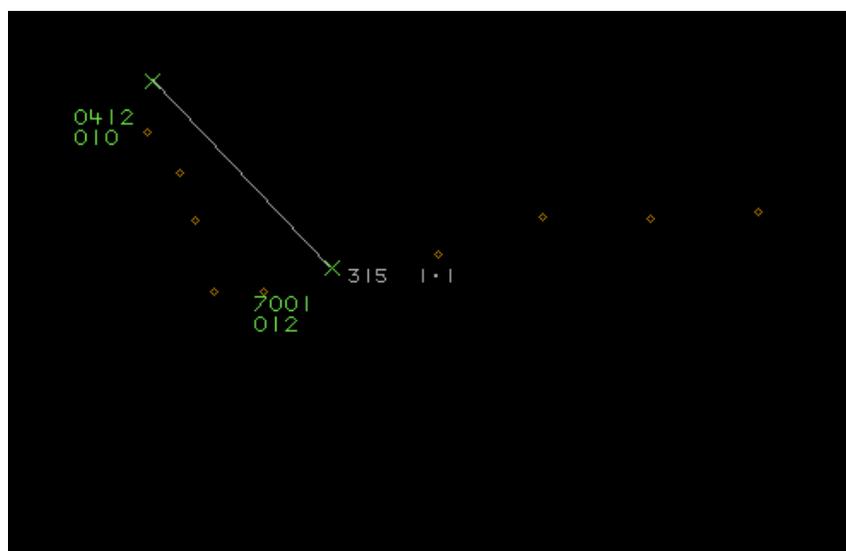


Figure 4: CPA was measured at 1.1NM and 200ft.

The unit investigation found that the Prefect got airborne earlier than planned but did not update CADS and did not re-run the sorties to check for new conflictors. This could have potentially prevented the two aircraft being in the area at the same time. The Leeming Approach controller's traffic levels were low and although the Hawk was seen for over two minutes on the NATS radar prior to Traffic Information being passed, this may not be representative of what was seen by the controller. Traffic Information, in combination with a TAS alert, enabled the Prefect to take action to increase separation from the Hawk.

UKAB Secretariat

The Prefect and Hawk pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. Separation at CPA was measured as 1NM on the NATS Ltd radar replay available to UKAB.

¹ MAA RA 2307 paragraphs 1 and 2.

Comments

HQ Air Command

This Airprox was subject to a very detailed Local Investigation, making one recommendation to help address some supervisory concerns that came to light from it. Although, the risk of collision was low, owing to the fact the Hawk was visual with the Prefect throughout, the actions of the Prefect QFI were entirely appropriate. Without knowing that the Hawk was visual, the QFI was right not to assume anything and to manoeuvre out of any conflict in addition to increasing the profile to help visual acquisition. The 'see and avoid' barrier worked from the Hawk perspective. For the Prefect, the barriers of having an Air Traffic Service and a Traffic Alert System also worked, all be it, late. However, neither crews heard anything on the VHF Low Level Common frequency, caused by either terrain or not being on frequency when calls were made. But both crews use of the frequency was correct and should be encouraged with military and civil flying alike.

The other barrier that was weakened was CADS. This is a great situational awareness tool during the planning stages but is largely historical in nature and relies on crews or supervisors to keep it up to date. The investigation found that the Prefect got airborne 20 minutes earlier than planned with CADS never being updated. This would explain why the Hawks route wasn't visible, vice versa with the Prefect. The DDH comments state: 'I note the 'good practice' advice in the UK Low Flying Handbook which suggests that supervisors/authorisers should review CADS regularly to allow them to inform crews of any changes – this did not occur on this occasion'. The recommendation looks to address this by continually looking at and improving the supervision of flying to help mitigate this from happening again. It is worth highlighting that the investigation carried out by 3 FTS was of the highest standard and exemplifies the RAF safety culture.

