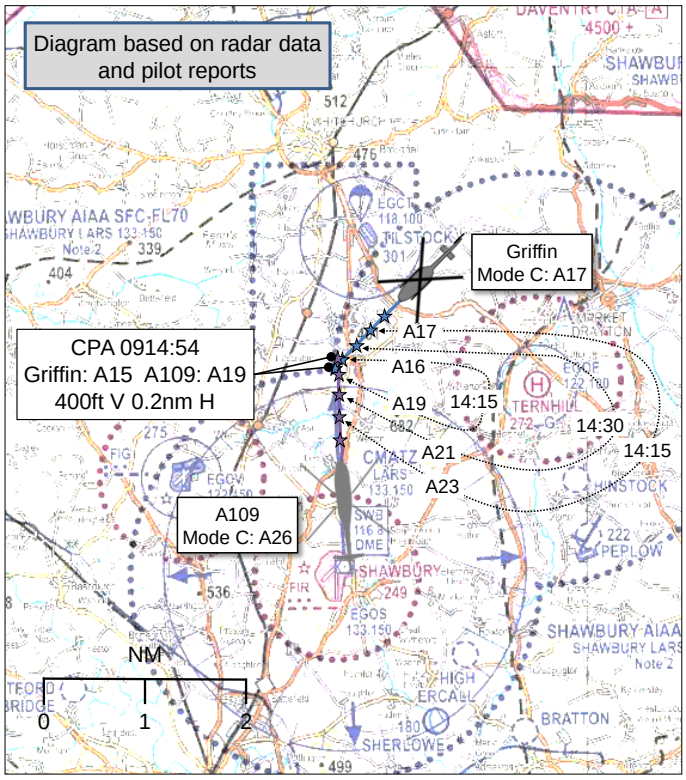
AIRPROX REPORT No 2013138

Date/Time: 23 Sep 2013 0914Z

Position: 5252N 00240W (4.8nm North of Shawbury)

Airspace: Shawbury CMATZ[1] (*Class*: G)

	Aircraft 1	*Aircraft 2*
Type:	Griffin HT1	Agusta A109
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	1500ft QFE (1016hPa)	1700ft QFE (1016hPa)
Weather:	IMC In Cloud	IMC In Cloud
Visibility:	50m	0m
Reported Separation:	100ft V/NR H	100ft V/NR H
Recorded Separation:	400ft V/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GRIFFIN PILOT reports flying a black and yellow helicopter with HISLs, position lights and the landing light illuminated, squawking transponder Modes A, C and S and with the TAS[2] operating. The crew were on an Instrument Flying sortie, IMC with a cloud-base of 900ft, at 1500ft QFE, and were following radar vectors for a PAR[3] approach to RW18, under a Traffic Service from Shawbury Talkdown. As they approached the descent point at around 5nm from touchdown, they received a TAS warning of an aircraft 2nm away, 500ft above them, followed by Traffic Information from the Talkdown controller on traffic '12 o'clock, 500ft above'. The TAS display showed the other aircraft descending and, when it reached 300ft above them and 0.5nm away, the co-pilot transmitted to the Talkdown controller that the conflicting aircraft was descending. The Griffin Captain instructed the co-pilot to 'descend now', and the co-pilot immediately followed the instruction. As they descended, the crew recalls receiving further Traffic Information on the A109 at a range of 0.5nm, but they could not recall the height information. The Griffin crew levelled their helicopter at 1200ft, still in IMC, and the TAS display showed that the A109 was now clear of them so they elected to continue with the PAR approach; once the approach was complete, the Captain asked the Talkdown controller what height the other aircraft had been at, and recalls being informed that it was 100ft above them.

He assessed the risk of collision as 'Very High'.

THE A109 PILOT reports flying in cloud, with a cloud-base of 700ft, with HISLs and navigation lights turned on, and squawking transponder Modes 3/A and C. He was flying a VOR/DME approach to RW18, at 100kt, descending to 1600ft QFE (1016hPa), under a Traffic Service from Shawbury Approach. As he was passing 1700ft he received Traffic Information on the Griffin 'in confliction' with him at 1500ft; he immediately levelled the A109 and maintained 1600ft. He did not see the Griffin, and was only made aware of the Airprox after landing.

