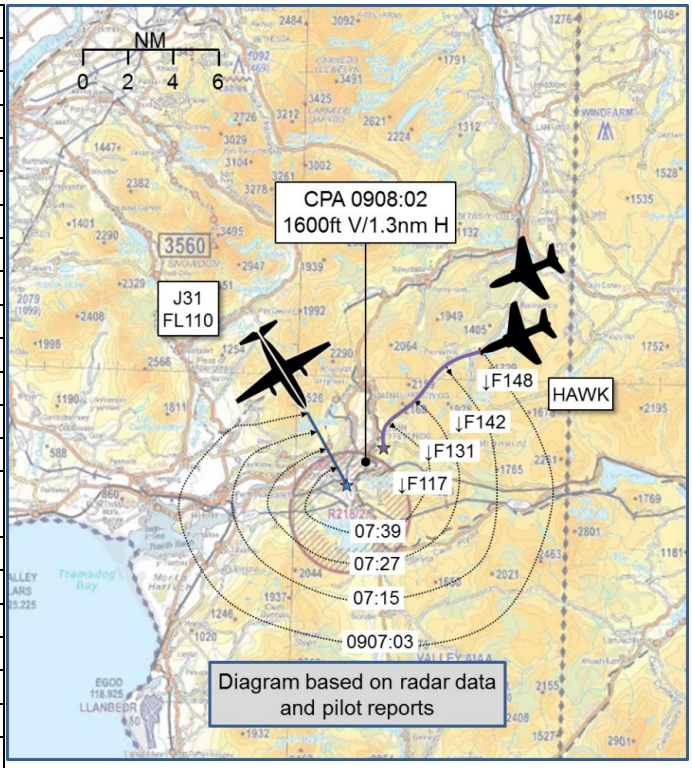
AIRPROX REPORT No 2015019

Date: 27 Feb 2015 Time: 0908Z Position: 5256N 00337W Location: SW of VATA D, NWMTA

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	HAWK T2	BAE J31
Operator	HQ Air (Trg)	CAT
Airspace	MTA	MTA
Class	G	G
Rules	VFR	IFR
Service	Traffic	Deconfliction
Provider	Swanwick (Mil)	Valley Deps
Altitude/FL	11300ft	FL110
ACAS/TAS	TCAS II	TCAS II
Alert	TA	RA
Transponder	A, C, S	A, C, S
Reported		
Colour	Black	White/Red
Lighting	HISL, Nav.	HISL, Anti collision, Nav.
Conditions	VMC	VMC
Visibility	20km	40km
Altitude/FL	11300ft	FL110
Altimeter	RPS (1011hPa)	QNH (1013hPa)
Speed	230kt	220kt
Separation		
Reported	300ft V/0.5nm H	NK
Recorded	1600ft V/1.3nm H	



THE HAWK PILOT reports operating as a pair conducting combat training in VATA D under VFR, in VMC in receipt of a Traffic Service. His TCAS was set to a 20nm range and in TA mode. He received an aural TCAS alert 2100ft below. Swanwick (Mil) then called with Traffic Information, but the transmission was broken. The fight was terminated and Traffic Information was requested again. By this time the traffic was 1 mile away about 300ft below. The student pilot saw the traffic and initiated a "hard pull" to start climbing.

He perceived the severity of the incident as 'Medium'.

THE BAE J31 PILOT reports flying from Valley to Cardiff under IFR, in VMC, in receipt of a Deconfliction Service. Whilst in the cruise at FL110, he received a TCAS TA followed by a TCAS RA – 'descend'. The PF descended 300ft until clear of conflict. The flight was then resumed as cleared. The conflicting aircraft was not seen.

He assessed the risk of collision as 'Medium'.

