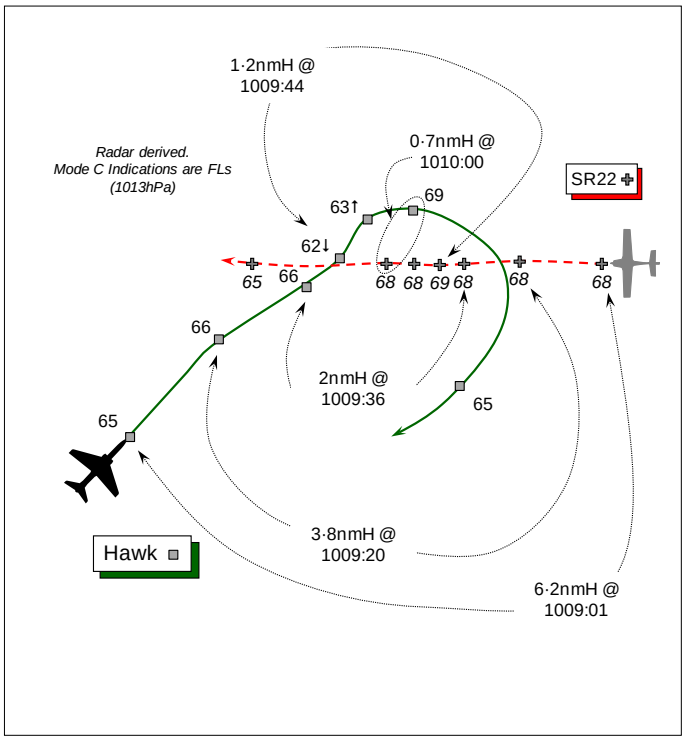
AIRPROX REPORT No 2012147

Date/Time:	14 Sep 2012 1010Z	
Position:	5306N 00442W (11nm SW of Valley)	
Airspace:	Valley ATA	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Hawk T Mk2	Cirrus SR22
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	FL65	6600ft RPS
Weather:	VMC CLBC	VMC CLBL
Visibility:	10km	>10km
Reported Separation:		
	2nm V/200ft H	NK
Recorded Separation:		
	100ftV @ 0·7nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BAe HAWK T MK2 PILOT, a QFI, reports that his student was the PF whilst established in the published TACAN hold for Valley at FL65. Flying in VMC under IFR they were in receipt of a TS from Valley DIRECTOR (DIR) on 363·65MHz; the allocated code of A3741 was selected with Modes C and S on. TCAS is fitted.

At 19 DME on the inbound leg, tracking 040° at 230kt, DIR called traffic to them 4nm NE of their position tracking W some 300ft above his ac. This traffic – the SR22 - appeared on TCAS 4nm away (TA Mode selected) and since his student was flying 'heads-in' (simulated instrument flying), he concentrated on looking out for the traffic. DIR updated the TI as 300ft above and added 'appears descending'. At this point the TCAS contact suddenly switched and was displayed to the SW of their position – with some 180° of bearing error and a known issue with the Hawk T2 TCAS system - before returning to its correct position. TCAS (still in TA Mode) then enunciated 'Traffic Traffic'. As he could not see the other ac and his student was about to turn R into the holding pattern and thus towards the SR22, he took control from his student and initiated a descending LH turn away from the confliction. It was at this point that they saw the white civilian SR22 in his 2:30 position some 2-300ft above his ac flying towards them straight though their intended track in the TACAN hold. The SR22 did not manoeuvre and passed 200ft above and 2nm away at the closest point with a 'low' Risk of collision.

Thereafter, they returned to the TACAN hold and continued the sortie without further incident. The ac is coloured black; the white HISLs and nose conspicuity light were on.

THE CIRRUS SR22 PILOT reports he was on an IFR pleasure flight from Sleap to Dublin, routeing via Caernarfon and LIPGO on the FIR boundary, whilst in receipt of a TS from Valley LARS on 125.225MHz. The allocated squawk was selected with Modes C and S on; TAS is fitted.

