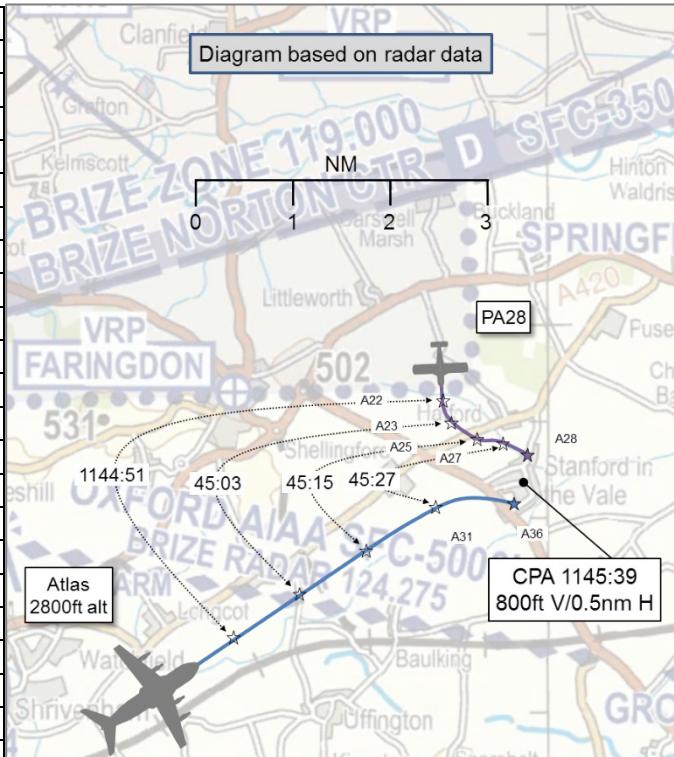


AIRPROX REPORT No 2018302

Date: 14 Nov 2018 Time: 1146Z Position: 5138N 00131W Location: Stanford in the Vale

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Atlas/A400	PA28
Operator	HQ Air (Ops)	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Traffic	Basic
Provider	Brize Director ¹	Brize Zone ¹
Altitude/FL	3600ft	2800ft
Transponder	A, C, S	A, C
Reported		
Colours	Grey	White, orange
Lighting	Landing/nav/HISL	Anti-col, nav
Conditions	VMC	VMC
Visibility	10km	10km
Altitude/FL	2800ft	3000ft
Altimeter	NK	QNH (NK hPa)
Heading	360°	150°
Speed	210kt	80kt
ACAS/TAS	TCAS II	Not fitted
Alert	RA	N/A
Separation		
Reported	200ft V/<1/4nm H	1000ft V/2nm H
Recorded		800ft V/0.5nm H



THE ATLAS PILOT reports recovering to Brize Norton after a training sortie in receipt of radar vectors for an ILS. When approximately 6nm south of RAF Brize Norton, on a heading given by ATC, the crew were warned that there was an aircraft in their 11 o'clock. The crew looked for the aircraft and, although it was observed on the TCAS display as level 500ft below, they were not able to acquire it visually. As the conflicting aircraft approached 2 miles it began to climb. Because it was not sighted, the crew took avoiding action and turned away, asking ATC for a new heading to the right of track. At this point a TCAS TA warning appeared and, because the crew were not visual, the PF began to climb. During the initial transition to the climb, the non-flying pilot became visual with the conflicting aircraft at an estimated distance of less than $\frac{1}{2}$ mile and less than 200ft below; he called for a hard right turn. The PF increased the rate of turn and, as he did so, a TCAS RA triggered. The PF followed the RA guidance and remained visual with the conflicting aircraft that passed down the left-hand side within $\frac{1}{4}$ mile and less than 200ft. The RA was reported to ATC and the remainder of the approach was flown without further incident. The crew were concerned that although they were outside controlled airspace and in receipt of a Traffic Service, they had been vectored towards an aircraft that was indicating 500ft below and was not being controlled. No call was heard from the controller, other than the initial report, and it was felt that if the crew had not started to take avoiding action prior to the TA/RA alerts, a risk of MAC was possible.