THE VALLEY LARS/DEPS CONTROLLER reports working the J31 after departure. After putting the Jetstream pilot on his own navigation, he initiated a handover to Western Radar. He did not initially coordinate with Swanwick (Mil) because the pair of Hawks were 10 miles to the east and at least 6000' above the Jetstream. However, during the handover to Western Radar it became apparent that the Hawks were tracking southwest and descending. He agreed a heading of 180° for the Jetstream with Western Radar but, because the pair of Hawks had descended rapidly, avoiding action was then given and the Jetstream pilot stated that he was descending on a TCAS RA. The Hawks were subsequently seen to climb away, and the Jetstream was transferred to Western Radar.

He perceived the severity of the incident as 'Low'.

THE VALLEY SUPERVISOR reports the controllers' workload as medium. He understood why coordination was not effected with Swanwick (Mil) due to the observed tracks of the aircraft involved. When the pair turned back and commenced a steep manoeuvre the controller attempted to resolve the confliction but the speed of convergence initiated a TCAS RA.

THE SWANWICK (MIL) CONTROLLER reports that he had just opened the West/South West sector. He was handed four aircraft general handling in the NWMTA, two of which were the pair of Hawks operating in the northern portion of the NWMTA in a 7000ft – 15000ft block. Two aircraft then free-called within two minutes. One of the Hawks reported a PLB active in the Snowdonia area. This was reported to D&D which had the effect of considerably increasing his workload. He noticed conflicting traffic to the Hawks at FL110 at a range of 3nm. He gave Traffic Information to the Hawks but got no response; he called again as the traffic was at 1nm, which was acknowledged, and the Hawks initiated a climb.

He perceived the severity of the incident as 'High'.

Factual Background

The weather at Valley was recorded as:

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METAR EGOV 270850Z 25014KT 9999 FEW016 05/01 Q1018 BLU NOSIG
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Analysis and Investigation

Military ATM

The transcript between RAF (U) Swanwick (Mil) and the pair of Hawks (Poison) is below:

From	To	Speech Transcription	Time
Poison	Controller	Just to let you know we are getting a PLB being activated in the Snowdonia area	09:05:21
Controller	Poison	Poison roger do you have a range and bearing from your present position	09:05:28
Poison	Controller	We don't have df I'm afraid we are only picking it up in the Valley VATA delta just to the east of Snowdonia	09:05:33
Controller	Poison	Poison traffic southwest 3 miles tracking southeast indicating flight level 110	09:07:20
Poison	Controller	Say again for Poison Swanwick	09:07:34
Controller	Poison	Poison traffic southeast 1 mile now tracking southeast indicating flight level 110	09:07:35
Poison	Controller	Poison visual Poison 2 climb	09:07:43
Poison	Controller	Poison visual and no confliction anymore	09:07:50
Poison	Controller	Swanwick Poison just confirm the height of that traffic that's now in our left 9 o clock please	09:08:30
Controller	Poison	Poison now indicating flight level 110	09:08:35

Portions of the transcript between RAF Valley, the J31 and Western Radar are below (UHF denotes where Deps inadvertently transmitted to the Jetstream on the UHF):