Valley RADAR advised him of the presence of another ac that correlated with a contact on his ac's TAS. The other ac – the Hawk - appeared to him to be performing manoeuvres and not maintaining a constant heading. At this point he was flying at 7000ft but he decided to descend to 6000ft and whilst descending he observed the Hawk was closing in, when he received a second call from RADAR advising him again of the Hawk's position, which again concurred with his TAS. Heading

270° at 170kt, he elected to stop his descent at 6600ft, in VMC clear between layers, to allow the Hawk 'more room' and advised the controller of that. When the Hawk became visible to him it was in his 2 o'clock a range of about 1nm. The Hawk then circled about his ac in a clockwise direction; he last saw it in his 5 o'clock. The SR22 pilot estimated the minimum horizontal separation as 2km on the diagram included within his report. Assessing the Risk as 'none', he knew where the Hawk was at all times and saw no reason to take any evasive action.

The ac is coloured silver; the HISL and landing light were on.

THE VALLEY DIRECTOR (DIR) UNDER TRAINING reports that two ac were on frequency conducting TACAN Approaches to RW31RHC. The preceding ac had left the TACAN hold descending inbound at which point he instructed the subject Hawk crew to descend to FL65 and report established in the hold. Observing an ac squawking A3720 – the SR22 - indicating FL72 Mode C some 8nm NE of the Hawk, the SR22's track appeared to be heading towards Point A of the TACAN Hold. He passed TI on the conflicting SR22 to the Hawk crew, who were not visual with the other ac. TI on the conflicting SR22 was passed a further 2 times, advising the Hawk crew that the other ac appeared to have commenced a descent. He called the LARS controller - RADAR - via landline to request TI and was advised that the A3720 squawk had levelled at an altitude of 6600ft RPS and the ac type was a Cessna 22 (sic). Updating the TI to the Hawk crew a further 2 times, the Hawk pilot elected to break-off from the TACAN procedure. Subsequently, the Hawk crew called visual with the SR22, asked if the SR22 pilot was working Valley ATC and advising that an Airprox would be filed.

THE VALLEY DIRECTOR INSTRUCTOR CONTROLLER reports that he observed all of the actions undertaken by the controller under training and believed that the obligations of a TS had been met; the controller under training passed and continuously updated the TI in a timely fashion.

THE VALLEY LARS CONTROLLER (RADAR) [who was screening a trainee] reports he had been controlling a very slow moving civilian ac – the SR22 - for about 20 min under a TS en-route westbound to Weston Airport Dublin at 7000ft HOLYHEAD RPS (1004hPa). As the SR22 approached a position about 10nm S of Valley, an ac left the TACAN hold on a path that would conflict with the SR22 and was 'called appropriately'. This track then descended well below the SR22 well before it came within 3nm. As the SR22 continued westward, he could see that in approximately 20-25 miles it would fly into confliction with another ac established in the TACAN hold – the subject Hawk - level at FL65. Around this time the SR22 pilot informed him that he was going to begin a descent to 4000ft RPS. Although this would descend it through the level of the Hawk in the TACAN hold, he felt that the range from this track and from the speed that he had earlier seen the SR22 descend, this would position the SR22 comfortably below the Hawk before any potential confliction arose. DIR called on the landline requesting TI on the SR22 and he advised of the SR22 pilot's intended descent. Without a request for any form of co-ordination from DIR he took it that DIR, or the crew of the Hawk, were happy with the descent and probably on a TS themselves. He called the Hawk to the SR22 pilot at a range of 10nm, then again at 7 or 8nm, as it was not descending at all quick enough to take it below the Hawk. In response, the SR22 pilot advised that he would level off at 6600ft RPS (1004hPa) until it was safely clear of the Hawk. Whilst this would not provide 500ft of vertical separation it meant that it was no longer descending through the Hawk's level and would remain over 300ft above it within 5nm range. As the flight was under a TS, he did not give any avoiding action. He called DIR back on the landline and passed an update that the SR22 was no longer descending and had levelled off. Once the SR22 was around 3nm clear of the Hawk, the SR22 pilot began descending of his own accord without advising that he was clear of the traffic. Upon checking his intentions, the SR22 pilot replied that he was descending to 4000ft RPS, but at this point the Hawk was now clear of the SR22.

BM SAFETY POLICY & ASSURANCE reports that this Airprox occurred between the Hawk operating IFR within the Valley TACAN hold in receipt of a TS from DIR, and an SR22 operating IFR in receipt of a TS from Valley RADAR.

DIR was manned by a trainee and screen controller; they reported their workload and task complexity as low and were providing ATSs to 2 Hawk ac, both conducting TACAN approaches to RW31RH. Disappointingly, the RADAR controller has not made an assessment of their workload and task complexity and was not available for comment at the time that this investigation was conducted. However, analysis of RADAR's RT transcript seems to show that the SR22 was the only ac in receipt of an ATS. No input was provided from the ATC SUPERVISOR. Moreover, this ATSU did not conduct an investigation of this Airprox in accordance with MAA RA 1410(1).

The incident sequence commenced at 1007:45, as DIR provided TI to the Hawk crew on the SR22 stating, "*traffic north-east 8 miles westbound indicating 1200 feet above*", which was acknowledged. The SR22 was 10.1nm NE of the Hawk, tracking W'ly, indicating 7200ft Mode C (1013hPa); the SR22 was flying at 7000ft on Holyhead RPS (1004hPa) – broadly 270ft difference between the RPS and the 1013.2hPa radar Mode C datum). The Hawk was flying level at FL65 within the TACAN hold (Figure 1 refers).

At 1007:51, the SR22 pilot advised RADAR that they were "*descending to 4000 feet*", which was acknowledged; 10.1nm lateral separation existed between the Hawk and the SR22 at this point. The RADAR screen controller stated in his report that, given the lateral separation that existed between the SR22 and the Hawk and the expected ROD of the SR22, based on a descent witnessed prior to the incident sequence, the SR22 would be 'comfortably below the TACAN traffic before the potential confliction arose'. Furthermore, RADAR stated that they conducted landline liaison with DIR over the SR22's transit at around this time and that as DIR had not requested co-ordination, they assumed that DIR was 'happy' with the SR22's descent and that the Hawk was also under a TS. However, this liaison call is not recorded on the tape transcript and is not referred to by DIR. It may be that the liaison was conducted 'off-line' and thus not recorded, or it may be that RADAR was mistaken and that they had confused this liaison with that conducted later in the incident sequence; a common human error in 'eye witness' reporting. Unfortunately, it has not proved possible to confirm either of these hypotheses.

At 1008:00, RADAR passed accurate TI to the SR22 on the Hawk, advising the pilot of, "*traffic left 10 o'clock 10 miles crossing left to right Flight Level 6-5*", which was acknowledged. At that point, the SR22 had not commenced a descent, which becomes apparent on the radar replay at 1008:21, when it is shown 9.1nm NE of the Hawk.

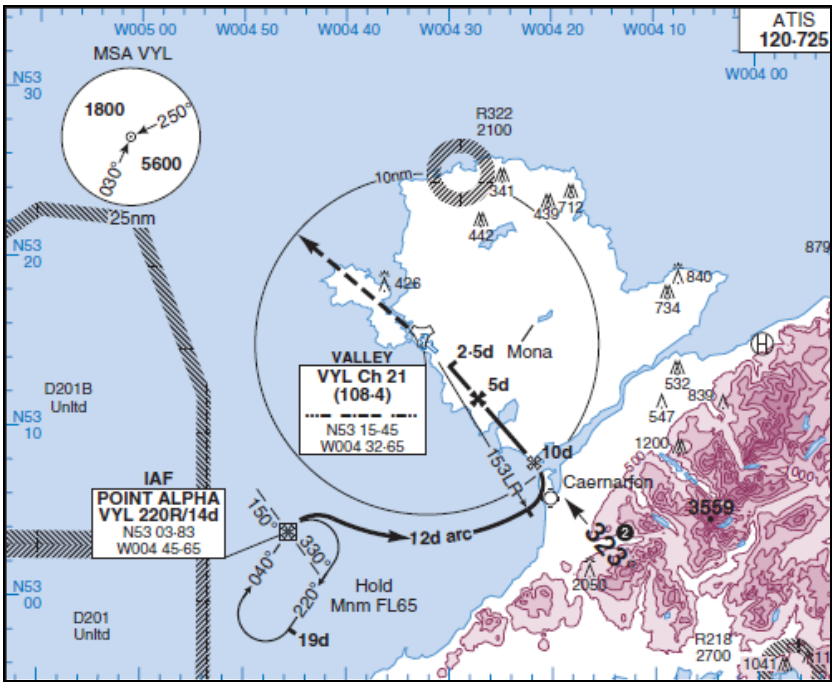


Figure 1: TACAN Procedure RW31RH at Valley.

At 1008:41, RADAR accurately updated the TI on the Hawk to the SR22 advising them that the, "*previously reported traffic now left 11 o'clock 7 miles crossing left to right Flight Level 6-5*." The SR22 pilot initially acknowledged the TI then, at 1008:59, advised RADAR that they were, "*maintaining 6600 feet till clear of that traffic*", which was acknowledged by the controller. At that point, the SR22 was 6.3nm ENE of the Hawk indicating 6900ft (1013hPa) - 6630ft RPS - tracking W'ly; the Hawk was turning through NNE, onto a QDM of 040° in accordance with the TACAN procedure. RADAR suggests in their report that the updated TI was prompted by the slow ROD of the SR22 which 'was not descending at all quick enough to take it below' the Hawk. Moreover, the RADAR controller states that whilst they were conscious that 6600ft RPS would not provide 500ft separation against the Hawk, they were content that the risk of collision had been averted as the SR22 would no longer be descending through the Hawk's level. RADAR's report also suggests that they were aware that, as the SR22 was in receipt of a TS, they were not required to achieve planned deconfliction minima.

At 1008:53, DIR updated the TI on the SR22 to the Hawk crew stating that, "*previously reported traffic now north-east 4 miles* [radar replay shows 6.6nm] *appears to be descending 300 feet above now this time*", which was acknowledged. At 1009:19, DIR provided a further update on the TI to the Hawk, advising the pilot that the, "*traffic now east abeam 3 miles, now...100 feet above this time*." The SR22 was 4.3nm ENE of the Hawk, indicating FL68 (about 6530ft RPS); the Hawk was indicating FL66 [and just about to turn R onto the outbound QDM of 220°]. Immediately after updating the TI, DIR contacted RADAR on the landline and requested, "*traffic information, Point ALPHA, north-east, 3 miles squawking 3-7-2-0* [the SR22]." RADAR replied that the SR22 was, "*maintaining 6600 feet, Valley Q*[garbled]." DIR immediately (1009:26) provided a further update on the TI to the Hawk crew, advising them, "*that Cessna aircraft* [it has not been possible to determine why DIR believed the SR22 to be a Cessna] *now east abeam 2 miles indicating 3 now 400 feet above*." Towards the end of this transmission at 1009:36, the Hawk indicates FL66; the SR22 is 2nm ENE indicating FL68. At 1009:40, the Hawk QFI advised DIR that they were, "*abandoning the hold, visual with that traffic*." It is evident on the radar replay that, just after this transmission is made, the Hawk has turned L and is next shown descending through FL62; the SR22 is 1.2nm ENE indicating FL69.

The CPA occurred at 1009:53, as the Hawk, indicating FL60, passed 0.6nm NW of the SR22 that was indicating 6900ft. [UKAB Note: The radar recording available to the UKAB only shows the Hawk descending to FL62, with min H occurring at 1010:00, as the Hawk, indicating FL69, flew into the SR22's 4 o'clock at a range of 0·7nm, the latter indicating FL68.] The SR22 pilot reported that he first sighted the Hawk in their 2 o'clock, which mirrors the geometry at the time of the CPA. The Hawk pilot reported sighting the SR22 shortly after initiating the descending L turn at about 1009:40.

CAP 774 Chapter 3 Para 6 states that:

> 'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller. If after receiving traffic information, a pilot requires deconfliction advice, an upgrade to Deconfliction Service shall be requested. The controller shall make all reasonable endeavours to accommodate this request as soon as practicable and provide deconfliction advice at the earliest opportunity.
>
> > *When providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced by the instructions passed. However, the controller is not required to achieve defined deconfliction minima.*