He assessed the risk of collision as 'Medium'.

THE PA28 PILOT reports that he was an instructor refreshing a qualified pilot on the PA28 after a 4-year gap. They departed Brize via Faringdon at 1300ft QNH and then requested a Basic Service from Brize Zone to operate in the southern training area up to 4000ft. The student then commenced the climb from 1300ft to 4000ft. A layer of 1-2 oktas cloud lay across the climb track so they turned towards

¹ Being provided by the same controller but on different VHF frequencies.

the general area of Didcot Power Station in order to remain clear of cloud and in sight of the surface. At about 3000ft, they noticed a fast moving military transport aircraft appear from the right and in front, above the clouds, which crossed at high speed from right to left at a range of 1-2nm. They were in receipt of a Basic Service from Brize Zone on VHF but heard no communications from the transport aircraft. The student was instructed to level above the cloud layer to avoid possible wake turbulence from behind the transport aircraft, which departed rapidly to the east. The instructor noticed it rocked its wings, possibly to increase its conspicuity as the aircraft was located such that the flight crew could not see the PA28, located in their 7 o'clock position. The PA28 instructor believed the transport aircraft crew were aware of his position by TCAS because direct visibility would have been difficult due to the cloud layer. He felt the military crew operated in a professional manner in trying to assist him with identifying their position. He reviewed his own actions and believed that a Traffic Service may have been appropriate due to the cloud and the need to train in the AIAA. The PA28 was not fitted with TCAS and he believed this should be mandatory for operations in the AIAA.

He assessed the risk of collision as 'Low'.

THE BRIZE ZONE/DIRECTOR CONTROLLER reports that he was talking to both pilots involved, the Atlas pilot on the VHF Director frequency and the PA28 pilot on the VHF Zone frequency. He was vectoring the Atlas wide-downwind for the ILS as the PA28 departed VFR via Farringdon under a Basic Service, reporting in the climb to altitude 5000ft. The controller passed Traffic Information on the PA28 to the Atlas crew. At the time the Traffic Information was passed, he recalled the PA28 was around 2000ft below the Atlas. The controller noted that local 'ATC Op Info' advice from a colleague, who had recently been on an Atlas familiarisation flight, stated "All our [aircraft] have glass cockpits with integrated TCAS images, so they are quite aware of the general air picture (of squawking traffic) and only need information on non-squawking traffic or [aircraft] that will come within the 3nm, 3000ft 'bubble'". The advice was coincidentally published on the same day that the Airprox was filed. The controller stated that he was a little confused as to what further was expected of him; the Atlas crew were in receipt of a Traffic Service and he had passed timely, relevant Traffic Information. The controller stressed that the purpose of Traffic Information was for a pilot to visually acquire traffic and take or request action to avoid the traffic. The controller felt that if the Atlas crew wanted to be deconflicted from other aircraft in Class G then a request for a Deconfliction Service, or at least deconfliction advice, would have been appropriate.

He assessed the risk of collision as 'Low'.

THE BRIZE SUPERVISOR reports that he was positioned in the ACR at the time the Atlas was inbound and was assisting the LARS controller with their traffic but noted the rate of descent of the Atlas and the track of the outbound PA28. He confirmed with the Zone/Director controller that the PA28 had been called to the Atlas, in-line with controllers' responsibility under a Traffic Service. The controller confirmed this had been completed and, shortly afterwards, the Atlas crew elected to self-position to remain clear of the reported traffic.

Factual Background

The weather at Brize Norton was recorded as follows:

METAR EGVN 141150Z 20011KT 9999 FEW020 SCT200 13/09 Q1021 BLU TEMPO SCT020 WHT=

Analysis and Investigation

Military ATM

The A400 was on a routine training sortie and was returning to Brize Norton for an ILS approach. The PA28 belonged to the Brize Flying Club and was conducting a PA28 convex sortie on a qualified pilot. Figures 1-5 show the positions of the A400 and the PA28 at relevant times in the lead up to and during the Airprox. The screen shots are taken from a replay using the Swanwick Radars, which are not utilised by Brize Norton, therefore are not representative of the picture

available to the controllers. There was a disparity of approximately 57sec between the timings on the radar repay and those on the tape transcript.