From	To	Speech	Time
Deps	Jetstream	[Jetstream c/s], what heading do you require?	09:05:25
Jetstream	Deps	155 degrees, will take us straight TALGA, [Jetstream c/s]	09:05:33
Deps	Jetstream	[Jetstream c/s], roger, turn right heading 155	09:05:40
Jetstream	Deps	Right 155, [Jetstream c/s]	09:05:43
Deps	Western	Valley, unprenoted handover [Jetstream c/s]	09:06:34
Western	Deps	Pass your message	09:06:35
Deps	Western	Portmadoc, North East, 2 … 5 miles, heading 155, squawking 3731	09:06:36
Western	Deps	Contact, Squawk 3771	09:06:41
Deps	Jetstream	[Jetstream c/s], Squawk 3771	09:06:45
Jetstream	Deps	3771, [Jetstream c/s]	09:06:47
Deps	Western	Standby	09:06:48
Deps	Western	Climbing FL110, Deconfliction service	09:07:04
Western	Deps	FL110, [Jetstream c/s] is identified, for Deconfliction service, contact Western Radar 132.3	09:07:07
Deps	Western	132.3	09:07:12
Western	Deps	That's correct, have you co-ordinated at all with (unreadable) aircraft just to the north east of him by 5 miles	09:07:14
Deps	Western	No, I haven't yet … I was going to turn him onto south now, if you want	09:07:20
Western	Deps	Yeah if you can do	09:07:23
Deps	Western	Yeah	09:07:24
Western	Deps	Grand that's great	09:07:25
Deps	Western	Put him on 180, thank you, Valley	09:07:26
Deps **UHF**	Jetstream	[Jetstream c/s], turn right heading 180 degrees	09:07:30
Deps **UHF**	Jetstream	[Jetstream c/s], avoiding action turn right heading 180 degrees, traffic was left 9 o'clock, 2 miles, manoeuvring	09:07:37
Jetstream	Deps	[Jetstream c/s], descending to TCAS warning	09:07:44
Deps **UHF**	Jetstream	[Jetstream c/s]	09:07:48
Jetstream	Deps	[Jetstream c/s], we're level and heading … FL110	09:08:21
Deps **UHF**	Jetstream	[Jetstream c/s], roger	09:08:26
Deps **UHF**	Jetstream	[Jetstream c/s], Contact Western radar 132.3	09:08:33
Jetstream	Deps	[Jetstream c/s] … radio check	09:08:37
Deps	Jetstream	[Jetstream c/s] … roger, contact Western Radar 132.3	09:08:40
Jetstream	Deps	Western 132.3	09:08:46

At 0900:06, the Jetstream was issued with own navigation and, following an avoiding action, the Valley Departures controller had requested the new heading from the Jetstream. At 0905:40 (Figure 1), the Valley Departures controller instructed the Jetstream to turn right onto the requested heading of 155°.

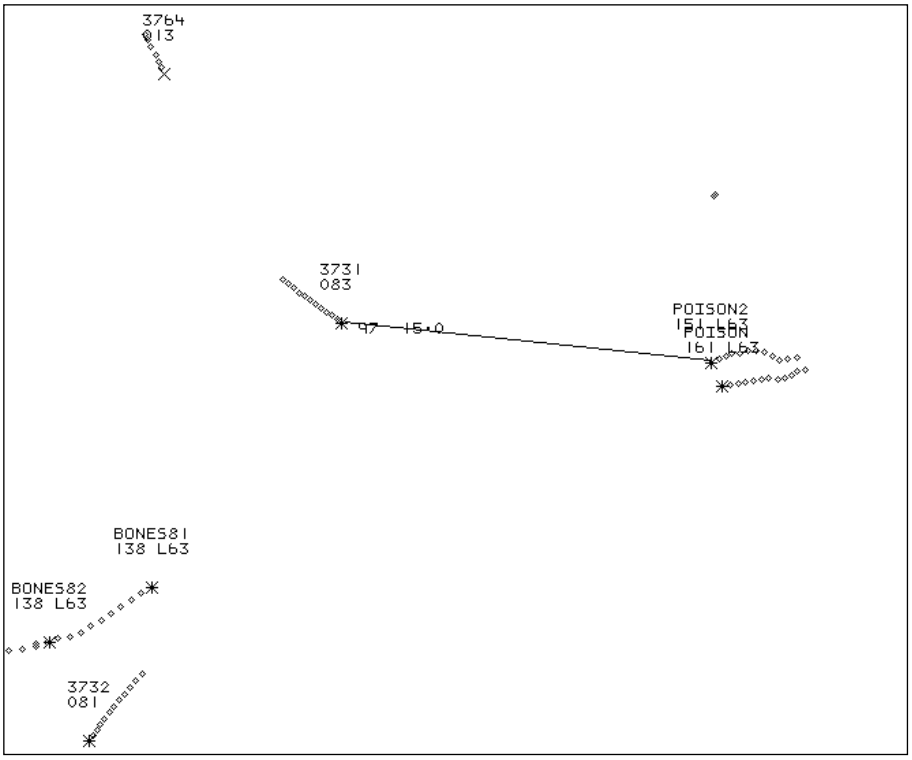

Figure 1: Right turn heading 155° passed at 0905:40
(Jetstream 3731/3771; Poison 1/2 3331/3332).