Notwithstanding the extract from CAP774 and cognisant that both DIR and RADAR maintained a flow of timely and accurate TI, BM SPA contends that as the Hawk crew was conducting an IFR procedure, both controllers had an opportunity to exhibit more positive control, at an earlier phase of the incident, in line with both 'good practice' and their 'Duty of Care'. Whilst RADAR did not knowingly introduce a risk of collision by permitting the SR22's descent, given that they were becoming concerned over the SR22's slow ROD, 'good practice' would have been an intermediate

level-off instruction or to have requested the SR22 pilot to expedite the descent. Moreover, analysis of the DIR RT transcript proved that an earlier opportunity existed for them to contact RADAR to determine the SR22 pilot's intentions and, potentially, to agree a course of action to de-conflict the flight paths of the respective ac. That said, the pilots of both the SR22 and the Hawk were operating in Class G airspace and were in receipt of timely and accurate TI to enable them to discharge their responsibilities to 'see and avoid' each other's ac. It is noteworthy that the Hawk crew maintained the hold until visually acquiring the SR22 relatively late in the incident sequence. The risk of collision was broken by the SR22 pilot's decision to level-off at 6600ft RPS, with the lateral confliction broken by the Hawk QFI's descending L turn.

During this investigation it was noted that the advisory notes contained within the Terminal Approach Plates (TAPs) for RAF Valley still make reference to the fact that a 'Radar Advisory Service' is not available at certain phases of an IFR approach. SATCO Valley has stated that AIDU have been requested to make the necessary amendments; however, AIDU have stated that due to manpower shortages, they will not amend the Valley TAPs until the PANSOPS charts have been finalised.

HQ AIR (TRG) comments that everyone involved in this incident complied with their obligations; to pass TI on the part of the controllers and to take avoiding action on the part of the crews. Echoing BM SPA's comments, it is disappointing that more informative TI, or a degree of positive controlling, was not provided. The SR22 pilot was understandably not aware of the location of the TACAN hold and the intentions of the Hawk crew, perceiving them to be manoeuvring. Had ATC advise him that the Hawk was in the hold and would be descending at some point, possibly suggesting a clear altitude, the SR22 pilot may have been able to plan to remain clear, as was clearly his intent. That said, a DS might have been more appropriate in this instance, and his TAS should have provided a reliable altitude indication. The Hawk T2 operation in TA mode was in compliance with 22 Gp Orders, which do not specify either TA or RA mode in this situation, although there is a good argument for RA mode. HQ Air note that there are currently no Regulations published regarding military operation of ACAS, other than ATM aspects.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Airprox occurred in Class G airspace where the pilots in both ac shared an equal responsibility to see and avoid other traffic. Both pilots had agreed a TS with their respective controllers and both received timely TI. Both ac were equipped with either a TCAS or TAS. The Hawk crew were aware of the approaching SR22 from TI and their TCAS and were required to give way to it on their R. However they stood on their course in the TACAN hold until their TCAS generated a TA. The Board understood that the Hawk instructor was trying to achieve a training objective for his student, but noted that standing on while attempting to gain visual contact is frequently a factor in Airprox incidents. A controller Member suggested that if the Hawk crew had been operating under a DS, DIR might have been prompted to coordinate the descent of the SR22 with RADAR thereby allowing the the Hawk to maintain the TACAN hold. As it was the Hawk instructor took control and turned L out of the hold. As he did so he spotted the SR22 at about the same time as they crossed ahead of it by 1·2nm and 600ft below. The Board considered this to be a late sighting and part of the Cause. The Board noted that the SR22 pilot was operating on the Holyhead QNH and not at an IFR quadrantal cruising level before he commenced his descent; it was surmised that this was to assist in maintaining a safe altitude above terrain. A GA pilot Member considered that the SR22 pilot would be unlikely to know that he was routeing through the TACAN hold and it would have assisted his SA if he had been advised that the Hawk was conducting an instrument procedure. Nevertheless, the SR22 pilot was aware from TI and his TAS that the Hawk was approaching at FL65 and he elected to level-off above it in a VMC layer to try to acquire it visually. However, he first spotted it only after it had crossed his nose and was passing down his RHS, which the Board also considered to be a late sighting and the other part of the Cause. Notwithstanding these late sightings, Members were

satisfied that both pilots had taken sufficient positive and effective action to forestall any risk of collision.

[UKAB Note: Military FLIPs are available through the Aeronautical Information Documents Unit (AIDU) at www.aidu.mod.uk]

Controller Members agreed that the Valley DIR and RADAR controllers had done all that was required of them under the provisions of a TS. However, it was also agreed that a more proactive approach and a greater awareness of the Unit's training task would have seen the controllers working together to coordinate the 2 flights to ensure safe passage for the SR22 and the achievement of the training objective by the Hawk.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the pilots of both ac.

Degree of Risk: C.