He assessed the risk of collision as 'Medium'.

THE TALKDOWN CONTROLLER reports using the PAR to provide vectors and a Traffic Service to the Griffin pilot, who was level at 1500ft QFE (1016hPa); workload and task complexity were reported

[1] Combined Military Air Traffic Zone
[2] Traffic Alerting System
[3] Precision Approach Radar

as 'low'. When the Griffin was at a range of around 6nm from touchdown, she noticed a conflicting contact 'painting' on the radar display; she looked over to the Director's screen and saw that the contact was the A109 displaying the VOR squawk. The Talkdown controller asked the Approach controller if Traffic Information on the Griffin had been passed to the A109 pilot and Approach confirmed that it had. Talkdown 'called' the A109 to the Griffin pilot '12 o'clock, 1mile'; the controller thought that the Griffin pilot replied 'visual' and that the A109 was '100ft above'. The PAR approach was continued normally and, when the Griffin reached 0.5nm from touchdown, its pilot asked the controller to confirm the height of the A109; following consultation with the Approach controller, the Talkdown controller confirmed that the A109 had been 100ft above the Griffin.

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

THE APPROACH CONTROLLER reports 'low' workload and 'easy' task complexity whilst providing Traffic Services to two aircraft, and having been on console for around 45min. The Griffin was in the RTC[4], and the A109 was in the VOR hold. As the Griffin pilot climbed away from his first low-approach, the controller passed him Traffic information on the A109 and then passed Traffic Information on the Griffin to the A109 pilot. As the A109 exited from the hold, its pilot was instructed to 'report beacon outbound'; at this point the Griffin had been handed over to the Talkdown controller. As the A109 tracked north towards the Griffin, Approach passed Traffic Information on the Griffin to the A109 pilot. Approach then recalls passing information on the confliction, through a third qualified radar controller, to the Talkdown controller. The A109 pilot requested the height of the Griffin and Approach replied that it was at 1500ft; the A109 pilot replied that he was stopping his helicopter's descent at 1600ft and requested updated Traffic Information. The Approach controller reports that the Griffin was 1nm south of the A109 and no longer in confliction with it.

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

THE ATC SUPERVISOR reports that the Unit and controller workloads were 'Low' but was not in the Approach Control Room and did not witness the occurrence.

Factual Background

The Shawbury weather at 0850 and 0950 was reported as:

METAR EGOS 230850Z 12003KT 6000 BR FEW008 OVC010 16/15 Q1025 GRN BECMG 8000 GRN
METAR EGOS 230950Z 12004KT 8000 HZ FEW009 OVC011 17/15 Q1025 GRN NOSIG

Analysis and Investigation

Military ATM

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated.

The Griffin pilot was receiving radar vectors for a PAR and the A109 pilot was conducting a COPTER VOR/DME for RW18 (Figure 1). In a post-incident review, the Approach controller mentioned a degree of confusion as to which procedure was being flown but, at 0855:21, the Approach controller offers the procedure minima for a VOR/DME approach to RW18. As the Griffin climbed out to conduct Radar Training Circuits, Approach informed the A109 in the hold, and both aircraft were controlled on the same frequency.