Figure 1 depicts the point at which the A400 (squawk 3741) was given a positioning turn and descent in preparation for its instrument recovery. At this time, the Brize Zone controller had not ascertained the intentions of the PA28 (squawk 3707) which was still within the Brize Class D airspace.

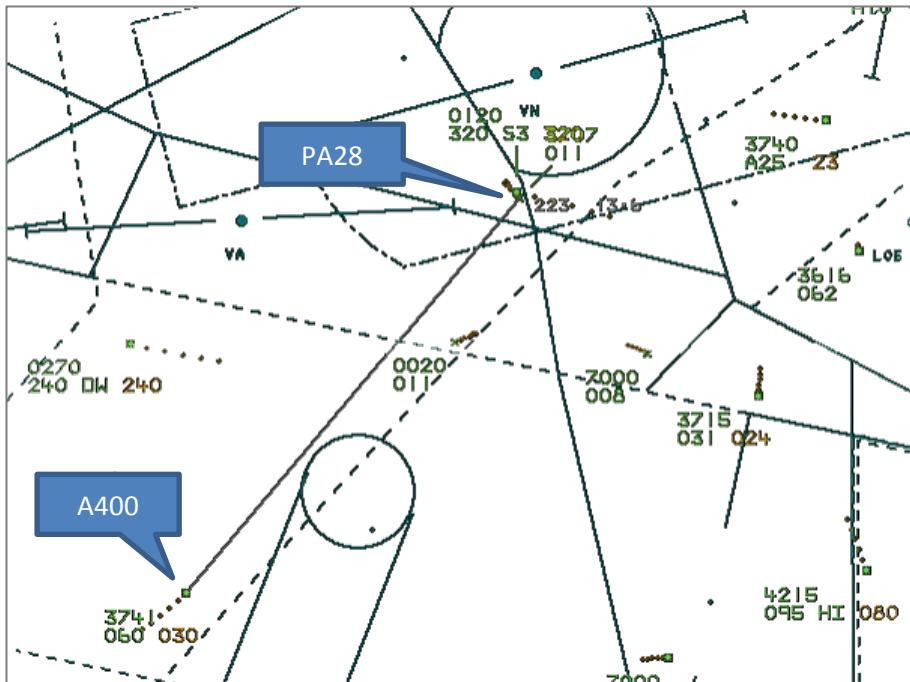


Figure 1

As the PA28 left CAS (Figure 2), the Brize Zone controller established that the PA28 intended to operate to the south of Brize (known locally as the southern training area) up to an altitude of 5000ft. Separation at this point was 9nm and 3400ft, decreasing; Traffic Information was not passed to the A400 at this point.