Summary

An Airprox was reported when a Prefect and a Hawk flew into proximity near Pateley Bridge at 0904Z on Wednesday 9th June 2021. Both pilots were operating under VFR in VMC, the Prefect pilot in receipt of a Traffic Service from Leeming Approach and the Hawk pilot listening out on the VHF LL Common frequency.

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.

With the luxury of a radar replay, Board members were quickly able to agree that there had been no risk of collision. Although the Hawk pilot had no SA on the Prefect's presence at low-level (**CF2**), they had seen the Prefect at range and had assessed that no action was required. However, the closure rate was such that the Prefect TAS alerted (**CF4**) which, in combination with a Traffic Information call, was sufficient for the Prefect Instructor to form a hazardous mental model (**CF3**). It was unfortunate that the Prefect Instructor was operating outside the CADS booking time (**CF1**), which denied SA to both parties but the Board also commended the Prefect Instructor for taking timely and appropriate action based on their mental model of the evolving situation and for filing an Airprox, entirely appropriately, for a situation that they believed may 'have been such that the safety of the aircraft involved may have been compromised.'

The Board agreed that in this case, normal safety standards and parameters pertained.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2021076				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Regulations, Processes, Procedures and Compliance				
1	Human Factors	• Use of policy/Procedures	Events involving the use of the relevant policy or procedures by flight crew	Regulations and/or procedures not complied with
• 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
3	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
• Electronic Warning System Operation and Compliance				
4	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	

Degree of Risk: E.

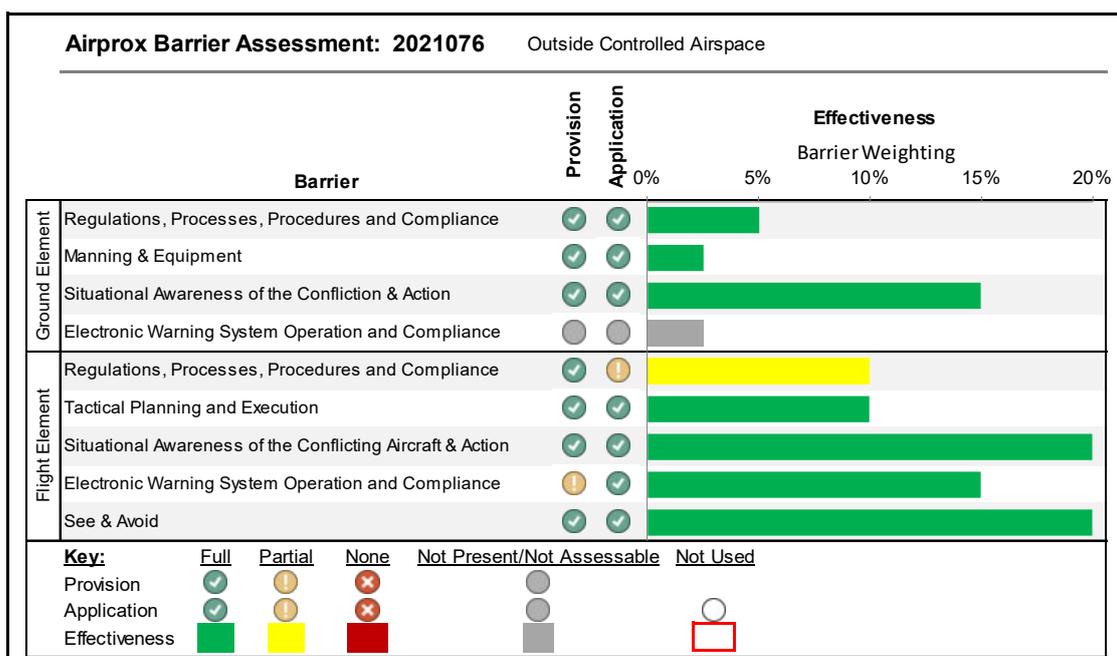
Recommendation: Nil.

Safety Barrier Assessment²

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 **partially effective** because the Prefect pilot's CADS booking was not active at the time of the Airprox, denying SA to both parties.



² The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).