[4] Radar Training Circuit

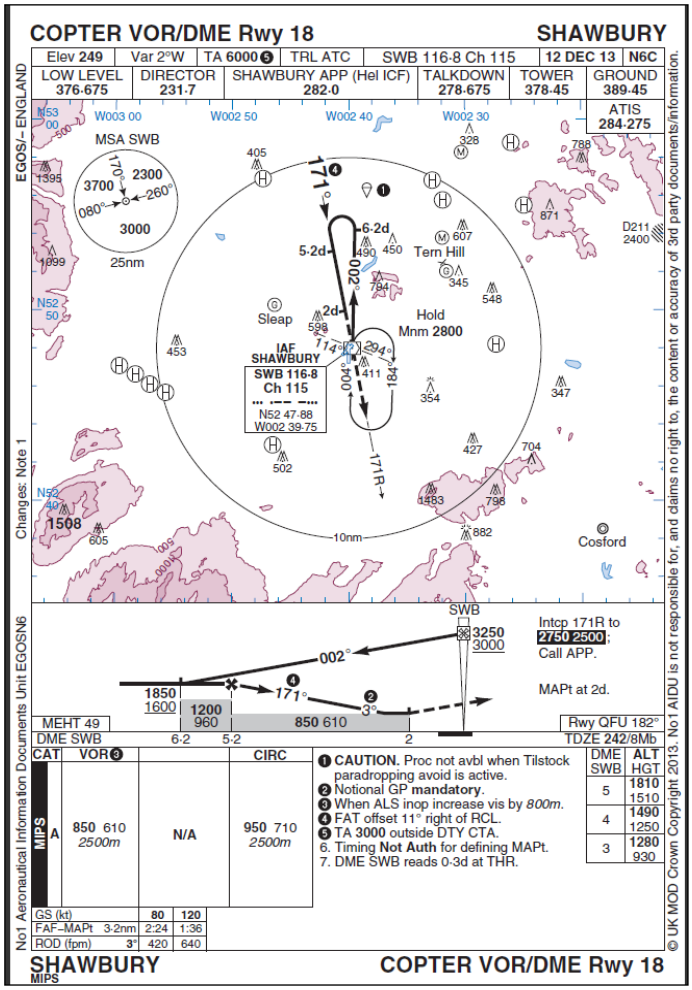


Figure 1: Shawbury COPTER VOR/DME Rwy18
(procedure in force at time of incident).

When the A109 reported 'final hold', the Approach controller replied, '*[A109 c/s], roger, report beacon outbound*.' The RAF Shawbury ATC Aide Memoire and RT Guide for the Defence Helicopter Flying School state that a clearance is needed to approve the procedure, as in 'cleared VOR/DME, report beacon outbound', and the notes section reminds controllers to apply a height restriction, if required.

At 0912:39, the A109 was abeam the airfield, its pilot requesting to leave the hold to conduct the procedure; the Griffin was approximately 7nm downwind in the radar pattern (Figure 2). The A109 pilot reported 'beacon outbound' and, at 0912:43, the Approach controller approved the procedure with, '*[A109 c/s], report base leg, checks complete, Shawbury QFE 1016*.'

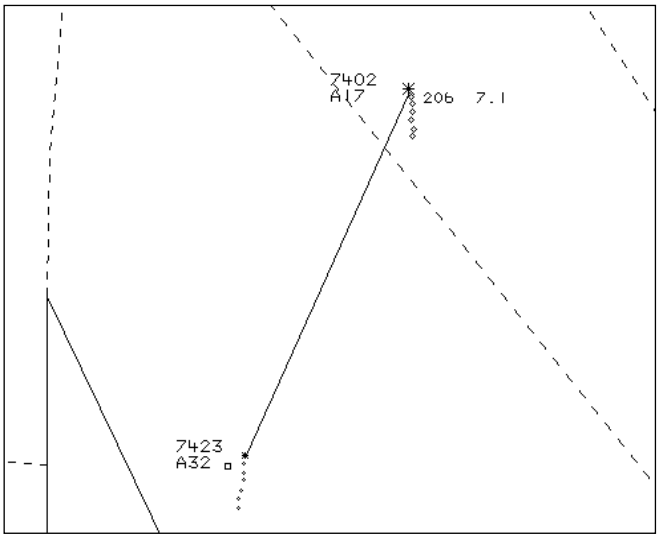


Figure 2: Aircraft geometry at 0912:39.