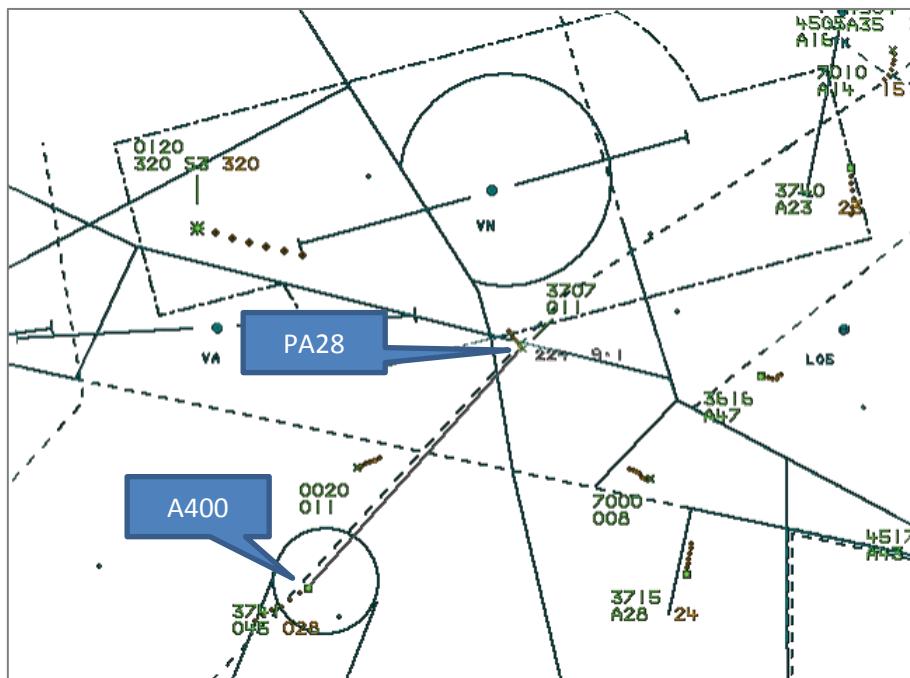


Figure 2

Approximately 50sec later (Figure 3), the Brize Zone Controller initiated a liaison call to Brize Tower concerning an aircraft at 8nm from touchdown. Separation between the A400 and PA28 had decreased to 5.4nm and 1100ft.



Figure 3

Figure 4

Traffic information was passed to the A400 23sec later (Figure 4). Although the controller noted the PA28 was 600ft (500ft indicated on Radar Replay) below the A400, no mention was made of the aircraft type or its intentions to operate up to 5000ft.

30sec later the A400 requested a right turn which was approved by the controller. Shortly afterward the A400 announced that they had a TCAS RA. CPA occurred at 1145:39 (Figure 5), some 13sec after the request for the right turn, and was measured at 0.5nm and 800ft.

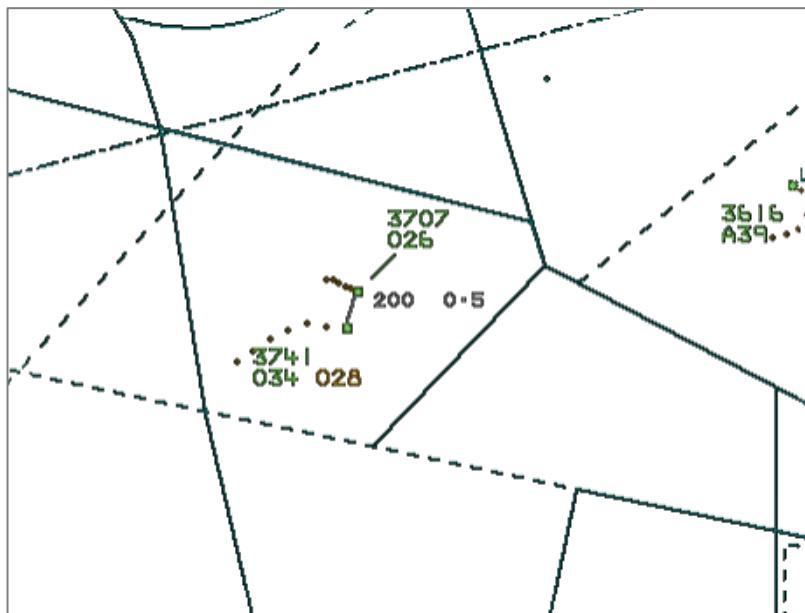


Figure 5 – CPA

Although the controller concerned was operating on multiple frequencies, traffic loading was light. In addition to the two aircraft involved in the incident there was one other aircraft on frequency which was conducting an internal aids approach to Brize Norton and required no assistance from the Brize controller apart from liaison calls to Brize Tower.

Analysis of the radar replay indicates that the flight paths of the aircraft involved were always going to conflict (given the differences in speed) and thus Traffic Information would be required. CAP 774 states, under the conditions of a Traffic Service, that conflicting traffic (relevant traffic which will pass within 3nm and 3000ft) should be passed to an aircraft before the conflicting traffic is within 5nm. Given the low traffic levels there was no obvious reason why these criteria could not have been met by the controller. The decision to conduct a liaison call to Tower at the point where the 5nm 'bubble' was about to be breached was not correct: the priority should have been Traffic Information to the A400. Once Traffic Information was passed, it was incomplete and did not paint the full available picture to the A400. The PA28 was described as crossing left-right (with no indication of ahead or behind) when it should have been described as converging. Additionally, the altitude was given as 600ft below when it would have been prudent to give the aircraft altitude with the additional information that it was climbing and operating up to 5000ft.