At 0907:07 (Figure 2), Western Radar identified the Jetstream and passed their frequency for the handover.

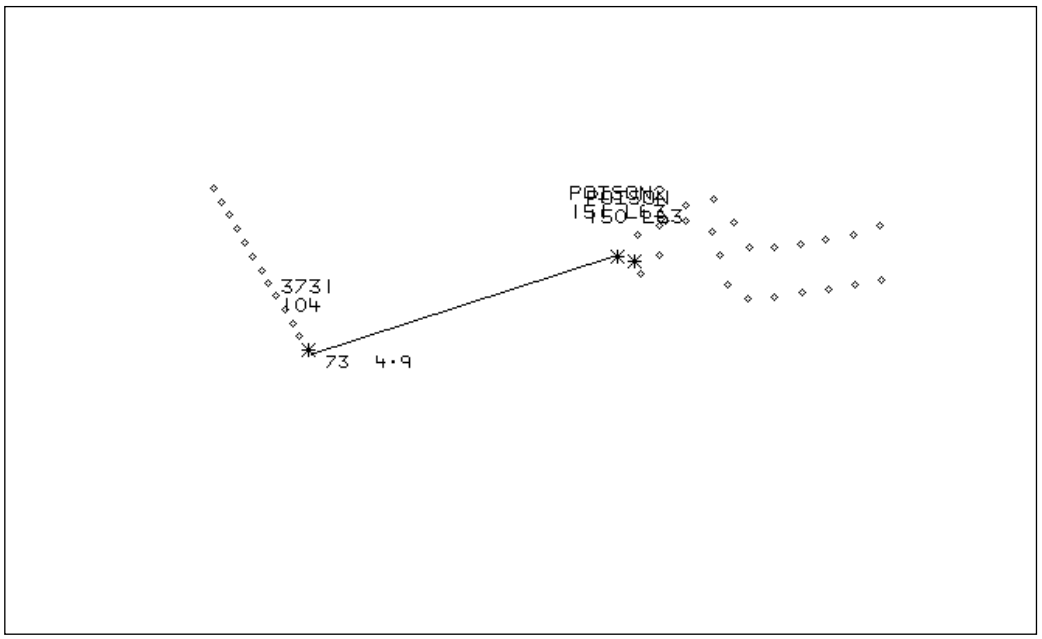

Figure 2: Geometry at handover at 0907:07.

At 0907:20, Swanwick passed Traffic Information as, "*Poison traffic southwest 3 miles tracking southeast indicating flight level 110.*" The initial transmission had to be repeated. Valley Departures and Western Radar agreed a turn onto 180° for the Jetstream.

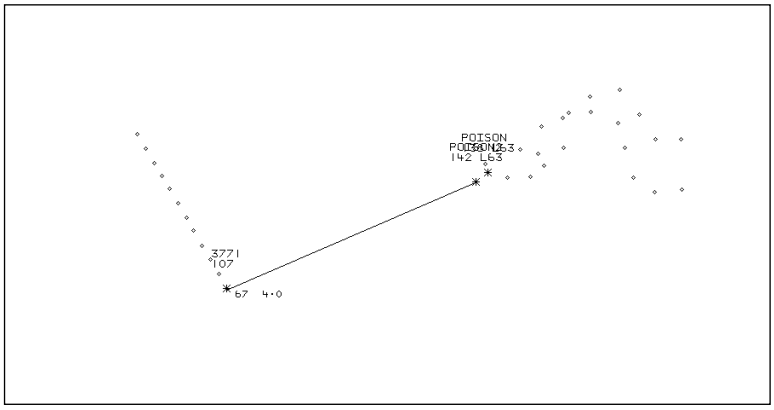

Figure 3: Geometry at 0907:20.

At 0907:35 (Figure 4), Swanwick repeated the Traffic Information as, "*Poison traffic southeast 1 mile now tracking southeast indicating flight level 110."* The Valley Departures controller passed Traffic Information as, "*avoiding action turn right heading 180 degrees, traffic was left 9 o'clock, 2 miles, manoeuvring*." The transmission was delivered on the UHF frequency and was not received by the Jetstream.

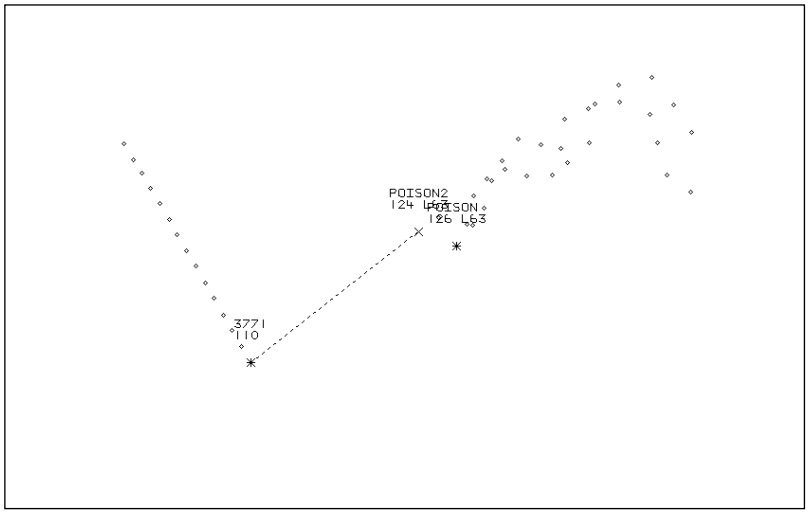

Figure 4: Geometry at Traffic Information at 0907:35.

At 0907:43 (Figure 5), the Jetstream reported descending on TCAS warning and the Hawk lead called visual, instructing the number two Hawk to climb.

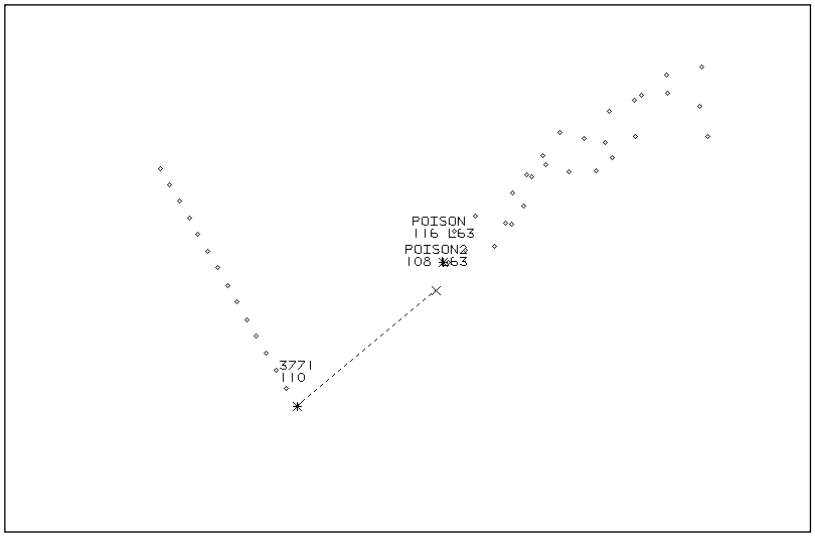

Figure 5: Geometry at 0907:43.

The CPA was estimated with Poison 1 at 0908:02 with 1.3nm horizontal separation and 1600ft vertically.

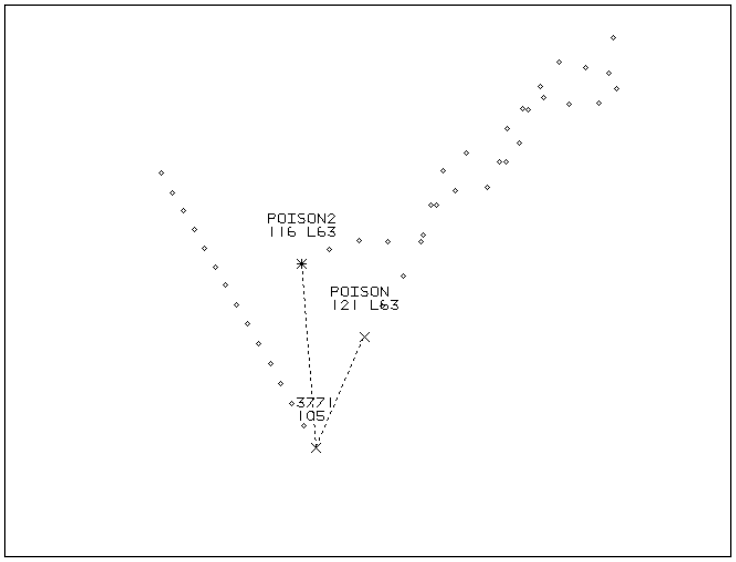

Figure 6: Geometry at 0908:00.

The Swanwick controller described a high workload with six aircraft on frequency. The controller had to liaise with the Distress & Diversion Cell following the PLB report in the Snowdonia area and was passing Traffic Information to other tracks under a service. The first set of Traffic Information to Poison was at 3nm and, because Poison were conducting high-energy air combat training, the crew asked for repeat and the Jetstream was called at 1nm, as per Figure 4. Typically, Traffic Information would be passed before 1nm but, as per CAP774, Chapter 3.5, high controller workload may reduce the ability of the controller to pass information.

Poison had situational awareness of the other aircraft through TCAS and was in the middle of air combat manoeuvres when the 3nm Traffic Information was called; the update was provided again at 1nm. From the cockpit replay, the lead terminated the fight, requested a repeat of the Traffic Information, visually acquired the aircraft, climbed and gave instructions to the number two aircraft to climb. The Hawk cockpit, during a training sortie, would have been a high workload environment given the type of manoeuvring. Although TCAS failed temporarily, the Hawk report indicates that awareness of a TCAS return was at 18nm and further aural alerts of two contacts within the 2nm range.

Valley departures had the task of providing a Deconflcition Service to the Jetstream, through the busy airspace of multiple fast jets in the North Wales Military Training Airspace, Valley Aerial Tactics Areas and over the Llyn Peninsular. Avoiding action had been given prior to the Airprox on another track, and the controller reported being in contact with Poison and assessing the height separation as not affecting the Jetstream. As the handover to Western Radar was initiated, the Hawks may not have been a factor but their south-westerly track and rapid descent brought them into confliction. During the handover at 0907:07, the tracks continued to merge and both controllers agreed on a southerly heading for avoiding action. The Valley Departures controller passed the avoiding action but had transmitted on the UHF frequency; the Jetstream was on the VHF and the controller had a mix of civil and military traffic. The controller did not have the ability to cross-couple frequencies and controllers felt discouraged from transmitting on UHF/VHF at the same time. As a result, the controller switched between UHF/VHF depending upon transmissions to civil/military aircraft. On this occasion, the error was made as the controller transmitted on the wrong frequency.

The Jetstream crew were aware of the closing Hawks from TCAS and, at 0907:43 (Figure 5); the crew took a TCAS warning to descend. By CPA, the Jetstream was indicating FL105, a descent of 500ft. Concerned by the lack of RT, the pilot initiated a radio check with Valley.

The normal barriers to an Airprox in Class G would be ACAS, see-and-avoid and a radar-derived ATS. The Jetstream had flight-planned to join CAS at ROLEX but then adopted to take a more direct route through Class G airspace. Both aircraft had TCAS, and this did provide a degree of situational awareness, although the Hawks air combat took them south-westerly on a converging path with the Jetstream. See-and-avoid would prove difficult for both crews; the Jetstream had the jets high in the 8 o'clock position and the Hawks were constantly changing heading and levels in a high workload environment. The types of Air Traffic Services chosen were appropriate for the conditions, and controller workload meant that the Hawks got Traffic Information from Swanwick at 1nm separation. The Valley controller had transmitted on the wrong frequency which resulted in the Jetstream not receiving the avoiding action. The controller action was likely to have been a selection error in execution and it highlights the issues with constantly (de)selecting frequencies depending upon the type of aircraft under control.

By choosing to route through busy Class G airspace, the Jetstream was always liable to encounter fast-moving aircraft conducting unpredictable manoeuvres. Such manoeuvring in the North Wales area does present difficulties in providing lateral/vertical separation to aircraft under a Deconfliction Service. The CAP774, Ch 4.12 acknowledges that deconfliction advice is subject to 'unknown aircraft or high-energy manoeuvres'. It is recognised that controllers cannot guarantee deconfliction minima but should apply all reasonable endeavours.

UKAB Secretariat

Both pilots shared an equal responsibility to avoid a collision and for not flying into such proximity as to create a danger of collision.[1] The incident geometry is considered as converging, the Hawk pilot was required to give way to the Jetstream, which he did.[2]

Comments

HQ Air Command

The controller of the Jetstream elected not to attempt coordination with the controller of the Hawks as, at the time, there was ample displacement between the aircraft. However, this also denied the Jetstream's controller Situational Awareness on the sortie profile of the Hawks. It is impractical to coordinate all traffic in and around the NWMTA but controllers should always be alert to the fact that Hawks can rapidly change heading and level so an idea of the intentions of the Hawk pair would have aided the decision making of the Valley controller. When it became apparent that Deconfliction Service minima would not be achieved, avoiding action was given to the Jetstream but on the wrong frequency; it is not uncommon for Valley controllers to work independent frequencies and it is also not the first time that this has led to an instruction being broadcast on the wrong frequency. That said, the Jetstream pilot had filed an IFR flight plan for a routing in CAS and elected to re-route through the Class G airspace so should have expected to encounter other, VFR, traffic. Ultimately, TCAS on both aircraft detected the conflict and gave an RA to the Jetstream pilot, which not only demonstrates the utility of TCAS II to a non-manoeuvring aircraft but also the limitations of the system when fitted to an aircraft that has a rapidly changing flight vector.

Summary

An Airprox was reported when a Jetstream and a Hawk flew into proximity at 0908 on Friday 27th February. The Jetstream was receiving a Deconfliction Service from RAF Valley operating IFR in VMC whilst transiting the Valley Aerial Tactics Area. The Hawk was receiving a Traffic Service from Swanwick (Mil) operating VFR in VMC whilst performing air combat manoevres.

[1] SERA 3205 (Proximity)
[2] SERA 3210 (Converging)

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.

The Board initially considered the actions of the pilots. They noted that the Hawk pilot had been involved in reporting PLB activation some two minutes prior to the incident, and had also been engaged in air-combat at the time of the initial Traffic Information. All of this had conspired to cause him to miss the traffic call at 3nm and then ask for a repeat. The Board noted that by the time he had received the repeated Traffic Information the Jetstream was at 1nm, and all that he could do was to pull up immediately to avoid it on sighting it visually at that point. Turning to the Jetstream pilot, the Board noted that the pilot had elected to route directly through Class G airspace rather than his flight-planned route through CAS. ATC members informed the Board that it had become common practice for this operator's crews to enquire about traffic levels within the NWMTA as part of their pre-flight briefing, and then to fly direct under a Deconfliction Service if traffic levels were judged by them to be low enough. They opined that the problem with this was that, at the time of asking, traffic levels may well be low but the dynamic nature of operations in the NWMTA meant that this often was not the case after they had got airborne. As a result, it was often practically impossible to achieve the requirements of a Deconfliction Service as they routed through this airspace. Given this practical reality, the Board wondered how robust the Jetstream risk assessment process was regarding flight in Class G airspace.

Turning to the Swanwick (Mil) controller, it was evident that he was busy, and the subsequent reporting action regarding the PLB activation would have greatly increased his workload. The Board felt that it was unfortunate that his Traffic Information was not received by the Hawk when the aircraft were 3nm apart because this would probably have avoided the TCAS event. Notwithstanding, giving Traffic Information to fast-jet manoeuvring traffic at just 3nm from another aircraft was already a late call, and the Board wondered whether there had been any opportunity for better coordination between the Valley controller and the Swanwick (Mil) controller such that the Swanwick (Mil) controller could then have passed more generic information on the Jetstream to the Hawks sooner after its departure from Valley as they track-progressed towards it.

Looking at the actions of the Valley controller; the Board noted that he had described the situation as 'busy', and had already given avoiding action to the Jetstream shortly after departure; the Board were intrigued as to why he did not limit the Deconfliction Service, or even downgrade it to a Traffic Service. The Board considered that his not limiting the Deconfliction Service was a contributory factor to the incident because the Jetstream crew were probably lulled into a false sense of security as a result, and may even have chosen to re-route into CAS had they been told that one was not available.

The Board then discussed the fact that the critical avoiding action call to the Jetstream had erroneously been made on UHF rather than VHF, which was therefore not received by the Jetstream pilot. The Board were informed by military ATC members that the practice of switching between VHF and UHF is commonplace at military ATC units, but that this practice is discouraged because transmitting simultaneously on both is perfectly acceptable; the Board wondered whether this should be reinforced amongst military ATC controllers in order to avoid situations like this where critical information was not received. The Board agreed that the transmission of avoiding action on UHF rather than VHF was a contributory factor to the incident.

The Board then discussed the handover of the Jetstream from Valley to Western Radar. Some ATC members opined that the Valley controller should have identified the Hawk pair to the Western Radar controller as part of the handover, rather than the latter having to point them out; that the Valley controller did not do so raised questions in their mind as to his awareness of the Hawks in relation to the Jetstream. Moreover, it was evident to them that the situation was beginning to deteriorate quickly during the handover (and even before); they opined that, rather than persist with the handover, the Valley controller should have cut the conversation short at an earlier stage to attend to

the problem at hand. In their view, this would have helped his Situational Awareness, and might have prevented the UHF/VHF confusion which probably resulted from hurried transmissions.

This incident generated much debate within the Board about the dialogue that should exist between Western Radar and Valley regarding the feasibility of provision of a Deconfliction Service in the NWMTA. The nub of the debate centred on the requirement to make an early call as to whether a Deconfliction Service was achievable, and informs the Jetstream crews accordingly since it seemed that their operating company's Standard Operating Procedures relied on a potentially false premise that one could be achieved even during periods of intense aerial activity.

In the end, when considering the cause and risk, the Board agreed that the Airprox had resulted from a conflict in Class G see-and-avoid airspace where, ultimately, the pilots were responsible for collision avoidance. Notwithstanding, the fact that the Valley controller had not achieved Deconfliction Minima whilst providing a Deconfliction Service was considered to be a further contributory factor. All that being said, the TCAS RA manoeuvre executed by the Jetstream pilot, together with the Hawk's avoiding-action climb, meant that both pilots had taken timely and effective action to prevent a collision, and this incident was therefore assessed as Category C.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Contributory Factor(s): 1. The Valley controller did not achieve Deconfliction minima.
2. The Valley controller transmitted avoiding action on UHF rather than VHF
3. The Valley controller did not limit the Deconfliction Service.

Degree of Risk: C.