At this point, the Griffin was at 1500ft QFE whilst the A109 had been cleared down to 1600ft QFE, as per the procedure shown in Figure 1; with the Griffin expected to be turned in at approx 8nm, both aircraft were allowed to track towards each other with 100ft separation in IMC. The procedure taught at Shawbury, as part of the controller training package, was to build in 500ft separation or to remain in the hold, irrespective of the type of ATS[5]; under these rules, the A109 pilot should have been instructed not to descend below 2000ft QFE until advised to do so, and Traffic Information should have been passed on the Griffin pilot. The 'final hold' or 'beacon outbound' transmissions are both suitable points at which height restrictions may be applied.

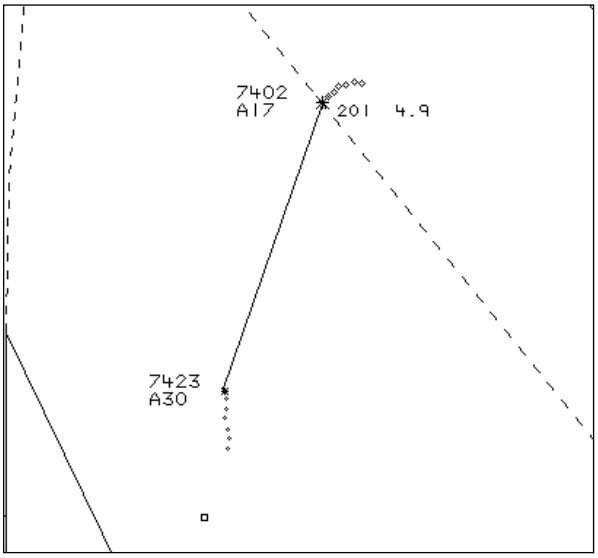


Figure 3: Aircraft geometry at 0913:27 when Traffic Information was passed.

The Griffin was handed over from Approach to the Talkdown controller at 0913:27 (Figure 3); at the same time, the Approach controller passed accurate Traffic Information to the A109 pilot, "[A109 c/s]*, traffic right one o'clock, four miles, opposite direction, Shawbury rotary, height one thousand five hundred feet, descending on Talkdown",* this was acknowledged by the A109 pilot.

At 0914:04, Approach passed Traffic Information, via a third party controller, to the Talkdown controller and, at 0914:23, the Talkdown controller passed Traffic Information to the Griffin pilot, *'[Griffin c/s] traffic, twelve o'clock, one mile, opposite direction, has been called, VOR traffic, Agusta 109'*; this was non-standard Traffic Information that omitted height details[6]. The transcript of the reply to the Traffic Information is unintelligible in parts, but was recorded as "[Griffin c/s]*, ??, looks like he is in the descent two hundred feet above us*.' The Talkdown controller thought that the Griffin pilot had confirmed visual contact with the A109, but he had seen the A109 on the TAS display, and was taking an avoiding action descent; the Griffin descended to 1,200ft QFE. At the end of the talkdown, the Griffin pilot asked what height the traffic was at and was informed "*100ft above*" by the Talkdown controller.

At 0914:27, the Approach controller updated the Traffic Information to the A109 pilot with, "[A109 c/s]*, previously called traffic in your twelve o'clock, half a mile*." The A109 pilot requested the height and was informed "*1,500 feet, descending on* Talkdown". A further update was requested by the A109 pilot at 0915:12, and he was informed that the Griffin was 1nm to the south. Figure 4 shows the separation at 0914:40, immediately after the A109 had reported level at 1600ft QFE.

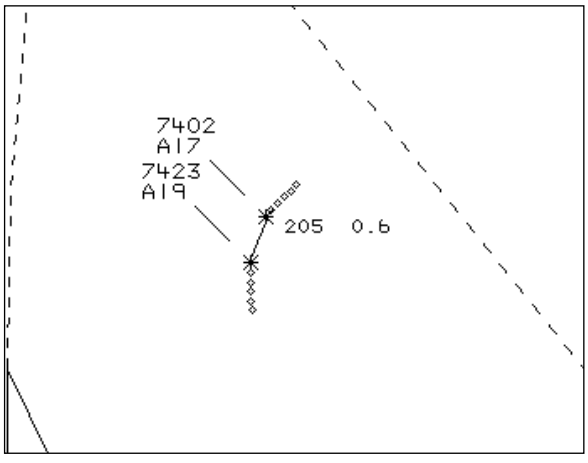


Figure 4: Aircraft geometry at 09:14:40. .