UKAB Secretariat

The Atlas and PA28 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard². If the incident geometry is considered as converging then the PA28 pilot was required to give way to the Atlas³.

Brize Norton Occurrence Investigation

The Brize Norton Occurrence Safety Investigation (OSI) established that the Brize Zone/Director controller called traffic accurately and in a timely fashion. The situation could have been aided if the controller had also called Traffic Information [on the Atlas] to the PA28 when leaving the Brize CTR; however, this was not necessary for air systems under a Basic Service.

On the morning of the incident, a potentially confusing entry was placed into the operational read file, which is a 'must read' file before controllers are allowed to control on the day. Some of the information contained in the document may have played a contributory factor in this incident. The Atlas crew's report states that they were visual with the conflicting aircraft at $\frac{1}{2}$ mile, at the same time as receiving a TCAS Resolution Advisory. The PA28 Instructor became visual with the Atlas at a similar time.

The controller followed the correct procedures for aircraft under a BS and TS. However, Traffic Information of the recovering A400 could have been passed to the pilot of the PA28 upon leaving BZN CTR at Farringdon to improve their situational awareness.

The RA controller was working multiple frequencies and several tracks across two frequencies, whilst also conducting internal liaison calls with the ADC controller. Whilst maintaining a scan of all the tracks worked, a BS would have been the lowest priority air system being worked, whilst the air system approaching 8 miles would have been the highest priority. The Traffic Information was passed to the A400 pilot in accordance with CAP774, so attention could be paid to the higher priority air system.

Following an annual mandatory ATCO air experience flight (co-incidentally on an A400) an entry was placed into the Sqn operational read file, highlighting their experience. Quoting their observations, the ATCO stated 'several irrelevant traffic information calls were received, again disrupting operational or training dialogue. All our AS have glass cockpits, with integrated TCAS images, so they are quite aware of the general air picture (of squawking traffic) and only need information on non-squawking traffic or AS that will come within the 3nm, 3000ft "bubble"'. This must-read document, read on the morning of the incident, would have only accentuated the belief that the traffic information given by the RA controller, as well as the glass cockpit and TCAS display present inside the A400 aircraft, would have been sufficient for the air crew to fulfil their responsibilities of avoiding other traffic.

² SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

³ SERA.3210 Right-of-way (c)(2) Converging. MAA RA 2307 paragraph 12.

Although this entry was made with the best intentions, it could have caused confusion with what and when Traffic Information should be passed. Although the climbing aircraft was clearly relevant, the controller may have felt it irrelevant to update TI given this brief, his workload on other frequencies, and the belief that the pilot would avoid traffic if necessary given their responsibilities under TS. An emphasis has been made to only provide essential operational information in the op read file, and all other information, such as this, be placed in the admin read file, to read at a controllers leisure. Also, an emphasis on avoiding any information that could cause confusion on the regulatory provision of ATSOCAS.

Under CAP774, under a Traffic Service, a controller is to provide specific surveillance-derived traffic information to assist the pilot in avoiding other traffic. However, the controller is not required to achieve deconfliction minima and the pilot remains responsible for collision avoidance. Deconfliction advice is not provided under a Basic Service. If a pilot requires deconfliction advice outside controlled airspace, a Deconfliction Service shall be requested. Furthermore, a pilot may change level or heading without advising the controller under a Basic Service. This definition is part of an ATCO's professional and working knowledge examinations, which are held at least annually. It is not sure as to how familiar air crews are with the definitions provided within CAP774, and if they are examined on the definitions and provisions of ATSOCAS regularly. Under a BS, the pilot is responsible for collision avoidance and can operate without notifying changes of altitude or heading to ATC. The RA controller was busy with an aircraft approaching 8 miles, and performing internal liaison calls with ADC, and as such provided timely Traffic Information to the TS aircraft. Under a TS, the pilot remains responsible for collision avoidance. As a result of this incident, Brize Norton have utilised this example in standards and safety bulletins as well as disseminated to ATC personnel acting as Sqn reps to highlight ATC responsibilities and air crew responsibilities under different ATS.

Comments

HQ Air Command

The barriers to MAC that were available in this Airprox were a surveillance-based air traffic service (ATS), electronic conspicuity (EC) and lookout. There was no plan-to-avoid barrier available as aircraft recovery profiles to Brize Norton are many and varied and often unpredictable and the PA28 pilot's intentions could not have been known to the crew of the Atlas in the planning stage.

The ATS barrier was employed, but not entirely effectively, with the Atlas under a Traffic Service (TS) and the PA28 under a Basic Service (BS), the controller passed traffic information (TI) on the PA28 to the crew of the Atlas but not vice versa. Whilst not required to do so under the provisions of a BS, had TI been passed to the pilot of the PA28 this may have enabled him to become visual with the Atlas somewhat earlier than was the case. That said, the TI passed to the crew of the Atlas could have been more detailed in terms of track evolution, and that it was converging, to highlight that there was a potential confliction.

As the PA28 was equipped with a transponder, the TCAS II system on the Atlas detected the PA28 and confirmed the presence of the aircraft to the crew as circa 2nm range and 500ft below; the crew was unable to see the PA28 but started to manoeuvre the aircraft based on the TCAS display indication that the PA28 was climbing, whereupon they became visual with the aircraft. Shortly after this, the TCAS annunciated an RA, which was followed by the handling pilot.

Lessons that can be drawn from this Airprox include the need to pass timely and accurate information to permit pilots to execute their obligations for collision avoidance under a TS, which includes additional information describing if the aircraft is crossing, converging, climbing etc. Furthermore, it does appear from the Atlas pilot's remarks that an understanding of what is, and what is not, provided under the terms of a TS may not be what it should be. The purpose of TI is to permit the pilot to take action to avoid a confliction – this includes whether under radar vectors or

own navigation. If a pilot expects to be deconflicted from other tracks by the controller then a Deconfliction Service should be requested.

Summary

An Airprox was reported when an Atlas and a PA28 flew into proximity near Brize Norton at 1146hrs on Wednesday 14th November 2019. Both pilots were operating under VFR in VMC, the Atlas pilot in receipt of a Traffic Service and the PA28 pilot in receipt of a Basic Service, both from Brize Norton.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, transcripts of the relevant R/T frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first discussed the chronology of the incident. The PA28 had departed from Brize Norton, initially with a 'Farringdon Departure' clearance (VFR on track to Faringdon VRP not above altitude 1800ft). The PA28 pilot changed to the Zone frequency, was initially instructed to 'stand-by' and shortly afterwards was placed under Radar Control whilst in the Brize CTR. The Atlas pilot came onto the Director frequency after this R/T exchange, was vectored onto a heading of 060° and instructed to descend to altitude 2800ft. The next R/T exchange (with the same controller but on the Zone frequency) established a Basic Service with the PA28 pilot as he left the Brize CTR, operating up to altitude 5000ft in the 'southern training area'.

Although the PA28 pilot's routeing was not explicit it was apparent on radar and some members felt that by giving the Atlas pilot a vector into the same airspace the Brize controller may have vectored the Atlas into conflict with the PA28. It was pointed out by a NATS advisor that the PA28 pilot had initially received a clearance not above altitude 1800ft to the Faringdon VRP (1.5nm outside the Brize CTR) and therefore that by descending the Atlas to altitude 2800ft, he had not vectored the aircraft into conflict at that time because it was not until after he had vectored the Atlas that he had learnt that the PA28 pilot intended to operate up to 5000ft. Given that the controller did not change the Atlas vector once the PA28 had left the Brize CTR and stated his intention to operate up to 5000ft in the area the Atlas had been vectored through, members then discussed whether a vector that had already been given could be construed as a vector into conflict should the other traffic subsequently establish a conflicting course. After much discussion, the Board accepted that the CAP774 definition of deconfliction under a Traffic Service that '*... a risk of collision is not knowingly introduced by the instructions passed.*' had been achieved, although more than one controller member opined that under the duty of care requirement it had been unfortunate that the Brize controller had not modified the Atlas crew's clearance once he had become aware of the potential conflict.

Members then discussed the means for deconfliction in Class G airspace and agreed that ultimate responsibility fell to the pilots concerned, whatever service had been agreed. In this case, the PA28 pilot was under a Basic Service and the Atlas pilot under a Traffic Service. Although the pilots were ultimately responsible for collision avoidance, it fell to the Brize controller to pass timely and accurate Traffic Information to the Atlas pilot. The Board discussed this aspect at length and agreed that the Traffic Information passed to the Atlas pilot was late (inside 5nm separation) and that it did not include information that was of critical importance, i.e. that the tracks were converging. The Board agreed that this had been a contributory factor.

Turning to the cause of the Airprox, some members felt that the Atlas pilot appeared to have been operating under the misapprehension that the Brize controller would provide deconfliction advice or that other traffic would be vectored around them. The converging PA28 was displayed on TCAS but its closing vector seemed to take the Atlas crew by surprise although it was acknowledged that they ultimately did turn away and then climb as the TCAS also issued an RA. Under VFR in Class G, the PA28 pilot was required to give way to the Atlas. However, he was not aware of the Atlas (with which he reported direct visibility would have been difficult due to a cloud layer), in part at least because the controller did not pass Traffic Information despite also controlling the Atlas at the time. Members

agreed that CAP774⁴ provided for Traffic Information to be passed to pilots under a Basic Service, and that, in this instance with converging tracks, it would have been reasonable to pass Traffic Information about the Atlas to the PA28 pilot. After considerable discussion, members agreed that although the pilots remained responsible for collision avoidance without assistance from the controller, in this instance the Airprox had occurred because the Brize controller had allowed the Atlas to continue into conflict with the PA28. It was also agreed that, despite this, the Atlas pilot had taken effective and timely action such that the risk of collision was averted.

The Board made 3 observations concerning this Airprox.

1. The Brize controller's mindset had no doubt been influenced by the information contained in the 'ATC Op Info' file. Members wondered how it was that information which was in direct contradiction with regulations concerning service provision could have been included in the Brize ATC mandatory read-file.
2. The Board noted that the military risk management construct was dependent on OSI information that was fulsome, accurate and impartial so that lessons could be learnt and passed up the DDH/ODH chain within a Just Culture context. In this respect, it seemed to the Board that the Brize Norton OSI report was less than rigorous and appeared to be simply an explanation of ATC rationale that did not include input from the pilots concerned and was largely devoid of any analysis.
3. It appeared to the Board from the OSI and Military ATM analysis (which included an R/T transcript) that the Brize controller and the Atlas and PA28 pilots appeared to have been operating under what could best be described as a transactional relationship. Although regulations were clear in providing the necessary framework for operations, it was essential for the best interests of all concerned that all parties operate in a collegiate manner; safety of flight was best served by acting in concert, with each other's interests at heart.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Brize controller allowed the Atlas to continue into conflict with the PA28.

Contributory Factors: Late and incomplete Traffic Information from the Brize controller.

Degree of Risk: C.

Safety Barrier Assessment⁵

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

ANSP:

Regulations, Processes, Procedures and Compliance were assessed as **partially effective** because the Brize controller passed late and incomplete Traffic Information.

Situational Awareness and Action were assessed as **ineffective** because the conflict was not resolved despite being aware that the aircraft were converging.

⁴ CAP774, Chapter 2 (Basic Service), Traffic Information, para 2.6 states: 'However, where a controller/FISO has information that indicates that there is aerial activity in a particular location that may affect a flight, in so far as it is practical, they should provide traffic information in general terms to assist with the pilot's situational awareness.'

⁵ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).

Flight Crew:

Tactical Planning was assessed as **partially effective** because the PA28 pilot chose not to request a Traffic Service in the AIAA.

