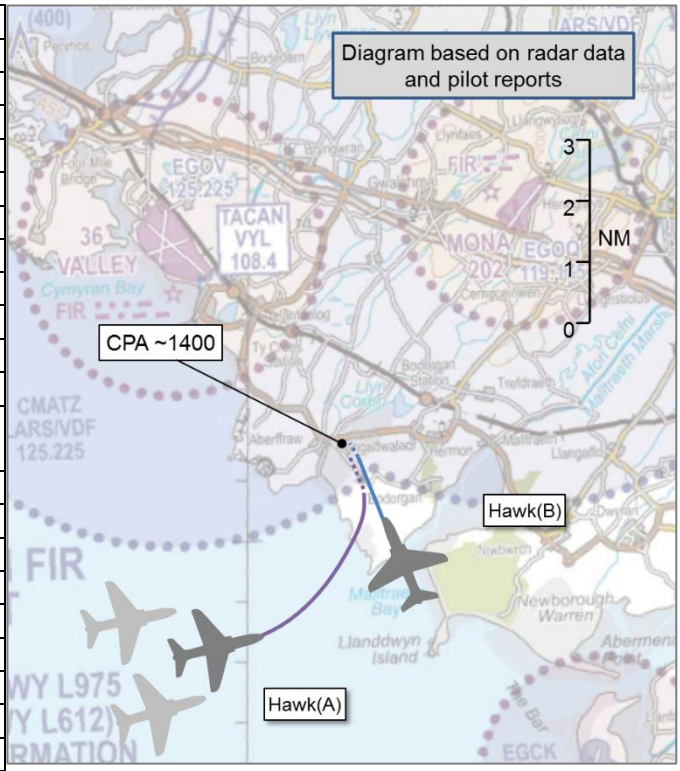
AIRPROX REPORT No 2019310

Date: 05 Nov 2019 Time: 1400Z Position: 5310N 00426W Location: 4NM SE Valley

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Hawk	Hawk
Operator	HQ Air (Trg)	HQ Air (Trg)
Airspace	Valley CMATZ	Valley CMATZ
Class	G	G
Rules	VFR	VFR
Service	Traffic	Traffic
Provider	Valley App	Valley Talkdown
Altitude/FL	NK	NK
Transponder	A, C, S	A, C, S
Reported		
Colours	Black	Black
Lighting	HISL, Nav, Landing, Beacon	NR
Conditions	VMC	NK
Visibility	40km	NR
Altitude/FL	NR	NR
Altimeter	QNH (1004hPa)	NK
Heading	330°	310°
Speed	300kt	NK
ACAS/TAS	TCAS II	TCAS II
Alert	TA	TA
Separation		
Reported	200ft V/850ft H	NR
Recorded	NK	



THE HAWK(A) PILOT reports that they were on recovery as a formation of 3 Hawks to Valley RW31RH. He was the formation lead and became aware of the instrument traffic on initial contact with Valley App and, following further information from the controller, became visual when 90° offset from RW31RH before turning his formation inbound. He misjudged the geometry and separation available between his formation and the Hawk on instrument approach at approximately 4NM final. He estimated the formation passed less than 1000ft to the left and slightly above as they were running in for an Arrow break. In hindsight, positioning the formation further out at 8-10NM before committing inbound would have allowed more time to laterally and vertically offset from the traffic by a safe margin.

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

THE HAWK(B) PILOT reports was he was the captain, non-handling pilot during the time of the Airprox. They were busy with a PAR approach to Valley RW31RH. Valley Talkdown informed them of the traffic at 13:59:03. He looked on TCAS and in the mirrors. The conspicuity lights were visible in the mirrors in their 7 o'clock and appeared to be tracking clear of their aircraft. The TCAS "Traffic, Traffic" caution sounded at 13:59:20 and the formation passed left abeam at 13:59:40. Whilst the closest wingman passed closer than he had expected, he perceived no risk of collision and the rest of the sortie continued uneventfully. On debriefing with the student leading the formation, he cautioned on how differently the geometry could have been with a TACAN approach, where the IF traffic flightpath would be offset over the approach lane for any traffic joining via initials.

THE VALLEY APPROACH CONTROLLER reports that the Hawk(A) formation was in receipt of a Traffic Service and positioning for a visual join for RW31RH under their own navigation from the SW. There was radar traffic (Hawk (B)) at 8NM at 2000ft on a PAR. The formation was informed of the radar traffic and was kept updated on the position throughout their recovery. They called visual as they were

turning inbound at 8NM, by which time the radar traffic was approaching 5NM, and they contacted Tower on Stud 2 as normal. He informed the Talkdown controller about the visual joiners passing down the left-hand side of the radar traffic, told him that they were visual, and heard that information passed to the radar traffic. No further comments were received from either the formation or the radar traffic on any frequency and there was no mention of an Airprox.

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

THE VALLEY TALKDOWN CONTROLLER reports that he was providing the Hawk(B) pilot with an instrument approach to RW31RH. He was notified by the Approach controller of a 3-ship of Hawks passing down the left-hand side of Hawk(B) and that the formation was visual with the instrument traffic. He passed this Traffic Information to Hawk(B). Then, when Hawk(B) was at 4NM, the formation passed very close to it, just above and to the left hand side. Hawk(B) continued to make his recovery successfully. He was later informed that this was to be reported as an Airprox.

Factual Background

The weather at Valley was recorded as follows:

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METAR COR EGOV 051350Z 01012KT 9999 FEW020 BKN030 11/07 Q1005NOSIG RMK BLU BLU=
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Analysis and Investigation

Military ATM

The Hawk formation was conducting a visual recovery to RAF Valley in Arrow formation. Concurrently, another station-based Hawk was conducting a PAR approach to RW31RH. The unit investigation identified that the student pilot in the formation lead aircraft lined the approach up to fly down the runway centreline, rather than offsetting to fly through on the deadside. As a result, the Hawk on the right-hand side of the formation came within an estimated 850ft horizontally and 200ft vertically of the single Hawk conducting the PAR approach and flew through the wake turbulence of that aircraft.

Analysis of the radar replay proved inconclusive due to the altitude of the aircraft involved. Analysis of the tape transcript provided from the Valley Approach controller, coupled with the statements of the pilot conducting the PAR approach, shows that all aircraft involved were passed Traffic Information on each other and all parties were visual with each other prior to and during the Airprox.

The Hawk formation was passed Traffic Information on the single Hawk at 1357:10 and then again at 1358:12. Traffic Information was passed by the Approach Controller for a third time at 1358:39 after which the Hawk formation confirmed that they were visual with the other aircraft.

Hawk(B) pilot stated that Traffic Information was passed by the Talkdown Controller at 1359:03 and that he was visual with the Hawk formation and had them on TCAS. At 1359:20, the TCAS issued a 'Traffic, Traffic' warning and the Hawk formation passed by 20sec later. The single Hawk pilot noted that the formation had passed closer than expected but believed no risk of collision existed.

Concurrent visual recoveries while instrument recoveries are taking place is routine business for military ATC and the required procedures are well understood. In this instance, both controllers involved passed Traffic Information to the aircraft under their control, allowing both parties to become visual with each other prior to the Airprox occurring and therefore the ATC barrier was effective.

UKAB Secretariat

The Hawk(A) and Hawk(B) 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 Hawk(B) pilot had right of way and the Hawk(A) pilot was required to keep out of the way of the other aircraft by altering course to the right.[2]

Comments

HQ Air Command

The risk of collision was low as the formation elements were visual with the aircraft on the PAR. That being said, the lead QFI was right to raise this as an Airprox and should be commended for his honest and upfront account of the situation. After Fast Jet trainees graduate from RAF Valley, they will then spend at least the first year of their front-line tour as wingmen. This means there is no requirement for the students on Advanced Fast Jet training to lead formations. However, during the course, they are exposed to the basic fundamentals of leading a formation to help build their capacity and decision making ability. As the DDH states in his report, students need to be coached and monitored even more closely than usual.

In this occurrence, the student with limited exposure to leading had a situation where other formation elements were on minimum fuel, requiring a swift recovery, and an aircraft on approach. The workload and pressure would have been high and this, in turn, can cause a reduction in capacity and affect their ability to process information. The lead QFI correctly identified in his report that he needed to be more directive with his verbal intervention and if this wasn't having the desired effect, should have taken control. There are also important lessons for other members in the formation, who in this situation could have requested a safer course of action; especially the element closest to the aircraft on approach. From the investigation carried out at RAF Valley, the lead QFI shared the lessons he identified by briefing other QFIs and sending an email.

When teaching in the air, be it civilian or military, intervention can be an incredibly fine balancing act. Too much intervention and the student will not learn from their mistakes, too little, as was the case in this Airprox, has the potential for a dangerous situation developing very quickly. This fine art generally comes with experience, but reports like this are invaluable in passing on these vital lessons to other instructors, junior and experienced alike.

Summary

An Airprox was reported when Hawk(A) and Hawk(B) flew into proximity whilst on approach to Valley at approximately 1400hrs on Tuesday 5th November 2019. Both pilots were operating under VFR in VMC, the Hawk(A) pilot in receipt of a Traffic Service from Valley App and the Hawk(B) pilot in receipt of a Traffic Service from Valley Talkdown.

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

[1] MAA RA 2307 paragraphs 1 and 2.
[2] MAA RA 2307 paragraph 14.

were more limited, sufficient engagement was achieved to enable a formal assessment to be agreed along with the following associated comments.

The Board first discussed the actions of Hawk(A) pilot. They heard from a military member that the formation was being led by a student; furthermore, one of the members of the formation had declared that he was approaching minimum fuel. This undoubtedly had a bearing on how the formation joined, with the student pilot setting up the formation to join the circuit on a tight pattern, no doubt pressured by the need to land swiftly. In turning the formation inbound, he had not taken into account the aircraft on radar approach, on which he had been given Traffic Information and, as a consequence, the wingman on the right of the formation had flown closer than desirable to it (**CF1**, **CF2**, **CF5**). Members discussed the role that the Instructor had to play in the incident. They accepted that there was a fine line between allowing a student to make a mistake and learn from it, and allowing an unsafe situation to develop, and noted that the Instructor himself said that, with hindsight, early intervention may have been appropriate (**CF3**). However, they also noted that the wingman in the formation, the aircraft closest to the Hawk on instrument approach, had been visual with it and could have spoken up if he had felt the situation to have been unsafe.

For his part, Hawk(B) pilot could have done very little about the situation as it unfolded. He had been given Traffic information by ATC and had been aware that the formation would pass by, however, it had been approaching from behind and he had not been able to see it until he looked in his mirrors. He had received a warning from his TCAS (**CF4**) and, when he looked in his mirror, he perceived that there was had been no risk of collision.

Turning to the role of ATC, the Approach controller had given Traffic Information to the Hawk formation 3 times, had received confirmation that they were visual, and had then ensured that the Talkdown controller knew about the traffic. The Talkdown controller had provided Traffic Information to the Hawk(B) pilot, but neither controller could have known that the formation would fly so close to the instrument approach traffic and the Board thought that they had both discharged their duties appropriately.

In determining the risk, the Board quickly agreed that the Hawk(A) formation had been visual with Hawk(B) and, although they passed by closer than desirable, there had been no risk of collision. Whilst the incident met all the criteria for reporting an Airprox and valuable lessons could be drawn from it, members assessed that normal safety standards had pertained; Risk Category E.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2019310		
CF	**Factor**	**Description**	**Amplification**
	Flight Elements		
	• Tactical Planning and Execution		
1	Human Factors	• Action Performed Incorrectly	Incorrect or ineffective execution
	• Situational Awareness of the Conflicting Aircraft and Action		
2	Human Factors	• Lack of Action	Pilot flew close enough to cause concern despite Situational Awareness
3	Human Factors	• Mentoring	Sub-Optimal
	• Electronic Warning System Operation and Compliance		
4	Contextual	• ACAS/TCAS TA	TCAS TA / CWS indication
	• See and Avoid		
5	Human Factors	• Perception of Visual Information	Pilot perceived there was no conflict

Degree of Risk: E.

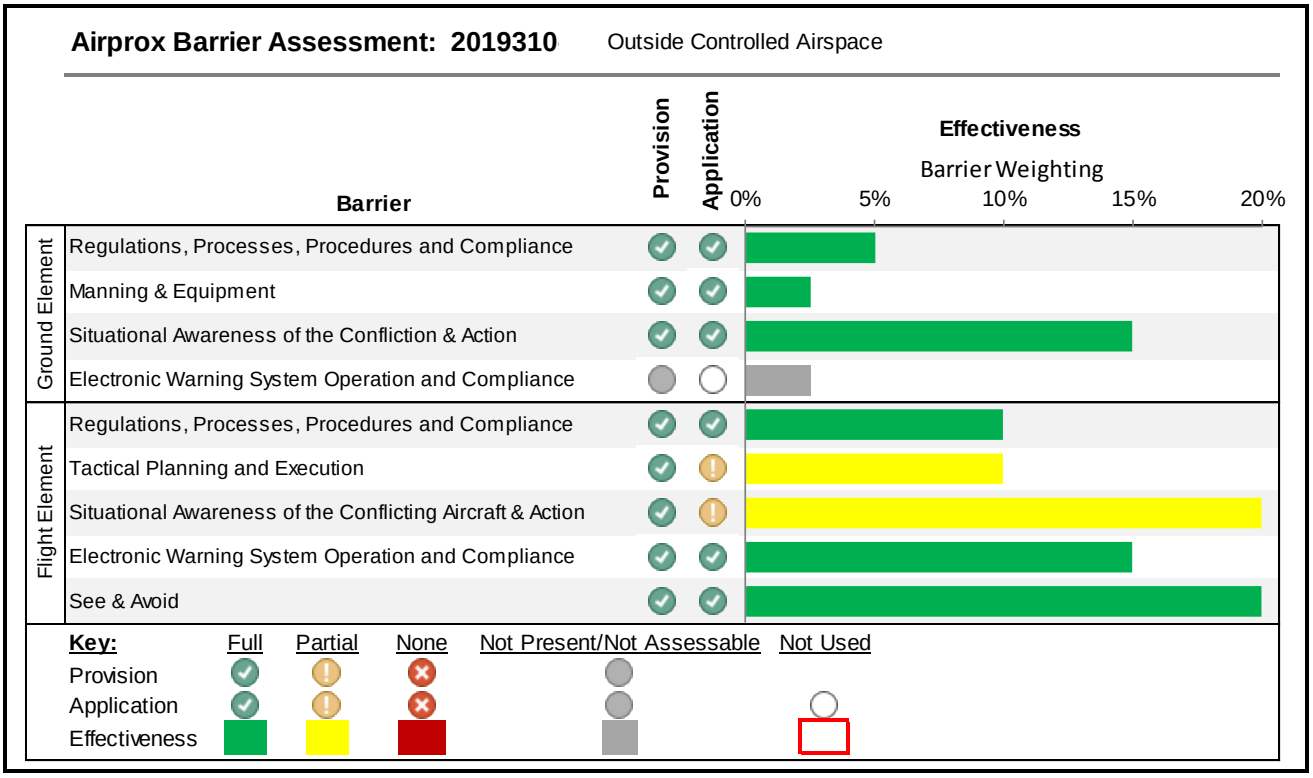
Safety Barrier Assessment[3]

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 Hawk(A) pilot planned to execute a run-and-break but, when it became apparent that there was instrument traffic, could have adapted the plan in order to deconflict from it.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **partially effective** because, although Hawk(A) pilot had Traffic Information on Hawk(B), the formation came closer than desirable to the instrument traffic.



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