The A109 crew had been passed Traffic Information at 4nm and 1nm, and appear from their reports to be more comfortable with the situation as it unfolded, despite the fact that their TAS

[5] Air Traffic Service
[6] CAP413

was unserviceable. The Griffin crew were not provided information on the A109 as they turned inbound on finals, but they were aware of the traffic being cleared for the procedure. Both crews selected a Traffic Service, despite being IMC, and may have been better served by a Deconfliction Service. The guidance material to CAP 774 Chapter 3 Para 3 states that 'pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

BM SPA contends that, despite the provision of a Traffic Service, Shawbury's procedures required a minimum of 500ft separation between IFR recoveries unless lateral separation could be guaranteed. Furthermore, BM SPA contends that the Approach controller was not aware of, or did not appreciate, the respective flight paths and that adequate vertical separation was not built in; any confusion could have been allayed with clearer communication and would have reinforced the need to build in vertical separation. The Approach controller must not have appreciated the respective flight paths and, during such a low intensity session, failed to pay adequate attention to monitoring the situation, and did not provide adequate separation or timely and accurate Traffic Information.

Contributory factors include the lack of Traffic Information to the Griffin crew as they were vectored onto finals, and incomplete Traffic Information when the A109 was 1nm away on a reciprocal heading. The avoiding action taken by the Griffin pilot would have been entirely unnecessary had procedures been followed and separation built in. Chapter 5 of CAP 413 states that the level of conflicting aircraft should be called, if known. During this incident, the heights of both aircraft were known, and were omitted from two sets of Traffic Information; this was emphasised by the pilots requesting height information on both occasions. The Approach controller ultimately had the duty of care to keep aircraft safe and provide a level of protection for the Talkdown controller.

The COPTER VOR/DME procedure has potential latent failures because it allows aircraft to descend to within 100ft of recovering radar traffic. The procedure has been reviewed but remains unchanged because possible amendments produce other undesirable effects; positive ATC control has to compensate for the procedural shortfall.

One of the safety barriers in this incident sequence was training and supervision in ATC, but it did not perform as expected. An inexperienced shift was not closely supervised, although traffic levels were low. A Supervisor would be expected to provide guidance and intervention. The Approach controller did not have Training Objectives signed-off for applying safe separation standards and the Talkdown controller did not have avoiding action on PAR signed off; this questions whether the controllers were suitably trained to deal with the incident. The risk perception for the controllers differed from the aircrew (the Griffin pilot described severity as 'high' as opposed to the Talkdown controller as 'low'; the pilot and controller of the A109 both assessed severity as 'medium'). For the Talkdown controller to view this as low severity incident, considering only 100ft separation in IMC, suggests a lack of appreciation of the whole situation and lack of knowledge of how precision radar depicts a return versus the real-world separation.

Comments

HQ Air Command

It is concerning that both aircraft involved in this incident were flying in IMC in receipt of a Traffic Service, once again indicating a lack of understanding as to what each level of ATSOCAS[7] provides. The selection of a Deconfliction Service by one or other of the aircraft involved may well have alerted the controllers sooner to the inherent confliction problems of the differing procedures. Encouragingly, RAF Shawbury has already taken steps to increase the understanding amongst aircrew of the importance of selecting an ATS appropriate to the prevailing weather conditions and has also reviewed the approach procedures in light of this incident.

[7] Air Traffic Control Services Outside Controlled Airspace

Summary

This incident occurred 5nm north of RAF Shawbury between a Griffin and an A109. The A109 had been cleared to descend to 1600ft QFE whilst conducting a COPTER VOR/DME for RW18, under a Traffic Service from the Shawbury Approach controller. The Griffin was at 1500ft QFE, on a PAR approach, under a Traffic Service from the Shawbury Talkdown controller.

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 photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first looked at the procedural aspects of the incident and noted that both helicopters were being flown in IMC under Traffic Services; some members opined that Deconfliction Services would have been more appropriate to the weather conditions. Whilst other members agreed about the type of ATS[8], they were not convinced that the Approach controller would have applied any more separation as a result because he appeared not to have assimilated that the PAR and COPTER VOR/DME procedures had only 100ft separation between them. It was suggested that the procedures could be reviewed to provide greater separation, but Air Traffic members informed the Board that this was probably not practical, and that there were many procedures at many airfields that were not compatible with each other, the key was that ATC should not allow aircraft to be cleared to conduct them at the same time. In this instance, ATC members opined that either the A109 pilot should have been instructed to remain in the hold until the Griffin had descended sufficiently on PAR, or Approach could have used radar vectors to horizontally separate the aircraft.

Turning to the actions of the controllers, the Board noted that the Approach controller had reported his workload as 'low' and members wondered whether low arousal may have contributed to his misjudgement and the lack of sufficient Traffic Information to the A109 regarding the Griffin's height. This lead to the Board discussing why another member of the controlling team had not noticed the conflict. In this respect, the Board noted that the military ATM report comments that this was an inexperienced shift that was not closely supervised, and the Board wondered whether the Supervisor should also have been available (he was not in the control room at the time) to monitor events. The Board was informed that one of the Supervisor's key roles is to spot human error. In the RAF, there is normally only one supervisor who splits their attention between the dislocated visual and radar control rooms; the RN employs 2 supervisors in their ATC towers, one for each area. With only one Supervisor, that individual has to continually monitor the traffic situation and controllers' workloads in separate areas so that they can prioritise support to the right individuals in the right place at the right time. The Board agreed that, in this case, the traffic levels had been low, and so it was understandable for the Supervisor to have prioritised support to other members of the team even though the radar team were inexperienced. Members noted that civilian ATC units rarely employ a supervisor but in military ATC there is a greater turn-over of personnel, a higher training load and the controlling task is arguably more dynamic and diverse; given these elements military ATC members reported that the Supervisor is a valuable member of the team and there have been many examples of supervisors intervening appropriately to prevent human error leading to an incident.

Finally, the Board also noted that there were irregularities in the controllers' training records regarding their competence in demonstrating the ability to ensure separation of aircraft. However, members were informed that this was 'just' an administrative issue because both controllers would have demonstrated their competence to a Local Examining Officer during a live exam and, if necessary, using a simulator; the Board were somewhat placated by this explanation but reflected that the incomplete training records were themselves indicative of supervisory inattention.

[8] Air Traffic Service

In debating the cause and risk of this incident, the Board focused on the Approach controller's actions and agreed that he should have been able to manage the separation more pro-actively; they unanimously agreed that the cause of the Airprox was that he had cleared the A109 pilot to descend into conflict with the Griffin. Members noted that the procedures would have provided 100ft separation, so the aircraft were unlikely to collide, and that both pilots had been aware of the other aircraft from Traffic Information passed by the PAR controller and shown on their TAS displays. In the end, the Griffin pilot had taken avoiding action which succeeded in increasing the vertical separation. Consequently, the Board agreed that several safety barriers had operated effectively, but safety margins had been much reduced so the degree of risk was B.

As a postscript, the Board were heartened to hear from BM SPA that Shawbury had identified numerous lessons and taken action on them: ATC now run synthetic exercises using this scenario and the management of training objectives has been improved; aircrew have been re-briefed on these procedures and reminded to request ATSOCAS appropriate to the weather conditions; the incident will be used during flight safety training days; and the Minimum Equipment List for the aircraft has been amended to include serviceable traffic alerting systems.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Shawbury Approach cleared the A109 pilot to descend into conflict with the Griffin.

Degree of Risk: B

ERC Score[9]: 4

[9] Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC.